

# Innovative tools for healthy travel: A web-based bicycle trip planning tool

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[www.cycleancouver.ubc.ca](http://www.cycleancouver.ubc.ca)

## Background

With the growing concerns around physical inactivity, traffic congestion and greenhouse gas (GHG) emissions, cycling is increasingly promoted as a sustainable transport mode. However, cycling mode share is low in most North American cities as compared to European centers (1-2% of trips versus 10-30%) suggesting a great potential for mode shift if barriers to cycling are addressed.

Cycling promotion requires a multi-faceted approach with diverse policy initiatives in the realms of engineering, environmental, enforcement, encouragement and education. The Cycling in Cities survey ([www.cher.ubc.ca/cyclingincities](http://www.cher.ubc.ca/cyclingincities)) found that "the availability of a web-based bicycle trip planning tool" was a motivating factor for both current and potential cyclists. **Until now**, no such interactive tool has been available to help cyclists in Metro Vancouver plan trips.

## Methods

- Individualized route preferences
- Google Maps interface – searches by origin and destination addresses, common destinations
- Underlying Geographical information system (GIS)
- Data sources: national and regional data for variables known to influence bicycling
- Programming: topology, node/vertex index tables, C#

## Implementation

The planner was launched in June 2008 for Bike Month. Currently the site has > 3500 visits a month. It has been incorporated in local "commuter skills" training courses, used in bike-to-school promotion programs, and featured on local prime-time news.

Currently, several other Canadian centers are proposing to build bike trip planners based on this technology.

Future developments include a tool specific to Vancouver's transport conditions during the Vancouver 2010 Olympics, and increasing the tool's participatory GIS capacity.

## Acknowledgements

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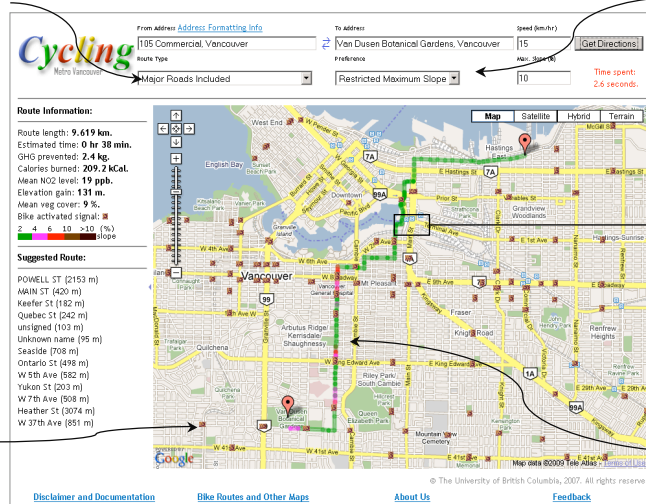
Enter user preference:

- Cycling facilities only
- OR
- Cycling facilities & major roads

Route statistics

Street directions

Bike activated crossing signals



Enter user preference:

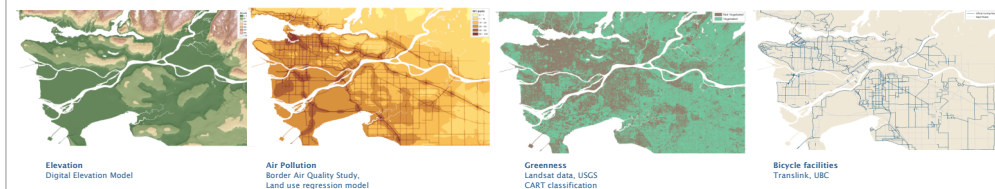
- Restricted maximum slope
- Least air pollution
- Least total elevation gain
- Greenest route
- Shortest route

Links to transit

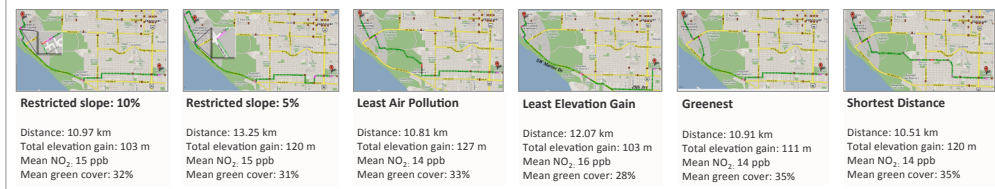


Optimized route, color coded by road gradient

## Data Inputs



## Case Study: 6 route options, VanDeusen Gardens to University



## Innovations

The planner creates optimized cycling routes **based on individual preferences**: shortest distance route, restricted maximum slope, maximum greenery en route, least air pollution, or the use of designated bicycle routes only.

The technology is readily transferable to other regions: the basic functionality of the planner relies on widely available geographic data (e.g., road networks, elevation files), while enhanced functionality is possible in regions with rich data sources (e.g., links to transit, green routes, air pollution, locations of bike racks).