Creating More Urban Cyclists
Using mapping, demography and social psychology to change travel behaviour

BECC Conference – November 18th, 2013

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Outline

Background

Accelerating Cycling Adoption Through:

- Understanding Travel Patterns

- Developing a Cycling Adoption Tool Kit

- Piloting the Tool Kit

Conclusions

Future Direction

Research Goals and Partners

- To understand how lessons from the field of behaviour change can be applied to cycling adoption for transportation, to hasten mode shift and to enhance the local economy, environment and social inclusion;

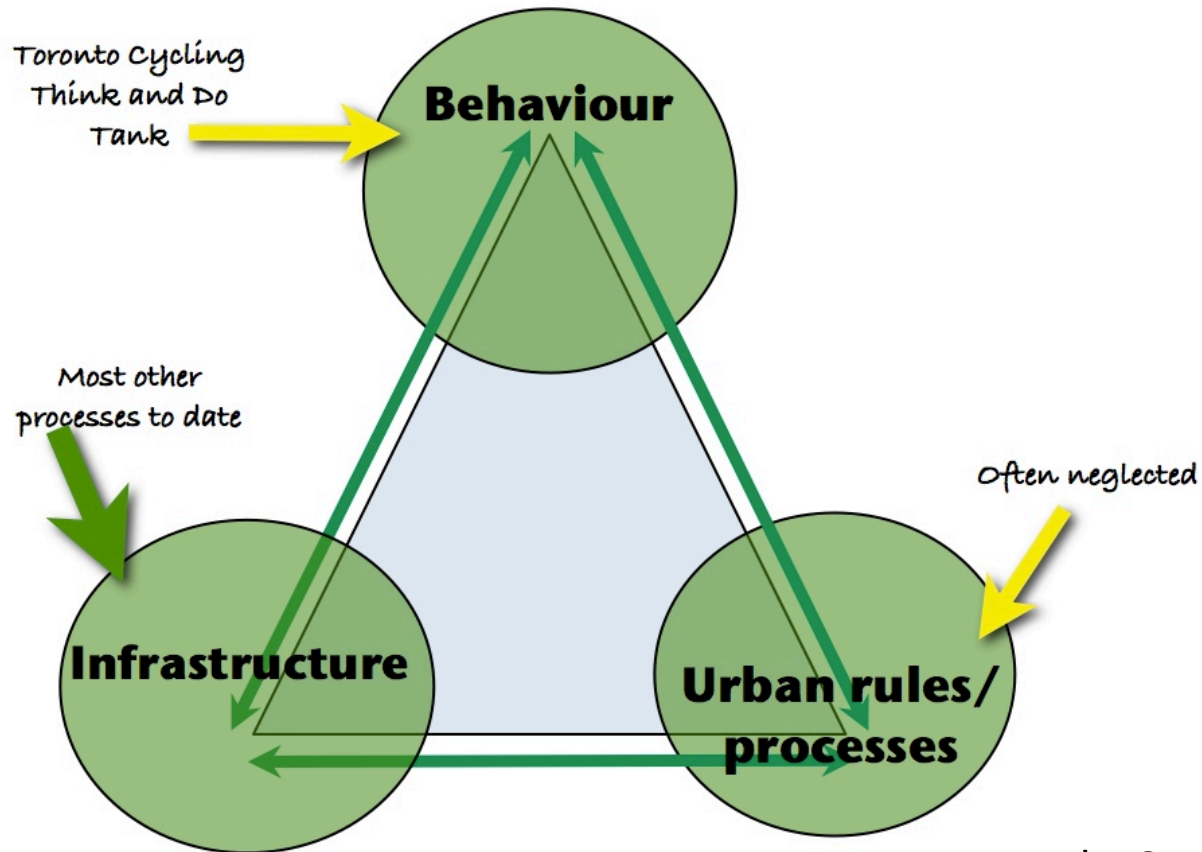- To fill a gap in the literature about cycling adoption with a rigorous, evidence based study.

Drivers to Promote Cycling

3 main components to increase cycling

Toronto Cycling Think and Do Tank → **Behaviour**

Most other processes to date → **Infrastructure**

Often neglected → **Urban rules/processes**

Lake Sagaris, 2012

Cycling Trends in North America

Trend in share of workers commuting by Bicycle in North American Cities:
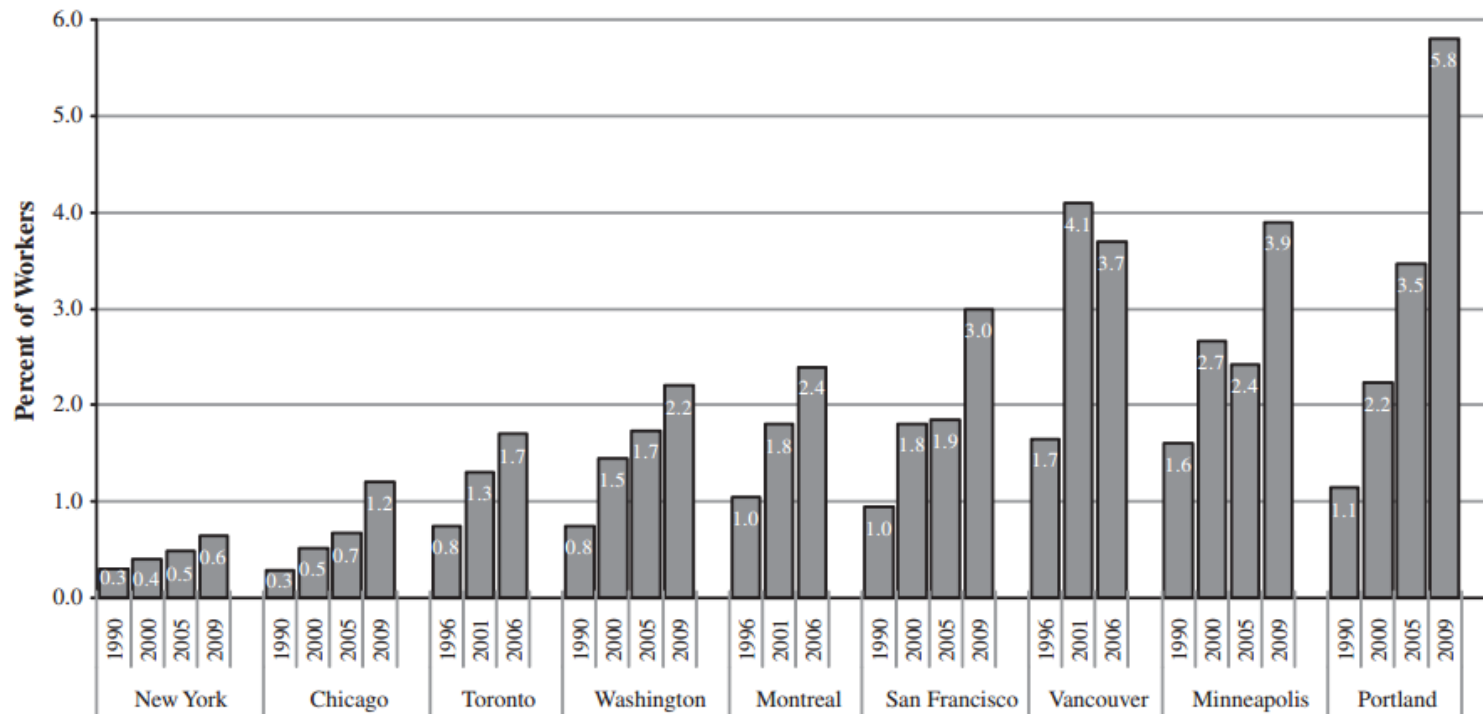

Fig. 4. Trend in share of workers commuting by bicycle in large North American Cities, 1990–2009. *Sources*: USDOC (1980–2000, 2010a); Statistics Canada (1996–2010).

Cycling Trends in Toronto

**During the last 5 years, cycling in the City of Toronto has roughly doubled:**

- Share the Road survey (2013) found that 7% of the population of the City of Toronto cycles regularly[1]
- Toronto Downtowns study (2012) found approximately 7.5% cycling mode share through a cordon count around the downtown core[2]
- And just try looking for bike parking!

Mapping Cycling Patterns

1. Who cycles?

2. What characterizes cycling trips?

3. What factors are associated with higher rates of cycling?

4. Do some municipal wards show behavioural differences?

5. What factors should we consider when selecting target sites and populations for behavioural interventions?
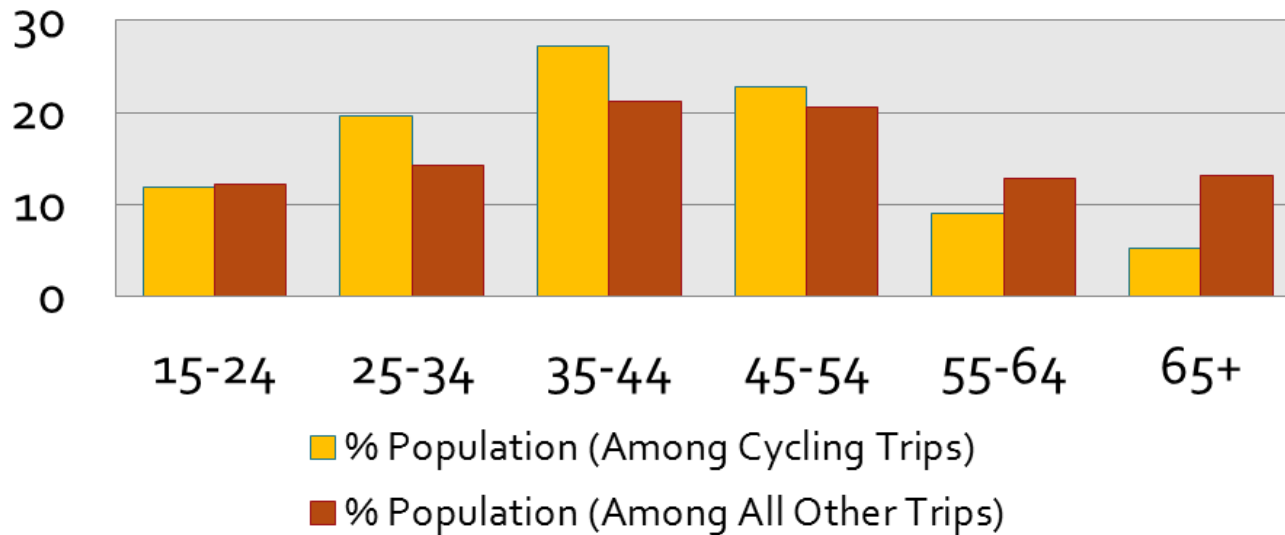
Cycling Mode Share
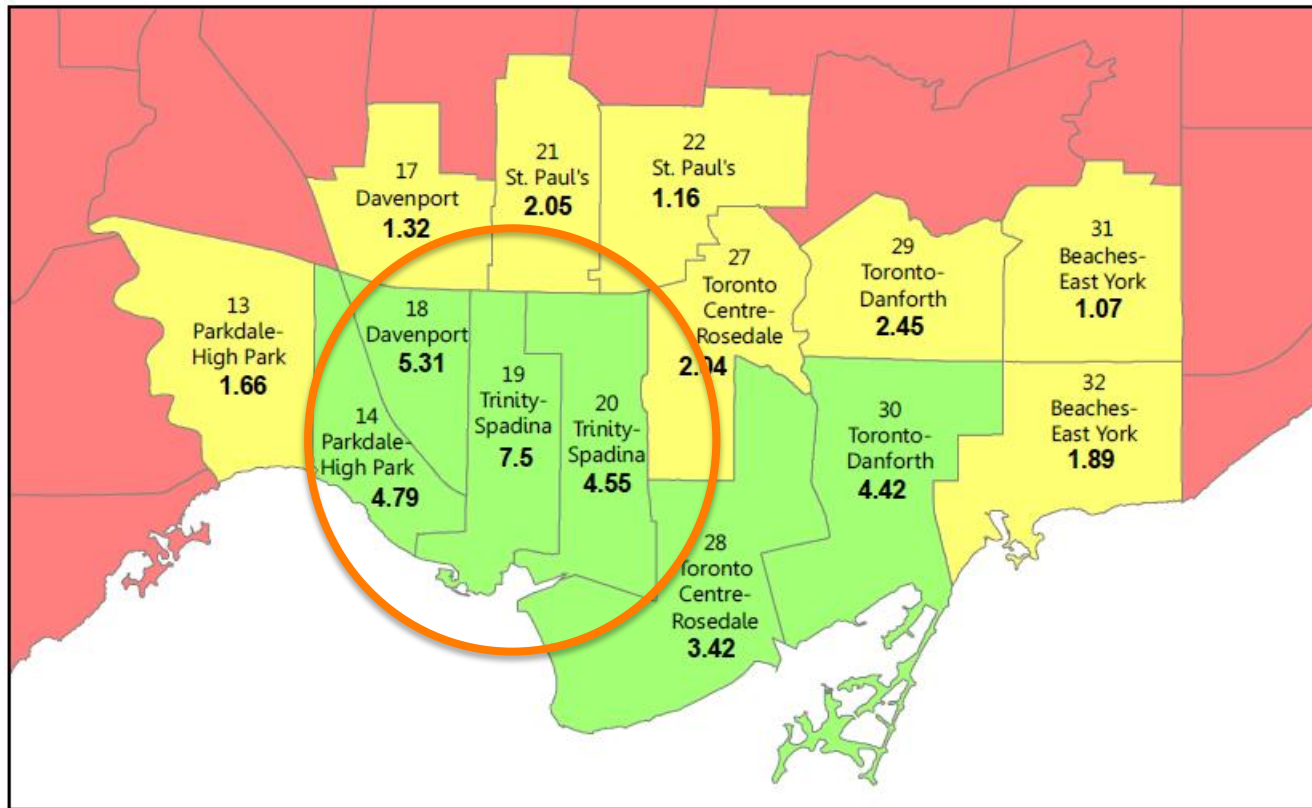
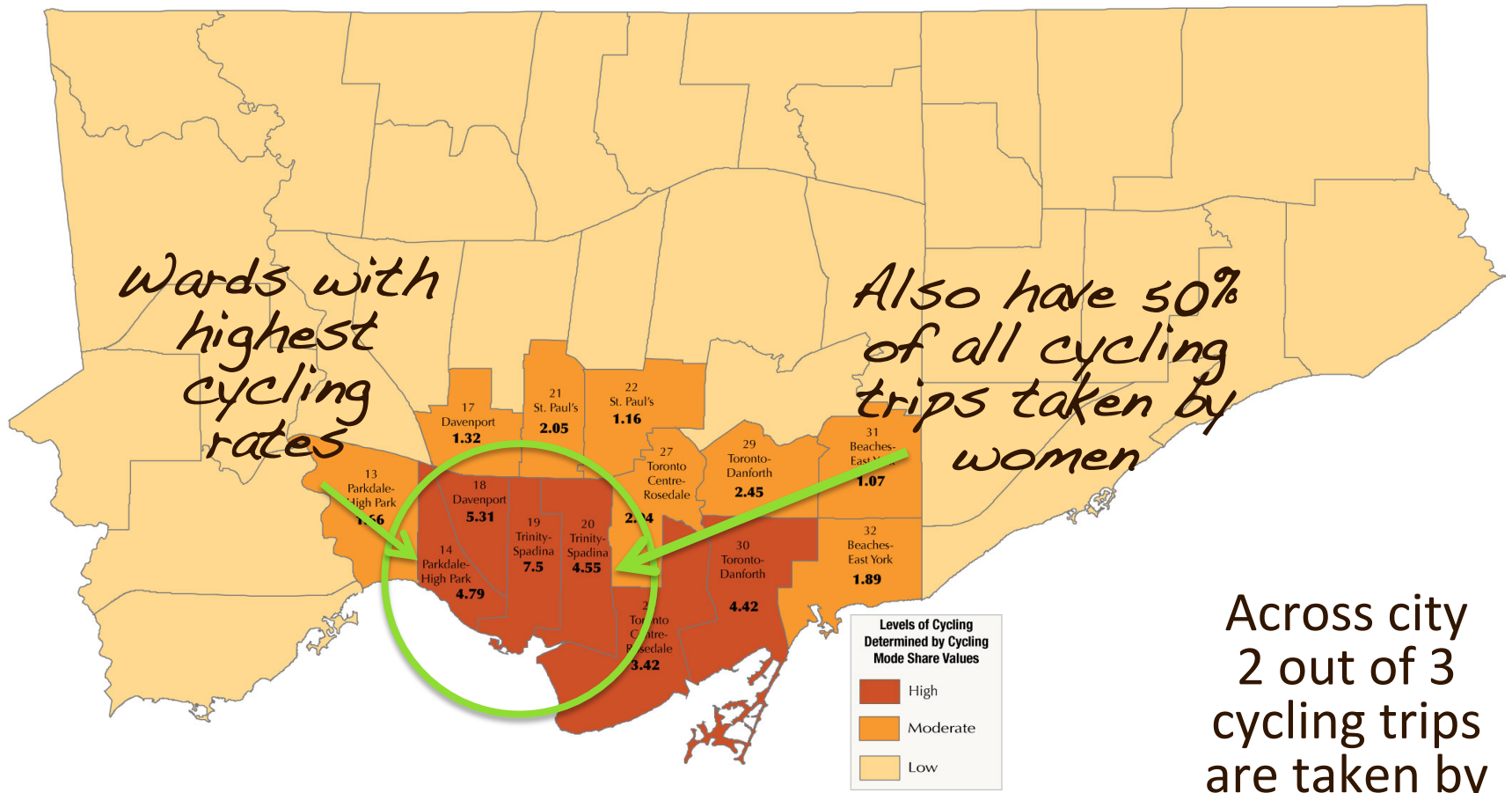Watt-Data sources: City of Toronto Open Data 2012 & DMG 2006

Who Cycles?

Age Distribution of Trips Taken

Source: Data Management Group (DMG), 2006

Who Cycles?

Wards with highest cycling rates

Also have 50% of all cycling trips taken by women

| 17 Davenport **1.32** | 21 St. Paul's **2.05** | 22 St. Paul's **1.16** | | | | 31 Beaches-East York **1.07** |

13 Parkdale-High Park **1.56**

18 Davenport **5.31**

19 Trinity-Spadina **7.5**

20 Trinity-Spadina **4.55**

27 Toronto Centre-Rosedale **2.24**

29 Toronto-Danforth **2.45**

14 Parkdale-High Park **4.79**

28 Toronto Centre-Rosedale **3.42**

30 Toronto-Danforth **4.42**

32 Beaches-East York **1.89**

Levels of Cycling Determined by Cycling Mode Share Values

High

Moderate

Low

Across city 2 out of 3 cycling trips are taken by men
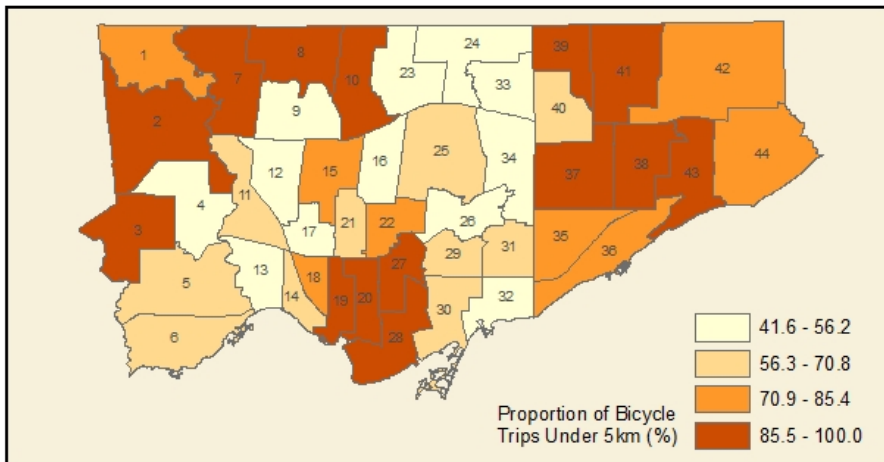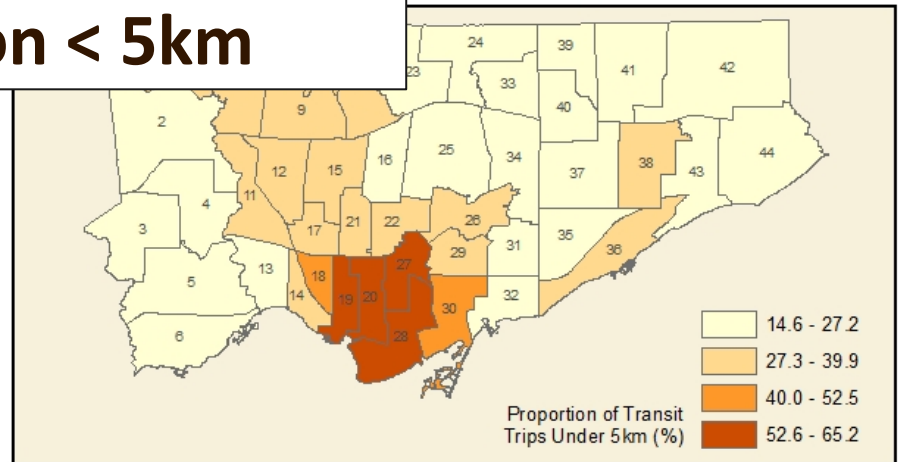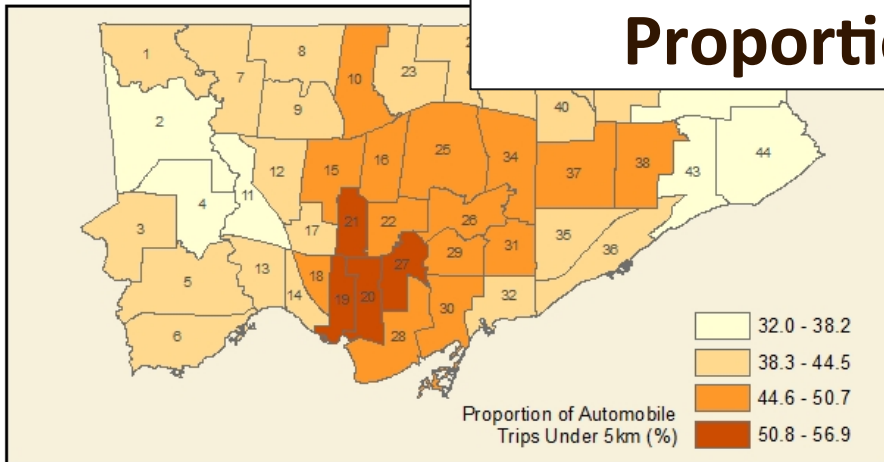
What Characterizes Cycling Trips?
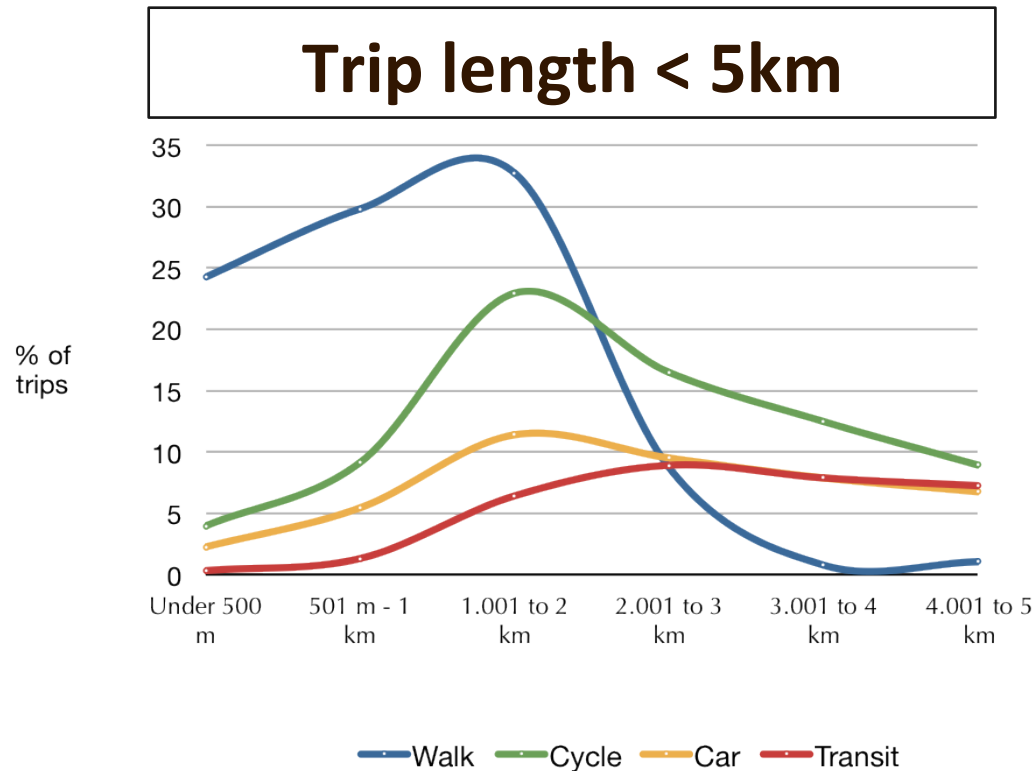
Trip length for each mode in Toronto (Data source: DMG, 2006)

What Characterizes Cycling Trips?

Proportion < 5km
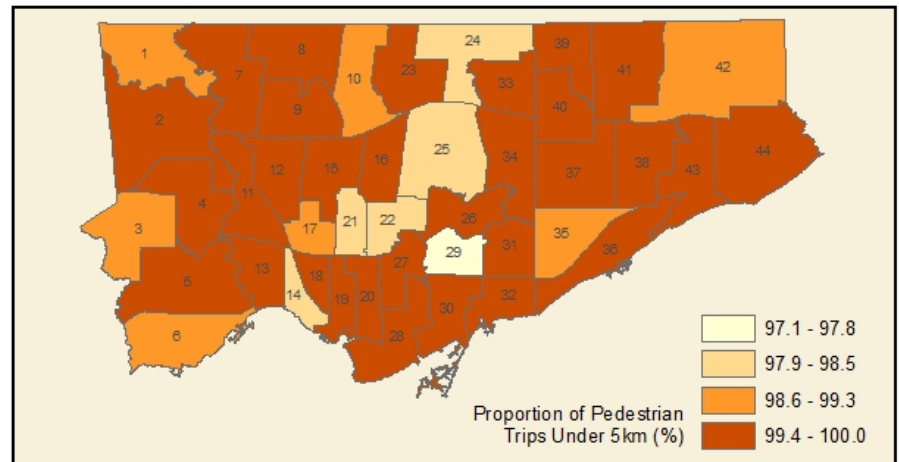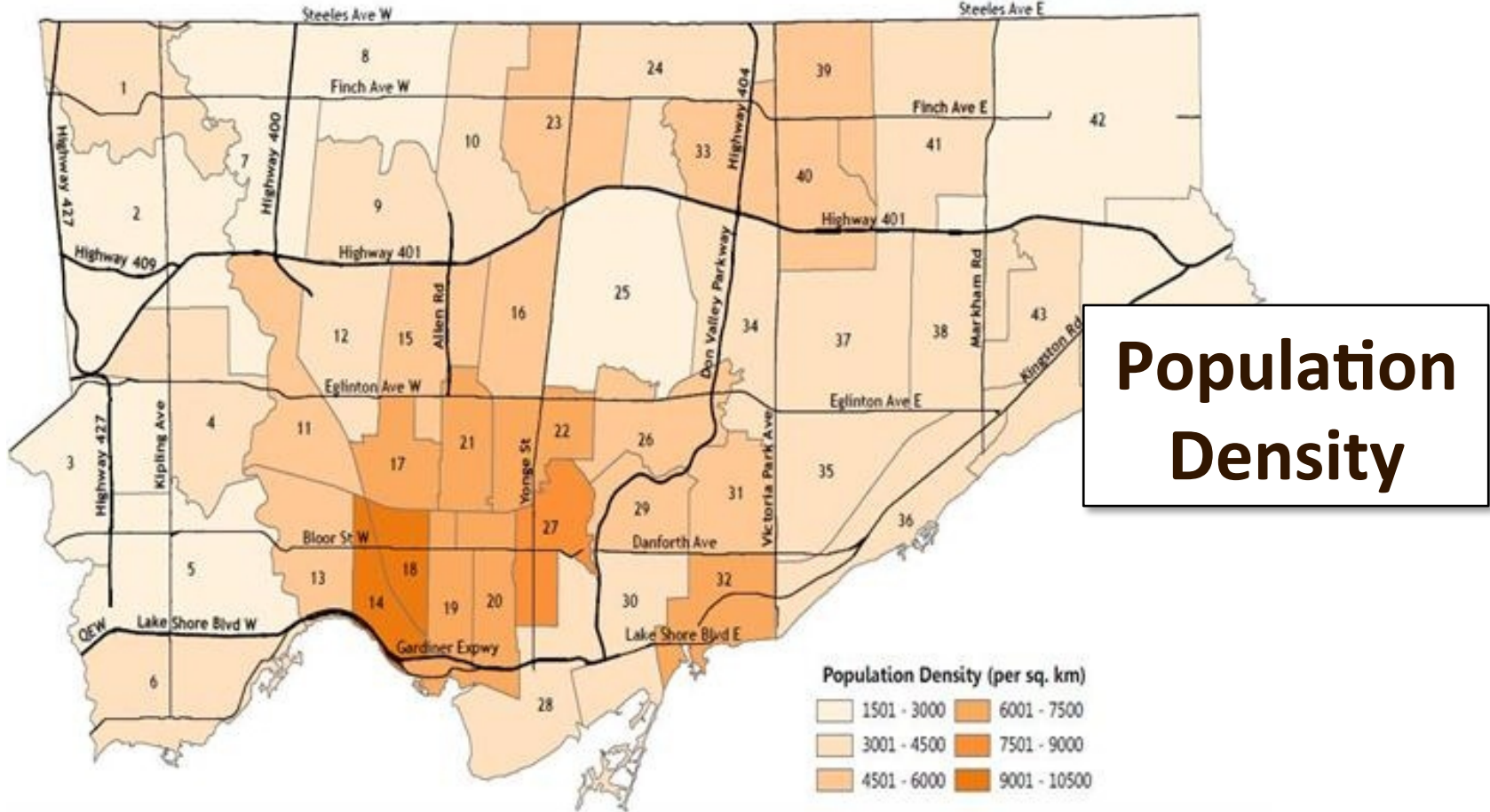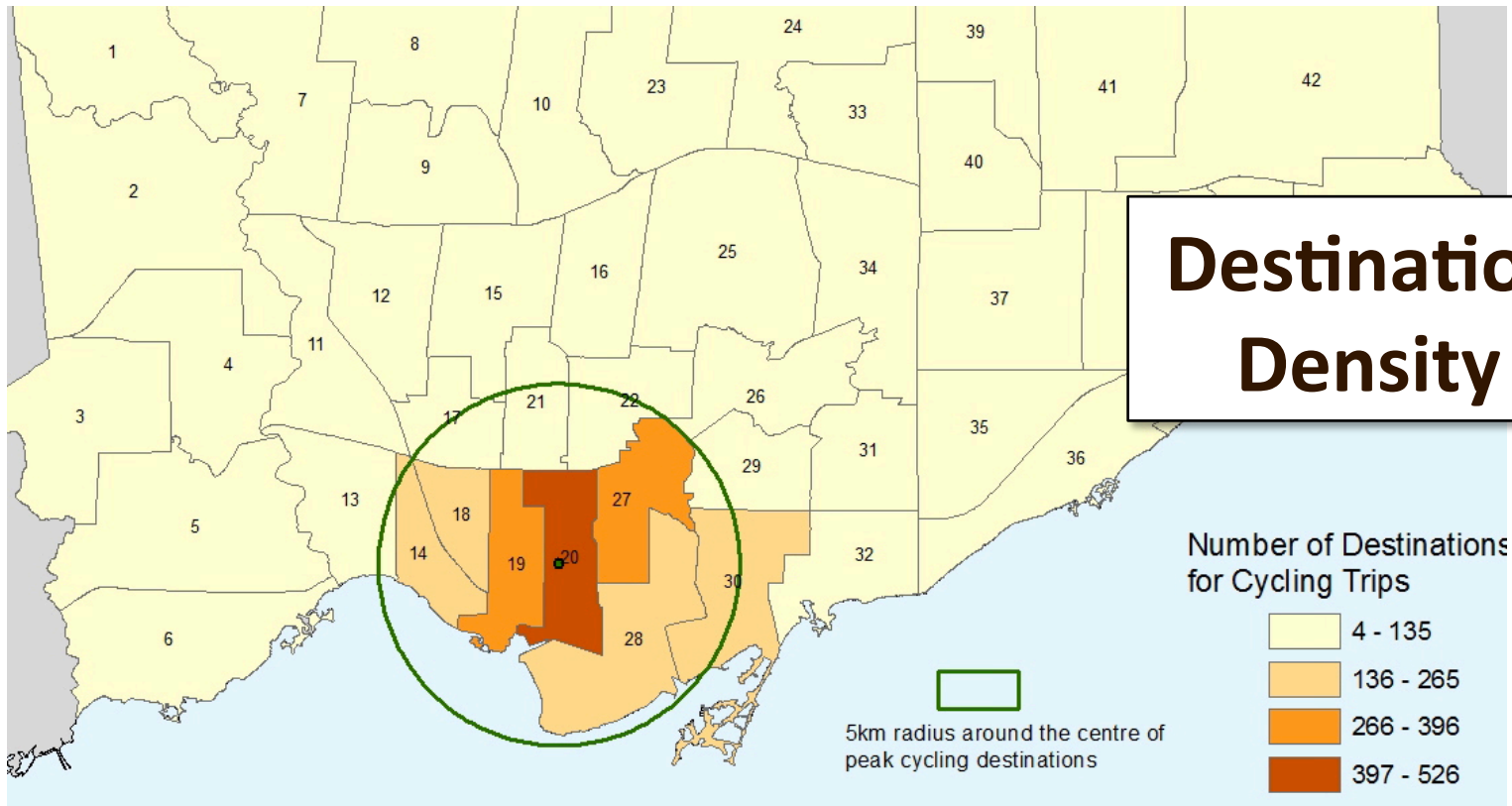
Proportion of all Trips under 5km (Data source: DMG, 2006 & City of Toronto Open Data, 2012)
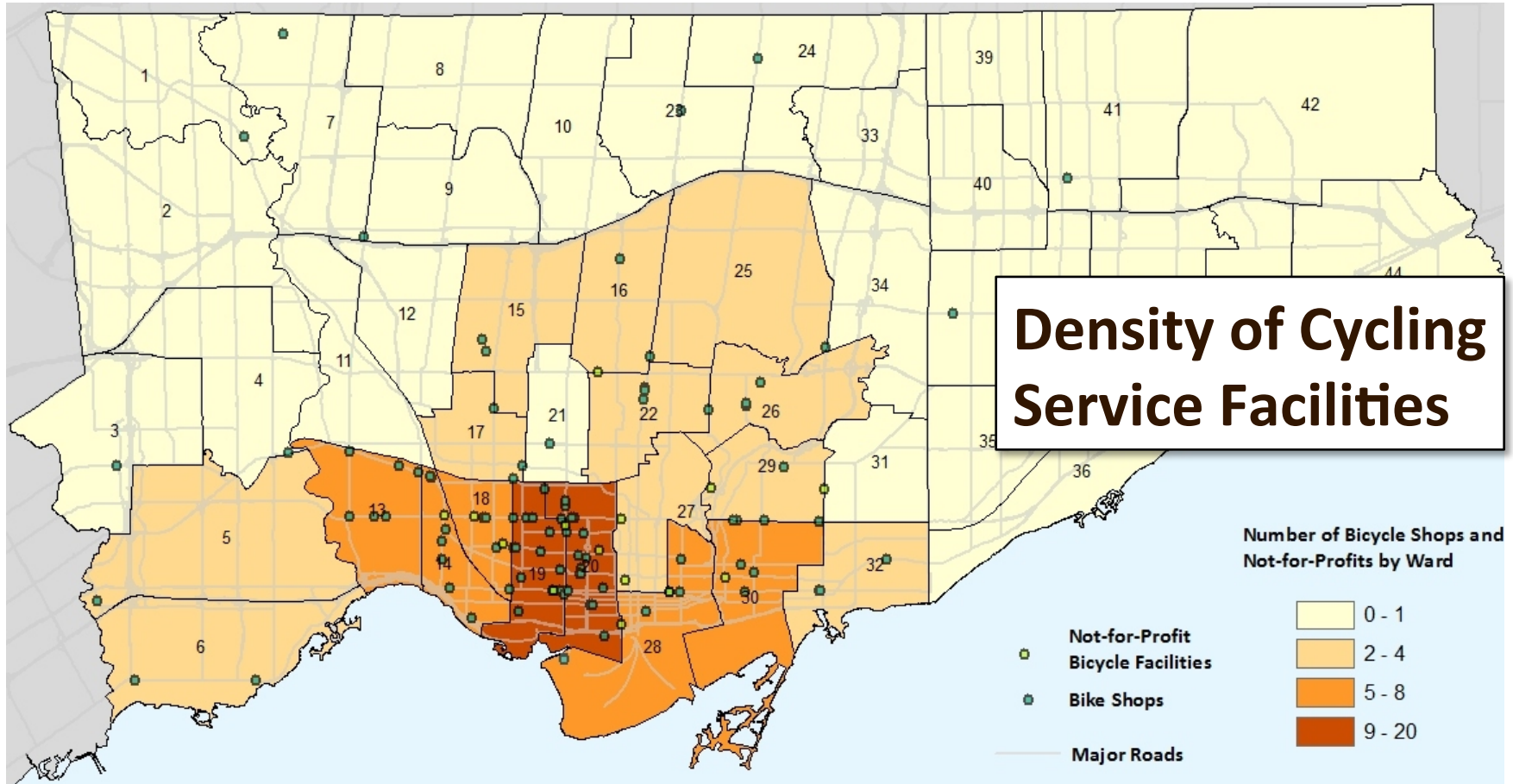
Factors Associated with Higher Rates of Cycling

Population Density

Watt (Data sources-City of Toronto Open Data and Census, 2006)

Destination Density

Number of Destinations for Cycling Trips
- 4 - 135
- 136 - 265
- 266 - 396
- 397 - 526

5km radius around the centre of peak cycling destinations

Wittmann (DMG, 2006 and City of Toronto Open Data, 2012

Factors Associated with Higher Rates of Cycling

Density of Cycling Service Facilities

Number of Bicycle Shops and Not-for-Profits by Ward

- 0 - 1
- 2 - 4
- 5 - 8
- 9 - 20

- Not-for-Profit Bicycle Facilities
- Bike Shops
- Major Roads

Wittmann (Data sources: Toronto Open Data, 2012)

Bike Score™

area with highest cycling mode shares

Most bikeable

Least bikeable.
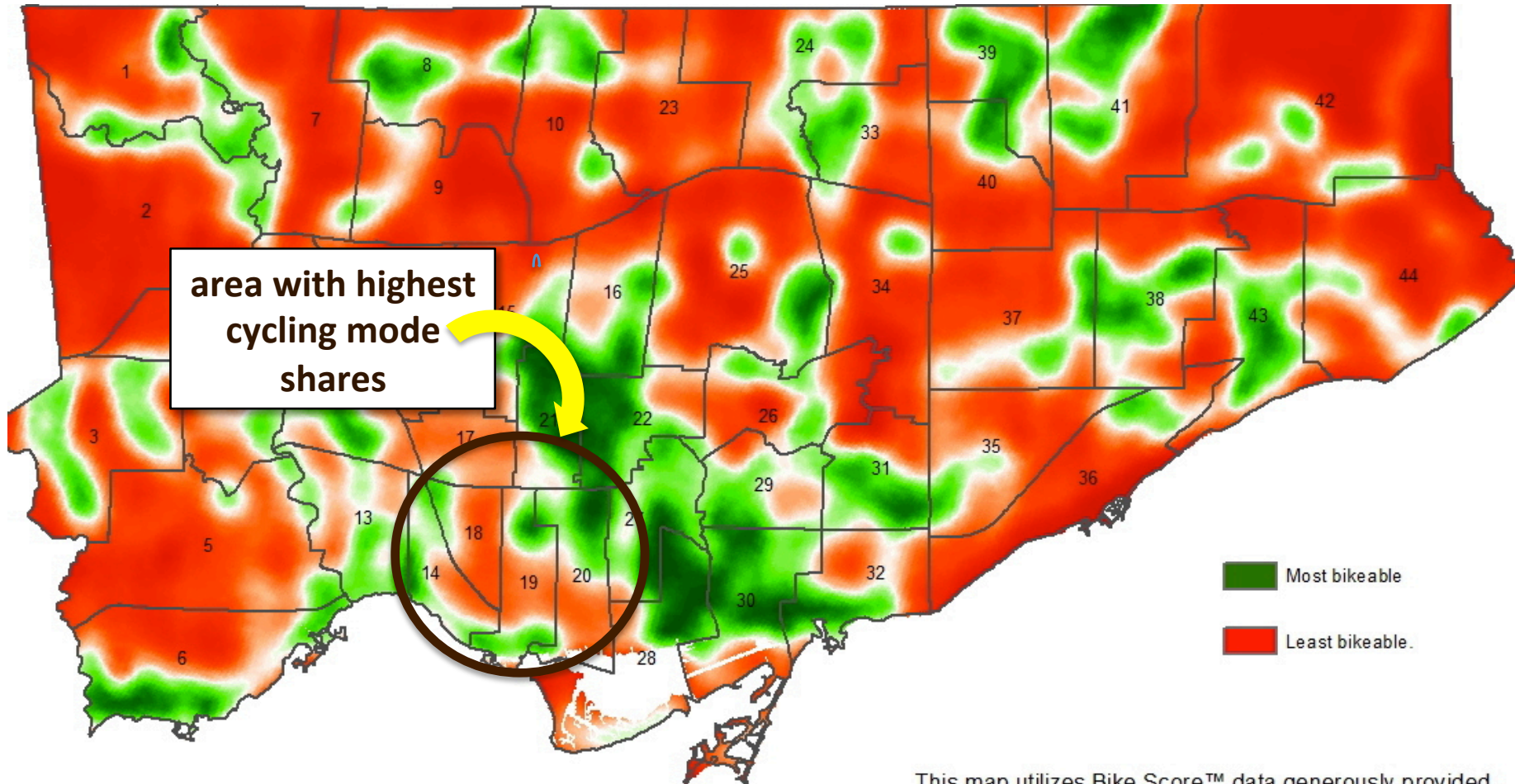
Wittmann-sources City of Toronto Open Data 2012 and BikeScore™ 2012

This map utilizes Bike Score™ data generously provided by the researchers at Walk Score®. The overall score accounts for bike lanes, hills, as well as destinations and connectivity.

Eight Key Characteristics
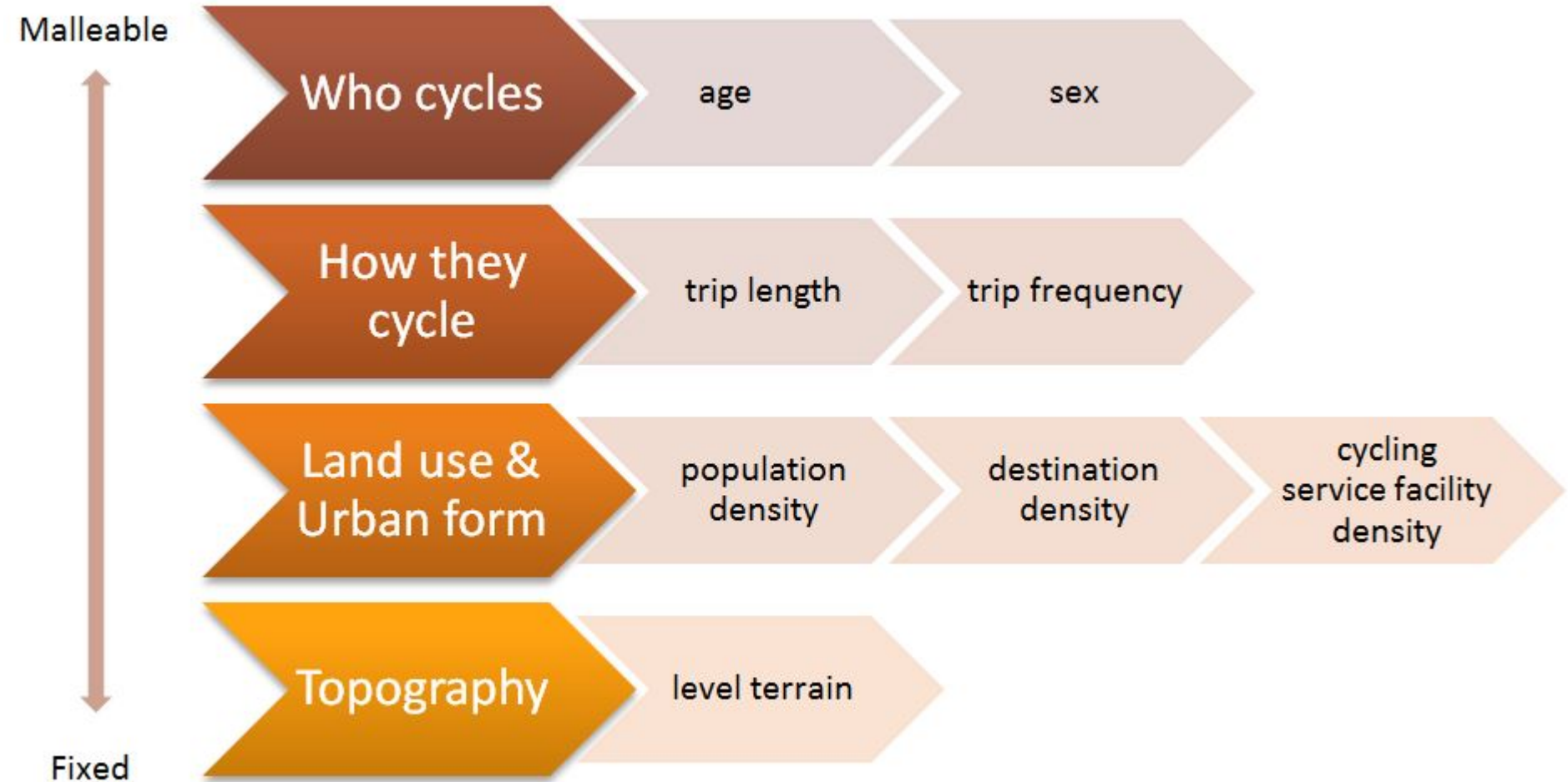
Conclusions of Mapping Study

We should direct behaviour change programs to:

1. The people most likely to take up cycling

In areas with:

2. Medium to high population density
3. High destination density
4. Medium to high cycling service facility density
5. Relatively level terrain

Where we have strong community partnerships

A Toolkit to Accelerate the Adoption of Cycling for Transportation

Findings from a review of the literature on behaviour change interventions to increase urban cycling

Academic literature

+

Practical examples of cycling initiatives and promotional programs

Behaviour Change Principle	Cycling Initiative
Identify and Remove Barriers	Open Streets
Social Norms	Safe Routes to School
Social Cues & Modeling	Cycle to Work Schemes
Local Hubs & Community Involvement	Cycle Training and Education
Foot in the Door & Pledges	Cycle Promotion Events
Visual Images, Prompts & Reminders	Bicycle Share Programs
Branding	Route Planning Tools
Feedback	Advocacy
Incentives	

Literature Review: Summary

DEFINITION & RATIONALE

- Information based campaigns do not lead to significant behaviour change

KEY MESSAGES

- Fear is constructed with the prevalence of cycling safety programs
- Parent's perceptions are significant barriers to youth cycling
- Cyclist stereotypes & individual's attitudes are deep rooted barriers to cycling
- Power of habit strength formation is strong predictor of bicycle use
- Interconnectedness of physical environment, individual factors and societal structures cannot be ignored

Emma Colmeyer, 2012

CYCLING PROMOTION TOOLKIT

Includes a sequence of steps for promotional program design

Based on behaviour change theory and evidence

List of practical options at each step

Adaptability is key!

4

Sustain the Behaviour Change

Community-based partnerships

1

Segment Target Population

3

Implement Commitment Strategies

2

Identify and Remove Barriers
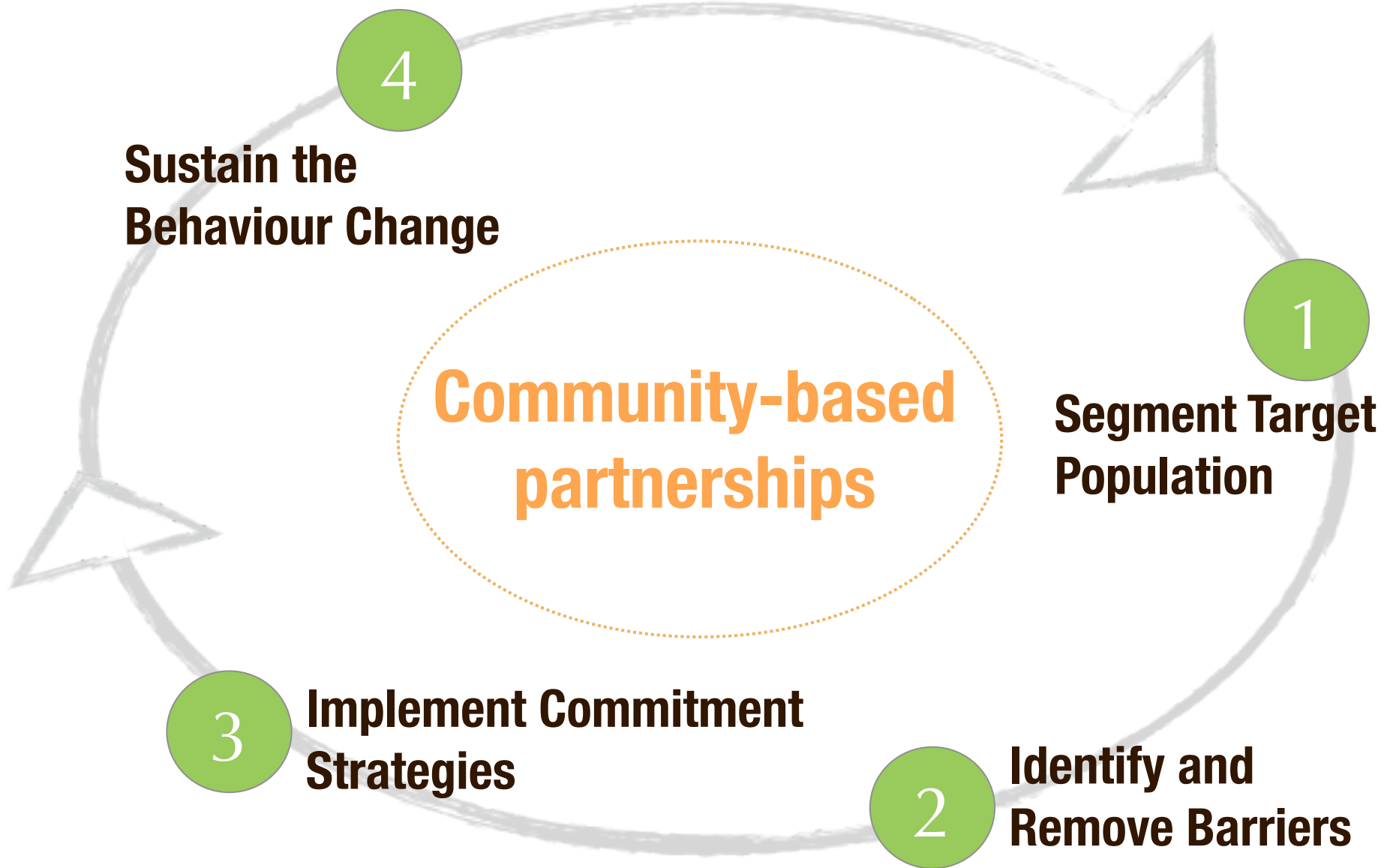
Translating into Practice

- Make public commitment

- Link to social events and supportive spaces

- Leverage commitment with priming and peers

- Prompt through weekly communication

- Track success for encouragement

Piloting the Tool Kit

Photo: Kristin Schwartz

Results: Graduate Residence

Our intervention produced:

- Increase in awareness of cycling activities, but <u>not participation</u>.

- Changes in Willingness to Pay: Will spend more on a bicycle

- Increase in negative impressions of bike stores, gender equity and fear of theft

Our intervention produced:

- Changes in Attitudes – Convenience of Cycling

- Changes in Willingness to Pay: Will spend more on a bicycle

- Changes in Social norms – Positive perceptions of peer group expectations of cycling

- Dramatic increase in cycling behavior – 5 times as much, even in those participants who did not receive a loaner.

Conclusions

- Awareness lead to change in attitudes and perceptions only

- Engagement and peer support lead to change in behaviour

- Piloting has validated the toolkit, but differences in pilot outcomes reflect differences in target populations and programs:

  - Population: level of transience, need for social interactions, motivation

  - Program design: mentorship and regular small group activities leveraging peer support

Next Steps

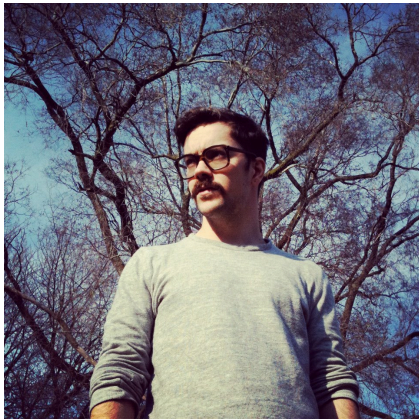**Winter 2014**

Consolidate findings from pilot projects
&
test toolkit within newcomer high
school student populations

Thank you

TORONTO CYCLING
THINK
& DO TANK

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Thanks to:
Trudy Ledsham, Katie Wittmann, Daniel Arancibia, Emily Watt, George Liu, Lake Sagaris, Emma Cohlmeyer