Promoting Safe Walking and Cycling to Improve Public Health: Lessons from the Netherlands and Germany

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Public health problems of auto-dependence

• Lack of exercise
• Social isolation
• Mental and physical diseases
• Traffic dangers
• Environmental pollution
Comparisons with Europe

• Americans (and probably Canadians as well) get much less exercise than most Europeans

• Main difference between Americans and Europeans in their overall physical exercise levels is much higher rates of walking and cycling in Europe

• Americans have much higher rates of obesity, hypertension and diabetes

• Europeans have longer healthy life expectancies although they spend less than half as much as Americans for health care
Cycling and walking for public health

• Best way to increase physical exercise among Americans and Canadians is to promote safe and convenient walking and cycling for daily urban travel

• Europeans have developed extremely effective policies that could be easily adapted in American and Canadian cities
Obesity Trends* Among U.S. Adults
BRFSS, 1991 compared to 2002

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)

1991

2002

Source: Behavioral Risk Factor Surveillance System, CDC

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Source: Center for Disease Control and Prevention, U.S. Department of Health and Human Services; Eurostat, Public Health Statistics (from Eurobarometer 44-3).  

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Percentage of Urban Trips by Walking, Cycling, and Public Transport in the USA, Canada and Europe, 1995

Walking and Bicycling Shares of Urban Travel by Age Group in the USA, Germany and The Netherlands, 1995


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## Modal Split Distributions for Selected German Cities

<table>
<thead>
<tr>
<th>City (year) (ranked by bicycle use)</th>
<th>Population (000)</th>
<th>Percent of Trips by Travel Mode (all trip purposes)</th>
<th>Bicycle</th>
<th>Walking</th>
<th>Public Transport</th>
<th>Auto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muenster (1994)</td>
<td>270</td>
<td>32</td>
<td>22</td>
<td>10</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Bremen (1991)</td>
<td>554</td>
<td>22</td>
<td>21</td>
<td>17</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Freiburg (1992)</td>
<td>179</td>
<td>19</td>
<td>21</td>
<td>18</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Hannover (1990)</td>
<td>524</td>
<td>16</td>
<td>23</td>
<td>22</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Munich (1995)</td>
<td>1,257</td>
<td>15</td>
<td>23</td>
<td>25</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Cologne (1992)</td>
<td>961</td>
<td>11</td>
<td>30</td>
<td>17</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Berlin (2003)</td>
<td>3,400</td>
<td>10</td>
<td>25</td>
<td>27</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Dusseldorf (1990)</td>
<td>578</td>
<td>9</td>
<td>30</td>
<td>18</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Kassel (1994)</td>
<td>192</td>
<td>7</td>
<td>28</td>
<td>19</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Stuttgart (1990)</td>
<td>599</td>
<td>6</td>
<td>28</td>
<td>23</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Essen (1990)</td>
<td>627</td>
<td>5</td>
<td>27</td>
<td>15</td>
<td>57</td>
<td></td>
</tr>
</tbody>
</table>

Increases in bike share of urban trips from mid-1970s to mid-1990s in selected German cities

<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 1992</td>
<td>6% to 15%</td>
<td>+150%</td>
</tr>
<tr>
<td>Nuremberg</td>
<td>1976 to 1995</td>
<td>4% to 10%</td>
<td>+150%</td>
</tr>
<tr>
<td>Cologne</td>
<td>1976 to 1992</td>
<td>6% to 11%</td>
<td>+83%</td>
</tr>
<tr>
<td>Freiburg</td>
<td>1976 to 1992</td>
<td>12% to 19%</td>
<td>+58%</td>
</tr>
<tr>
<td>Essen</td>
<td>1976 to 1990</td>
<td>3% to 5%</td>
<td>+67%</td>
</tr>
<tr>
<td>Bremen</td>
<td>1976 to 1994</td>
<td>16% to 22%</td>
<td>+38%</td>
</tr>
<tr>
<td>Muenster</td>
<td>1976 to 1994</td>
<td>29% to 32%</td>
<td>+10%</td>
</tr>
<tr>
<td>Average for all urban areas in Western Germany</td>
<td>1972 to 1995</td>
<td>8% to 12%</td>
<td>+50%</td>
</tr>
</tbody>
</table>

Sources: Werner Broeg and Erhard Erl, "Can Daily Mobility Be Reduced or Transfered to Other Modes," European Conference of the Ministers of Transport, OECD, Paris, France, Round Table 102, March 1996; and supplemental data collected from individual cities by the author.
Does auto-dependency make us fat? Obesity falls sharply with increased walking, cycling, and transit use.

Fatality Rates and Non-Fatal Injury Rates in the USA, Germany and The Netherlands, 2000

Trends in Pedestrian and Bicycling Fatalities in the USA, Germany, and The Netherlands, 1975-2001 (1975=100%)


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SAFETY IN NUMBERS

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

• Fatality rates per trip and per km are much lower for countries and cities with high bicycling and walking shares of total travel, and fatality rates fall for any given country or city as cycling and walking levels rise

• THUS, it is quite likely that increased walking and cycling in the USA and Canada would be safer than they are today.

MOREOVER,

there are many policies, already used in Europe--and some American and Canadian cities--that simultaneously make walking and cycling BOTH safer AND more convenient, faster, most pleasant, and more attractive, as shown in the following slides:
Recommended Measures for Making Walking and Cycling Safer

• Better facilities for walking and cycling
• Traffic calming of residential neighborhoods
• Mixed-use zoning and improved urban design
• Restrictions on motor vehicle use
• Traffic education
• Traffic regulations and enforcement
Better facilities for walking and cycling

• Auto-free zones covering much of city center
• Wide, well-lit sidewalks with benches and plants
• Median islands for crossing wide streets
• Clearly marked, well-lit crosswalks, often with pedestrian-activated traffic signals
• Bike paths and lanes with exclusive rights of way
• Intersection modifications that minimize dangers for pedestrians and cyclists to cross streams of traffic
• Advance green lights for cyclists and pedestrians (to cross intersections before motor vehicles)
• All-red phase for motorists from all directions at especially dangerous intersections (to eliminate dangers from turning vehicles)
• No turn on red!
Traffic Calming of Residential Neighborhoods

• Speed limited by law to 30km per hour (19mph) or less

• Physical measures to limit speeds:
  • Traffic circles
  • Road narrowing, zigzag routing
  • Raised intersections
  • Speed humps
  • Mid-block closures and artificial dead-ends
  • Bulb-outs at intersections and crosswalks, with sidewalk widening
Restrictions on Motor Vehicle Use

• Lower overall urban speed limit (31mph in most German and Dutch cities)

• Restricted parking, especially in city center and residential areas

• Prohibition of truck traffic and thru traffic in residential areas

• Extensive motor vehicle turn restrictions at dangerous intersections, and complete ban of turns on red

• Complete ban of cars in certain central city areas

• “Walking speed” requirement for cars in certain residential areas designated as “woonerfs”
Traffic Education

• Improved motorist training, with much more emphasis on how to avoid endangering pedestrians and cyclists

• Compulsory traffic safety lessons for all school children by the age of 10, with testing by traffic police on actual traffic test courses, to ensure safe and defensive walking and cycling by an early age (as in the Netherlands and Germany)
Mixed-Use Zoning and Better Urban Design

• Inclusion of *sidewalks and bikeways or bike lanes* in all new suburban developments and retrofitting of existing developments, where possible

• *Mixed land use zoning* so that residential units are within easy walking or cycling distance of cultural facilities, shopping, and service establishments

• Encouragement of *compact, mixed-use development* around transit stops to facilitate walking/bicycling communities (transit-oriented development) through subsidies, mortgage bonuses, and zoning.

• *Restrict parking lots* to locations behind buildings rather than between buildings and the street (as with most strip mall development in USA).
Traffic Regulations and Enforcement

• **Revise traffic laws** to place burden of proof on motorists, with the assumption that motorist is guilty unless it can be shown otherwise, especially when children or elderly are involved in crashes (forcing motorists to be extra careful to avoid crashes with pedestrians and cyclists)

• **Enforce existing legal rights of pedestrians and cyclists**, with strict penalties and fines for motorist violations of ped/bike rights of way in crosswalks, bike lanes, intersection crossings.

• **Traffic cameras at intersections** to photograph motorists failing to stop or yield when required to do so, with automatic ticketing for violations
CONCLUSIONS:

• Crucial to increase walking and cycling in American and Canadian cities for many reasons

• Many ways to achieve this goal, with manifold benefits that would far outweigh the costs

• All the necessary measures have already been successfully implemented in many European cities and some North American cities

• The same policies that would make walking and cycling safer also increase overall walking and cycling levels

• Increased walking and cycling, in turn, would encourage greater safety for non-motorists
For any questions or further information, please feel free to contact:

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