Cycling for Everyone: Lessons for Vancouver from the Netherlands, Denmark, and Germany

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Reasons for *everyone* to support cycling:

• Improved mobility options for everyone

• Improved traffic safety and more livable neighborhoods

• More daily physical activity and improved health

• Reduced air, water, and ground pollution; less noise; less disruption of natural ecosystems

• Reduced traffic congestion, parking needs, energy use

• Reduced Greenhouse Gases (remember Kyoto?)
Lots of Potential for Increased Cycling in Canada: Short trips

• 1/2 of all trips in Greater Vancouver are shorter than 5 km
• 1/3 of all trips are shorter than 3 km
• 1/4 of all trips are shorter than 2 km
Lots of Potential for Increased Cycling in Canada:

Almost EVERYONE could bike!

- Cycling is possible at any age, except for very young and very old
- Women can cycle as well as men
- Cycling possible for wide range of skills and physical fitness
- Cycling affordable by everyone
Bike share of trips in Europe, North America, and Australia
(Percent of total trips by bicycle)
Lots of women cycle in Denmark!
Women’s share of bike trips in Europe, Australia, and North America

Australia 21%
USA 25%
UK 29%
Canada 30%
Denmark 45%
Germany 49%
Netherlands 55%
Cycling can start at a very young age
And we can keep cycling all life long!!!
Bike Share of Local Trips by Age Group in the USA, Germany, Denmark, and the Netherlands (2000-2002)

Make Cycling Safe for Everyone!

• Especially important for the young, the old, for anyone with disabilities, for the timid or risk-averse
• Women more sensitive to safety than men
• Safety of cycling in the Netherlands, Denmark, and Germany helps explain why everyone cycles there
Cycling Fatality Rates in North America and Europe, 2002
(cyclist deaths per 100 million km cycled)

The Dutch do NOT wear safety helmets, yet have the safest cycling in the world!
Cycling Safety in Muenster, Germany

- Population of 265,000, 35% bike share of trips
- Most complete and most separate bicycling facilities of any German city
- Almost no one wears helmets

ONE CYCLING INJURY PER 608,000 BIKE TRIPS!
SAFETY IN NUMBERS

• As levels of cycling increase, injury and fatality rates per trip and per km traveled fall dramatically

• Thus, if we can increase cycling, it will almost inevitably be safer
Fate of Cycling
Determined by Public Policies

• Pro-car policies in European cities in 1950s and 1960s caused huge decline in cycling

• Dramatic policy turn-around since 1970s to limit car use and promote cycling, walking, and public transport in Dutch, Danish, and German cities

• Cycling levels rose sharply, doubling or tripling in some cities (such as Munich, Cologne, and Berlin)
German Cycling Boom Engineered by Explicit Shifts in Transport Policy in 1970s

<table>
<thead>
<tr>
<th>City</th>
<th>Time Period</th>
<th>Change in Bicycle Modal Split Share</th>
<th>Percentage Increase in Bicycle Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Munich</td>
<td>1976 to 1996</td>
<td>6% to 13%</td>
<td>+117%</td>
</tr>
<tr>
<td>Nuremberg</td>
<td>1976 to 2001</td>
<td>4% to 9%</td>
<td>+125%</td>
</tr>
<tr>
<td>Cologne</td>
<td>1976 to 1998</td>
<td>6% to 12%</td>
<td>+100%</td>
</tr>
<tr>
<td>Freiburg</td>
<td>1976 to 1998</td>
<td>12% to 19%</td>
<td>+58%</td>
</tr>
<tr>
<td>Stuttgart</td>
<td>1976 to 2000</td>
<td>2% to 6%</td>
<td>+200%</td>
</tr>
<tr>
<td>Bremen</td>
<td>1976 to 1997</td>
<td>16% to 21%</td>
<td>+31%</td>
</tr>
<tr>
<td>Muenster</td>
<td>1976 to 2001</td>
<td>29% to 35%</td>
<td>+21%</td>
</tr>
<tr>
<td>Average for all urban areas in Western Germany</td>
<td>1972 to 2002</td>
<td>8% to 10%</td>
<td>+25%</td>
</tr>
</tbody>
</table>

TRIPLING of bikeway network 1975-1995

Bridge in Freiburg BEFORE and AFTER reforms

avant

Aujourd'hui

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Typical residential street in Freiburg BEFORE and AFTER traffic calming reforms
Premium Unleaded Gasoline Prices per Liter (2007)

- Norway: 2.1
- Netherlands: 2.0
- United Kingdom: 1.9
- Belgium: 1.9
- Germany: 1.9
- Finland: 1.8
- Italy: 1.8
- Denmark: 1.8
- France: 1.8
- Sweden: 1.7
- Austria: 1.6
- Switzerland: 1.4
- Canada: 1.0
- United States: 0.8

Source: Energy Prices & Taxes 4th Quarter 2007
Percentage of Taxes in Premium Unleaded Gasoline Prices (2007)

How to Increase Cycling by Broadening its Appeal to all Groups

• Better cycling facilities (incl. bike-friendly roads!)
• Traffic calming of residential neighborhoods
• Integration of bike with public transport
• Restrictions on motor vehicle use
• Traffic education
• Traffic regulations and enforcement
• Mixed-use zoning and improved urban design
Extensive car-free districts ideal for walking and cycling
Two-way bike path in middle of car-free zone in Amsterdam
Peaceful co-existence of trams, bicyclists, and pedestrians in Freiburg’s car-free center
Fahrradstrassen in Germany, bicycle streets where cyclists have absolute priority over cars for entire width of roadway.
Bicycling facilities in Berlin, Germany’s capital and largest city

• 860 km of completely separate bike paths
• 60 km of bike lanes on streets
• 70 km of combined bike/bus lanes on streets
• 100 km of combined pedestrian/bike paths
• 3,800 km of city streets (72%) are traffic calmed, with speed limit of 30km/hr or less, and thus ideal for cycling on street, without any special lanes or paths

10% of all trips in Berlin are by bike

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Bicycle expressway-beltway in Muenster, Germany
Separate cycling and pedestrian facilities in Vancouver

Foto: Gordon Price

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Regular laser inspection of bikeway surfaces in Denmark for preventive maintenance!
Special contraflow lanes in Toronto and Melbourne that permit cyclists to travel in both directions.
Passage for cyclists through median island at Burnaby intersection
Relaxing traffic restrictions for cyclists by permitting bi-directional travel on one-way streets, turns, and thru-travel for bikes where prohibited for cars.
Convenient bike cut-thru for cyclists in Melbourne

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Foto by Peter Berkeley
Cut-through for cyclists on bike route in Vancouver

Foto: Gordon Price

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“Cut-thru” short cut for cyclists in residential area

Short-cut for cyclists between two adjacent streets to avoid round-about route that would involve crossing street and making two left turns

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Most new suburban developments in Germany and the Netherlands have sidewalks and cycle paths.
Extensive, fully-integrated bikeway network in Freiburg, Germany

CRUCIAL to have full connectivity of cycling facilities!
Usually lacking in North America

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Bike bridge along Yarra River in Melbourne

Bike bridge along Ems River in Muenster

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Ped/bike overpass in New Westminster
Bike path on south entry to Lion’s Gate Bridge in Vancouver

Foto: Gordon Price

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Brisbane’s floating bikeway
Special traffic signals and signs give priority to cyclists.
Bike crossing designed to reduce likelihood of right-turning car hitting cyclist crossing intersection
Bike path placed behind bus stop to reduce conflict between cyclists and bus passengers
Bike lane, advance stop line, and priority signal for cyclists in Muenster
Highly visible red bike lanes for intersection crossings on all four sides, Muenster
Four-way all-green signal for cyclists in Portland

How to Use the New Bicycle Signal

1. TO GET A GREEN LIGHT
   Place your bicycle on the marking on the sidewalk, with your wheels directly on the lines.

2. When the bicycle signal here is green...

3. Cyclists can cross the intersection as shown here.

Bike sensor in pavement

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Bike sensors in pavement to trigger green light for cyclists in Richmond
Denmark: Ubiquitous short-cuts for right-hand turns and full-speed ahead for cyclists at red lights at T-intersections

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Green wave for *cyclists* in Odense, Denmark

Troels Andersen, “Cycling in Odense, Denmark”
Green wave for *cyclists* in Copenhagen, Denmark

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Traffic Calming of Residential Neighborhoods

• Speed limited *by law* to 30km per hour *or less*

• Physical measures that force cars to slow down:
  • Road narrowing, zigzag routing, chicanes
  • Raised intersections and crosswalks
  • Traffic circles
  • Speed humps and bumps
  • Mid-block closures and artificial dead-ends
  • Bulb-outs at intersections and crosswalks, with sidewalk widening
Freiburg

7 km/hr speed limit

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Freiburg

30 km/hr speed limit

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7 km/hr speed limit

Freiburg

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Traffic calming in Vancouver that promotes cycling while discouraging car use

One-way for cars, two-way for bikes
Pro-bike traffic calming in Vancouver

Short cuts for bikes, detours for cars!

Fotos: Rich Drdul

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Traffic calming turns these streets into bikeways

Bike Boulevards in Portland

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Bike and Ride
Convenient and secure parking for 3,500 bikes at main train station in Muenster
Bike Wash at Muenster Bike Station
Bike parking at bus stop in Muenster
At least it’s there, but it’s not quite irresistible

Bike parking at bus stop in Burnaby
Bike and Ride in Denmark
Bike racks on all TransLink buses in Metro Vancouver
On-street car parking in German and Dutch cities often replaced by bike parking.
Conversion of car parking to bike parking in San Francisco

• Lose 1 car
• Gain 10 bikes
Free internet bike trip planning in Berlin

• Cyclists enter origin, intermediate stops and final destination of their intended bike trips

• Cyclists can indicate preferences:
  • desired speed of travel
  • direct arterial streets or secondary roads
  • type of pavement
  • volume, speed, and mix of traffic
  • on-street lanes, off-street paths, parkways
Recommended route appears **in red** on computer screen, along with trip details shown at top of screen, and more!
Bike Route Planning by Mobile Phone, with suggested route shown on LCD display
Innovative directional signs and bike trip counters in Denmark
Convenient air pumps for bikes throughout Odense
Cycling Can Serve Many Different Travel Purposes

• Commuting to work
• Traveling to school or university
• Shopping
• Recreation and exercise
• Visiting friends, running errands, etc.
Transporting kids in Copenhagen: the famous Christiania bike
Police are friendlier and more effective on bikes

Need to restore the Bike Police Squad in Vancouver

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Postal deliveries by bike in Germany and Denmark
Many potential uses of bikes
MARKETING CYCLING TO ALL SOCIAL GROUPS

• Very diverse needs of different groups
• Need to tailor cycling facilities, policies, and programs to serve this broad range
• Be as inclusive as possible
• Need good facilities as well as active marketing of cycling, with different approaches to each potential group of cyclists
Cycling Duckie for very young kids in Odense, Denmark
Cycling competitions for somewhat older kids in Odense, Denmark
Most German and Dutch children take cycling lessons by the 3rd or 4th grade and must pass a police-administered cycling safety test!
You are never too old to learn!!!

Cycling training course for adults in Metro Vancouver

Foto: Bonnie Fenton

Foto: Amy Walker

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German traffic laws generally favor cyclists and pedestrians over motorists.
For Employees: Company bicycles provided by Danish firms for business trips during the day

The perfect zero emissions vehicles!!

Troels Andersen, “Cycling in Odense, Denmark”
“Get rid of the sack” Campaign aimed at overweight middle-aged men with pot bellies

Troels Andersen, “Cycling in Odense, Denmark”
Guided Bicycle Tours for Seniors

Troels Andersen, “Cycling in Odense, Denmark”

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CONCLUSIONS

• Almost everyone has the potential to cycle, but must design cycling facilities and programs to meet the diverse needs of different groups

• “Hard” infrastructure measures must be complemented by full range of “soft” measures

• Need to improve cycling conditions while restricting car use and making it more expensive (carrots and sticks!)

• Must be inclusive in bicycling programs to gather necessary political and public support to finance and implement them
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