

TRANS Committee



2005 Origin-Destination Survey **Bicycle Profile**

National Capital Region

November 2010



TRANS Committee Members:

City of Ottawa

Ville de Gatineau

Société de transport de l'Outaouais

Ministry of Transportation of Ontario

Ministère des Transports du Québec

National Capital Commission

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1. INTRODUCTION

1.1 Purpose

This report analyzes the findings of the 2005 Origin-Destination Survey in the National Capital Region as it relates to bicycle trips. The context of cycling trips developed through this analysis will assist planners in identifying region-wide transportation infrastructure needs and services, measuring trends and monitoring progress towards a complete cycling network.

1.2 Survey Background

The 2005 Origin-Destination (O-D) Survey was a joint project of the TRANS Committee, made up of the National Capital Commission, the City of Ottawa, the City of Gatineau, the Ontario and Quebec Ministries of Transportation, and the transit agencies of Ottawa and Gatineau, STO and OC Transpo.

The survey was conducted in fall 2005, by way of telephone interviews. In all, 23,912 telephone interviews were completed, representing 5.1% of all households in both urban and rural districts of the survey area. Statistically, this is considered a rich sample. The results of the sample have been factored up to the general population of the National Capital Region (NCR).

Findings of the 2005 O-D Survey may be found on the O-D Survey Web site at www.O-DSurvey.ca. Some additional results relating to bicycle trips are presented below. Total trip numbers in this document relate to the population of age 11 and over. The survey did not capture commercial trips or trips generated outside of the National Capital Region.

Table 1: Terminology

Trip	A single movement by a person from an origin to a destination, for a single purpose. It may compromise one or more modes and one or more transfers.
Bicycle Trip	A single movement by a person from an origin to a destination made on a bicycle, for a single purpose. A trip is not considered a bicycle trip if any leg of the trip involve motorized mode such as auto or transit.
Origin	The location where a trip begins.
Destination	The location where a trip ends.
District	A geographic area defined for the purpose of reporting O-D Survey results.
Morning Peak Period	Refers to the AM peak period (06:30 to 08:59).
Afternoon Peak Period	Refers to the PM peak period (15:30 to 17:59).
Modal Share	The proportion of trips by any given mode out of the total trips by all modes, for a given time period.

Note that the 2005 O-D survey, although a large sample size survey, may not have fully captured all bicycle trips made by residents of the NCR. For example, the survey only covered households – excluding those living in rooming houses, on campus, etc. Further, bicycle use for non-utilitarian trips (recreation/exercise) may not have fully captured in the survey. Much of these bicycle trips happen on weekends, and in summer. Most importantly, the survey spans over the whole Fall season, at the end of which weather may not be very favourable to bike use.

1.3 General Observations

- Approximately 37,100 daily bicycle trips were made within the National Capital Region during a typical weekday in 2005. Of the total, almost 84% were originating from Ottawa and 16% were originating from Gatineau side.
- Inter-provincial bicycle travel accounts for 10% of daily bicycle trips in the Region – with 50/50 split.

Table 2: 2005 Daily Bicycle Trips

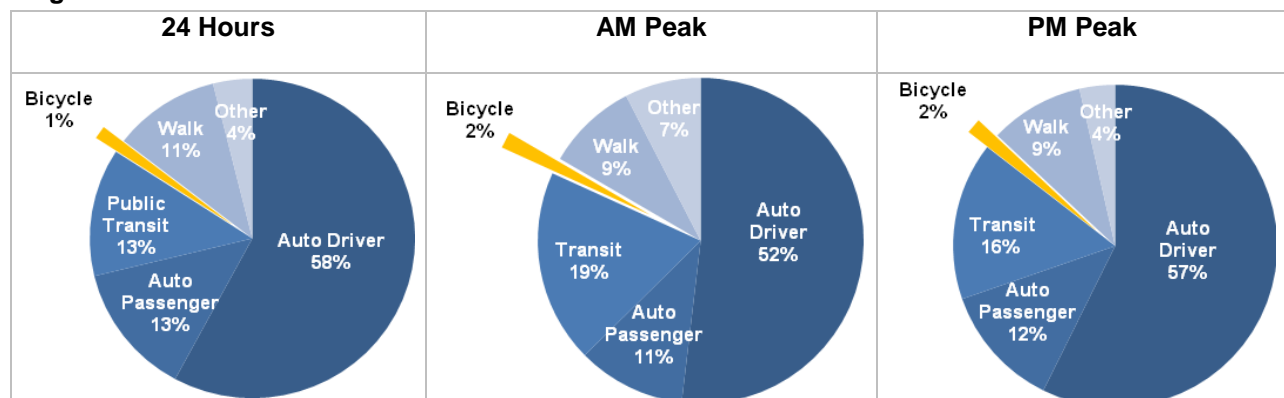
		Destination		
		Ottawa	Gatineau	Total
Origin	Ottawa	29,220	1,860	31,080
	Gatineau	1,880	4,130	6,010
	Total	31,100	5,990	37,090

2. BICYCLE MODE PROFILE

2.1 Bicycle Mode Share by Time of Day

- An examination of the origin-destination modal share revealed that 1% of all trips over 24 hours are made with bicycles.
- In the AM and PM peak periods, the modal share increases to 2% of all trips within the National Capital Region. **Figure 1** illustrates the share of all modes at these time periods.
- Further, a bicycle is used as an access mode for an estimated 750 transit trips each day or approximately 0.2% of all daily transit trips.

Figure 1: Modal Share



2.2 Bicycle Mode Share by Location

- The highest bicycle mode share originates from Central Ottawa at 2.6% of all modes.
- Less than 1% of all trips are made by bicycle in Rural and Suburban districts in the National Capital Region.
- Overall, 1.3% of all daily trips in the National Capital Region are made by bicycle.

Table 3: Bicycle Mode Share by Aggregated District of Origin

Aggregated District of Origin	Trips	Mode Share
Central Ottawa	11,300	2.6%
Central Gatineau	1,010	2.2%
Rural Ontario	560	0.4%
Rural Quebec	730	0.8%
Suburban Gatineau	2,490	0.8%
Suburban Ottawa	3,950	0.8%
Urban Gatineau	1,780	1.3%
Urban Ottawa	15,270	1.4%
Total	37,090	1.3%

The urban structural level separates the TRANS districts as follows:

- Central Ottawa (Ottawa Centre, Ottawa Inner Area);
- Central Gatineau (Île de Hull);
- Urban Ottawa (Alta Vista, Bayshore/Cedarview, Beacon Hill, Hunt Club, Merivale, Ottawa East, Ottawa West);
- Urban Gatineau (Hull Périphérie);
- Suburban Ottawa [outside greenbelt] (Kanata/Stittsville, Orléans, South Gloucester/Leitrim, South Nepean);
- Suburban Gatineau (Aylmer, Gatineau Centre, Gatineau Est, Plateau)
- Rural Ontario (Rural East, Southeast and Southwest); and
- Rural Québec (Masson-Angers, Rural Northeast and Northwest)

2.3 Bicycle Trips by Age Group

Figure 2 and Figure 3 highlight the distribution of daily Bicycle and All Mode trips amongst age groups.

- The 35-44 age group accounts for the highest percentage of daily bicycle trips at 23%. This is followed by the 24-34 age group with 18%.
- The distribution of cycling trips is relatively equal amongst the 10-24 and 45-49 age groups, around 10%.
- The percentage of bicycle trips begins to decline among age groups 50 and up, while the lowest percentage of bicycle trips is the 75+ age group.
- Compared to all modes, age groups under 44 are 10% more active in favour of bicycle while age groups over 50 are 10% less active in terms of bicycle.

Figure 2: Daily Bicycle Trips by Age Group

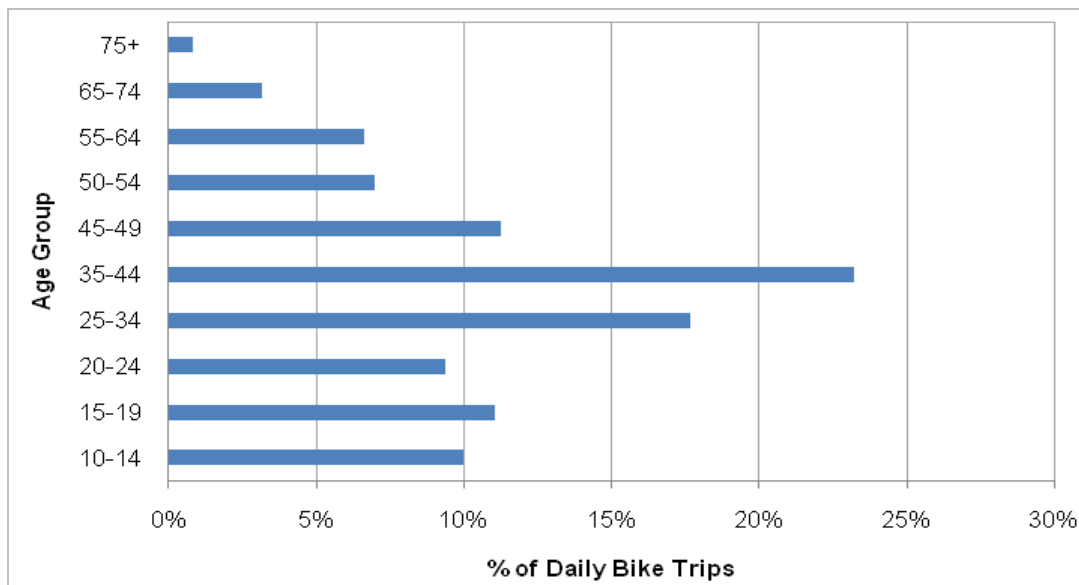


Figure 3: Daily All Mode Trips by Age Group

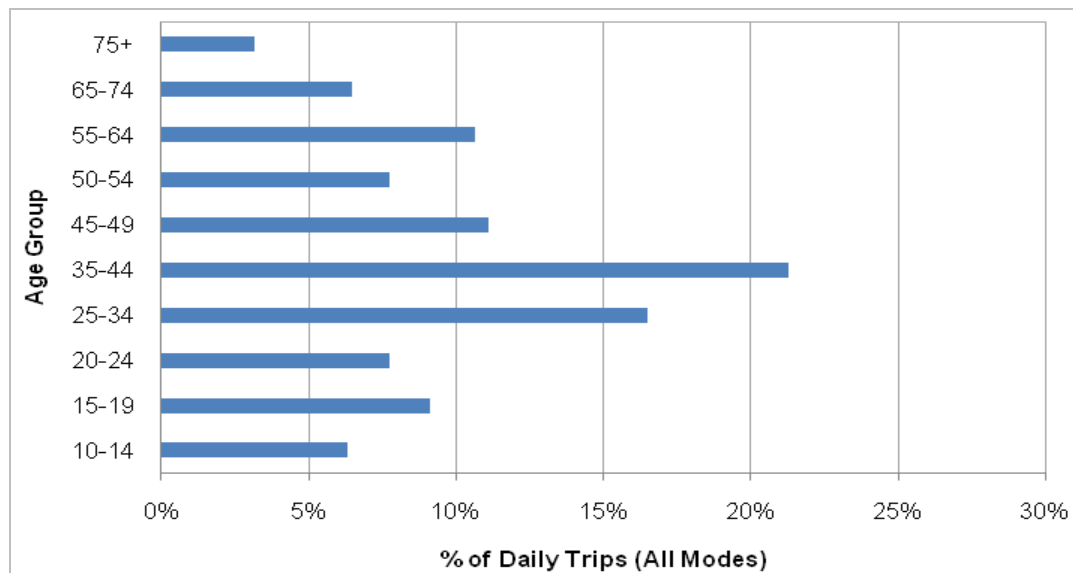


Figure 4 and Figure 5 display the distribution of morning peak period bicycle and all mode trips among age groups.

- In the morning peak period, bicycle trips distributions by age groups are almost similar to the daily distribution.
- The proportion of bicycle trips for all age group is consistent with their respective proportions of the total trips by all modes.

Figure 4: Morning Bicycle Trips by Age Group

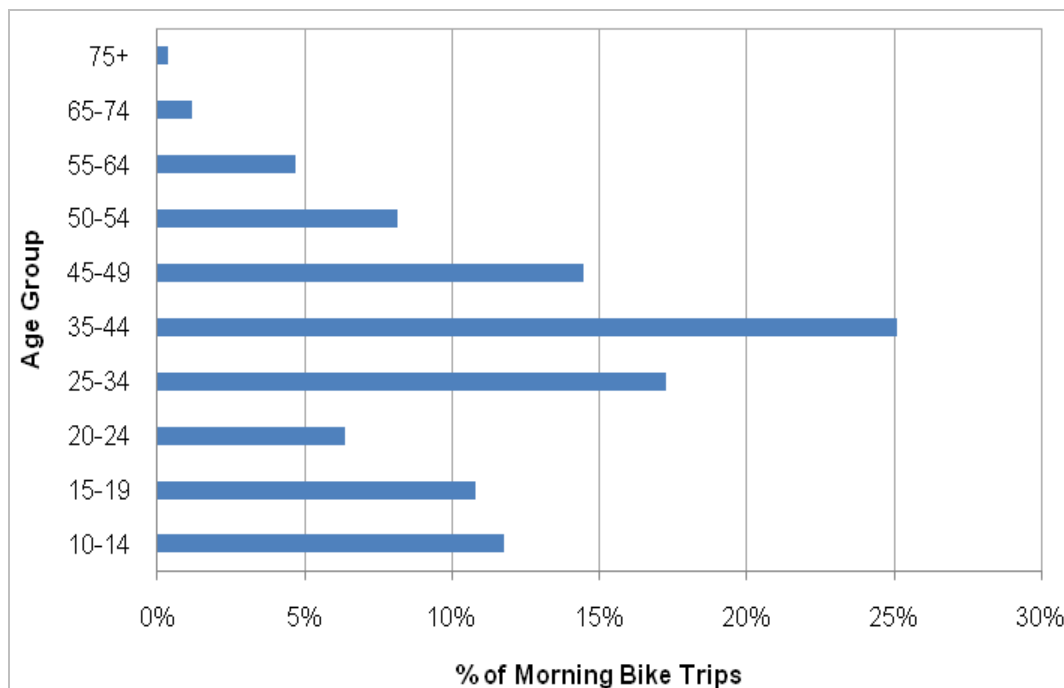
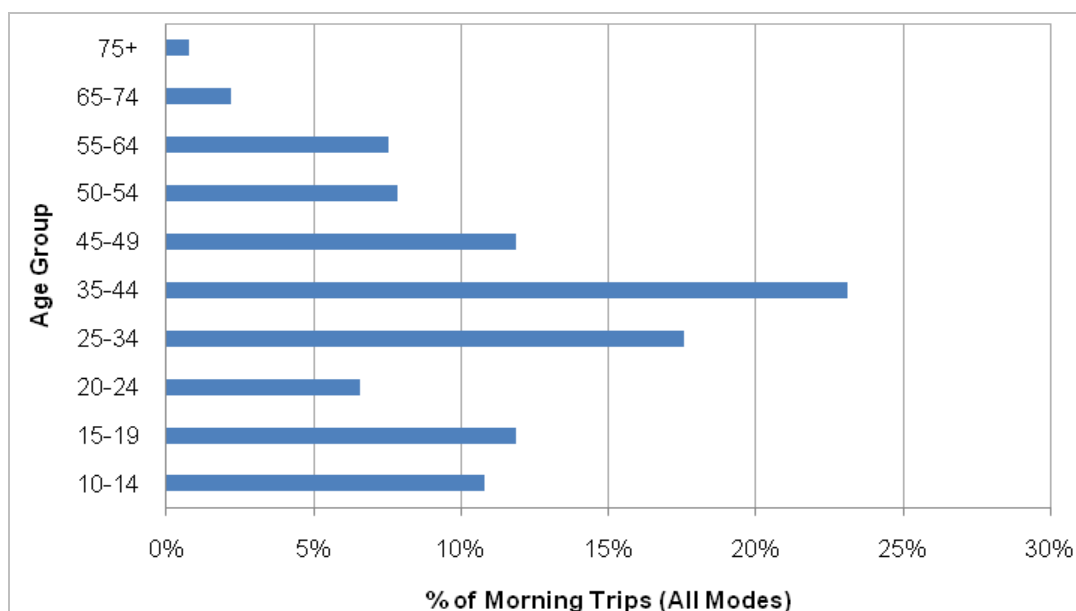


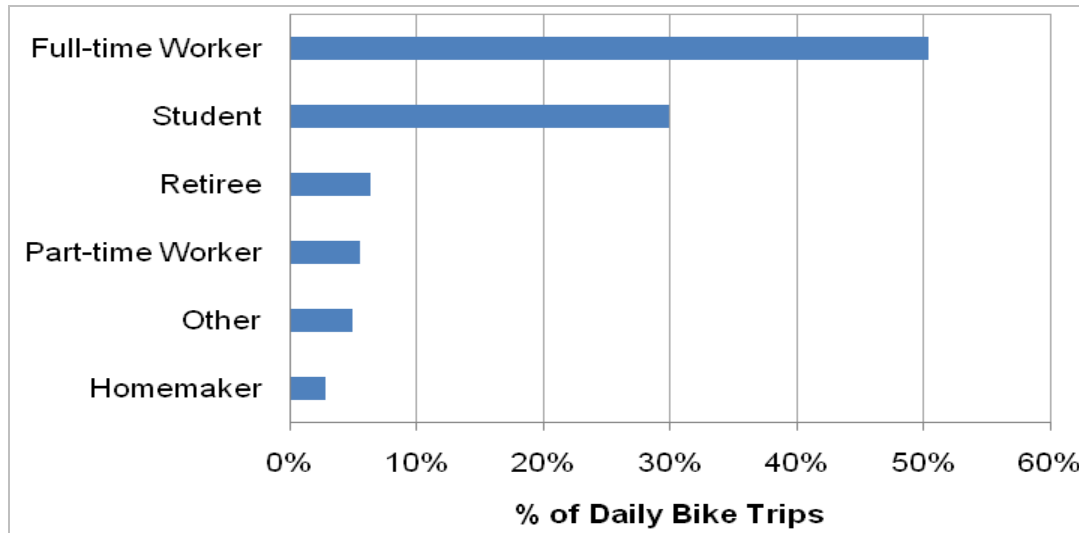
Figure 5: Morning All Mode Trips by Age Group



2.4 Bicycle Trips by Occupation

- Full-time Workers and Students account for 80% of all bicycle trips over the 24-hour period.
- The remaining 20% of daily bicycle trips are equally distributed among retirees, part-time workers, homemakers and other occupations.

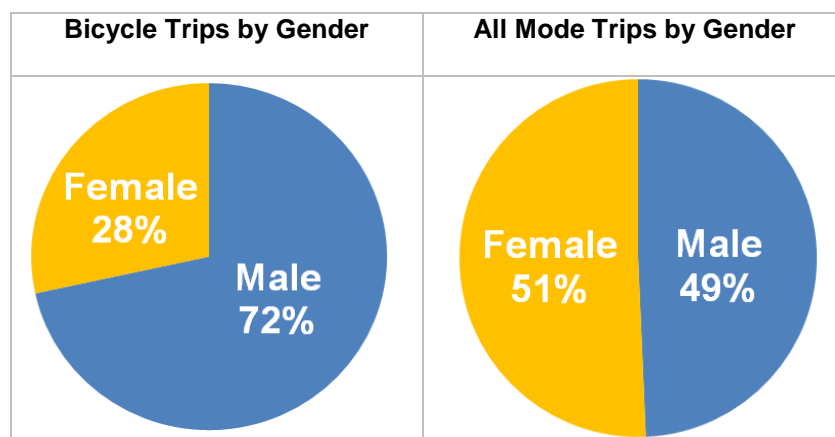
Figure 6: Daily Bicycle Trips by Occupation Status



2.5 Bicycle Trips by Gender

- As illustrated in **Figure 7**, 72% of cycling trips over 24-hours are made by males.
- Compared to all mode trips by gender over 24 hours, the proportion of female bicycle trips is much lower than the expected 51%.

Figure 7: Daily Trips by Gender



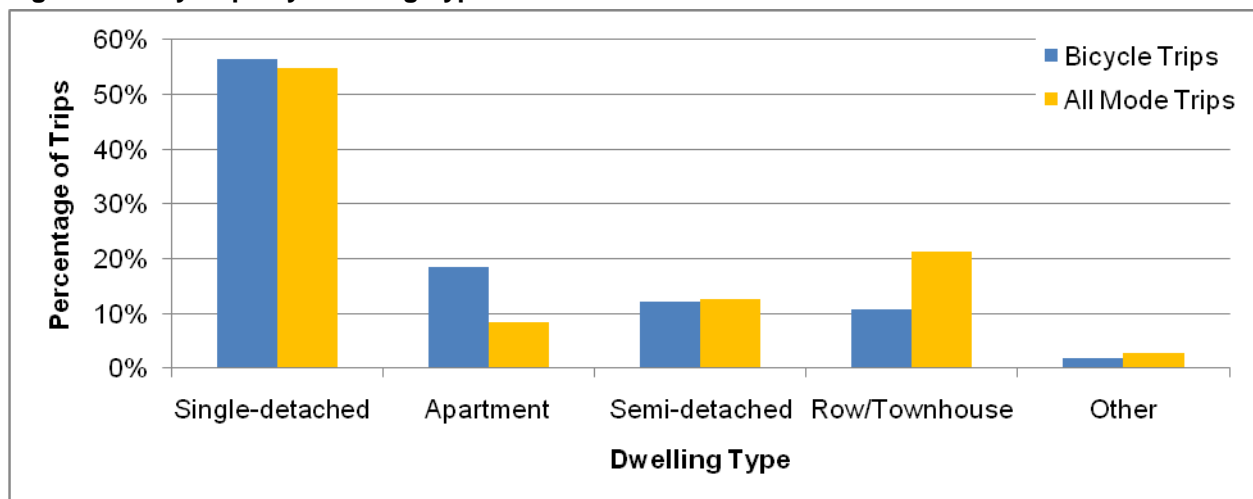
2.6 Bicycle Trips by Dwelling Type

- Of all trips made by cyclists over the 24-hour period, approximately 56% originate from a single-detached dwelling type.
- Apartment, Semi-detached and Row/Townhouse dwelling types generate 41% of daily cycling trips.

Figure 8 further illustrates the distribution of cycling trips and all mode trips among dwelling types.

- The proportion of bicycle trips originating from Apartment dwellings is 9% greater than those of all mode trips.
- Similarly, the proportion of bicycle trips originating from Townhouse dwellings is 10% less than those of all mode trips.

Figure 8: Daily Trips by Dwelling Type

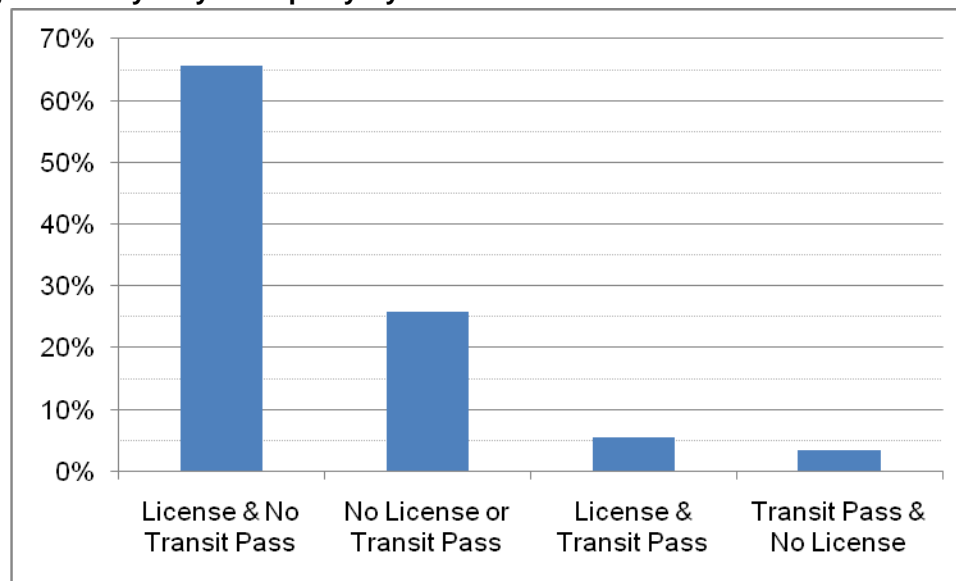


2.7 Bicycle Trips by Driver's Licence and Transit Pass

Figure 9 displays the percentage of bicycle trips by cyclists holding valid driver's licenses and valid transit passes in greater detail.

- 71% of cyclists hold a valid driver's license, however only 5% of cyclists hold a license and transit pass.
- 26% of cyclists do not hold a valid driver's license or transit pass
- 9% of all bicycle trips are made by cyclists holding a valid transit pass.

Figure 9: Daily Bicycle Trips by Cyclists with Valid Driver's License and Transit Pass



2.8 Bicycle Trips by Travel Purposes

- Overall, the proportions of daily bicycle trips by purpose are similar to those of trips by all modes.
- Over the 24-hour period, 34% of bicycle trips are made for work or school related purposes; compared to 26% of trips by all modes for work or school related purposes.
- Over the 24-hour period, 6% of trips are made by bicycle for shopping purposes, compared to 10% of trips by all modes.

Figure 10 and **Figure 11** further details bicycle trip purposes categorized by the time of day.

- For morning peak period, 66% of bicycle trips are work related followed by 26% school purpose

Figure 10: Bicycle Trip Purposes by Time of Day

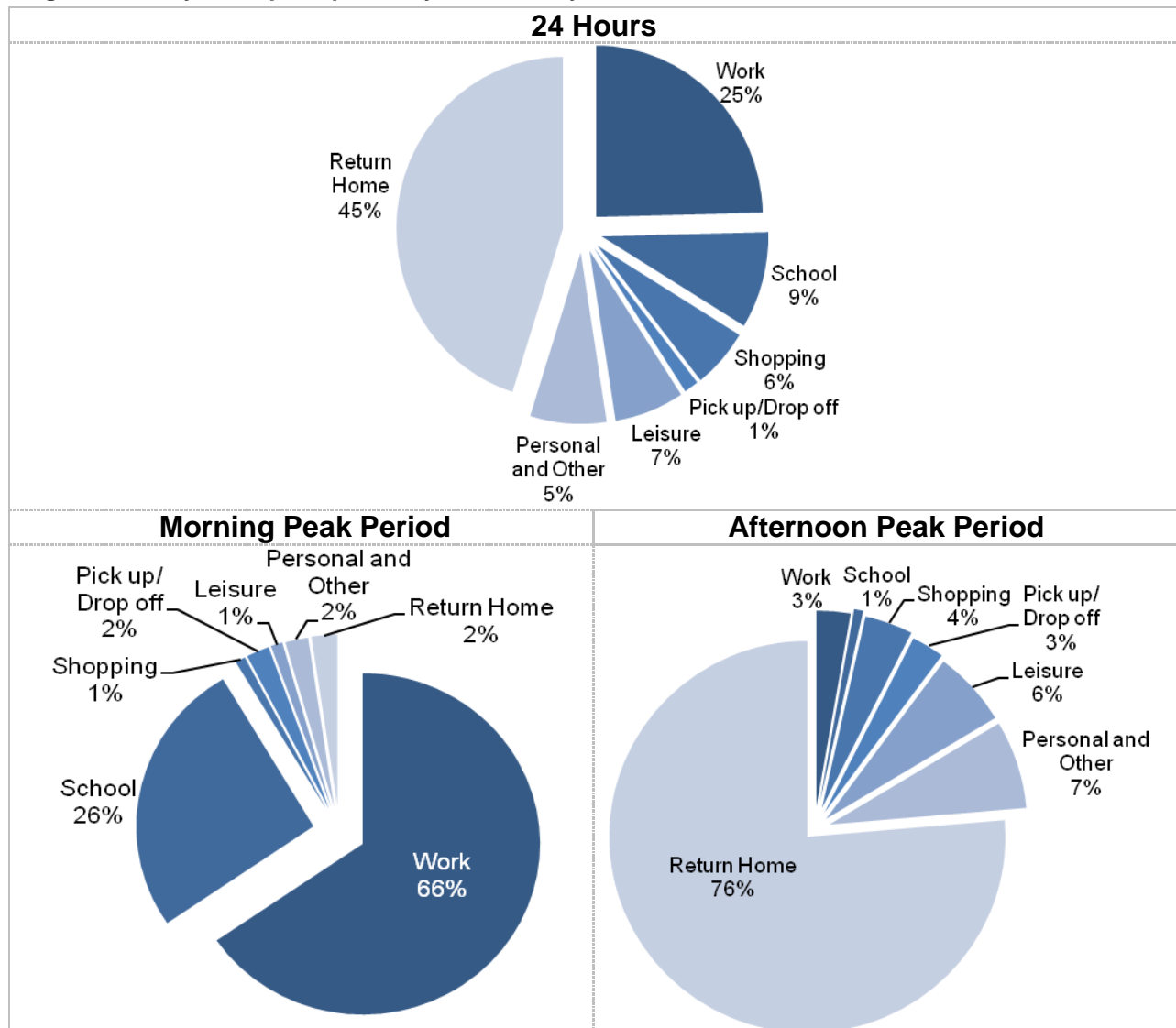
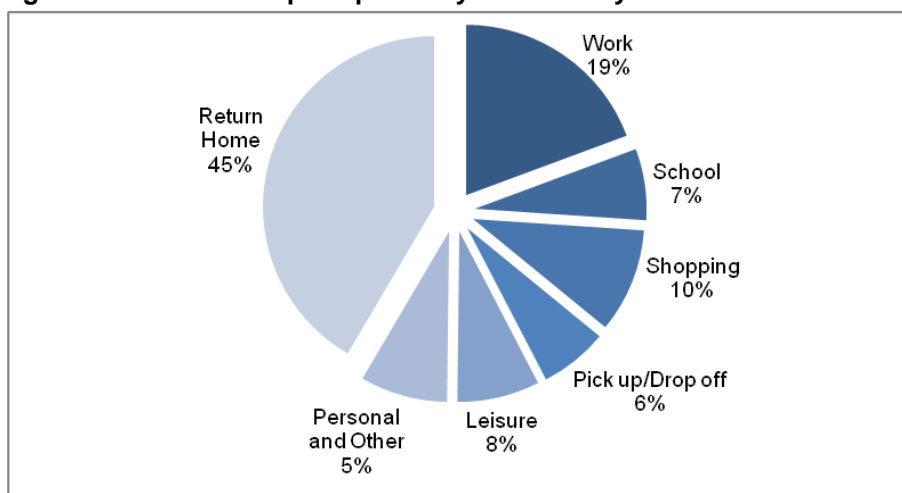


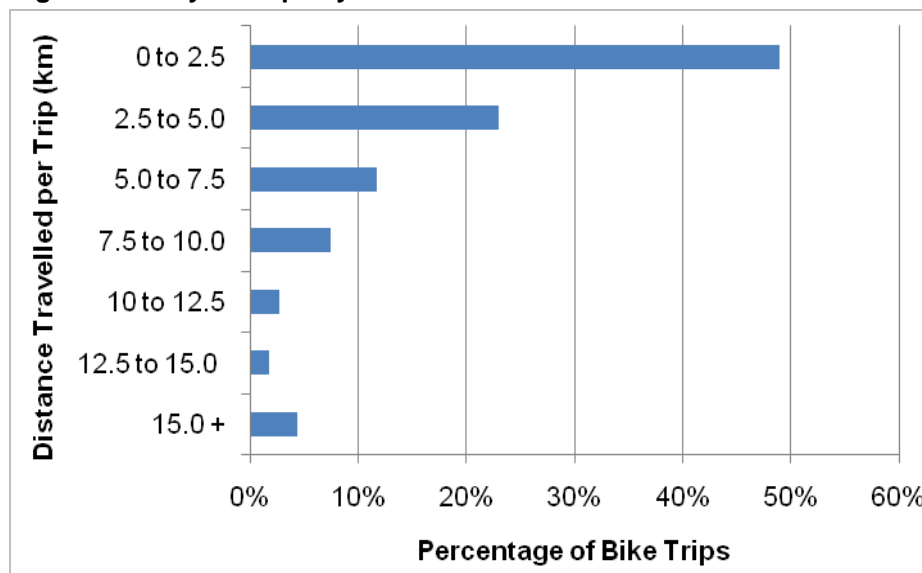
Figure 11: All Mode Trip Purposes by Time of Day



2.9 Bicycle Trips by Travel Distance

- Almost 49% of all bicycle trips are within a distance of 2.5km, while 72% of trips are within 5km in total distance (**Figure 12**).
- 37% of all Morning Bicycle Trips to Work are within a distance of 5km.
- Of all daily bicycle trips fewer than 5km, approximately 50% take place in Morning and Afternoon Peak Periods; 23% of trips occur during the Morning Peak Period and 25% of trips occur during the Afternoon Peak Period.
- 4% of bicycle trips over 24 hours are greater than 15km in total distance.

Figure 12: Bicycle Trips by Total Distance

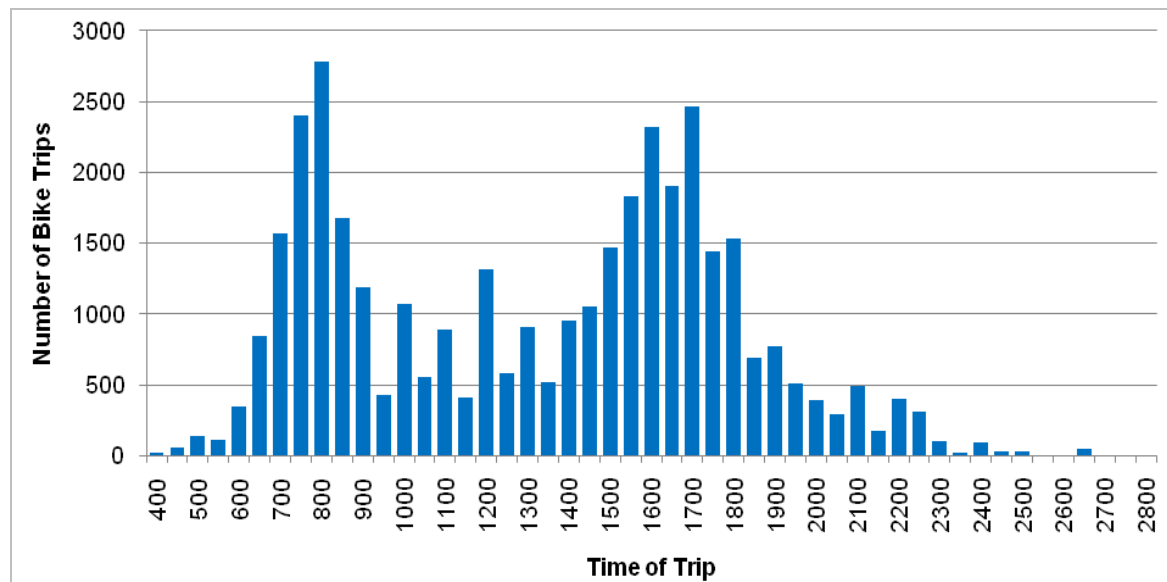


2.10 Bicycle Trips by Time of Travel

Figure 13 illustrates the daily distribution of bicycle trips over 24 hours.

- There are 2 visible peak periods of travel; between 7:00 & 8:30 and between 15:00 & 18:30. Morning peak is sharp and spread over $1\frac{1}{2}$ hours while afternoon peak spread over a longer period i.e. $3\frac{1}{2}$ hour
- There are steady bicycle trips between the Morning and Afternoon peak periods (9:00 & 15:00).
- The number of bicycle trips begins to decline after 19:00.
- Approximately half of all bicycle trips occur during the 2 peak periods.

Figure 13: Daily Time Distribution of Bicycle Trips



2.11 Bicycle Trips by Origin – Destination

Figure 14 and **Figure 15** quantify the approximate number of bicycle trips which originate from and are destined to TRANS districts during the morning peak period in the National Capital Region.

- The top 5 origin districts are:
 - Ottawa Inner Area
 - Ottawa West
 - Alta Vista
 - Ottawa East
 - Merivale
- The top 5 destination districts are:
 - Ottawa Centre
 - Ottawa Inner Area
 - Alta Vista
 - Ottawa West
 - Merivale.
- The high number of trips destined to Ottawa Centre is disproportionate to the low number of trips originating from Ottawa Centre.

Figure 14: Morning Bicycle Trips by Origin TRANS District

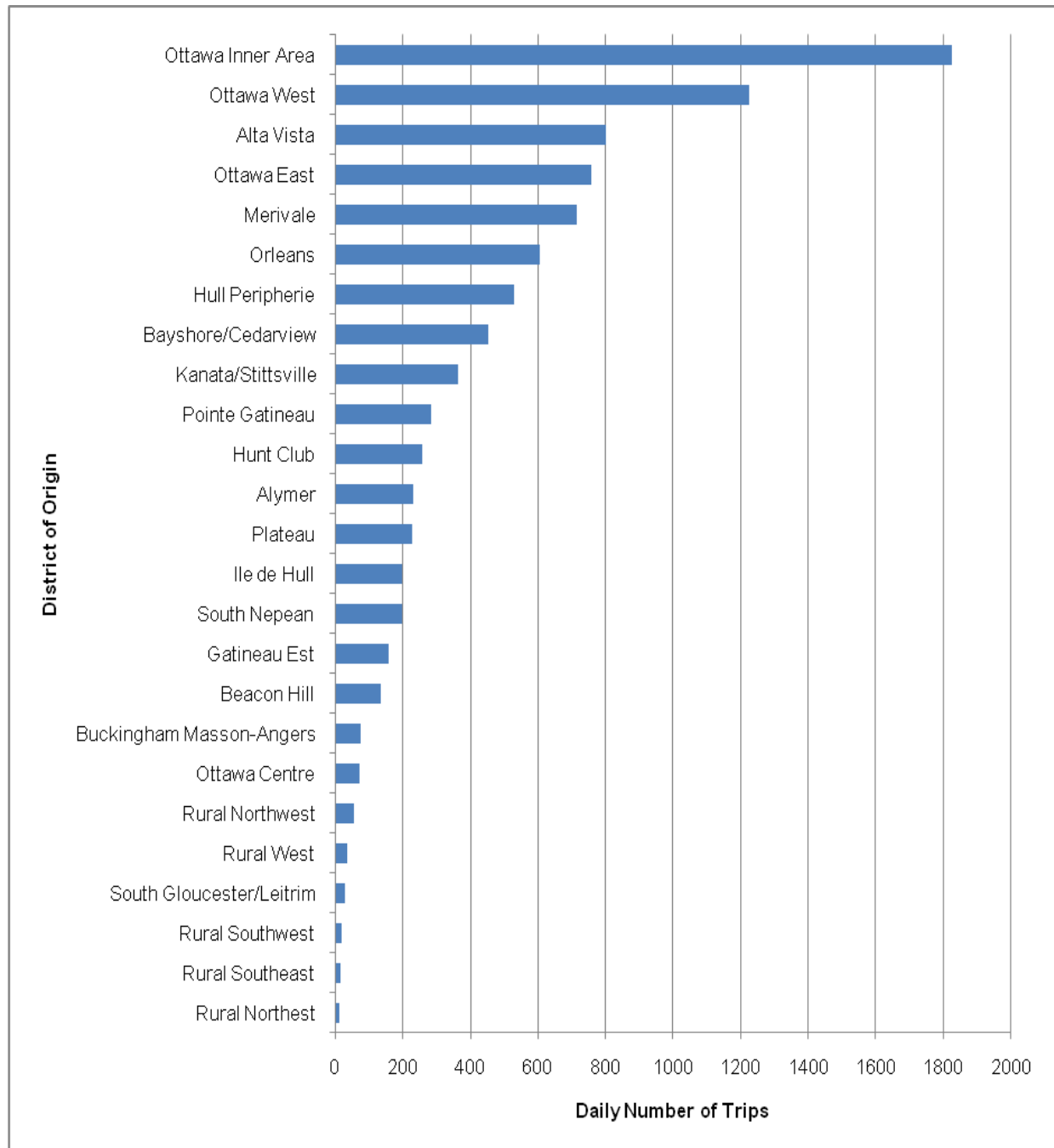


Figure 15: Morning Bicycle Trips by Destination TRANS District

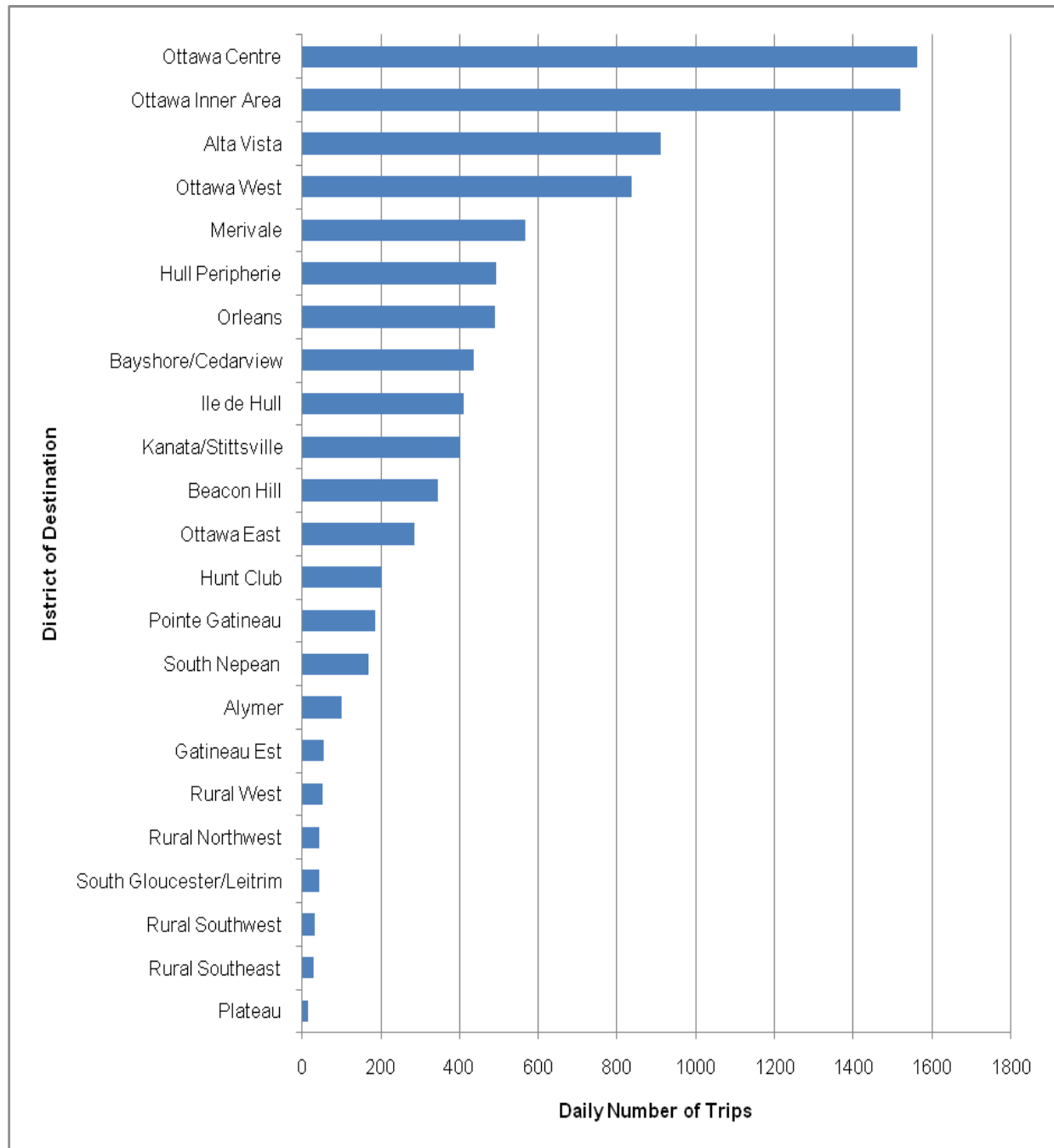


Figure 16 highlights intra-zonal activity and major desire lines of bicycle travel in the Morning Peak Period.

- For the purpose of this report, a desire line is defined as greater than 75 bicycle trips among TRANS districts.
- The top 10 bicycle desire lines among TRANS districts in the Morning Peak Period are the following:
 - Ottawa Inner Area to Ottawa Inner Area (610 trips)
 - Orléans to Orléans (440 trips)
 - Ottawa West to Ottawa West (440 trips)
 - Ottawa Inner Area to Ottawa Centre (400 trips)
 - Alta Vista to Alta Vista (300 trips)
 - Ottawa West to Ottawa Inner Area (300 trips)
 - Kanata/Stittsville to Kanata/Stittsville (290 trips)
 - Merivale to Merivale (210 trips)
 - Bayshore/Cedarview to Bayshore/Cedarview (200 trips)
 - Ottawa East to Ottawa East (190 trips)
- An underlying trend in bicycle desire lines is a high level of intra-zonal travel. This is consistent with Figure 12, which demonstrated that 72% of trips are less than 5km.
- **Table 4, Table 5** and **Table 6** further detail the distribution of bicycle trips from origin to destination in the corresponding Morning Peak, Afternoon Peak and 24 Hour Period.

Figure 16: Morning Major Bicycle Desired Lines – (TRANS Districts)

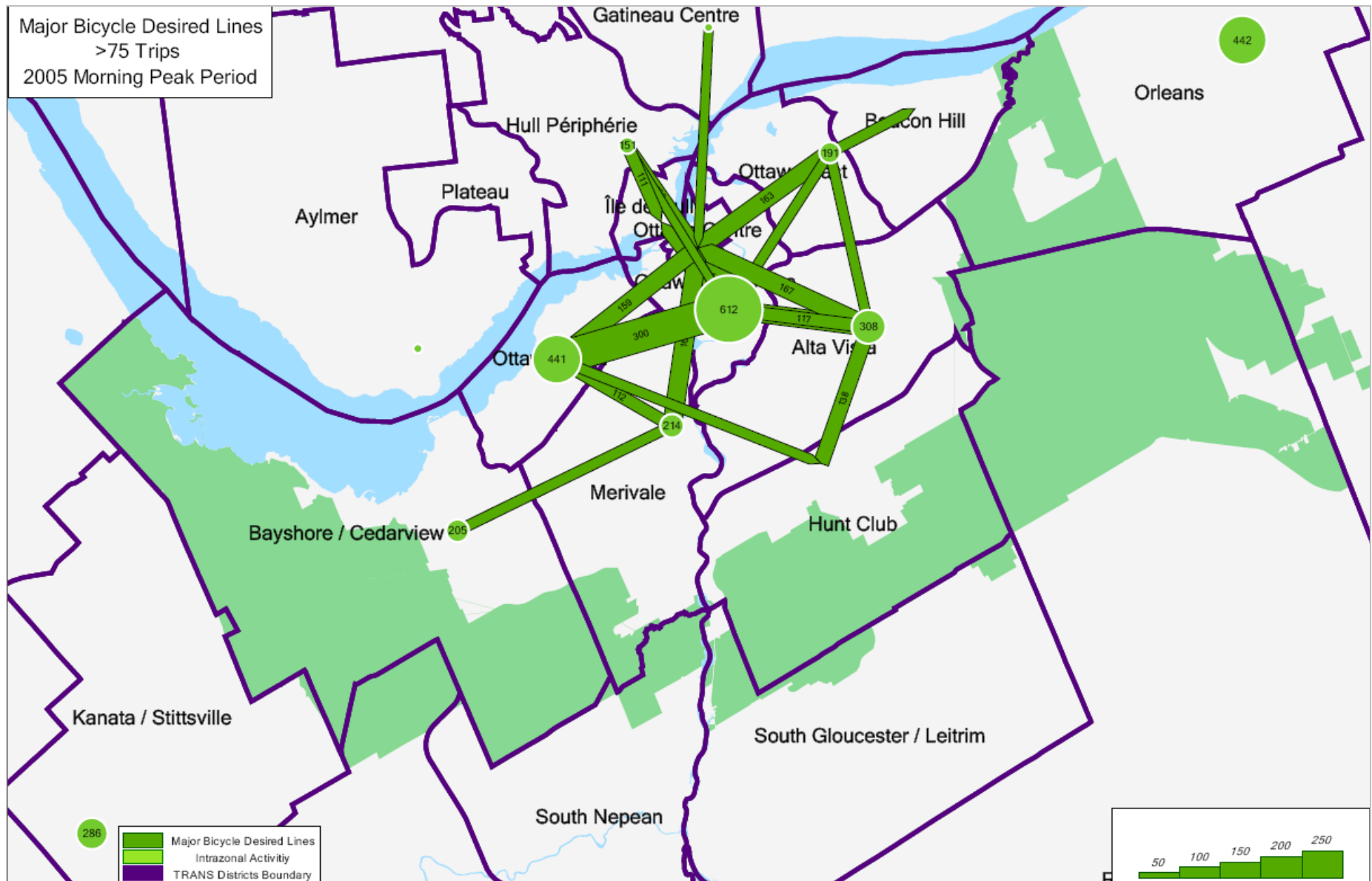


Table 4: Morning Peak Period Bicycle Trip* - All Purposes (TRANS Districts)

ORIGIN	DESTINATION																									
	Ottawa Centre	Ottawa Inner Area	Ottawa East	Beacon Hill	Alta Vista	Hunt Club	Merivale	Ottawa West	Bayshore/Cedarview	Orleans	Rural Southeast	South Gloucester/Leitrim	South Nepean	Rural Southwest	Kanata/ Stittsville	Rural West	Ile de Hull	Hull Peripherie	Plateau	Alymer	Rural Northwest	Pointe Gatineau	Gatineau Est	Rural Northeast	Buckingham Masson-Angers	Total
	Ottawa Centre	30		20														20								70
	Ottawa Inner Area	400	610	80	70	170	50	70	50	60		10				20	120	80							30	1,820
	Ottawa East	160	90	190	100	90		20	20								70									760
	Beacon Hill	30	40		50						20															140
	Alta Vista	170	120		20	310	20	20	40	20		20				20	30		20							800
	Hunt Club		50			140	20	20				30														260
	Merivale	170	70	20		50		210	110	20								60								710
	Ottawa West	160	300			60	90	60	440					20	20	40		40								1,230
	Bayshore/Cedarview		20		30	30		100		200	30					40										450
	Orleans	20	10		60	20	20				440							20								610
	Rural Southeast												10		10											10
	South Gloucester/Leitrim		10									10						10								30
	South Nepean									50				150												200
	Rural Southwest																	20								20
	Kanata/Stittsville	20								60							290									360
	Rural West		30																							30
	Ile de Hull	70				40		10	20										30		20		20			200
	Hull Peripherie	110	80						40									110	150			10	30			530
	Plateau	60	20						50							10		10	40	10		10				230
	Alymer	40	10					30	10	10								20			80			10		230
	Rural Northwest		10					10		10												20				60
	Pointe Gatineau	80	40						50										20				80	20		280
	Gatineau Est	30																	50				60	20		160
	Rural Northeast																		10							10
Buckingham Masson-Angers																		20						60	80	
Total	1,560	1,520	290	340	910	200	570	840	440	490	30	40	170	30	400	50	410	490	10	100	40	190	60	0	90	9,270

* Note: The numbers are rounded to the nearest 10. As a result, there might be some minor differences between the control totals and distribution.

Table 5: Afternoon Peak Period Bicycle Trip* - All Purposes (TRANS Districts)

ORIGIN	DESTINATION																												
		Ottawa Centre	Ottawa Inner Area	Ottawa East	Beacon Hill	Alta Vista	Hunt Club	Merivale	Ottawa West	Bayshore/Cedarview	Orleans	Rural East	Rural Southeast	South Gloucester/Leitrim	South Nepean	Rural Southwest	Kanata/ Stittsville	Rural West	Ile de Hull	Hull Peripherie	Plateau	Alymer	Rural Northwest	Pointe Gatineau	Gatineau Est	Rural Northeast	Buckingham Masson-Angers	Total	
	Ottawa Centre	20	420	90		50	20	140	120		30	10	20		20				100	120	60	20		80	50	10		1,390	
	Ottawa Inner Area	230	900	60	60	120	60	90	220	50	20			10						60	40	30	10	10				1,970	
	Ottawa East	20	120	140				30																				310	
	Beacon Hill		30	70	20	20				30	80																	240	
	Alta Vista	20	150	120		200	30	30	80	30	50								60					10				760	
	Hunt Club		10				130		50		20																	220	
	Merivale	20	140	30		20	20	360	120	90									30			50	10	20				920	
	Ottawa West	20	110	20		50		130	510	30						20	20			40	30	40		50				1,070	
	Bayshore/Cedarview		50			20		20	70	230	20				20		60					10						490	
	Orleans				90	40					260																	380	
	Rural East					30																						30	
	Rural Southeast		20										20	10														60	
	South Gloucester/Leitrim		10											10														30	
	South Nepean								20						130													150	
	Rural Southwest								20							30						10						60	
	Kanata/Stittsville				20	20			20	40							230											340	
	Rural West		20														20											40	
	Ile de Hull	10	50	70		20			20		20			10		20				40	30							290	
	Hull Peripherie		30			20		50											30	280	30			30	30	10		510	
	Plateau																			20	10			10				50	
	Alymer								30													130						160	
	Rural Northwest					10															10	10		20				50	
	Pointe Gatineau																			60	10				80	30		10	200
	Gatineau Est		20														10					40		20	60			150	
	Rural Northeast																							20				20	
Buckingham Masson-Angers		30																								40	70		
Total	350	2,110	600	190	620	260	850	1270	510	480	10	40	40	160	70	350	0	220	620	230	330	80	310	180	20	60	9,960		

* Note: The numbers are rounded to the nearest 10. As a result, there might be some minor differences between the control totals and distribution.

Table 6: 24-Hour Bicycle Trip* - All Purposes (TRANS Districts)

ORIGIN	DESTINATION																											
	Ottawa Centre	Ottawa Inner Area	Ottawa East	Beacon Hill	Alta Vista	Hunt Club	Merivale	Ottawa West	Bayshore/Cedarview	Orleans	Rural East	Rural Southeast	South Gloucester/Leitrim	South Nepean	Rural Southwest	Kanata/ Stittsville	Rural West	Ile de Hull	Hull Peripherie	Plateau	Alymer	Rural Northwest	Pointe Gatineau	Gatineau Est	Rural Northeast	Buckingham Masson-Angers	Total	
	Ottawa Centre	150	1140	220	30	230	60	210	250		30	10	20		20				140	180	60	40		80	50	10		2,930
	Ottawa Inner Area	1220	4270	400	140	520	170	390	470	140	50			30	30			20	160	220	40	50	10	10			30	8,370
	Ottawa East	240	480	980	150	130		90	20		10								70	20								2,220
	Beacon Hill	30	120	200	80	20			20	30	150																	660
	Alta Vista	190	460	130	20	1130	160	70	120	50	140		20			30	20	30	80	20	20		10					2,700
	Hunt Club	50	150			210	370	40	120		20			30											20			1,020
	Merivale	220	420	70	10	110	40	1330	520	240	20				20				30	60		50	10	20				3,170
	Ottawa West	230	490	20		180	120	530	1740	140					20	60	60	20	60	40	60	60		50				3,870
	Bayshore/Cedarview		140	30	30	50		240	110	750	50				60		160					10						1,630
	Orleans	50	50	10	150	140	20	20		30	1460								20									1,960
	Rural East					30		20																				60
	Rural Southeast		20			20							80	10		30												160
	South Gloucester/Leitrim		30				30						10	30					10									110
	South Nepean							40	20	80					550													680
	Rural Southwest					30			60				30			70			20			10						230
	Kanata/Stittsville	20			20	20			40	140							930	20			10							1,200
	Rural West		50						20								20	30										120
	Ile de Hull	140	150	70		80		60	60		20			10		20			100	130	50	20	20	50		20	20	1,000
	Hull Peripherie	190	170	20		20		50	40										190	840	50	20	10	60	70	10	40	1,780
	Plateau	80	40			20			60								10		10	70	150		10	10				460
	Alymer	40	50					50	60	10						10			20	20		420			40	20		740
	Rural Northwest		10			10		10		10										10	10		90			50		210
	Pointe Gatineau	80	40					20	50										30	90	10			310	90		10	740
	Gatineau Est	50	20														10			70		40		110	250			540
	Rural Northeast	10																	20	10			20	10		70		150
Buckingham Masson-Angers		30																20	40							290	380	
Total	2990	8320	2230	650	2950	990	3180	3770	1620	1960	10	160	110	680	230	1220	120	980	1820	470	720	190	720	510	180	390	37,140	

* Note: The numbers are rounded to the nearest 10. As a result, there might be some minor differences between the control totals and distribution.