



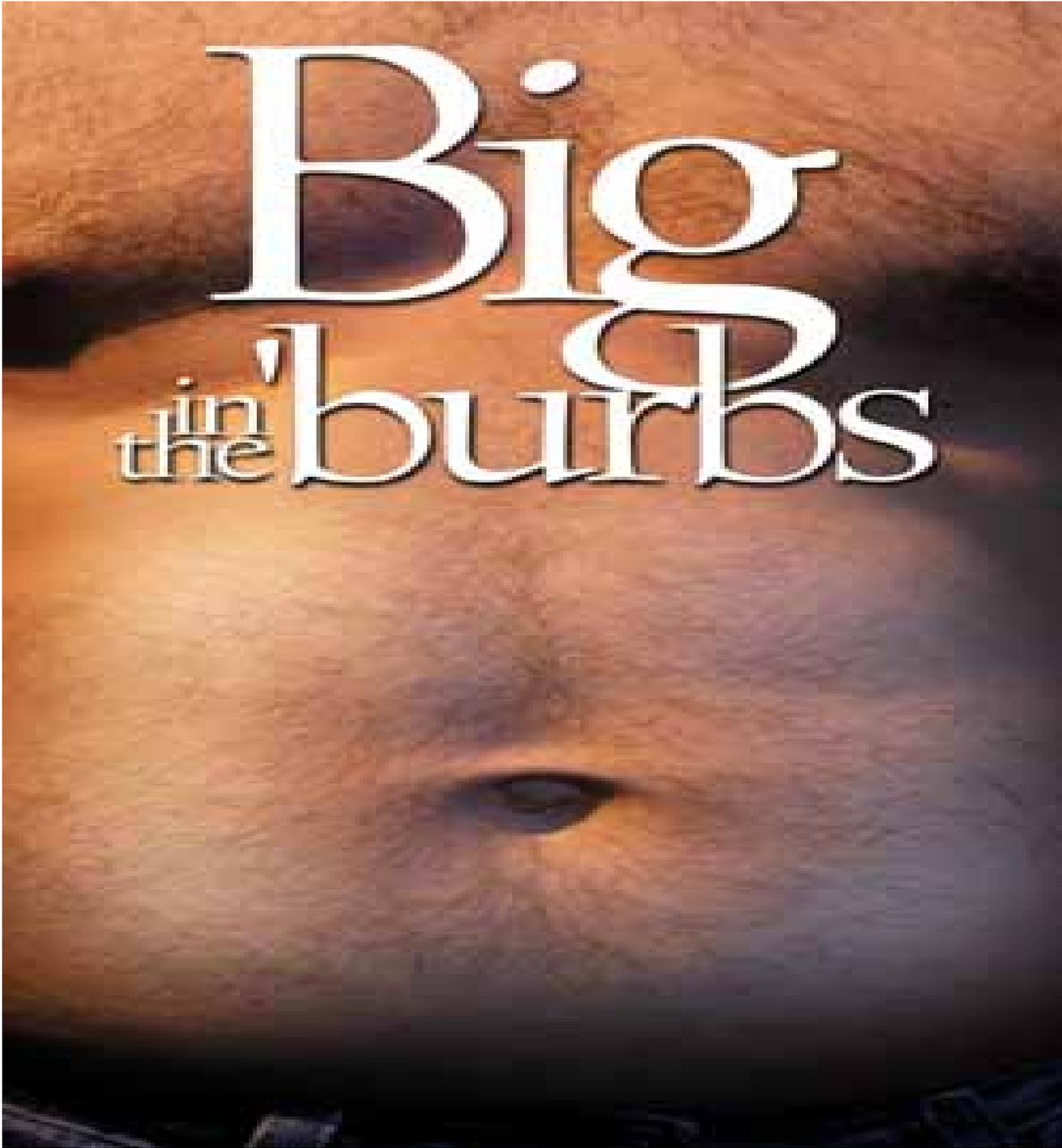
# Walking and Bicycling: What Does the Research Tell Us?

Susan Handy

Sustainable Transportation Center  
University of California Davis

Presented at the California Transportation Futures  
Symposium

September 3, 2008



# Big in the burbs



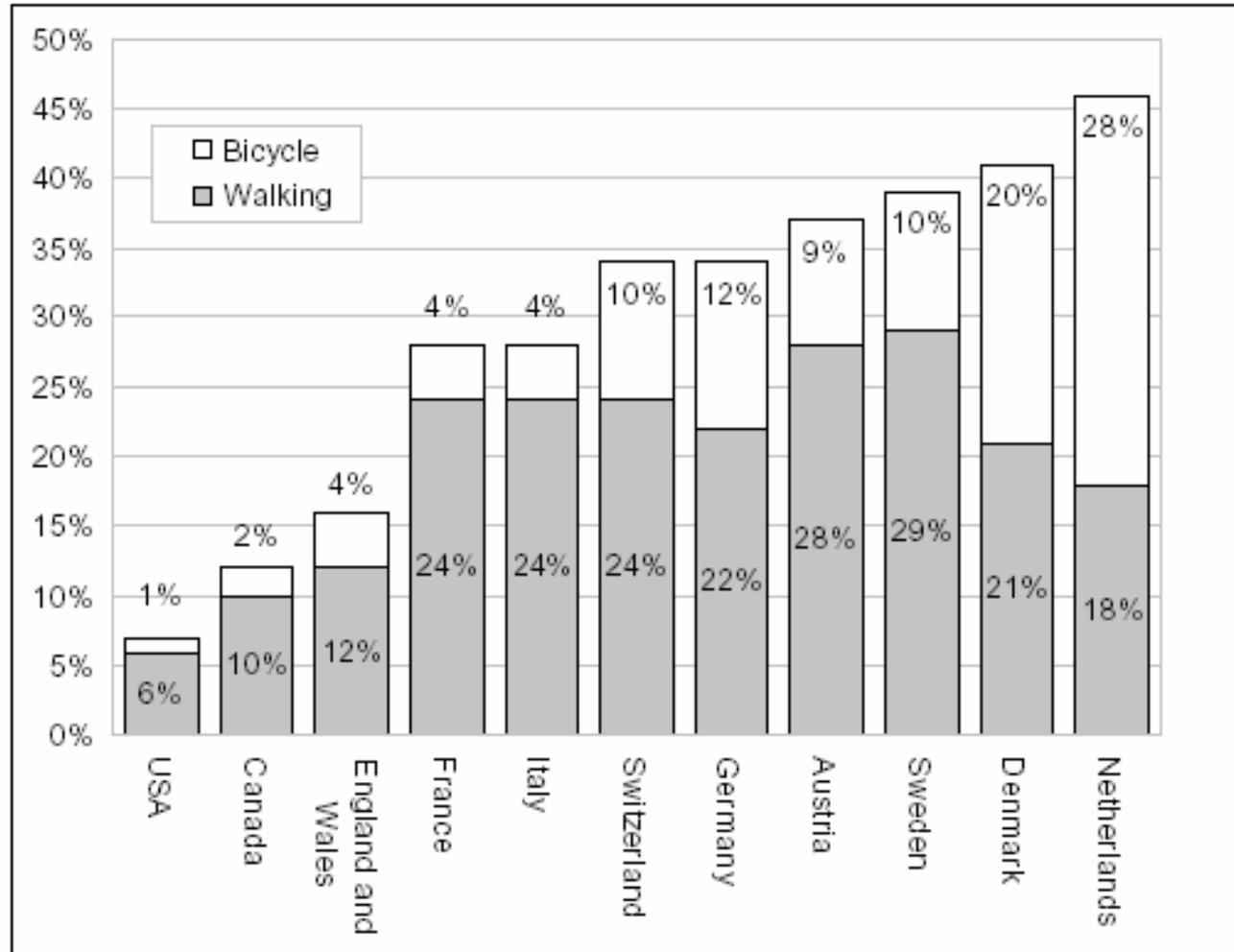








# Walk/Bike as Share of Urban Trips 1995



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

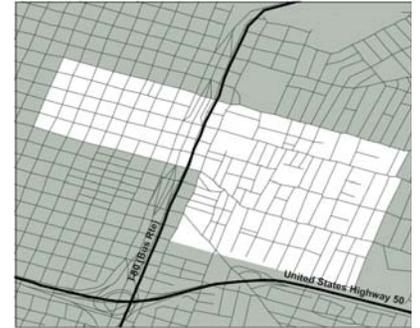


# Influence of Built Environment on Walking for Transport

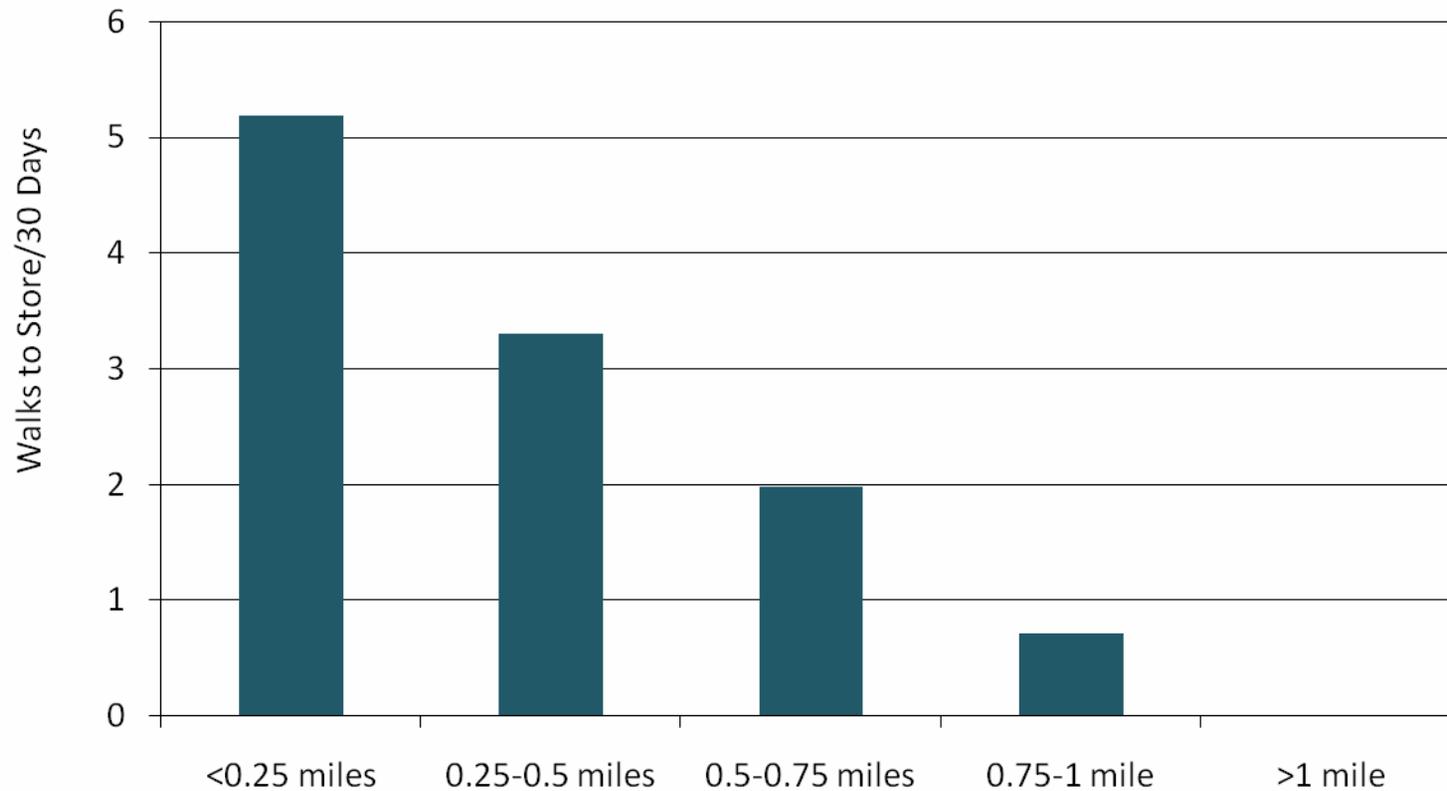
Density	+
Land-use mix	+
Distance to destinations	-
Street connectivity	?
Pedestrian infrastructure	?
Traffic	?
Personal safety	?
Parks/open space	?
Aesthetics	?

# The Caltrans Study

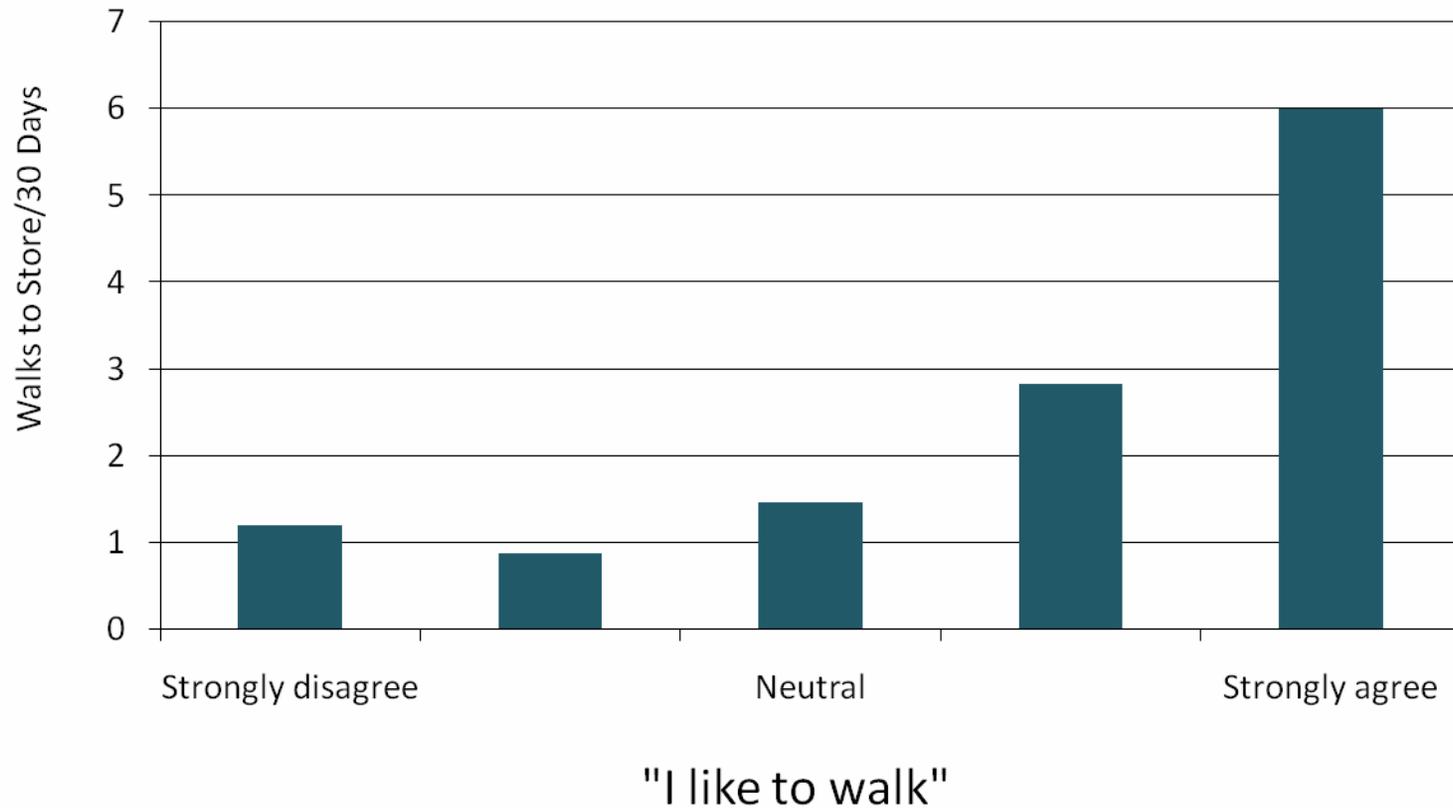
- Eight neighborhoods in Northern California, chosen based on design and location
- 2003 mail-out, mail-back survey with 1672 respondents (24.7%)
- Funding from Caltrans, UCTC, Active Living Research Program



# Walking to Store vs. Distance



# Walking to Store vs. Walk Preference



# 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.



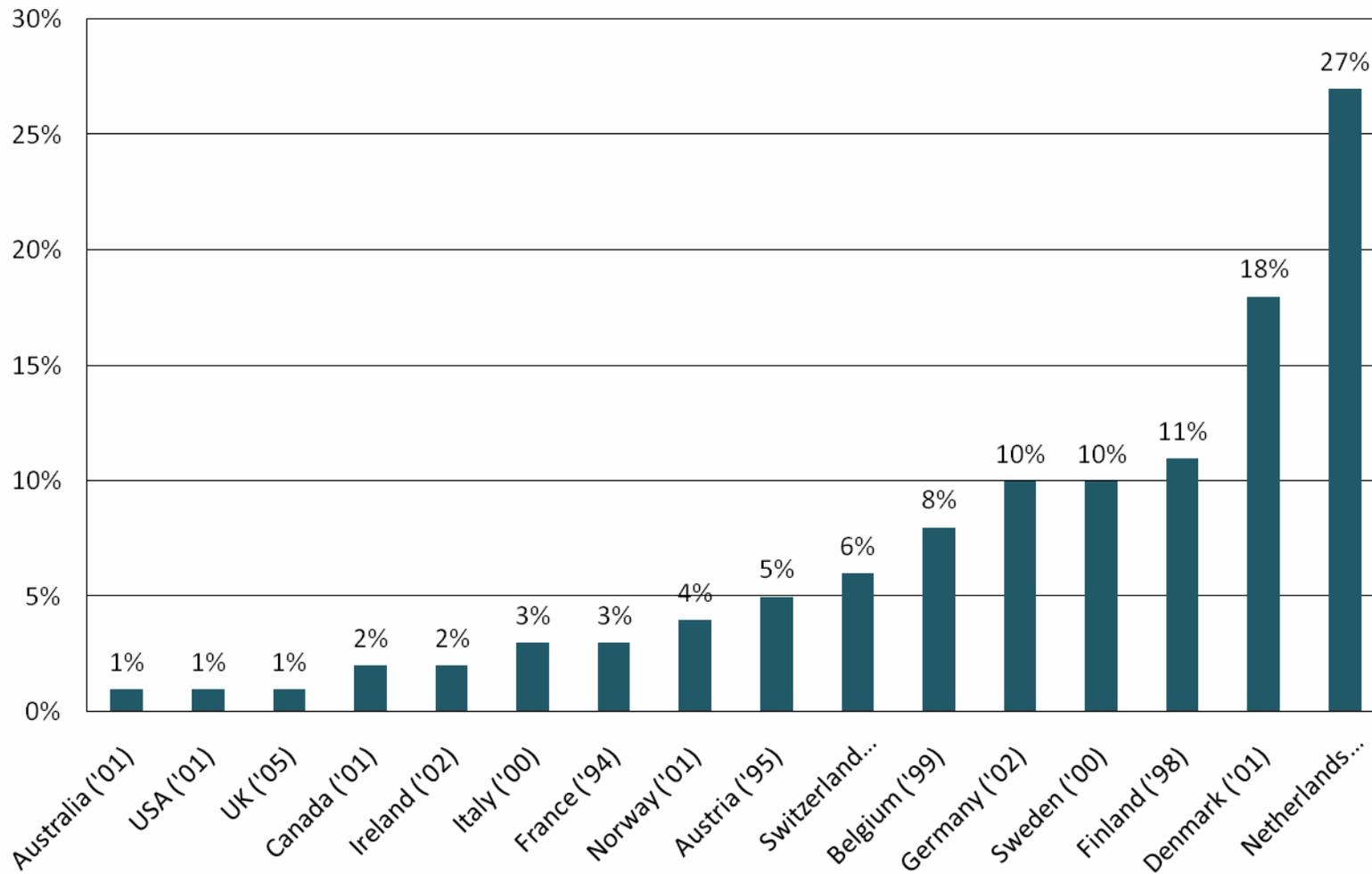
Source: Walkable Communities, Inc.

# Research Findings

## Biking

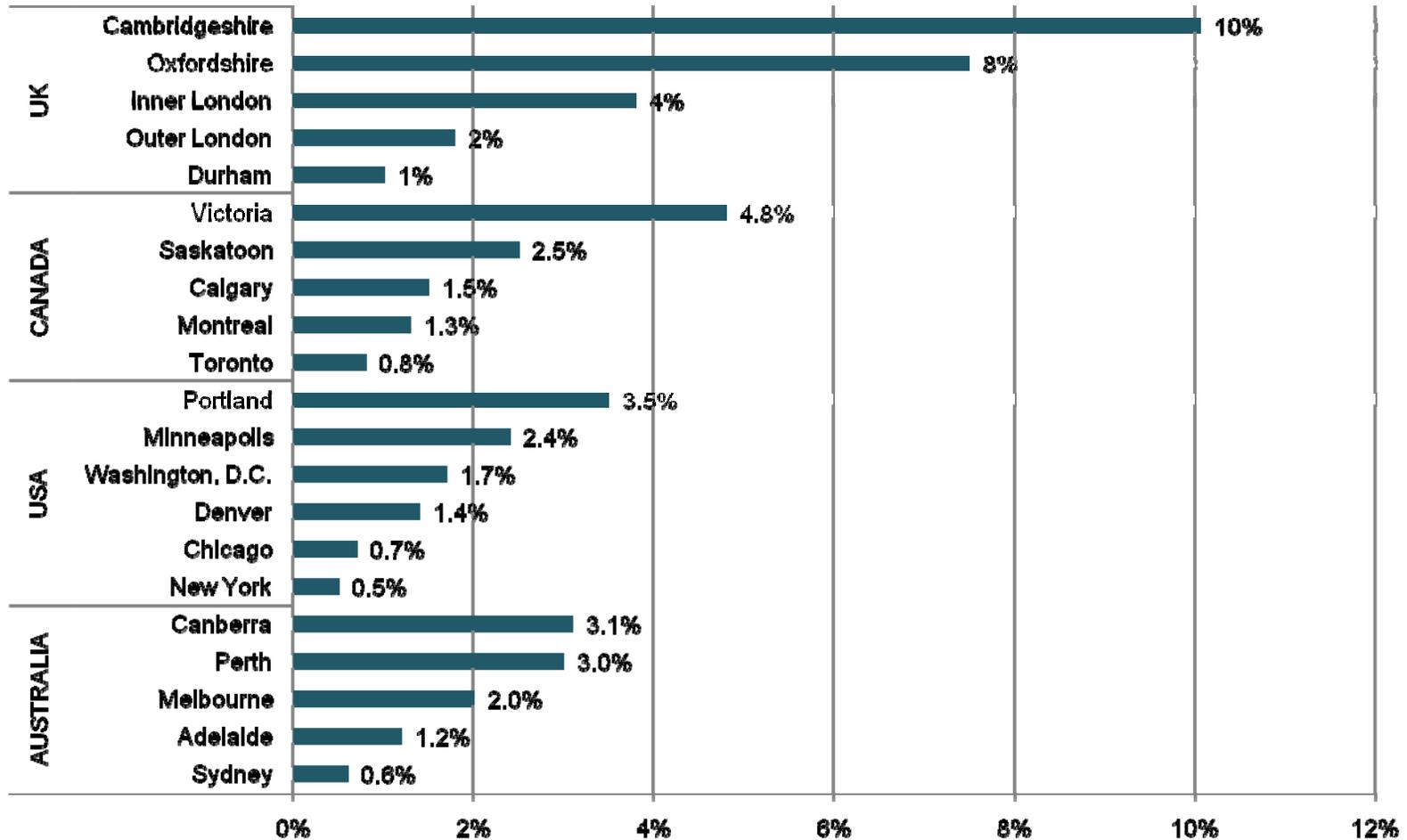


# Bicycle Share of Total Trips



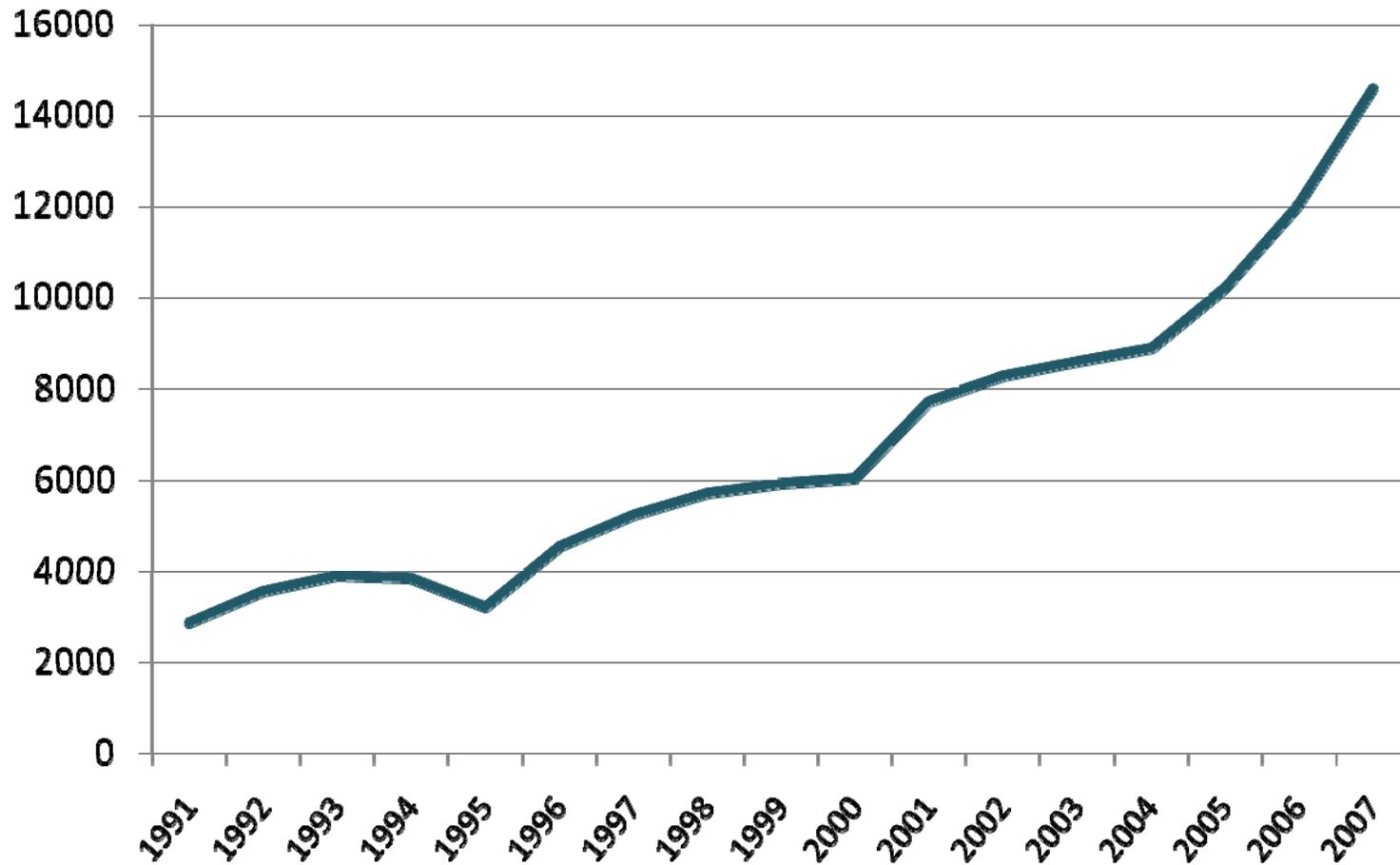
Source: Pucher and Buehler, 2008

# Bicycle Share by City



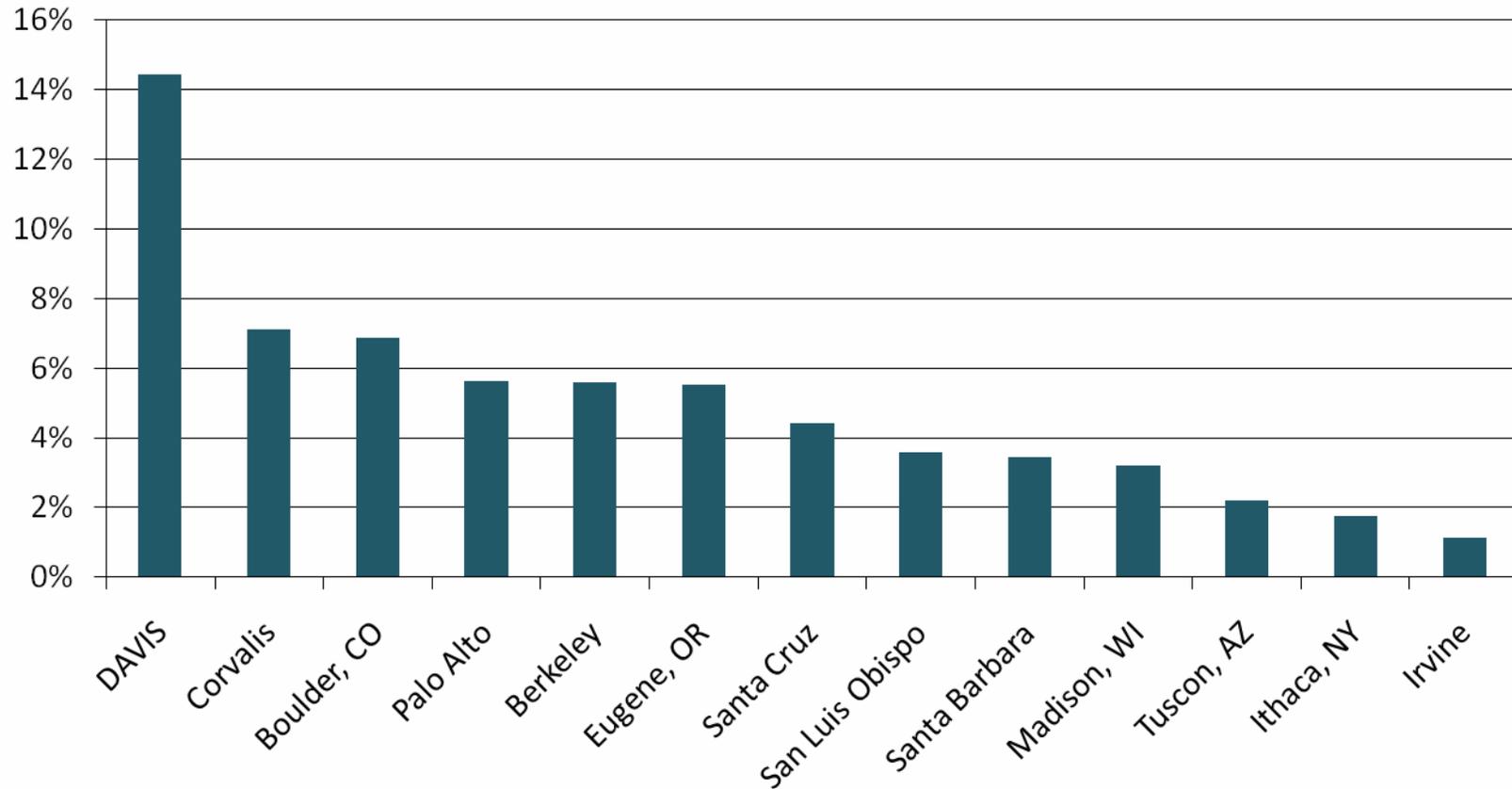
Source: Pucher and Buehler, 2008

# Bicycle Traffic Across 4 Main Portland Bridges



Source: <http://bikeportland.org/wp-content/uploads/2007/09/2007-bike-countsbig.jpg>

# Percent Biking to Work



Source: 2000 U.S. Census

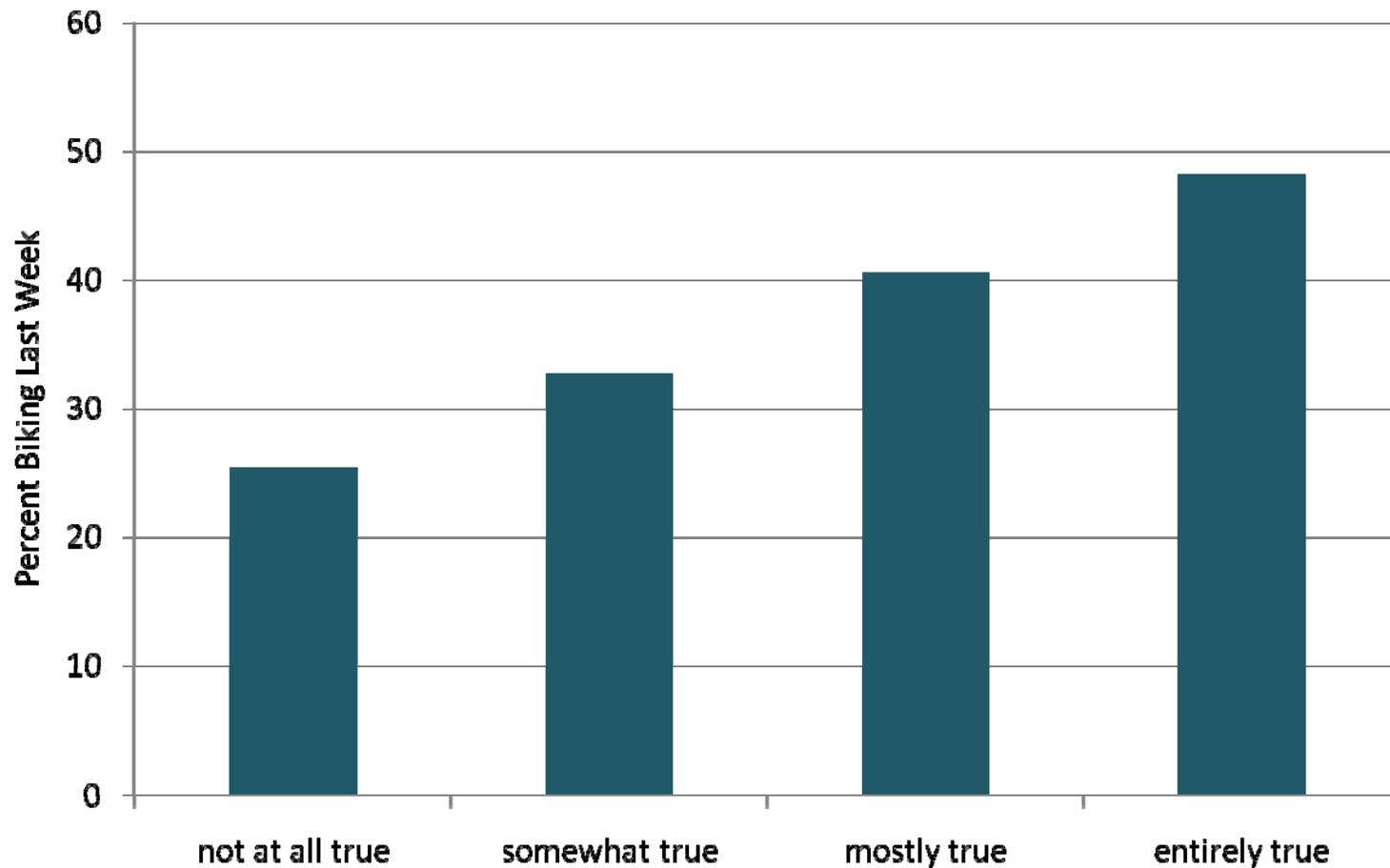
Source: Xing, Buehler, and Handy, 2008

# Davis Bicycle Studies

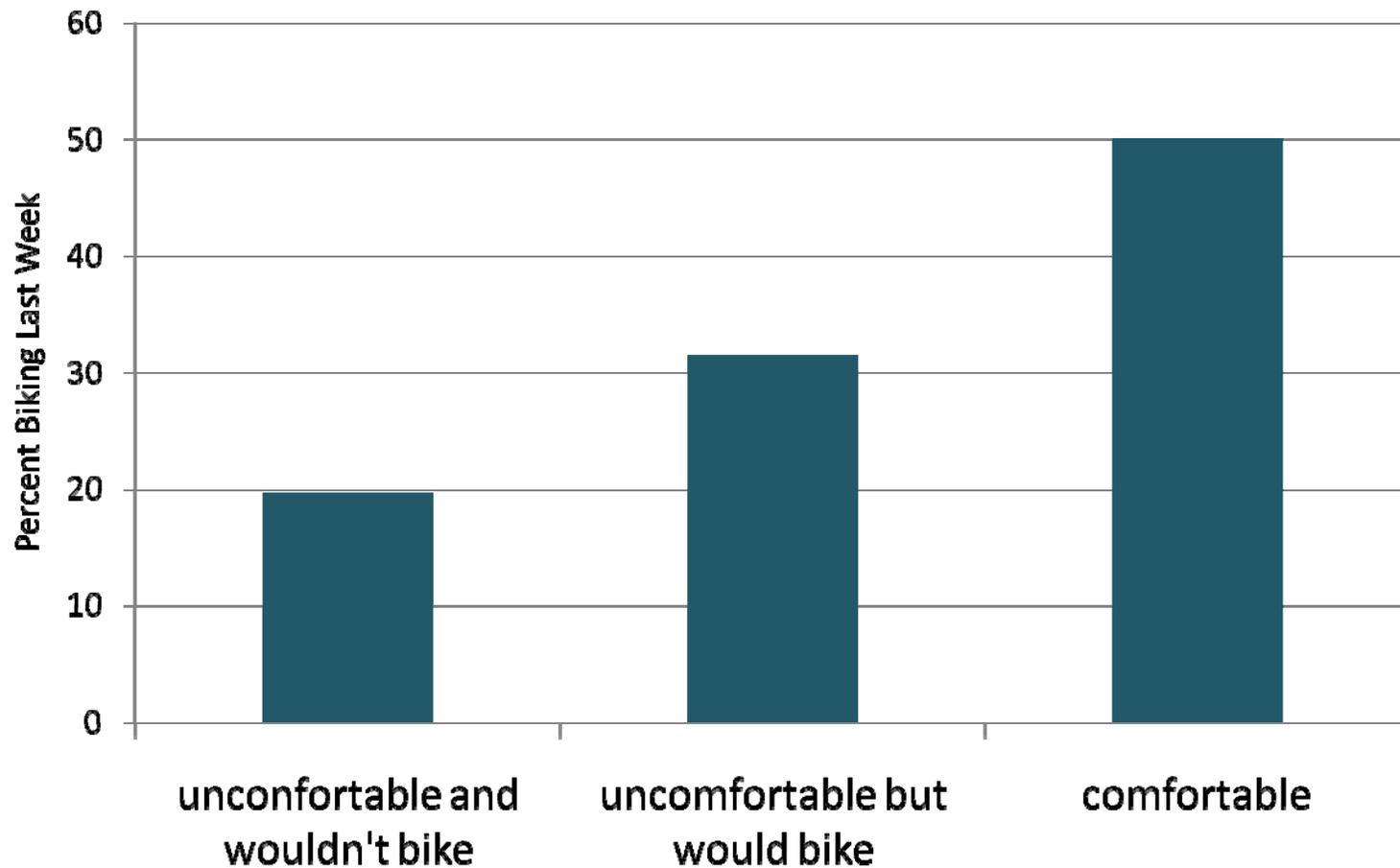
- Six small cities, chosen based on infrastructure and culture: Davis, Woodland, Chico, Turlock, Eugene, Boulder
- 2006 on-line survey, with 864 responses (12.3%)
- Funding from the Sustainable Transportation Center



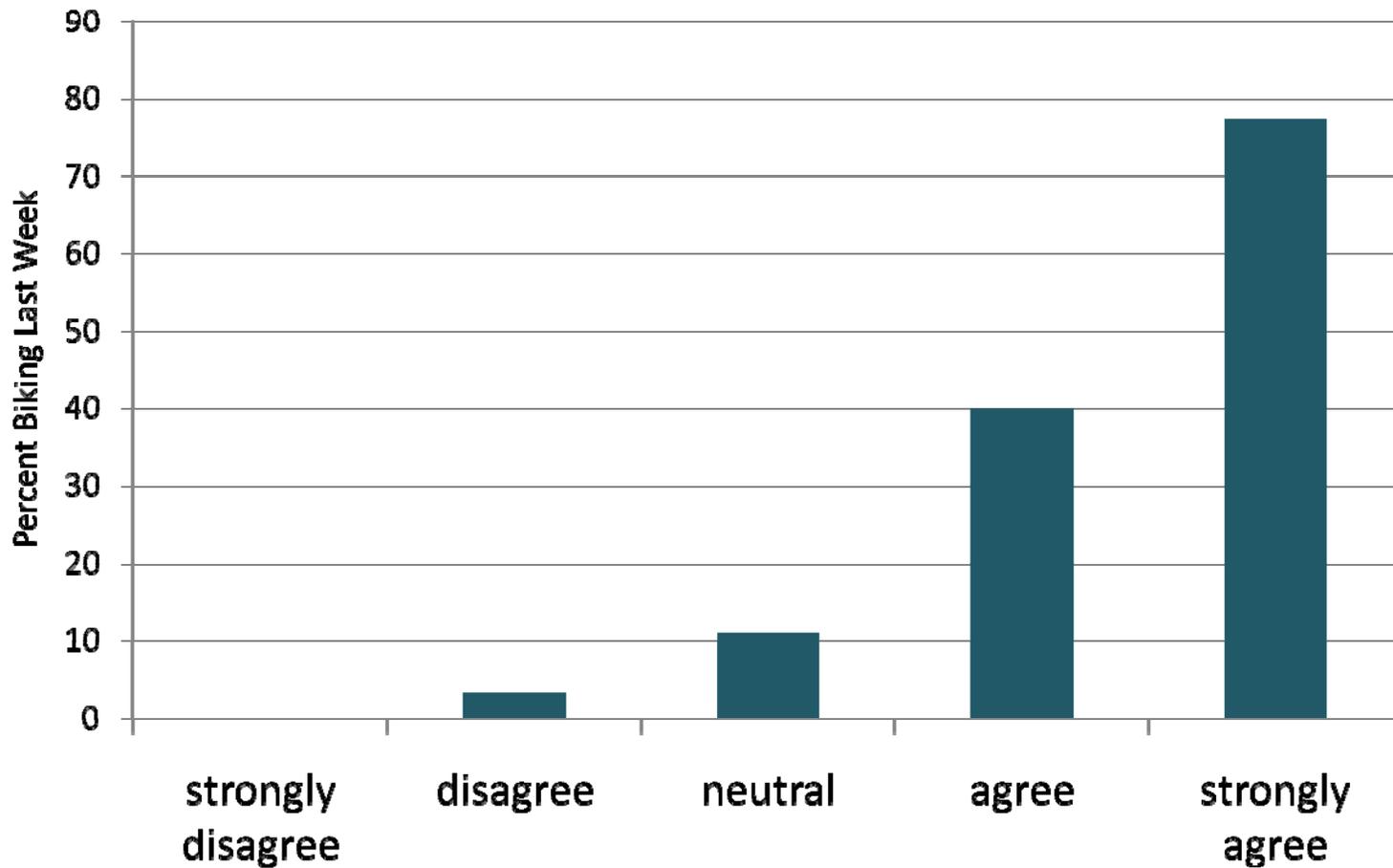
# Percent Biking Last Week by “Major streets have bike lanes”



# Percent Biking Last Week vs. Comfort Biking to Grocery Store



# Percent Biking Last Week vs. “I like riding a bike”



# 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.



<http://www.daylife.com/photo/0eKJfLB8Mn2a1>



[http://www.tate.org.uk/research/tateresearch/tatepapers/07autumn/images/lang\\_fig1.jpg](http://www.tate.org.uk/research/tateresearch/tatepapers/07autumn/images/lang_fig1.jpg)

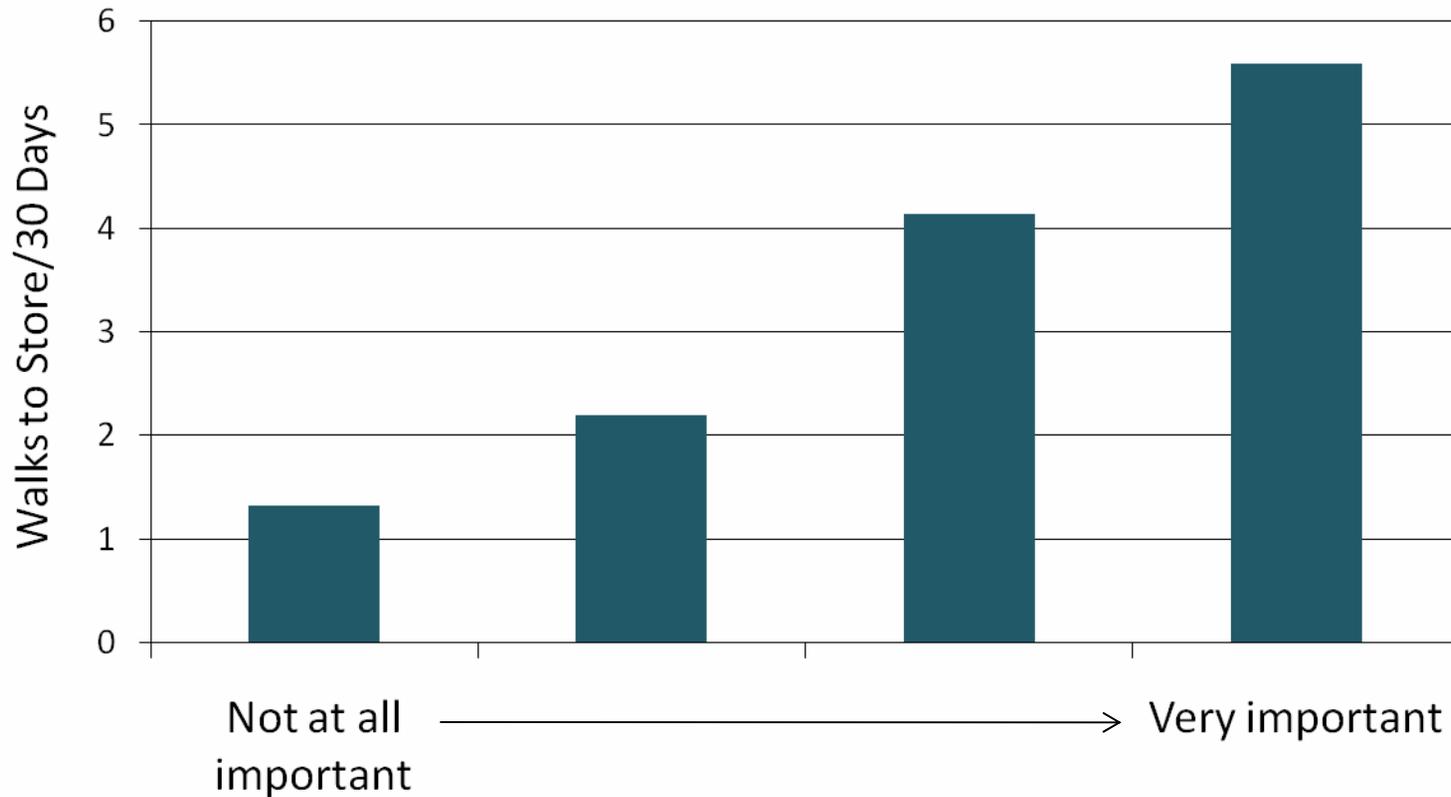
## Research Findings

# The Self-Selection Question

*Do people who like to walk or bike  
choose to live in communities  
conducive to walking and biking?*

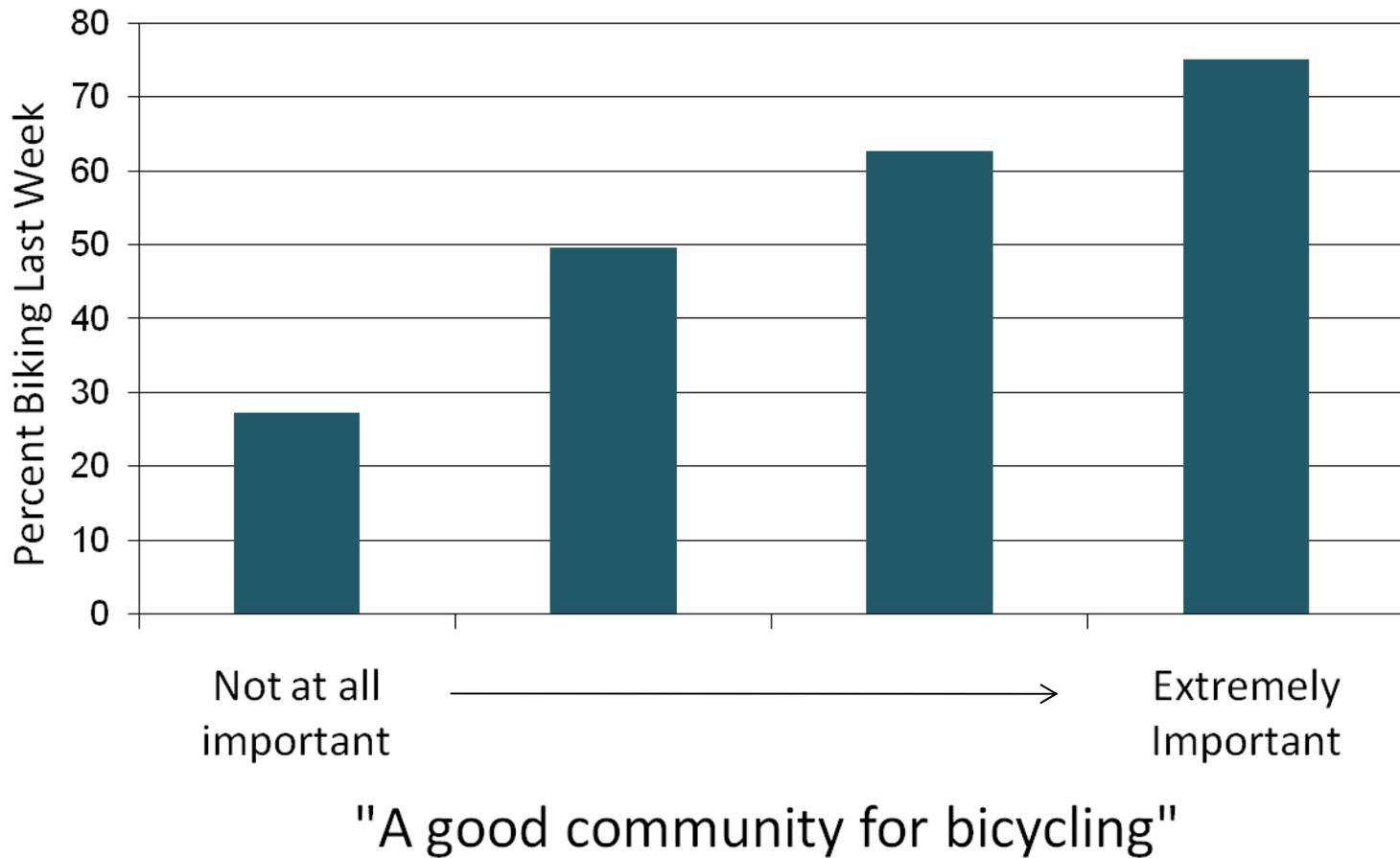


# Walking to Store vs. Neighborhood Choice



"Shopping areas within walking distance"

# Biked Last Week vs. Neighborhood Choice



# 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

<p>Walking and Bicycling Conditions</p>	
<p>Individual and Social Factors</p>	
<p>Self-Selection Effect</p>	



Thanks!