What route types best motivate cycling?
Evidence about route preferences & safety

Kay Teschke
School of Population & Public Health
The University of British Columbia
<table>
<thead>
<tr>
<th>City</th>
<th>% of Commuters Who Travel by Bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revelstoke</td>
<td>11.5</td>
</tr>
<tr>
<td>Victoria</td>
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<tr>
<td>Oak Bay</td>
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<td>Whistler</td>
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<tr>
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<tr>
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<tr>
<td>Comox</td>
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<tr>
<td>Smithers</td>
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</tr>
<tr>
<td>Terrace</td>
<td>3.9</td>
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<tr>
<td>Nelson</td>
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<tr>
<td>Sidney</td>
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<tr>
<td>Penticton</td>
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<tr>
<td>Kelowna</td>
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<tr>
<td>Squamish</td>
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<tr>
<td>North Saanich</td>
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<tr>
<td>Central Saanich</td>
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<tr>
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<tr>
<td>Courtenay</td>
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<tr>
<td>North Vancouver</td>
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<tr>
<td>Nanaimo</td>
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</tr>
<tr>
<td>Chilliwack</td>
<td>1.8</td>
</tr>
<tr>
<td>Langford</td>
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<tr>
<td>Campbell River</td>
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<tr>
<td>Vernon</td>
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</tr>
<tr>
<td>West Vancouver</td>
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</tr>
<tr>
<td>Delta</td>
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<tr>
<td>Richmond</td>
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<tr>
<td>Kamloops</td>
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</tr>
<tr>
<td>Prince George</td>
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</tr>
<tr>
<td>New Westminster</td>
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<tr>
<td>West Kelowna</td>
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<tr>
<td>Abbotsford</td>
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<tr>
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<tr>
<td>Port Coquitlam</td>
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<td>Port Moody</td>
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<td>Langley</td>
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<td>Maple Ridge</td>
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<tr>
<td>Coquitlam</td>
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<tr>
<td>Surrey</td>
<td>0.3</td>
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</tbody>
</table>

Source: Statistics Canada, National Household Survey, 2011
“Of course cycling numbers are low – there's no cycle track network. That’s actually evidence to do it, not evidence to not do it.”
Top deterrents

Route safety

- car, bus & truck traffic
- vehicles driving faster than 50 km/h
- motorists who don’t know how to drive safely near bikes
- risk of injury from car-bike collisions
“Cycling in Cities”
Opinion Survey

N=1400
in Metro Vancouver

16 route types, 73 potential motivators or deterrents

“Bicyclists’ Injuries & the Cycling Environment”
Case-Crossover Study

N=690
in Vancouver & Toronto

15 route types

route types matter for both …
Do preferences & safety agree?

Multi-use paths
- Multiuse path paved
- Multiuse path unpaved

Bike-specific facilities
- Bike only path
- Residential street bike route
- Cycle track
- Residential street bike route & traffic diverters

Busy streets
- Major street bike lane, no parked cars
- Major street shared lane, no parked cars
- Major street bike lane, parked cars
- Major street shared lane, parked cars
- Residential street
- Residential street

Route preference vs. route safety
Busy streets . . . arterials, collectors

400 to 2200 vehicles / hour
0 to 170 bikes / hour
Busy street, parked cars, no bike infrastructure

Least safe, greatest deterrent to cycling

Photo Flickr: Café Mama
Busy street, sharrows

Less safe, deters cycling

Photo Flickr: W.D. Vanlue
Busy street, parked cars, bike lane
Less safe, deters cycling
Busy street, no parked cars, bike lane
Safer, neutral impact on cycling
Busy street, separated bike lane
Safest, motivates cycling
Quiet streets . . . local, residential

10 to 130 vehicles / hour
0 to 110 bikes / hour
Quiet street
Safer, neutral impact on cycling
Quiet street, bike route
Safer, motivates cycling
Quiet street, bike route, with traffic diversion

Safest, motivates cycling

Sources: Teschke et al, 2012; Harris et al, 2013
Quiet street, bike route, with traffic circle
Less safe, motivates cycling
Off-street . . . sidewalks, bike/multiuse paths

vehicles not counted
0 to 170 bikes / hour
Sidewalk
Less safe

Photo: San Francisco Citizen
Multi-use path

Less safe, motivates cycling
Bike path

Moderate safety, strongest cycling motivator
Quiet streets

bike routes with traffic diversion

Busy streets

separated bike lanes “cycle tracks”

Off-street

bike only paths
“Both Oulu and Copenhagen have extensive networks of cycle tracks and dedicated bike paths, which made the ride easy.

But something else was also different. It took a while for me to figure out what, but I eventually realized that I had relaxed. Unlike riding in Calgary, I wasn’t on constant lookout for cars getting too close for comfort.

I could feel the difference in my gut.”

Tom Babin, Author of “Frostbike”
Calgary Herald, February 2013
Bike facility selection tool – on or beside roads

Adapted from Cycling Embassy of Denmark
Collection of Cycle Concepts 2012
Motivation ...

route type matters

**Separated from traffic**
- Paved bike path
- Paved multiuse path
- Unpaved multiuse path
- Cycle track

**Quiet streets**
- Residential street bike route, with traffic calming
- Residential street

**Busy city streets & rural roads**
- Major street, with bike lane & no parked cars
- Major street, with bike symbols & no parked cars
- Rural road, with paved shoulder & bike symbols
- Major street, no parked cars
- Major street, no parked cars
- Major street, no parked cars

regular cyclists
occasional cyclists
potential cyclists
mean male
mean female

Motivation ... route type matters
Motivation ...

route type matters

<table>
<thead>
<tr>
<th>Separated from traffic</th>
<th>Quiet streets</th>
<th>Busy city streets &amp; rural roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paved bike path</td>
<td>Residential street bike route</td>
<td>Major street, with paved shoulder &amp; no parked cars</td>
</tr>
<tr>
<td>Paved multiuse path</td>
<td>Residential street</td>
<td>Major street, with parked shoulder</td>
</tr>
<tr>
<td>Unpaved multiuse path</td>
<td>Residential street</td>
<td>Major street, no parked cars</td>
</tr>
<tr>
<td>Cycle track</td>
<td>Residential street</td>
<td>Major street, with bike symbols &amp; parked cars</td>
</tr>
</tbody>
</table>

+ Regular cyclists
- Occasional cyclists
- Potential cyclists

Motivation ...
route type matters...