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2006 CAMPUS TRAFFIC SURVEY
University of Victoria
Victoria, B.C.

Prepared for:	**University of Victoria**
Prepared by:	**Bunt & Associates Engineering Ltd.**
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1 Introduction

In September 2006, Bunt & Associates Engineering Ltd. was retained by the University of Victoria (UVic) Department of Facilities Management to conduct a comprehensive survey of current traffic access patterns to and from the University for a typical weekday condition.

The data requirements of the 2006 survey were to be closely modeled upon the reporting structure of similar traffic surveys conducted for the University in 1992, 1996, 2000, and 2004 by Bunt & Associates.

UVic completed a Transportation Demand Management (TDM) Study in September 2003, which examined ways in which the University can promote the use of alternative modes of transport to and from the campus and reduce reliance on single occupant automobiles. Many of the study recommendations have been implemented and include a broad range of initiatives such as parking pricing strategies, cycling infrastructure improvements, transit subsidies, crosswalk improvements, rideshare programs, and educational activities. One of the primary purposes of the 2006 traffic survey is to provide the University with an up to date snap shot of traffic and transportation patterns on campus to assist with monitoring the effectiveness of the TDM over the past two years.

The 2006 campus traffic surveys consider the following modes of traffic:

- automobile drivers;
- automobile passengers;
- transit passengers;
- cyclists;
- pedestrians;
- skateboarding; and
- rollerblading.

For the first time, as requested by UVic, an inventory of greenhouse gas emissions for the campus has been undertaken. This inventory will provide the basis for future environmental comparison of campus travel patterns.

As with the 2004 survey, Bunt & Associates were assisted by Transtech Data Services (Mr. Sandy McMillan and Mr. Charles McMillan) for some of the traffic data, BC Transit (Mr. Mike Davis and Mr. Gerald Benjamin) for the transit data collection, and R.H. Malatest & Associates Ltd for intercept surveys conducted for the greenhouse gas emission component of the study.

1.1 University of Victoria: 2006 Status

Size of Campus and Facilities

The University of Victoria (UVic) presently has a total enrollment of approximately 18,930 students (November 2006). In addition, UVic employs 4,124 people through various appointments from tenured faculty to support staff (September 2006). These numbers are similar to 2004.

In 2003 UVic completed its Campus Plan. The Campus Plan is intended to guide the physical growth of the campus for several years to come. The plan itself has three main goals supported by nine principles and 30 action items.

The Travel and Parking Goal aims to "reduce motor vehicle traffic to campus and to encourage the increased use of public transit, cycling and walking."

The following principles from the 2003 Campus Plan are directly related to transportation and parking:

Principle 5 – The University will manage development carefully respecting "smart growth" principles and practices as they may be adapted to the university context.

Principle 6 – The University commits to incorporate sustainable practices in the planning, construction, and operation of buildings and facilities.

Principle 7 – The University will continue to plan and design in a way that enhances social interaction at a human scale**.**

Principle 8 – The University is committed to open and universal access to its facilities while reducing dependence on single-occupant vehicles.

Principle 9 – The University recognizes the need to minimize surface parking and pursue alternatives.

Since 2004 there have been a number of new buildings constructed on the Gordon Head campus including:

- Medical Sciences Building (completed in 2004);
- Engineering/Computer Science Building; and
- Student residences (510 units).

In addition to this a number of projects are currently under construction and anticipated for completion by 2008:

- Library expansion: constructed over parking lot D, removing approximately 160 parking spaces;
- Science Building;
- Social Sciences and Mathematics Building;
- First Peoples House; and
- Support Services.

Despite this new construction, the basic configuration and operation of the driveway access and internal ring road system has not changed appreciably since 2004.

Parking Fees

At present, parking charges range from $320.65 per year for general parking ($61.48 per month), and $561.27 per year for reserved staff parking. These rates reflect an increase of approximately 66.5% over the past two years.

On a related note, the University also created a separate Residence Student Parking pass and parking zones to enable effective data collection of those living on campus who own vehicles.

A Flexible Parking Permit was introduced to the campus since the 2004 surveys for those who bring vehicles to campus occasionally, but not often enough to warrant paying for reserved or general parking permits. These permits are designed to encourage staff to use non-vehicular modes of transport as their primary means of travel to and from the campus, but allow the flexibility of occasional vehicle use for tasks such as running errands. The Flex Pass allows 12 parking uses per month and costs $33 per month for the reserved parking area and $21 per month for the general parking area. In November 2006, 213 general flex passes and 48 reserved flex passes were sold (note that these permits are sold on a monthly basis so the monthly sales total represents the total use of the program at that point in time).

A variety of rideshare programs have also been introduced to the campus. In August 2005 UVic introduced a rideshare parking permit that allows vehicles with 3 or more riders to park in designated spaces. These spaces are reserved between 7 a.m. and 10 a.m. and the cost of the permit is divided amongst the three (or more) occupants. The Victoria Car Share Co-op has also introduced a service to provide members with access to communally owned vehicles for occasional use such as running errands, etc. Currently there are ten vehicles in the fleet, with one located on the UVic campus.

Transit Service and Programs

BC Transit provides fixed route bus services 365 days a year from 6:00 a.m. to midnight on most days. No significant changes to the routes, frequency, or vehicle capacity of transit services to and from UVic have been made since the 2004 surveys. The price of a single cash fare (adult and college) has remained at $2 for a one zone trip, the same as in 2004. It is noted that a transit fare increase is scheduled by BC Transit for April 2007.

The following 12 bus routes go to the UVic Transit Exchange located on the Gordon Head campus at Finnerty Road.

- #4 UVic/Downtown from downtown via Douglas, Hillside and Lansdowne
- #7 UVic/Downtown from downtown via Fairfield and Foul Bay
- #11 Tillicum Mall/UVic from Tillicum Mall via Gorge, downtown, Fort, Cadboro Bay and Arbutus
- #14 Vic General/UVic from Victoria General via Fort, Richmond and Cedar Hill
- #17 Cedar Hill School Limited service, Monday to Friday AM and PM
- #18 Cedar Hill School Limited Service, Monday to Friday AM
- #26 Dockyard/UVic from Esquimalt via McKenzie to UVic
- #29 UVic Gordon Head area to UVic, Monday to Friday
- #33 UVic via Richmond Monday to Friday AM service only
- #39 UVic from Royal Roads University to Camosun College interurban campus, Royal Oak Exchange to UVic (Monday-Saturday only)
- #51 Langford/UVic from CanWest Mall and Western Exchange to UVic (Monday-Friday only)
- #76 Swartz Bay From UVic to Swatrz Bay Friday evenings and back on Sunday evenings only

The Universal Bus Pass (U-PASS) was implemented in 1999 and gives all UVic undergraduate and graduate students unlimited access on all Greater Victoria BC Transit routes anytime, anywhere during a semester. It costs $61 per semester, up 9% from two years ago.

The semesterly fee is mandatory, similar to Athletics and Recreation fees. Any increases require a referendum by the student bodies. Co-op students may also opt into this program. The only students exempt from this program are those registered solely in distance education programs, persons with a BC Bus Pass, or those with mobility disabilities which prevent them from using BC Transit or handy DART services. The U-PASS program offers a large financial saving as BC Transit college bus passes are presently $57 per month as compared to the $15.25 per month U-PASS.

The University introduced an Employee Bus Pass (EBP) in September 2005 to offset the difference in cost between parking and transit for campus employees. The pass cost $30 per month in 2006 and was raised to $33 per month in April 2007. As of April, the pass is subsidized by UVic at $35.92 per month per pass and the Victoria Regional Transit Authority at $7.33 per month per pass. Approximately 432 employees purchased an EBP in November 2006 (note that these passes are sold on a monthly basis so the monthly sales total represents the total use of the program at that point in time). The EBP program has effectively replaced the higher-cost regional ProPass program run by BC Transit. The ProPass program attracted only 50 University employees at its peak.

A number of transit stop improvements have also been made to the campus including upgrades to the four transit stops around Ring Road to incorporate additional seating, motion detector security lighting, and bus route information panels. UVic is working with BC Transit on reconfiguring the bus stop locations at the main transit loop to better accommodate additional buses.

Cycling

There have been some significant additions to bicycle infrastructure in the past two years both on campus and in the broader community.

In a broader community sense, UVic has worked with the District of Oak Bay to stencil bike lanes and stopping points on Henderson Road/University Drive.

The following cycling related initiatives or infrastructure expansion has occurred on the UVic campus since 2004:

- Additional bike parking at the McPherson Library;
- Bike parking, lockers, shower and change facilities in all new buildings;
- Continuation of SPOKES Bike Bursary Program (student run program which aims to lend out refurbished bikes to students each academic year);
- Formal sponsorship and participation in Greater Victoria Bike to Work Week;
- Free Road Skills Cycling Courses for students, faculty and staff each year (spring and fall); and
- Planning for the construction of a self-serve bicycle maintenance and repair facility.

Regional Growth and Transportation Infrastructure

It should also be noted that in 2004, The Capital Regional District (CRD) completed its own Travel Choices Strategy, an implementation component of the Regional Growth Strategy. The Strategy establishes a long-term direction and a short term set of priorities for improving transportation options across the region. The University of Victoria will, undoubtedly, be impacted by the goals and actions outlined in the strategy:

1. Coordinate land use and transportation;
2. Encourage use of alternative modes;
3. Provide access to commercial activities;
4. Maintain a safe transportation system;
5. Keep transportation affordable;
6. Preserve options such as the LRT for the future.

A five-year Travel Choices Implementation Plan is currently being developed to identify key transportation projects required to achieve the objectives of the Travel Choices Strategy.

The CRD Regional Growth Strategy has committed to the following transportation related targets:

- By 2026, achieve a minimum PM peak period region–wide transit mode share of 10% of trips;
- By 2026, achieve a minimum PM peak period mode share by non–auto modes of 40% for trips to, from and within the Metropolitan Core;
- By 2026, achieve a minimum region–wide transit mode share of 15% for journey–to–work trips;
- By 2026, achieve a minimum cycling mode–share of 10% within the Victoria Census Metropolitan Area for journey–to–work trips, and 15% for journey–to–work trips for residents of the combined areas of Victoria, Oak Bay, Esquimalt and urban Saanich.

2 Survey Method

To simplify the study process and ensure consistency between the 2004 and 2006 traffic survey results, the traffic survey methodology used for the 2004 study was, where possible, replicated for 2006. As in 2004 the basic design of the travel mode survey was to establish a cordon around the periphery of the campus across which all trips entering and exiting the University could be systematically recorded.

Three different forms of traffic count survey were used for the 2006 update:

- Driveway Counts – 24-Hour Automatic Tube Counts (ATC);
- Driveway Counts - Peak Period Manual Observations including vehicles, vehicle passengers, cyclists, pedestrians, skateboarders, and rollerbladers;
- Transit Counts - Arriving/ Departing Passenger Counts recorded through automatic counters on a sample of the bus fleet.

The traffic survey locations used for the 2006 survey are summarized in **Exhibit 1**. They are almost identical to those used in 2004. The one exception to this is where the University preferred to move the location of M-10 from the Ring Road by the Glover Greenhouse Building to the employee parking lot off Finnerty Road to obtain information about the use of this facility. Results from the M-10 location are not designed to be included in the general results (consistent with the 2004 report) and are covered in a separate section of the report. Additional survey details are described below.

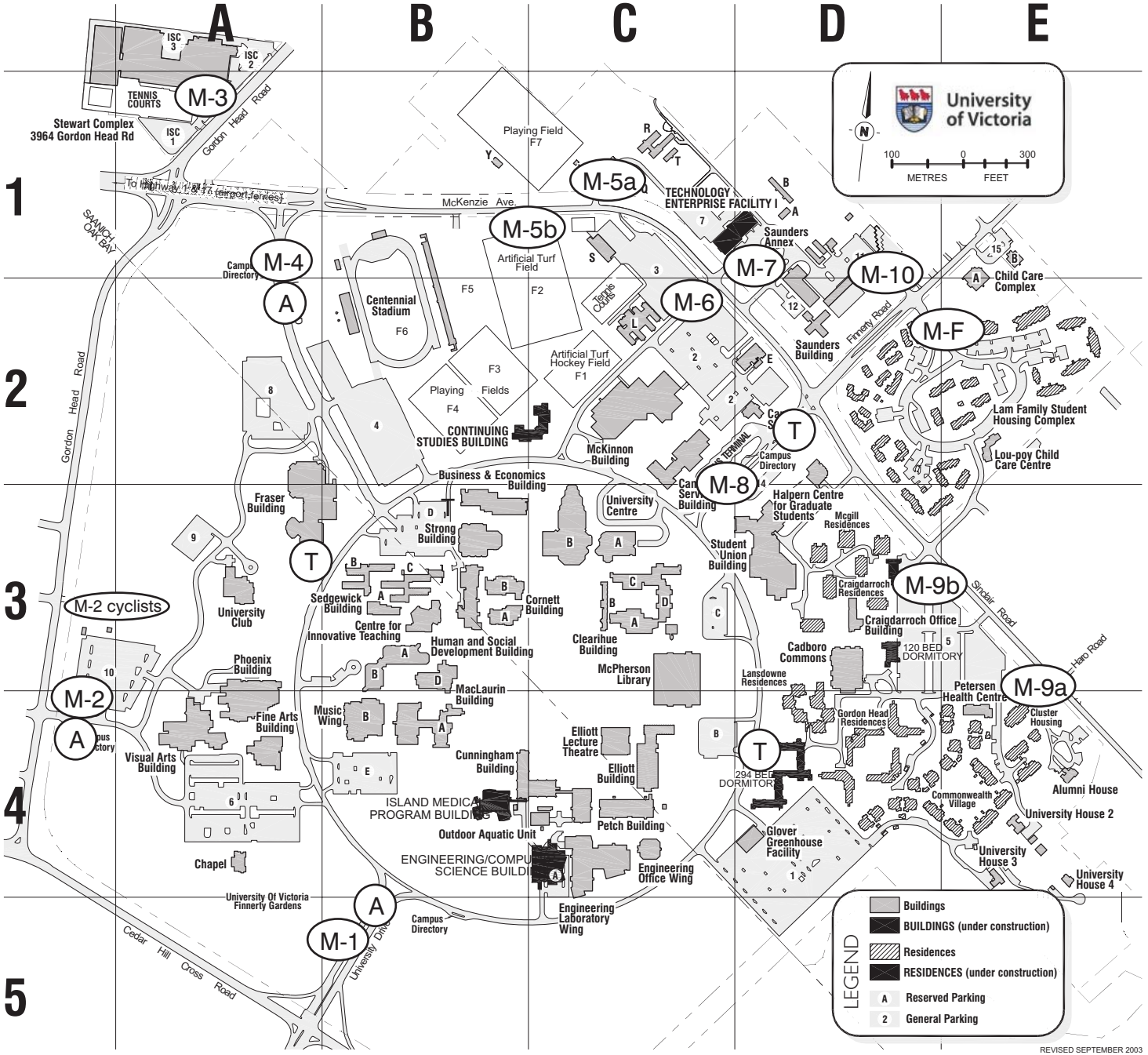
2.1 Driveway Counts: 24-Hour Automatic Tube Counts

Transtech Data Services established automatic tube count stations on the same three (3) driveways surveyed in the 2004 survey, i.e.: University Drive, McGill Road, and the driveway leading in from Gordon Head Road. The automatic tube counts provided a continuous, hourly record of all inbound and outbound vehicle traffic on these three driveways for a two week period. In 2004, malfunctioning equipment early in the survey week resulted in the study week shifting to between Thursday, October 21 and Wednesday, October 27. Weather conditions were generally cloudy throughout that week, although there was rain on Monday, October 25.

The 2006 surveys were conducted between Thursday, October 19 and Wednesday, October 25 (a two week period to allow consistent comparison with the 2004 surveys). Weather conditions varied during the week, generally raining early in the week and dry thereafter.

The primary purpose of the automatic tube counts was to provide some indication of the daily variation in total vehicle traffic activity at the University, as well as profiles of vehicle traffic activity throughout the course of an entire 24 hour day, including both peak and off-peak traffic periods. It is noted that the ATC locations provide good coverage of overall campus traffic movements, however to complete a cordon around the campus, future counts would need to include a station on Finnerty Road, south of McKenzie Avenue (north-east of M8 on Exhibit 1) and at the driveway west of the campus security building (at approximately M6 on Exhibit 1).

A complete record of the automatic traffic count data is provided in **Appendix 1**.



M Manual Vehicle Counts (13)

A Automatic Vehicle Counts (3)

T Transit Counts (3)

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Location Plan and Traffic Count Stations

University of Victoria - 2006 Traffic Survey

Exhibit 1

2.2 Driveway Counts: Peak Period Manual Counts

As shown in Exhibit 1, a total of 12 manual traffic count locations were established at key driveway and parking lot entrances to the University. One count location (M-F) was established at the Finnerty Road access to the David and Dorothy Lamb Family Student Housing Complex, and at the Clarndon Road access to this same facility.

As with the 2000 and 2004 surveys, the manual counts were conducted over two consecutive weekdays (Wednesday, October 18, 2006 and Thursday, October 19, 2006) during both the morning (7:00 – 10:00 a.m.) and afternoon (2:00 – 6:00 p.m.) peak traffic periods at the University. The data collected from the manual traffic counts included:

- peak period inbound and outbound vehicle traffic in 15 minute intervals;
- number of occupants in inbound vehicles during the AM peak and in outbound vehicles during the PM peak; and
- peak period inbound and outbound pedestrian, cycling, rollerblading and skateboarding activity.

To ensure that the manual counts did not record the travel patterns of the same group of people, they were executed on two different class scheduling days (Wednesday and Thursday). A complete record of the peak period manual traffic count data is provided in **Appendix 2**.

2.3 BC Transit Passenger Counts

In 2004 and 2006, BC Transit conducted inbound and outbound transit passenger counts over two days for the routes serving the University of Victoria. They did this at three transit count stations around the campus.

Since 2000, BC Transit have equipped approximately 21% of their bus fleet with GPS automated passenger counters (APC) to record running time and passenger count information. For this survey, BC Transit was able to provide data relating to the average number of people entering and leaving the UVic campus during weekdays on the bus routes that service the site. The data supplied covered the period September 5 to November 5 2006.

A complete record of the BC Transit passenger data is provided in **Appendix 3**.

3 Travel Mode Survey Results

3.1 Automobile Drivers

The volume of automobile traffic (automobile drivers) was recorded using both automatic tube counts (ATC) on the three busiest driveways and manual observations during the morning and afternoon peak periods on all key driveways and parking entrances. A summary of the combined daily traffic (24hr inbound and outbound total) for the three automatic count stations is provided in **Table 1**. Included in Table 1, for comparison purposes, are the results from the 2000 and 2004 surveys.

Table 1: Combined Daily Traffic

		Monday			Tuesday			Wednesday			Thursday			Friday			Average weekday		
Count Location		2000	2004	2006	2000	2004	2006	2000	2004	2006	2000	2004	2006	2000	2004	2006	2000	2004	2006
University Drive	in	4179	4353	4172	4323	4533	4276	4379	4567	4542	4425	4594	4644	4007	4147	4120	4263	4439	4351
	out	4635	4570	4752	4696	4515	4861	4719	4645	5040	4805	4803	5017	4161	4306	4483	4603	4568	4831
West Campus Gate	in	1425	1448	1290	1347	1460	1368	1552	1423	1435	1650	1384	1346	1325	1059	1084	1460	1355	1305
	out	1420	1304	1178	1388	1329	1299	1348	1267	1335	1452	1197	1261	1155	981	981	1353	1216	1211
McGill Road	in	3513	3410	3537	3571	3590	3671	3509	3536	3730	3576	3489	3546	2969	3102	3082	3428	3425	3513
	out	2474	2286	2301	2429	2286	2340	2497	2450	2388	2491	2348	2270	2086	2029	1936	2395	2280	2247
Totals	in	9117	9211	8999	9241	9583	9315	9440	9526	9707	9651	9467	9536	8301	8308	8286	9150	9219	9169
	out	8529	8160	8231	8513	8130	8500	8564	8362	8763	8748	8348	8548	7402	7316	7400	8351	8063	8288
	combined	17646	17371	17230	17754	17713	17815	18004	17888	18470	18399	17815	18084	15703	15624	15686	17501	17282	17457
% of average weekday		100.8	100.5	98.7	101.4	102.5	102.1	102.9	103.5	105.8	105.1	103.1	103.6	89.7	90.4	89.9	n/a	n/a	n/a

Overall, the average total weekday traffic (24 hour) recorded on the three driveways in 2006 was 17,457 vehicles, approximately 1.0% higher than 2004 and 0.25% lower than the 2000 total. The results of the automatic tube counts indicate that overall vehicle traffic to the University has remained approximately the same as 2004 levels. Another comparison between 2000, 2004, and 2006 levels of vehicle traffic considers the manual count data recorded at the various driveways over the combined periods of 7:00 – 9:00 a.m. and 2:00 – 6:00 p.m. This comparison is provided in **Table 2**.

Table 2: Observed Driveway Traffic Volumes (Peak 6 Hours)

	Survey Year		
	2000	**2004**	**2006**
Inbound	8,010	6598	6197
Outbound	7,006	6732	6534
Total	15,016	13,330	12,731

Note: Volumes are averaged over the two days counted for each year.

As shown in Table 2, the traffic volumes measured at the campus driveways during the daytime peak six hours appear to have decreased approximately 4.5% from 2004 conditions and 15.2% since 2000. Inbound traffic has decreased approximately 22.6% since 2000, while outbound traffic has decreased by only 6.7% over the same period. Recall that ATC volumes on the major driveways have remained largely consistent. This could be explained as more traffic occurring outside the peak six hours than in previous years or increases in vehicle traffic at the minor access roads.

Based on anecdotal information, there was a significant amount of construction activity occurring on the UVic campus during the 2006 surveys compared to those in 2004. This may have had some effect on daily traffic volumes, but could not be quantified.

A summary of the morning peak hour (8:00 – 9:00 a.m.) and afternoon peak hour (4:00 – 5:00 p.m.) vehicle traffic, averaged between the October 18th and 19th count days, is shown in **Exhibit 2**. As shown, the overall busiest driveway continues to be University Drive (as in 2004) with 29% of the morning traffic and 31% of the afternoon traffic. McGill Road is the next busiest access (as in 2004) with 22% of the morning peak hour traffic, and 18% of the afternoon peak hour traffic. Interestingly, Exhibit 2 shows that between 08:00 and 09:00 and 16:00 and 17:00, driveway volumes have remained fairly consistent with the results of the 2004 surveys.

Using the daily traffic profile information derived from the 24-hour ATC stations, estimates of the inbound and outbound vehicle trip profiles were developed for the 7:00 a.m. to 10:00 p.m. period. Over this period, which accounts for the majority of the total daily traffic at the University, the inbound vehicle traffic estimate is 12,780 vehicles while the outbound traffic estimate is 11,363 vehicles (note that the inbound/outbound imbalance may be attributed to some vehicles not having departed from the University at 10:00 p.m.) for an overall weekday daily trip generation of approximately 24,143 vehicles, which is approximately 1,779 vehicles less than in 2004. This calculation method has been used in place of using the ATC data directly to provide a consistent methodology that can also be applied to vehicle passenger, cycle, pedestrian, rollerblade, and skateboard modes of transport.

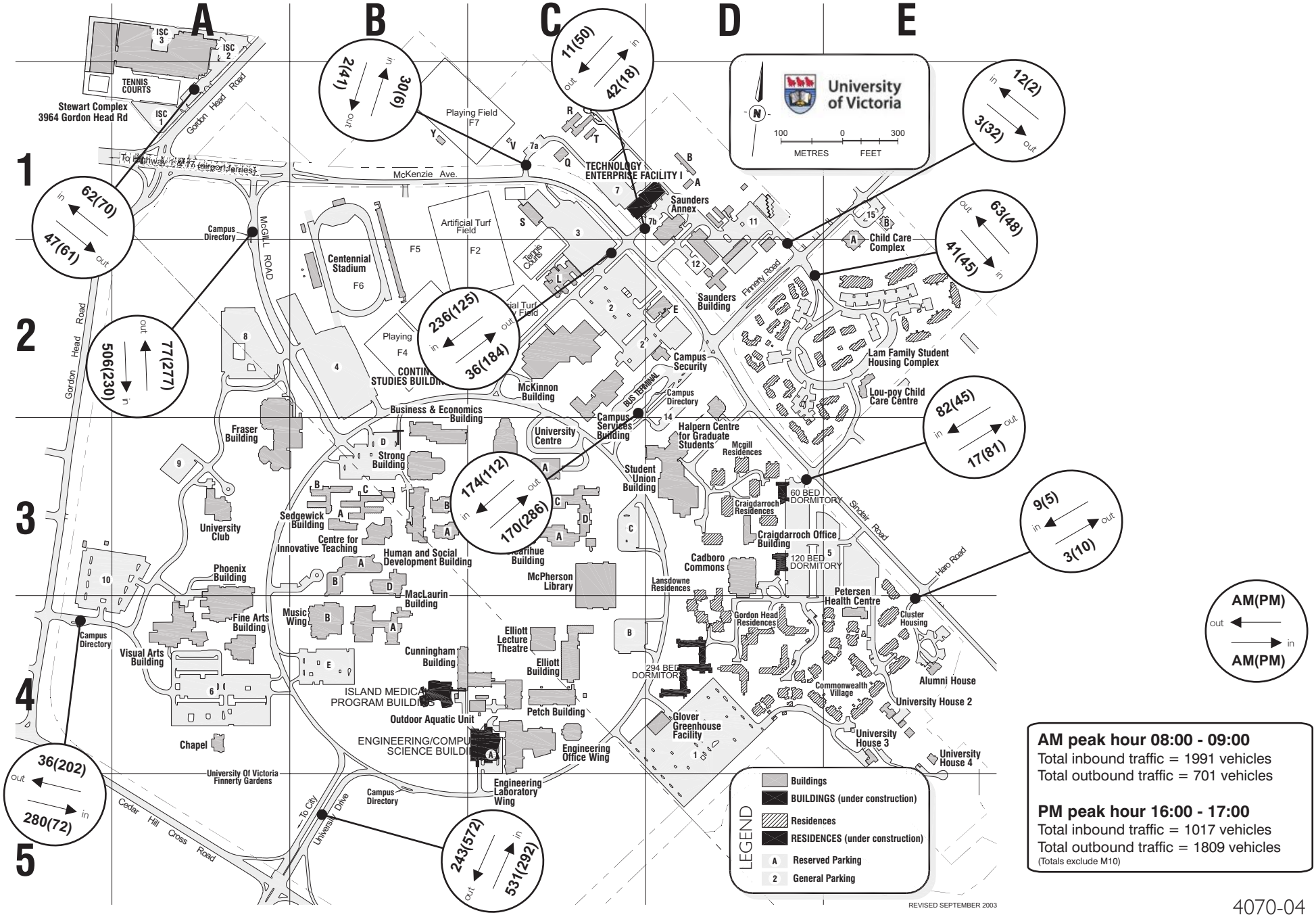
3.2 Automobile Passengers

As described previously, the manual driveway counts included observations of the number of total occupants (i.e., driver plus passengers) in vehicles arriving to the University during the morning peak period and leaving the University during the afternoon peak period. An hourly summary of the vehicle occupancy at each count station is provided in **Table 3**.

Table 3: Vehicle Occupancy

Location	7-8am	8-9am	9-10am	Average (am)	2-3pm	3-4pm	4-5pm	5-6pm	Average (pm)	Average (day)
M1 - University Drive	1.27	1.31	1.30	**1.30**	1.31	1.35	1.29	1.34	**1.32**	**1.31**
M2 - West Campus Gate	1.19	1.18	1.20	**1.19**	1.19	1.25	1.15	1.22	**1.20**	**1.19**
M3 - Stewart Complex	1.36	1.36	1.30	**1.34**	1.20	1.48	1.18	1.27	**1.28**	**1.30**
M4 - McGill Road	1.19	1.26	1.25	**1.25**	1.27	1.28	1.29	1.32	**1.29**	**1.27**
M5a - R Hut	1.00	1.05	1.15	**1.07**	1.06	1.00	1.12	1.18	**1.12**	**1.10**
M5b - McKenzie Avenue	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**
M6 - Gabriola Road	1.30	1.19	1.23	**1.23**	1.29	1.25	1.27	1.30	**1.28**	**1.26**
M7 - Saunders Annex	1.14	1.24	1.18	**1.18**	1.12	1.05	1.21	1.26	**1.16**	**1.17**
M8 - Finnerty Road	1.29	1.39	1.27	**1.33**	1.32	1.36	1.27	1.35	**1.32**	**1.32**
M9a - Haro Road	1.10	1.10	1.17	**1.16**	1.00	1.25	1.24	1.00	**1.17**	**1.17**
M9b - Clarndon Road	1.42	1.23	1.24	**1.26**	1.31	1.35	1.31	1.47	**1.36**	**1.32**
MF - Lam Circle	1.26	1.31	1.14	**1.25**	1.22	1.41	1.38	1.44	**1.37**	**1.33**
Overall Average				**1.26**					**1.29**	**1.28**

As with the 2000 and 2004 surveys, the vehicle occupancy varies considerably at the different count stations. For the morning and afternoon periods combined, the highest average occupancy of 1.33 persons per vehicle occurs at the driveways to the Family Student Housing Complex (Station M-F). The lowest average occupancy of 1.10 persons per vehicle occurs at the driveway to the playing fields (Station M-5a). The overall average occupancy for vehicles arriving at the University is 1.26 persons per vehicle, down from 1.27 in 2004. The overall average occupancy for vehicles departing the University is 1.29 persons per vehicle, up from 1.28 in 2004. The outbound vehicle



AM peak hour 08:00 - 09:00
Total inbound traffic = 1991 vehicles
Total outbound traffic = 701 vehicles

PM peak hour 16:00 - 17:00
Total inbound traffic = 1017 vehicles
Total outbound traffic = 1809 vehicles
(Totals exclude M10)

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Peak hour vehicle traffic
University of Victoria - 2006 Traffic Survey

Exhibit
2

occupancy was found to be higher than the inbound occupancy, which may be attributable to drivers offering friends and colleagues a ride home.

Similar to the 2000 and 2004 surveys, vehicles were grouped into one of six classes depending on the number of occupants per vehicle. The categories ranged from one person (driver only) up to six or more persons. A comparison of the 2000, 2004, and 2006 survey results is provided in **Table 4**.

Table 4: Occupants per Vehicle – Combined AM and PM Peak Periods

Year		1 person	2 persons	3 persons	4 persons	5 persons	6+ persons	Totals
2006	Vehicles	7018	2033	183	44	10	3	9291
	%	75.5%	21.9%	2.0%	0.5%	0.1%	0.0%	
2004	Vehicles	7523	2069	187	49	4	3	9835
	%	76.5%	21.0%	1.9%	0.5%	0.0%	0.0%	
2000	Vehicles	6005	1588	183	52	9	4	7841
	%	76.6%	20.3%	2.3%	0.7%	0.1%	0.1%	

For 2000, inbound occupancy was recorded in both the AM and PM peak. In 2004 and 2006, inbound occupancy was recorded in the AM and outbound occupancy in the PM peak. This may explain the difference between 2004 and 2006 totals being significantly higher than the 2000 totals.

As indicated in Table 4, the following notes compare the 2004 and 2006 survey results:

- In 2006, single-occupant vehicles, i.e., driver only, accounted for 75.5% of all inbound trips between 7:00 – 10:00 a.m. and outbound trips between 2:00 – 6:00 p.m., lower than in 2004 (76.5%);
- In 2006, two person vehicle trips accounted for 21.9% of all measured trips, up from 21.0% in 2004;
- In 2006, three person vehicle trips accounted for 2.0% of all measured trips, up from 1.9% in 2004;
- Little change occurred between 2004 and 2006 for trips with four or more persons per vehicle, accounting collectively for less than 1% of all vehicle trips to the University.

3.3 Transit Passengers

BC Transit's complete summary of the transit passenger survey conducted between September 5th and November 5th 2006 is presented in **Appendix 3** and summarized in Table 5 in terms of average weekday ridership.

Table 5: Transit Passenger Summary

Transit passengers	Year 2004	Year 2006	% Change
Inbound	8,149	7,885	-3.2
Outbound	6,694	7,550	+12.8
Total	14,843	15,435	+4.0

Highlights of Table 5 include:

- For a typical weekday in Autumn 2006, 7,885 transit passengers arrive at the University (3.2% less than in 2004). For inbound trips the busiest hour is between 08:00 and 09:00 when 1,491 passengers arrive;

- 7,550 passengers leave during the same typical weekday (12.8% more than in 2004). The peak hour for outbound trips is 16:00 – 17:00 when 995 passengers depart;

- Therefore, the combined total transit ridership for a typical weekday in Autumn 2006 is 15,435 passengers (an increase of 4.0% over 2004). In terms of bus frequency, an average of 698 inbound and outbound bus trips are made throughout the typical weekday with 59 trips made in the peak hour.

It would appear that overall transit ridership has increased over the past two years. The reduction in inbound transit travel may be attributable to increased on-campus housing or to peak-spreading, i.e. transit arrivals to the campus may be more evenly distributed across the morning hours than in 2004 due to class schedule changes, etc; although the peak inbound and outbound hours of travel remained the same as in 2004.

The increase in outbound transit travel may have been impacted by poor weather or mode switching, which would have encouraged inbound cyclists and pedestrians to take transit for their outbound trip. It is noted that the number of cycling and pedestrian trips outbound were significantly lower than inbound trips in 2006 (see Sections 3.4 and 3.5 below).

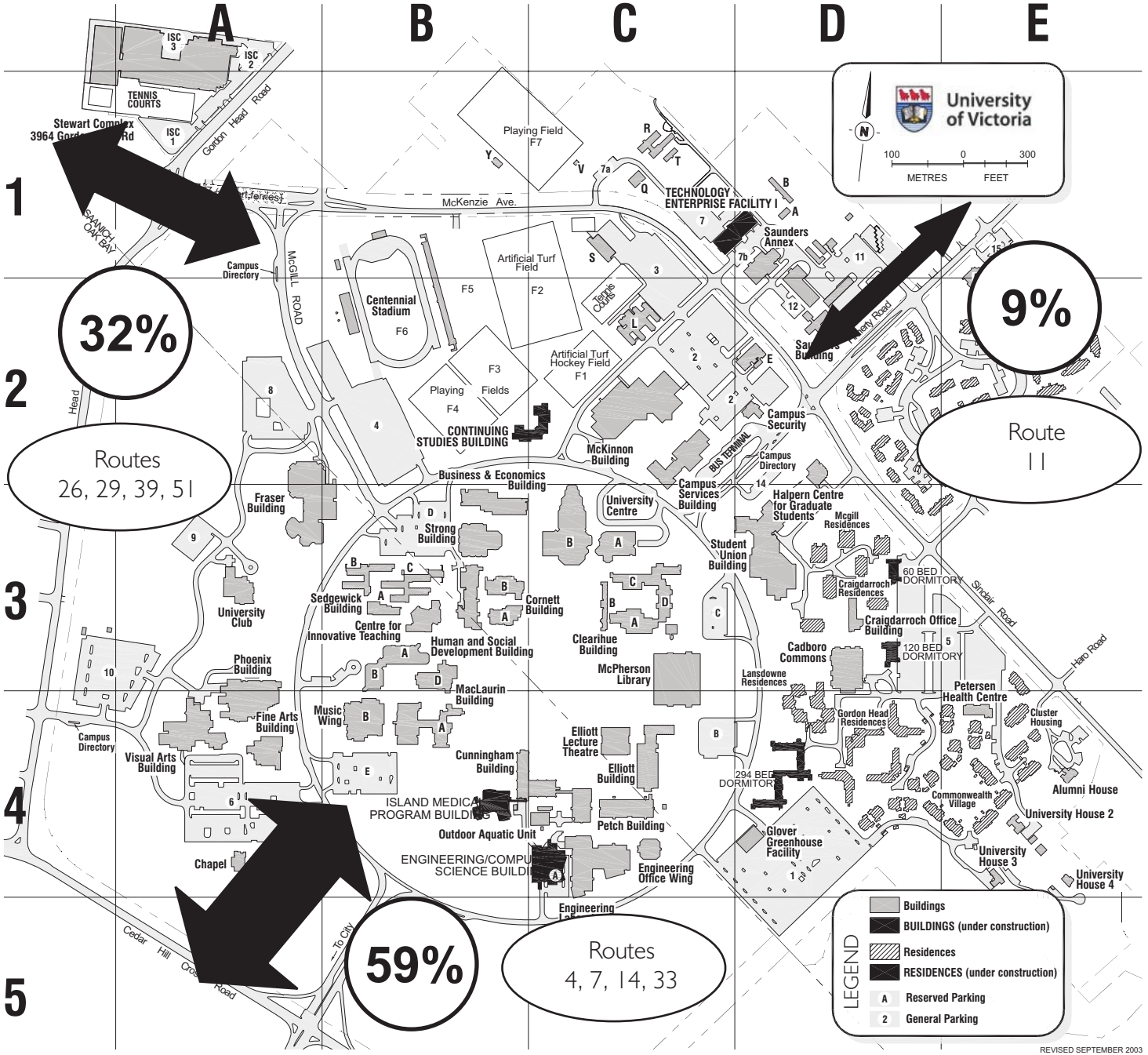
Of the 11 routes serving the University, the most heavily used route is the #14 University route, accounting for 29% of all trips to and from the campus. The next most popular route is #26 (Crosstown) with 25% of all trips and then #4 (Mount Tolmie) with 21% of all trips. These top three are the same as in 2000 and 2004.

The approximate distribution of transit trips at UVic is shown in **Exhibit 3**. As in 2004, the predominant transit trip-orientation is to the south/southwest, primarily involving the #4, #7, and #14 routes. These three routes plus #33 which heads in the same direction, account for 58% of all trips.

3.4 Cyclists

Using the same procedure as described in the “Automobile Drivers” section, the observed peak period cyclists trips were expanded into daily inbound and outbound trip profiles. A summary of the total observed inbound and outbound cyclist trips at the University for the 7:00 a.m. to 10:00 p.m. period is summarized in **Exhibit 4**. The most heavily used driveway for cyclist trips is University Drive accounting for approximately 28%, followed by the West Campus gate at 15% and the McKenzie Avenue cycle/ pathway at 11%. It appears that over an average weekday (from 7:00 a.m. to 10:00 p.m.) approximately 2,894 bicycle trips are made. This is approximately 14.2% less than in 2004 and is likely due to the poor weather conditions on the days of the manual surveys in 2006. Poor weather such as rain often results in cyclists altering their travel patterns to different transportation modes, particularly transit or walking, or to revise their need to make a trip at all. Some of the increase in transit and walking trips may be attributable to cyclists shifting modes. It is noted that in 2004, it did not rain over the two survey days.

The 2006 cycling trip total includes 1,723 inbound and 1,171 outbound cycling trips. The inbound/outbound imbalance may reflect that at 10:00 p.m. there are still cyclists on the campus who have not yet departed or who used transit for their outbound trip.



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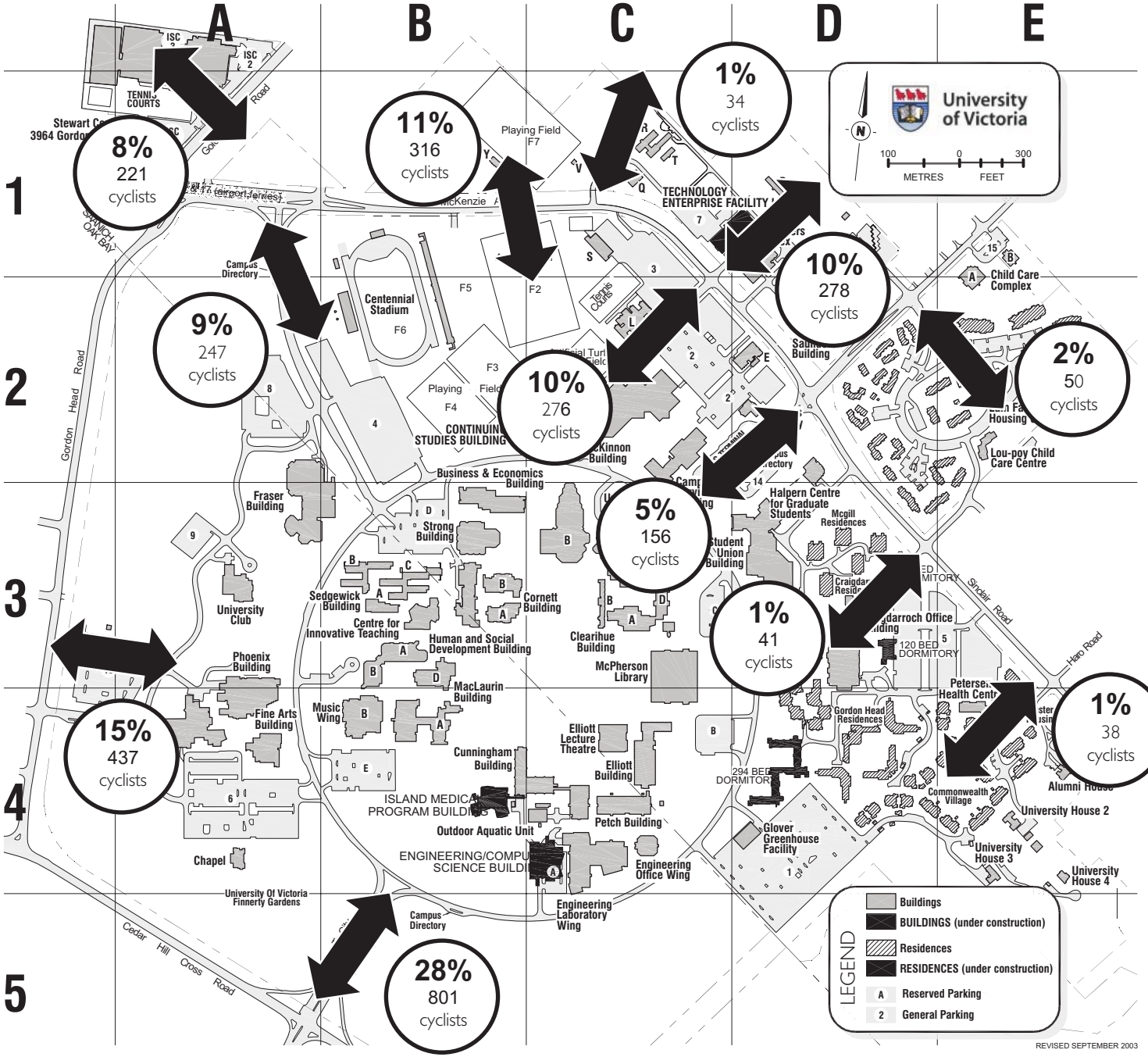
Transit passenger directional distribution

University of Victoria - 2006 Traffic Survey

Exhibit 3



Daily Cyclist Traffic (07:00 - 22:00)
Inbound: 1,723
Outbound: 1,171
Total: 2,894

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Cyclist access patterns

University of Victoria - 2006 Traffic Survey

Exhibit
4

The cumulative inbound and outbound cycle trip estimates were used to estimate on-site bicycle accumulation for each hour, as summarized in **Table 6**. As indicated, the apparent peak accumulation of bicycles parked at the University is approximately 931 bicycles between 1:00 and 2:00 p.m. based on the inbound/ outbound traffic observations. This is up from 870 in 2004 and 600 in 2000, although still lower than the 1,000 bicycles estimated in the 1996 survey. The increase in bicycle accumulation appears to contradict the overall reduction in cycling trips to and from the campus. This may be a result of using overall campus trip trends to estimate cyclist trips to and from campus outside of the peak survey hours or may suggest that cyclists are either traveling to campus later and/or staying on campus longer. It is noted that a more accurate estimate of on-campus bicycle accumulation could be achieved through surveys of bike parking facilities throughout the day.

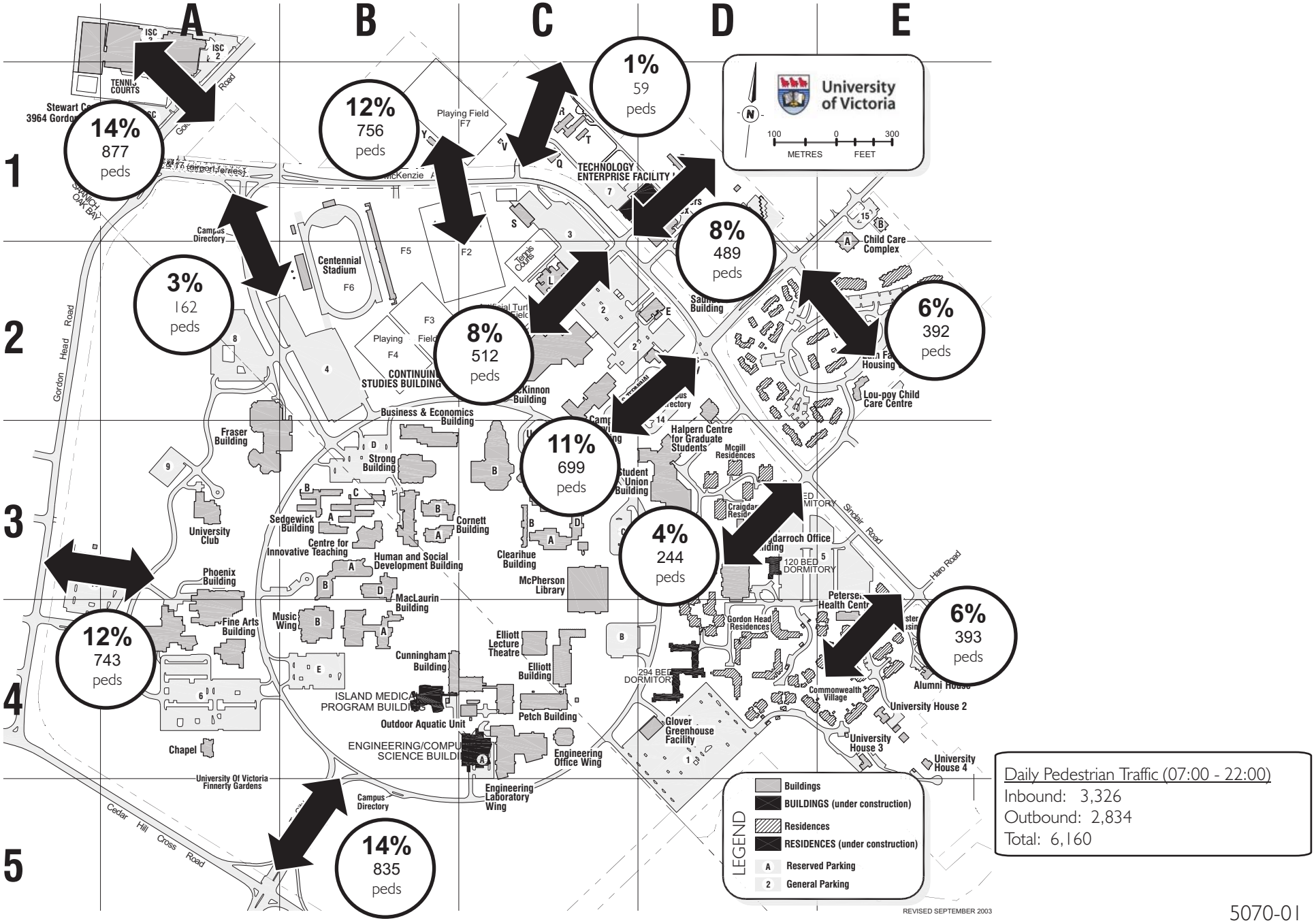
Table 6: On-Site Bicycle Parking Estimate

Hour beginning	Cumulative bicycle arrivals	Cumulative bicycle departs	On-site bicycle accumulation
7:00	76	21	54
8:00	369	81	288
9:00	600	116	485
10:00	726	136	590
11:00	869	160	710
12:00	1009	183	826
13:00	1135	204	931
14:00	1228	335	893
15:00	1332	502	830
16:00	1437	750	687
17:00	1516	964	552
18:00	1605	1053	552
19:00	1670	1119	552
20:00	1700	1149	552
21:00	1723	1171	552

3.5 Pedestrians

Based on the estimated daily inbound/outbound trip profiles developed for the 7:00 a.m. to 10:00 p.m. period, the summary of the total observed inbound and outbound pedestrian trips at the University for the 7:00 a.m. to 10:00 p.m. period is summarized in **Exhibit 5**. As shown in Exhibit 5, the number of daily pedestrian trips to/ from the University is estimated at approximately 6,160 trips, comprising 3,326 inbound and 2,834 outbound trips. Compared with four years ago, it appears that foot traffic has risen by approximately 29%. A component of this increase may be regular cyclists that switched transportation modes to walking or transit (and alighted prior to campus, traveling through the survey cordon as pedestrians). This increase is also likely a direct result of additional student housing being provided on the campus since 2004 availing this method of transport to persons that may not have had this option in 2004.

The highest percentage of pedestrians was recorded at the Stewart Complex and University Drive, both recording 14%.



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Pedestrian access patterns

University of Victoria - 2006 Traffic Survey

Exhibit 5

3.6 Modal Split Summary

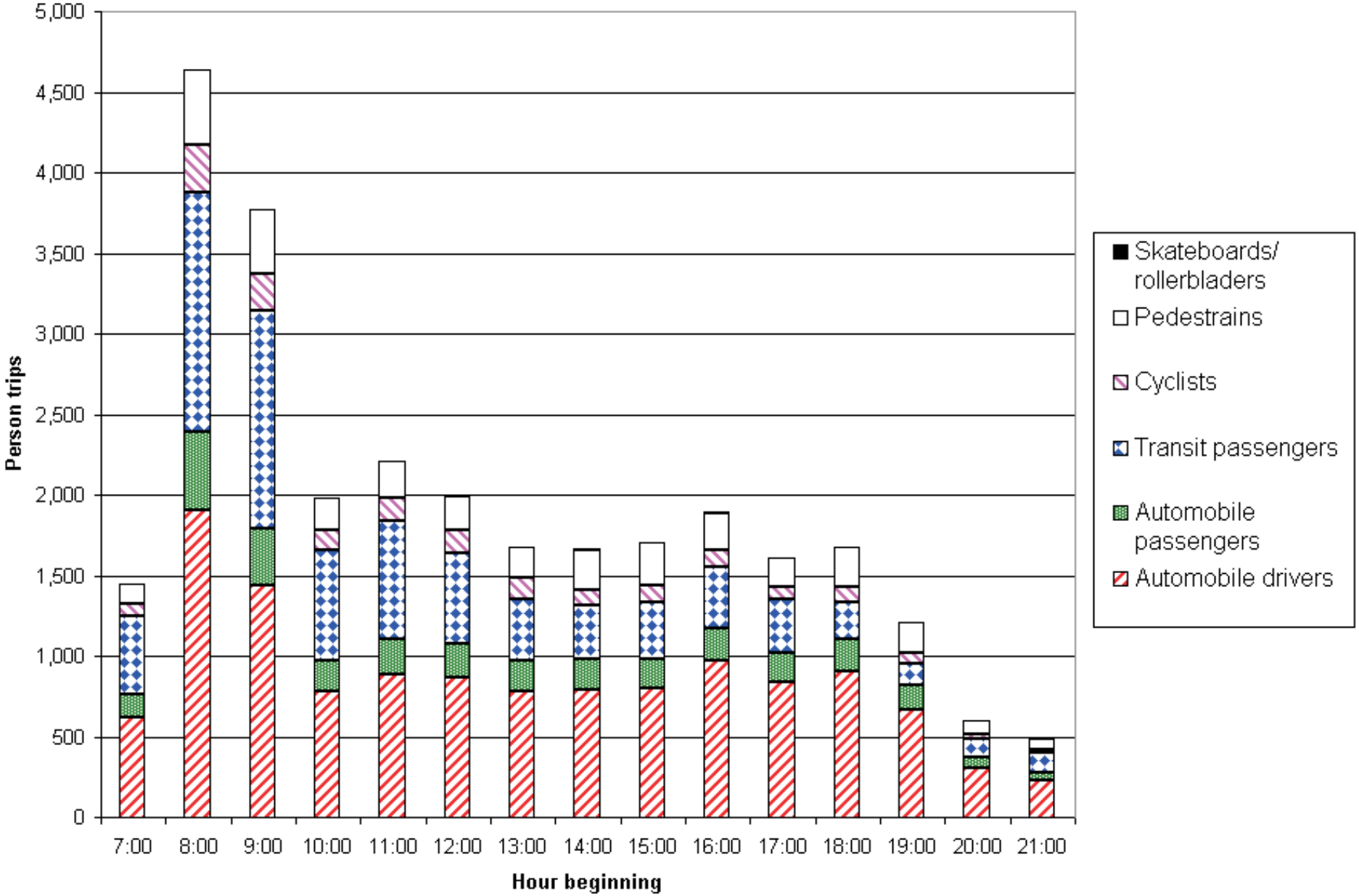
For a typical weekday condition, the estimated daily profiles of inbound and outbound trips to/from the University are summarized in **Table 7** and **Table 8** for all the major modes considered, i.e., vehicles, automobile passengers, transit passengers, cyclists, pedestrians and rollerbladers/ skateboarders. **Table 9** summarizes the overall mode split for 2006. The corresponding profiles for inbound and outbound trips, by all modes, are presented in **Exhibits 6** and **7** respectively.

Table 7: Inbound Modal Trip Split by Hour

Hour beginning	Automobile drivers	Automobile passengers	Transit passengers	Cyclists	Pedestrains	Skateboards/ rollerbladers	Total
7:00	619	145	482	76	122	0	1,444
8:00	1,902	487	1,491	293	466	1	4,640
9:00	1,440	347	1,352	231	403	0	3,773
10:00	780	193	686	126	195	0	1,980
11:00	890	220	731	143	223	0	2,207
12:00	867	214	557	140	217	0	1,995
13:00	779	192	386	126	195	0	1,678
14:00	795	183	339	93	251	3	1,664
15:00	798	179	352	105	268	8	1,709
16:00	971	202	379	104	230	6	1,892
17:00	835	186	328	79	181	4	1,613
18:00	906	200	229	89	248	5	1,677
19:00	668	148	141	66	183	4	1,209
20:00	306	68	113	30	84	2	602
21:00	226	50	123	22	62	1	484
Total	12,780	3,013	7,689	1,723	3,326	36	28,566
Modal split	44.7%	10.5%	26.9%	6.0%	11.6%	0.1%	100.0%

Table 8: Outbound Modal Trip Split by Hour

Hour beginning	Automobile drivers	Automobile passengers	Transit passengers	Cyclists	Pedestrains	Skateboards/ rollerbladers	Total
7:00	244	54	115	21	59	1	495
8:00	670	142	155	60	125	0	1,151
9:00	575	149	189	34	155	0	1,103
10:00	293	144	283	21	67	0	808
11:00	334	234	449	24	76	1	1,118
12:00	326	277	520	23	74	1	1,221
13:00	293	262	647	21	67	1	1,290
14:00	1,146	300	978	132	328	2	2,886
15:00	1,149	341	833	167	298	3	2,792
16:00	1,728	441	995	247	414	4	3,829
17:00	1,304	409	795	214	326	4	3,052
18:00	1,420	205	572	89	364	2	2,652
19:00	1,048	195	303	66	268	2	1,882
20:00	479	165	235	30	123	2	1,034
21:00	354	198	224	22	91	2	890
Total	11,363	3,517	7,293	1,171	2,834	24	26,203
Modal split	43.4%	13.4%	27.8%	4.5%	10.8%	0.1%	100.0%



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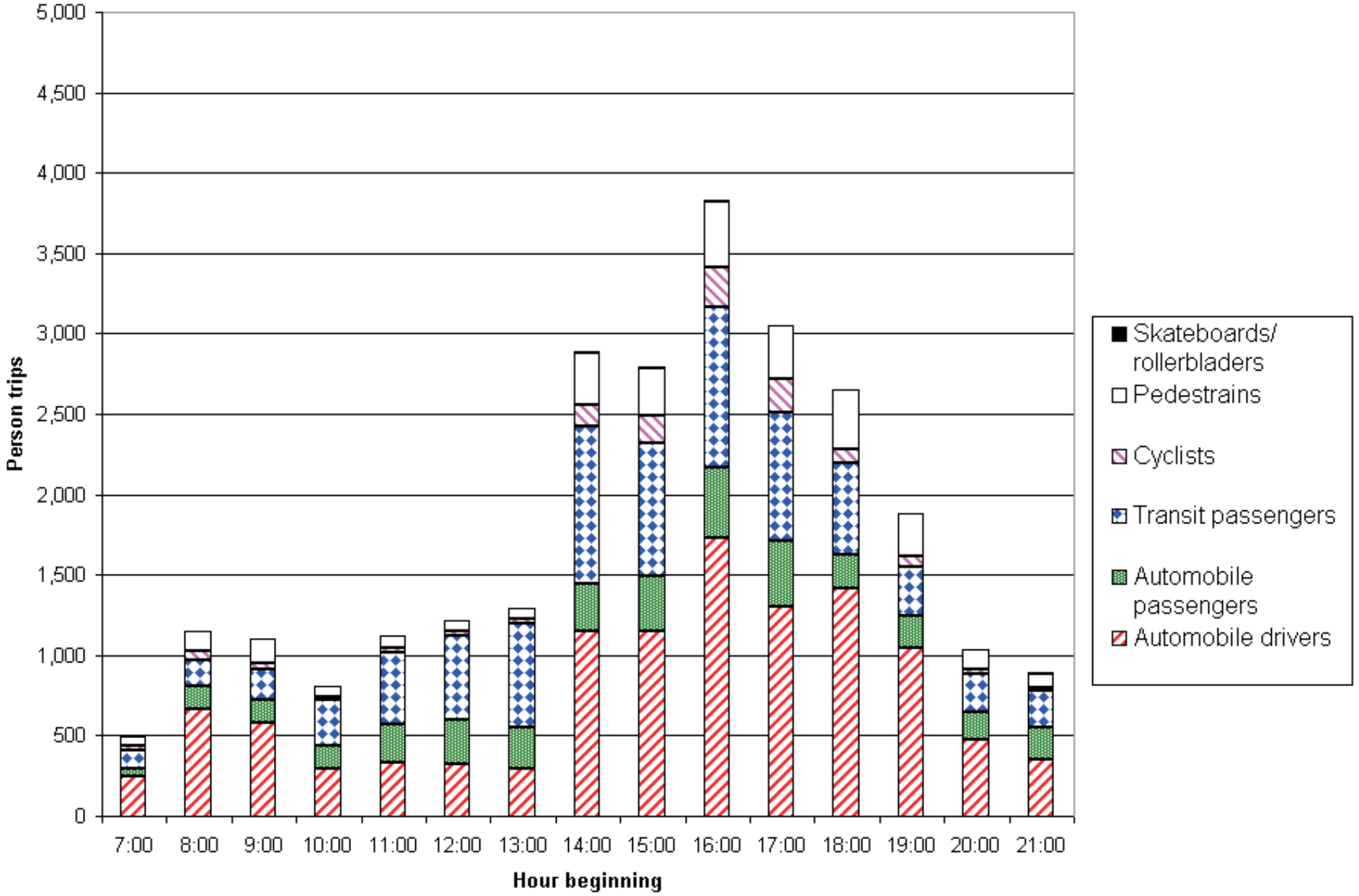
Inbound traffic profile (all travel modes)

University of Victoria - 2006 Traffic Survey

Exhibit 6



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Outbound traffic profile (all travel modes)

University of Victoria - 2006 Traffic Survey

Exhibit 7

Table 9: Total Inbound and Outbound Trips (Overall Mode Split)

Hour beginning	Automobile drivers	Automobile passengers	Transit passengers	Cyclists	Pedestrains	Skateboards/ rollerbladers	Total
Total	24,143	6,530	14,982	2,894	6,160	60	54,770
Modal split	44.1%	11.9%	27.4%	5.3%	11.2%	0.1%	100.0%

3.7 M-10 Finnerty Road Parking Lot

The University of Victoria requested that a new manual count location be set up at the entrance/ exit to the Finnerty Road parking lot to determine how the parking lot was being used. This count station's data was not included in the general analysis as it would be inconsistent with the survey methodology of previous years.

During the observed peak hours (07:00 – 10:00 and 14:00 – 18:00) a total of 49 vehicles entered the parking lot and 50 vehicles exited the lot. The peak inbound hour was observed to be between 07:00 and 08:00 when 20 vehicles entered the parking lot, and the peak outbound hour between 16:00 and 17:00 when 32 vehicles exited the parking lot (averaged over the two observation days).

The lot provides parking for facilities management staff and includes a total of 71 general parking stalls and 12 parking stalls used by UVic vehicles throughout the day (e.g. maintenance vehicles). Based on field observation and isolated parking occupancy surveys, it would appear that the lot is regularly occupied at between 95 to 100% of capacity during periods of a typical weekday.

The average vehicle occupancy observed at the lot was approximately 1.08, which is well below the average vehicle occupancy for the remainder of the campus (1.28).

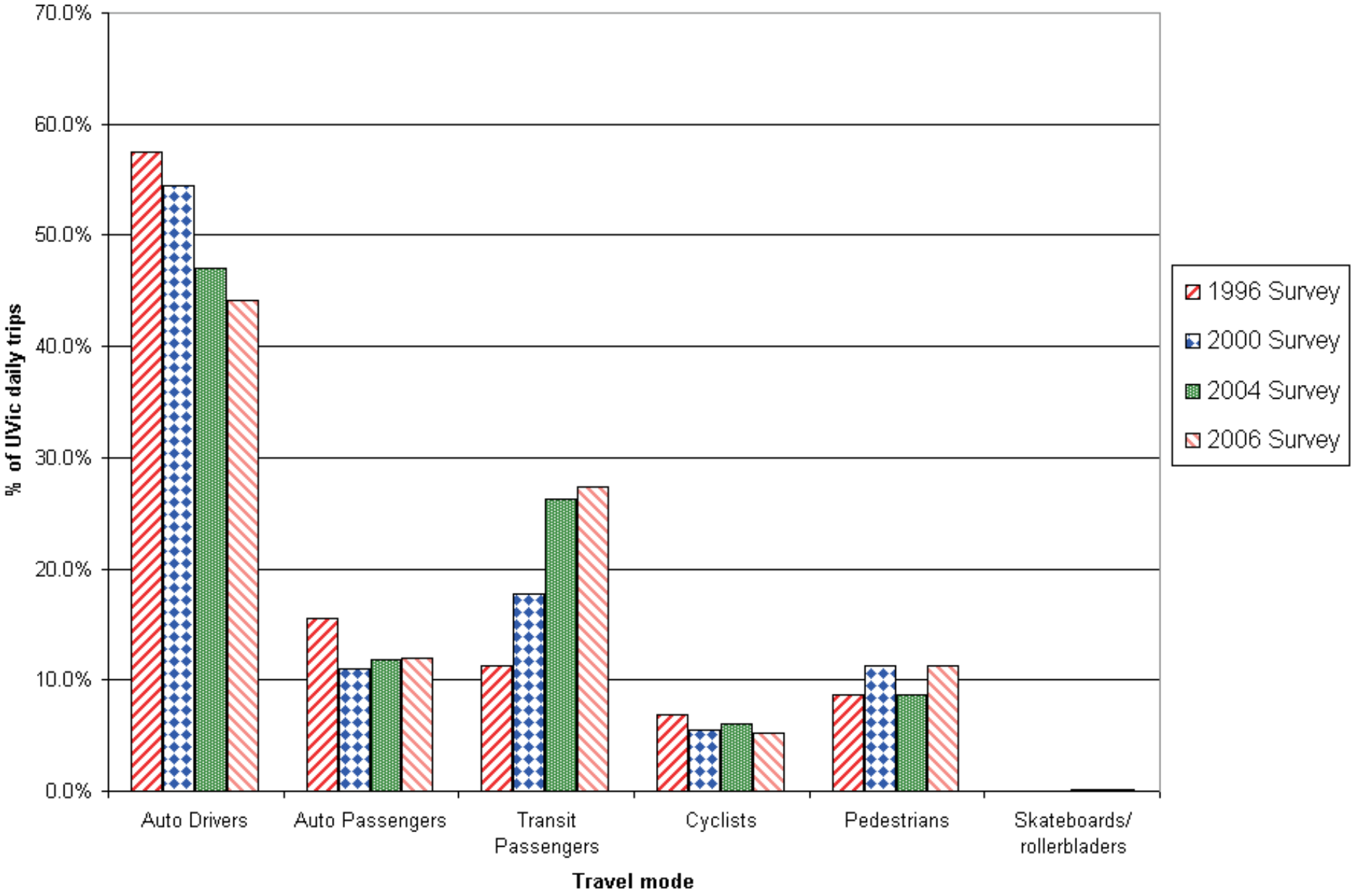
4 Modal Split Comparison

A comparison of modal split results from 1996 to 2006 is shown in **Table 10** and visually in **Exhibit 8**.

Table 10: Modal Split Comparison With Previous Years

Travel Mode	1996 Survey	2000 Survey	2004 Survey	2006 Survey
Auto Drivers	57.5%	54.4%	47.1%	44.1%
Auto Passengers	15.6%	11.0%	11.8%	11.9%
Transit Passengers	11.3%	17.8%	26.2%	27.4%
Cyclists	6.9%	5.5%	6.0%	5.3%
Pedestrians	8.7%	11.3%	8.7%	11.2%
Skateboards/ rollerbladers	0.0%	0.0%	0.2%	0.1%
Total	100.0%	100.0%	100.0%	100.0%

The percentage of auto drivers is again below 50%, at 44.1% a decrease from 2004. The number of auto passengers has decreased since 1996, but has remained fairly constant since 2000. The percentage of transit users has risen significantly since 1996 and from 26.2% in 2004 to 27.4% in 2006. Cycling experienced a decrease from 2004 (6.0% to 5.3%), which may be attributable to poor weather conditions on the survey days. Walking has increased from 8.7% in 2004 to 11.2% in 2006, however is approximately the same level as recorded in 2000 (11.3%). Walking has fluctuated almost uniformly since 1996. Skateboarders and rollerbladers currently make up only 0.1% of traffic to and from the campus, a slight decrease from 2004.



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1996/ 2000/ 2004/ 2006 Travel mode split summary

University of Victoria - 2006 Traffic Survey

Exhibit 8

5 Greenhouse Gas Emissions

In 2005, the University of Victoria (UVic) implemented a comprehensive transportation demand management program with the aim of reducing single occupancy vehicles and parking demand on the campus. A number of programs have been introduced or expanded over the past two years (since the last travel survey update) as part of the TDM to encourage and promote a shift towards transit and non-vehicular modes of transport. Bunt & Associates Engineering Ltd was commissioned to undertake the 2006 transportation survey of the University of Victoria campus.

Included for the first time in 2006 is a transportation Greenhouse Gas (GHG) inventory to quantify emissions associated with commuter vehicle trips to the UVic campus. It is estimated that transportation contributes approximately 25% of Canada's total greenhouse gas emission inventory of 756 Mt CO2 per year, and in particular road transport is thought to contribute approximately 19%. Further, emissions from the transportation sector rose by about 29.9 percent from 1990 to 2004 (1). There are a number of different vehicle emissions that contribute to greenhouse gases, in particular Volatile Organic Carbons (VOCs), Carbon Monoxide (CO), Nitrous Oxide (NO), and Carbon Dioxide (CO2). However, CO2 is by far the largest contributor, accounting for over 90% of vehicle emissions, and has been used as representative of GHG emissions for this study.

The methodology for calculating CO2 emissions was adopted from emissions calculators obtained from Environment Canada and the www.carpool.ca website (2). The methodology takes into account each vehicle type by size and fuel consumption and applies "emissions conversion factors" developed by the Pembina Institute to the number of vehicle kilometers traveled by each vehicle type. These are then aggregated to obtain an estimate of total vehicle emissions in kilograms of CO2 (kg CO2).

In order to calculate GHG emissions, a representative sample of commuter travel patterns was collected and applied to the entire campus using the 2006 traffic survey results. The commuter travel survey was conducted by R.H. Malatest & Associates Ltd., a Victoria based independent research firm that specializes in market and transportation related research. R.H. Malatest & Associates conducted an intercept survey at nine parking lot locations that captured commuters to different parts of the UVic campus. These surveys were conducted on the mornings of Wednesday, October 18th and Thursday, October 19th 2006 and collected the following information:

- distribution of vehicle types;
- distribution of vehicle trip lengths; and
- average vehicle occupancy.

A total of 693 surveys were conducted, of which 71 were deemed invalid due to inaccurate information provided by the interviewee or incomplete information recorded by the interviewer, resulting in a total of 622 completed surveys.

A population analysis was also conducted to determine the travel patterns of the different population groups at the UVic campus. Finally, a travel distance analysis was conducted to determine the percentage of commuters that lived within walking and cycling distance. This was then compared to the perceived travel distance to determine whether or not commuters had a realistic sense of their daily commuting distance.

5.1 Travel Survey Results

A copy of the results of the travel surveys conducted by Malatest & Associates Ltd is provided in **Appendix 4**, the key features of which are summarized in the sections below.

Vehicle Type

The survey asked commuters what type of vehicle they drove based on a list that included six categories of vehicle size with corresponding average fuel consumption in Litres per 100 kilometres (L/100km) as follows:

1. Small Car (4 cylinder – 6.9L/100km) [e.g., Smart Car, Mini];
2. Compact Car (4 cylinder – 7.59L/100km) [e.g., Corolla, Civic];
3. Mid-sized Car (4 to 6 cylinder – 8.97 L/100km) [e.g., Accord, Taurus, PT Cruiser];
4. Full-sized Car (6 to 8 cylinder – 9.57L/100km) [e.g., Mercedes S Class, Cadillac];
5. Van (10.56L/100km) [e.g., Dodge Caravan, Honda Odyssey, Pontiac Montana];
6. SUV/Pick-up Truck (12.32L/100km) [e.g., Chevy Silverado, Dodge Durango].

Table 11 provides a summary of the percentage of commuters for each vehicle type at the UVic campus.

Table 11: Percentage of UVic Commuters by Vehicle Type

Vehicle Type	Number of Vehicles	Percentage of Vehicles
Small Car (6.9L/100km)	87	14%
Compact Car (7.59L/100km)	186	30%
Mid-sized Car (8.97L/100km)	181	29%
Full-sized Car (9.57L/100km)	43	7%
Van (10.56L/100km)	35	6%
SUV/Pick-up Truck (12.32L/100km)	90	14%
Total	**622**	**100%**

Travel Distance

The total and average number of kilometers traveled by each vehicle type was collected as part of the travel surveys and is summarized in **Table 12**.

Table 12: Total and Average Kilometers Traveled by Vehicle Type

Vehicle Type	Total Distance Traveled (km)	Number of Vehicles	Average Distance Traveled (km)
Small Car	799	87	9.18
Compact Car	1673	186	8.99
Mid-sized Car	1733	181	9.57
Full-sized Car	421	43	9.79
Van	214	35	6.11
SUV/Pick-up	918	90	10.20
Totals	**5758**	**622**	**9.26**

In terms of kilometers traveled, a total of 5,758 km were driven by the 622 people surveyed, an average commute of approximately 9 km. Vans traveled a significantly shorter distance than all other vehicle types, while SUV/pick-up trucks traveled the farthest.

Vehicle Occupancy

For each vehicle type surveyed, drivers were asked how many occupants were in the vehicle. The results of this survey are summarized in **Table 13** in terms of the total number of commuters (drivers and occupants) and the occupancy rate by vehicle type.

Table 13: Vehicle Occupancy by Vehicle Type

Vehicle Type	Number of Occupants						Vehicles	People	Occupancy
	(1)	(2)	(3)	(4)	(5)	(6)			
Small Car	68	15	4	0	0	0	87	110	1.26
Compact Car	153	29	2	2	0	0	186	225	1.21
Mid-sized Car	148	28	3	2	0	0	181	221	1.22
Full-sized Car	35	6	2	0	0	0	43	53	1.23
Van	30	4	1	0	0	0	35	41	1.17
SUV/Pick-up	78	9	3	0	0	0	90	105	1.17
Total	**512**	**91**	**15**	**4**	**0**	**0**	**622**	**755**	**1.21**
Percentage	**82**	**15**	**2**	**1**	**0**	**0**	**100**		

The vast majority of respondents (82%) commute as single-occupant vehicles. Fifteen percent of vehicles have two occupants, and only 2% and 1% of vehicles were observed with three and four occupants respectively. No vehicles had five or more occupants. Interestingly, small cars observed the highest occupancy rate at 1.26 persons per vehicle followed closely by full-sized cars (1.23), mid-sized cars (1.22), and compact cars (1.21). Vans and SUV/pick-up trucks observed a significantly lower occupancy rate at 1.17 persons per vehicle. These results suggest that a targeted campaign towards drivers of larger vehicles needs to be undertaken in order to encourage either modal shift, movement to a smaller vehicle, or higher occupancy.

5.2 GHG Emissions

CO2 Emissions

Campus-wide GHG emissions were calculated by multiplying the average GHG emissions, measured as kilograms of Carbon Dioxide (kg CO2), for each vehicle type by the number of each vehicle type traveling to and from campus each day.

Average CO2 emissions were calculated from the average number of kilometers traveled by each vehicle type, multiplied by the CO2 emission factors obtained from the carpool.ca website. Average CO2 emissions for each vehicle type are summarized in **Table 14**.

Table 14: Average GHG (kg CO2) Emissions by Vehicle Type

Vehicle Type	Average Distance Traveled (km)	CO2 Emission Factor* (kg CO2/km)	Average GHG (kg CO2)
Small Car	9.18	0.172	1.58
Compact Car	8.99	0.18975	1.71
Mid-sized Car	9.57	0.22425	2.15
Full-sized Car	9.79	0.23925	2.34
Van	6.11	0.264	1.61
SUV/Pick-up	10.20	0.308	3.14
Totals	**9.26**	0.172	**2.09**

* CO2 Emission factors obtained from the www.carpool.ca website (2).

SUV/pick-up trucks had the highest average GHG emissions at 3.14 kg CO2 per vehicle, this is due to the fact that they have the highest fuel consumption (12.32L/100km) and they traveled the farthest distance on average during their commutes at 10.20km. The second highest average emissions was seen in the Full-sized Cars at 2.34 kg CO2 per vehicle, then 2.15 kg CO2 for Mid-sized Cars, and 1.71 kg CO2 for Compact Cars. The anomaly lies in the Vans category which had the second lowest average GHG emissions at 1.61 kg CO2 even though they have the second highest fuel consumption. This is due to the fact that they drove the shortest average distance during their commutes at 6.11km per vehicle. The Small Cars had the lowest average GHG emissions at 1.58 kg CO2 which is attributed mostly to the fact that they have the lowest fuel consumption (6.9L/100km) although they did travel an average of 9.17km during their commutes, which is fairly high.

Campus-wide GHG emissions (kg CO2) were calculated by multiplying the average GHG emissions for each vehicle type, by the number of each vehicle type traveling to or from campus over a 24-hour period. The latter was obtained by multiplying the vehicle type percentages reported in Section 2.1 by the number of vehicles observed traveling to or from campus in the 2006 traffic surveys. **Table 15** summarizes these calculations. **Table 16** summarizes the calculation of campus-wide GHG emissions.

Table 15 24-Hour Campus Traffic Volumes by Vehicle Type

Vehicle Type	Percentage	24-Hour Volume (vpd)
*Overall**		*17,457*
Small Car	14%	2,444
Compact Car	30%	5,237
Mid-sized Car	29%	5,063
Full-sized Car	7%	1,222
Van	6%	1,047
SUV/Pick-up	14%	2,444

* Overall daily vehicle traffic volume obtained from the 2006 traffic surveys conducted by Bunt & Associates (Section 3.1) .

Table 16 Campus-Wide CO2 Emissions by Vehicle Type

Vehicle Type	24-Hour Volume (vph)	Average Emissions (kg CO2/vehicle)	Total Emissions (kg CO2)
Small Car	2,444	1.58	3,862
Compact Car	5,237	1.71	8,955
Mid-sized Car	5,063	2.15	10,885
Full-sized Car	1,222	2.34	2,859
Van	1,047	1.61	1,686
SUV/Pick-up	2,444	3.14	7,674
Total	**17,457**	**2.09**	**35,921**

Vehicle Efficiency

An analysis of vehicle occupancy combined with average emissions by vehicle type has been undertaken to understand which vehicle types are performing most efficiently on their commute in terms of emissions. A summary of the basic efficiency of each vehicle is provided in **Table 17**.

Table 17: Vehicle Efficiency

Vehicle Type	Occupancy Rate	*Rank Score*	Total GHG	*Rank Score*	*Overall Score*	Overall Rank
Small Car	1.26	*1*	1.58	*1*	*2*	**1**
Compact Car	1.21	*4*	1.71	*3*	*7*	**2T**
Mid-sized Car	1.22	*3*	2.15	*4*	*7*	**2T**
Full-sized Car	1.23	*2*	2.34	*5*	*7*	**2T**
Van	1.17	*5*	1.61	*2*	*7*	**2T**
SUV/Pick-up	1.17	*5*	3.14	*6*	*11*	**6**

Table 17 shows that small cars were the most efficient recording the highest occupancy rate and the lowest average GHG emissions. Vans were surprisingly, the second most efficient vehicle due to the relatively short distances traveled by this vehicle type. SUV/pick-up trucks were the worst performing vehicles with the lowest average occupancy rate, and the highest average emissions, and the farthest average distance traveled.

5.3 Population Analysis

The GHG survey asked respondents to classify themselves into four categories of population types: 1. Student, 2. Faculty, 3. Other/staff member, 4. Other/campus visitor. Collecting this information allows for analysis of the commuting habits of the various population types that make up the UVic campus. The number of each population type responding to the travel survey is shown on **Exhibit 9.**

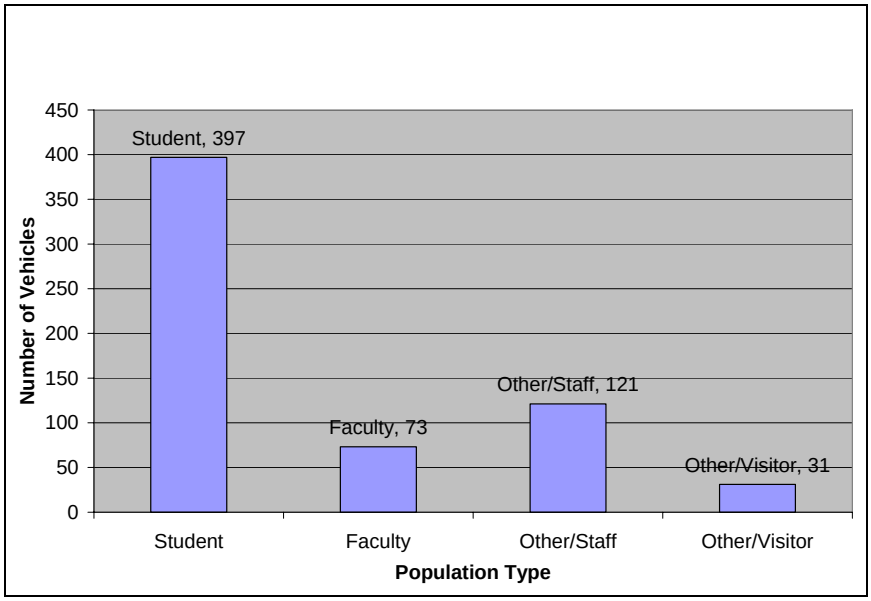

Exhibit 9: Sample Size by Population Type

Sixty-three percent of respondents were students, 19% non-faculty staff members, 11% faculty staff, and 4% visitors to the campus. This is representative of the overall UVic campus population breakdown.

The proportion of population type driving each vehicle type and the proportion of each vehicle type driven by the different population groups is shown graphically in **Exhibits 10** and **11** respectively.

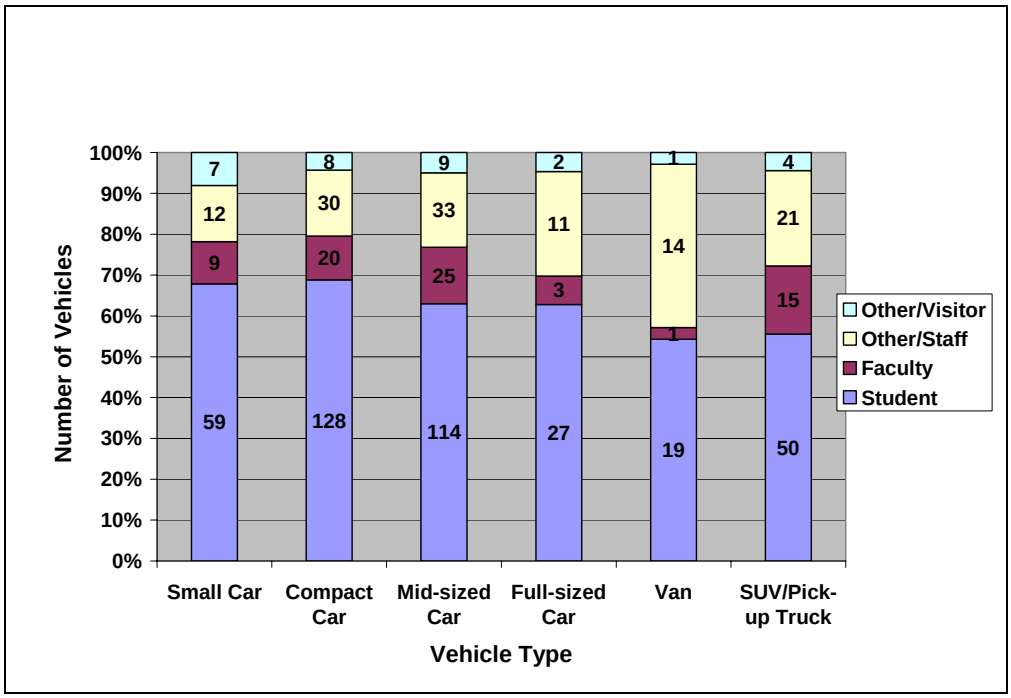

Exhibit 10: Percentage of Population Type Driving Each Vehicle Type

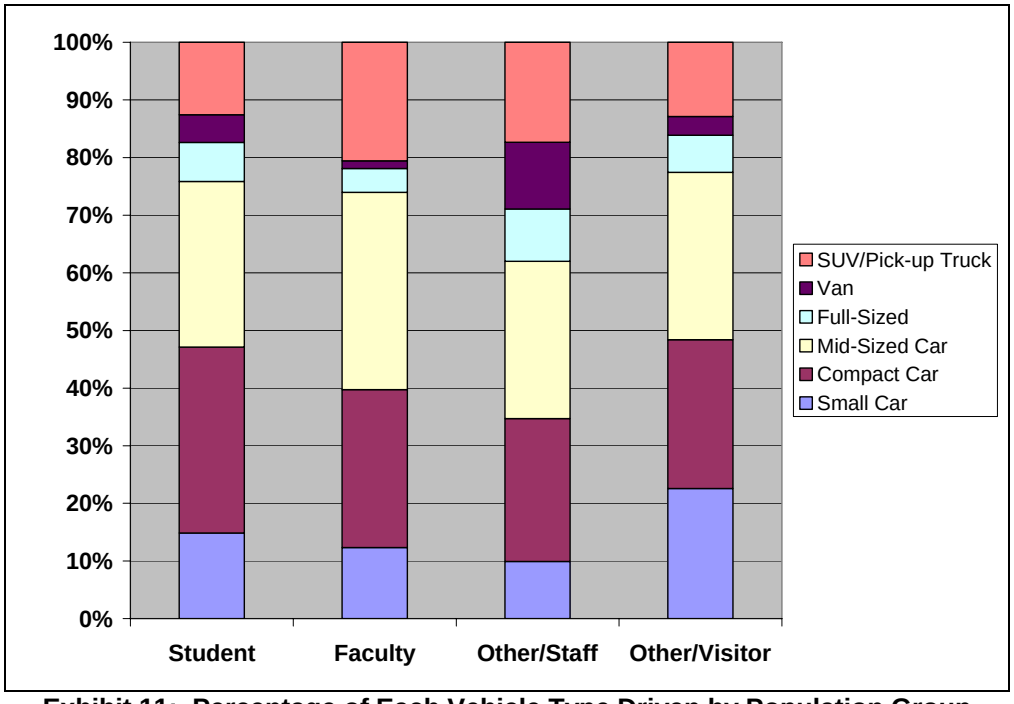

Exhibit 11: Percentage of Each Vehicle Type Driven by Population Group

The travel survey asked respondents where their commute origin was, in terms of the nearest major landmark or intersection, in order to establish a commute distance for each respondent. The results of the commute distance survey, by population type is summarized in **Table 18**.

Table 18: Commute Distance by Population Type

Population Type	<5km	6-10km	11-25km	26-50km	>50km	Total
Student	150	169	57	14	7	397
Faculty	24	38	10	1	0	73
Other Staff	39	47	29	6	0	121
Other/Visitor	9	14	3	5	0	31
Total	**222**	**268**	**99**	**26**	**7**	**622**
Percentage	**36%**	**43%**	**16%**	**4%**	**1%**	**100%**

The average commute distance for each population type was also calculated and summarized in **Table 19**.

Table 19: Average Commute Distance by Population Type

Population Type	Vehicles	Total km	Average km
Student	397	3655	9.21
Faculty	73	558	7.64
Other/Staff	121	1172	9.69
Other/Visitor	31	373	12.03
Total	**622**	**5758**	**9.26**

The average occupancy rate by population type is shown in **Exhibit 12**. This exhibit shows which population types carpool to the campus and which groups need to be targeted in carpooling/rideshare programs.

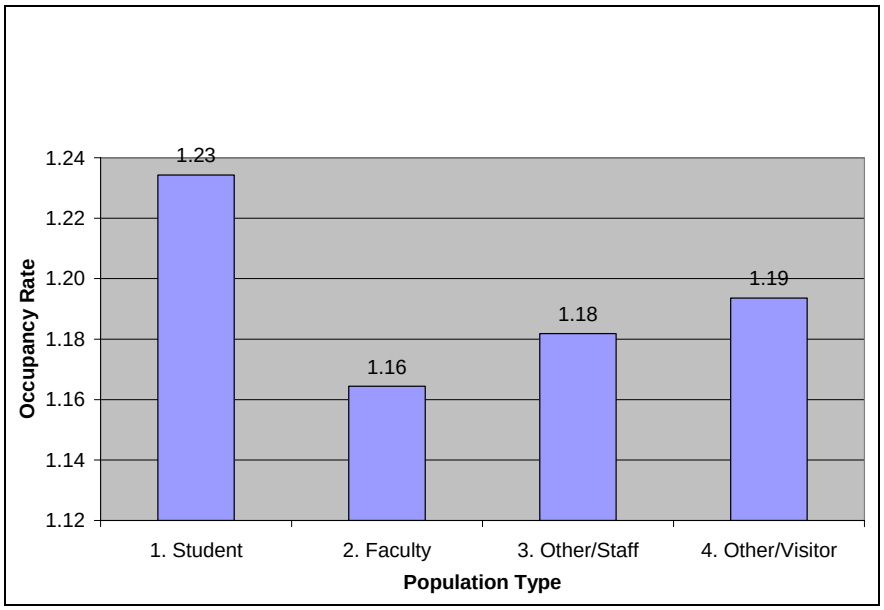

Exhibit 12: Vehicle Occupancy Rate by Population Type

Students recorded the highest occupancy rate at 1.23. Other population groups ranged between 1.16 and 1.19. It would appear that the current carpooling/rideshare programs at the UVic campus are working effectively amongst the student population, whilst other population groups may require more targeted programs to encourage higher occupancy travel.

5.4 Travel Distance Analysis

Perceived Versus Actual Travel Distance

The GHG survey asked respondents to estimate how far they travel on their daily commute to and from the University. This information was compared to the actual distance traveled, based on trip origin information (the closest major intersection or landmark). This comparison provides a greater understanding of perceived travel distances and may show that further work needs to be done to overcome travel distance perceptions in encouraging alternative transportation modes. A summary of perceived and actual travel distances are summarized in **Table 20** and shown on **Exhibit 13**.

Table 20: Perceived Versus Actual Travel Distance

	Underestimated						Overestimated				
	>50	**31-50**	**16-30**	**6-15**	**1-5**	**0**	**1-5**	**6-15**	**16-30**	**31-50**	**>50**
Number	0	2	0	14	144	59	160	40	10	1	1
%	0	0.5	0	3.2	33.4	13.7	37.1	9.3	2.3	0.2	0.2

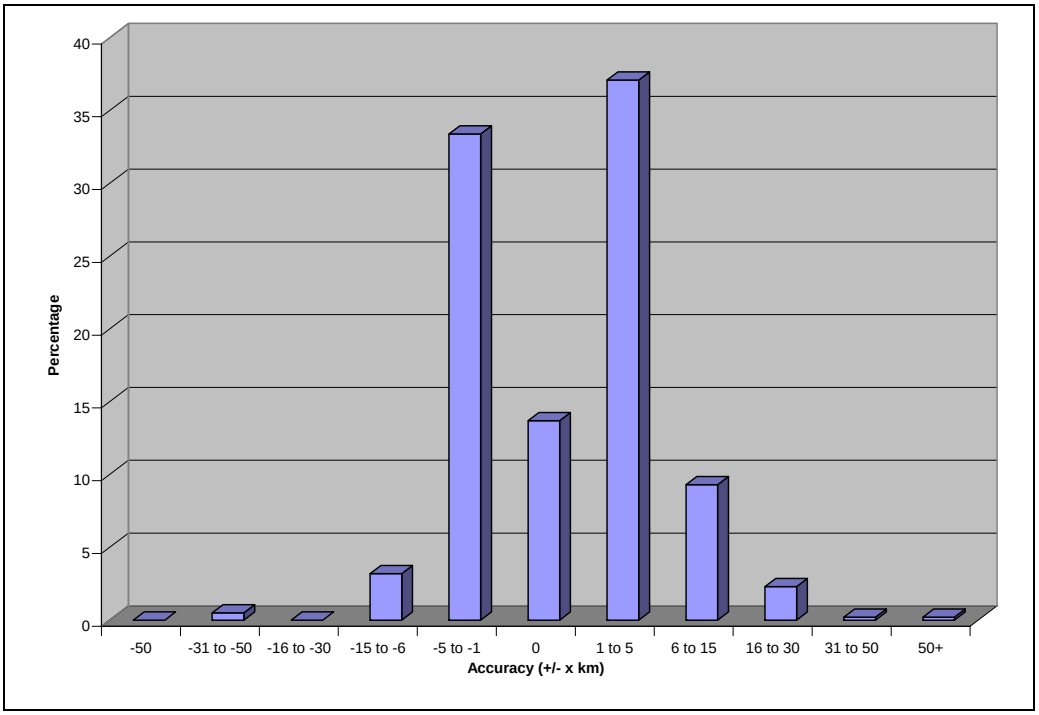

Exhibit 13: Perceived Versus Actual Distance Traveled

Of the 622 respondents, 431 gave an estimate of their commute distance to use as a comparison with their actual distance traveled. For the most part, commuters had a relatively good grasp of how far they travel on their commute, and thus, a relatively good understanding of scale and distance. A total of 363 people (84%) estimated their travel distance within +/- 5km. Another 54 people (13%) estimated within only +/- 6-15km, and 14 people (3%) estimated outside this range. Interestingly, more people overestimated their travel distance than underestimated. A key focus of the educational component of the TDM Plan should be to correct the discrepancy between a driver's perceived and actual driving distance in order that drivers reconsider their travel mode.

Mode Switch Potential

The University of Victoria Transportation Demand Management (TDM) strategy is intent on reducing the number of vehicles that arrive on campus by encouraging alternative modes of transport. One factor in travel mode decision making is travel distance.

Walking is a realistic form of travel for most people, especially over short distances, i.e. up to 2 kilometers or a 40-minute walk time (UK Institute of Highways and Transportation). Walking threshold distances are dependent on the purpose of the journey, although factors such as urban form, traffic, safety, personnel fitness, car ownership, parking availability, etc., are also influential.

A person's willingness to cycle is based on a number of lifestyle factors, including health benefits, cost savings (automobile use and parking) and convenience. Infrastructure also plays an important role through the safety of routes, gradients, cycle storage facilities, etc. Cycling is a realistic transport option for most people over short to medium distances i.e. up to 8 kilometers or 30 / 35 minutes cycle. Indeed, journeys over this distance provide the greatest opportunity to replace car trips.

An analysis of the number of commuters who live within these distances of the UVic campus was undertaken to better understand the number of people who have the potential to switch to walking and cycling modes of transport. This is summarized in **Table 21** and shown on **Exhibit 14**.

Table 21: Number of Respondents Within Walking and Cycling Distance of UVic

Distance (km)	Walking	Cycling
1 - 2 km	81	81
3 – 5 km		141
6 – 8 km		134*
Total	**81**	**356**

*This is an estimate based on 50% of the number of people within the 6-10 km distance range.

A significant portion of the commuting population live within either walking or cycling distance to the University and represent potential travel mode change trips. The greatest opportunity for modal split appears to be increasing campus cycling trips. Out of 622 respondents, 57% (356 respondents) live within the comfortable cycling radius of 8 km. There is some opportunity to shift commuter trips to walking, however existing TDM programs at the campus seem to have had a strong effect on increasing pedestrian trips within the comfortable walking radius of 2 km. Only thirteen percent (81 respondents) of commuters surveyed live within this radius. Approximately 47% of commuters live outside of a comfortable walking or cycling distance. These commuters do however provide opportunities to increase the transit mode split of the campus.

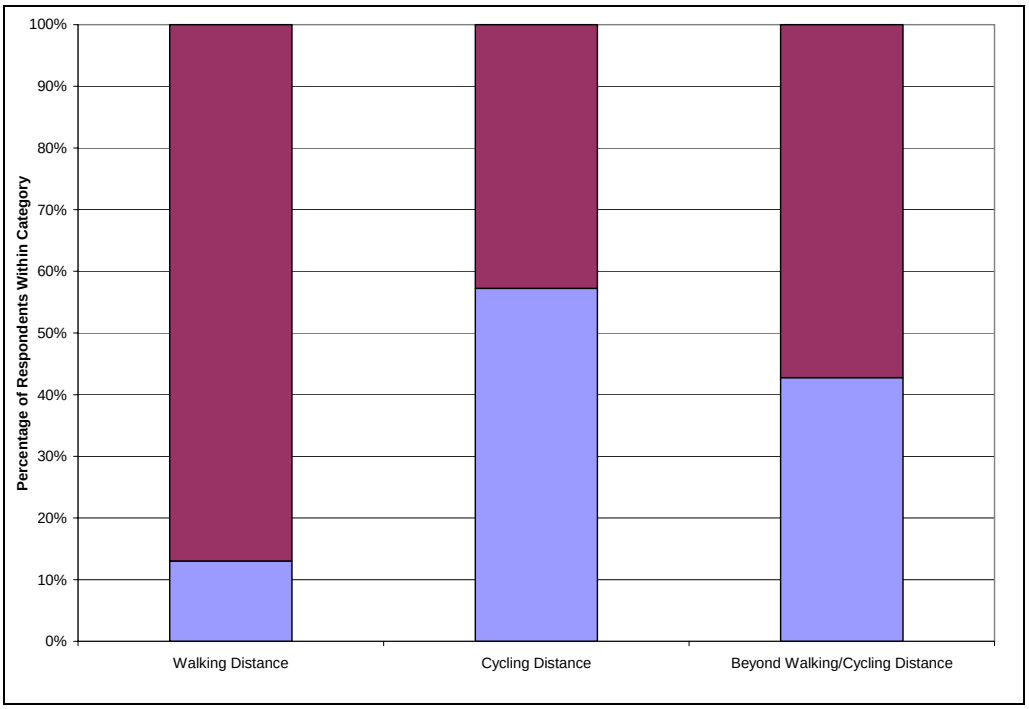

Exhibit 14: Percentage of Respondents Within Walking or Cycling Distance

5.5 GHG Emission Reduction Strategies

There are a number of individual and collective actions that can be undertaken to reduce the amount of transportation-related CO2 emissions at the UVic Campus. These can generally be categorized into four groups as follows.

1. Reduce the Amount of Driving
This is in line with current initiatives at the UVic campus and the TDM program, which encourages the use of transit, cycling, and waling to campus, however the campus has never before conducted an inventory of its GHG emissions and is now in the unique position of being able to use this data to establish a reduction target and directing a campaign towards this. It is recommended that these efforts be focused around a particular day or week-long "celebration" with the purpose of information dissemination and nominating personal responsibility for obtaining the target. Ideas can be generated from similar projects such as Toronto's *20/20 The Way to Clean Air* program that sets an energy reduction target of 20% (both at home and on the road) through a toolkit that allows individuals to develop a personal plan to achieve the reduction (3).

Car-pool and ride-share programs should continue to be encouraged along with the concept of trip chaining, i.e. linking together multiple trip purposes such as visiting the grocery store on the way home rather than as a separate trip

2. Encourage Proper Vehicle Maintenance
There are numerous ways that a vehicle operator can limit vehicle emissions simply by properly maintaining their vehicle. Cost saving benefits through increased fuel efficiency can also be realized by these techniques (4), which include:

- maintaining properly inflated tires;
- regularly checking and replacing air filters;
- keeping the engine properly tuned; and
- Using the recommended grade of motor oil.

3. Encourage Fuel Efficient Driving
Similar to proper vehicle maintenance, there are a number of ways in which drivers can maximize fuel efficiency and minimize GHG emissions. At a very broad level, students and staff should be encouraged to consider more fuel efficient vehicles when considering the purchase of a vehicle. Websites such as the US Department of Energy's *Find A Car* website provide useful comparative guides that focus on minimizing GHG emissions (4). These links could be incorporated and advertised through the UVic TDM website.

Personal driving techniques can also influence GHG emissions including:

- using renewable fuel sources;
- maintaining appropriate driving speeds: minimizing the need to rapidly accelerate and decelerate increases fuel efficiency. The speed interval that provides maximum fuel efficiency varies between vehicles but generally occurs between 40 – 95 km/h. Fuel efficiency has been shown to decrease rapidly above 95 km/h (4).
- Shed unnecessary loads: each additional 100lbs carried is equivalent to a 1-2% increase in gas consumption (5).

4. Offset CO2 Emissions
Apart from reducing personal CO2 emissions, a recent initiative has been to establish "Carbon Offset" programs that invest a user-charged fee into renewable energy, energy efficiency, or tree-planting projects to offset the remaining GHG contributions and establish carbon neutrality. There are a number of Canadian companies that help consumers and businesses neutralize their emissions through offset projects located either overseas or in Canada (6, 7). For road transportation, carbon offset fees are based on a number of factors including the type of vehicle, its fuel efficiency, the number of kilometers driven, etc. To highlight the cost of carbon offsetting, the CO2 contribution of the UVic campus (35,921 kg of CO2 per day) is approximately $790 per day (approximately $290,000 per year).

There are a number of options for UVic to achieve a carbon neutral transportation system. Firstly, it is essential that the administration continue efforts to reduce transport-related CO2 emissions. Secondly, the remaining CO2 emissions need to be offset. The latter could be achieved through contributions to external carbon reducing projects such as renewable energy developments or energy efficiency improvements. These projects can be local or international and often have positive social impact criteria associated with them, e.g. reducing the operating costs of a charitable organization through improved energy efficiency. Alternatively, UVic could establish their own campus or community carbon-offset projects. It is anticipated that these projects would require significant establishment costs, but do provide the additional benefits of reducing operating costs, etc. More research into this option and the availability of projects already established in the area is required.

6 Summary

The campus population has remained relatively the same since 2004, although several new buildings have been constructed which have actually led to a reduction in available parking. The findings and analysis of this report will help gauge the impact of the campus' Transport Demand Management Strategy. The overall travel patterns observed at the UVic campus have changed dramatically since 1992, a continuing trend since 2004 also. The analysis showed the following trends since 2004:

- Single occupancy vehicles remain below 50% of all trips and have reduced since 2004;

- Less overall vehicle traffic was recorded during the peak daytime periods than in 2004. The manual counts show a 4.5% fall in traffic compared to two years ago. Over a 24-hour period, volumes are not significantly different to 2004;

- The percentage of single occupancy trips compared to multi occupancy trips has remained relatively consistent with 2004;

- Transit ridership has increased by 4% over 2004 levels and represents over one-quarter of all trips. Transit ridership increased over the past two years from 26.2% of all trips to 27.4% of all trips;

- The volume of recorded pedestrian trips increased by 29% from 2004 and represents 11% of all trips;

- Cycling trips decreased by 14% from 2004, although rain on the survey days in 2006 may have affected the result. Mode shift from cycling to either transit or walking may have contributed to a portion of the increases in transit and pedestrian trips;

- Greenhouse gases have been measured in terms of the largest emissions contributor, carbon dioxide. The UVic campus generates a total of 35,921 kg CO2 on a typical weekday. A number of strategies to reduce campus transportation-related emissions have been presented in this report.

7 References

1. Environment Canada, *National Inventory Report Greenhouse Gas Sources and Sinks in Canada 1990 – 2004*. April 2006.

2. Carpool Website: www.carpool.ca Accessed: December 1, 2006.

3. Clean Air Partnership. *20/20 The Way to Clean Air.* 2005. Website address: http://www.toronto.ca/health/2020/pdf/planner_full.pdf Accessed: May 7, 2007.

4. US Department of Energy, Fuel Economy Website. Address: www.fueleconomy.gov/feg/findacar.htm Accessed: May 7, 2007.

5. Drive Neutral Website: http://www.driveneutral.org/ Accessed: May 7, 2007.

6. Carbon Zero Website: www.carbonzero.ca Accessed: May 7, 2007.

7. Carbon Off-setters Website: www.offsetters.ca Accessed: May 7, 2007.

Appendix 1 - Automatic Traffic Count Data, Transtech Data Services

McGill Road

Northbound (out)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	21	16	14	15	10	11	15	102	15	73	15
1:00	19	15	11	9	1	11	9	75	11	55	11
2:00	3	1	4	6	2	2	5	23	3	13	3
3:00	3	2	3	5	7	1	1	22	3	14	3
4:00	2	3	5	1	2	3	1	17	2	11	2
5:00	2	2	2	0	3	2	3	14	2	12	2
6:00	7	4	1	2	8	6	4	32	5	29	6
7:00	27	18	10	4	25	28	21	133	19	119	24
8:00	94	100	35	16	91	96	82	514	73	463	93
9:00	118	117	25	14	107	87	85	553	79	514	103
10:00	76	109	35	34	80	110	110	554	79	485	97
11:00	143	142	86	60	186	112	130	859	123	713	143
12:00	135	199	74	58	150	161	189	966	138	834	167
13:00	119	216	49	72	132	161	182	931	133	810	162
14:00	221	238	79	75	196	228	203	1240	177	1086	217
15:00	197	183	76	79	206	166	195	1102	157	947	189
16:00	267	234	77	166	303	214	256	1517	217	1274	255
17:00	245	103	66	71	233	220	199	1137	162	1000	200
18:00	149	70	49	85	144	136	141	774	111	640	128
19:00	116	46	33	52	83	87	133	550	79	465	93
20:00	94	39	24	39	133	164	149	642	92	579	116
21:00	130	37	46	23	138	240	170	784	112	715	143
22:00	61	23	46	31	38	62	72	333	48	256	51
23:00	21	19	30	26	23	32	33	184	26	128	26
24 hr total	2270	1936	880	943	2301	2340	2388				
12 hr total	1791	1729	661	734	1853	1719	1793				
7 - 10 total	2131	1851	764	848	2207	2210	2245				

		total	average
Overall weekday	**24hr**	11235	2,247
	12hr	8885	1,777
	7 - 10	10644	2,129

Peak hour 1600 - 1700

Southbound (in)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	27	8	14	11	13	5	6	84	12	59	12
1:00	15	6	12	11	4	1	2	51	7	28	6
2:00	6	3	4	12	1	4	4	34	5	18	4
3:00	1	6	3	10	1	2	0	23	3	10	2
4:00	23	22	10	8	23	26	23	135	19	117	23
5:00	9	9	1	0	8	7	6	40	6	39	8
6:00	38	30	5	1	31	36	33	174	25	168	34
7:00	147	177	46	18	149	159	152	848	121	784	157
8:00	500	468	104	58	545	548	526	2749	393	2587	517
9:00	484	378	155	83	421	388	351	2260	323	2022	404
10:00	183	260	88	93	207	254	289	1374	196	1193	239
11:00	219	254	96	102	258	228	266	1423	203	1225	245
12:00	249	217	141	107	260	255	277	1506	215	1258	252
13:00	206	266	128	128	195	220	229	1372	196	1116	223
14:00	216	189	121	139	229	192	209	1295	185	1035	207
15:00	207	153	101	125	184	186	213	1169	167	943	189
16:00	265	147	99	97	239	222	248	1317	188	1121	224
17:00	191	123	87	99	218	228	237	1183	169	997	199
18:00	241	130	82	95	219	302	260	1329	190	1152	230
19:00	133	67	96	69	135	203	203	906	129	741	148
20:00	74	53	41	67	84	89	73	481	69	373	75
21:00	64	47	36	50	57	69	47	370	53	284	57
22:00	32	31	30	23	41	31	48	236	34	183	37
23:00	16	38	26	14	15	16	28	153	22	113	23
24 hr total	3546	3082	1526	1420	3537	3671	3730				
12 hr total	3108	2762	1248	1144	3124	3182	3257				
7 - 10 total	3379	2929	1421	1330	3400	3543	3580				

		Total	Average
Overall weekday	**24hr**	17566	3513
	12hr	15433	3087
	7 - 10	16831	3366

Peak hour 0800 - 0900

West Campus Gate

Eastbound (in)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	1	1	4	3	0	3	0	12	2	5	1
1:00	3	1	1	2	0	0	0	7	1	4	1
2:00	0	0	2	1	0	1	2	6	1	3	1
3:00	0	1	1	2	2	0	0	6	1	3	1
4:00	9	10	2	1	12	9	9	52	7	49	10
5:00	0	1	1	2	1	0	0	5	1	2	0
6:00	7	5	0	0	4	3	2	21	3	21	4
7:00	55	47	3	1	66	50	53	275	39	271	54
8:00	295	187	20	15	273	273	243	1306	187	1271	254
9:00	176	180	60	17	172	214	185	1004	143	927	185
10:00	76	89	20	19	93	98	96	491	70	452	90
11:00	115	87	24	22	114	98	119	579	83	533	107
12:00	97	87	99	28	88	100	90	589	84	462	92
13:00	69	95	53	39	62	98	109	525	75	433	87
14:00	74	47	26	33	84	56	81	401	57	342	68
15:00	61	38	23	31	85	51	76	365	52	311	62
16:00	58	28	26	27	90	65	93	387	55	334	67
17:00	56	36	14	23	38	55	83	305	44	268	54
18:00	76	76	32	15	44	89	69	401	57	354	71
19:00	89	41	49	11	25	75	76	366	52	306	61
20:00	10	8	6	5	17	15	17	78	11	67	13
21:00	10	8	11	6	9	11	14	69	10	52	10
22:00	4	4	3	3	4	3	16	37	5	31	6
23:00	5	7	3	1	7	1	2	26	4	22	4
24 hr total	1346	1084	483	307	1290	1368	1435				
12 hr total	1208	997	400	270	1209	1247	1297				
7 - 10 total	1317	1054	466	292	1260	1348	1404				

		total	average
Overall weekday	**24hr**	6523	1,305
	12hr	5958	1,192
	7 - 10	6383	1,277

Peak hour 0800 - 0900

Westbound (out)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	7	3	9	4	2	7	8	40	6	27	5
1:00	10	8	5	2	2	8	7	42	6	35	7
2:00	4	0	2	1	1	1	0	9	1	6	1
3:00	1	1	0	0	0	0	0	2	0	2	0
4:00	2	2	1	2	2	2	2	13	2	10	2
5:00	2	1	0	0	0	2	1	6	1	6	1
6:00	2	1	0	1	3	0	0	7	1	6	1
7:00	7	9	2	2	6	8	7	41	6	37	7
8:00	27	15	6	4	41	31	34	158	23	148	30
9:00	37	39	14	10	39	36	34	209	30	185	37
10:00	38	42	8	13	34	45	52	232	33	211	42
11:00	86	89	23	15	93	68	80	454	65	416	83
12:00	91	123	33	16	114	129	109	615	88	566	113
13:00	88	108	27	20	103	110	131	587	84	540	108
14:00	156	104	46	14	111	133	128	692	99	632	126
15:00	124	87	73	17	107	124	132	664	95	574	115
16:00	181	104	52	43	199	158	170	907	130	812	162
17:00	121	83	22	30	119	129	101	605	86	553	111
18:00	57	33	18	23	71	74	78	354	51	313	63
19:00	44	17	13	11	42	47	74	248	35	224	45
20:00	27	19	13	16	44	51	39	209	30	180	36
21:00	50	21	22	9	30	74	78	284	41	253	51
22:00	63	66	63	7	9	56	62	326	47	256	51
23:00	36	6	8	6	6	6	8	76	11	62	12
24 hr total	1261	981	460	266	1178	1299	1335				
12 hr total	1013	836	324	207	1037	1045	1056				
7 - 10 total	1134	893	372	243	1153	1217	1247				

		Total	Average
Overall weekday	**24hr**	6054	1211
	12hr	4987	997
	7 - 10	5644	1129

Peak hour 1600 - 1700

University Drive

Northbound (in)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	28	22	39	38	9	15	13	164	23	87	17
1:00	18	12	40	29	6	6	6	117	17	48	10
2:00	3	9	29	26	6	2	4	79	11	24	5
3:00	5	3	12	8	4	1	3	36	5	16	3
4:00	3	4	3	4	2	0	2	18	3	11	2
5:00	19	16	10	6	15	18	15	99	14	83	17
6:00	53	52	20	5	48	51	58	287	41	262	52
7:00	316	277	65	35	309	284	286	1572	225	1472	294
8:00	561	486	156	58	474	539	570	2844	406	2630	526
9:00	446	388	186	125	421	345	374	2285	326	1974	395
10:00	250	300	188	137	231	251	288	1645	235	1320	264
11:00	276	283	183	183	229	271	275	1700	243	1334	267
12:00	292	317	233	194	315	283	311	1945	278	1518	304
13:00	270	303	180	354	219	215	291	1832	262	1298	260
14:00	298	291	205	225	255	233	267	1774	253	1344	269
15:00	303	238	173	197	294	264	294	1763	252	1393	279
16:00	298	231	168	172	314	322	340	1845	264	1505	301
17:00	309	214	142	156	276	321	331	1749	250	1451	290
18:00	368	213	210	156	290	358	283	1878	268	1512	302
19:00	168	135	191	97	148	188	163	1090	156	802	160
20:00	172	118	96	86	136	163	149	920	131	738	148
21:00	103	89	71	63	96	81	116	619	88	485	97
22:00	44	70	74	52	49	36	75	400	57	274	55
23:00	41	49	48	26	26	29	28	247	35	173	35
24 hr total	4644	4120	2722	2432	4172	4276	4542				
12 hr total	3987	3541	2089	1992	3627	3686	3910				
7 - 10 total	4430	3883	2447	2238	4007	4118	4338				

		total	average
Overall weekday	**24hr**	21754	4,351
	12hr	18751	3,750
	7 - 10	20776	4,155

Peak hour 0800 - 0900

Southbound (out)

Start hour	Thu 19-Oct	Fri 20-Oct	Sat 21-Oct	Sun 22-Oct	Mon 23-Oct	Tue 24-Oct	Wed 25-Oct	7 day Total	7 day Average	5 day Total	5 day Average
0:00	58	29	51	42	21	38	36	275	39	182	36
1:00	30	14	34	37	5	11	11	142	20	71	14
2:00	9	5	16	16	5	4	10	65	9	33	7
3:00	6	5	8	8	5	2	2	36	5	20	4
4:00	1	5	3	6	4	2	7	28	4	19	4
5:00	6	4	8	2	9	9	9	47	7	37	7
6:00	49	41	9	6	47	43	38	233	33	218	44
7:00	135	118	47	27	138	138	140	743	106	669	134
8:00	261	228	71	35	229	263	252	1339	191	1233	247
9:00	256	232	110	69	233	225	213	1338	191	1159	232
10:00	197	259	155	95	179	193	202	1280	183	1030	206
11:00	320	345	207	139	355	280	313	1959	280	1613	323
12:00	362	410	175	144	349	327	379	2146	307	1827	365
13:00	288	366	205	172	267	307	310	1915	274	1538	308
14:00	412	445	209	232	372	391	378	2439	348	1998	400
15:00	418	425	274	219	416	396	452	2600	371	2107	421
16:00	623	534	260	369	588	515	596	3485	498	2856	571
17:00	415	308	212	190	487	423	416	2451	350	2049	410
18:00	236	169	113	131	248	302	246	1445	206	1201	240
19:00	232	134	101	116	180	225	335	1323	189	1106	221
20:00	254	127	128	100	192	358	288	1447	207	1219	244
21:00	236	115	98	91	260	246	202	1248	178	1059	212
22:00	155	86	216	83	107	125	134	906	129	607	121
23:00	58	79	54	42	56	38	71	398	57	302	60
24 hr total	5017	4483	2764	2371	4752	4861	5040				
12 hr total	3923	3839	2038	1822	3861	3760	3897				
7 - 10 total	4645	4215	2365	2129	4493	4589	4722				

		Total	Average
Overall weekday	**24hr**	24153	4831
	12hr	19280	3856
	7 - 10	22664	4533

Peak hour 1600 - 1700

Appendix 2 - Peak Period Manual Traffic Count Data

Summary

Inbound total vehicles

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10	MF	Total
7:00	181	46	19	142	11		103	58	50	4	27	20	12	648
8:00	531	280	62	506	30		236	42	174	9	82	12	41	1991
9:00	408	214	42	423	20		152	17	120	5	84	3	26	1508
14:00	250	80	44	192	9		87	17	86	7	44	9	19	832
15:00	250	62	55	193	4		91	10	85	7	48	3	34	836
16:00	292	72	70	230	6		125	18	112	5	45	2	45	1017
17:00	260	56	73	170	20		121	5	82	0	47	1	42	874

Outbound total vehicles

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10	MF	
7:00	84	7	20	22	0		24	8	64	1	12	2	17	256
8:00	243	36	47	77	2		36	11	170	3	17	3	63	701
9:00	212	45	22	85	3		49	15	114	3	28	2	28	603
14:00	348	174	42	195	11		127	18	176	3	80	4	29	1200
15:00	336	159	50	197	9		111	34	200	3	82	4	26	1204
16:00	572	202	61	277	41		184	50	286	10	81	32	48	1809
17:00	389	138	83	227	22		149	17	221	3	80	4	40	1365

14842

AM and PM peak hour ins and outs at Manual stations

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10	MF	Total
Inbound														
AM	531	280	62	506	30		236	42	174	9	82	12	41	1991
PM	292	72	70	230	6		125	18	112	5	45	2	45	1017
Outbound														
AM	243	36	47	77	2		36	11	170	3	17	3	63	701
PM	572	202	61	277	41		184	50	286	10	81	32	48	1809

Summary

Inbound total cyclists

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10
7 - 10	206	112	12	67	6	79	55	89	33	6	7	1
14 - 18	74	50	52	30	6	39	37	26	21	6	8	3

Outbound total cyclists

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10
7 - 10	23	9	26	2	1	10	16	10	9	4	2	1
14 - 18	254	124	48	66	10	83	78	137	40	11	11	4

Summary

Inbound total peds

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10
7 - 10	194	183	76	22	14	108	92	89	154	57	35	5
14 - 18	85	72	246	31	4	132	72	53	108	55	41	4

Outbound total peds

	M1	M2	M3	M4	M5a	M5b	M6	M7	M8	M9a	M9b	M10
7 - 10	17	19	38	5	1	74	31	23	34	23	13	2
14 - 18	216	179	193	44	19	151	120	137	131	110	62	6

MF

17
77

MF

78
69

MF

4
18

MF

12
13

Appendix 3 - Transit Passenger Count Data, BC Transit

ARRIVE

Time	#4 - UVic		#7 - UVic		#11 - UVic		#14 - UVic		#17 - School Sp		#18 - School special		#26 - UVic		#29 - UVic		#33 - UVic		#39 - UVic		#51 - UVic		TOTALS	
	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips
500																								
600	6	2	0	1	6	5	5	6					6	3					0	1	0	1	23	19
700	69	6	59	5	19	5	66	10					136	8			70	2	22	3	41	3	482	42
800	241	14	125	5	125	5	368	11	14	1	9	1	275	5	13	1	97	2	127	4	97	1	1491	50
900	224	10	103	4	100	3	324	9					438	11					148	2	15	1	1352	40
1000	99	5	68	4	121	3	176	8					222	4									686	24
1100	163	4	73	4	47	4	205	8					212	5					31	2			731	27
1200	147	5	43	4	45	3	166	9					132	5					24	3			557	29
1300	103	4	33	4	22	3	126	8					90	5					12	2			386	26
1400	51	7	26	4	33	4	120	9					90	5					19	2			339	31
1500	51	4	13	4	43	4	110	12					109	5					26	2	0	1	352	32
1600	83	5	18	4	28	4	105	11					135	5					7	2	3	1	379	32
1700	75	5	14	3	64	6	87	5					75	4					13	1			328	24
1800	80	4	11	2	21	3	61	4					45	3					11	1			229	17
1900	45	4	4	2	12	2	52	4					28	1					0	1			141	14
2000	33	4			17	2	34	4					29	2									113	12
2100	38	4			34	2	33	2					14	2					4	1			123	11
2200	25	2			24	2	19	3					42	1									110	8
2300	13	2			10	2	14	1					13	2									50	7
2400	6	1					7	1															13	2
2500																								
TOTALS	**1,552**	**92**	**590**	**50**	**771**	**62**	**2,078**	**125**	**14**	**1**	**9**	**1**	**2,091**	**76**	**13**	**1**	**167**	**4**	**444**	**27**	**156**	**8**	**7,885**	**447**

LEAVE

Time	#4 - Downtown		#7 - Downtown		#11 - Tillicum Ma		#14 - Vic Genera						#26 - Dockyard						39 - Royal Road		#51 - Langford		TOTALS	
	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips					Rides	Trips					Rides	Trips	Rides	Trips	Rides	Trips
500	0	1					1	1															1	2
600	7	2	0	1	4	3	10	5					3	3					5	1			29	15
700	16	5	11	4	15	5	34	8					10	3					14	3	15	1	115	29
800	32	5	17	4	14	4	46	7					39	6					7	3			155	29
900	44	4	12	4	13	3	47	8					66	5					7	1			189	25
1000	60	5	26	4	29	4	81	9					77	5					10	2			283	29
1100	114	5	38	4	23	3	137	8					120	5					17	2			449	27
1200	100	5	42	4	35	3	176	7					144	5					23	2			520	26
1300	180	6	56	4	36	4	200	8					142	4					33	2			647	28
1400	231	6	69	4	62	4	294	8					253	6					69	3			978	31
1500	163	6	58	4	66	6	254	12					185	5					54	2	53	2	833	37
1600	213	7	85	4	70	5	313	9					229	6					43	2	42	2	995	35
1700	124	5	69	3	44	3	302	10					193	6					50	2	13	1	795	30
1800	161	4	45	2	44	3	162	4					153	4					7	1			572	18
1900	85	4	26	2	20	2	105	4					67	2									303	14
2000	73	4			20	2	97	4					37	1					8	1			235	12
2100	71	4	9	1	23	2	52	3					61	2					8	1			224	13
2200	31	2			13	2	50	3					45	2									139	9
2300	22	2			6	1	26	2					21	1									75	6
2400	13	1																					13	1
2500																							0	0
TOTALS	**1,740**	**83**	**563**	**49**	**537**	**59**	**2,387**	**120**	**-**	**-**	**-**	**-**	**1,845**	**71**	**-**	**-**	**-**	**-**	**355**	**28**	**123**	**6**	**7,550**	**416**

TOTAL																								
Time	#4 - UVic		#7 - UVic		#11 - UVic		#14 - UVic		#17 - School Sp		#18 - School special		#26 - UVic		#29 - UVic		#33 - UVic		#39 - UVic		#51 - UVic		TOTALS	
	#4 - Downtown		#7 - Downtown		#11 - Tillicum Ma		#14 - Vic Genera						#26 - Dockyard						39 - Royal Road		#51 - Langford			
	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips	Rides	Trips
500	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
600	13	4	0	2	10	8	15	11	0	0	0	0	9	6	0	0	0	0	5	2	0	1	52	34
700	85	11	70	9	34	10	100	18	0	0	0	0	146	11	0	0	70	2	36	6	56	4	597	71
800	273	19	142	9	139	9	414	18	14	1	9	1	314	11	13	1	97	2	134	7	97	1	1646	79
900	268	14	115	8	113	6	371	17	0	0	0	0	504	16	0	0	0	0	155	3	15	1	1541	65
1000	159	10	94	8	150	7	257	17	0	0	0	0	299	9	0	0	0	0	10	2	0	0	969	53
1100	277	9	111	8	70	7	342	16	0	0	0	0	332	10	0	0	0	0	48	4	0	0	1180	54
1200	247	10	85	8	80	6	342	16	0	0	0	0	276	10	0	0	0	0	47	5	0	0	1077	55
1300	283	10	89	8	58	7	326	16	0	0	0	0	232	9	0	0	0	0	45	4	0	0	1033	54
1400	282	13	95	8	95	8	414	17	0	0	0	0	343	11	0	0	0	0	88	5	0	0	1317	62
1500	214	10	71	8	109	10	364	24	0	0	0	0	294	10	0	0	0	0	80	4	53	3	1185	69
1600	296	12	103	8	98	9	418	20	0	0	0	0	364	11	0	0	0	0	50	4	45	3	1374	67
1700	199	10	83	6	108	9	389	15	0	0	0	0	268	10	0	0	0	0	63	3	13	1	1123	54
1800	241	8	56	4	65	6	223	8	0	0	0	0	198	7	0	0	0	0	18	2	0	0	801	35
1900	130	8	30	4	32	4	157	8	0	0	0	0	95	3	0	0	0	0	0	1	0	0	444	28
2000	106	8	0	0	37	4	131	8	0	0	0	0	66	3	0	0	0	0	8	1	0	0	348	24
2100	109	8	9	1	57	4	85	5	0	0	0	0	75	4	0	0	0	0	12	2	0	0	347	24
2200	56	4	0	0	37	4	69	6	0	0	0	0	87	3	0	0	0	0	0	0	0	0	249	17
2300	35	4	0	0	16	3	40	3	0	0	0	0	34	3	0	0	0	0	0	0	0	0	125	13
2400	19	2	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	3
2500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	**3,292**	**175**	**1,153**	**99**	**1,308**	**121**	**4,465**	**245**	**14**	**1**	**9**	**1**	**3,936**	**147**	**13**	**1**	**167**	**4**	**799**	**55**	**279**	**14**	**15,435**	**863**
	21.3%		7.7%		8.8%		28.9%		0.1%		0.1%		25.1%		0.1%		1.0%		5.2%		1.8%		100.0%	

	Rte 4	**Rte 7**	**Rte 11**	**Rte 14**	**Rte 17**	**Rte 18**	**Rte 26**	**Rte 29**	**Rte 33**	**Rte 39**	**Rte 51**	**Total**
500	-	-	-	1	-	-	-	-	-	-	-	1
600	13	-	10	15	-	-	9	-	-	5	-	52
700	85	70	34	100	-	-	146	-	70	36	56	597
800	273	142	139	414	14	9	314	13	97	134	97	1,646
900	268	115	113	371	-	-	504	-	-	155	15	1,541
1000	159	94	150	257	-	-	299	-	-	10	-	969
1100	277	111	70	342	-	-	332	-	-	48	-	1,180
1200	247	85	80	342	-	-	276	-	-	47	-	1,077
1300	283	89	58	326	-	-	232	-	-	45	-	1,033
1400	282	95	95	414	-	-	343	-	-	88	-	1,317
1500	214	71	109	364	-	-	294	-	-	80	53	1,185
1600	296	103	98	418	-	-	364	-	-	50	45	1,374
1700	199	83	108	389	-	-	268	-	-	63	13	1,123
1800	241	56	65	223	-	-	198	-	-	18	-	801
1900	130	30	32	157	-	-	95	-	-	-	-	444
2000	106	-	37	131	-	-	66	-	-	8	-	348
2100	109	9	57	85	-	-	75	-	-	12	-	347
2200	56	-	37	69	-	-	87	-	-	-	-	249
2300	35	-	16	40	-	-	34	-	-	-	-	125
2400	19	-	-	7	-	-	-	-	-	-	-	26
2500	-	-	-	-	-	-	-	-	-	-	-	-
												-
Total	**3,292**	**1,153**	**1,308**	**4,465**	**14**	**9**	**3,936**	**13**	**167**	**799**	**279**	**15,435**

Appendix 4 – Travel Survey Results, Malatest & Associates Ltd

ID No
numerical ID assigned to survey

Gender
1 = Male
2 = Female

Q1 - Vehicle Type
1. Small Car (4 cylinder ~ 6.9L/100km) [e.g., Smart Car, Mini]
2. Compact Car (4 cylinder ~ 7.59L/100km) [e.g., Corolla, Civic]
3. Mid-sized Car (4 to 6 cylinder ~ 8.97L/100 km) [e.g., Accord, Taurus, PT Cruiser]
4. Full-sized Car (6 to 8 cylinder ~ 9.57L/100km) [e.g., Mercedes S Class, Cadillac]
5. Van (10.56L/100km) [e.g., Dodge Caravan, Honda Odyssey, Pontiac Montana)
6. SUV/Pick-upTruck (12.32L/100km) [e.g., Chevy Silverado, Dodge Durango]

Q2 - KM travelled
based on data from
http://maps.yahoo.com/dd

Q3 - Estimate KM travelled
provided by respondent

Difference
Q2 - Q3
Only provided for those respondents
who provided an estimate of
distance travelled

Q4 - People in Vehicle
provided by respondent

Q5 - Person Type
1. Student (any level)
2. Faculty/Sessional Instructor/Specialist/instructional staff
3. Other staff member
4. Other campus visitor

ID No	Gender	Q1 Vehicle Type	Q2 KM travelled	Q3 Estimate KM travelled	Difference	Q4 People in Vehicle	Q5 Person Type
1	2	2	5	4	1	2	1
3	2	3	8	8	0	1	1
4	2	2	10	6	4	1	1
5	2	3	28	35	-7	1	1
6	2	2	6			1	1
7	1	4	9	10	-1	1	1
8	1	2	6	2	4	2	1
11	1	2	7	12	-5	1	1
12	1	1	2	5	-3	1	1
13	1	3	5	5	0	1	1
14	2	3	2	10	-8	3	2
15	1	2	25	30	-5	1	2
17	1	2	38	65	-27	1	3
18	2	2	7			1	1
20	1	3	6	4	2	1	1
21	1	6	4	2	2	1	1
23	2	6	4	6	-2	2	3
24	2	6	8	10	-2	1	1
25	1	3	9	8	1	2	1
27	1	2	20			2	1
28	1	6	6	5	1	1	1
29	1	6	10	15	-5	1	2
30	1	3	2	3	-1	1	1
31	2	2	3			1	1
33	2	1	4			1	3
34	1	6	9	8	1	1	4
35	1	6	22	25	-3	2	2
36	2	2	7	5	2	1	1
37	2	6	6	7	-1	1	1
39	1	3	9	7	2	1	3
40	2	3	1	5	-4	1	1
41	2	2	8	4	4	1	2
42	2	2	1			2	1
43	1	2	5			1	1
44	2	3	24	47	-23	2	1
45	1	2	2			1	1
47	2	3	7			1	3
48	1	3	6			1	3
49	2	2	6			1	3
50	1	1	38	42	-4	1	1
51	2	2	1	4	-3	1	2
52	1	3	1			2	1
53	2	2	1			1	3
54	1	2	8	8	0	1	2
55	2	3	25			2	4
56	2	3	5			2	1
57	2	3	19	20	-1	2	1
58	2	2	3			2	1
59	2	2	3			1	1
60	1	2	6	2	4	1	1
61	1	3	8	4	4	1	1
62	2	2	7			1	1
63	1	3	1	2	-1	1	1
64	1	2	4	4	0	2	1
65	2	2	5	2	3	1	1
67	1	2	5	5	0	2	1
68	1	5	7			1	1
70	2	3	6			1	1
73	2	3	4			1	1
88	2	3	110	95	15	1	1
90	1	3	6	2	4	1	1
91	2	3	6	5	1	2	1
92	2	3	6	7	-1	1	3
93	2	3	14	20	-6	1	1
94	2	3	8			1	1
95	2	3	20	14	6	1	1
96	1	3	2	5	-3	1	1
97	2	6	7			1	3
98	2	3	1			2	4
99	1	3	9	8	1	1	1
100	1	3	14	17	-3	1	1
101	2	3	7			1	3
103	1	2	5	5	0	1	1
104	2	3	11			1	3
105	1	3	3	3	0	1	1
107	1	6	14	10	4	1	1
108	2	6	8	12	-4	1	3
109	2	3	7	8	-1	2	3

111	1	2	5	3	2	1	1
112	2	3	8	10	-2	1	1
113	1	2	5	6	-1	1	3
114	2	2	7			1	1
115	2	5	4	3	1	1	2
116	1	6	7	5	2	1	1
118	2	2	1	1	0	1	3
119	1	2	7	6	1	1	3
121	1	3	7	10	-3	2	1
122	2	6	8	15	-7	1	1
123	2	2	5	7	-2	1	1
124	2	3	1	2	-1	2	1
125	2	2	2	4	-2	1	1
126	2	2	13	10	3	2	1
127	2	3	9	10	-1	1	2
128	2	6	18	15	3	1	3
130	2	2	7	4	3	2	1
131	1	3	7	12	-5	1	1
132	2	3	7	12	-5	2	1
133	2	2	9	6	3	1	1
134	2	2	2	2	0	1	1
137	1	3	9			1	3
138	2	3	25	25	0	1	3
139	1	3	11	8	3	1	3
140	1	4	9	7	2	1	4
142	2	2	10			1	1
146	2	3	4			4	3
147	1	3	27			1	1
148	1	2	9	15	-6	2	1
151	1	2	3			2	2
152	1	2	8			1	3
155	2	2	5	5	0	1	3
157	2	2	8			1	3
159	1	4	4	8	-4	2	1
160	2	3	62	60	2	1	1
161	1	4	5	3	2	1	1
162	1	6	7	10	-3	2	1
163	2	1	2	8	-6	1	1
164	1	1	4	6	-2	1	1
165	2	3	9			1	1
166	1	2	12	15	-3	1	3
167	2	2	5	6	-1	1	1
168	1	1	7	2	5	1	2
169	2	5	6			2	3
170	1	2	45	80	-35	1	4
171	2	6	27			2	3
172	1	6	45	50	-5	1	4
173	1	6	8	5	3	1	3
174	1	2	5	5	0	1	4
175	1	1	17	80	-63	3	4
178	2	5	5	2	3	2	3
179	1	2	7	5	2	1	1
180	2	3	5	2	3	1	3
181	1	2	10	5	5	1	1
185	2	3	11			1	1
186	2	1	10	17	-7	2	2
187	2	3	8			2	1
188	1	3	7	5	2	1	3
190	2	1	7	6	1	2	4
193	2	1	62	60	2	1	1
199	1	4	6			2	1
201	2	3	6	10	-4	1	1
202	1	6	5	6	-1	1	2
203	2	3	10	15	-5	1	1
204	1	6	10	15	-5	3	1
205	2	2	27	30	-3	1	1
206	1	6	9	10	-1	1	2
207	2	3	9	9	0	1	3
208	2	1	2	5	-3	3	1
209	2	3	16			1	1
210	2	1	5	8	-3	1	1
212	2	6	7	7	0	1	1
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