

# Peel Region GPS Cycling Study



## Executive Summary

January 2014

WATERLOO **PUBLIC TRANSPORTATION** INITIATIVE





## PEEL REGION GPS CYCLING STUDY EXECUTIVE SUMMARY

### STUDY PURPOSE:

The Region of Peel, with support from the City of Mississauga, the City of Brampton and the Town of Caledon, partnered with the University of Waterloo’s Waterloo Public Transportation Initiative (WPTI) to collect data on cyclist behaviour and patterns that will help the Region accommodate current cycling activity and prioritize cycling investments.

### OBJECTIVE:

The study focused on acquiring the following data:

- Cyclists in the Region;
- Households in which cyclists live;
- Cycling activity in the Region;
- Cycling infrastructure utilization and prioritization.

### METHOD:

Data was collected from two sources. One was a web-based survey with questions about participant demographics, household composition, and motivations for (and obstacles to) cycling. The other was low-cost GPS units provided to cyclists that recorded cycling origins, destinations and travel paths.



### PARTICIPATION:

The study ran for three two-week periods between July and October 2012. 212 people participated in total. The breakdown of participants by Municipality can be found in Table 1.

Group	Brampton	Caledon	Mississauga	Total
1	28	5	36	69
2	28	6	34	68
3	26	9	40	75
Total	82	20	110	212

Table 1

**CHARACTERISTICS OF PARTICIPANTS:**

- Cyclists came from diverse age groups – ranging in age from under 10 to over 80 – with an average age of 40;
- Eighty cyclists were 51 and older, indicating that cycling remains a viable option throughout one’s lifespan;
- The income distribution of our participants is quite diverse but many may be considered high earners, suggesting that these respondents ride by choice, not necessity;
- 77% of participants were male and 23% were female;
- The breakdown of participants by age group is displayed in Table 2.

Age Range	Number of Participants
Under 18	11
19 – 30	23
31 – 40	51
41 – 50	57
51 – 60	49
Over 60	21
<b>Total</b>	<b>212</b>

Table 2

**CYCLING AND CAR OWNERSHIP:**

Automobile ownership is a major expense for households. When cycling is an option, households are able to own fewer cars, reduce their transportation expenditures and still meet their transportation needs. Table 3 shows that 38% of participants’ households had more licensed drivers than cars (meaning there was less than one car per person). CAA estimates owning one less car can save a household from \$10,000 to \$15,000 annually.

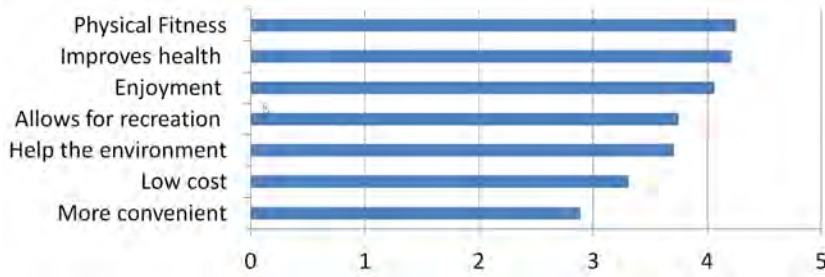
		Number of autos owned by household members				
		0	1	2	3+	Sum
Number of licensed drivers	0	2%	0%	0%	0%	2%
	1	5%	11%	2%	0%	18%
	2	2%	18%	37%	2%	59%
	3+	0%	4%	9%	8%	21%
	Sum	9%	33%	48%	10%	100%

Table 3

**FACTORS THAT INFLUENCE CYCLING:**

The survey asked respondents to indicate the importance from 1 (least important) to 5 (most important) of motivations for and obstacles to cycling. The results are shown in Figure 1. Participants largely elected to cycle for physical fitness which, ultimately, improves health. Convenience did not rate highly as a motivation. A perceived lack of safety is the largest deterrent to increased cycling in the Region.

**Motivations for Cycling**



**Obstacles to Cycling**

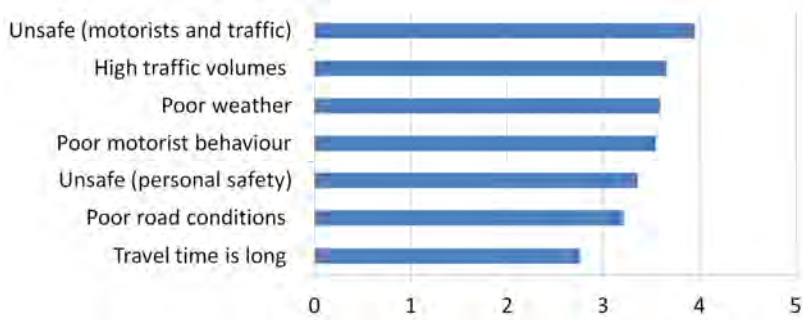


Figure 1

**CYCLISTS TRAVEL TIMES:**

Most of the trips in the study took place in “peak hours” the periods where congestion is highest (see Figure 2). This suggests that cyclists are helping to reduce congestion in the Region by biking rather than using cars in periods of highest demand.

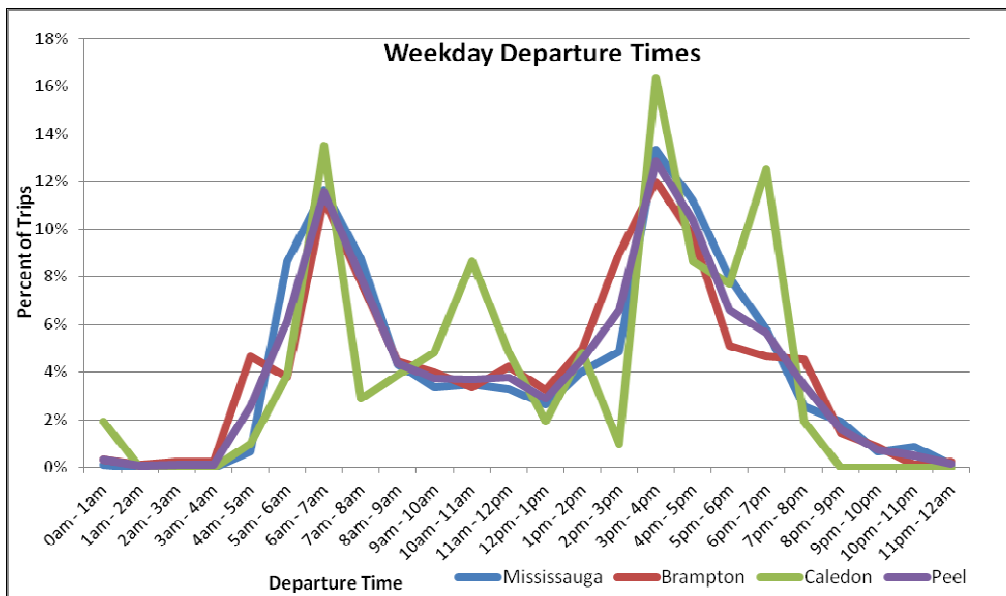


Figure 2

**FREQUENCY AND DISTANCE OF TRIPS:**

Cyclists in the study made almost 2400 trips totalling 23,331 km. The average speed was 15 km/hr. Figure 3 shows the average trip length and the average number of trips made per participant over the two week study period. The data is shown for all participants and disaggregated by local municipality.

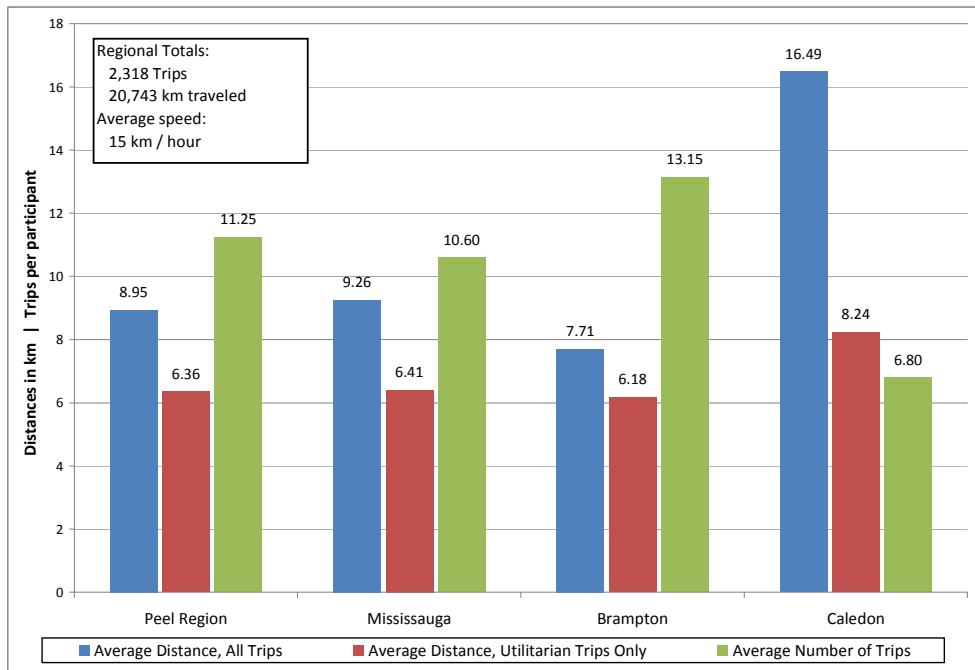


Figure 3

**PARTICIPANTS’ CYCLING ROUTES:**

Figure 4 (as displayed on page 5) shows the trips traveled in the study. This also helped highlight the key routes that cyclists travel. The first 30 seconds of every trip were deleted to ensure participant privacy.

**HAZARDS IDENTIFIED:**

Figure 5 (as displayed on page 6) shows the concentration of hazards identified by participants. The darker the color, the more hazards were identified in that area. The ranges of hazards were generated by GIS software.

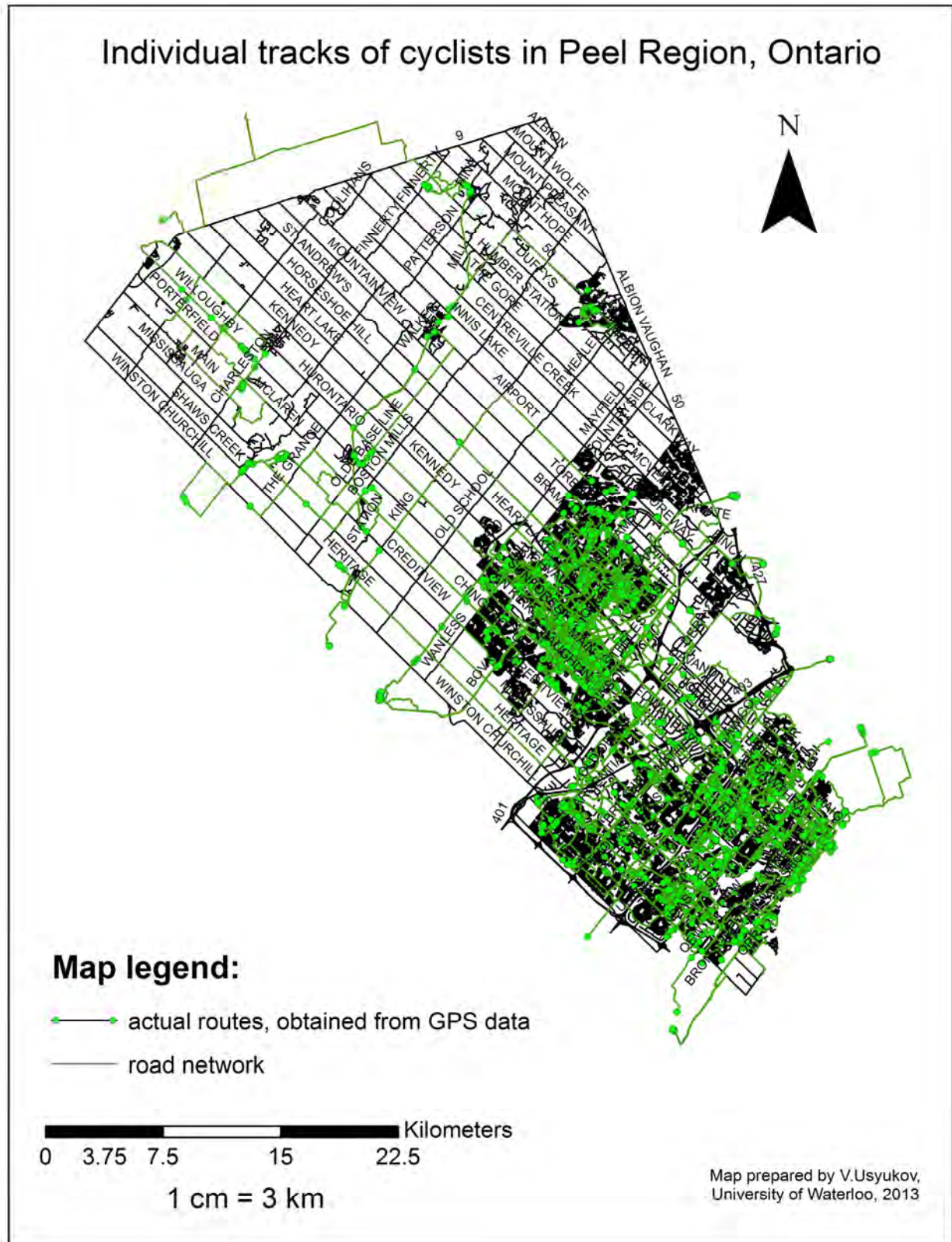


Figure 4 All observed paths from GPS units

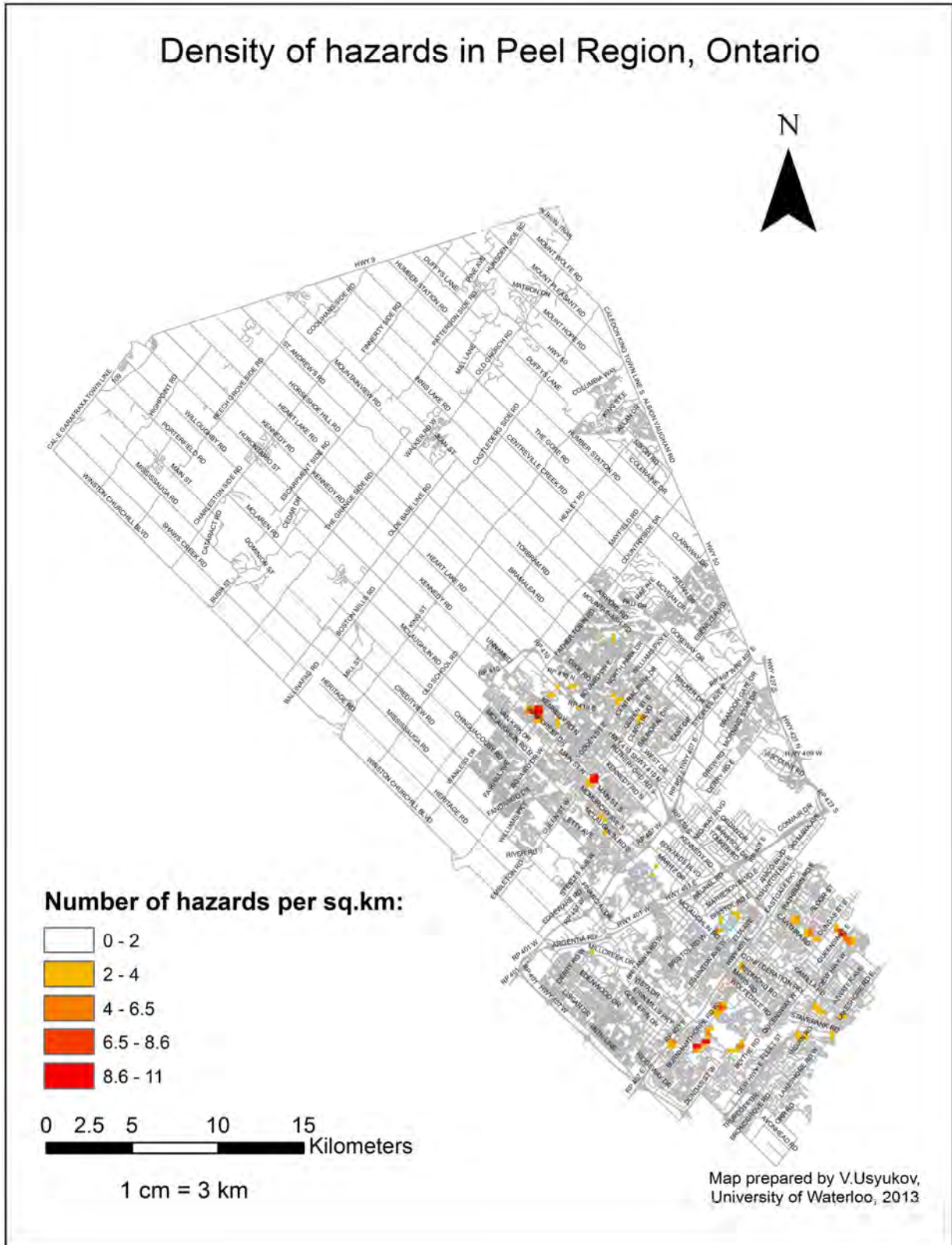


Figure 5 Density of hazards identified by cyclists



## INFRASTRUCTURE TO IMPROVE CYCLING:

Participants were asked what infrastructure might improve their likelihood of cycling and where this infrastructure should be constructed. 84% of participants suggested more on-road cycling facilities. The most commonly suggested locations were Hurontario Street, Lake Shore Road, Mississauga Road and Queen Street.

## CONCLUSIONS:

- The data gathered in this study suggests there exists great potential for increasing cycling mode share in the Region of Peel.
- Cyclists represent a wide range of age groups and income categories with the majority being “choice cyclists.”
- The main motivations for cycling are physical fitness and improved health.
- The primary obstacle to increased cycling in the Region is safety, more specifically:
  - Motorist behavior
  - Traffic
  - Personal safety.
- Participants cycle despite it being less convenient than other modes of travel. Improving convenience by improving infrastructure should encourage more cycling.
- The paths cyclists chose involved substantial excess travel – observed path distances that were considerably longer than the shortest possible path. This suggests:
  - longer paths are required due to gaps in the cycling network
  - the most direct route is perceived as less desirable than alternatives.
- Participants advocate strongly for infrastructure investments with on-road cycling paths being most popular. Locations include:
  - Hurontario; Lake Shore; Mississauga Road and Queen Street.

## RECOMMENDATIONS:

- Based on these observations, it is recommended that ***cycling and cyclists’ safety be enhanced, particularly in areas where gaps in the cycling network have been observed.*** Increased safety can be obtained through:
  - Traffic calming in areas of heavy cycling activity or on links where network connectivity may be significantly enhanced;
  - Greater physical separation of cyclists and autos in areas where auto volumes are high;
  - Improved lighting as a means to increase cyclists’ visibility and to enhance personal safety; and
  - Increased attention to on-road cycling path maintenance.
- The Region of Peel and partner municipalities will use these information sources to further analyze, assess and prioritize investments and policy changes, where appropriate, to continue to enhance cycling throughout Peel Region.