A Snapshot of Urban Cycling in Toronto

TORONTO CYCLING
THINK
& DO TANK

www.torontocycling.org

Photo credit-Daniel Rother

Like many cities across North America, Toronto is experiencing a cycling renaissance. However, unlike cities such as New York, San Francisco, Montreal and Vancouver, where official policy and funding supports cycling as an important transportation choice, the growth in Toronto cycling is occurring in spite of a lack of political will and support. In this report, the Toronto Cycling Think & Do Tank studied cycling behaviour as it plays out in the city across space and demographics.

Photo credit—Jacklyn Atlas TCAT 2012

We wanted to understand the factors underpinning higher rates of cycling in order to effectively target potential cyclists with behaviour change support. The next phase of our research will pilot two behaviour change programs and their effects on urban transportation choices. In this study we focused on the following questions:

Who cycles in Toronto?

Including the main characteristics of cyclists in terms of age, sex, location of residence and work or study.

What characterizes cycling trips?

We examined distances of cycling trips, the frequency of daily trips and locations of common destinations.

What factors are associated with higher proportions of cycling trips?

Population density, destination densities, cycling services, terrain and cycling infrastructure were compared to cycling participation in Toronto.

Do some municipal wards show behavioural differences?

Socio-cultural aspects of the population, physical barriers and facilitating factors were compared to ward based cycling behaviour.

And finally considered:

What factors should we consider when selecting sites and populations for behavioural interventions?

Key Findings

Behaviour change support should be directed to:

The people most likely to cycle

Taking trips

- under 5 km
- that would be viable by bicycle

In areas with

- medium to high population density

Within 5km of

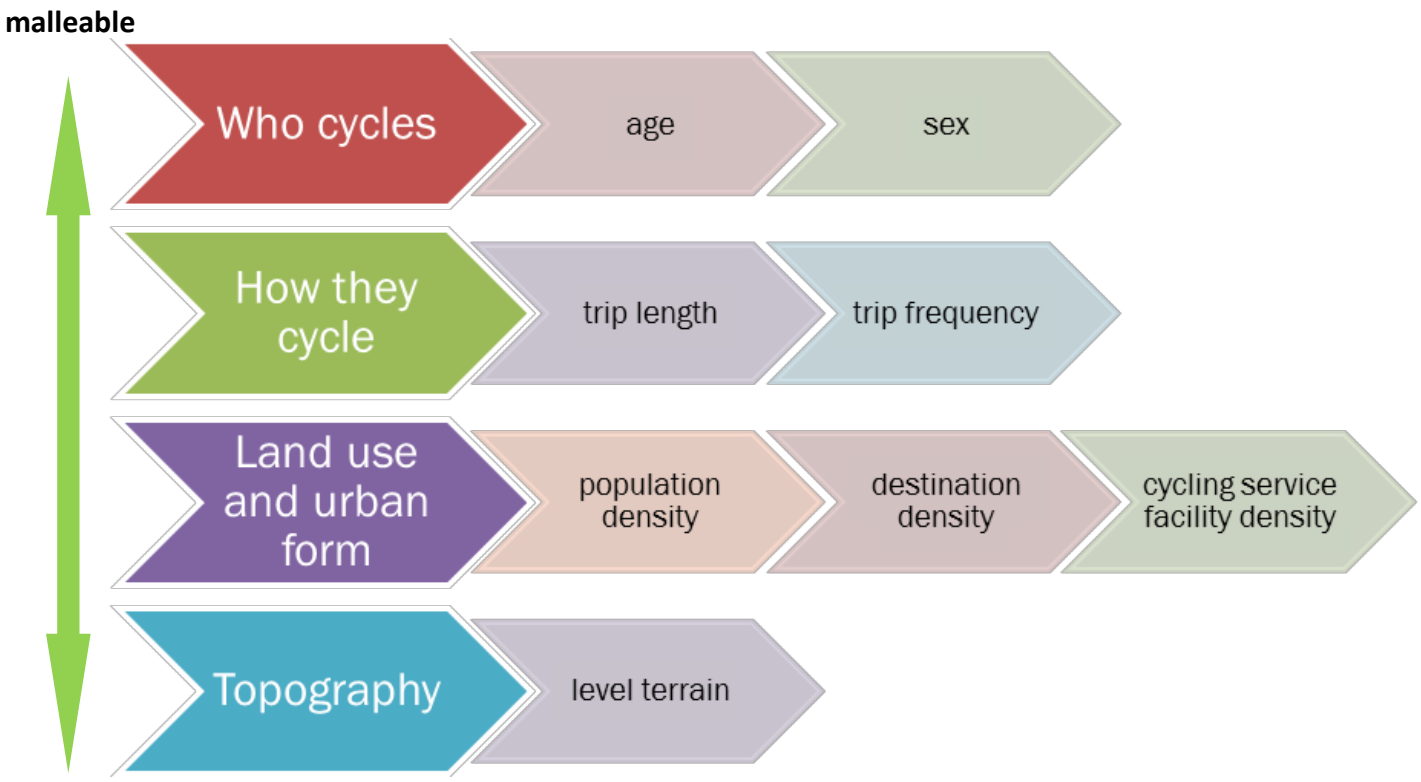
- high destination density
- medium to high cycling service facility density

In areas with

- relatively level terrain.

Can these findings help us reach potential cyclists with effective behaviour change supports?

Our findings suggest higher rates of cycling in Toronto are created through a combination of complex conditions. These conditions range from malleable to fixed. Lengthy time horizons are required to change less malleable factors such as population and destination density. Therefore, choosing intervention sites with the necessary background conditions is the best way to maximize the impact of behaviour change programs with or without desirable cycling infrastructure and policy enhancements.

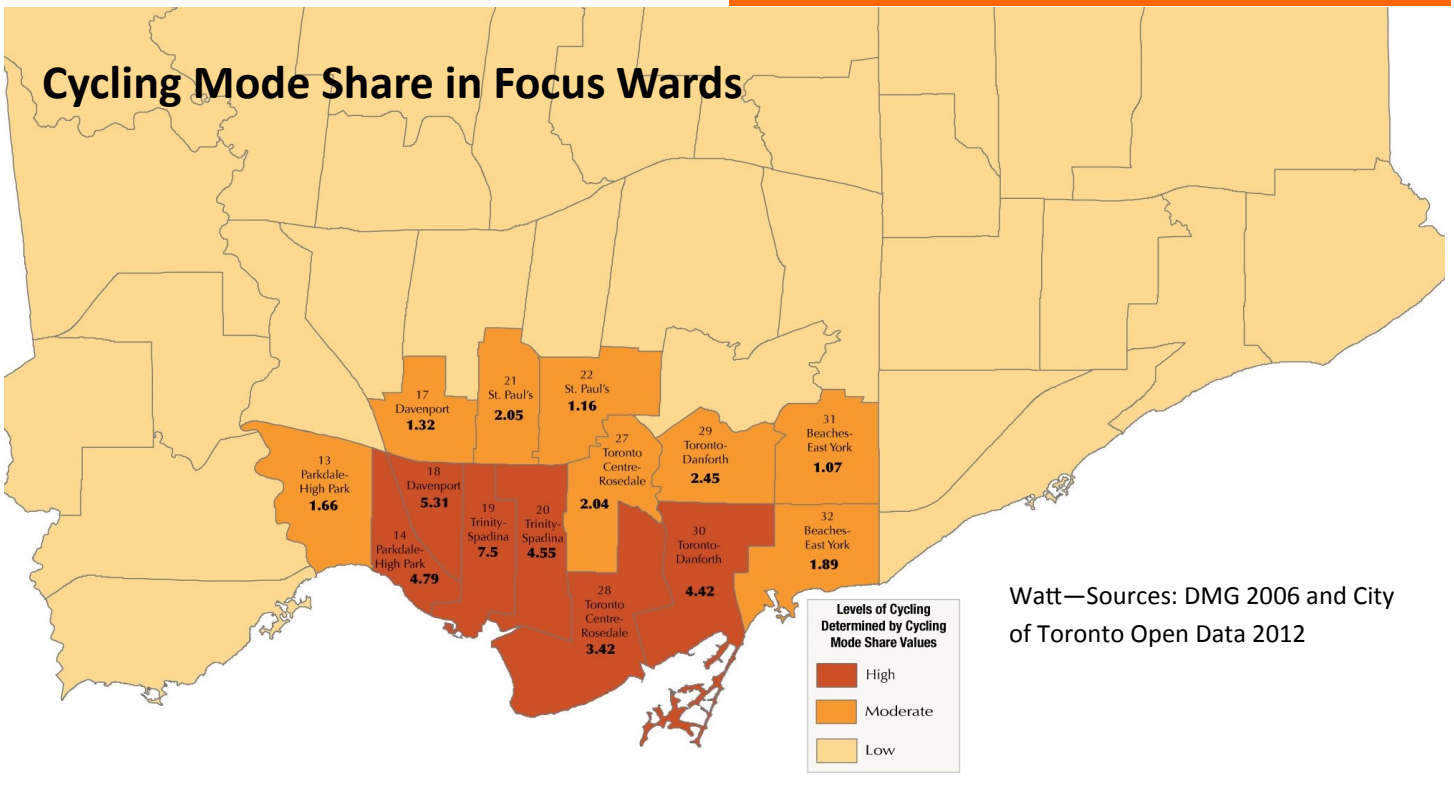


Higher rates of cycling are concentrated in 14 wards. These wards accounted for 81% of all cycling trips.

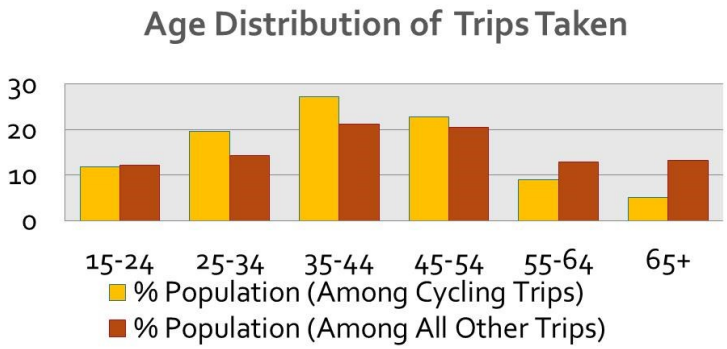
Toronto's data on cycling and cyclists is limited. In this map we used the Transportation Tomorrow Survey from 2006 (the newest TTS data –2012-has not yet been released). Lower rates of cycling and low data collection resulted in a large number of wards outside the central core not having enough data to be statistically robust. Consequently for this study we focused on a group of 14 wards where rates of cycling are higher. These 14 wards accounted for 81% of all cycling trips in the city. Although, as a group, they have a higher average cycling mode share (3.1% average) than the rest of the city (1.3%), within the group of wards there is a very wide range of cycling mode share-from a low of 1.07% in Ward 31 Beaches-East York, to a high of 7.5% in Ward 19 Trinity-Spadina. Discrepancies exist between extremely similar wards. For example: immediately north of and adjacent to Ward 19 Trinity-Spadina (7.5% cycling mode share), in Ward 21 St. Paul's, (above the former lakeshore, up a steep hill) cycling has a much lower mode share of 2.05. The wards along the north-south subway routes show a lower cycling mode share (and higher pedestrian mode share) while the east west subway route appears to have no impact on cycling mode share. No identifiable demographic data was found to be associated with the differences by ward.

Similar wards have widely varying rates of cycling participation.

Cycling Mode Share in Focus Wards



Watt—Sources: DMG 2006 and City of Toronto Open Data 2012

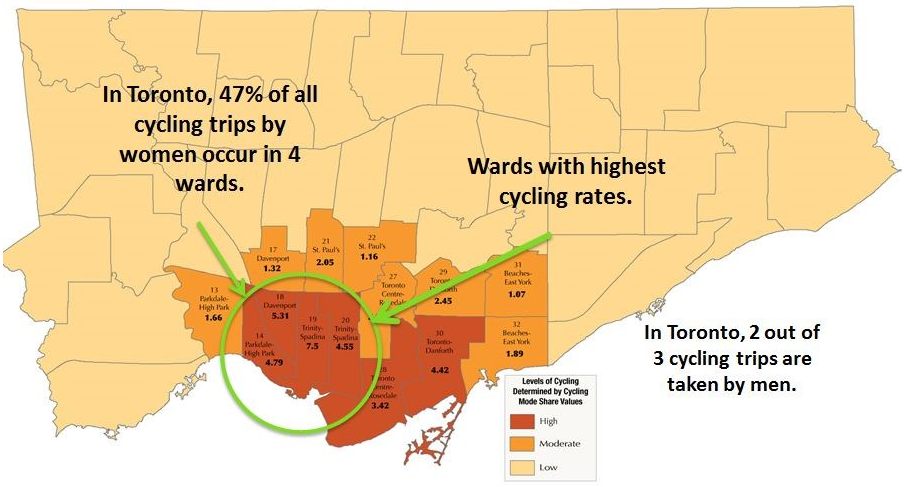


In 2006, adults between the ages of 25 and 54 undertook a disproportionate share of cycling trips. The greatest proportion of cycling trips was taken by adults 35-44 years old. Those over 55 were least likely to cycle for transportation. The data suggest the 15-24 year old segment participate in a similar proportion of cycling trips to other modes. Countries with high cycling mode share tend to have more evenly distributed patterns of participation by age (Pucher and Buehler, 2008).

Peak cycling participation occurs in 35-44 year olds.

Wards with a significant proportion of female cyclists generally have the highest cycling mode shares. On average in Toronto, one of three cyclists is a woman. However, in the wards (19, 18, and 14) with the highest cycling mode share, women account for closer to 50% of those cycling. In wards with higher rates of cycling participation, the percentage of women who cycle increases and gender disparity is greatly reduced. This pattern is not completely consistent across all wards. Ward 20, for example, posts relatively high rates (4.6%), well above the citywide average, but just 31.3% of cyclists are women. This is below the 34.3% average for the city.

In Toronto, almost half of all cycling trips by women occur in the four western lakeshore wards which also have the city's highest cycling mode share.



Watt & Wittmann- Sources: City of Toronto Open Data 2012 and DMG, 2006.

In Toronto, sex may interact with age to reduce the overall cycling participation rates of those over 55. Toronto's population over the age of 15 is skewed towards females. 52.7% of the population is female (Statistics Canada, 2006). Over the age of 60 this trend becomes stronger; 57.8% of Toronto's 60 plus population is female. The combination of age and sex is a powerful determinant of reduced cycling participation with specific barriers that may be addressed through behavioural interventions in appropriate neighbourhoods.

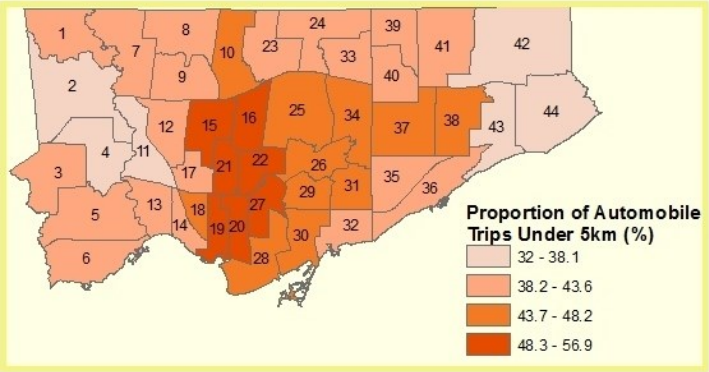
47% of cycling trips by women in Toronto occur in just 4 wards in the central city: 14, 18, 19 &20. These wards also have the highest overall rates of cycling in Toronto and have an almost equal split between trips taken by men & women.

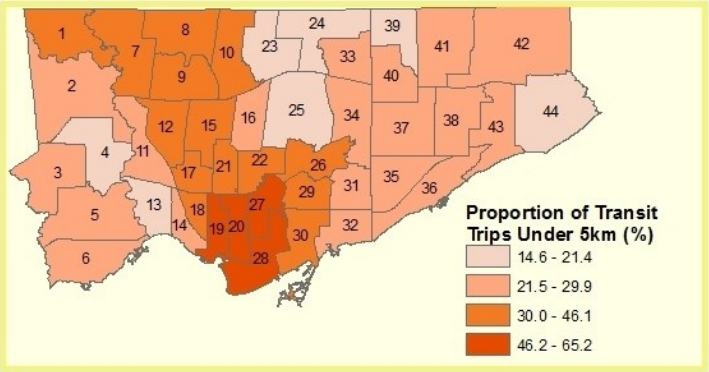
'sex may interact with age to reduce the overall cycling participation rates of those over age 55'

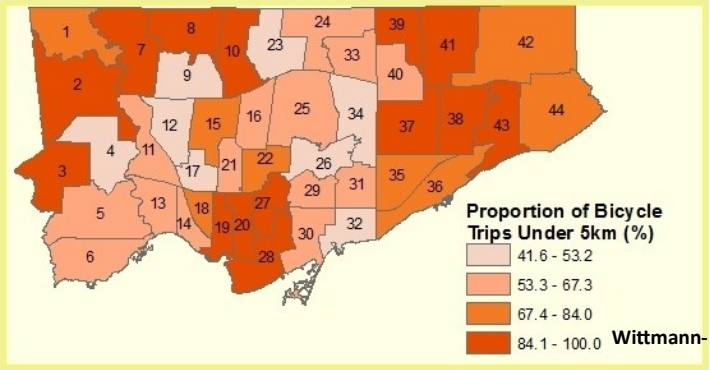
74% of cycling trips in Toronto are less than 5km.

Neighbourhood trips are key to increasing cycling participation.

In order to identify trips by other transportation modes that would be targets for behaviour change, we mapped trips under 5km by mode and ward. 45% of all trips in Toronto were less than 5km in length. Of these short trips, the majority (65%) were made by private automobile.

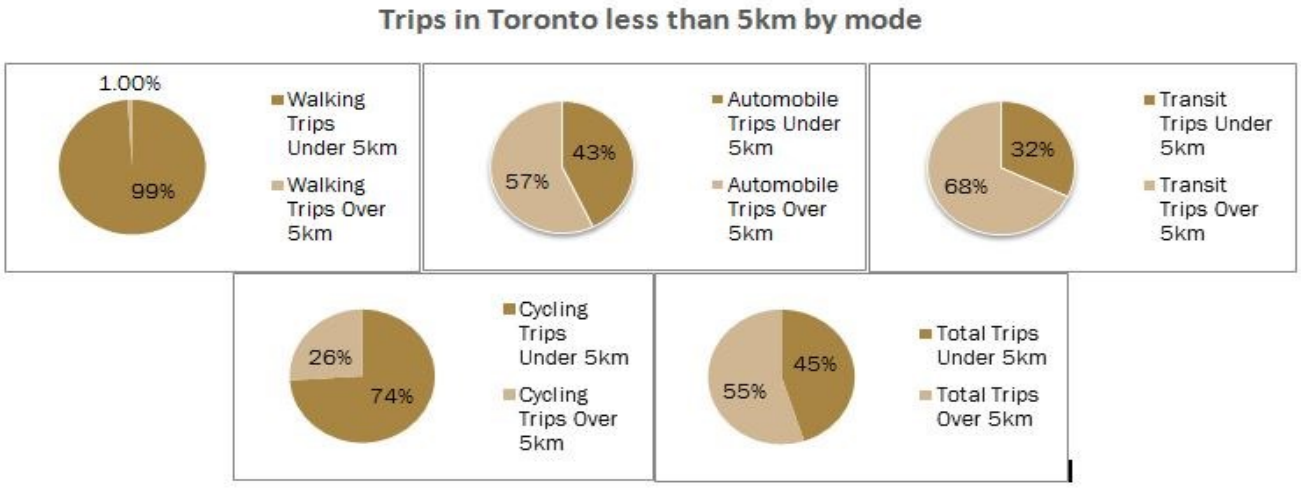




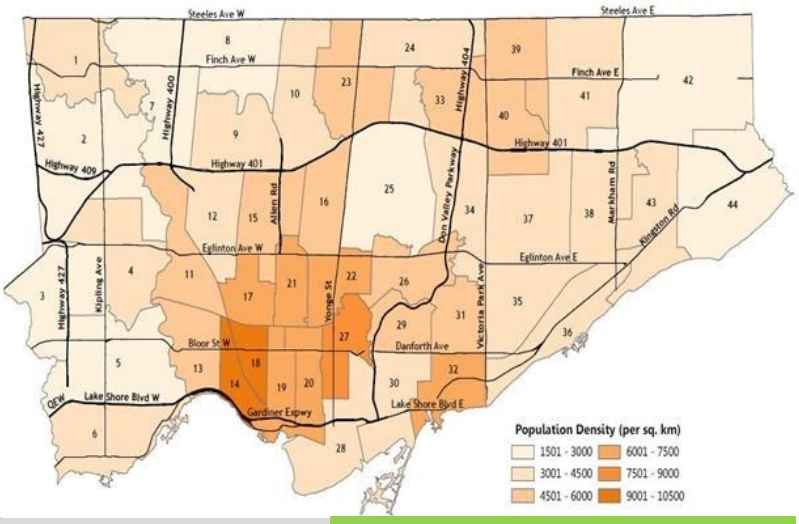


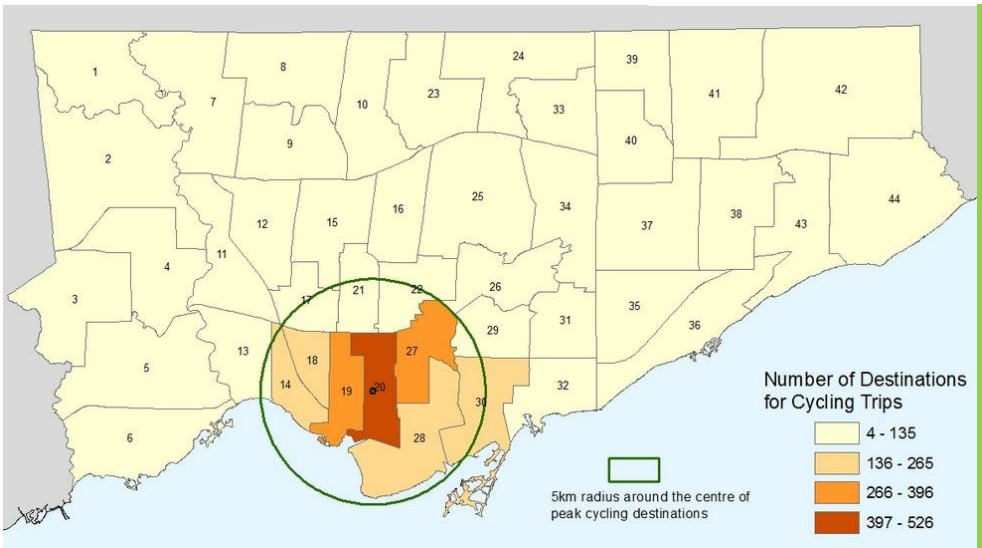
Wittmann- Sources: DMG, 2006 City of Toronto Open Data 2012

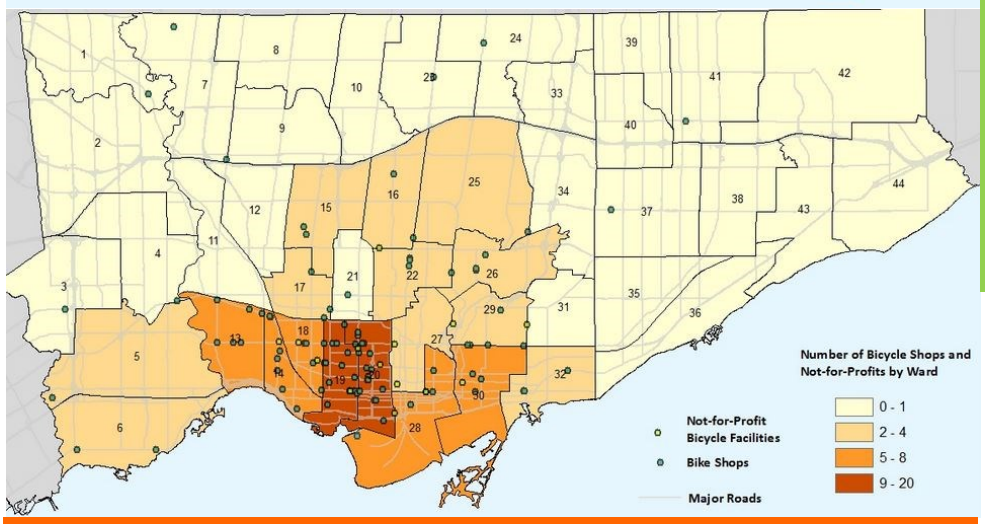
Even in wards with high cycling and walking mode shares, approximately half of all automobile trips were less than 5km long. In other words, neighbourhood oriented trips account for half of all automobile trips. Automobiles account for 68% of all trips in Toronto and 43% of those trips were less than 5km in length. Given Toronto Public Health's conclusion in the Road to Health report that cycling may be faster and more convenient than driving for these short trips, (2012, p.17) an opportunity exists for more trips by bicycle.



Density is a key factor supporting higher levels of cycling. However, population density alone does not correlate directly with higher rates of cycling. Rather population density, in combination with destination density and cycling service facility density are the common factors associated with higher cycling participation. Mixed use areas, where neighbourhoods contain housing and access to employment and shopping destinations, within the key 5km distance, support higher levels of cycling





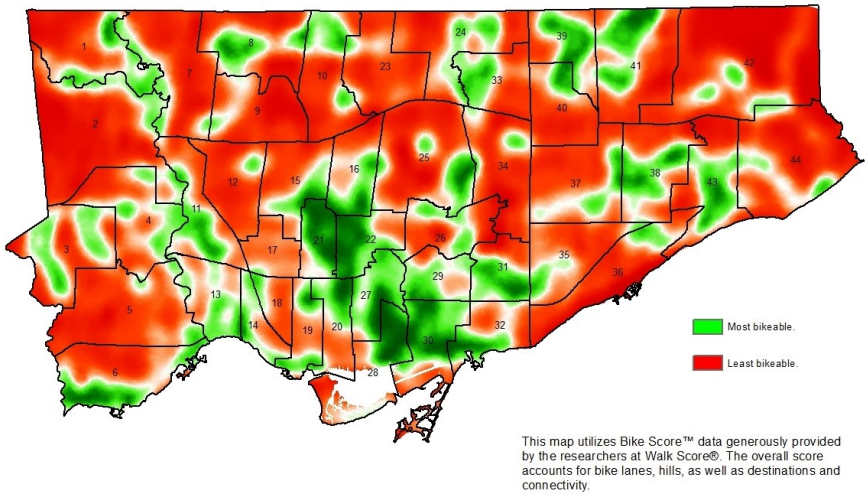


Do cycling services encourage greater cycling participation at the same time as they seek to locate in areas of higher cycling participation for market reasons? Can this relationship be utilized to create increased cycling participation?

Population density, in combination with destination and cycling service facility density, are the common factors associated with higher cycling participation.

Higher densities of cycling service facilities are found in areas with higher rates of cycling participation. The density of these bicycle service facilities relates quite closely to the bicycle mode share map, where Ward 19 holds the highest values, followed by 14, 18, 20 and 30. There is a strong relationship between density of cycling facilities and number of cyclists.

BikeScore ™ appears to overstate commuter cycling infrastructure in Toronto. Higher densities of population, destinations and cycling service facilities in combination with level terrain (HillsScore) are more closely aligned with higher rates of cycling.



Wittmann-Sources: Open Data City of Toronto 2012 and data provided courtesy of BikeScore™

BikeScore™ in Toronto seems to have little relationship to actual cycling activity. This may be because commuter cycling infrastructure is overstated. Toronto has only recently implemented a few kilometres of cycle tracks. Frequently, separated bike paths do not coincide with commuter patterns.

We did find BikeScore's hills score relevant to cycling behaviour in Toronto. In those areas with population density, destination density, and cycling service facility density, level terrain appears to be a facilitating factor.

This summary is taken from the report Mapping Cycling Behaviour in Toronto

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