Designing Cities for Cycling

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Background

As a form of active transportation, cycling offers personal and environmental health benefits, with negligible economic costs. Furthermore, cycling is feasible: over 80% of Canadian live within 8 km of one common destination. However, cycling rates are low in Canadian cities as compared to European centres (2% versus 10-30% of work trips). The Cycling in Cities study aimed to understand the desires of current and potential cyclists, in order to target initiatives increase cycling mode share.

Cycling in Cities Survey

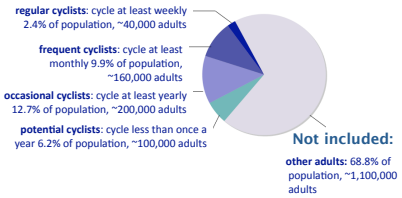
We conducted a population-based survey of 1,402 current and potential adult cyclists in Metro Vancouver using a web/mail self-administered questionnaire in 2006. This elicited opinions on:

- the influence of 73 factors that might affect cycling behavior, including: topography; markings; surfaces; intersections; vehicle traffic; aesthetics; safety; weather; facilities; links with transit; legislation; and education.
- current use patterns and stated preferences for 16 route types.

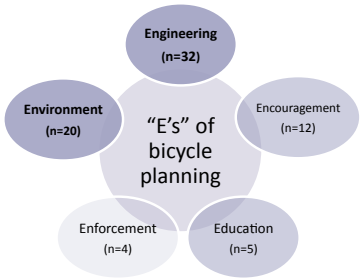
Methods

The73 factors were classified into a 5E framework to look at the relative influence of different approaches to cycling promotion. The 5-point survey responses were scaled from +1 (much more likely to cycle) to -1 (much less likely to cycle). Mean scores ≥|0.5| were considered a strong influence, those between |0.25| - |0.5| a moderate influence, and those <|0.25| neutral. For the 16 route types, preference and current usage were also ranked on a 5-point scale.

Who we asked:



Motivators & Deterrents of Cycling



The top motivators and deterrents were mainly **engineering** and **environment** factors (Table 1).

Education factors (e.g., cycling maps, trip planners, courses) and encouragement factors (co-ordination with transit, end-of – trip facilities) were moderate motivators.

Enforcement factors (helmet, light, and cycling restrictions) were only of neutral influence.

Results were similar across different cyclist types, with few exceptions: regular cyclists cared less about traveling longer distances, but more about the speed of bicycle trip relative to other modes.

Table 1: Top motivators and deterrents, where influence score = +1=much more likely to cycle, 0=neutral, -1=much less likely to cycle

Top 10 MOTIVATORS	Influence score	5E category
route is away from traffic noise & air pollution	0.79	engineering
route has beautiful scenery	0.70	environment
route has bike paths separated from traffic for the entire distance	0.69	engineering
route is flat	0.61	environment
cycling takes less time than traveling by other modes	0.59	environment
distance is less than 5 km	0.53	environment
can make the trip in daylight hours	0.50	environment
can take your bike on the SkyTrain at any time	0.50	encouragement
off-street path has reflective centre line for night/poor weather cycling	0.49	engineering
secure indoor bike storage	0.49	encouragement

Top 10 DETERRENTS	Influence score	5E category
route is icy or snowy	-0.86	environment
street has a lot of car, bus, & truck traffic	-0.83	engineering
vehicles drive faster than 50 km/hr	-0.76	engineering
route has glass or debris	-0.76	engineering
risk from motorists who don't know how to drive safely near bikes	-0.73	engineering
risk of injury from car-bike collisions	-0.67	engineering
raining	-0.63	environment
route has surfaces that can be slick when wet or icy when cold	-0.59	engineering
route is not well lit after dark	-0.59	engineering
need to carry bulky or heavy items	-0.57	environment

Policy Implications

In a reality of limited resources, these results provide direction on where to direct transportation investments to create the greatest change in cycling mode share.

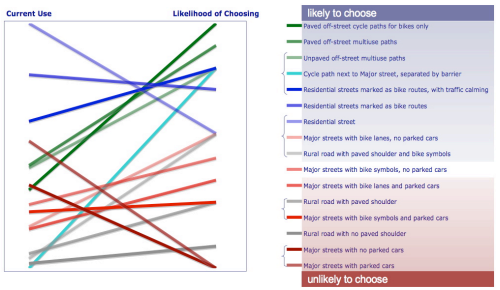
Key environmental and engineering factors were reported to have the strongest influence on cycling. This suggests the need for a shift in bicycle infrastructure planning and practice: rather than adding cycling facilities post-hoc during road-work and construction, route locations should be carefully considered a priori, prioritizing locations with favorable environmental conditions; subsequent care is required in the engineering design to build routes that are comfortable and safe.

At present, there is a great disconnect between the types of cycling facilities that are available in Metro Vancouver and those that people want. To reach the next wave of cyclists, there is a need to build the most desired route types, being:

- **for off-road paths:** paved & for cyclists only
- **for major streets:** paths separated from motor vehicle lanes by a curb or other barrier
- **for residential streets:** marked for cycling & with traffic calming

Desirable & Undesirable Routes

"Pick up sticks" → a disconnect between what we build, and what people want



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