Walking and Bicycling: What Does the Research Tell Us?

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Big in the 'burbs
Walk/Bike as Share of Urban Trips 1995

Source: Pucher and Dijkstra 2003
How can we get people to walk and bike more?

**Individual Factors:**
Age, gender, attitudes, experience, comfort?

**Social Environment Factors:**
Family, friends, neighbors, crime?

**Physical Environment Factors:**
Sidewalks, crosswalks, land-use mix, design?
Research Findings

Walking
Influence of Built Environment on Walking for Transport

<table>
<thead>
<tr>
<th>Factor</th>
<th>Influence</th>
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<tbody>
<tr>
<td>Density</td>
<td>+</td>
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<tr>
<td>Land-use mix</td>
<td>+</td>
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<tr>
<td>Distance to destinations</td>
<td>-</td>
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<tr>
<td>Street connectivity</td>
<td>?</td>
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<tr>
<td>Pedestrian infrastructure</td>
<td>?</td>
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<tr>
<td>Traffic</td>
<td>?</td>
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<td>Personal safety</td>
<td>?</td>
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<tr>
<td>Parks/open space</td>
<td>?</td>
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<td>Aesthetics</td>
<td>?</td>
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Saelens and Handy, 2008
The Caltrans Study

- Eight neighborhoods in Northern California, chosen based on design and location
- 2003 mail-out, mail-back survey with 1672 respondents (24.7%)
- Funding from Caltrans, UCTC, Active Living Research Program
Walking to Store vs. Distance

Handy, Cao, and Mokhtarian, 2006.
Walking to Store vs. Walk Preference

"I like to walk"

Handy, Cao, and Mokhtarian, 2006.
Walking for Low-Income Households

• Low-income household walk for travel and use transit more than moderate- and high-income households.

• Low-income persons perceive less favorable walking conditions, and pedestrian accidents are relatively high in low-income areas.

Source: Walkable Communities, Inc.
Research Findings

Biking
Bicycle Share of Total Trips

Source: Pucher and Buehler, 2008
Bicycle Share by City

Source: Pucher and Buehler, 2008
Bicycle Traffic Across 4 Main Portland Bridges

Percent Biking to Work

Source: Xing, Buehler, and Handy, 2008

Source: 2000 U.S. Census
Davis Bicycle Studies

• Six small cities, chosen based on infrastructure and culture: Davis, Woodland, Chico, Turlock, Eugene, Boulder

• 2006 on-line survey, with 864 responses (12.3%)

• Funding from the Sustainable Transportation Center
Percent Biking Last Week by “Major streets have bike lanes”

Source: Xing, Buehler, and Handy, 2008
Percent Biking Last Week vs. Comfort Biking to Grocery Store

Source: Xing, Buehler, and Handy, 2008
Percent Biking Last Week vs. “I like riding a bike”

Source: Xing, Buehler, and Handy, 2008
Biking for Low-Income Households

• Almost no research on use of bicycles by low-income households.
• Potential for bicycles to “fill the gap” between walking and transit, as low-cost alternative.
• Unsafe conditions in low-income areas an obstacle and concern.
Research Findings

The Self-Selection Question

*Do people who like to walk or bike choose to live in communities conducive to walking and biking?*
Walking to Store vs. Neighborhood Choice

"Shopping areas within walking distance"

Handy, Cao, and Mokhtarian, 2006.
Biked Last Week vs. Neighborhood Choice

"A good community for bicycling"

Xing, Buehler, and Handy, 2008
Implications of the Evidence
Implications of the Evidence

1. We can’t yet say that changes in the physical environment will necessarily lead to increases in walking and biking.
Implications of the Evidence

2. But we can be pretty sure that without changes in the physical environment, walking and biking are not likely to increase...
Implications of the Evidence

3. ..and we can be sure that changes in the physical environment will increase the opportunities for walking and biking:
   - Proximity = f (land use mix, connectivity)
   - Quality = f (design)
Implications of the Evidence

4. But we also know that we need to address **individual and social factors** if we want more people to take advantage of these opportunities.
# Policy Implications

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<thead>
<tr>
<th>Walking and Bicycling Conditions</th>
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<tr>
<td>Individual and Social Factors</td>
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<td>Self-Selection Effect</td>
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Thanks!