UBC PROPERTIES INC.

UNIVERSITY OF BRITISH COLUMBIA

Research Paper #7
Parking Issues and Opportunities

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CONTENTS

Summary

This paper presents the results of research on parking management (supply, pricing and enforcement) practices for the University of British Columbia. Issues and opportunities for both commuter parking and resident parking facilities are identified. Where possible, features of UBC's parking system are compared against those of other post-secondary educational institutions, as well as those of local governments. The information that is provided within this document is intended to assist UBC's policymakers in future parking, transportation, and land use planning decision making.

A. Commuter Parking

This section examines the existing commuter parking environment at UBC, and compares this environment with those of other post-secondary educational institutions, as well as other activity centres and employers throughout the Lower Mainland. This evaluation provides an indication of how UBC compares to other markets, and can assist in future policy decisions on the supply and pricing of parking for commuting students, faculty, staff and visitors.

Although numerous markets have been identified in this research paper, a few key markets can be directly compared to UBC given their similar characteristics. Provided below is a summary of the markets that UBC can be closely compared to with respect to parking supply and pricing:

- For post-secondary institutions within the Greater Vancouver area, **Simon Fraser University** on Burnaby Mountain serves as a good market for comparison. The SFU campus is located 16 km outside of Downtown Vancouver (UBC is 10 km away from the downtown) and shares a similar geographical condition of being relatively isolated from other activity and employment sites in the region. **BCIT**, located 10 km outside of the downtown and accommodating slightly smaller population than SFU, may also provide a useful comparison to UBC. However, BCIT is situated within the Willingdon-Canada Way corridor that accommodates a significant number of other major employers.

- Outside of Greater Vancouver, post-secondary institution markets that compare with UBC include the **University of Victoria**, **York University**, the **University of Alberta** and **the University of Calgary**. All of these universities are located within an urban area,

but are situated outside of the downtown core. York University in Toronto provides one of the best comparisons because it is of similar size, both in area and population, to UBC. Although it is located approximately 20 km outside of the Toronto downtown core, it is accessible by different modes of transportation to students, faculty and staff living throughout the Metropolitan Toronto area.

- Outside of Canada, the **University of Washington** in Seattle can be compared to UBC given its location outside of the downtown and comparable size. The University of Washington also serves as an interesting comparison given that it offers the U-PASS program that served as the model for UBC's upcoming U-TREK Card program.

- For other markets within the Greater Vancouver region that are not post-secondary institutions, it is not as easy to undertake direct comparisons with UBC. For example, Downtown Vancouver is a significantly larger activity centre than UBC, with many different land uses and associated travel patterns. If comparisons with an activity centre of this type must be made, **Metrotown** in Burnaby serves as a market of comparable scale, serving a large number of commuters. However, the majority of parking provided at Metrotown is provided for shoppers, and not employees.

I. *Parking Supply*

Table A-1 provides an illustration of how UBC's parking supply compares with other institutions and activity centres that were reviewed for the purpose of this document.

Table A-1: UBC Parking Supply – Comparison with Other Markets

	UBC Parking Supply - Relative Rating		
	Lower Than Other Markets	**Similar** To Other Markets	**Higher** Than Other Markets
Post Secondary Educational Institutions			
Total On-Campus Parking Supply			■
Parking Supply-Population Ratio		■	
Lower Mainland Activity Centres/Employers			
Total Parking Supply		■	

Key observations regarding UBC's parking supply are as follows:

- UBC has a relatively large parking supply (10,653 spaces) when compared to other post-secondary education institutions in B.C. and other parts of the country. Of the Canadian institutions surveyed, only York University in Toronto had more parking spaces at 11,000 spaces.
- When the ratio of parking spaces to population (full-time students, faculty and staff) was examined for surveyed universities, UBC ranks just above the average of 1 parking space for every 4 persons (0.25 parking spaces per person).
- At 10,653 spaces, UBC's parking supply is comparable to that of MetroTown in Burnaby at 11,631 (includes MetroTown, Eaton's Centre, Station Square parking supplies).

II. Parking Pricing

Table A-2 indicates how UBC's parking prices compare with other institutions and activity centres that were reviewed for the purpose of this document.

Table A-2: UBC Parking Pricing – Comparison with Other Markets

	UBC Parking Pricing - Relative Rating		
	Lower Than Other Markets	**Similar** To Other Markets	**Higher** Than Other Markets
Post Secondary Educational Institutions			
Monthly Parking Prices			■
Hourly Parking Prices			■
Lower Mainland Activity Centres/Employers			
Monthly Parking Prices	■	■	
Hourly Parking Prices			■
All Markets			
Parking Fines		■	

Key observations regarding UBC's parking pricing are as follows:

- Monthly commuter parking prices on the UBC campus range from $70 per month for student parkade spaces down to $9.67 per month for a student motorcycle parking permit. The maximum price charged for surface parking on campus is $59.00 per month.
- When comparing the maximum monthly charge for parking at various institutions, UBC's monthly price (UBC student parkade rate – $70 per month) can be considered high relative to most of the other institutions reviewed. This maximum price is comparable to the University of Washington's highest price at $73.00 per month (in Canadian dollars).
- When only surface parking prices are compared, UBC's prices remain high – at $59.00 per month – relative to other institutions reviewed. York University in Toronto has the highest surface parking prices ($76 per month) of those reviewed.
- When UBC's monthly parking prices are compared against other local government employers, as identified in **Table 3**, only the Greater Vancouver Regional District also charge their employees for parking at $55.20 per month.

Table A-3: Employee Parking Prices – Local Government Employers

Government Employment Site	Parking Price	Employer Parking Subsidy	Actual Price Paid by Employee
• **City of Burnaby**	Free	None	Free
• **GVRD** Metrotown, Burnaby	$80.00 (per month)	$24.80* (31%)	$55.20 (per month)
• **City of New Westminster**	Free	None	Free
• **District of North Vancouver**	Free	None	Free
• **City of Richmond**	Free	None	Free
• **City of Surrey**	Free	None	Free
• **City of Vancouver**	Free	None	Free
• **U.B.C.**	$59.00 (per month)	None	$59.00 (per month)

* Note: The GVRD is in the process of phasing out this parking subsidy over the next three years.

- An examination of monthly parking prices throughout the Lower Mainland at various activity and employment centres reveals that UBC's parking prices can be categorized as low – at $59 per month for faculty and staff and $70 per month for some students – relative to many other major destinations in the Lower Mainland.
- When parking prices at post-secondary educational institutions are compared on a per hour basis, UBC's hourly rates are the highest at $2.70 per hour. These prices typically represent hourly rates for parking at on-street meters and off-street, short-term parking facilities.
- An examination of hourly parking prices for activity centres within the Lower Mainland, indicates that UBC's hourly rates are only surpassed by the Vancouver International Airport parkade ($4.00 per hour) and the most expensive parking zone in Downtown Vancouver ($3.00 per hour).
- When comparing fines dispensed for an expired parking meter at different institutions and jurisdictions in B.C. and across Canada, UBC's current parking fines can be characterized as average.

B. Resident Parking

This section describes how residential parking – for both student and market housing on campus – is currently supplied and managed at UBC. Student housing – for both single students and students with families – is reviewed, as is market housing at Hampton Place. This section also includes the results of a number of residential parking surveys conducted for single-student residents, family-student residents and Hampton Place parking activity.

1. Parking Supply

Information regarding the supply of residential parking on campus is presented in a format that identifies individual housing developments and the associated parking facilities. Key observations regarding on-campus resident parking supply include:

- The average ratio of parking for UBC managed student residences is 0.32 stalls per bed. Existing parking ratios for residences range from a low of 0.16 stalls per bed for Totem Park / Ritsumeikan-UBC House to a high of 0.88 stalls per bed for the Thunderbird Residence.

This amounts to a difference of 5 times the amount of parking supplied. ***Excluding the Thunderbird Residence, the average is significantly lower at 0.24 stalls per bed.***

Table B-1: Comparison of Parking Ratios

	Student Housing		Market Housing		Social Housing
	Single (per bed)	Family (per dwell.unit)	Per dwell. unit	Per bedroom	
UBC	**0.32** (0.16-0.88) *0.25 excluding Thunderbird Residence	**1.25** (1.1+0.15 v)	**2.1** (1.85+0.25 v)	1 bedroom – 1.45 to 2.05 2 bedroom – 0.93 to 1.13 3 bedroom – 0.82	n/a
Vancouver	**0.5** (rooming house)	n/a	**1.1-2.2**	n/a	Social = 0.5 Senior = 0.16
Burnaby	**0.5** (rooming house)	n/a	**1.0-2.0**	n/a	**1.0-1.75**
New Westminster	n/a	n/a	**1.0-2.0**	1 bedroom – 1.0-1.2 2 bedroom – 0.75 3+ bedroom – 1.0	**0.2-0.4**
SFU	**0.33-0.5**	n/a	n/a	n/a	n/a
BCIT	**0.35**	n/a	n/a	n/a	n/a
UVic	n/a	**1.5** (1.0+0.5 v)	n/a	n/a	n/a

* Note: v = visitor parking

- A ratio of 1.1 parking stalls per dwelling unit (1.25 including visitor parking) was observed for the Acadia Park and University Apartments development. One parking space is provided for each dwelling unit as part of the rental agreement for these units. Tenants also have the choice to rent an additional space for a second car at a cost of $25 per month.
- Existing parking ratios also vary among the three theological college residences. Parking ratios for these residences range from 0.30 stalls per bed (Vancouver School of Theology) to 1.0 stalls per bed (Carey Hall).
- A total of 1,621 parking stalls are provided for 773 dwelling units in the Hampton Place market housing development. The resulting average parking ratio of 2.1 stalls per dwelling unit (including visitor

parking) is two-thirds higher than for Acadia Park and University Apartments. Parking ratios for these developments range from 1.45 stalls per unit to 2.45 stalls per unit.

- If the City of Vancouver's parking requirements for comparable housing (i.e. Kerrisdale and Kitsilano multi-family developments) were applied to Hampton Place, 271 to 337 less spaces would be required.

II. Parking Pricing

Key observations regarding on-campus resident parking pricing include:

- Prices for student housing parking at UBC range from $32 to $42 per month, and $256 to $657 per term for non-family student housing.
- For all non-family student housing, the cost for parking is separated from the regular rental charge for accommodations. Thus, tenants have the option of paying the additional cost to rent a parking space.
- For the Acadia Park (family students) and University Apartments (faculty/staff), a parking space is automatically included in the rental agreement, with the overall cost of parking included in the regular monthly housing rental fee.
- The cost of parking for residents at off-site facilities, such as parkades, is much higher than the cost of parking facilities on-site, such as underground or adjacent surface spaces.
- Discussions with UBC Housing and Conference staff revealed that some student residents are subletting their parking stalls to other students, typically for a profit.

III. Parking Policies and Practices

An overview of UBC's current residential parking policies and practices is provided in this section. Key observations include:

- UBC Housing and Conferences typically administers parking that is located adjacent to or within the housing development it services.
- UBC Parking, Security and Transportation Services administers and enforces all non-housing parking facilities such as parkades, surface lots and on-street spaces.

- The parkades and surface lots administered by UBC Parking, Security and Transportation Services function primarily as shared-use facilities that accommodate student residents, commuters and visitors.

- Enforcement of UBC Housing and Conferences parking facilities is monitored internally and carried out by Drake Towing.

- Surface lots associated with the three theological college residences on campus – Vancouver School of Theology, St. Andrews Hall and Carey Hall – are self-administered by the respective colleges.

IV. Single-Student Resident Parking Survey

The main objective of this parking survey of single-student residents at UBC was to determine existing and future parking needs – for both the automobile and the bicycle – of residents of single-student housing on campus. Additionally, the survey results provide some insight into the travel characteristics of tenants. A total of 551 parking questionnaires were returned out of a possible 5,043 questionnaires distributed, equivalent to a rate of return of 11%. Key findings of this survey are as follows:

- 42% of surveyed respondents currently have access to an automobile on campus – 36% of respondents owning a vehicle and an additional 6% of respondents borrowing a friend's vehicle.

- 81% of respondents who own a motor vehicle on campus park their vehicle at underground or surface parking associated with student housing.

- 17% of respondents indicated that they use their vehicle for at least one round-trip per day. 94% of respondents indicated that they use their vehicle for at least one round- trip per week.

- 34% of surveyed automobile owners identified 'shopping' as the primary use for their automobile. 'Work' and 'social and/or recreation' trips ranked second as primary uses, both identified by 23% of surveyed automobile owners.

- When surveyed automobile owners were asked if they would give up use of their automobile if transit services where more frequent and

less expensive, only 19% of respondents indicated that they would give up their automobile in favour of transit, ***which is close to the 20% U-TREK target for UBC***.

- Comments by respondents indicate that they have chosen to own a car because it is a more convenient form of transportation for travelling to work off-campus or taking long trips.
- 50% of surveyed respondents currently have access to a bicycle on campus – 45% of respondents owning a bicycle and an additional 5% of respondents borrowing a friend's bicycle.
- When surveyed bicycle owners were asked where they primarily park their bicycle when at their residence, 42% of respondents indicated that they parked their bicycle inside their residence room or suite.
- Of the respondents who make at least one round-trip bicycle trip per day, almost 80% of them identified 'school' trips as their primary use.
- 31% of respondents use their bicycle daily.

V. Family-Student Resident Parking Survey

A survey was undertaken of residents in the Acadia Park and University Apartments complexes, to determine parking usage. A total of 214 parking questionnaires were returned out of a possible 900 questionnaires distributed, equivalent to a rate of return of 24%. The key results and findings of the Parking survey are as follows:

- Over 90% of households surveyed had at least one motor vehicle.
- 98% of surveyed households had use of at least one assigned parking space. Of these households, 95% actually used the assigned space for their own vehicle.
- 40% of respondents indicated that the primary use of their motor vehicle was "shopping." "Work" was the second most frequently identified use at 37%.
- In 83% of surveyed households, there is at least one bicycle.
- 22% of households indicated that they would reduce the number of vehicles in their household if they were offered a reduced price

transit pass – a proportion that exceeds the U-TREK 20% reduction target.

Policies and Practices Elsewhere

Parking ratios and policies for comparable housing were reviewed in Vancouver, Burnaby, and New Westminster. Parking conditions at other post-secondary institutions were also reviewed. Additionally, parking policies and practices in other municipalities were included. The key findings are as follows:

- Parking requirements for multi-family developments in Vancouver, Burnaby and New Westminster vary not only by housing type and function, but also by zoning classification and geographic location in some cases.
- Generally, municipalities do not allow reductions in parking requirements for residential uses.
- Reductions have been allowed in exceptional circumstances for heritage restoration projects, seniors housing, low-income family housing and multi-family housing where the developer has demonstrated that the current parking standard provides more parking than is necessary, such as the case with Collingwood Village in Vancouver.
- Similar to UBC, other post-secondary educational institutions in BC have not yet developed comprehensive parking requirements for housing development on campus.
- Prices for parkades in downtown Vancouver range from $5 - $10 per day, and $55 to $225 per month.

VI. Hampton Place Parking Supply – Trip Generation Study

In an effort to determine whether there is a relationship between residential parking supply and residential vehicle trip generation at UBC's Hampton Place residential development, a survey of trip generation activity was undertaken in early December 1998. Specifically, a survey of trips to and from six Hampton Place housing complex parking lots was undertaken. Key results of the trip generation study include:

- Both the AM and PM peak hour trip generation surveys for Hampton Place indicate that a lower rate of trips is generated than would be expected using ITE and MoTH trip generation equations. This finding is further supported by traffic counts conducted on Hampton Place Road during the second week of November 1998.

- A primary goal of this study was to determine whether or not there is a relationship between the amount of parking supplied at individual Hampton Place sites and the rate of trips generated by individual sites. Based on the results of the parking ratio – trip generation study, it would appear that the amount of parking provided at Hampton Place residential land uses is somewhat correlated with the number of vehicle trips generated, particularly in the PM peak hour.

  However, it cannot be concluded from this evidence that the amount of parking supplied at residential land uses significantly influences the number of trips generated. Other factors such as vehicle ownership, employment status (i.e. employed vs. retired), and travel behaviour likely play an equal or greater role in influencing trip generation.

VII. Policies and Practices Elsewhere

This section presents an overview of residential parking policies and practices applied in local municipalities, post-secondary educational institutions and other municipalities in North America. Where available, information was gathered on general parking requirements, reductions to existing parking requirements, and parking pricing. The parking policies and practices from the following jurisdictions were reviewed in detail:

- City of Vancouver, BC
- City of Burnaby, BC
- City of New Westminster, BC
- Simon Fraser University, Burnaby, BC
- University of Victoria, BC
- BC Institute of Technology, Burnaby, BC
- City of Toronto, ON
- City of Olympia, WA

1. Introduction

The University of British Columbia is located in Vancouver, British Columbia, on the City's west side of Point Grey. The campus is situated approximately 10 kilometres southwest of the City's downtown core. The University Endowment Lands are situated to the east of the campus proper, and serves as a "green belt" between the city and the campus.

Because a significant proportion of students, faculty and staff commute to UBC from different areas of the region, traffic and transportation issues have become increasingly more important as the University population has grown. The U-TREK Program Centre was developed at UBC to reduce single occupant vehicle (SOV) use and provide a wider range of transportation options for commuters. The Centre has developed a Strategic Transportation Plan (STP) identifying policies and priorities for achieving transportation targets established through the UBC Official Community Plan process. Further information on UBC's U-TREK Program Centre can be found at the centre's web site at www.trek.ubc.ca.

This Research Paper provides an overview of parking issues and opportunities for the University of British Columbia. Because sound management of parking facilities is required from both a transportation perspective and an economic perspective, it is important for U.B.C. to address key parking issues and concerns as the University heads into the next millenium. This paper also serves as a reference document for the UBC Strategic Transportation Plan (STP).

Section 2 of this report reviews UBC's commuter parking used by faculty, staff, students and visitors for daily vehicle trips to UBC. From a Transportation Demand Management (TDM) perspective, policies that are directed toward the availability and price of commuter parking facilities on campus have significant potential to influence travel behaviour. Current parking supply and pricing data from UBC are compared against information from other markets including other post-secondary educational institutions in B.C. and across Canada, as well as local activity and employment centres in the Lower Mainland. This evaluation provides an indication of how UBC compares to other markets, and can assist in future policy decisions on parking supply and pricing.

The third section of this report examines residential parking supplies, prices, policies and user behaviour in an effort to determine what changes, if any, are necessary to maximize efficient use of space, accommodate the individual needs of resident, and minimize single occupant vehicle (SOV) use to and from UBC lands. This review includes an examination of both student resident parking and market housing resident parking, as both types of housing are currently accommodated on campus, and more development of these housing types are planned for the future. As was done for commuter parking, this section also includes a comparison with other markets and jurisdiction to provide UBC land use and transportation planners with a better idea of where the University's residential parking policies stand relative to others.

2. Commuter Parking

Local governments recognize that we can no longer continue to respond to increasing demand for travel with a supply-oriented approach, particularly when this approach often encourages increased automobile travel. This is especially true in the case of parking. The role of parking management as a means of reducing single occupant vehicle (SOV) trips in a given municipality, activity centre or employment site has been given increasing consideration in recent years. Parking management is viewed as a key support strategy that enhances the impact of other TDM measures such as transit improvements, HOV and rideshare programs, and bicycle and pedestrian facilities. Implementation of effective parking management strategies can play an important role in enhancing the attractiveness of alternative modes, while discouraging SOV trips.

This section examines the existing commuter parking environment at UBC, and compares this environment with those of other post-secondary educational institutions, as well as other activity centres and employers throughout the Lower Mainland. Through a review of parking supplies, prices and policies in these other markets, and a comparison with UBC's current supplies, prices and policies, UBC's transportation and parking policymakers will be provided with the information they need to effectively manage parking on-campus and reduce SOV travel.

2.1 Parking Supply

An individual's decision to use an automobile for a trip – rather than taking transit, ridesharing, bicycling or walking – is largely influenced by the availability of inexpensive and convenient parking. When the supply of parking for an area exceeds the demand for parking, the market value of parking is reduced below its actual cost. Thus, an overabundant supply of parking can have a significant effect on the number of SOV trips made to and from an area such as UBC.

This section examines the supply of parking at UBC, and how that supply compares to other post-secondary educational institutions and local activity centres.

Table 2.1.1: Summary of UBC Parking Supply

Facility	Parking Spaces
Parkades	
• Health Sciences	1,130
• North	1,001
• Fraser River	725
• West	1,200
• Rose Garden	902
Total	**4,958**
Daily Surface "B" Lots	
• B-1 Lot	768
• B-5 Lot	1,247
• B-6 Lot	1,003
• B-7 Lot	560
Total	**3,578**
Permit Surface Lots	
• Faculty/Staff Permit Lots	1,188
• Car-Pool Lot C-2	290
• Permit Lot B-4	192
Total	**1,670**
Meter Parking	
Total	**447**
Total	**10,653**

Table 2.1.1 summarizes the total on-campus supply of parking available to commuting faculty, staff, students and visitors at UBC. **Map 2.1.1** provides an indication of how these parking facilities are distributed throughout the campus. In general, UBC's commuter parking facilities fall under one of the following categories:

- **Parkades** provide convenient short- and long-term parking for persons accessing specific areas of the campus. This greater level of convenience typically comes at a higher price.
- **Daily surface lots** provide less expensive long-term parking, primarily for commuting students.
- **Permit surface lots** provide convenient access to buildings for faculty and staff, and preferential parking for persons who rideshare.
- **On-street meter parking** is available for visitors for short-duration visits for a maximum of two hours.

When comparing UBC's total commuter parking supply to other post-secondary education institutions in B.C. and throughout Canada, the following observations can be made:

- UBC has a relatively large parking supply (10,653 spaces), as indicated in **Figure 2.1.1**, when compared to other post-secondary education institutions in B.C. and other parts of the country. Of the Canadian institutions surveyed, only York University in Toronto had more parking spaces at 11,000 spaces. The University of Washington in Seattle has 11,346 parking spaces. However, the population (full-time equivalent students, faculty and staff) of UW is 60% greater than that of UBC (50,000 for UW versus 31,035 for UBC.). It is interesting to note recent study of York University's parking system estimated that they have a 1,500 space parking deficit.

- When the ratio of parking spaces to population (full-time students, faculty and staff) was examined for surveyed universities, it was found that UBC had about 1 parking space for every 3 persons on campus (0.34 parking spaces/person). **Figure 2.1.2** indicates that UBC ranks just above the average of 1 parking space for every 4 persons (0.25 parking spaces per person). The University of Toronto, located in downtown Toronto, has allocated only 1 parking space for every 17 person on campus (0.06 spaces/person). It is important to note that the University of Toronto campus is a downtown campus located conveniently near a rapid transit connection.

- **Figure 2.1.3** provides an indication of where UBC's parking supply ranks relative to other major activity and employment centres in the Lower Mainland. At 10,653 spaces, UBC's parking supply is

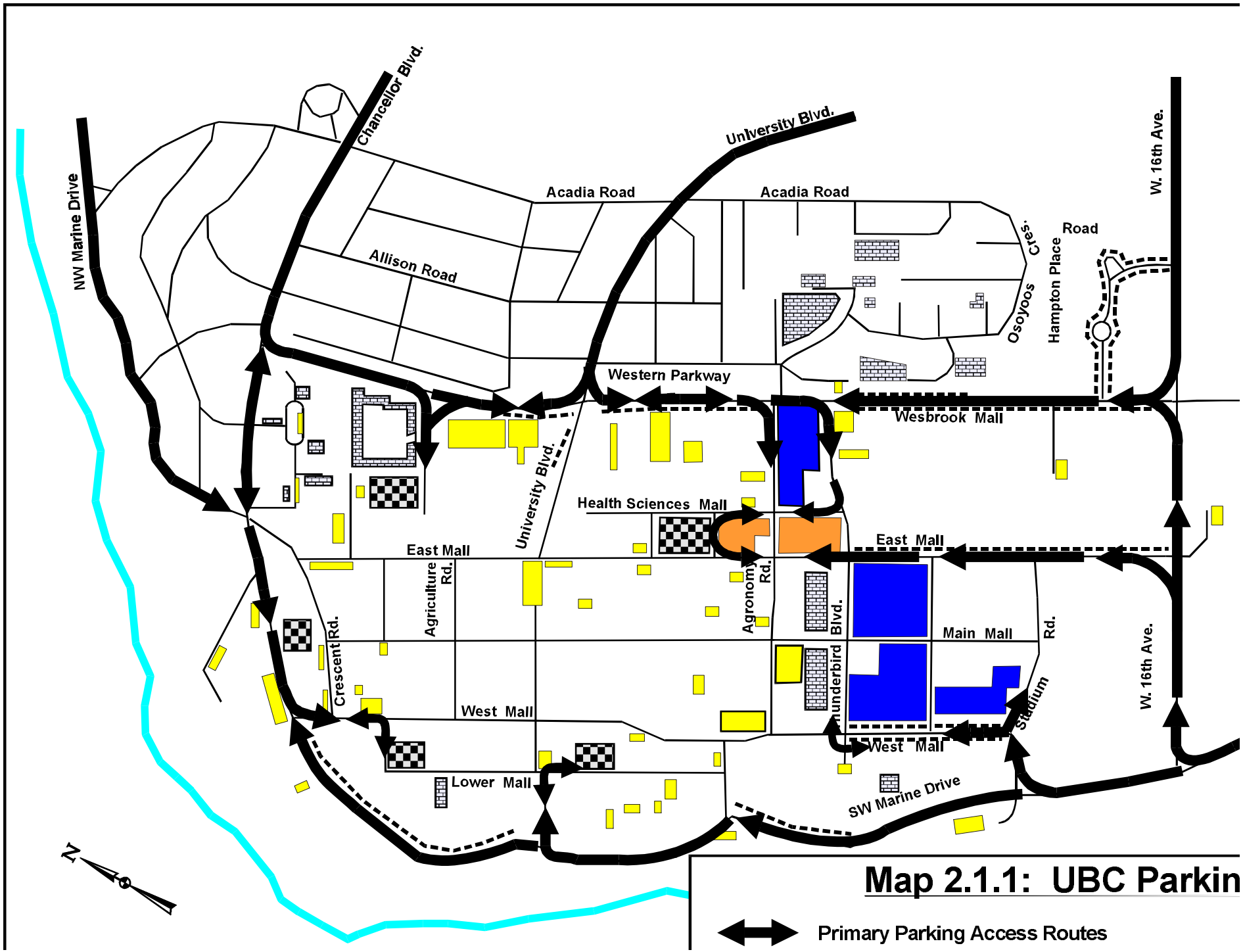

Chancellor Blvd.
University Blvd.
NW Marine Drive
Acadia Road
Acadia Road
Allison Road
Osoyoos Cres.
Hampton Place
Road
W. 16th Ave.
Western Parkway
Wesbrook Mall
University Blvd.
Health Sciences Mall
East Mall
East Mall
Agriculture Rd.
Agronomy Rd.
Crescent Rd.
Thunderbird Blvd.
Main Mall
Rd.
W. 16th Ave.
West Mall
Stadium
West Mall
Lower Mall
SW Marine Drive
N
Map 2.1.1: UBC Parkin
Primary Parking Access Routes

Figure 2.1.1: *On-Campus Parking Supply*

(includes on-street spaces, surface stalls, parkade and underground stalls)

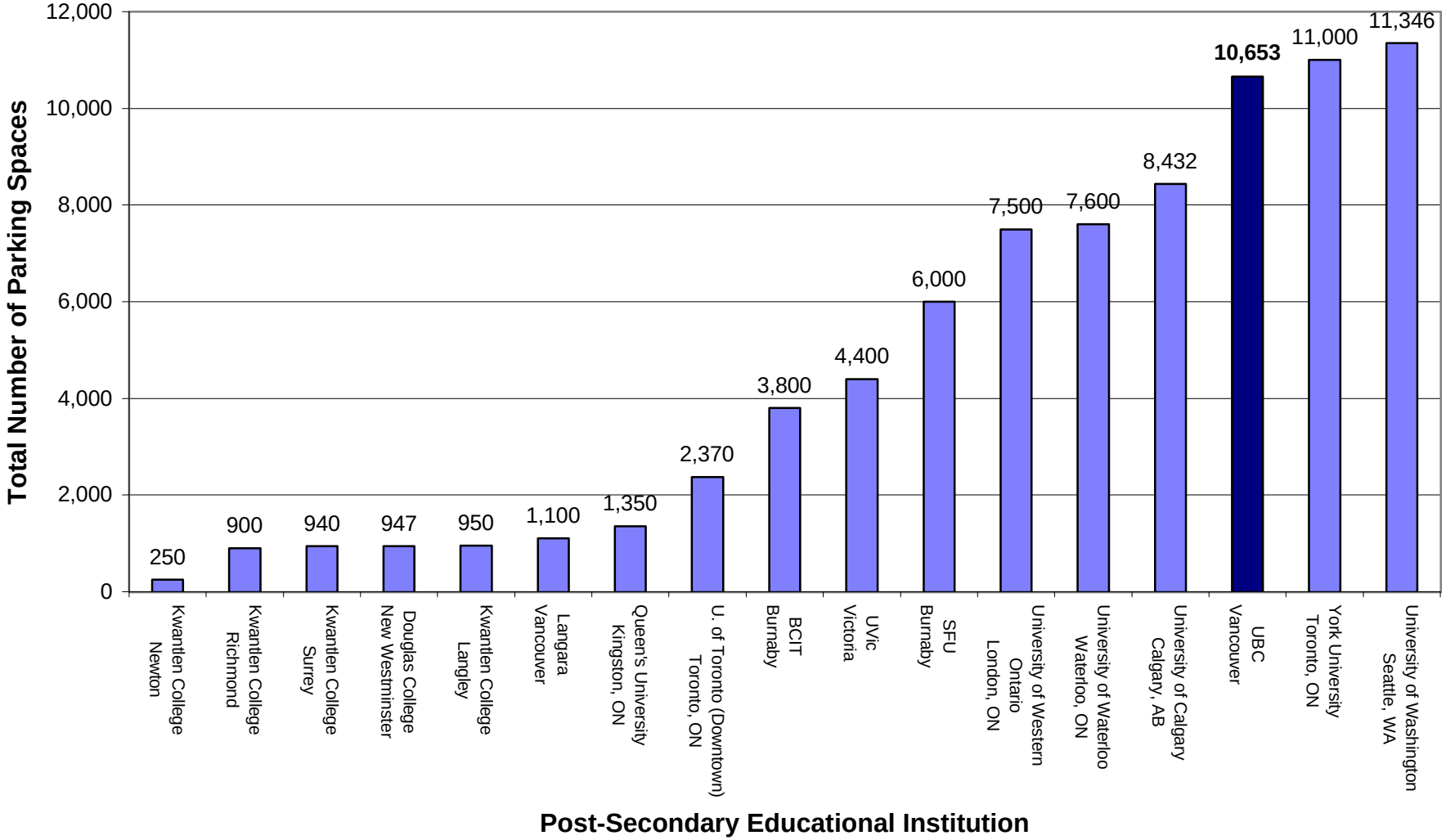


Figure 2.1.2: *Parking Supply - Population Ratio*

(population includes full-time faculty, staff and students)

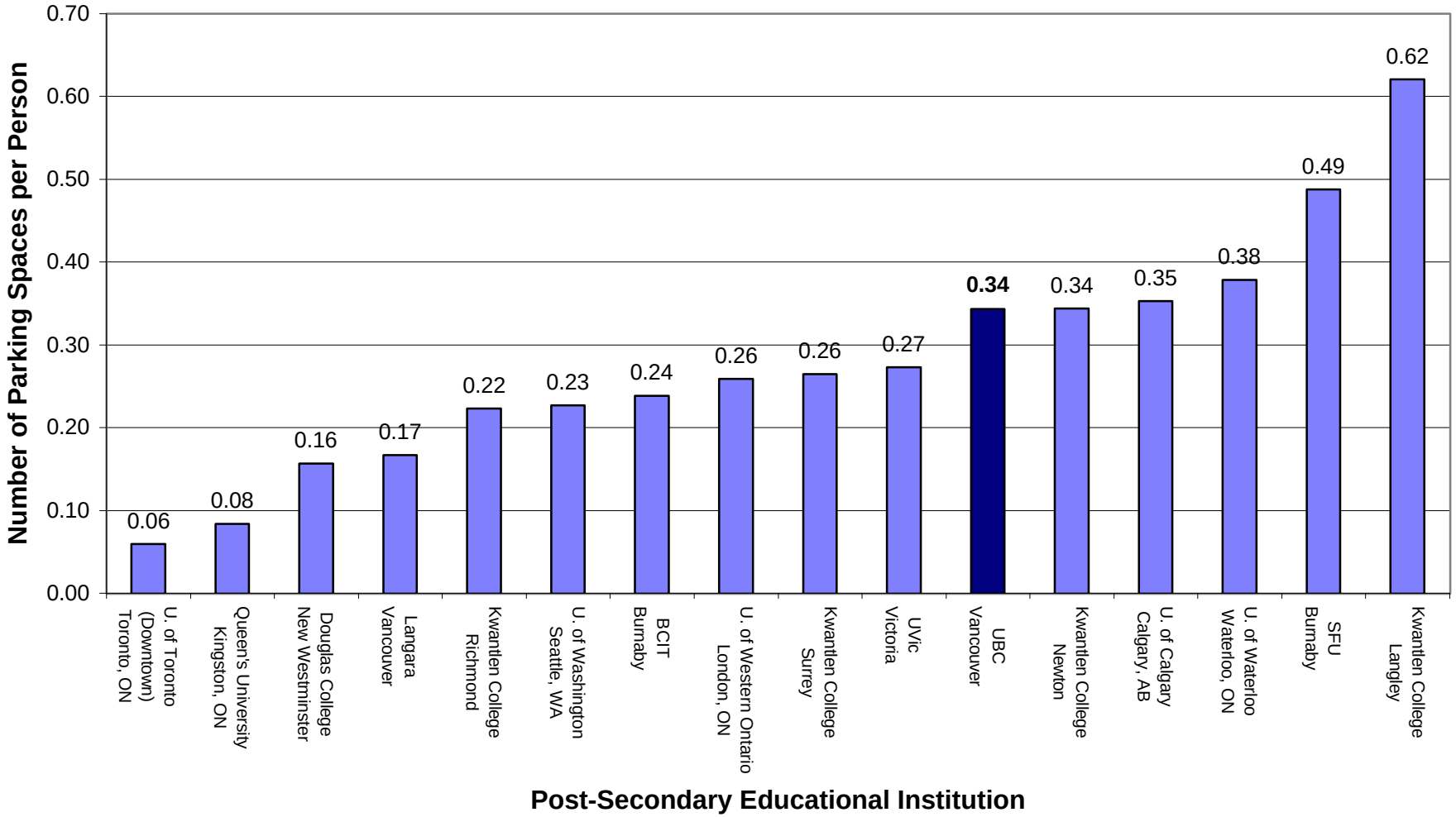
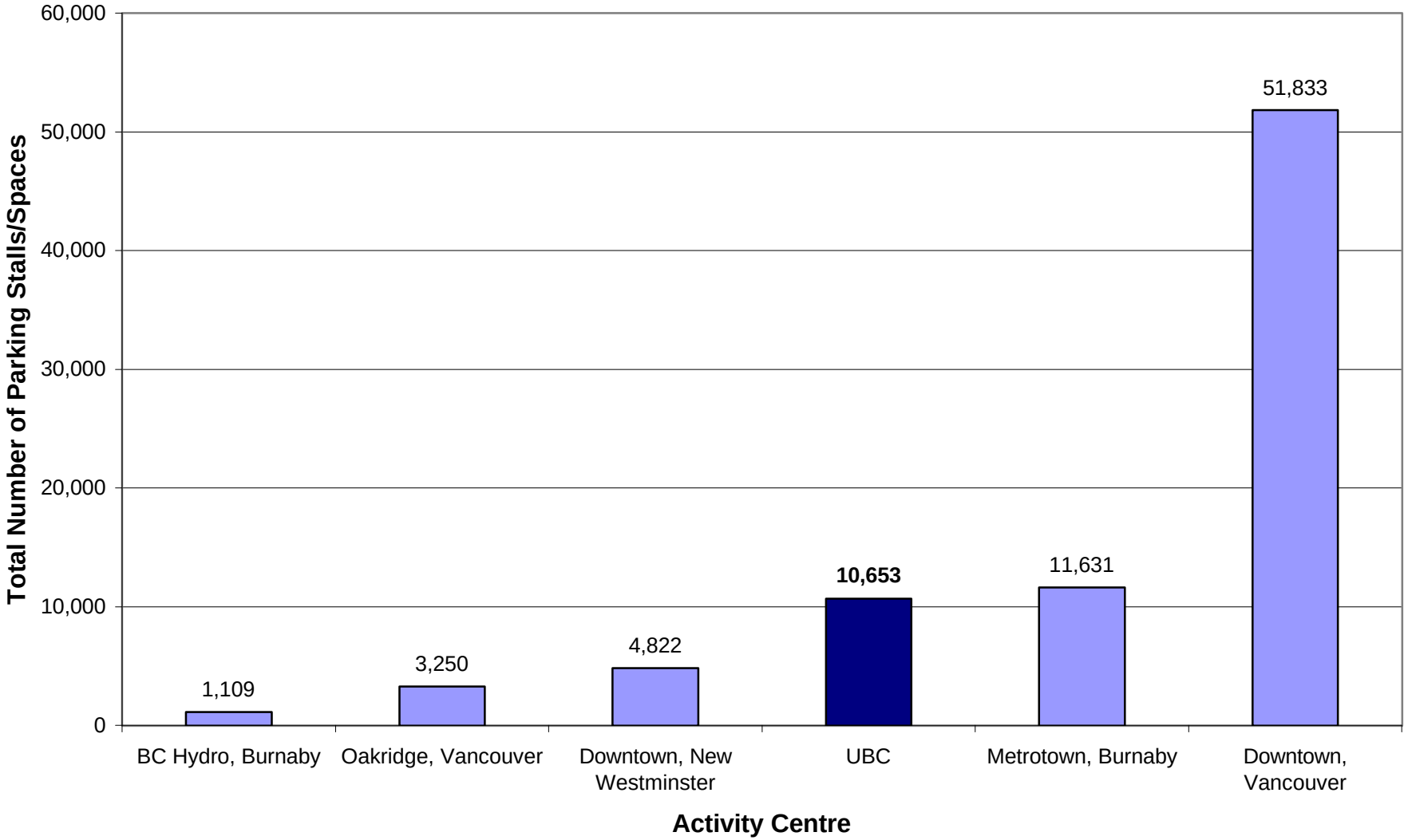


Figure 2.1.3: *Parking Supply - Lower Mainland Activity Centres*



comparable to that of MetroTown in Burnaby at 11,631 (includes MetroTown, Eaton's Centre, Station Square parking supplies). The parking supply of Downtown Vancouver, however, is almost five times as large as that of UBC.

More detailed information on the parking supplies of all the institutions and activity centres reviewed are provided in **Appendix A**, at the end of this report.

2.2 Parking Pricing

The cost of parking can have a significant influence on an individual's decision to drive alone to a destination. If parking is offered for free or even at a low price – all other things being equal – trips makers are more likely to choose SOVs as their travel mode over alternative modes such as transit, ridesharing or cycling. Parking facilities, as with other facilities that support automobile travel, are typically subsidized via indirect revenues such as taxes, rents, leases, prices of goods and services, and even salaries. Because the true value of parking is rarely paid by the motorist, the 'subsidized' price of parking does not influence them to switch to alternative modes. Within the context of TDM, the primary focus of parking pricing strategies is to discourage SOV travel by increasing the total cost of parking to trip makers. In order for parking pricing strategies to be effective, any increase in parking price must be directly passed on to the automobile user.

Provided in this section, is an overview of the current prices of parking at UBC, and how these prices compare with other post-secondary educational institutions and local activity and employment centres. As with the information on parking supply, this comparative review can provide UBC policymakers with a better understanding of where UBC ranks among other institutions and activity centres, both locally and nationally. More detailed information on parking pricing at the institutions and activity centres reviewed in this report is provided in **Appendix B** of this report.

Table 2.2.1 identifies the current parking pricing structure at UBC, broken down by facility, parking type and payment options. **Figure 2.2.1** provides a graphic illustration of how UBC parking prices compare on a monthly basis. Key observations are as follows:

- The most expensive commuter parking available on campus is offered at an equivalent cost of $70.00 per month for students

parking in parkades. This parking is not offered on a monthly basis, but on a per academic year basis (8 months) at a cost of $556.00.

- The least expensive commuter parking available to students is a motorcycle permit, offered at an equivalent cost of $9.67 per month ($116 per 12 months). Faculty and staff can obtain a motorcycle permit at no charge.
- The maximum price charged for surface parking is $59.00 per month.

Table 2.2.1: Summary of UBC Parking Prices*

Parking Facility	Parking Type	Parking Prices				
		Hourly	Daily	Monthly	8 Months	12 Months
Parkades	• Faculty/Staff • Student-commuter • Student-resident • Visitor-weekdays • Visitor-evening/ weekends	$2.70	$9.00 $12.50 $3.00	$59.00	 $556.00 $657.00	$711.00
B-Lots	General Surface Lots		$3.00		$456.00	
A-Lot	Student Resident Lot		$42.00		$336.00	$504.00
L-Lot	Student Resident Lot				$456.00	
Roadway Permit	General On-Street				$456.00	
B-4 Lot	Carpool (being phased out)				$283.00	
Meters	Short-Term On-Street (2 hour max.)	$2.70				
Special Needs Parking	• Faculty/Staff Permit • Student Permit • Meter Parking (2 hr. max.)			$50.00 $30.00 Free		
Motorcycle Permits	• Faculty/staff • Student					Free $116.28

** Note: Prices include applicable sales taxes.*

When UBC parking prices compared against the pricing of other post-secondary educational institutions, both locally and across the country, the following observations can be made:

- When comparing the maximum monthly charge for parking at various institutions, as illustrated in **Figure 2.2.2**, UBC's monthly

price (UBC student parkade rate – $70 per month) can be considered high relative to most of the other institutions reviewed. (Yet, even at this price, the demand exceeded the supply with 3,000 requests made for only 1,500 available permits – remedied through a random draw process.) This monthly rate is the highest of all major post-secondary educational institutions in Greater Vancouver, with the exception of some of the smaller satellite campuses provided in Downtown Vancouver, where prices can range from $125 to $200 at adjacent parking garages. However, these downtown campuses do not provide their own on-site parking, and their faculty, staff and students typically rely on use of private parking facilities, where parking prices are not controlled by the institution.

- The prices listed in **Figure 2.2.2** represent the maximum monthly prices charged by each institution. In other words, these prices are the highest price that would be paid by either a student, faculty or staff member for parking each month. Some of the higher prices identified in this figure not only reflect the market value of parking in a particular area (i.e. Downtown Toronto), but also the cost of the facility in question. For example, relatively new parkade facilities at York University and UBC result in higher parking price when compared against surface lots at other institutions.

- When only surface parking prices are compared, as in **Figure 2.2.3**, UBC's prices remain high – at $59.00 per month – relative to other institutions reviewed. York University in Toronto has the highest surface parking prices ($76 per month) of those reviewed. It is interesting to note that the next highest surface parking price of B.C. institutions is the University of Victoria, at $27.00 per month. The next highest price of Lower Mainland institutions is Simon Fraser University at $26.00 per month.

- When UBC's monthly parking prices are compared against other local government employers, as in **Table 2.2.2**, only the Greater Vancouver Regional District also charge their employees for parking at $55.20 per month. The actual cost of parking in the MetroTown area is $80 per month, but the GVRD currently provides a 31% subsidy to employees. All of the municipal halls reviewed do not impose parking charges on their employees. In some cases, labour agreements have served as a deterrent to pay parking policies for employees. In other cases, transportation demand management

Figure 2.2.1: *UBC Monthly Parking Prices*

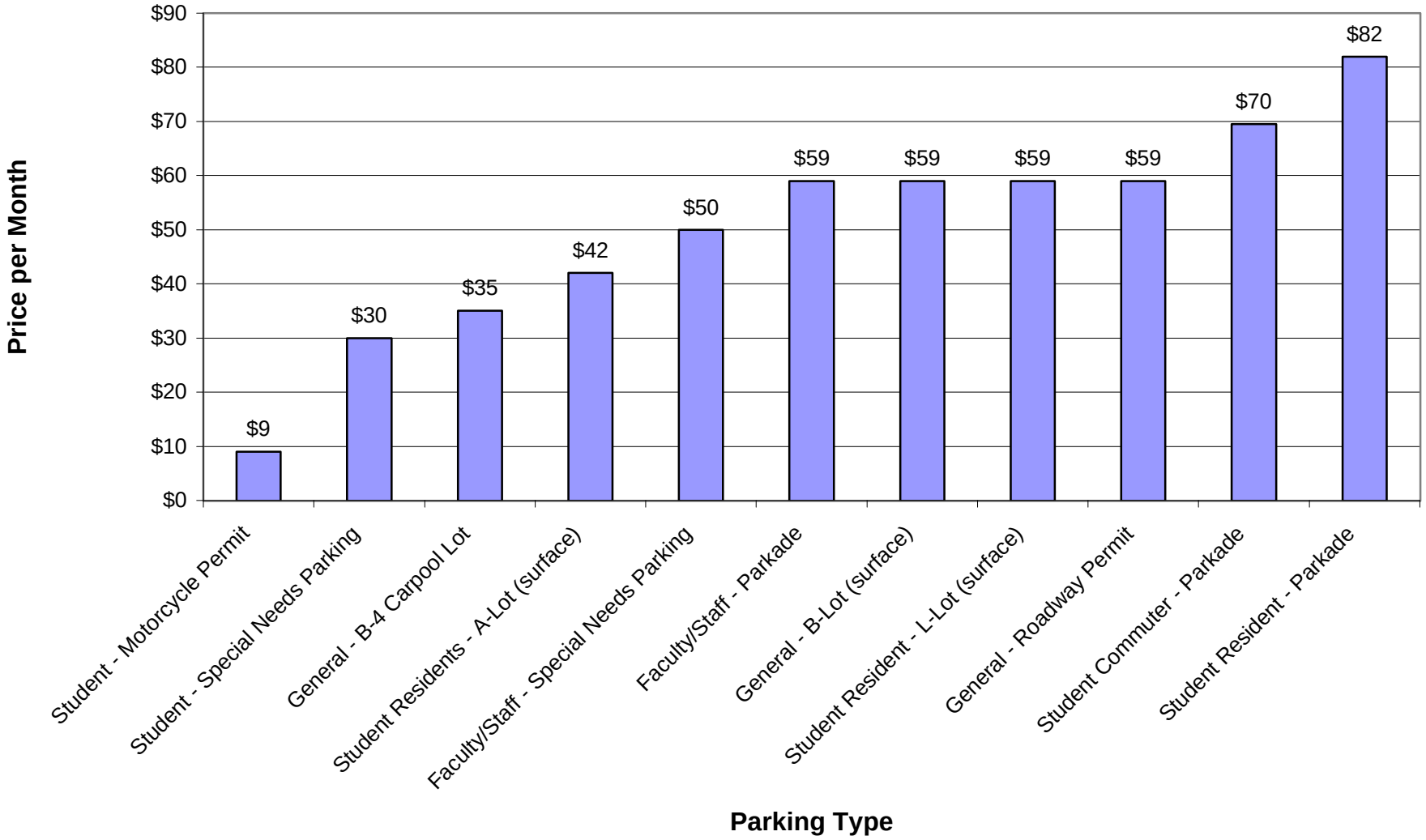
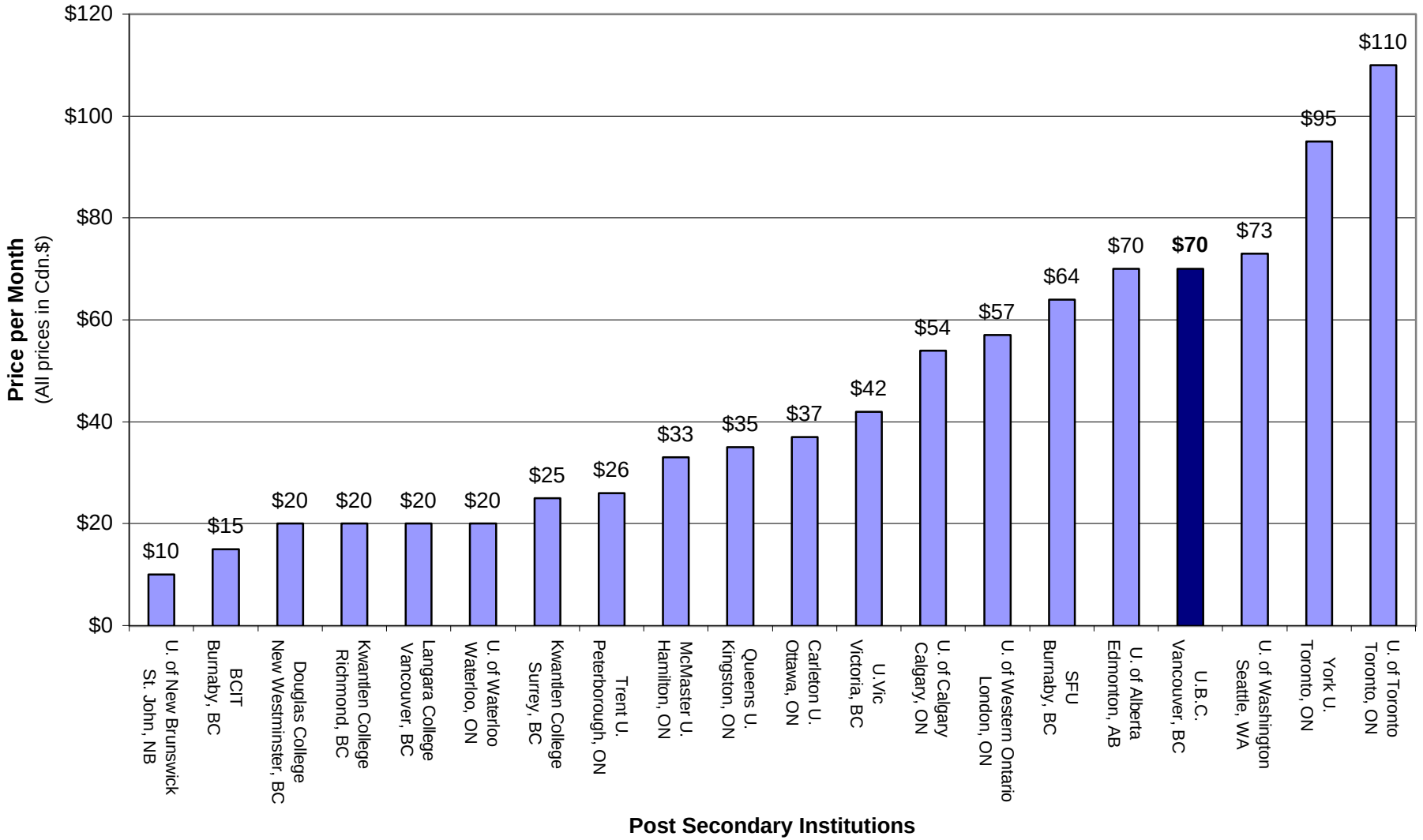


Figure 2.2.2: *Maximum Monthly Parking Prices -*
Post Secondary Educational Institutions



strategies have taken a backseat to labour relations in terms of priorities.

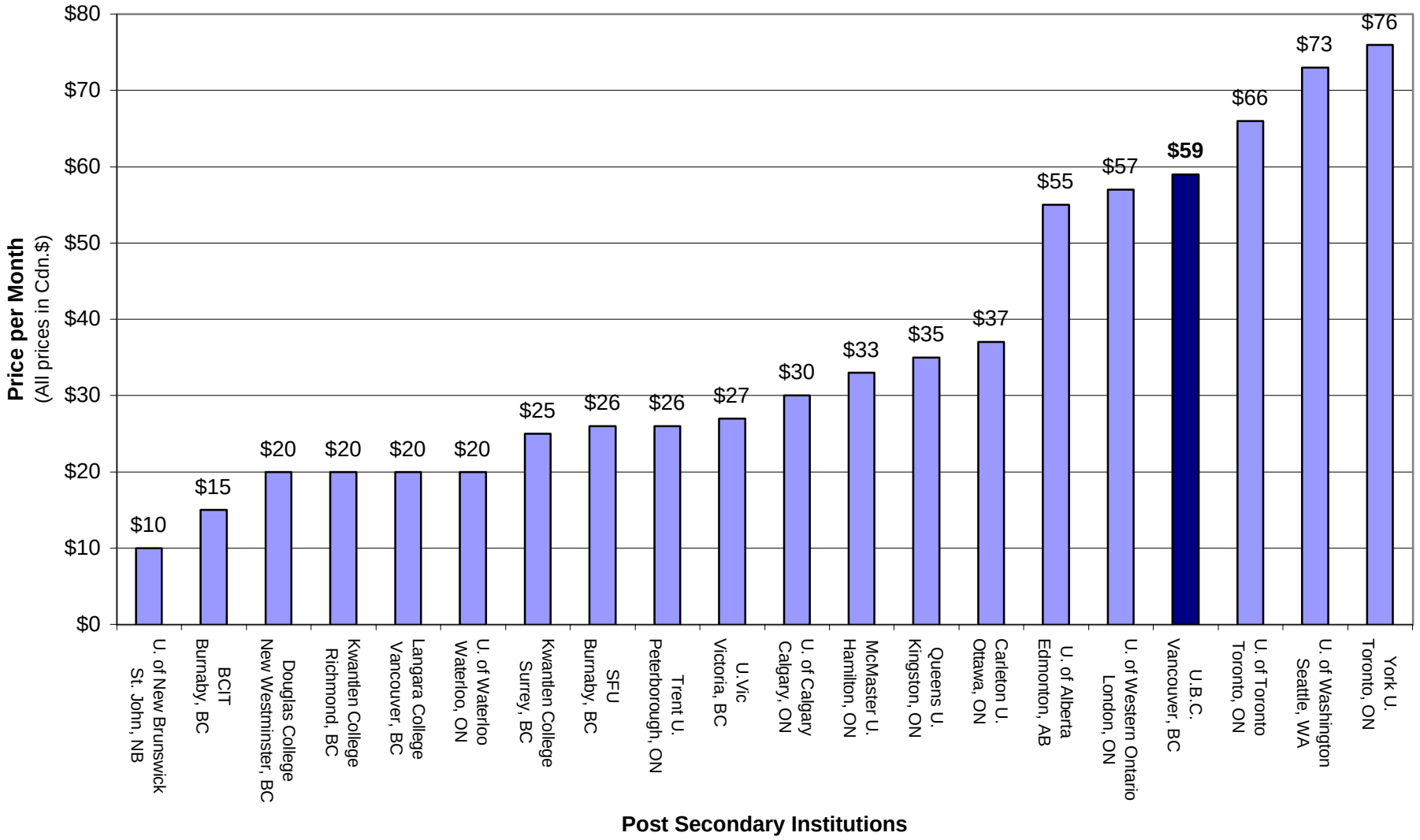
- **Figure 2.2.4** identifies monthly parking prices throughout the Lower Mainland at various activity and employment centres. UBC's parking prices can be categorized as low – at $59 per month for faculty and staff and $70 per month for some students – relative to many other major destinations in the Lower Mainland. In Downtown Vancouver, prices can range from $60 to $257 per month depending on where you park. At MetroTown, where a comparable parking supply is provided (see Figure 2.1.3), parking prices can be as high as $95 per month.

Table 2.2.2: Employee Parking Prices – Local Government Employers

Government Employment Site	Parking Price	Employer Parking Subsidy	Actual Price Paid by Employee
• **City of Burnaby** 4949 Canada Way, Burnaby	Free	None	Free
• **GVRD** Metrotown, Burnaby	$80.00 (per month)	$24.80 (31%)	$55.20 (per month)
• **City of New Westminster** 511 Royal Avenue, New Westminster	Free	None	Free
• **District of North Vancouver** 355 W. Queens Rd., North Vancouver	Free	None	Free
• **City of Richmond** 7577 Elmbridge Way, Richmond	Free	None	Free
• **City of Surrey** 14245 – 56th Avenue, Surrey	Free	None	Free
• **City of Vancouver** 453 W.12th Ave., Vancouver	Free	None	Free
• **U.B.C.**	$59.00 (per month)	None	$59.00 (per month)

- When parking prices at post-secondary educational institutions are compared on a per hour basis, as illustrated in **Figure 2.2.5**, UBC's hourly rates are the highest at $2.70 per hour. These prices typically represent hourly rates for parking at on-street meters and off-street,

Figure 2.2.3: *Monthly "Surface" Parking Prices -*
Post Secondary Educational Institutions



short-term parking facilities. The next highest hourly rates at Lower Mainland institutions are at Langara College, at $1.50 per hour.

- An examination of hourly parking prices for activity centres within the Lower Mainland, as illustrated in **Figure 2.2.6**, indicates that UBC's hourly rates are only surpassed by the Vancouver International Airport parkade ($4.00 per hour) and the most expensive parking zone in Downtown Vancouver ($3.00 per hour).

- **Figure 2.2.7** identifies the magnitude of fines dispensed for an expired parking meter at different institutions and jurisdictions in B.C. and across Canada. UBC's current parking fines can be characterized as average.

Figure 2.2.4: *Monthly Parking Prices -*
Lower Mainland Activity Centres

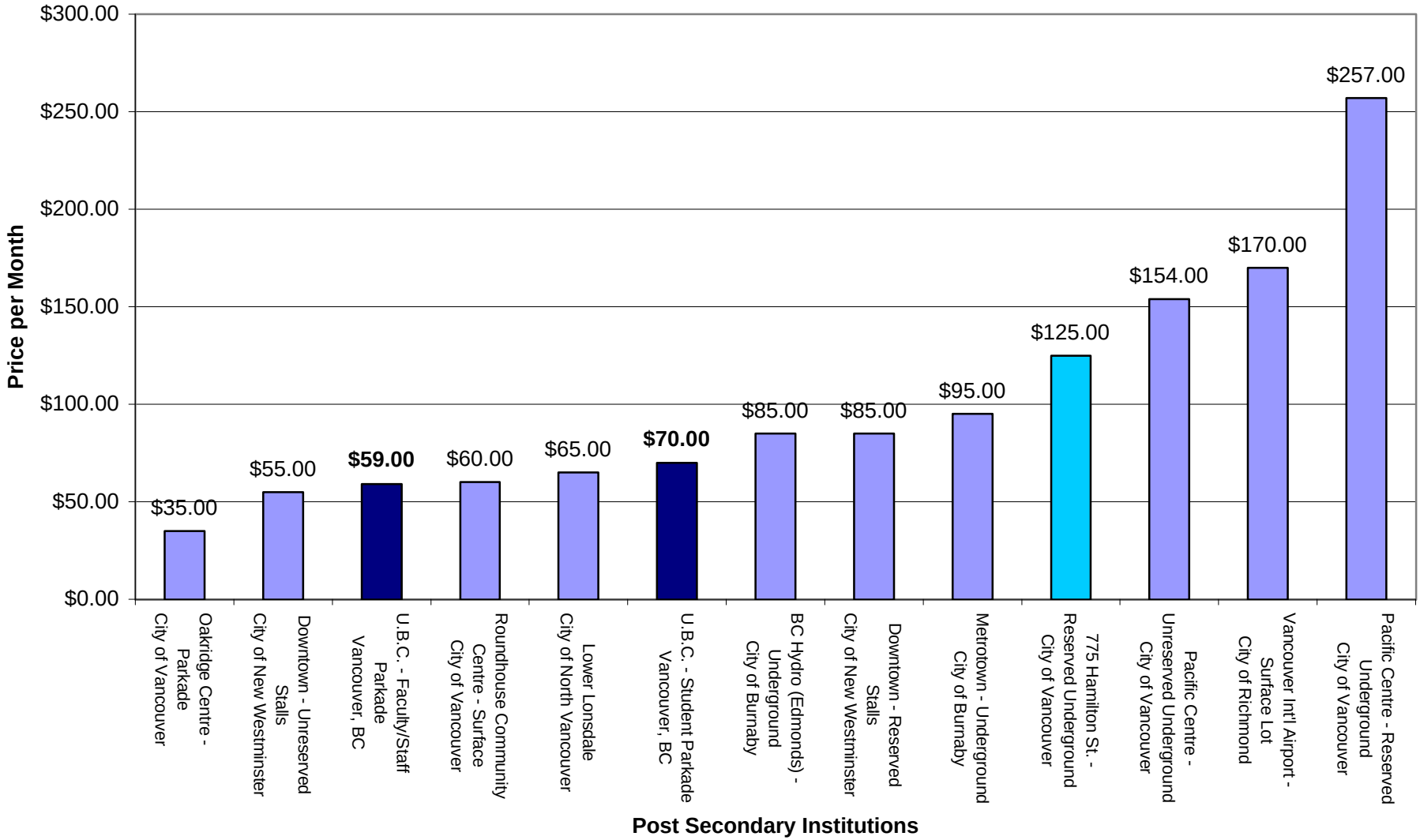


Figure 2.2.5: *Hourly Parking Prices -*
Post Secondary Educational Institutions

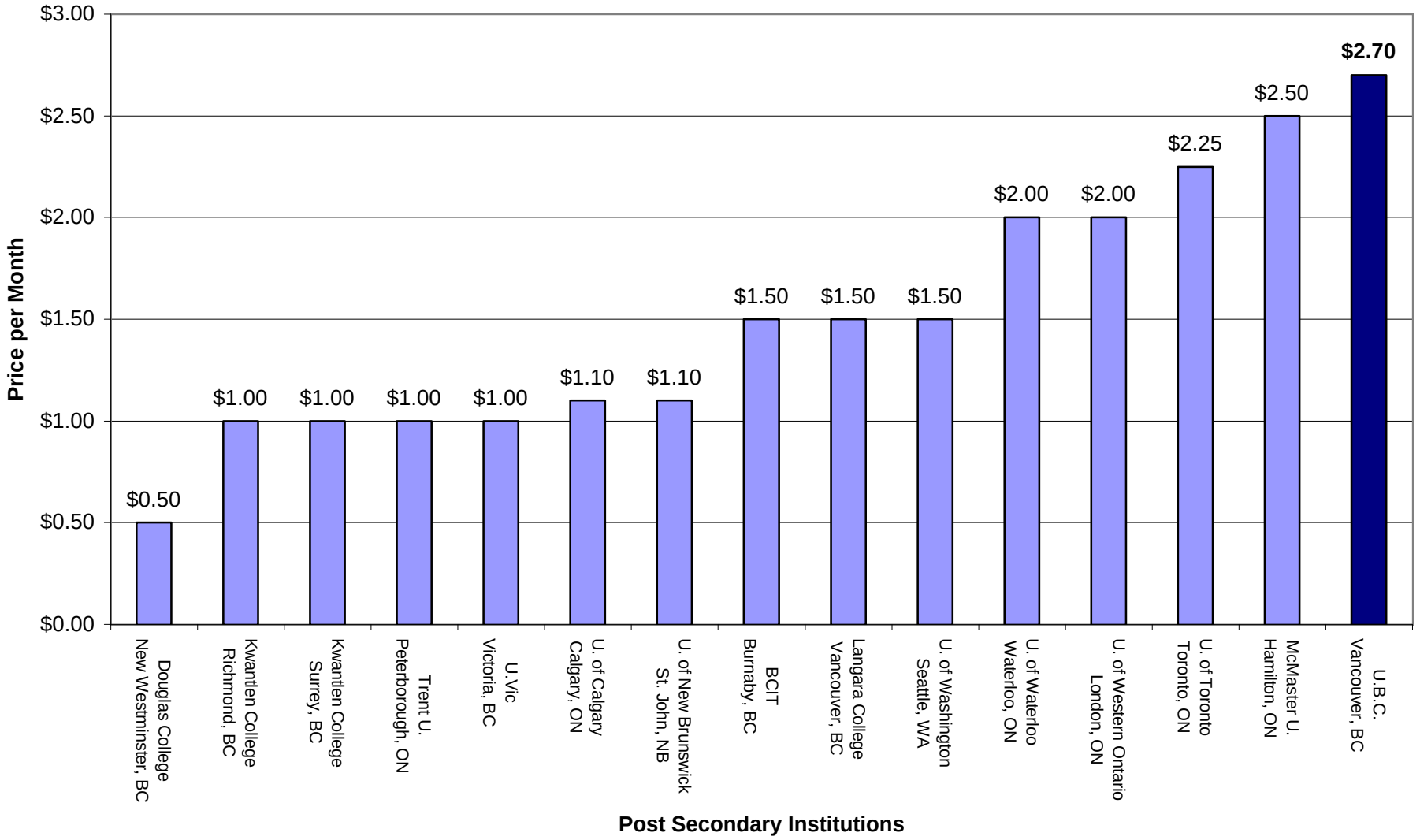


Figure 2.2.6: *Hourly Parking Prices -*
Lower Mainland Activity Centres

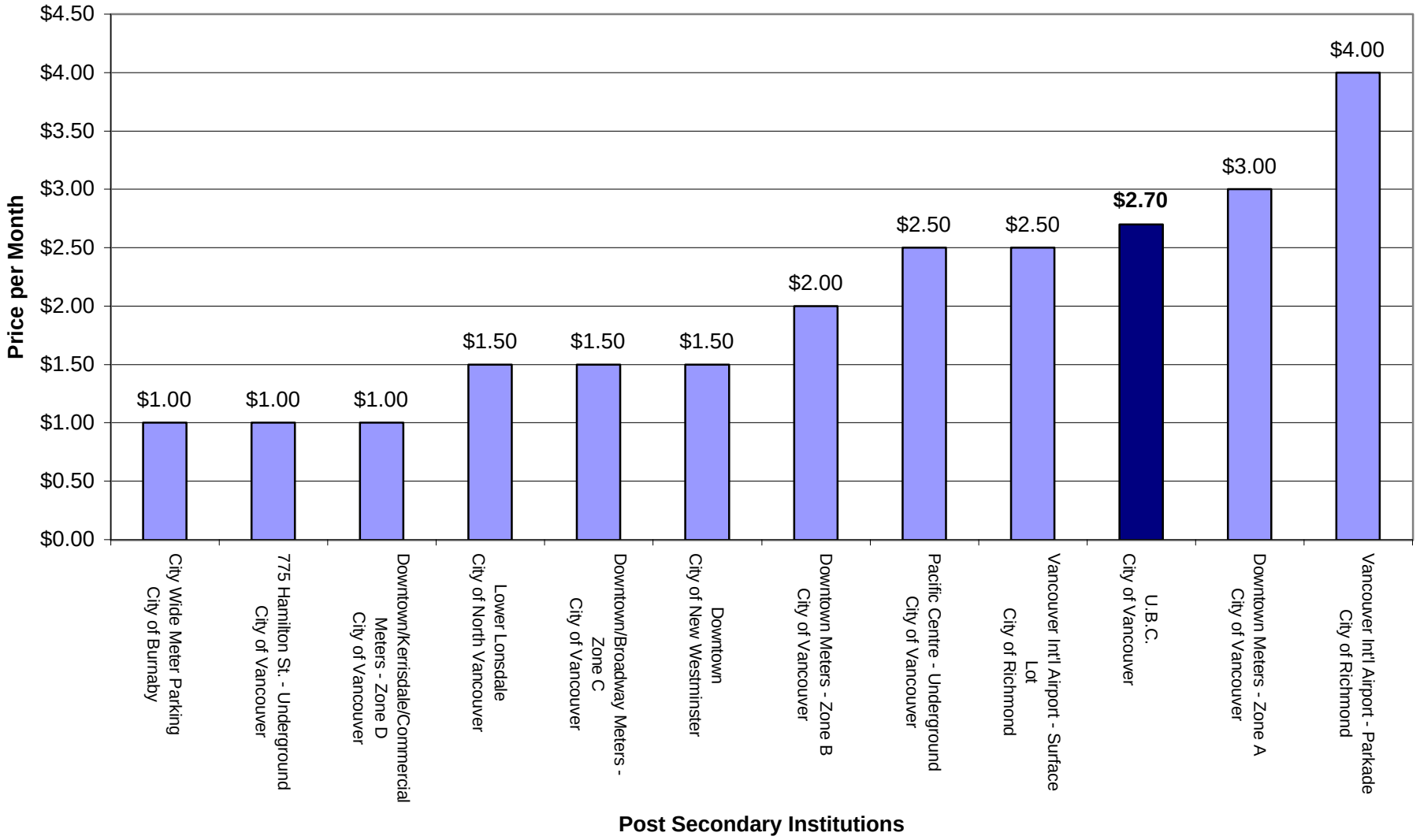
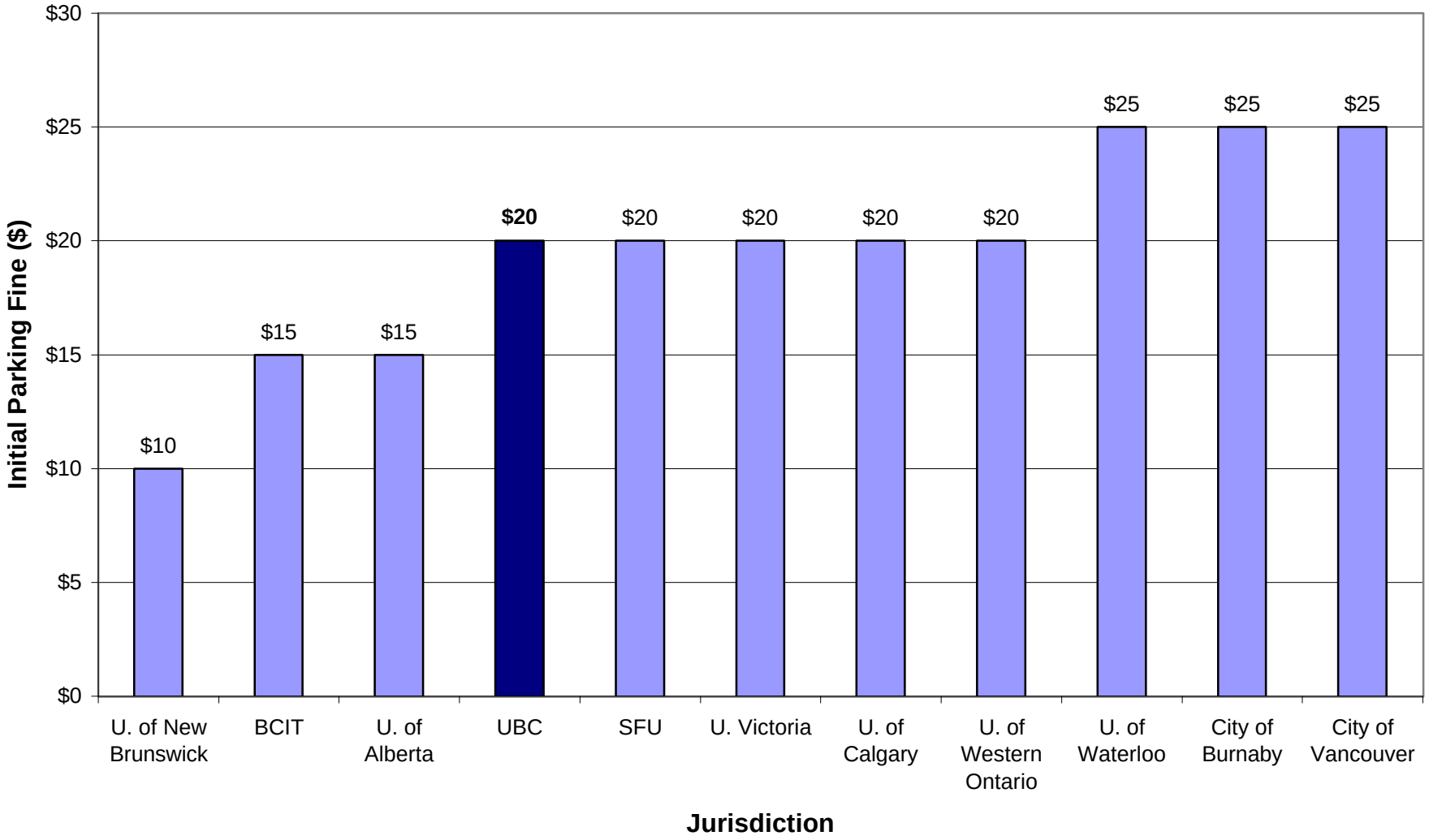


Figure 2.2.7: *Expired Parking Meter Fines*



3. Resident Parking

This section describes how residential parking – for both student and market housing on campus – is currently supplied and managed at UBC. Student housing – for both single students and students with families – is reviewed, as is market housing at Hampton Place. This section also includes the results of a number of residential parking surveys conducted for single-student residents, family-student residents and Hampton Place parking activity.

3.1 Parking Supply

Information regarding the supply of residential parking on campus is presented in a format that identifies individual housing developments and the associated parking facilities. **Table 3.1.1** identifies the number of parking stalls associated with each residence. Note that the Acadia Park and University Apartments developments – student and staff/faculty "family" housing – have been separated from the rest of the residences in the calculation of an overall ratio because of the family-oriented nature of this housing. Because it is not possible to determine how many sleeping units are actually being used by persons of driving age, the ratio is expressed in terms of parking stalls per dwelling unit, rather than beds, as for single-student housing.

Key observations regarding on-campus parking include:

- A total of 2,522 parking stalls are provided for 6,523 beds (i.e. sleeping units) for student housing managed by UBC. This is equivalent to an average ratio of 0.32 parking stalls per bed, or one parking space for every three beds. Because parking was overbuilt at Thunderbird Residence, in an effort to make full use of the building footprint, this figure is inflated. If the Thunderbird Residence was not included in the calculation of this ratio, a result of 0.25 parking stalls per bed, or one parking space for every four beds, would be realized.

- Existing parking ratios vary widely among individual UBC managed residences. Although the average ratio for residences is 0.32 stalls per bed, the parking ratio is as low as 0.16 stalls per bed for Totem Park / Ritsumeikan-UBC House – an undergraduate residence – and as high as 0.88 stalls per bed for the Thunderbird Residence – which is oriented more towards graduate students. This amounts to a difference of 5 times the amount of parking supplied.

- The ratio of 1.1 parking spaces per dwelling unit (1.25 including visitor parking) for the Acadia Park and University Apartments development is the highest ratio for student housing on campus. One parking space is provided for each dwelling unit as part of the rental agreement for these units. Tenants also have the choice to rent an additional space for a second car.

Table 3.1.1: UBC Student Housing Parking Inventory

Residence/ Housing	# of Beds	Associated Parking Facility	Number of Parking Stalls	Parking Stalls per Bed ratio
Gage Residence • 5% graduate • 95% undergrad	1,350	• G- Lot (surface and covered) • North Parkade **Total**	360 50 **410**	**0.30**
Totem Park / Ritsumeikan-UBC House • All undergrad	1,353	• T-Lot • West Parkade • L-Lot, A-Lot • On-street parking **Total**	62 25 115 20 **222**	**0.16**
Place Vanier • 50% graduate • 50% undergrad	938	• V-Lot • West Parkade • Fraser River Parkade • L-Lot, A-Lot • On-street parking **Total**	23 25 75 115 20 **258**	**0.28**
Thunderbird Residence • 50% graduate • 50% undergrad	633	• Underground **Total**	558 **558**	**0.88**
Fairview Cres. • 25% graduate • 75% undergrad	774	• Underground **Total**	174 **174**	**0.23**
Total	**5,048**		**1,622**	**0.32**
Acadia Park / University Apts. • 66% student family • 34% faculty/ staff and family	798 units 257-1 bed 449-2 bed 50- 3 bed 42- 4 bed	• Surface parking • Second car parking and visitor parking **Total**	800 200 **1000**	**1.25 per dwelling unit**

- Staff who work at the Acadia Park and University Apartments residences (i.e. administrative, janitorial, housekeeping, etc.) can purchase a permit to park in the James Mather Medical Clinic lot. This faculty/staff lot has 55 stalls, and serves clinic staff, as well as residence staff. It is administered by UBC Parking, Transportation and Security services. Other parking lots that are not intended for use by residence staff, but are used on a consistent basis by staff because of limited or non-existent enforcement at these sites, include:

    - *University Hill Secondary School lot* – although this lot is intended to serve parking associated with the school, UBC Housing & Conferences personnel report that residence staff often park in this lot because it is free and not monitored
    - *Child Care Facility lot* – this lot is rarely monitored by UBC Parking, Transportation and Security services because of its remote location.

Student housing that is not managed by UBC is located within the theological colleges situated in the northwest end of campus. These residences include the Vancouver School of Theology, Carey Hall, and St. Andrew's Hall. **Table 3.1.2** includes a summary of these residences and associated surface parking facilities.

Key findings on the parking supply of the theological colleges include the following:

- A total of 192 parking stalls are provided for 417 sleeping units or beds for student housing associated with the theological colleges. This is equivalent to an average ratio of 0.46 parking stalls per sleeping unit, or one parking space for every 2.2 beds. This average ratio is significantly higher than ratios for UBC managed student housing.

- Existing parking ratios vary widely among the three theological college residences. Parking ratios for these residences range from 0.30 stalls per bed (Vancouver School of Theology) to 1.0 stalls per bed (Carey Hall).

Discussions with theological college administration revealed that not all of the residential parking stalls are rented by tenants. If any surplus parking stalls remain at the beginning of a term, these stalls are rented out non-tenants (primarily commuters who travel to UBC on a daily basis).

Table 3.1.2: Theological College Housing Parking Inventory

Residence/ Housing	# of Beds	Associated Parking Facility	Number of Parking Stalls	Parking Stalls per Bed ratio
Vancouver School of Theology • Single students • Families	173	• Surface lot **Total**	52 **52**	**0.30**
Carey Hall • Single students	40	• Surface lot **Total**	40 **40**	**1.0**
St. Andrews Hall • Singles • Couples • Families	204	• Surface lot **Total**	100 **100**	**0.49**
Total	417		**192**	**0.46**

Table 3.1.3 provides a summary of the parking supply characteristics for market housing that has been developed on campus. All of the market housing built to date on UBC lands is contained within the Hampton Place site, located at the northeast corner of 16th Avenue and Wesbrook Mall.

Table 3.1.3: UBC Market Housing Parking Inventory

Strata Number and Name	# of Units	Number of Units	Number of Parking Stalls	Parking Stalls per Unit ratio*
1. Sandringham	32	• 9 - 2 bed • 23 - 3 bed **Total**	20 57 **77**	2.0 + 0.25 = 2.25 2.2 + 0.25 = 2.45
2. West Hampstead	73	• 73 - 2 bed **Total**	164 **164**	2.0 + 0.25 = 2.25
3. Thames Court	87	• 1 - 1 bed • 49 - 2 bed • 37 - 3 bed **Total**	2 110 91 **203**	1.8 + 0.25 = 2.05 2.0 + 0.25 = 2.25 2.2 + 0.25 = 2.45
4. St. James House	142	• 50 - 1 bed • 92 - 2 bed **Total**	73 170 **243**	1.2 + 0.25 = 1.45 1.6 + 0.25 = 1.85
5. The Chatham	97	• 20 - 1 bed • 72 - 2 bed • 5 - 3 bed **Total**	41 162 12 **215**	1.8 + 0.25 = 2.05 2.0 + 0.25 = 2.25 2.2 + 0.25 = 2.45
6. The Bristol	131	• 21 - 1 bed • 112 - 2 bed **Total**	40 212 **252**	1.6 + 0.29 = 1.89 1.6 + 0.29 = 1.89
7. (1) The Stratford	*Not Completed*			
7. (2) Wyndham Hall	54	• 5 - 1 bed • 49 - 2 bed **Total**	10 110 **120**	1.8 + 0.25 = 2.05 2.0 + 0.25 = 2.25
8. The Regency	*Not Completed*			
9. The Balmoral	85	• 81 - 2 bed • 4 - 3 bed **Total**	182 10 **192**	2.0 + 0.25 = 2.25 2.2 + 0.25 = 2.45
10. The Pemberley	72	• 36 - 1 bed • 36 - 2 bed **Total**	74 81 **155**	1.8 + 0.25 = 2.05 2.0 + 0.25 = 2.25
Total	**773**		**1,621**	**Average = 2.1**

* *Note:* The indicated parking ratio includes the sum of the number of required parking stalls per dwelling unit, plus the number of visitors stalls required per dwelling unit.

Key features of **Table 3.1.3** include:

- A total of 1,621 parking stalls have been provided for 773 dwelling units. The resulting average parking ratio of 2.1 stalls per dwelling unit is 168% of the average for student housing.

- The parking ratios for the individual strata developments within the Hampton Place lands are relatively consistent, with minor variations

for different dwelling types, unlike those observed for individual student housing developments.

3.2 Parking Pricing

Table 3.2.1 provides a summary of parking rates for students, families, and faculty and staff who live in UBC housing. Key observations regarding parking pricing include:

- For all non-family student housing, the cost for parking is separated from the regular rental charge for accommodations. Thus, tenants have the option of paying the additional cost to rent a parking space.

- For the Acadia Park and University Apartments, a parking space is automatically included in the rental agreement, with the overall cost of parking included in the regular monthly housing rental fee.

- The cost of parking for residents at off-site facilities, such as parkades, is much higher than the cost of parking facilities on-site, such as underground or adjacent surface spaces.

- Discussions with UBC Housing and Conference staff revealed that some student residents from both single student and family student residences are subletting their parking stalls to other students, typically for a profit. Even though many of these student residents may not own a motor vehicle, they are still obtaining a parking permit for the sole purpose of renting it out to a student with a motor vehicle, whether they are a commuting student or an on-campus resident with a car.

Table 3.2.1: UBC Student Housing Parking Prices

Residence/ Housing	Associated Parking Facility	Proximity	Cost	
			Per month	Per eight month term
Gage Residence	• G- Lot (surface) • G-Lot (covered) • North Parkade	On-site On-site 50m	$32 $42 n/a	$256 $336 $657*
Totem Park / Ritsumeikan-UBC House	• T-Lot • West Parkade • L-Lot, A-Lot • On-street parking	On-site 250-350m 150-400m 50m+	$32 n/a n/a n/a	$256 $657* $456* $456*
Place Vanier	• V-Lot • West Parkade • Fraser River Parkade • L-Lot, A-Lot • On-street parking	On-site 140-350m 50m-230m 100-270m 640m+	$32 n/a n/a n/a n/a	$256 $657* $657* $456* $456*
Thunderbird Residence	• Underground • On-street parking	On-site 60m+	$42 n/a	n/a $456*
Fairview Cres.	• Underground • Motorcycles • On-street parking	On-site On-site 75m+	$42 $22 n/a	$336 $176 $456*
Acadia Park / University Apts.	• Surface parking • Second car parking	• On-site	• Included in basic monthly rent • $25/month for second car	

- *Note*: Prices include G.S.T. and P.S.T. Sales taxes are not applicable for all other prices.

3.3 Parking Policies and Practices

An overview of UBC's current residential parking policies and practices is provided in this section. These policies and practices govern how parking is currently administered and supplied for residential properties on campus.

3.3.1 Administration of Residential Parking

Residential parking at UBC is primarily administered by UBC Housing and Conferences, and UBC Parking, Security and Transportation Services as indicated below in **Table 3.3.1**. Some key points regarding the administration of residential parking facilities includes:

- UBC Housing and Conferences typically administers parking that is located adjacent to or within the housing development it services.

- UBC Parking, Security and Transportation Services administers all non-housing parking facilities such as parkades, surface lots and on-street spaces.

- The parkades and surface lots administered by UBC Parking, Security and Transportation Services function primarily as shared-use facilities that accommodate student residents, commuters and visitors.

- Enforcement of UBC Housing and Conferences parking facilities is monitored internally and carried out by Drake Towing.

- Surface lots associated with the three theological college residences on campus – Vancouver School of Theology, St. Andrews Hall and Carey Hall – are self-administered by the respective colleges. Enforcement is also handled internally, although discussions with theology college staff reveal that occurrences of parking infractions are infrequent.

- UBC Parking, Security and Transportation Services enforces its own facilities, as well as all fire lanes and roadways around and within individual housing developments.

Table 3.3.1: Departmental Roles in Parking Administration

Department	Parking Facilities	Associated Housing
Housing and Conferences	• G-Lot (surface and covered) • T-Lot • V-Lot (surface) • Underground • Underground • Surface	• Gage • Totem Park/ Ritsumeikan • Place Vanier • Thunderbird • Fairview • Acadia/University Apts.
Parking , Security and Transportation Services	• North Parkade • West Parkade • Fraser River Parkade • A- Lot & L-Lot • On-street parking	• Gage • Totem Park & Place Vanier • Place Vanier • Totem Park & Place Vanier • All except Acadia/ University Apts.
Self-Administered	• Surface lots adjacent to theology colleges	• Vancouver School of Theology • St. Andrews Hall • Carey Hall

3.3.2 Residential Parking Regulations

Provided in **Table 3.3.2** are the parking regulations applied to the recent Hampton Place market housing development on campus. These regulations mirror the ratios provided in **Table 3.1.3**. A comprehensive set of parking requirements that applies to individual residential developments on campus does not exist at this time. The parking ratios calculated in Table 2.1 serve as the only information available at present to provide an indication of the relationship between parking and housing for past residential developments.

Table 3.3.2: Hampton Place Zoning Regulations - Parking

Strata Number and Name	Dwelling Type	Parking Stalls per Dwelling Unit		
		Basic Requirement	Visitor Parking Allowance	Total Requirement
1. Sandringham	• 2 bed • 3 bed	2.0 2.2	0.25	2.25 2.45
2. West Hampstead	• 2 bed	2.0	0.25	2.25
3. Thames Court **5. The Chatham**	• 1 bed • 2 bed • 3 bed	1.8 2.0 2.2	0.25	2.05 2.25 2.45
4. St. James House	• 1 bed • 2 bed	1.2 1.6	0.25	1.45 1.85
6. The Bristol	• 1 & 2 bed	1.6	0.29	1.89
7. (1) The Stratford* **(2) Wyndham Hall**	• 1 bed • 2 bed	1.8 2.0	0.25	2.05 2.25
8. The Regency* **10. The Pemberley**	• 1 bed • 2 bed	1.8 2.0	0.25	2.05 2.25
9. The Balmoral	• 2 bed • 3 bed	2.0 2.2	0.25	2.25 2.45
10. The Pemberley	• 1 bed • 2 bed	1.8 2.0	0.25	2.05 2.25

** Note: No building permit issued to date*

Table 3.3.3 provides a comparison of the parking requirements applied to Hampton Place with requirements for similar developments in the City of Vancouver. The total number of spaces that would be provided for Hampton Place under requirements for two City of Vancouver neighbourhoods – Kerrisdale (RM-3) and Kitsilano (RM-4) – are provided in this table. Note that if Vancouver's parking requirements for comparable housing was applied to Hampton Place, 271 to 337 less spaces would be required.

Table 3.3.3: Hampton Place Parking Requirements vs. City of Vancouver Parking Requirements

Strata Number and Name	Dwelling Type	Required Parking Ratios *(including visitor parking)*			Total Number of Parking Stalls Required*		
		Hampton Place	City of Vancouver		Hampton Place	City of Vancouver	
			RM-3 (Kerrisdale)	RM-4 (Kitsilano)		RM-3	RM-4
1. Sandringham	• 2 bed • 3 bed	2.25 2.45	1 stall per 70 sq.m. GFA, with no more than 2.2 stalls provided per DU	1.1 stall per DU plus 1 stall per 200 sq.m. GFA, with no more than 2.2 stalls provided per DU	77		
2. West Hampstead	• 2 bed	2.25			164		
3. Thames Court 5. The Chatham	• 1 bed • 2 bed • 3 bed	2.05 2.25 2.45			418		
4. St. James House	• 1 bed • 2 bed	1.45 1.85			243		
6. The Bristol	• 1 & 2 bed	1.89			252		
7. (1) The Stratford (2) Wyndham Hall	• 1 bed • 2 bed	2.05 2.25			242		
9. The Balmoral	• 2 bed • 3 bed	2.25 2.45			192		
8. The Regency 10. The Pemberley	• 1 bed • 2 bed	2.05 2.25			355		
				Total Parking Stalls	**1,943**	**1,672**	**1,606**
				Average No. Stalls per Unit	**2.1**	**1.8**	**1.7**

* Note: Calculations based on a total of 928 units for Hampton Place, and a total gross billable area of 117,065 square meters.

3.4 Single-Student Resident Parking Survey

This section provides an overview of the methodology and results behind the parking survey of single-student residents at UBC. The main objective of this survey is to determine existing and future parking needs – for both the automobile and the bicycle – of residents of single-student housing on campus. Additionally, the survey results provide some insight into the travel characteristics of tenants.

3.4.1 Methodology

During the week of November 23rd, 1998, questionnaires were delivered to each residence in the the following student housing complexes:

- Gage
- Place Vanier
- Totem Park/Ritsumeikan

- Thunderbird
- Fairview

A total of 5,043 questionnaires were distributed. A copy of the questionnaire is provided in **Appendix C** at the end of this report. Residents were asked to return the questionnaire by December 4th, 1998. Three options for return of the questionnaire were made available to residents. As an incentive to encourage the return of questionnaires, residents were informed that their names would be entered in a draw for a number of prizes from the UBC Bike Co-Op.

A total of 551 parking questionnaires were returned out of a possible 5,043 questionnaires distributed, equivalent to a rate of return of 11%. Although the number of questionnaires returned was much less than anticipated, this figure represents an average result for a survey of this type.

3.4.2 Results

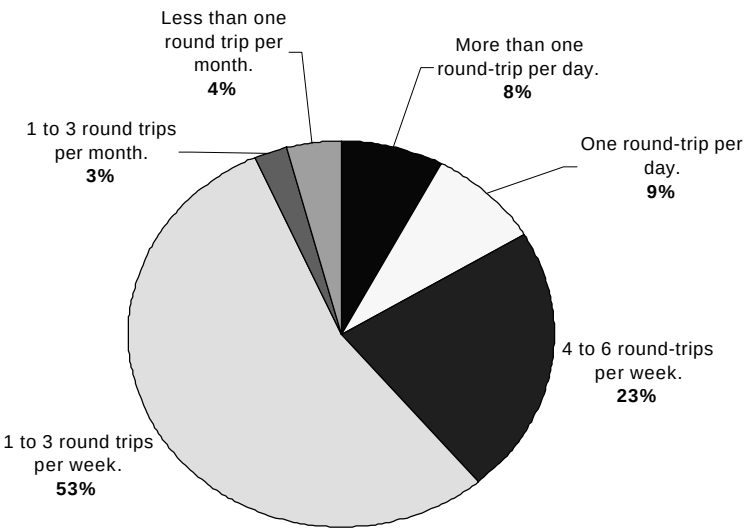
This section provides a summary of the results tabulated from returned parking questionnaires, with only the key findings presented. A complete analysis of the questionnaire is included in **Appendix C**, including a summary of comments provided by respondents.

The key findings of the parking survey are as follows:

Automobile Ownership, Parking and Usage

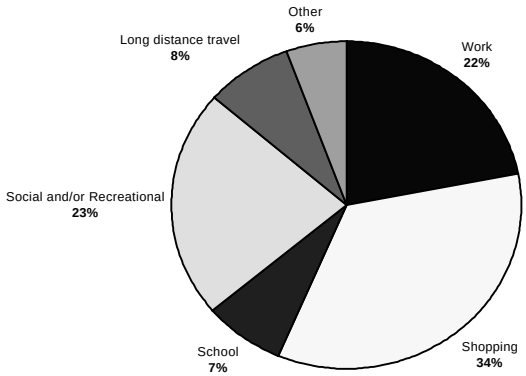
- 42% of surveyed respondents currently have access to an automobile on campus – 36% of respondents owning a vehicle and an additional 6% of respondents borrowing a friend's vehicle.
- A total of 197 cars were owned by the 547 responding tenants, which is equivalent to an average ratio of 0.36 cars per surveyed tenant.
- 81% of respondents who own a motor vehicle on campus park their vehicle at underground or surface parking associated with student housing. These facilities include V-lot, T-lot, G-lot, Thunderbird Parkade and the Fairview Crescent underground lot.
- 17% of respondents indicated that they use their vehicle for at least one round-trip per day. 94% of respondents indicated that they use their vehicle for at least one round- trip per week. **Figure 3.4.1** provides a detailed illustration of the frequency of vehicle use.

Figure 3.4.1: Frequency of Vehicle Use



- 34% of surveyed automobile owners identified 'shopping' as the primary use for their automobile. 'Work' and 'social and/or recreation' trips ranked second as primary uses, both identified by 23% of surveyed automobile owners, as illustrated below in **Figure 3.4.2**.

Figure 3.4.2: Primary Use of Automobile



- 36% of surveyed automobile owners identified 'social and/or recreational' trips as the secondary use of their vehicle. 'Shopping'

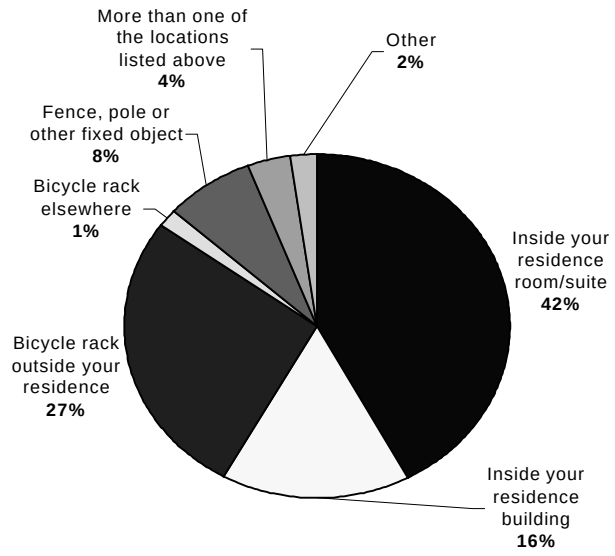
was identified by 29% of surveyed automobile owners, while 'long-distance travel' ranked third as a secondary use.

- Of the automobile owners making at least one round-trip per day, 50% of respondents identified 'work' as their primary trip purpose.
- When surveyed automobile owners were asked if they would give up use of their automobile if transit services where more frequent and less expensive, only 19% of respondents indicated that they would give up their automobile in favour of transit.
- Comments by respondents indicate that they have chosen to own a car because it is a more convenient form of transportation for travelling to work off-campus or taking long trips.
- Other parking issues frequently identified in respondents' comments include:
  - Security in underground parking facilities needs to be improved.
  - More visitor parking is needed at residences, particularly at Gage.
  - Parking fees are too expensive.

Bicycle Ownership, Parking and Usage

- 50% of surveyed respondents currently have access to a bicycle on campus – 45% of respondents owning a bicycle and an additional 5% of respondents borrowing a friend's bicycle.
- For those respondents that do not have access to an automobile, 53% of these individuals have access to a bicycle.
- When surveyed bicycle owners were asked where they primarily park their bicycle when at their residence, 42% of respondents indicated that they parked their bicycle inside their residence room or suite. **Figure 3.4.3** illustrates the proportion of responses for this question.

Figure 3.4.3: Bicycle Parking Locations



- Comments by respondents indicate that theft of bicycles and bicycle components (i.e. seats, wheels, pedals, etc.) from bicycle racks located outside residence buildings and in underground parking facilities is a significant concern. Respondents also indicated that more secure bicycle racks are needed to accommodate demand, and covered bicycle parking facilities are preferred by students, as they shelter the bicycles from the elements. The potential for theft, inadequate numbers of bicycle racks and a lack of weather protection appear to be the primary influences behind students storing their bicycles inside their rooms and suites.

- 31% of surveyed bicycle owners use their bicycle for at least one round-trip per day, while 65% of surveyed bicycle owners use their bicycle for at least one round-trip per week.

- When asked to indicate the primary use of their bicycle, 43% of respondents identified 'school' trips (i.e. travelling to and from classes on campus), while 28% of respondents identified 'recreational cycling' trips.

- Of the respondents who make at least one round-trip bicycle trip per day, almost 80% of them identified 'school' trips as their primary use.

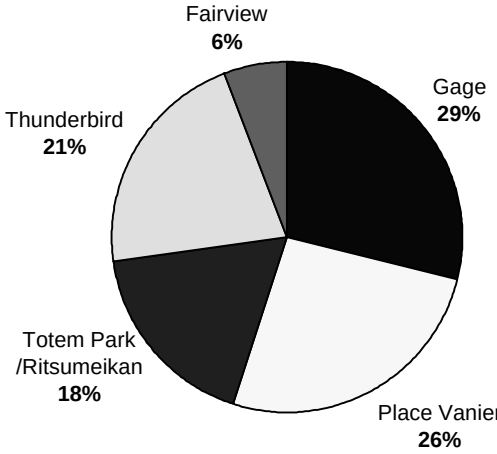
- Students were also asked if they were aware of the AMS Bike Co-Op, Bike Shop and/or Public Bike Program. Only 18% of

respondents indicated that they were aware of these programs and facilities. The questionnaire also included a brief advertisement for the Bike Co-Op and Repair Shop, which was well received by many respondents as indicated by their comments.

Other Characteristics

- **Figure 3.4.4** identifies the proportion of completed questionnaires received from each residence.

Figure 3.4.4: Returned Questionnaires by Residence



3.5 Family-Student Resident Parking Survey

This section provides an overview of the Parking Survey methodology and results. The main objective of the Parking Survey was to determine parking usage by residents in the Acadia Park and University Apartments developments. Additionally, the survey provided some insight into the travel characteristics of tenants.

3.5.1 Methodology

On May 19, 1998, questionnaires were delivered to each residence in the Acadia Park and University Apartments complexes. A total of 900 questionnaires were distributed. A copy of the questionnaire is provided in **Appendix D** at the end of this report. Residents were asked to return the questionnaire by May 25th. Three options for return of the

questionnaire were made available to residents. As an incentive to encourage the return of questionnaires, residents were informed that their names would be entered in a draw for a choice of one of three prizes valued at $50.

A total of 214 parking questionnaires were returned out of a possible 900 questionnaires distributed, equivalent to a rate of return of 24%. This represents a good result for a survey of this type.

3.5.2 Results

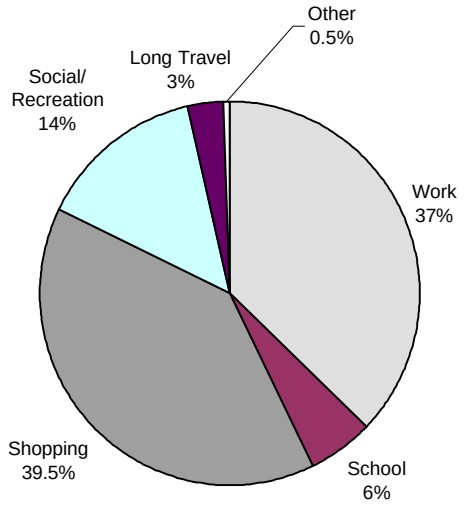
This section provides a summary of the results tabulated from returned parking questionnaires, with only the key findings presented. A complete analysis of the questionnaire is included in **Appendix D**.

The key findings of the survey are as follows:

Vehicle Ownership and Usage

- Over 90% of households surveyed had at least one motor vehicle.
- A total of 214 cars were owned by the 214 responding households, which is equivalent to an average ratio of 1 car per household.
- There is an average of 0.33 cars per tenant in Acadia Park and University Apartments.
- 40% of respondents indicated that the primary use of their motor vehicle was "shopping", as illustrated in **Figure 3.5.1**. "Work" was the second most frequently identified use at 37%.
- Over 56% of households with a motor vehicle identified discretionary uses – such as shopping, recreation/social trips and long trips – as their primary uses. Commuter uses – such as work and school trips – were only identified as primary uses by only 43% of households.

Figure 3.5.1: Primary Use of Motor Vehicle



- The majority of households (78%) indicated that they would not reduce the number of vehicles in their household if they were offered a reduced price transit pass. Of these respondents, 5% took some time to explain that the present transit system is not a reasonable alternative for them. Another 4% of these respondents indicated that they only had one car, and could not realistically give up that car.

- Of the 42 households (20% of respondents) that indicated they would reduce car ownership, 60% of these households said that they would keep at least one car, but reduce their use of this car and increase their use of transit.

Parking Spaces and Usage

- 98% of surveyed households had use of at least one assigned parking space.

- For surveyed households, a ratio of 1.04 parking spaces per household were provided, on average.

- Of those surveyed households that were assigned a parking space, 95% actually used the space for their vehicle or vehicles.

- Approximately 3% of households indicated that they use their assigned space for visitors – such as friends or relatives. One respondent revealed that they have permission to use their neighbour's unused space for their second car.

- Four respondents (2% of all surveyed households) indicated that more visitor parking was necessary, even though no question was provided on this issue. This comment may have been voiced due to high prices for visitor parking or the fact that some visitor parking is abused by residents.

Other Characteristics

- On average, there are 3 persons per household in the Acadia Park / University Apartments area.

- In 83% of surveyed households, there are at least one bicycle.

- Respondents identified a total of almost 400 bicycles in surveyed households, which is equivalent to almost 2 bicycles per household. within households with bicycles, average bicycle ownership is 2.2 bikes per household.

- Of the 22 households that did not own a motor vehicle, 60% had the use of at least one bicycle.

- Two respondents suggested that a car rental system would be a useful alternative for on-campus residents, even though the survey did not include any questions on this issue.

3.6 Hampton Place Parking Supply – Trip Generation Study

In an effort to determine whether there is a relationship between residential parking supply and residential vehicle trip generation at UBC's Hampton Place residential development, a survey of trip generation activity was undertaken in early December 1998. Unfortunately, a literature review did not identify any similar studies in North America for residential developments. However, the trip generation rates collected from Hampton Place can be viewed against rates for multi-family residential dwellings in the trip generation

manuals published by the Institute of Transportation Engineers (ITE) and the Ministry of Transportation and Highways (MoTH).

3.6.1 Methodology

During the week of December 14, 1998, a survey of trips to and from six Hampton Place housing complex parking lots was undertaken. These six housing complexes, listed in **Table 3.6.1**, were selected because they represent the widest range of parking supply rates, from 1.71 stalls per unit at St. James House to 2.41 stalls per unit at The Sandringham.

Table 3.6.1: Hampton Place trip generation study sites

	Number of Dwelling Units	Number of Parking Stalls	Parking Ratio (stalls/du)
St. James House	142	243	1.71
The Sandringham	32	77	2.41
The Balmoral	85	192	2.26
The Stratford	58	129	2.22
West Hampstead	73	164	2.25
The Bristol	133	252	1.89

Studies were undertaken for a total of six hours – three hours during the AM peak period (7am to 10am), and three hours during the PM peak period (3pm to 6pm). Surveyors counted the number of cars entering and leaving individual parking lots at 15-minute intervals throughout both peak periods.

3.6.2 Results

Trip Generation

A detailed summary of the trip generation studies is provided in **Appendix E**, with the key results of the study identified below in **Table 3.6.2**. An examination of how these Hampton Place trip generation rates compare to ITE and MoTH rates is provided in **Figures 3.6.1** and **3.6.2.**

Table 3.6.2: Trip generation study data

Housing Site	Number of Dwelling Units	Peak Hour Total Trips		Peak Hour Trip Generation (trips/du)	
		AM	PM	AM	PM
St. James House	142	44	33	0.31	0.23
The Sandringham	32	16	16	0.50	0.50
The Balmoral	85	28	25	0.33	0.29
The Stratford	58	20	24	0.34	0.41
West Hampstead	73	24	32	0.33	0.44
The Bristol	133	44	38	0.33	0.29
Total	523	176	168		

In **Figure 3.6.1**, the AM peak hour trip generation rates for the six surveyed Hampton Place sites were plotted against fitted-curve regression plots for both the ITE and MoTH trip generation equations for townhouse/condominium land uses. The lower alignment and slope of the Hampton Place trip generation curve relative to the ITE and MoTH curves indicate that the surveyed Hampton Place sites generate less trips per dwelling unit than would be expected for typical townhouse/condominium land uses. In general, the Hampton Place trip generation rates for the AM peak hour were approximately 34% lower than would be expected with ITE or MoTH rates for comparable developments.

Note that the R-squared value for the AM peak hour trip generation curve is 0.98. Generally, an R-squared value between 0.75 and 1.0 indicates a "good fit" for a regression curve, and a strong relationship between the total number of dwelling units and the resulting trips generated by a site. A value between 0.50 and 0.75 indicates a weaker relationship between the number of dwelling units and the number of trips generated. ITE does not document a trip generation regression curve if the R-squared value does not exceed 0.50, indicating a weak relationship between dwelling units and trips generated.

Figure 3.6.2 compares the PM peak hour trip generation rates for surveyed Hampton Place sites with those documented by ITE and MoTH. This figure illustrates that a significantly lower rate of trips are generated by surveyed Hampton Place sites than expected by ITE and MoTH trip generation curves. For example, 110 multi-family units at Hampton Place may only produce 32 trips in the PM peak hour, while ITE and MoTH rates would forecast almost 70 trips for the same number of units. Note, however, that the R-squared value for the

Figure 3.6.1: Hampton Place - *Weekday AM Peak Hour* Trip Generation Rates

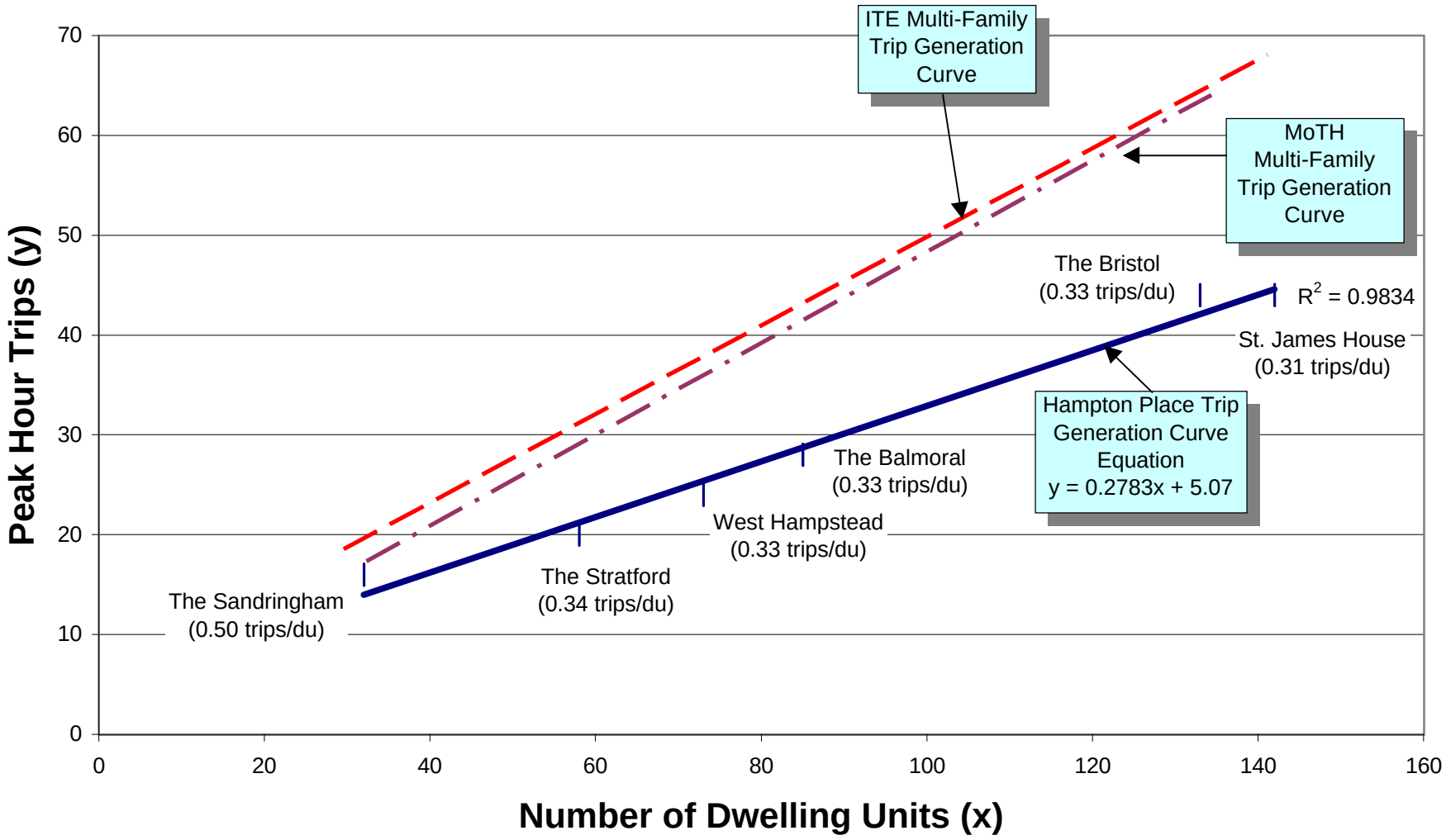
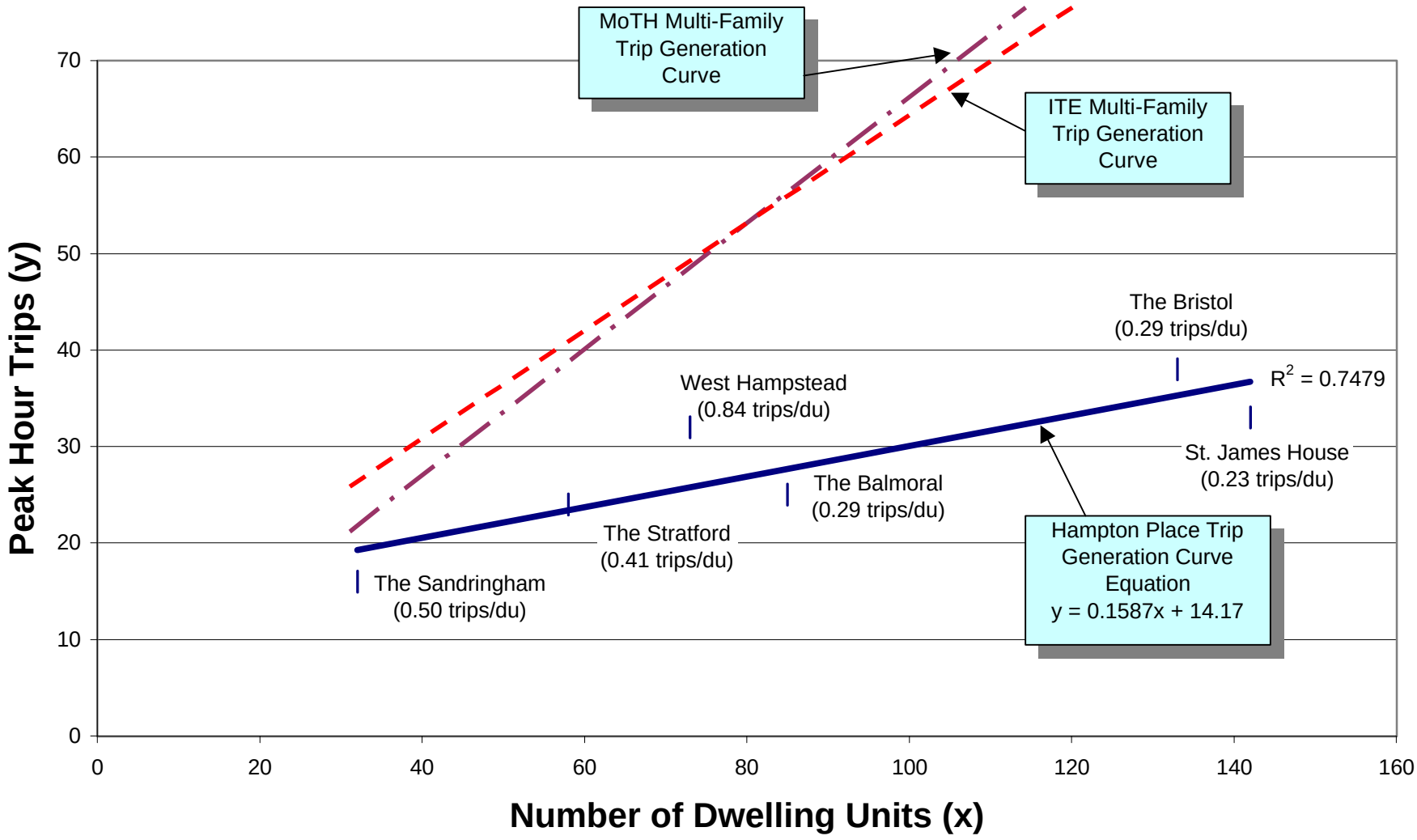


Figure 3.6.2: Hampton Place - *Weekday PM Peak Hour* Trip Generation Rates



Hampton Place trip generation curve is only 0.75 and does not represent as strong a relationship between number of dwelling units and trips generated as demonstrated in the AM peak hour survey. In general, the Hampton Place trip generation rates for the PM peak hour were approximately 50% lower than would be expected with ITE or MoTH rates for comparable developments.

Both the AM and PM peak hour trip generation surveys for Hampton Place indicate that a lower rate of trips is generated than would be expected using ITE and MoTH trip generation equations. This finding is further supported by traffic counts conducted on Hampton Place Road during the second week of November 1998. A 24-hour weekday total of 2,016 vehicles were counted on Hampton Place Road east of Wesbrook Mall. A traffic count conducted north of W.16th Avenue revealed that 1,037 vehicles passed by this location. However, many of these trips were likely also counted at the Wesbrook location, resulting in double-counting. At most, approximately 2,500 vehicles could be expected on Hampton Place Road on a typical weekday – with this total including pass-through traffic not generated or attracted by Hampton Place land uses. Given that Hampton Place accommodates approximately 910 multi-family dwelling units, application of ITE's weekday trip generation rate for townhouse/condominium land uses (3.34 trips/du) translates into a total of 3,040 vehicle trips on a given weekday. Factoring in the contribution of pass-through traffic to this total, a forecast using ITE's trip generation rate could exceed 3,500 vehicles per day, or 1,000 more vehicles than were actually observed on Hampton Place Road.

Parking Ratio and Trip Generation

A primary goal of this study was to determine whether or not there is a relationship between the amount of parking supplied at individual Hampton Place sites and the rate of trips generated by individual sites. This relationship is demonstrated in **Figures 3.6.3** and **3.6.4** on the following pages.

Figure 3.6.3 illustrates the fitted regression curve for the six surveyed Hampton Place sites in the AM peak hour. The trip generation rates for these sites were plotted against their respective parking ratios to determine whether or not there was a strong relationship between trip generation and parking ratio. Although the curve plotted in Figure 3.3 indicates that trip generation steadily increases as the number of parking stalls per unit increases, the R-squared value of 0.40 suggests that this relationship may not be very strong. A glance at the data points

Figure 3.6.3: Parking Ratio/Trip Generation Correlation · AM Peak Hour

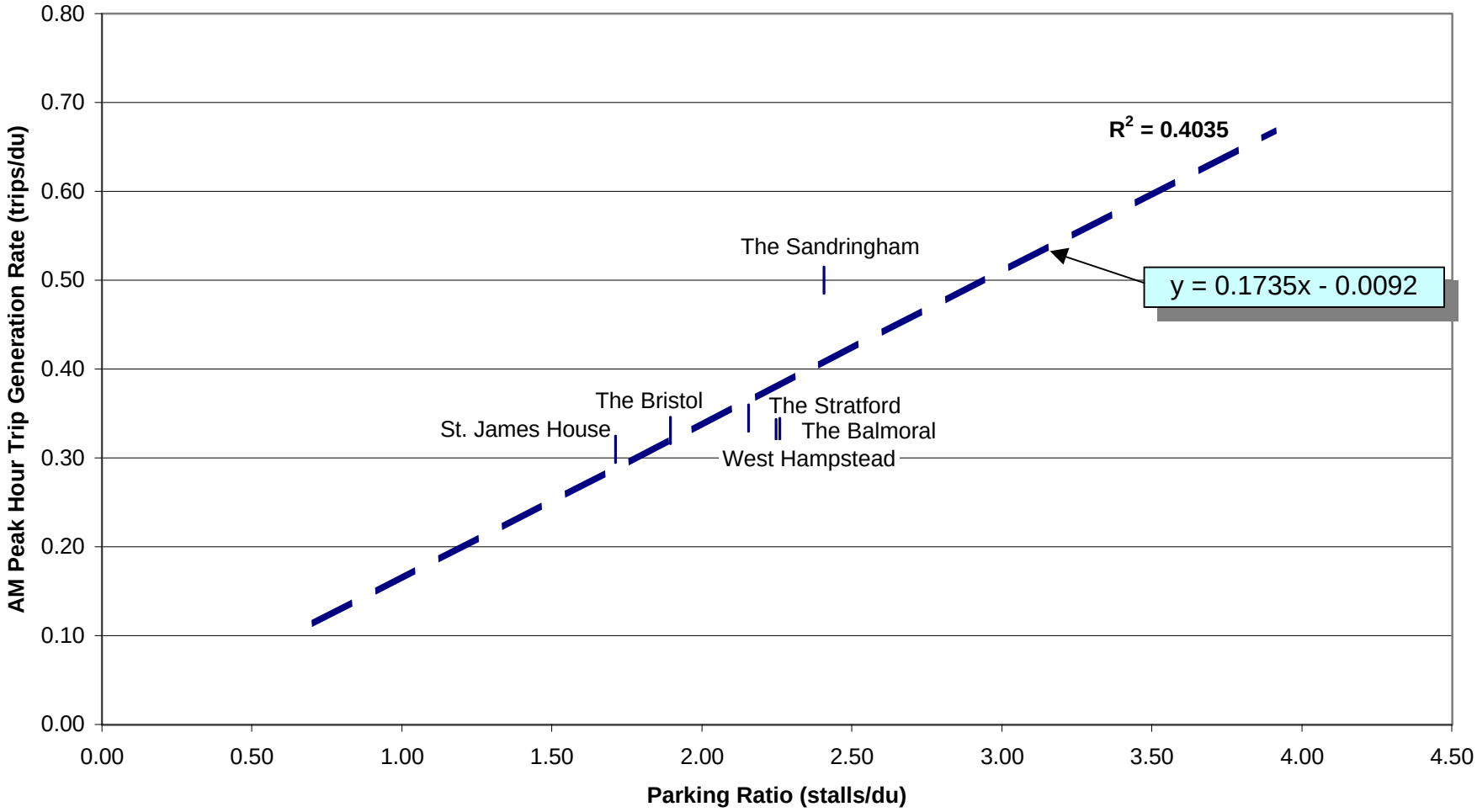
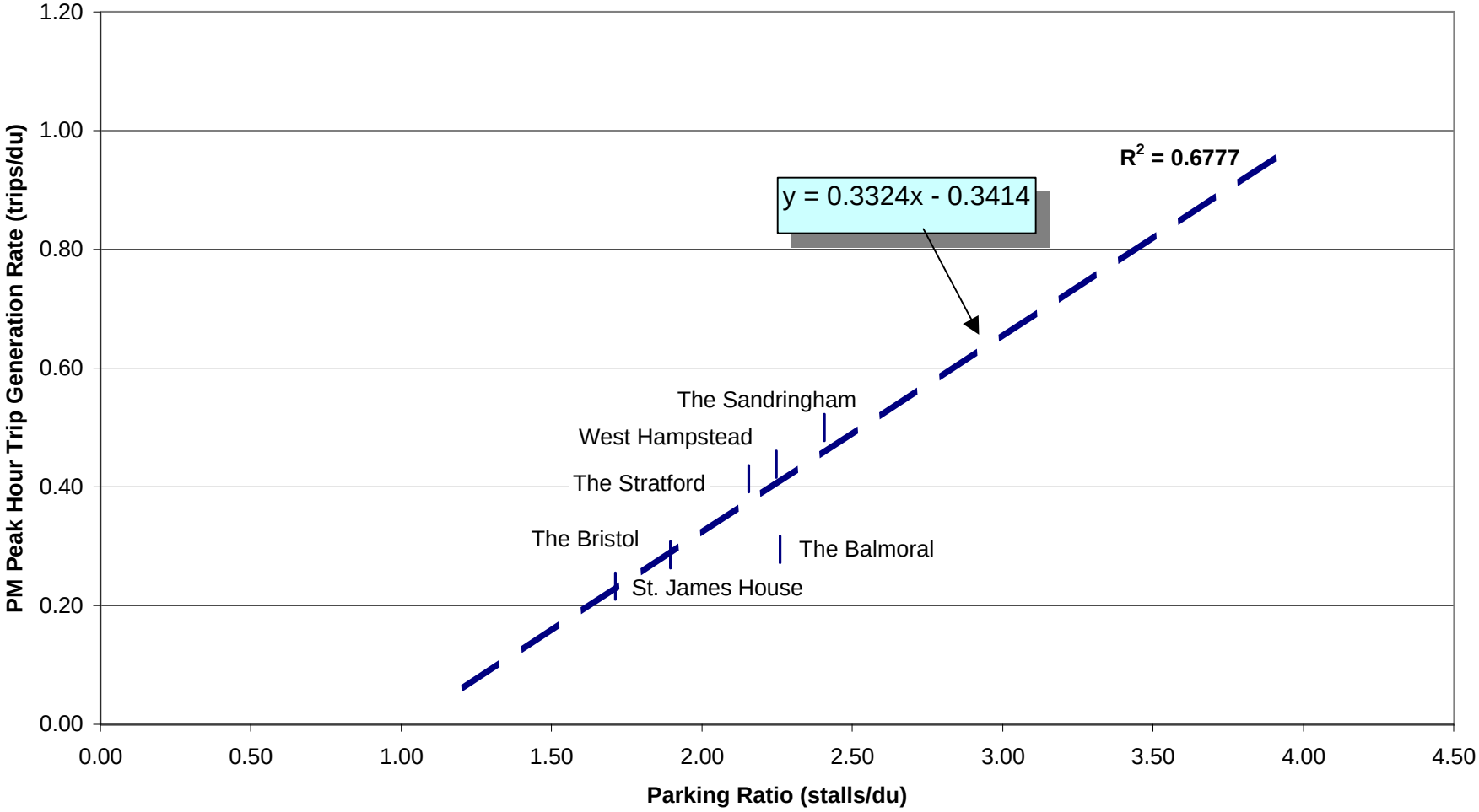


Figure 3.6.4: Parking Ratio/Trip Generation Correlation - PM Peak Hour



themselves reveals that The Sandringham results increase the slope of the curve. The results of the PM peak hour analysis, illustrated in **Figure 3.6.4**, indicates a significantly stronger relationship (R-squared = 0.68) than demonstrated by the AM peak hour curve. Why the PM peak hour analysis demonstrates a stronger relationship between parking supply and trip generation is unknown.

Based on the results of the parking ratio – trip generation study, it would appear that the amount of parking provided at Hampton Place residential land uses is somewhat correlated with the number of vehicle trips generated, particularly in the PM peak hour. However, it cannot be concluded from this evidence that the amount of parking supplied at residential land uses significantly influences the number of trips generated. Other factors such as vehicle ownership, employment status (i.e. employed vs. retired), and travel behaviour likely play an equal or greater role in influencing trip generation.

3.7 Policies and Practices Elsewhere

This section presents an overview of residential parking policies and practices applied in local municipalities, post-secondary educational institutions and other municipalities in North America. Where available, information was gathered on general parking requirements, reductions to existing parking requirements, and parking pricing. The information provided in this section was obtained through a review of existing parking and zoning by-laws, an examination of existing parking supplies and prices, and discussions with staff from various municipalities and post-secondary educational institutions.

3.7.1 Municipal

The following local municipal examples provide insight into the way parking requirements have been developed for multi-family residential developments in Greater Vancouver. Also provided are examples where the adopted parking requirement has been relaxed for new developments. In addition, parking pricing information from the City of Vancouver has been provided.

City of Vancouver

Parking Requirements

Parking requirements for multi-family residential developments in the City of Vancouver vary by neighbourhood zone as identified in **Table 3.7.1**. For example, multi-family residential developments in Kitsilano (RM-4 zone) require that more parking be provided than is required for a similar residential development in Kerrisdale (RM-3 zone). Discussions with City of Vancouver staff reveal that the difference in parking requirements is explained by the difference in the demographic composition of both neighbourhoods. Kitsilano has demonstrated the need for a higher parking requirement because residents tend to be younger and more mobile than their Kerrisdale counterparts, and are more likely to own more than one vehicle. Marpole (RM-3A zone) has a parking requirement equal to Kerrisdale, even though residents tend to be younger. However, Marpole households also tend to be less affluent than those in Kitsilano, with car ownership levels comparable to Kerrisdale households.

Table 3.7.2 provides an example of Vancouver's parking requirements for various commercial uses.

Table 3.7.1: City of Vancouver Residential Parking Requirements

Use	Required Parking Stalls
Multiple Family Dwellings or Infill Multiple Family Dwellings	
• Multi-Family and Mixed Use in Kerrisdale, Marpole and Downtown Eastside (RM-3, RM-3A, C, DEOD)	• Minimum of one space for each 70 sq.m. GFA, except that no more than 2.2 stalls for every dwelling unit need be provided
• Multi-family in Kitsilano and Fairview Slopes (Sites less than 500 sq.m. in RM-4, RM-4N and FM-1)	• Minimum of one space for every dwelling unit and one additional space for each 200 sq. m. GFA, except that no more than 2.2 stalls for every dwelling unit be provided.
• Multi-family in Kitsilano (Sites 500 sq.m. or larger in RM-4 and RM-4N)	• Minimum of 1.1 stalls for every dwelling unit and one additional space for each 200 sq. m. GFA, except that no more than 2.2 stalls for every dwelling unit be provided.
• Multi-family in Fairview Slopes (Sites 500 sq.m. or larger in FM-1)	• Minimum of 1.2 stalls for every dwelling unit and one additional space for each 200 sq. m. GFA, except that no more than 2.2 stalls for every dwelling unit be provided.
• Multi-family in West End (RM-5, RM-5A, RM-5B, RM-5C, RM-6)	• A minimum of one space for each 80 sq.m. GFA, except that no more than 2.2 stalls for every dwelling unit be provided.
Rooming House	0.5 stall / sleeping unit (1 for each 2 sleeping units)
Three or more dwelling units designated solely for senior citizens' housing	Minimum of 0.16 stall / du (one space for every six dwelling units)
Three or more dwelling units designated solely for low income families	Minimum of 0.5 stall / du (one space for every two dwelling units)
Co-op Housing	Minimum of 1.2 stalls / du

Table 3.7.2 City of Vancouver Commercial Parking Requirements

Use	Required Parking Stalls
Commercial	
Office Uses and Retail Uses, except as noted below: • School - Business, or • School - Vocational or Trade	Minimum of one space for each 100 sq.m. GFA up to 300 sq.m., and one additional space for each additional 50 sq.m. GFA
Office Uses in East False Creek	Minimum of one space for each 70 sq.m. GFA and a maximum of one space for each 46.5 sq.m. GFA
Grocery Store	Minimum of 1 space per 100 sq.m. GFA up to 300 sq.m., one additional space for each additional 20 sq.m. GFA up to 2,300 sq.m., and one additional space for each additional 30 sq.m. GFA over 2,300 sq.m.
Neighbourhood Grocery Store	No requirements
Restaurant or Drive-in Restaurant with less than 250 sq.m. GFA on a site less than 325 sq.m.	Minimum of one space for each 50 sq.m. GFA, except that no more than 2 spaces need be provided.
Restaurant or Drive-in Restaurant in the West End or along the Broadway Street corridor	Minimum of 1 space for the first 100 sq.m. GFA, one additional space for each additional 25 sq.m. GFA up to 500 sq.m., and an additional space for each 50 sq.m. GFA over 500 sq.m.
Restaurant or Drive-in Restaurant, except as otherwise provided for in this By-law	Minimum of 1 space for each 50 sq.m. GFA up to 100 sq.m., one additional space for each additional 10 sq.m. GFA up to 500 sq.m., and an additional space for each 20 sq.m. GFA over 500 sq.m.

Reductions to Parking Requirements

Generally, established parking requirements are not reduced for multi-family residential developments in Vancouver. Some examples where the parking requirement has been reduced, are described below:

- Collingwood Village / Joyce Skytrain Station Area

Greystone Properties, Bunt & Associates consultants, City staff and Joyce Area residents worked together in 1996 to determine an

appropriate standard for requiring parking for multi-family residential uses in Collingwood Village and an adjacent site.

Phase one of the four phase Collingwood Village development was constructed with a parking supply that well exceeded demand. The rate used for Phase 1 was taken from a parking standard that had been applied previously in other areas of Vancouver. However, it was determined that demand for parking at this site was less than the demand measured in other areas of the City. In an effort to determine a more appropriate standard for the three remaining phases of the development, Bunt & Associates and City staff undertook a survey of parking demand from 52 recently developed multiple-unit housing sites in east Vancouver and west Burnaby. The survey determined that average vehicle ownership was approximately one vehicle per household. Based on these findings, the recommended parking requirement was as follows:

- 0.75 space per dwelling unit plus one space per 250 sq.m. of gross floor area of residential use.

The above standard represents a modification of the RM-4 standard that had been reduced by 0.1 space per unit for Phase I of the development in recognition of proximity to Skytrain. This requirement represents a 20 to 50% reduction in the amount of residential parking, and resulted in a reduction in parking of approximately 700 stalls for Collingwood Village at build out.

City staff indicated that the study findings from Collingwood Village will be discussed further with the public and revisions to multi-family residential parking standards for other zoning districts may be proposed in the future.

- South Shore False Creek – West of Cambie Bridge

Parking for the initial phases of multi-family residential development in this Comprehensive Development District was provided at a rate considerably lower (one stall per dwelling unit or less) than for comparable housing developments in neighbourhoods such as Kitsilano and Fairview Slopes. In addition, transit service was provided for residents at the outset of occupation. However, many residents complained that not enough parking had been provided. The City responded to residents' concerns by constructing additional parking lots throughout the development to accommodate demand. The parking lot

constructed under the Laurel Street overpass is an example of the type of additional parking provided for residents. However, City of Vancouver parking staff estimate that the present residential parking supply is still less than what would be provided under the City's current requirements for comparable housing in neighbourhoods such as Kerrisdale or Kitsilano.

- Heritage Restoration Projects

It is common in the City of Vancouver for parking requirements to be reduced for heritage restoration projects. Examples include older apartment buildings that have been restored, but do not conform to existing parking requirements. The City does not require the owner of the building to provide additional parking, recognizing the value of restoring a heritage building in Vancouver.

- Seniors Housing Projects

The City is currently examining the possibility of allowing a reduction in the parking requirement for a non-market housing project for seniors. Because the building itself cannot accommodate the existing parking requirement, the City is looking at opportunities for parking in nearby buildings, as well as examining the potential for a car cooperative.

- Low-Income Family Housing

Within the Concord Pacific lands in Downtown Vancouver, the City has established a new rate for subsidized family housing of 1.1 stalls per family dwelling unit.

Parking Pricing

Provided in **Table 3.7.3** is a summary of parking rates for various parkades located within Downtown Vancouver, as obtained from the Parking Corporation of Vancouver. On-street parking meter rates in the City of Vancouver range from 50 cents per hour in areas outside of the downtown, to 75 cents to $2.50 per hour within the downtown.

Table 3.7.3: Downtown Vancouver Parkade Rates

Parkade	Price
Vancouver Library	• 50 cents / half hour • $6 / day (weekdays) • $5 flat rate for evenings, Sundays and holidays • $80 / month - unreserved • $110 / month - reserved
Pacific Centre Mall	• $1.10 / half hour weekdays and Saturdays • $10 / day weekdays • $8 / day Saturdays • $3 flat rate for evenings, Sundays and holidays • $130 / month - unreserved • $220 / month - reserved
Woodwards (160 Water St.)	• $1.50 / hour • $5 / day • $4 / evening • $6.50 / 24 hour max. • $90 / month - unreserved • $110 / month - reserved
Waterfront (Hastings/Cordova)	• $1.50 / half hour • $9 / day • $3 / evening or Saturday • $155/ month - unreserved • $225 / month - reserved

City of Burnaby

Parking Requirements

Parking requirements for multi-family residential developments in the City of Burnaby are provided in **Table 3.7.4**. These requirements vary only by building type, not by neighbourhood zone, as in Vancouver. The only relatively low parking requirements is that provided for family social housing on Hastings Street (RM-6 Districts), and apartments in C8 and C8a Districts, where medium density multi-family apartments are provided above ground-floor retail establishments. Both districts require only one space per dwelling unit.

Reductions to Parking Requirements

The City of Burnaby has allowed no reductions in the parking requirement for residential developments. Reductions have been granted for non-residential uses. For example, the B.C. Hydro development near Edmonds Skytrain Station was allowed a 10% reduction in the parking requirement for office and commercial

developments based on proximity to transit. A similar transit-related 10% parking reduction was applied to Metrotown. At Middlegate Mall, a 10% reduction in the parking requirement was permitted because shared parking benefits were considered.

Table 3.7.4: City of Burnaby Parking Requirements

Use	Required Parking Stalls
Multiple Family Dwellings	
• Townhouses (each unit having direct access to the ground level, either by stairs or at grade)	• 1.75 per dwelling unit, plus a minimum of 0.25 stalls per unit for visitor parking
• Townhouses in RM6 Districts (social housing for families - Hastings Street)	• 1.0 per dwelling unit
• Apartments in C8 and C8a Districts (commercial/retail with medium density multi-family dwellings above)	• 1.0 per dwelling unit
• Apartments (common corridor access)	• 1.6 per dwelling unit, plus 0.25 stalls per unit for visitor parking
• Non-profit housing (receives rent supplement assistance from government)	• 1.5 per dwelling unit, plus 0.25 stalls per unit for visitor parking
Boarding, lodging or rooming houses, fraternity or sorority houses, or other similar uses	1 for each 2 sleeping units (0.5 / sleeping unit)
* Visitor Parking – If a building has four storeys or more, at least 35% of visitor parking stalls shall be at surface level.	

Parking Pricing

Meter rates for on-street parking in the Metrotown area are currently set at $1.00 per hour, with a maximum stay of 3 hours.

City of New Westminster

Parking Requirements

The City of New Westminster's parking requirements – provided in **Table 3.7.5** – have been criticized for requiring more parking than is necessary. However, Planning Department staff maintain that a recent parking study conducted for the City supports the suitability of their current standards. In some cases – such as with multi-family developments at Westminster Quay – residents have complained that not enough parking has been provided. The first two-thirds of the Quay

development was constructed with a parking requirement of 1.2 stalls per dwelling unit.

City staff have noted that many of the problems with parking supply at multi-family developments stem from the way in which parking is administered by condominium boards and strata-councils. In many cases, parking stalls are "hoarded" by residents who do not always have vehicles to occupy them. The result is an inefficient use of parking resources.

Table 3.7.5: City of New Westminster Parking Requirements

Use	Required Parking Stalls
Townhouses, rowhouses, multiple dwellings in commercial districts, and apartment buildings	• 1.0 space per bachelor unit • 1.2 stalls per one-bedroom dwelling unit • 1.5 stalls per two-bedroom dwelling unit • 2.0 stalls per dwelling unit with 3 or more bedrooms
Sleeping units or dormitory units	• One space per 350 sq.ft. of floor space
Elderly citizens' homes	• One space per 5 bachelor units (0.2 / du) • Two stalls per 5 one-bedroom units (0.4 / du)

Reductions to Parking Requirements

No reductions to multi-family residential developments have been permitted in the City of New Westminster to date. However, City Council is currently reviewing a proposal to relax the parking requirement for the Freemason's Hall Building. A developer plans to restore this heritage building and convert it to a 63 housing unit complex. The current parking standard for such a development would require the developer to provide 95 stalls (or 1.5 stalls per dwelling unit). The developer is proposing to provide only 66 stalls, on the basis that this heritage building is being restored.

Parking reductions have been allowed for commercial developments such as the Royal Bank Building at 643 Sixth Avenue. The City allowed a reduction from 220 stalls to 150 stalls, based on the results of a consultants study that revealed New Westminster's are significantly higher than any of the other municipalities in the region. The Royal

Bank also agreed to provide transportation improvements in the vicinity of their building such as signal and crosswalk improvements, other pedestrian amenities and the provision of a trip reduction program for employees.

3.7.2 Post-Secondary

The information provided in this section identifies the current residential parking characteristics, policies and practices of other B.C. post-secondary educational institutions. In all cases, the parking ratios provided in this review are based on observations of existing parking supplies, and not a set of parking standards developed by each institution.

Simon Fraser University

Similar to the U.B.C, Simon Fraser University is currently in the process of developing comprehensive plans for the campus. These plans include proposals to develop market residential and commercial facilities on University lands. However, these plans have not yet incorporated any detailed requirements for parking.

Provided below is a summary of Simon Fraser University's existing residential parking supply:

- A total of 650 parking stalls are provided for 1300 students in residence, or a ratio of 0.5 stalls for every student resident (equal to the City of Burnaby's requirement for boarding, lodging or rooming houses). The majority of these stalls are provided on surface parking lots.

- In a student housing development of townhouses for single students built almost five years ago, 0.33 stalls per unit were provided. Housing staff felt that this ratio was overly generous since there has been a surplus of stalls over the last few years.

- Students pay rental fees for parking that are separate from their housing fees. The cost for a reserved parking space is $65 per semester (4 months).

University of Victoria

The University of Victoria only provides reserved parking stalls for 181 student family housing units. This parking is provided at a ratio of one parking stall per unit, with an additional 90 stalls provided for visitors, or 1.5 stalls per dwelling unit including visitor parking.

The University does not allocate separate parking facilities or stalls for students in residences and other non-family students living on campus. These students can only buy a general parking pass for the student lots which are also used by commuters and visitors. However, campus housing staff estimate that the majority of people using the student lots are on-campus residents. General parking permits cost $120 for the year, or $20 per month.

No market housing is currently provided on the University campus.

BCIT

The British Columbia Institute of Technology provides a total of 119 parking stalls to 336 students in single unit housing on campus (a ratio of 0.35 stalls per unit). Housing staff identify the ratio of one parking space per three students as their standard student housing. Any students that do not receive one of these reserved stalls can purchase a parking pass for the general student parking lots or "scramble" lots. Reserved stalls cost $18 per month, while "scramble" lot passes are $15 per month.

3.7.3 Other

Toronto, Ontario

The City of Toronto, Ontario has conducted several studies on parking requirements recently. Some of the City's most significant changes to residential parking requirements have been in the downtown and on main streets. The City has provided relaxations on parking requirements for low-income housing in inner-city neighbourhoods. However, the greatest relaxations have been applied to multi-family residential developments on main streets. Because these new developments are often provided as infill projects, there are many cases where the City does not require the developer to provide any parking at all.

The only other significant parking reductions that have been allowed for multi-family residential developments in the City are with supportive-

care housing projects. In these cases, the housing developments accommodate persons with mental and physical disabilities that require a team of support staff. Thus, only a limited number of parking stalls are required for staff and visitors.

Olympia, Washington

The City of Olympia has taken a proactive approach to identifying opportunities for parking reductions. Although most municipalities have not identified the criteria required for a reduction in parking supply in their parking bylaws, the City of Olympia bylaw identifies clear opportunities and requirements for applicants.

Through a process of Administrative Variance, parking may be reduced by more than 40%. For example, any stalls gained through sharing, combining or on-site park-and-ride can be counted towards total parking needs. Developers wanting to provide parking in excess of the parking standards are also required to follow detailed criteria for the application process. An example of the guidelines for the Administrative Variance are provided in **Table 3.7.6**.

The actual process required to reduce or increase parking is as follows:

1. Submit evidence that decreased/increased parking is necessary. This may take the form of a brief report for all decreases and one to twenty percent increases.

2. Describe site characteristics (i.e. site accessibility and proximity to transit, shared-use opportunities, employee density, and adjacent land uses).

3. Determine if additional parking can be provided by shared and combined parking, on-site park-and-ride, and by commute trip reduction measures.

4. If additional parking is desired, applicant may be required to complete a parking cost worksheet.

5. If additional parking is still desired, an administrative variance is required, and the site plan must meet specific design elements.

Table 3.7.6: City of Olympia criteria to reduce parking

Decrease of 1% to 20%	Decrease of 21% to 40%
• Shared and combined parking opportunities are fully explored • On-site park-and-ride opportunities are fully explored • Compliance with commute trip reduction measures as required by state law • Site is no closer than 300 feet from a single family residential zoned neighbourhood • A report is submitted providing a basis for less parking and mitigation is necessary to off-set any negative effects	• Shared and combined parking opportunities are fully explored • On-site park-and-ride opportunities are fully explored • Compliance with commute trip reduction measures as required by state law • Site is no closer than 300 feet from a single family residential zoned neighbourhood • A report is submitted providing a basis for less parking and mitigation is necessary to off-set any negative effects • The site is served by transit or can be served within 6 months of occupancy (within 3 blocks or 600 feet – whichever is less).

4. Future Research

Although this report presents a comprehensive examination of parking at UBC, opportunities for additional research on the subject are numerous. This section provides a summary of additional parking research opportunities that are recommend for UBC, in the near future, to support TDM, financial and sustainable development goals. Key research opportunities include:

- **Parking at Multi-Family Developments in the Region**

  Further research on parking for multi-family developments in Greater Vancouver would be valuable to UBC for comparison against existing market housing developments on campus, such as Hampton Place, and future multi-family developments in the south campus area. Where possible, trip generation data for multi-family developments in areas in Vancouver such as Kitsilano and Kerrisdale should be obtained to compare against the trip generation results collected at Hampton Place. UBC should also constantly monitor parking supply ratios applied by other Lower Mainland municipalities to new developments, especially in cases where lower parking requirements are being applied. For cases where lower parking requirements have been applied, such as the multi-family developments in the Collingwood neighbourhood in Vancouver, UBC should pay close attention to how the situation evolves over the longer term with parking demand, spillover parking, vehicle ownership and transit use.

- **GIS Parking Inventory**

  Current parking inventory data is incomplete and difficult to access and maintain. It is recommended that UBC work towards developing a comprehensive – but user-friendly – geographic information system (GIS) that includes a mapped inventory of all parking resources, and information on pricing, occupancy, facility type, and regulations. Parking and Transportation Planning staff should be able to display and print out thematic maps on parking facilities, such as parking price contours, for use in transportation planning exercises. Students, faculty, staff and visitors should also be able to access this information for trip planning purposes (i.e. print out a map to direct them to the parking facility that best supports their needs). U-TREK Program Centre staff could work

with the Geography Department and Parking staff to develop the GIS system.

- **Hampton Place Parking**

Because only peak-hour trip generation rates were surveyed at Hampton Place developments for this report, more data is required to determine trip generation characteristics throughout the entire day. Data from an entire 24-hour period would provide more convincing evidence that Hampton Place developments generate significantly less vehicle trips than would be expected using ITE and MoTH trip generation rates.

- **Regional Parking Pricing and Supply Data**

More detailed information on parking supply and pricing throughout the Greater Vancouver region is required for comparisons with UBC. Because collection of regional parking data is a significant undertaking, TransLink is currently developing a strategy for the data collection effort. It is recommended that UBC liaise with TransLink in this area, and freely exchange parking supply and pricing data, as well as any other research results that may be relevant to both parties.

Appendix A – Parking Supply Data

1999 Parking Supply Summary: *Post-Secondary Educational Institutions*

Institution	Municipality	Parking Type	Description	Number of Stalls/Spaces	Comments
University of British Columbia	Vancouver, B.C.	Parkades	Health Sciences	1,130	
			North	1,001	
			Fraser River	725	
			West	1,200	
			Rose Garden	902	
		Daily Surface "B" Lots	B-1	768	
			B-5	1,247	
			B-6	1,003	
			B-7	560	
		Permit Surface Lots	Faculty/Staff Permit Lots	1,188	
			Car-Pool C-2 Lot	290	
			Permit B-4 Lot	192	
		Meter Parking		447	
			Total	**10,653**	
Other B.C. Institutions					
BCIT	Burnaby, B.C.	Surface Lots	Student Lots	2,500	
			Faculty/Staff Lots	1,200	
			Visitor Spaces	100	
			Total	**3,800**	
Douglas College	New Westminster, B.C.	On-site Underground Parking		700	
		Off-site Lot		250	
			Total	**950**	
Kwantlen College	Surrey (72 Avenue)	Paved Lot		840	
		Unpaved Lot		100	
	Surrey (Newton)	Surface Lot		250	
	Langley	Surface Lot		850	
	Richmond	Surface Lot		900	
			Total	**2,940**	
Langara College	Vancouver, B.C.	Surface Lots		1,100	
			Total	**1,100**	
Simon Fraser University	Burnaby, B.C.	Parkades and Surface Lots		6,000	- No parking provided by SFU at Downtown campus
		Residence Parking		650	- 4,000 person waiting list to get parking permit
			Total	**6,650**	
University of Victoria	Victoria, B.C.	General Surface Lots		3,292	
		Reserved Spaces		817	
		Meter Parking		143	
		Disabled Spaces		48	
		Carpool Spaces		25	
		Motorcycle Spaces		75	
			Total	**4,400**	
Other Canadian Institutions					
Queen's University	Kingston, ON	Surface Lots			
			Total	**1,350**	
University of Calgary	Calgary, AB	Surface Lots		6,620	
		Parkades		1,410	
		Meter Parking		402	
			Total	**8,432**	
University of Toronto	Toronto, ON	St. George Campus		2,370	
		Mississauga Campus		2,000	
		Scarborough Campus		2,310	
			Total	**6,680**	
University of Waterloo	Waterloo, ON	Surface Lots		5,600	
		Visitors (lots and meters)		2,000	
			Total	**7,600**	
University of Western Ontario	London, ON	Campus Core	Faculty/Staff	900	
		Campus Perimeter	Faculty/Staff/Grad Students	2,500	
			Students	2,500	
		Resident Spaces		1,000	
		Visitors		600	
			Total	**7,500**	
York University	Toronto, ON	Surface Lots and Parkades			
			Total	**11,000**	
U.S. Institutions					
University of Washington	Seattle, WA	Surface Lots			- Parking supply has been reduced by 8% since 1990.
			Total	**11,346**	

Parking Supply/Population Ratio - Post Secondary Educational Institutions

Location	Educational Institution	Ratio of Number of Spaces to Population	Total Number of Parking Spaces	Full-Time Student Population	Full-Time Faculty/Staff Population	Total Population
Toronto, ON	**U. of Toronto (Downtown)**	0.06	2,370	33,104	6,600	39,704
Kingston, ON	**Queen's University**	0.08	1,350	13,089	3,000	16,089
New Westminster	**Douglas College**	0.16	947	5,200	855	6,055
Vancouver	**Langara**	0.17	1,100	6,000	600	6,600
Richmond	**Kwantlen College**	0.22	900	3,848	186	4,034
Seattle, WA	**U. of Washington**	0.23	11,346	33,000	17,000	50,000
Burnaby	**BCIT**	0.24	3,800	14,000	1,945	15,945
London, ON	**U. of Western Ontario**	0.26	7,500	26,000	3,000	29,000
Surrey	**Kwantlen College**	0.26	940	3,225	329	3,554
Victoria	**UVic**	0.27	4,400	13,744	2,373	16,117
Vancouver	**UBC**	0.34	10,650	25,560	5,475	31,035
Newton	**Kwantlen College**	0.34	250	625	102	727
Calgary, AB	**U. of Calgary**	0.35	8,432	19,832	4,077	23,909
Waterloo, ON	**U. of Waterloo**	0.38	7,600	17,078	3,000	20,078
Burnaby	**SFU**	0.49	6,000	9,894	2,403	12,297
Langley	**Kwantlen College**	0.62	950	1,447	84	1,531

1999 Parking Supply Summary: Greater Vancouver

Municipality	Activity Centre	Supply		Comments
		Parking Facilities	Number of Stalls/Spaces	
Burnaby	**Metrotown**			
	Station Square	Commercial/Retail	1,382	
		Office	194	
		Hotel/Apartment	455	
		Total	**2,031**	
	Eaton Centre	Commercial/Retail	3,532	
		Office	1,796	
		Hotel/Apartment	0	
		Total	**5,328**	
	Metrotown Centre	Commercial/Retail	3,718	
		Office	351	
		Hotel/Apartment	203	
		Total	**4,272**	
	Totals	Commercial/Retail	8,632	
		Office	2,341	
		Hotel/Apartment	658	
	Total		**11,631**	
	BC Hydro (Edmonds)	Underground Parking (managed by Imperial Parking)	1,109	
New Westminster	**Downtown**	Front St. Parkade (city operated)	750	
		Columbia Station Parkade (city operated)	189	
		On-street metered spaces	546	
		Total Number of Off-Street Spaces	4,282	
North Vancouver	Upper Lonsdale	Vacant land presently used for parking purposes	741	- City owned lots only
	Lower Lonsdale		97	
Vancouver	**Downtown Vancouver**			
	Zone 1 (North)	Off-street	6,101	
		On-street	611	
		Total	6,712	
	Zone 2 (Canada Place)	Off-street	13,419	
		On-street	272	
		Total	13,691	
	Zone 3 (Gastown)	Off-street	4,882	
		On-street	384	
		Total	5,266	
	Zone 4 (Chinatown)	Off-street	3,352	
		On-street	812	
		Total	4,164	
	Zone 5 (Core)	Off-street	13,177	
		On-street	1,055	
		Total	14,232	
	Zone 6 (South)	Off-street	4,000	
		On-street	758	
		Total	4,758	
	Zone 11 (BC Place)	Off-street	2,779	
		On-street	231	
		Total	3,010	
	Total Supply	Off-Street - Transient & Monthly	**47,710**	- 13% total off-street controlled by PCV
		Total Transient Spaces	21,800	- 77% total off-street controlled by IMPARK
		Total Monthly Spaces	25,910	
		On-Street	**4,123**	
		All Spaces	**51,833**	
	Oakridge Centre	Retail	3,050	
		Office	200	
		Total	**3,250**	

Appendix B – Parking Pricing Data

1999 Parking Pricing Summary: *Post-Secondary Educational Institutions*

** Note: All prices include applicable taxes (GST and PST)*

Institution	Municipality	Parking Type	Description	Parking Price					
				Hourly	Daily	Monthly	4 Months	8 Months	12 Months
University of B.C.	Vancouver, B.C.	Parkade	Faculty/staff			$59.28			$711.36
			Student - commuter					$556.32	
			Student - resident					$656.64	
			Visitor weekdays	$2.70	$12.50				
			Visitor evening/weekends		$3.00				
		B-lots			$3.00			$456.00	
		A-lot	Student residents			$42.00		$336.00	$504.00
		L-lot	Student residents					$456.00	
		Roadway permit						$456.00	
		B-4 Carpool lot						$282.72	
		Meter parking	Max. 2 - hours	$2.70					
		Special needs parking	Faculty/staff permit			$50.00			
			Student permit			$29.64			
			Meter parking - 2 hr. max.	Free					
		Motorcycle permit	Faculty/staff						Free
			Student						$116.28
Other B.C. Institutions									
BCIT	Burnaby, B.C.	Student parking		$1.50		$15.00	$75.00		
		Faculty/Staff Parking				$2 - $5			
		Night school/Part-time					$16.00		
		Handicapped spaces				$15.00			
		Motorcycles				$7.00	$35.00		
		Visitor parking	One-hour maximum	$1.50	$6.00				
Douglas College	New Westminster, B.C.	Student parking		$0.50		$20.00	$80.00		
Kwantlen College	Surrey, B.C.	Student/faculty/staff lot	Reserved				$60.00		
			Unreserved		$1.00		$100.00		$200.00
	Richmond, B.C.	Student/faculty/staff lot			$1.00		$80.00		$160.00
	Langley, B.C.	Student/faculty/staff lot			$1.00		$80.00		$160.00
	Newton, B.C.	Student/faculty/staff lot			$1.00		$80.00		$160.00
Langara College	Vancouver, B.C.	Student lots		$0.25	$1.50		$80.00		$160.00
		Visitor meter parking		$1.50					
Simon Fraser University	Burnaby, B.C.	B-lot					$93.00		
		C-lot					$102.00		
		Parkades					$255.00		
		C-lot Evening/Weekend					$59.00		
		B-lot Evening/Weekend					$54.00		
		B-lot rideshare					$170.00		
		Summer session					$47.00		
University of Victoria	Victoria, B.C.	Parkade		$1.00			$169.00	$338.00	$508.00
		General reserve and commercial				$42.80	$73.80	$149.00	$222.00
		General parking (staff/students)			$4.00	$26.75	$42.30	$85.60	$126.80
		Motorcycle/scooter			$4.00	$12.80	$12.80	$25.70	$38.50
		Carpool	50% off term rate						
		Reserve disabled	25% off general rate						
		Meters	2-hour max.	$1.00					
			1-hour max.	$1.00					
			30-minute max.	$1.00					
			Disabled-only	$1.00					
Other Canadian Institutions									
University of Alberta	Edmonton, Alberta	Reserved stall permits	with plug-in			$54.00			
			without plug-in			$51.00			
		Reserved lot permits	Timms Centre parkade			$70.00			
			Extension centre			$55.00			
			Southfield car park			$50.00			
			Education/stadium car park			$45.00			
			Surface lot			$45.00			
			Surface lot			$42.00			
			Jubilee Auditorium lot			$38.00			
			Afternoon permits			$20.00			
			Evening permits						$100.00
			Motorcycle permits						$50.00
University of Calgary	Calgary, Ontario	Permit Lot							$359.52
		Permit Lot							$279.24
		Art Parkade		$1.10	$3.25		$214.00		
		McMahon Stadium					$42.80		
		Paylots	Per entry pricing = $2.50						
		Meter parking		$1.00					
		Motorcycles	Free in designated areas						
Carleton University	Ottawa, Ontario	Full-time student permits	Surface lot						$439.00
			Surface lot						$244.00
		Part-time student permits	Surface lot						$266.00
			Surface lot						$137.00
		Motorcycle pass							$57.00
McMaster University	Hamilton, Ontario	Undergraduate Permit	Zone 1	$2.50	$8.50	$20.00		$160.00	$240.00
			Zone 6, 7 and disabled					$104.00	$156.00
		Graduate Permit	Zone 1 and 4			$20.00			$240.00
			Zone 3NX						$396.00
			Zone 6, 7, evening and disabled			$13.00			$156.00
		Faculty and Staff	Zone 1, 4 and 5			$20.00			$240.00
			Zone 2, 3 and 3NX			$33.00			$396.00
			Zone 6 and 7			$13.00			$156.00
		Visitor parking	Central Campus	$2.50	$8.50				
			West Campus	$2.50	$2.50				
			Central Campus - Weekend	$2.50	$2.50				
			West Campus - Weekend	$0.00	$0.00				
		Motorcycle							$50.00
University of New Brunswick	St. John, New Brunswick	Student/faculty/staff permit			$3.00		$40.00	$60.00	$95.00

Institution	Municipality	Parking Type	Description	Parking Price					
				Hourly	Daily	Monthly	4 Months	8 Months	12 Months
		Meter parking		$1.10					
Queens University	Kingston, Ontario	University lots	Monthly permit			$35.00			
University of Toronto	Toronto, Ontario	Reserved				$109.48			$1,313.76
		Block Reserved	Garage			$87.57	$350.28		$1,050.84
		Unreserved	Surface	$2.25	$13.00	$65.55	$262.20		$786.60
		Motorcycle			$0.55	$16.10			
		Commercial permits				$98.90			
		Off-hours permits				$21.00			
		Evening/Sat/Sun Flat Rate			$4.50				
Trent University	Peterborough, Ontario	Red permit	Full time faculty/staff			$26.00			$248.00
		Red permit	Part time faculty/staff			$15.75			$123.20
		Blue permit	Full time student						$118.50
		Blue permit	Part time student						$134.50
		Green permit	Full time student						$0.00
		Green permit	Part time student						$50.00
		Meter parking	Temporary permit	$1.00					
		Day parking	Temporary permit		$4.00				
		Summer permit	Student				$59.25		
University of Waterloo	Waterloo, Ontario	Faculty/staff permit				$20.00			
		Student permit				$20.00			
		Motorcycle permit					$25.00		
		Visitor lot		$2.00	$10.00				
		Meter parking		$1.00					
University of Western Ontario	London, Ontario	Reserved Permit	Core area			$57.00			$684.00
			Perimeter area			$34.50			$414.00
		Non-reserved permit	Core lots			$28.50			$342.00
			Perimeter lots			$17.00			$204.00
			Disabled permit			$17.00			$204.00
		Undergraduate permit	Green non-reserved				$120.00		$205.00
			Green reserved				$240.00		$414.00
		Commercial permits				$28.50	$342.00		
		Weekend permit				$5.75			
		Monthly permit				$46.00			
		Evening/weekend permit					$60.00		
		Summer permit					$60.00		
		Motorcycle permit							$42.00
		Visitor parking		$2.00					
York University	Toronto, Ontario	Unreserved	First-come, first served			$44.28	$177.10	$354.20	$531.30
		Diamond pool	Guaranteed space			$44.28	$177.10	$354.20	$531.30
		Outer reserved	Guaranteed space			$70.73	$282.90	$565.80	$848.70
		Day unreserved/evening reserved	First-come, first served			$76.47	$305.90	$611.80	$917.70
		Reserved parking	Guaranteed space			$85.68	$324.70	$685.40	$1,028.00
		Evening unreserved	First-come, first served			$38.53	$154.10	$308.20	$462.30
		Evening diamond pool	Guaranteed space			$38.53	$154.10	$308.20	$462.30
		Evening outer reserved	Guaranteed space			$44.28	$177.10	$354.20	$531.30
		Evening reserved	Guaranteed space			$70.73	$282.90	$565.80	$848.70
		Tentant parking	First-come, first served			$70.73	$282.90	$565.80	$848.70
		Consultant	Guaranteed space			$76.47	$305.90	$611.80	$917.70
		Motorcycle parking	Motorcycle and unreserved lot			$38.53	$154.10	$308.20	$462.30
		York Lanes structure	Long and short-term parking			$95.45	$381.80	$763.60	$1,145.40
		Evening Your Lanes structure	Long and short-term parking			$85.68	$324.70	$685.40	$1,028.00
U.S. Institutions									
University of Washington *(all prices are in U.S. $)*	Seattle, Washington	SOV permit			$1.75	$48.50	$194.00		$582.00
		Night permit			$2.50	$17.00	$68.00		$204.00
		Motorcycle parking			$2.00	$16.50	$66.00		$198.00
		Summer permit	Student				$97.00		
		Meter parking	Short-term parking	$1.00					
		Student U-PASS				$10.33			$124.00
		Faculty U-PASS				$14.00			$168.00

1999 Parking Pricing Summary: *Greater Vancouver*

Municipality	Location	Parking Type	Description	Parking Price						
				Hourly	Daily	Weekly	Monthly	4 Months	8 Months	12 Months
City of Burnaby	City-wide	Meter parking		$1.00						
	Metrotown	Underground parking	Employee parking		$4.00		$70 - $95			
			Employee parking							
	B.C. Hydro - Edmonds	Underground parking	Employee parking				$85.00			
			Employee parking				$45.00			
City of North Vancouver	Upper Lonsdale			$1.00			$50 - $55			
	Lower Lonsdale (CBD)			$1.50			$65.00			
City of New Westminster	Downtown	On-street meters and parkade		$0.50 - $1.50						
		Reserved					$85.00			
		Unreserved					$45 - $55			
City of Richmond	Vancouver International Airport	Parkade - Hourly Parking	Express pay station	$4.00						
			Cashier services	$5.00						
		Parkade - Hourly/Daily/Weekly	Express pay station	$4.00	$14.00	$91.00				
			Cashier services	$5.00	$14.00	$91.00				
		Economy Parking Lot	Cashier services	$4.00	$10.00	$65.00	$170.00			
		(Hourly/Long-term)								
		Long-Term Parking Lot		$2.50	$7.50	$48.75	$142.50			
		South Terminal Parking	Terminal lots	$1.00	$9.00					
			Overflow parking lot	$1.00	$7.50					
			Curbside parking	$1.00						
City of Vancouver	Roundhouse Community Centre	Surface lot	Daytime rates	$1.00	$5.00		$60.00			
			Evening rates		$2.00					
	Downtown	Meter parking	Zone A	$3.00						
			Zone B	$2.00						
			Zone C	$1.50						
			Zone D	$1.00						
	Broadway Corridor	Meter parking	Zone C	$1.50						
			Zone D	$1.00						
	Kerrisdale	Meter parking	Zone D	$1.00						
	Commercial Drive	Meter parking	Zone D	$1.00						
	Pacific Centre - Downtown	Reserved - Underground	Monthly				$256.50			
		Unreserved - Underground	Monthly				$153.90			
			Weekday daytime	$2.50	$10.00					
			Saturday	$2.50	$8.00					
			Evenings	$2.50	$3.00					
			Sunday/holiday	$2.50	$3.00					
	535 Hornby Street - Downtown	Reserved					$222.30			
		Unreserved	Weekday daytime	$2.00	$9.50		$153.90			
			Evening/weekend		$3.00					
	150 West Pender - Downtown	Reserved					$108.30			
		Unreserved	Weekday daytime	$1.00	$4.25		$91.20			
			Evening/weekend		$4.00					
	775 Hamilton Street - Downtown	Reserved					$125.40			
		Unreserved	Weekday daytime	$1.00	$6.00		$91.20			
			Evening/weekend		$5.00					
	595 W. 6th Avenue at Ash	Reserved					$51.30			
		Unreserved	All week	$1.00	$2.50		$39.90			
	900 Denman St. - West End	Unreserved	All week	$0.75	$4.50		$45.60			
	Oakridge Centre	Employee parking					$25 - $35			
	Resident Permit Parking Fees	Resident permit parking only	Examples:							
	- Downtown Zones		- West End							$48.00
	- Central/Broadway Zones		- VGH							$36.00
	- Outer Zones		- Kitsilano, S.Granville, PNE							$24.00

1999 Parking Fines Summary

Location	Municipality	Infraction Type	Fines
University of B.C.	Vancouver, B.C.	Expired meter	$20.00
		All other parking infractions	$30.00
		Parking along pedestrian/bike-only areas (i.e Main Mall)	$50.00
Other B.C. Institutions			
BCIT	Burnaby, B.C.	All offences	
		- 1st offence paid within 72 hours issuance	$15.00
		- 1st offence paid after 72 hours issuance	$20.00
		- 2nd offence paide within 72 hours issuance	$15.00
		- 2nd offence paid after 72 hours of issuance	$20.00
Simon Fraser University	Burnaby, B.C.	No permit or invalid permit displayed	$10.00
		No valid loading zone permit displayed	$15.00
		Improperly parked within lot	$15.00
		Parked in a reserved space	$15.00
		Parking in a "no stopping" or "no parking" zone	$15.00
		Parking in excess of time limit	$15.00
		Parked in fire lane	$15.00
		Parked in a handicapped space	$20.00
		Lost or stolen permit displayed	$20.00
		Counterfeit permit displayed	$20.00
		Parked in pedestrian areas	$20.00
		Unauthorized bicycle parking area	$20.00
University of Victoria	Victoria, B.C.	All violations (except as noted below)	$20.00
		Parking in a fire lane (not including towing costs)	$50.00
		Displaying altered, lost or stolen permit	$75.00
		False report of lost or stolen permit	$75.00
		Parking in disabled parking spaces (not including towin	$50.00
		Unauthorized travel/parking on/in non-designated road/l	$50.00
		Parking or travelling in inner Quad	$50.00
		False statement on permit application	$10.00
Other Canadian Institutions			
University of Alberta	Edmonton, Alberta	Improper display of permit	$5.00
		Improperly parked within lot	$5.00
		Parking in reserved area	$8.00
		Parking in driving lane	$10.00
		Parking a vehicle in motorcycle zone	$10.00
		Expired Meter	$15.00
		Parking in excess of loading zone time limit	$15.00
		Parking on crosswalk, walkway, boulevard	$15.00
		Illegal parking - impeding traffic	$15.00
		Abandoned vehicle - greater than 72 hours	$15.00
		Parked in a signed "No Parking" area	$20.00
		Parking within a 24-hour reserved parking area	$30.00
		Parking in a transit bus zone	$30.00
		No permit or invalid permit displayed in reserved area	$30.00
		Parking within a fire lane or emergency access route	$40.00
		Parking within 5m of a fire hydrant	$40.00
		Parking in a handicapped zone	$50.00
		Displaying a stolen, forged or altered parking permit	$200.00
University of Calgary	Calgary, Ontario	Permit incorrectly displayed	$20.00
		Lost or stolen permit not replaced	$20.00
		Parking in loading area without permit or over permitte	$20.00
		Parking incorrectly in lot	$20.00
		Expired meter	$20.00
		Parking longer than 48 hours without authorization	$20.00
		Parking in excess of posted time limit	$20.00
		Parking in reserved stall or serviced zone without perm	$20.00
		Parking when under suspension	$40.00
		Parking on sidewalk or landscaping	$40.00
		Parking with a stolen, counterfeit or illegal permit	$40.00
		Parking in a fire lane or emergency zone	$40.00
University of New Brunswick	Fredericton, NB	Expired Meter	$10.00
		No permit or invalid permit displayed	$10.00
		Parking bicycle in building - impeding pedestrians	$10.00
		Obstructing parking personnel	$20.00
		Illegal parking - impeding traffic	$20.00
		Parking in tow zone	$20.00
Univesity of Waterloo	Waterloo, ON	All violations (except as noted below)	$25.00
		Parking illegally, designated handicapped parking	$50.00
		Obstruct handicapped accessway	$50.00
		Improper access/or exit from a card or coin controlled l	$50.00
University of Western Ontario	London, ON	Permit not displayed	$5.00
		Fail to register vehicle with UWO	$15.00
		Vehicle/Service assistance	$15.00
		Park at expired Meter	$20.00
		Park at end of an aisle	$35.00
		Park in an unauthorized/hashlined area	$35.00
		Park over the time limit permitted	$35.00

Location	Municipality	Infraction Type	Fines
		Double parked	$35.00
		Disk Replacement	$25.00
		Display Expired Permit	$35.00
		Park in a reserved area	$35.00
		Park on a roadway	$35.00
		Obstruct a loading zone	$35.00
		Obstruct a walkway	$35.00
		Park in a boulevard or landscaped area	$35.00
		Unauthorized parking	$35.00
		Park blocking other vehicles	$35.00
		Obstruct a Disabled access route - bicycle	$60.00
		Park bicycle inside building - bicycle	$50.00
		Cost recovery for Ministry searches	$12.00
		Fail to pay parking fee at visitor booth	$35.00
		Park in a Fire Lane or Emergency Route	$100.00
		Park in Disabled space/no permit	$100.00
		Damage/vandalism to parking facilities	$250.00
		Displaying lost, stolen, fraudulent, revoked,or altered pe	$500.00
U.S. Institutions			
University of Washington *(all prices are in U.S. $)*	Seattle, Washington	Fines associated with parking violations range from $3 to $100.	
Municipalities			
City of Vancouver		Expired meters	
		- 0 to 34 days	$25.00
		- After 34 days	$50.00
		Prohibited parking	
		- 0 to 34 days	$35.00
		- After 34 days	$70.00
City of Burnaby		Expired meters	$25.00

Appendix C – Single Student Resident Parking Survey

UBC TREK Program

Parking Questionnaire

The University of British Columbia is reviewing parking needs for on-campus student housing in order to ensure that appropriate bicycle and automobile parking is provided for existing and future student housing developments. Your input is a very important part of this review. Please take 5 minutes to complete this questionnaire and return it to one of the locations identified on the back of the page. *Your name will be entered into a draw for a chance to win one of the following prizes:*

- *A free bike from the UBC Bike Co-Op*
- *One of three $25 gift certificates for use at the UBC Bike Co-Op*
- *One of three memberships to the UBC Bike Co-Op (valued at $15 each)*

1. Do you have access to an automobile on campus? *Please check only one box.*

   ❑ 1 Yes, I own an automobile.
   ❑ 2 Yes, I borrow a friend's automobile. (*go to question 3*)
   ❑ 3 No. (*go to question 6*)

2. Where do you park this vehicle? *Please check only one box.*

   ❑ 1 Residence underground or surface parking (V-lot, T-Lot, G-Lot, Thunderbird Parkade, Fairview Cres. underground lot)
   ❑ 2 Parkades (North, West or Fraser River)
   ❑ 3 Reserved surface lots (A-Lot or L-Lot)
   ❑ 4 B-lots
   ❑ 5 Southwest Marine Drive
   ❑ 6 Other streets (Wesbrook Mall, West Mall, East Mall)
   ❑ 7 More than one of the locations listed above
   ❑ 8 Other: _____

3. How often do you use this vehicle? *Please check only one box.*

   ❑ 1 More than one round-trip per day
   ❑ 2 One round-trip per day
   ❑ 3 4 to 6 round-trips per week
   ❑ 4 1 to 3 round-trips per week
   ❑ 5 1 to 3 round-trips per month
   ❑ 6 Less than one round-trip per month

4. Please indicate your primary use and your secondary use for this vehicle? *Please check only one box per column.*

a. Primary	*b. Secondary*	
❑ 1	❑ 1	Work
❑ 2	❑ 2	Shopping
❑ 3	❑ 3	School
❑ 4	❑ 4	Social and/or Recreation
❑ 5	❑ 5	Long distance travel
❑ 6	❑ 6	Other: _____

5. If transit services were more frequent and less expensive, would you give up your automobile?

   ❑ 1 Yes
   ❑ 2 No

6. Do you have access to a bicycle on campus? *Please check only one box.*

   ❑ 1 Yes, I own a bicycle.
   ❑ 2 Yes, I borrow a friend's bicycle.
   ❑ 3 No. (*go to question 10)*

7. Where do you primarily park this bicycle at your residence? *Please check only one box.*

   ❑ 1 Inside your residence room/suite
   ❑ 2 Inside your residence building
   ❑ 3 Bicycle rack outside your residence
   ❑ 4 Bicycle rack elsewhere
   ❑ 5 Fence, pole or other fixed object
   ❑ 6 More than one of the locations listed above
   ❑ 7 Other: _____

8. How often do you use this bicycle? *Please check only one box.*

- ❑ 1 More than one round-trip per day
- ❑ 2 One round-trip per day
- ❑ 3 4 to 6 round-trips per week
- ❑ 4 1 to 3 round-trips per week
- ❑ 5 1 to 3 round-trips per month
- ❑ 6 Less than one round-trip per month

9. What do you primarily use this bicycle for? *Please check only one box.*

- ❑ 1 Work
- ❑ 2 Shopping
- ❑ 3 School
- ❑ 4 Personal trips
- ❑ 5 Long distance travel
- ❑ 6 Recreational cycling
- ❑ 7 Competitive cycling
- ❑ 8 Other: _____

10. Are you aware of the AMS Bike Co-Op, Bike Shop and/or Public Bike program?

- ❑ 1 Yes
- ❑ 2 No

Need a bike? Or some bike repairs? Try out the new UBC Bike Co-Op and Repair Shop. For a nominal membership fee, you can gain access to the famous UBC public bicycle fleet, as well as trained mechanics to help you with all of your bicycle repairs.

Call the Co-Op at *82-SPEED*, send an e-mail to bikecoop@interchange.ubc.ca or check out the Co-Op's web site at:

www.interchange.ubc.ca/buehler/bikecoop/

11. Where do you live on-campus?

- ❑ 1 Gage
- ❑ 2 Place Vanier
- ❑ 3 Totem Park/Ritsumeikan
- ❑ 4 Thunderbird
- ❑ 5 Fairview

Comments: _____

_____

_____

_____

Thank you for your time! Please return your questionnaire to one of the following locations by *Thursday, December 4th, 1998:*

- ☞ *Fax* your questionnaire to 273-8752
- ☞ *Drop* your questionnaire off at the drop-box provided at the front desk of your residence.
- ☞ *Mail* your questionnaire to 204–10711 Cambie Road, Richmond, BC V6X 3G5

If you have any questions or require further information, please contact us at:

- 827-TREK
- E-mail: trek@ubc.ca
- Web Site: www.trek.ubc.ca

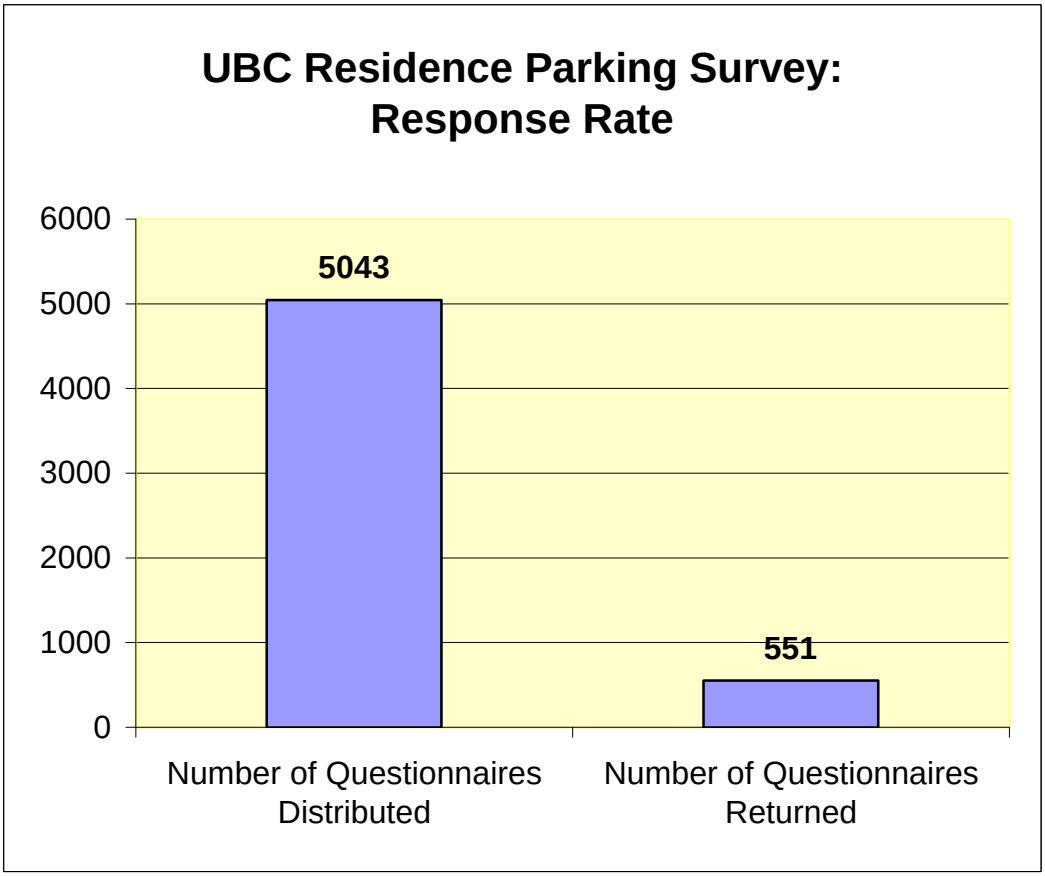
Names and personal information will be kept confidential and are only required for prize awards.

Name: _____

Address: _____

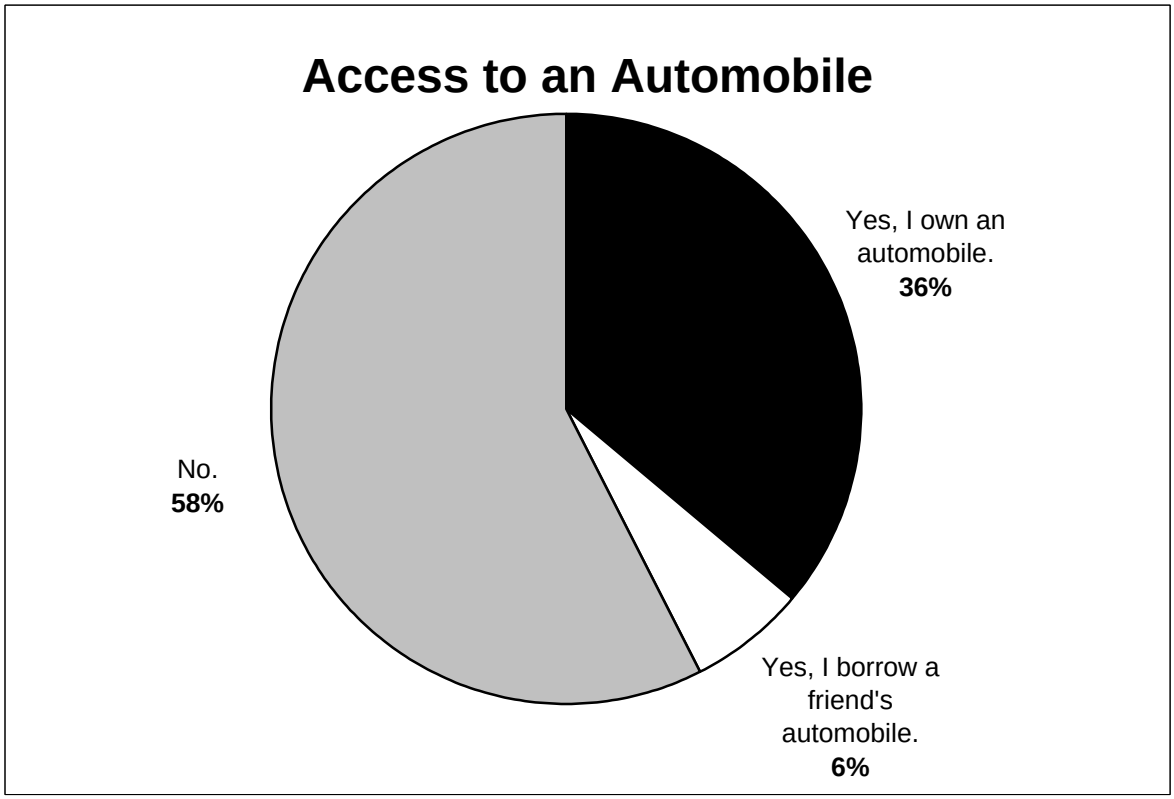
Phone: _____

Number of Questionnaires Distributed	5043
Number of Questionnaires Returned	551
Rate of Return	11%



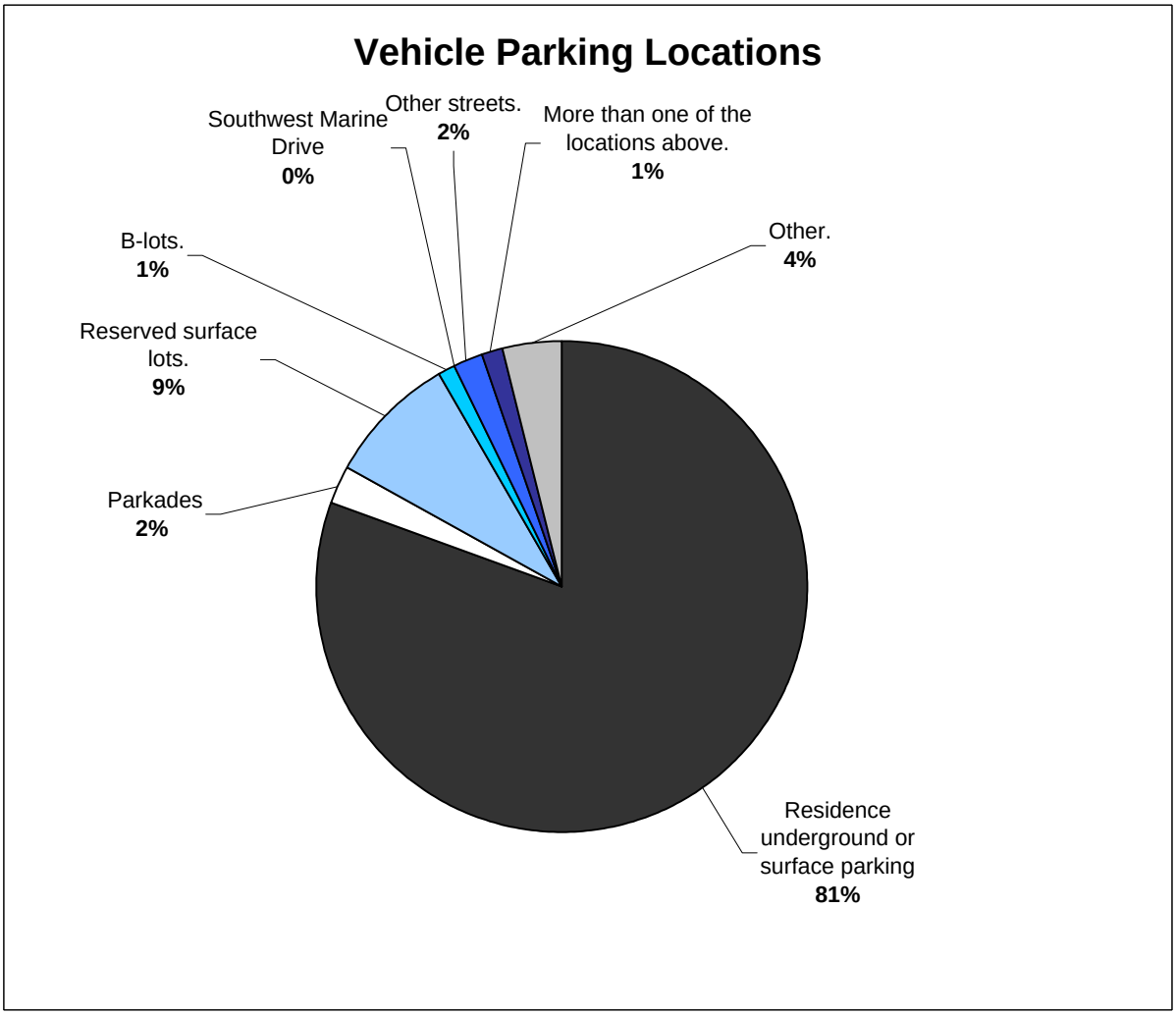
Question 1: *Do you have access to an automobile on campus?*

	# of responses	Percent
1. Yes, I own an automobile.	197	36%
2. Yes, I borrow a friend's automobile.	35	6%
3. No.	315	58%
Total	547	100%



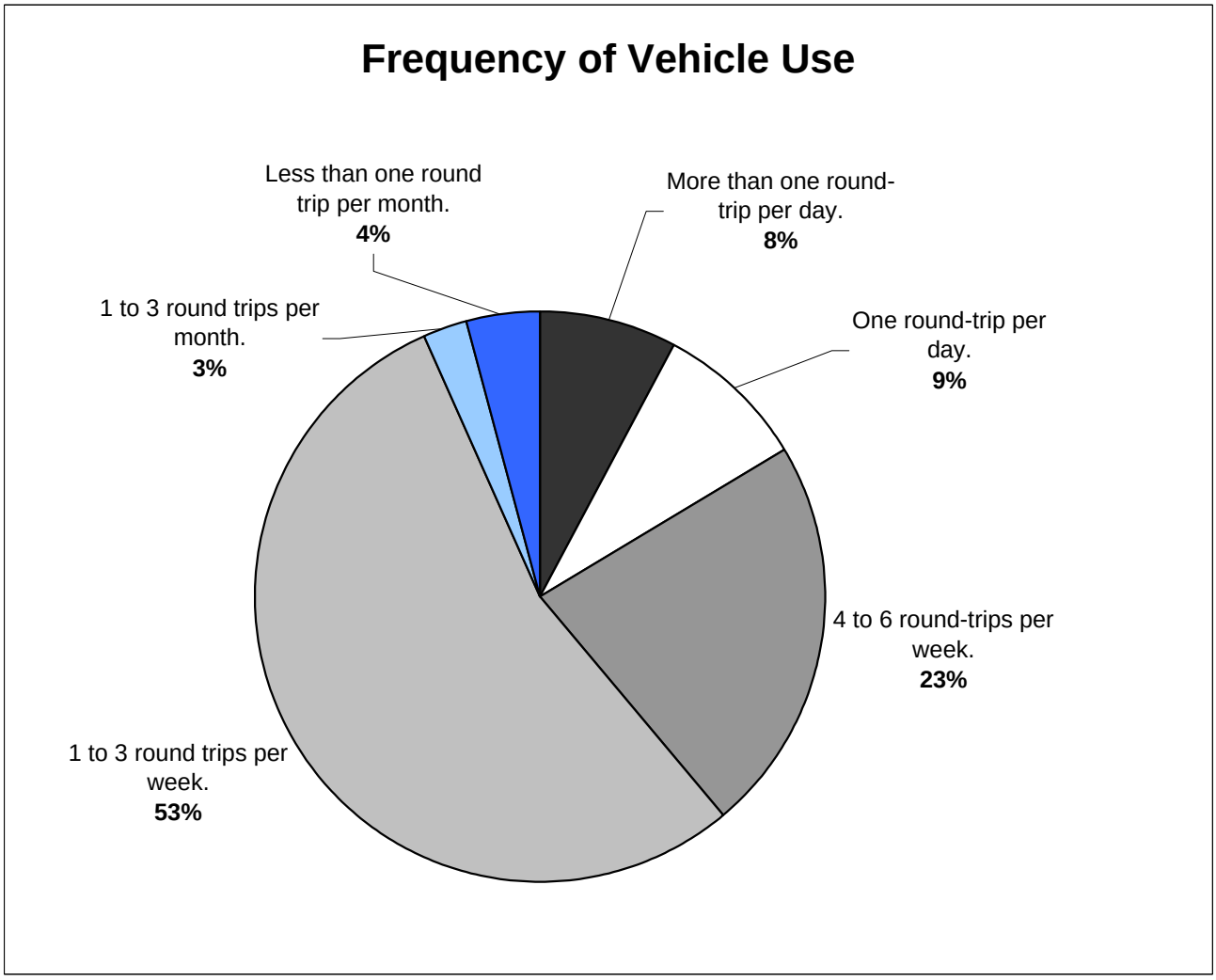
Question 2: *Where do you park this vehicle?*

	# of responses	Percent
1. Residence underground or surface parking	166	81%
2. Parkades	5	2%
3. Reserved surface lots.	18	9%
4. B-lots.	2	1%
5. Southwest Marine Drive	0	0%
6. Other streets.	4	2%
7. More than one of the locations above.	3	1%
8. Other.	8	4%
Total	206	100%



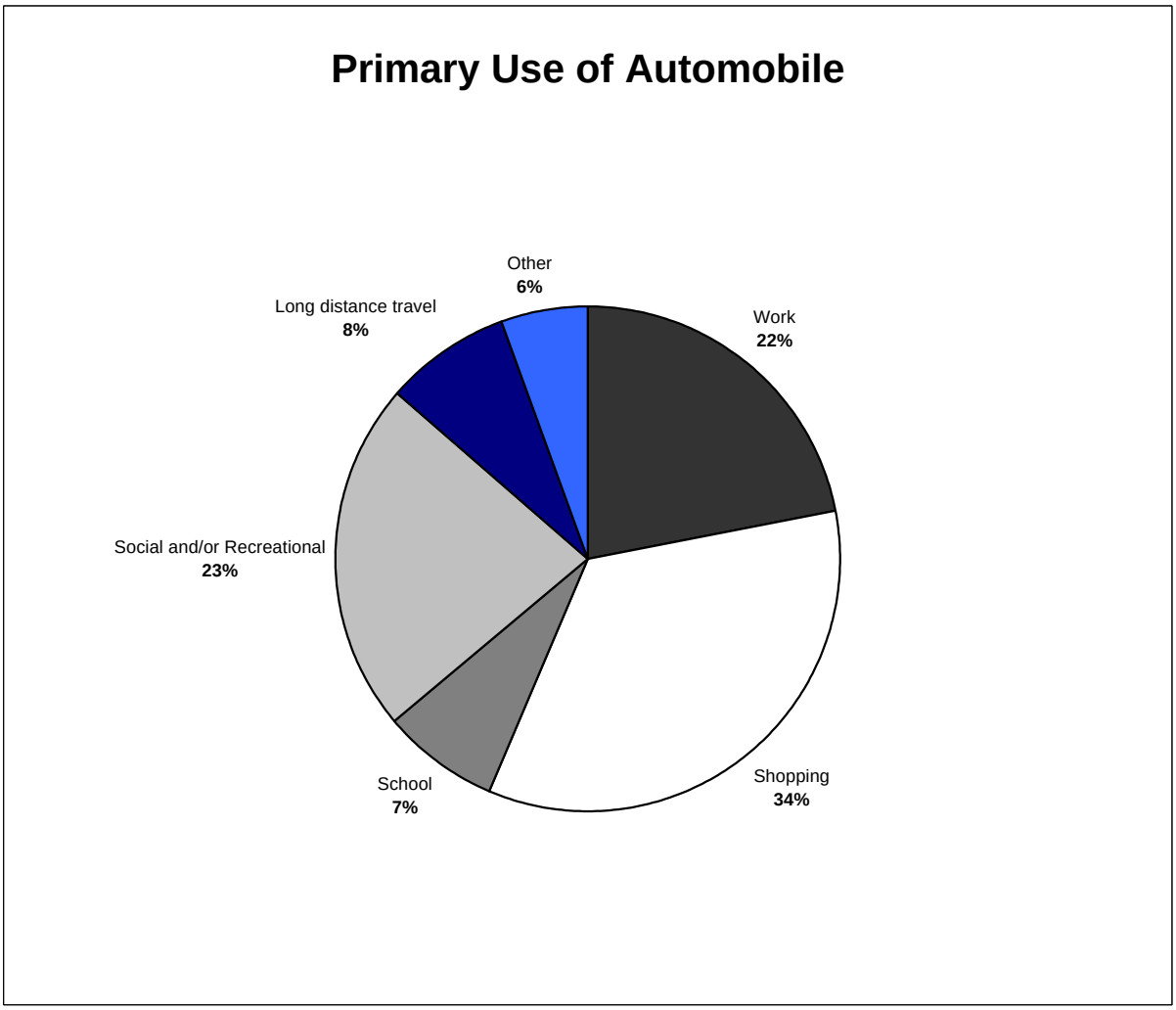
Question 3: *How often do you use this vehicle?*

	# of responses	Percent
1. More than one round-trip per day.	17	8%
2. One round-trip per day.	19	9%
3. 4 to 6 round-trips per week.	50	23%
4. 1 to 3 round trips per week.	120	54%
5. 1 to 3 round trips per month.	6	3%
6. Less than one round trip per month.	9	4%
Total	221	100%



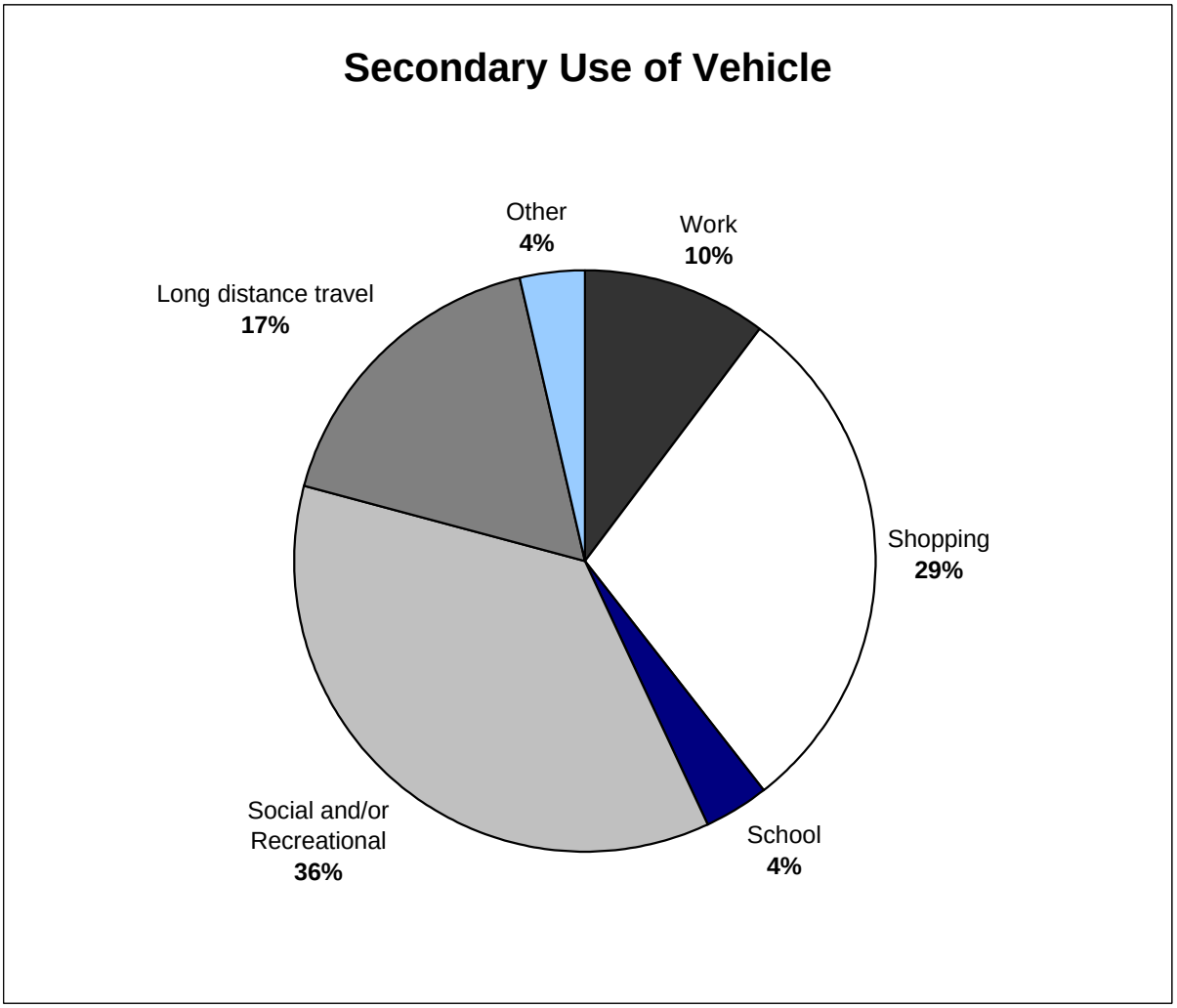
Question 4a: *Please indicate your primary use for this vehicle?*

	# of responses	Percent
1. Work	50	22%
2. Shopping	79	34%
3. School	17	7%
4. Social and/or Recreational	52	23%
5. Long distance travel	18	8%
6. Other	13	6%
Total	229	100%



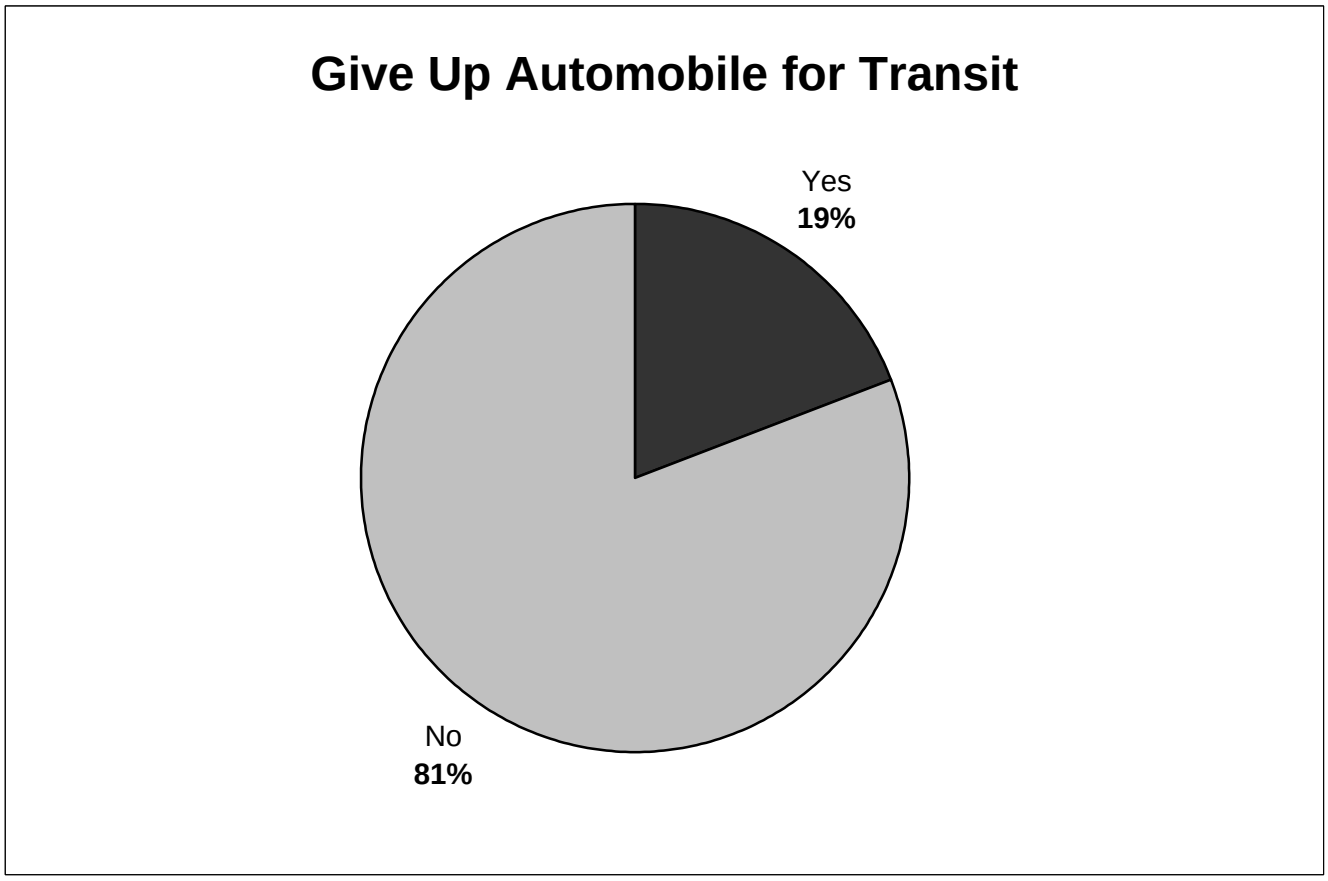
Question 4b: *Please indicate your secondary use for this vehicle?*

	# of responses	Percent
1. Work	23	10%
2. Shopping	66	29%
3. School	8	4%
4. Social and/or Recreational	82	36%
5. Long distance travel	39	17%
6. Other	8	4%
Total	226	100%



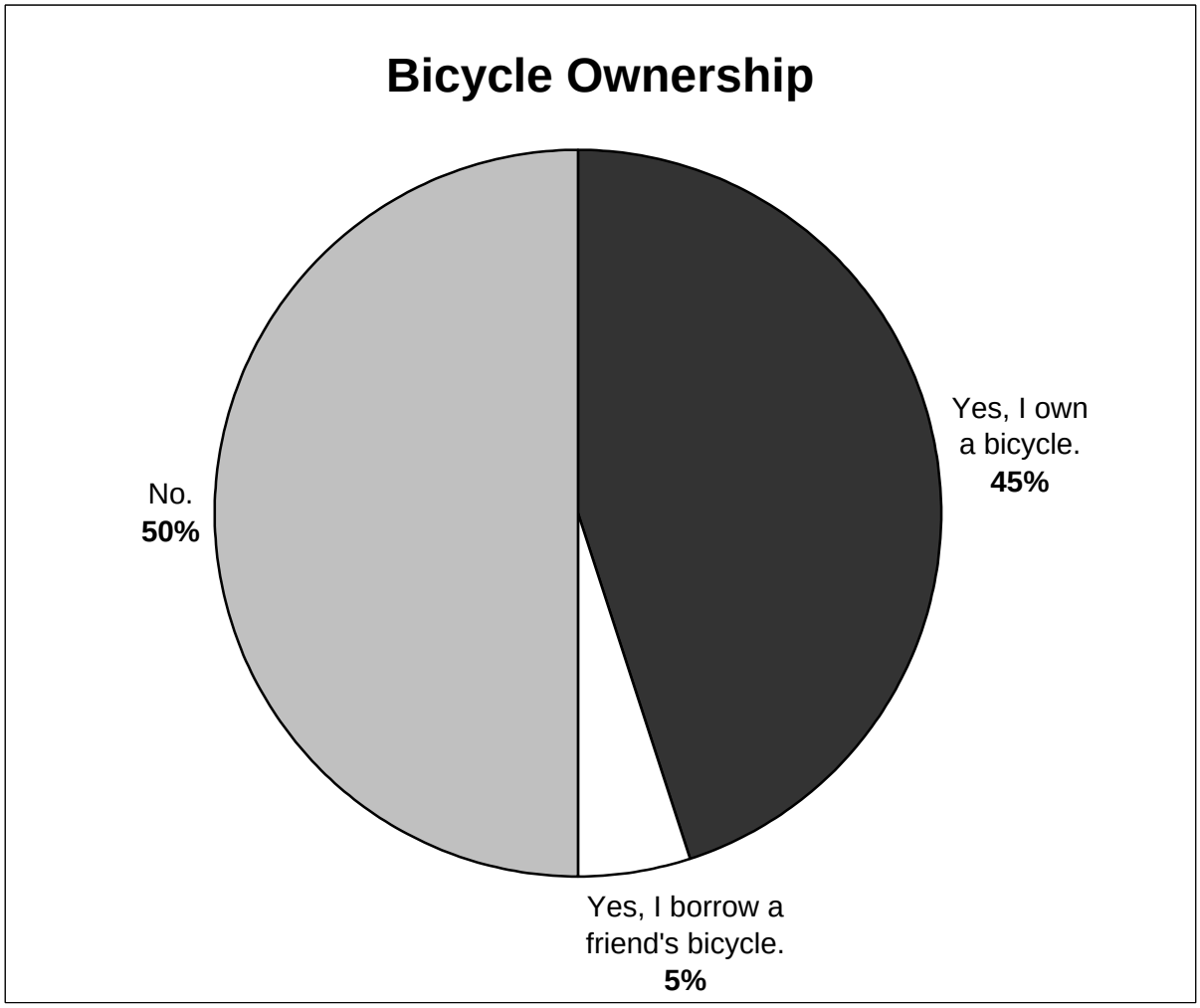
Question 5: *If transit services were more frequent and less expensive, would you give up your automobile?*

	# of responses	Percent
1. Yes	44	19%
2. No	184	81%
Total	228	100%



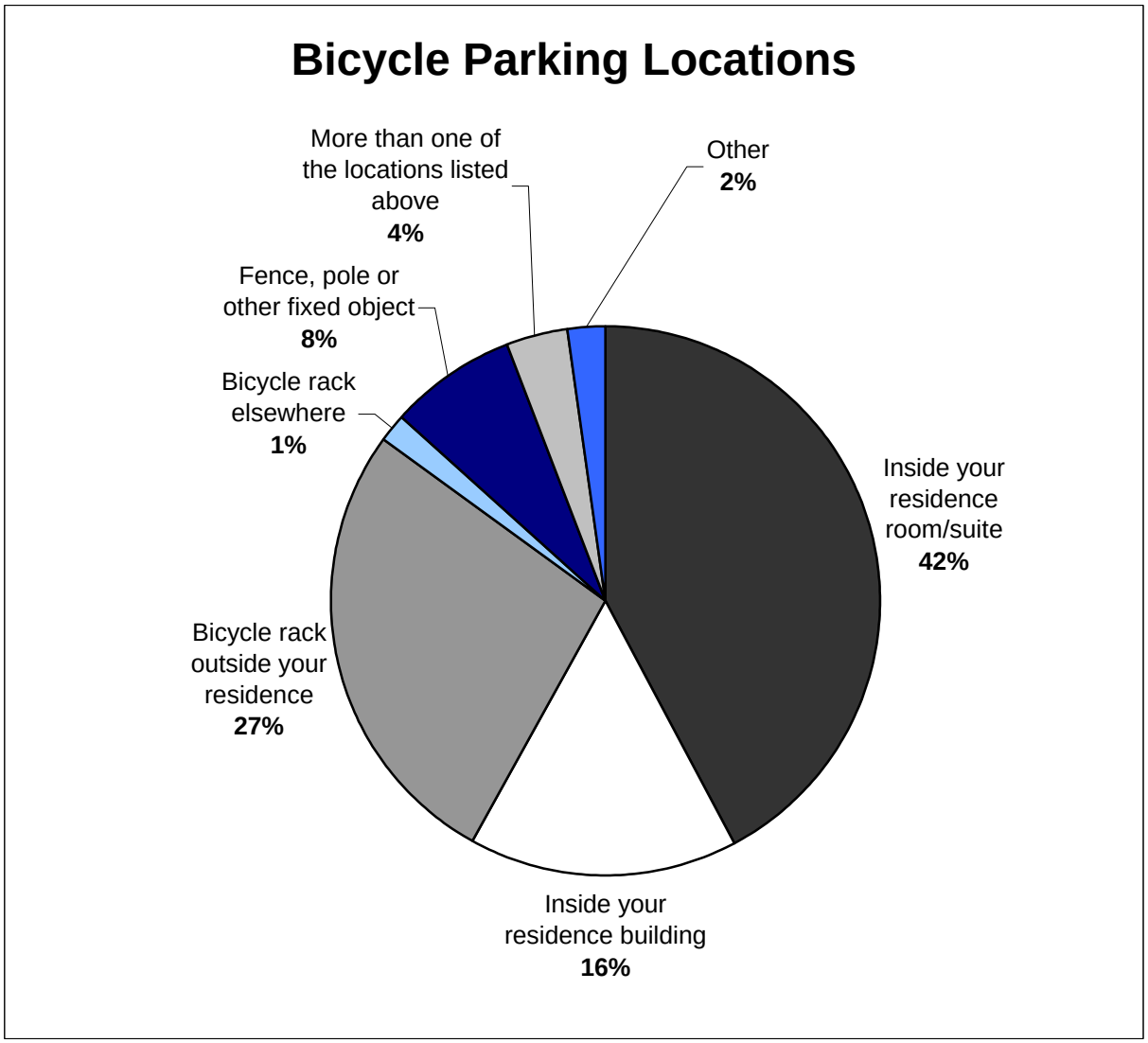
Question 6: *Do you have access to a bicycle on campus?*

	# of responses	Percent
1. Yes, I own a bicycle.	247	45%
2. Yes, I borrow a friend's bicycle.	28	5%
3. No.	274	50%
Total	549	100%



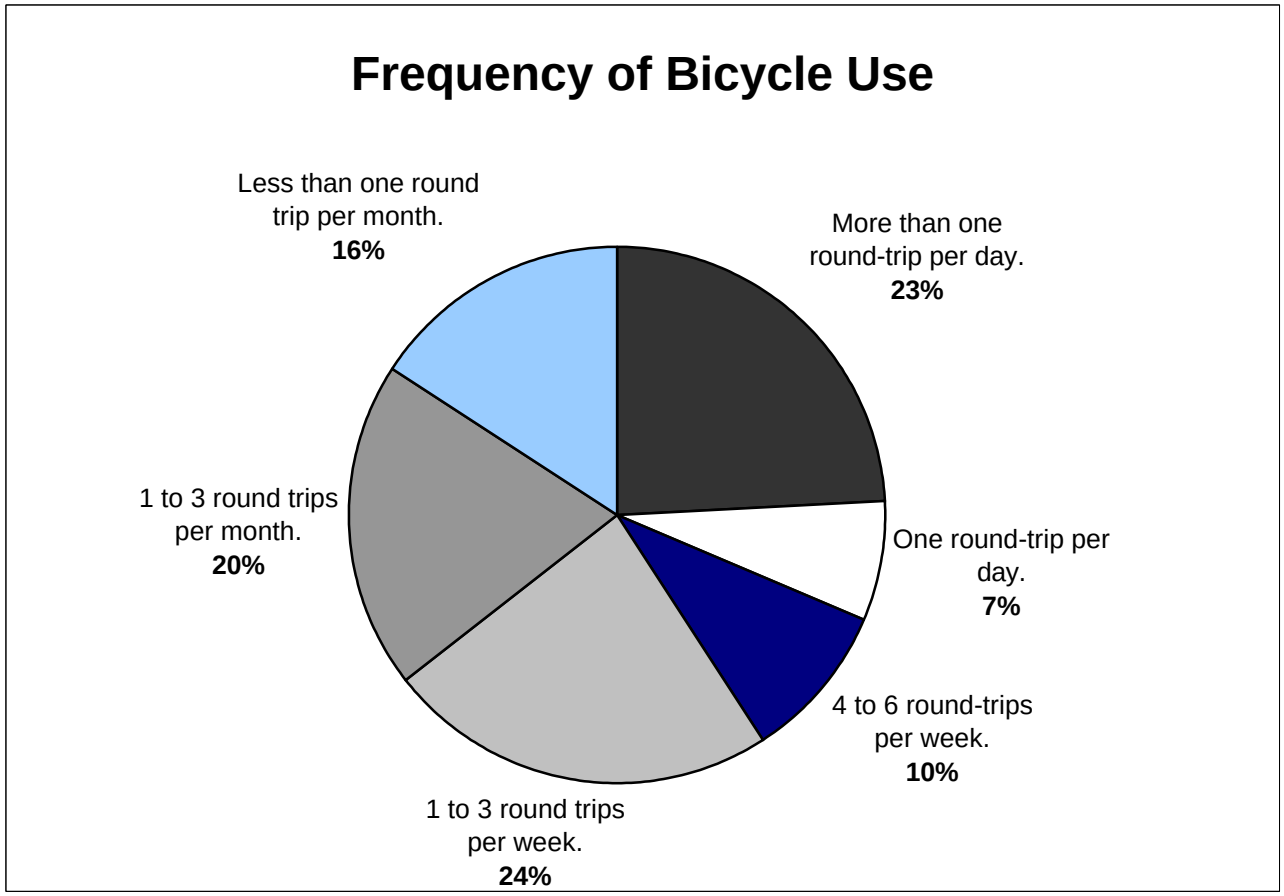
Question 7: *Where do you primarily park this bicycle at your residence?*

	# of responses	Percent
1. Inside your residence room/suite	116	42%
2. Inside your residence building	44	16%
3. Bicycle rack outside your residence	74	27%
4. Bicycle rack elsewhere	4	1%
5. Fence, pole or other fixed object	21	8%
6. More than one of the locations listed above	10	4%
7. Other	6	2%
Total	275	100%



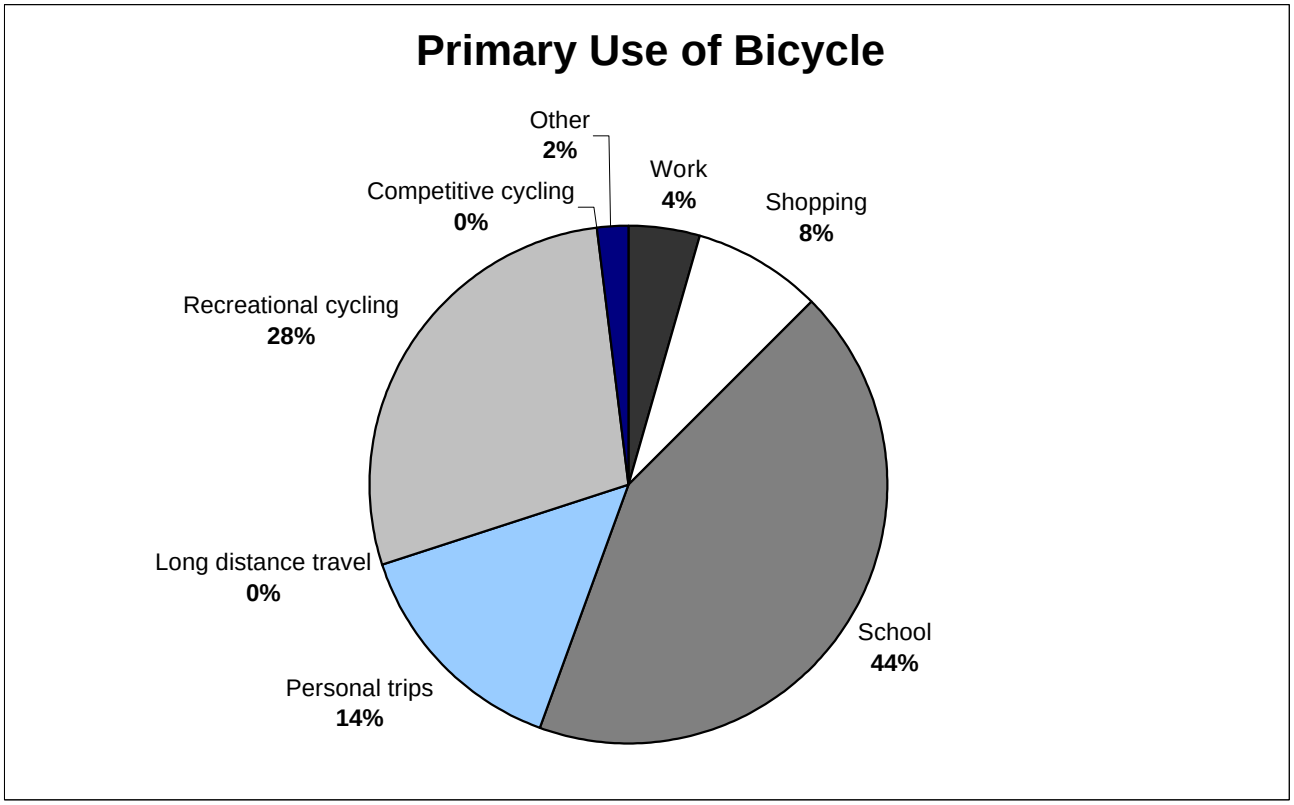
Question 8: *How often do you use this bicycle?*

	# of responses	Percent
1. More than one round-trip per day.	66	24%
2. One round-trip per day.	19	7%
3. 4 to 6 round-trips per week.	26	10%
4. 1 to 3 round trips per week.	64	24%
5. 1 to 3 round trips per month.	54	20%
6. Less than one round trip per month.	43	16%
Total	272	100%



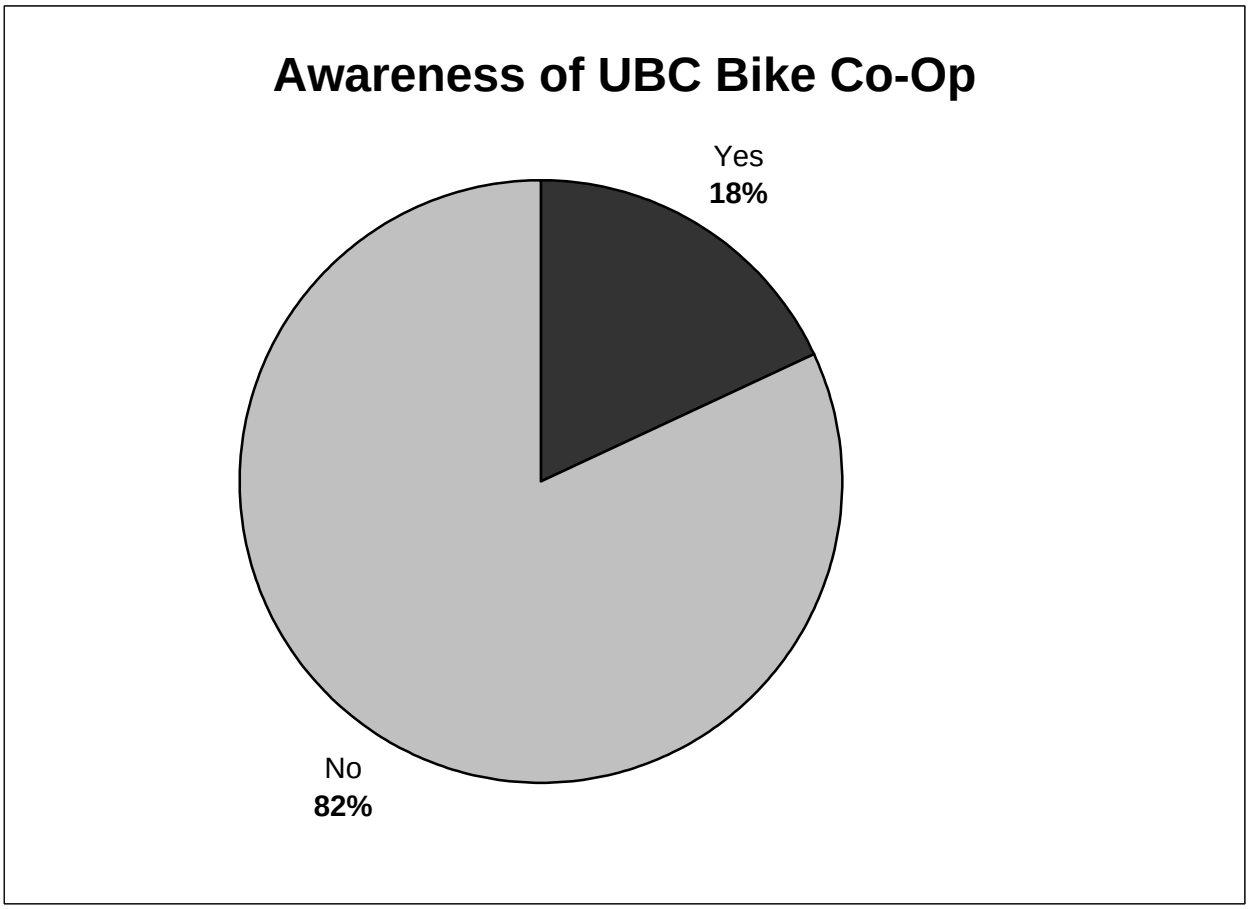
Question 9: *What do you primarily use this bicycle for?*

	# of responses	Percent
1. Work	12	4%
2. Shopping	22	8%
3. School	118	43%
4. Personal trips	39	14%
5. Long distance travel	0	0%
6. Recreational cycling	77	28%
7. Competitive cycling	0	0%
8. Other	5	2%
Total	273	100%



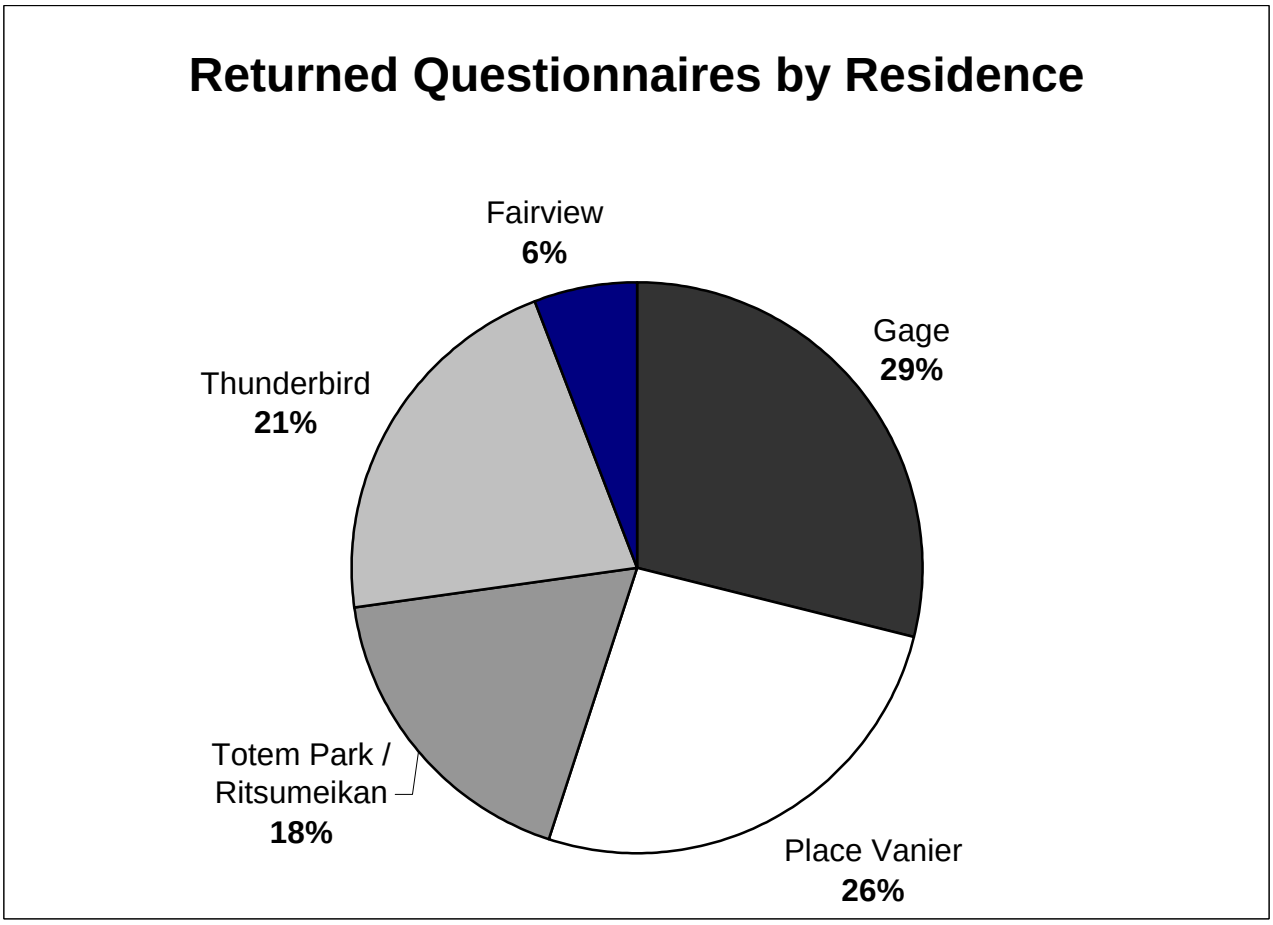
Question 10: *Are you aware of the AMS Bike Co-Op, Bike Shop and/or Public Bike Program?*

	# of responses	Percent
1. Yes	97	18%
2. No	443	82%
Total	540	100%



Question 11: *Where do you live on campus?*

	# of responses	Percent
1. Gage	156	29%
2. Place Vanier	141	26%
3. Totem Park/Ritsumeikan	96	18%
4. Thunderbird	115	21%
5. Fairview	32	6%
Total	540	100%



Summary of Comments: UBC Parking Questionnaire

Number	Subject	Comment
1	Auto Ownership	Car needed for off-campus work (practicum). Transit trips would take too long.
2	Auto Ownership	I like the convenience of having a car. I wouldn't give up my car, even if transit was great.
3	Auto Ownership	I own a vehicle, but do not keep it on campus, as I am unable to get parking. I use the bus, which is less convenient.
4	Auto Ownership	Moved out to residence to avoid commuting but did not give up car. Need car for off-campus activities (scuba diving - 100+ lbs of equipment).
5	Auto Ownership	My car gives me advantages that transit can't provide.
6	Auto Ownership	Need car for long distance travel.
7	Bicycle Parking	Bicycle racks outside Gage are inadequate. Covered and well lit bicycle racks should be available. As a minimum, the number of racks should be doubled.
8	Bicycle Parking	Bike racks are not secure enough. Bikes are still being stolen.
9	Bicycle Parking	Bike theft (including theft of components) deters me from using my bike for trips to/from school more often.
10	Bicycle Parking	Build several bike parking compounds on campus that are covered and give access to members only.
11	Bicycle Parking	Fairview requires more secure bicycle storage, such as a bicycle cage.
12	Bicycle Parking	I find campus parking inadequate. Bike security around school buildings should be improved.
13	Bicycle Parking	I used to have a bike, but it got stolen from a rack outside my residence.
14	Bicycle Parking	I would get a bike if secure, covered parking was available. My roommates bring their bikes inside and there is no more room for another bike.
15	Bicycle Parking	More bike racks needed, both at residences and around campus. Need to be strategically placed around campus.
16	Bicycle Parking	My front tire was stolen from my bike in the underground bicycle racks.
17	Bicycle Parking	My wheels were stolen from the bike racks. Need to be able to park bikes indoors.
18	Bicycle Parking	Need a large bike rack in the courtyard of T-Bird residence blocks like there are in Fairview.
19	Bicycle Parking	Need an indoor storage facility for bikes at Gage residence.
20	Bicycle Parking	Need bicycle lockers at residence buildings.
21	Bicycle Parking	Need more bicycle parking that is secure and indoors.
22	Bicycle Parking	Need more bicycle racks at SRC and at Village.
23	Bicycle Parking	Need more bicycle racks in at residences.
24	Bicycle Parking	Need more bike racks (to accommodate demand and avoid damage to bikes) as well as covered bicycle parking facilities.
25	Bicycle Parking	Need more bike racks as well as covered bicycle parking facilities.
26	Bicycle Parking	Need more bike racks in ares of Math Annex and Hebb Theatre.
27	Bicycle Parking	Need more bike racks.
28	Bicycle Parking	Need more covered bicycle parking facilities all over campus.
29	Bicycle Parking	Need more covered bicycle parking facilities all over campus. Bike racks on buses also.
30	Bicycle Parking	Need more covered/sheltered bicycle racks and more secure facilities.
31	Bicycle Parking	Need more covered/sheltered bicycle racks or an indoor storage area for T-Bird residence. Maybe one covered storage facility per block.
32	Bicycle Parking	Need more covered/sheltered bicycle racks or an indoor storage area.
33	Bicycle Parking	Need more covered/sheltered bicycle racks.
34	Bicycle Parking	Need more covered/sheltered bicycle racks.
35	Bicycle Parking	Need more security for bike parking.
36	Bicycle Parking	Not enough secure bicycle racks by hospital.
37	Bicycle Parking	There are not enough bicycle racks at Gage residence. Need a covered facility.
38	Bicycle Parking	There is not adequate storage for expensive bikes. UBC Housing should install or allow hooks to be placed in walls to hang bikes in residence.
39	Bicycle Parking	Underground bicycle racks in Gage need to be improved and expanded. They are not secure.
40	Bicycle Parking	Need more bike racks. Find people at residences parking at other houses since not enough spaces at their houses.
41	Bicycle Parking	Need more bike raks at CSCI, CICSR Hennings and at residences.
42	Bicycles	Bicycle theft is a problem.

Number	Subject	Comment
43	Bicycles	Bike co-op is not successful. Not run as the originally stated program. Bicycles are old and unsafe.
44	Bicycles	Haven't heard of the Bike Co-op, but it sounds like a good idea.
45	Bicycles	I haven't seen any public bikes yet. Has the program even started yet? I would use them if I saw them.
46	Bicycles	I would like more info on the UBC Bike Co-op program.
47	Bicycles	I would love to own a bike.
48	Bicycles	If I had a bike I would probably take the bus less, and I could ride to Safeway for groceries.
49	Bicycles	Need more bike racks on buses.
50	Bicycles	Never heard of the Bike Co-op.
51	Bicycles	The Bike Co-op is a great idea.
52	Bicycles	The Bike Co-op sounds like a great idea.
53	Bicycles	The Co-op is a good idea but the current realization appears to be merely symbolic. We need real cycling paths along University Boulevard.
54	Bicycles	Theft potential deters me from parking my bike on campus. I may take advantage of the Bike Coop to eliminate the potential for theft.
55	Bicycles	Would be nice to have a location on campus with "air" for bike tires. I sold my car because the cost of residence parking was too high.
56	Bicycles	Hard to bike around especially at 10 min breaks, very dangerous.
57	Bicycles	Checked out Co-op website, still unclear of organization.C40
58	Bicycles	Would like to have use of a bike for recreation use (trail riding). I'm an out-of-province student and didn't bring my bike to UBC. I'll look into the Bike Co-op.
59	General	I use in-line skates instead of biking.
60	General	My friends with cars have no complaints with the system here and have expressed satisfaction with it.
61	General	What about motorcycles? Are they considered as part of the Trek Program.
62	General	Need more unloading areas by residences, they're usually locked up.
63	General	You guys are running a long-awaited and excellent program. Keep it up.
64	Parking	Fairview underground garage doors either stick open or won't open. It is unsafe for them to open to anyone. Poor lighting in entrance area and could be a good hiding area for prowlers.
65	Parking	Increase security at UBC Lots. Many auto thefts recently.
66	Parking	Meter parking at Totem is ridiculous for visitors.
67	Parking	Need auto parking closer to libraries so that I don't need to walk such a long way after dark. Parking meters should allow more than 1 hour at a time. It makes it difficult for 2 hour classes.
68	Parking	Need guest parking spots at Thunderbird residence for overnight visitors since B-lots are closed after 2am.
69	Parking	Need more guest parking around Gage residence. Especially for short-term visitors.
70	Parking	Need more guest parking at residences.
71	Parking	Need more guest parking.
72	Parking	Need more inexpensive parking closer to central campus.
73	Parking	Need more parking for visitors. The parkade is too expensive.
74	Parking	Need more visitor parking at Gage.
75	Parking	Need more visitor parking or loading spaces. I live in Gage, but park in Thunderbird.
76	Parking	Need more visitor parking.
77	Parking	Need more visitor/temporary parking and more overnight parking for Gage residence.
78	Parking	Need more visitor/temporary parking and more overnight parking.
79	Parking	Need more visitor/temporary parking and more overnight parking. There are no affordable options for guests.
80	Parking	Need security cameras at parking lots to prevent theft.
81	Parking	Not enough parking at Totem residence.
82	Parking	Parking anywhere on this campus is too expensive, at the meters especially (25 cents for 7 minutes!!!). The parking patrol officers are not fair. Fines are too expensive also.
83	Parking	Parking for private vehicles is too expensive.
84	Parking	Parking is much too expensive. I work far away (White Rock).
85	Parking	Parking prices are ridiculous. I keep a car on campus so that I can get home throughout the school year.
86	Parking	Parking should be cheaper for students. Remove yellow poles in T-Bird undeground parking.

Number	Subject	Comment
87	Parking	Parking should be included with the expensive cost of rent.
88	Parking	Parking stalls at T-Bird Residence are too small. All of the best spots go to Housing Trucks and Vans.
89	Parking	Parking stalls at T-Bird Residence are too small. Difficult to park. Parking too expensive. There are too many cars on campus. Close local campus roads to general automobile traffic.
90	Parking	People park in my assigned spot all the time at Gage.
91	Parking	Remove the dumpster from in front of the underground parking access of Gage. It is hard to see around.
92	Parking	Security at parking facilities (T-Bird underground) needs to be improved. My car was broken into at this location.
93	Parking	Security for auto and bike parking should be improved all over campus.
94	Parking	Service vans at Gage park opposite underground stalls and make it almost impossible for cars to use parking stalls.
95	Parking	The $42.00 parking fee is too high. T-Bird residents pay the same as Totem residents for use of T-Bird parking facilities.
96	Parking	There are way too few parking spaces at Gage.
97	Parking	There is a parking shortage for Gage residence for visitors. I often find my parking spot occupied by another vehicle.
98	Parking	If you are a resident on campus, I think you should have access to free parking
99	Parking	Need short term lots (meter) around residences for parents.
100	Parking	Why is V-lot only for girls?
101	Parking	Trying to get a parking permit is difficult.
102	Parking	L-lot is expensive and cannot believe for price paying that it is not paved.
103	Parking	Need more lights in parking lots, very dangerous.
104	Parking	Not enough handicap access close to the buildings.C65
105	Parking	L-lot is close and conveinent, but more lots needed. Also, price is high, hard for some to bring vehicles to campus.
106	Transit	Bus service to local areas is okay, but service to/from suburbs is poor.
107	Transit	It would be nice if Bus 41 came by Totem at an earlier time. Also need more indoor bicycle parking areas.
108	Transit	Need Skytrain extension to UBC.
109	Transit	Need Skytrain extension to UBC.
110	Transit	Perhaps our student cards could be used as bus passes, with an additional fee. This would make the bus an even more attractive option.
111	Transit	Please consider including the cost of transit passes in student fees.
112	Walking	I find it just as easy to walk around campus, instead of having to lock my bike everytime I need to stop.
113	Walking	Please make all of the necessary repairs so that pedestrians can enjoy the walk (trip hazards, puddling, stairs).

Appendix D – Family Student Resident Parking Survey

UBC Department of Housing and Conferences

U B C ⁎ P A R K I N G ⁎ R E V I E W

The University of British Columbia is reviewing parking needs for on-campus housing, in order to ensure that appropriate parking is provided for existing and planned new housing developments. Your input is an important part of this review. Please take 5 minutes to complete this questionnaire and return it to one of the locations identified at the bottom of the page. *Your name will be entered into a drawing for a choice of:*

- *A $50 gift certificate to Our Community Bikes, or;*
- *A 1-zone monthly transit pass, or;*
- *$50 off a monthly vanpool fare.*

1. How many motor vehicles are owned by persons in your household? _____

2. a) How many parking spaces are assigned to your household? _____

   b) How many of these do you use to park vehicles? _____

3. What is the primary use of the motor vehicle(s) in your household?
   Please check only one box.

   ☐1 Work ☐4 Social and/or recreation trips
   ☐2 School ☐5 Long-distance travel
   ☐3 Shopping ☐6 Other _____

4. If a reduced-price transit pass were available to you and persons in your household, would that encourage you to reduce the number of vehicles in your household?

   ☐1 Yes ☐2 No

   If yes, how many vehicles would you keep? _____

5. How many bicycles are owned by persons in your household? _____

6. How many persons are there in your household? _____

Thank you for your time! Please return your questionnaire to one of the following locations by *Monday, May 25.*

- ☞ *Fax* your questionnaire to 273-8752
- ☞ *Drop* your questionnaire off at the Acadia Park front desk in the Commons Building.

Mail your questionnaire to 204–10711 Cambie Road, Richmond, BC V6X 3G5

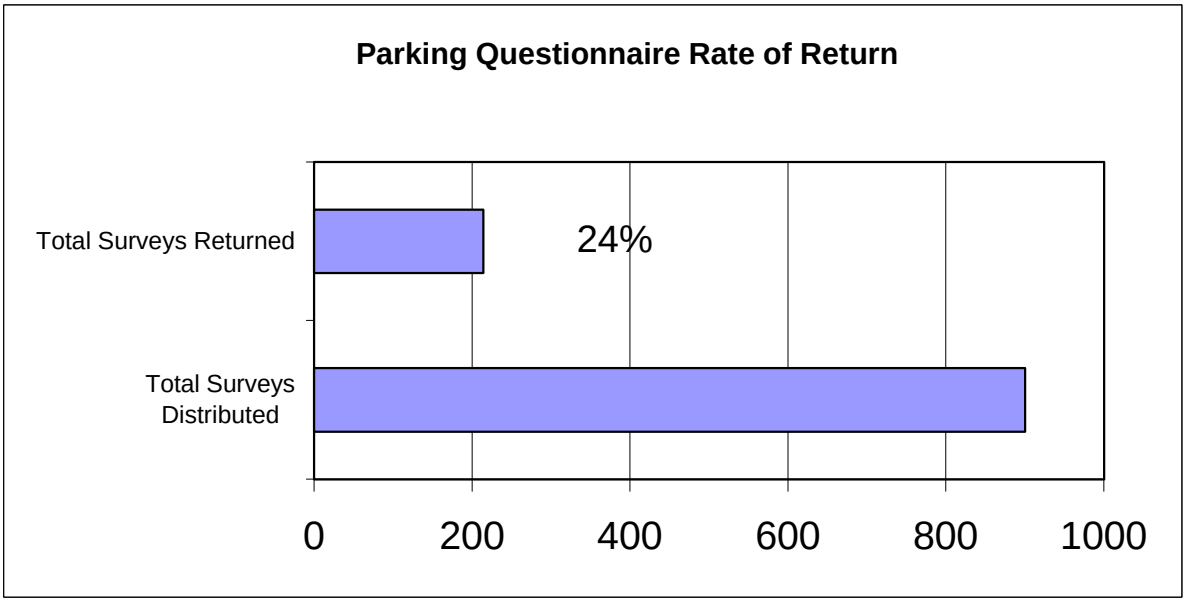
Name: _____

Address: _____

Phone: _____

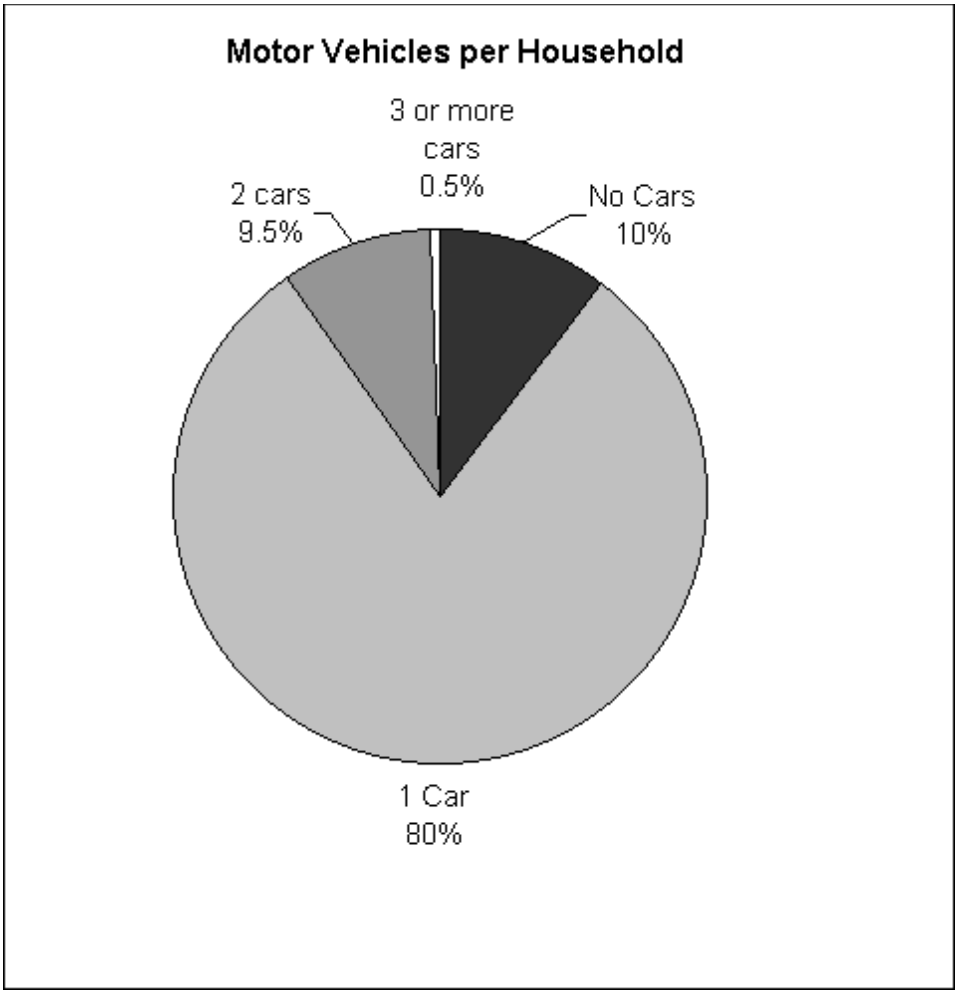
Questionnaire Rate of Return

Total Surveys Distributed	900
Total Surveys Returned	214
Rate of Return	24%



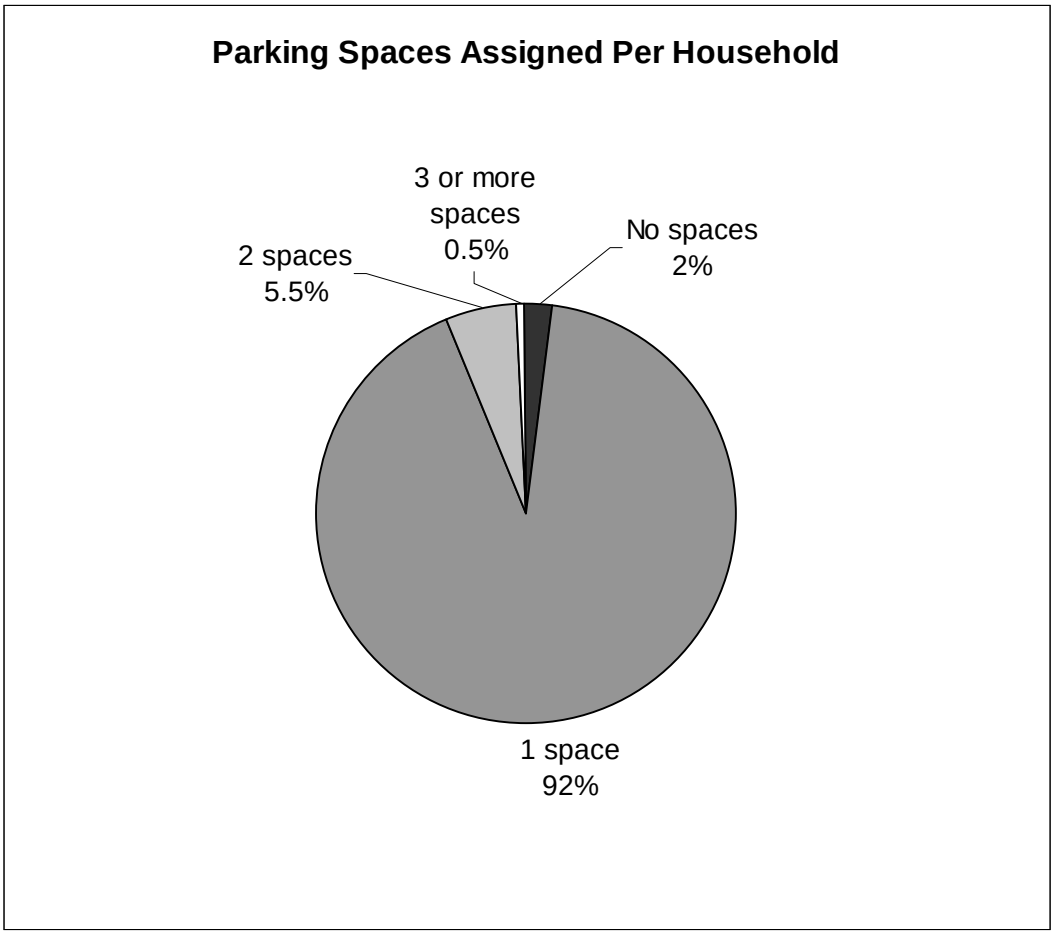
Question 1: How many motor vehicles are owned by persons in your household?

No. of Motor Vehicles	0	1	2	3 or more
Totals	22	171	20	1



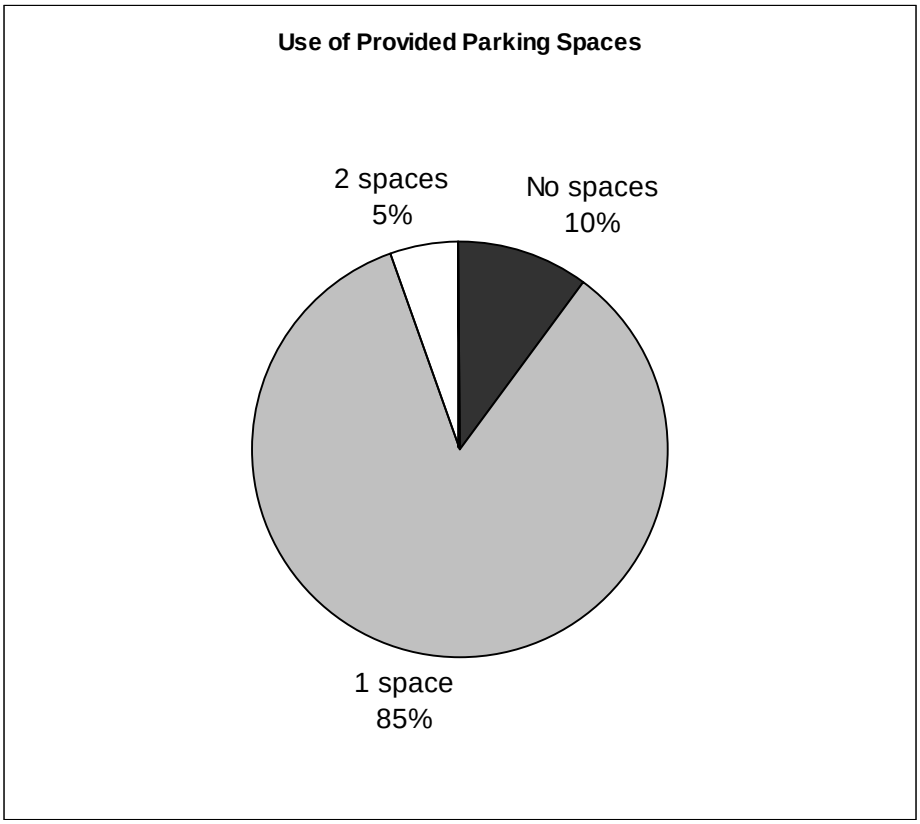
Question 2(a): How many parking spaces are assigned to your household?

No. of Assigned Spaces	0	1	2	3 or more
Totals	5	196	12	1



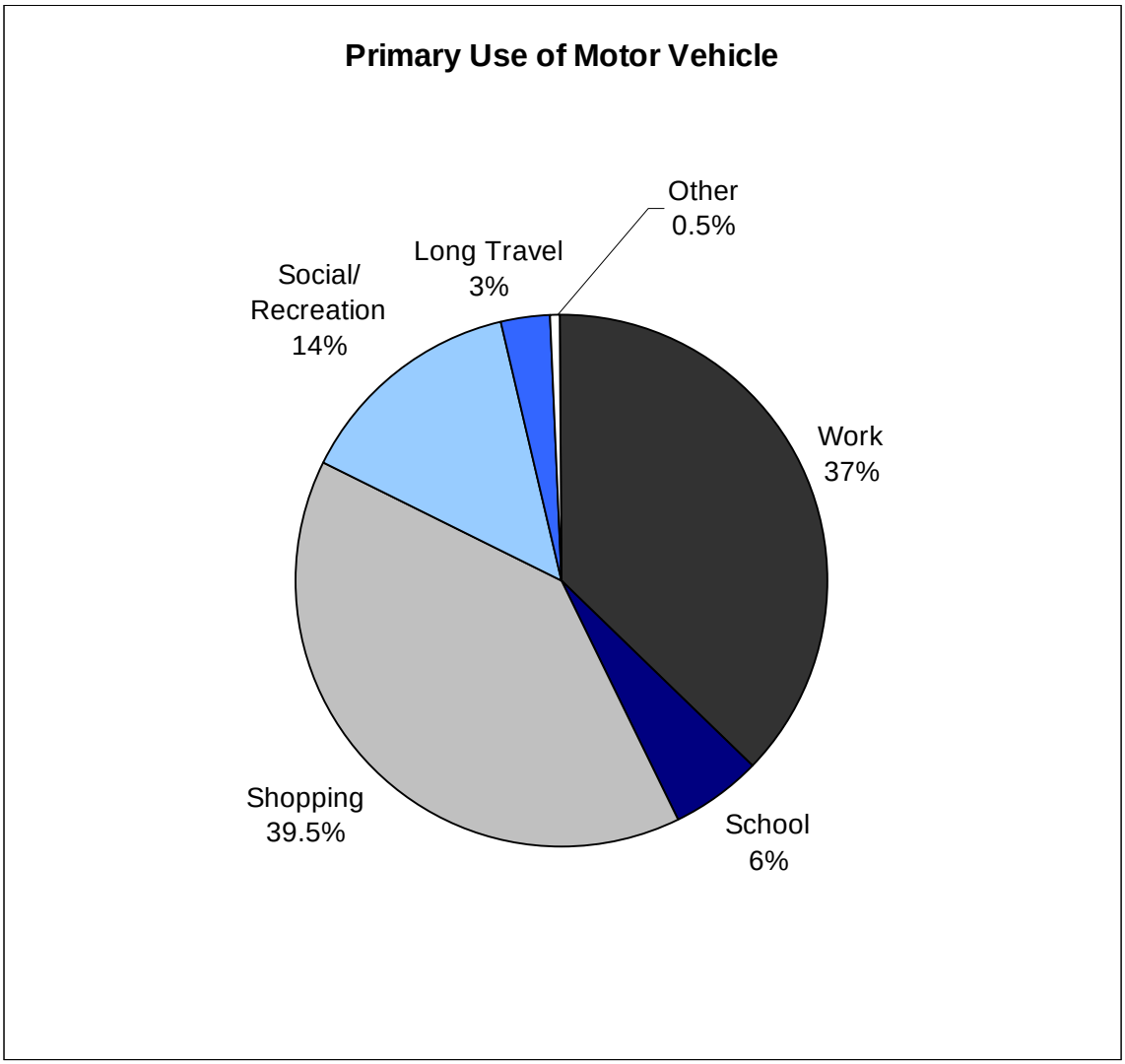
Question 2(b): How many of these do you use to park your vehicle?

No. of Assigned Spaces	0	1	2	3 or more
Totals	22	181	11	0



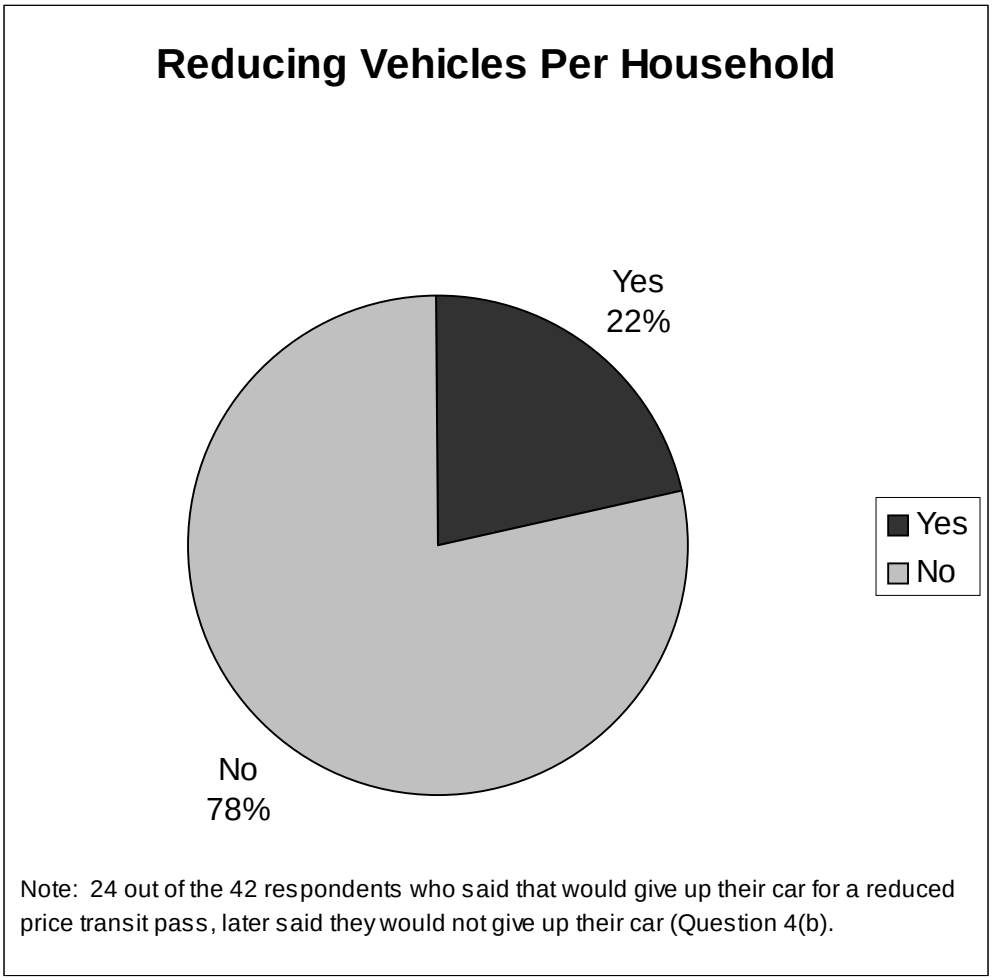
Question 3: What is the primary use of the motor vehicle in your household?

Primary Use	Work	School	Shopping	Social/ Recreation	Long Travel	Other
Totals	73	11	77	28	6	1



Question 4 (a): If a reduced-price transit pass were available to you and persons in your household, would that encourage you to reduce the number of vehicles in your household?

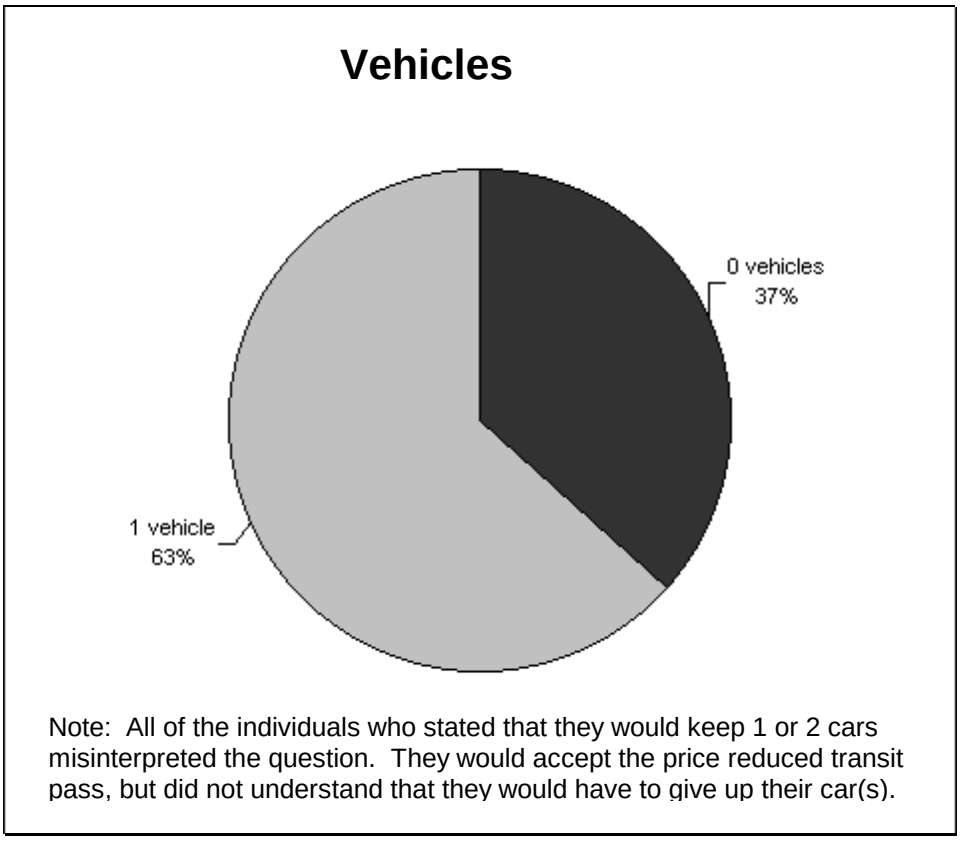
	Yes	No
Totals	42	153



Note: 24 out of the 42 respondents who said that would give up their car for a reduced price transit pass, later said they would not give up their car (Question 4(b).

Question 4 (b): If you answered yes to question 4 (a), how many vehicles would you keep?

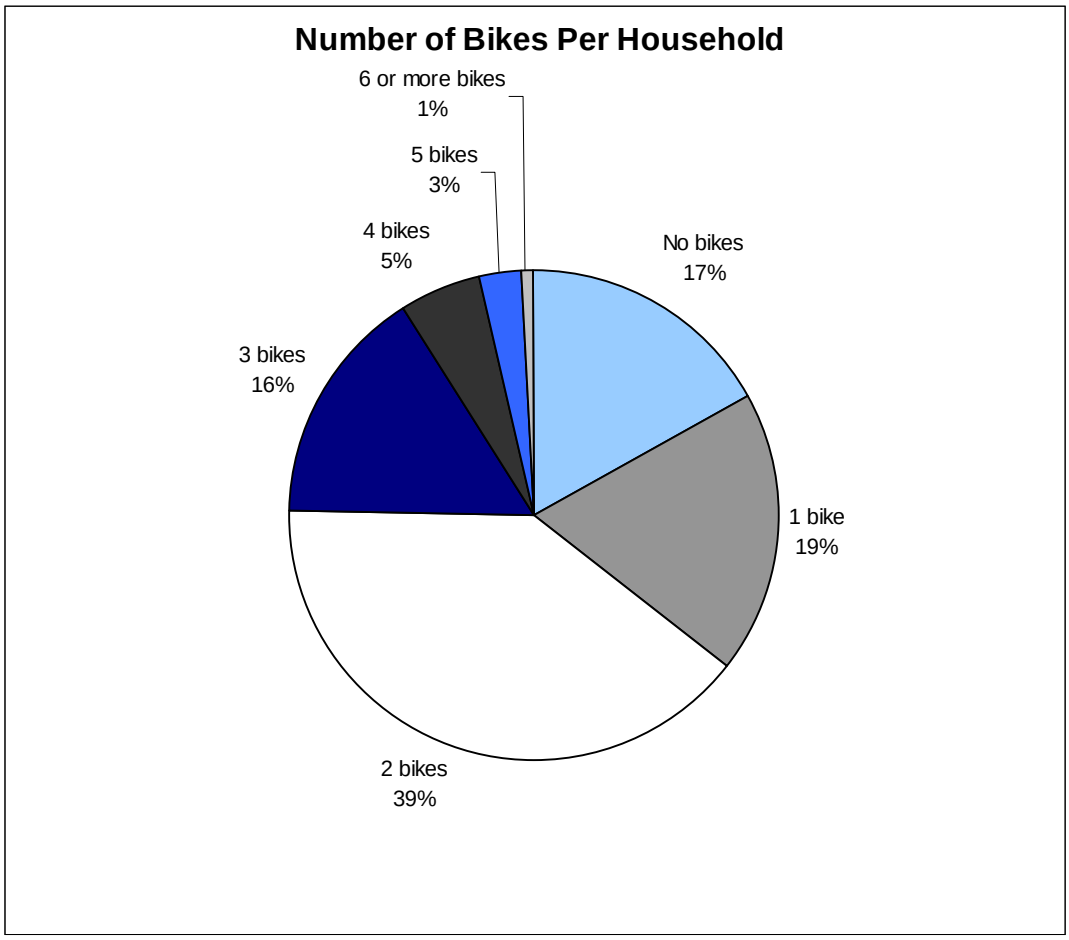
	0 vehicles	1 vehicle	2 vehicles
Totals	15	26	1



Note: All of the individuals who stated that they would keep 1 or 2 cars misinterpreted the question. They would accept the price reduced transit pass, but did not understand that they would have to give up their car(s).

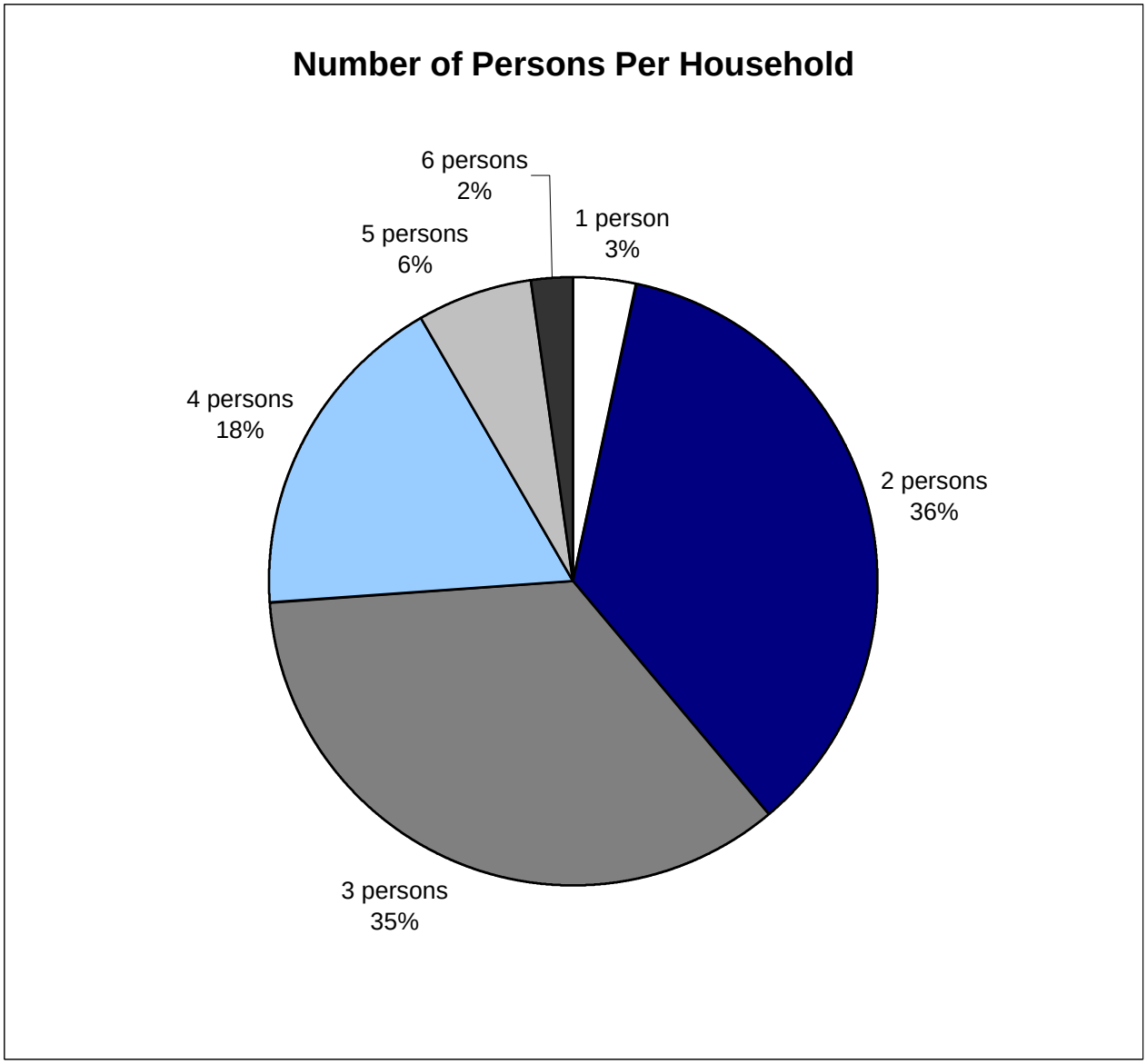
Question 5: How many bicycles are owned by persons in your household?

# of Bicycles	No bikes	1 bike	2 bikes	3 bikes	4 bikes	5 bikes	6 or more bikes
Totals	36	40	85	34	11	6	2



Question 6: How many persons are there in your household?

# of Persons	1 person	2 persons	3 persons	4 persons	5 persons	6 persons
Totals	7	76	75	38	13	5



Appendix E – Hampton Place Trip Generation Results

Location: Hampton Place Road
Date: December 14 to 17, 1998
Weather: Clear
Surveyor(s): Jack Hsu, Kennedy Ko

	142 units		32 units		85 units		58 units		73 units		133 units	
Time	**St. James House**		**The Sandringham**		**The Balmoral**		**The Stratford**		**West Hampstead**		**The Bristol**	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
07:00 - 07:15	0	8	0	1	0	3	1	1	1	1	0	1
07:15 - 07:30	0	6	0	3	0	2	1	4	0	3	0	3
07:30 - 07:45	1	2	0	0	1	1	1	1	1	3	3	12
07:45 - 08:00	2	8	2	1	0	5	0	5	0	5	1	9
08:00 - 08:15	0	11	0	2	0	6	0	6	2	6	2	9
08:15 - 08:30	1	10	0	3	1	5	1	5	0	8	2	6
08:30 - 08:45	1	11	1	1	4	2	1	2	2	1	5	9
08:45 - 09:00	3	4	1	5	2	4	3	3	2	2	3	7
09:00 - 09:15	1	4	3	2	2	8	1	4	1	2	3	6
09:15 - 09:30	0	3	0	3	1	3	5	1	2	2	3	7
09:30 - 09:45	1	4	1	1	1	3	0	4	2	2	3	2
09:45 - 10:00	1	5	2	0	0	2	2	2	0	0	0	5
Total 3hr Period	11	76	10	22	12	44	16	38	13	35	25	76
Peak Hour	4	40	5	11	9	19	2	18	4	20	8	36
Peak Hour Total Trips		44		16		28		20		24		44
Peak Hour Trip Generation (trips/du)		**0.31**		**0.50**		**0.33**		**0.34**		**0.33**		**0.33**
Existing Parking Ratio (stalls/du)		**1.71**		**2.41**		**2.26**		**2.22**		**2.25**		**1.89**
Trip Gen.-Parking Correlation		**0.18**		**0.21**		**0.15**		**0.16**		**0.15**		**0.18**
ITE Pk. Hr. Trip Generation Rate		**0.44**										
ITE Parking Generation Rate		**1.11**										
ITE Trip Gen.-Parking Correlation		**0.40**										
MoTH Pk. Hr. Trip Generation Rate		**0.49**										
MoTH Parking Generation Rate		**1.20**										
MoTH Trip Gen.-Parking Correlation		**0.41**										

15:00 - 15:15	3	5	2	0	4	4	4	2	1	3	3	2
15:15 - 15:30	5	4	1	1	5	3	2	2	6	2	3	3
15:30 - 15:45	3	1	4	0	2	3	2	2	4	4	10	2
15:45 - 16:00	3	4	2	2	4	2	2	3	3	3	5	3
16:00 - 16:15	6	2	2	2	3	5	3	2	5	3	1	2
16:15 - 16:30	4	4	0	1	2	1	3	0	3	2	6	5
16:30 - 16:45	3	2	1	0	2	1	3	2	5	2	4	1
16:45 - 17:00	6	1	5	2	2	0	3	2	6	2	5	3
17:00 - 17:15	6	1	2	1	5	4	4	0	5	0	10	5
17:15 - 17:30	7	1	3	0	2	1	4	3	7	5	6	3
17:30 - 17:45	7	4	3	0	6	0	4	4	4	1	4	2
17:45 - 18:00	6	0	4	2	5	2	3	2	2	1	3	5
Total 3hr Period	59	29	29	11	42	26	37	24	51	28	60	36
Peak Hour	26	7	13	3	18	7	15	9	23	9	25	13
Peak Hour Total Trips		33		16		25		24		32		38
Peak Hour Trip Generation (trips/du)		**0.23**		**0.50**		**0.29**		**0.41**		**0.44**		**0.29**
Existing Parking Ratio (stalls/du)		**1.71**		**2.41**		**2.26**		**2.22**		**2.25**		**1.89**
Trip Gen.-Parking Correlation		**0.14**		**0.21**		**0.13**		**0.19**		**0.19**		**0.15**
ITE Pk. Hr. Trip Generation Rate		**0.54**										
ITE Parking Generation Rate		**1.11**										
ITE Trip Gen.-Parking Correlation		**0.49**										
MoTH Pk. Hr. Trip Generation Rate		**0.68**										
MoTH Parking Generation Rate		**1.20**										
MoTH Trip Gen.-Parking Correlation		**0.57**										

Appendix F - References and Contact List

City of Vancouver

Resources:

Bunt and Associates. *Collingwood Village Parking Study.* November 30, 1996.

City of Vancouver. *Vancouver City Council Policy Report – Building and Development: Collingwood Village Parking Study.* December 20, 1996.

Contacts:

Bob MacDonald, *Parking Section, Engineering Department*
Paul Pinsker, *Parking Section, Engineering Department*
Tom Phipps, *Planning Department*

City of Burnaby

Contacts:

Robert Wrenger, *Planning Department*
Ken Ito, *Planning Department*

City of New Westminster

Resources:

City of New Westminster. *Planning Report – Development Variance Permit Application 305 for 634 Sixth Avenue.* February 19, 1998.

Contact:

Stephen Scheving, *Planning Department*

Simon Fraser University

Resources:

City of Burnaby. *Simon Fraser University Official Community Plan.* September 9, 1996.

Contact:

Jeff Ward, *Housing Department*

University of Victoria

Contacts:

Housing, Food and Conferences Services
Parking and Security Services

British Columbia Institute of Technology

Contact:

Tom Moore, *Housing and Conferences Office*

York University

Resources:

Status Report on Parking (1999/2000)

City of Toronto, Ontario

Contact:

Ian Cooper, *Planning Department*

City of Olympia, Washington

Resources:

City of Olympia. *Parking and Loading By-Law.* August 14, 1995.

GVRD / BCTFA / Urban Systems Ltd.

Resources:

Greater Vancouver Regional District and B.C. Transportation Financing Authority. *A Comprehensive Parking Management Strategy.* April, 1996.

Contact:

John Steiner, *Urban Systems Ltd.*