

Cycling in Cities

research brief



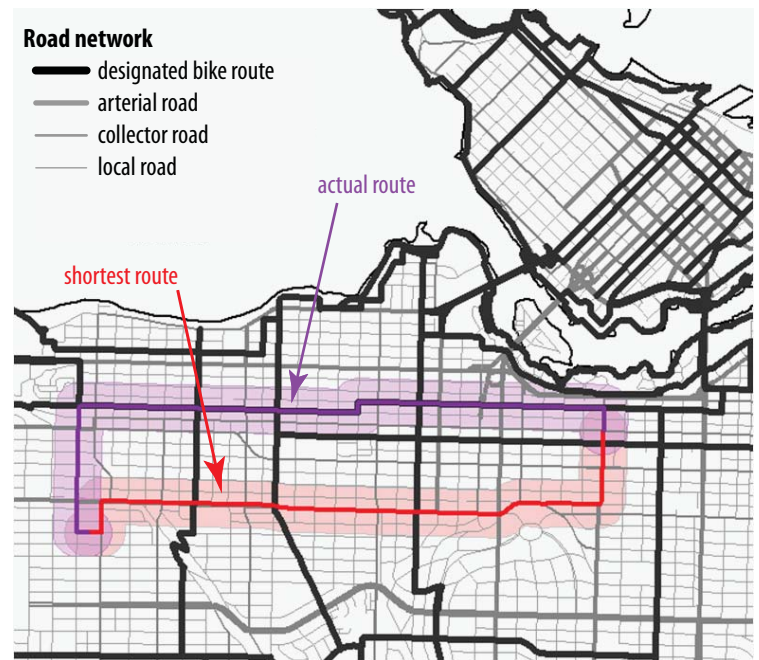
How far out of the way will we travel? How the built environment influences route selection for bicycle travel

About the study

As cycling is a self-propelled mode of transportation, it is tempting to assume that cyclists take the shortest route between point A and point B to minimize their energy output. However, cyclists' decisions are often complex, based on their preferences for safe, flat, or scenic routes. This study aimed to learn more about how much, and for what reasons, cyclists deviate from the shortest route.

What we did

We interviewed a randomly-selected group of regular and infrequent cyclists from the Metro Vancouver area about fifty different utilitarian cycling trips (i.e., for work, school or errands). They provided us with a detailed overview of the route they actually took from their origin to their destination. We compared this route to the shortest distance route, taking into account trip distance, use of different road types, and features of the built environment (e.g. bicycle facilities).



What we found

Our analysis showed that cyclists do deviate from shortest routes in order to take routes with better bicycle facilities (including traffic calming features, bike stencils, and signage). Population density, air pollution, hilliness, land use, and green cover along the route were not different between the actual routes travelled and the shortest routes.

Although we found that cyclists do detour from the shortest path route, this deviation was limited: on average, cyclists detoured 400 meters (about 2 city blocks). Three-quarters of the trips in our study were less than 10% longer than the shortest route between the origin and the destination.





Why do cyclists detour?

A sample of reasons given by interview participants

- Always goes along bicycle routes
- Doesn't mind going extra distance to stay on bike routes, especially aesthetically pleasing ones
- Selects downtown road with bike lane instead of more direct route without bike lane
- Takes a longer route to avoid a dangerous on-ramp
- Selects (off-street) route along dyke because there is no traffic
- Selects route through alley instead of busy arterial
- Does not take shortest route, but safest; rides through regional park in daytime, but not at night
- Takes route because there is not a lot of traffic, and good shade
- Avoids climbing steep hills; turns to avoid hills, or narrow or rough roads
- Changes route often to get favorable hills, and travels where there are fewer cars
- Selects route to have less traffic, better scenery, and avoids hills
- Takes a variety of routes to keep it interesting, along any of the residential streets
- Rides different routes depending on whether trip is made fast (arterial) or safe (along local road)
- Takes (unpaved) route through the park on the way home, when it is fine to get dirty

Implications

Our findings indicate that good cycling facilities are important, and that people will go out of their way to use designated bicycle routes. However, cyclists need to be able to access these routes quickly. Since cyclists are unlikely to detour more than about 400 meters to find a route with bicycle facilities, a bicycle route network with designated facilities spaced a minimum of every 500 meters should be the goal for urban areas where there is a desire to increase the modal share of cycling.

Learn more

The full research paper will be published in the peer-reviewed journal *Transportation Research Record*.

Winters M, Teschke K, Grant M, Setton E, Brauer M. (in press). *How far out of the way will we travel? Built environment influences on route selection for bicycle and car travel*. *Transportation Research Record*.

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