

# Where do people bicycle?

*Using GPS to examine the role of infrastructure in improving health*



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*New Partners for Smart Growth ♦ Seattle, WA ♦ February 4, 2010*





# Background

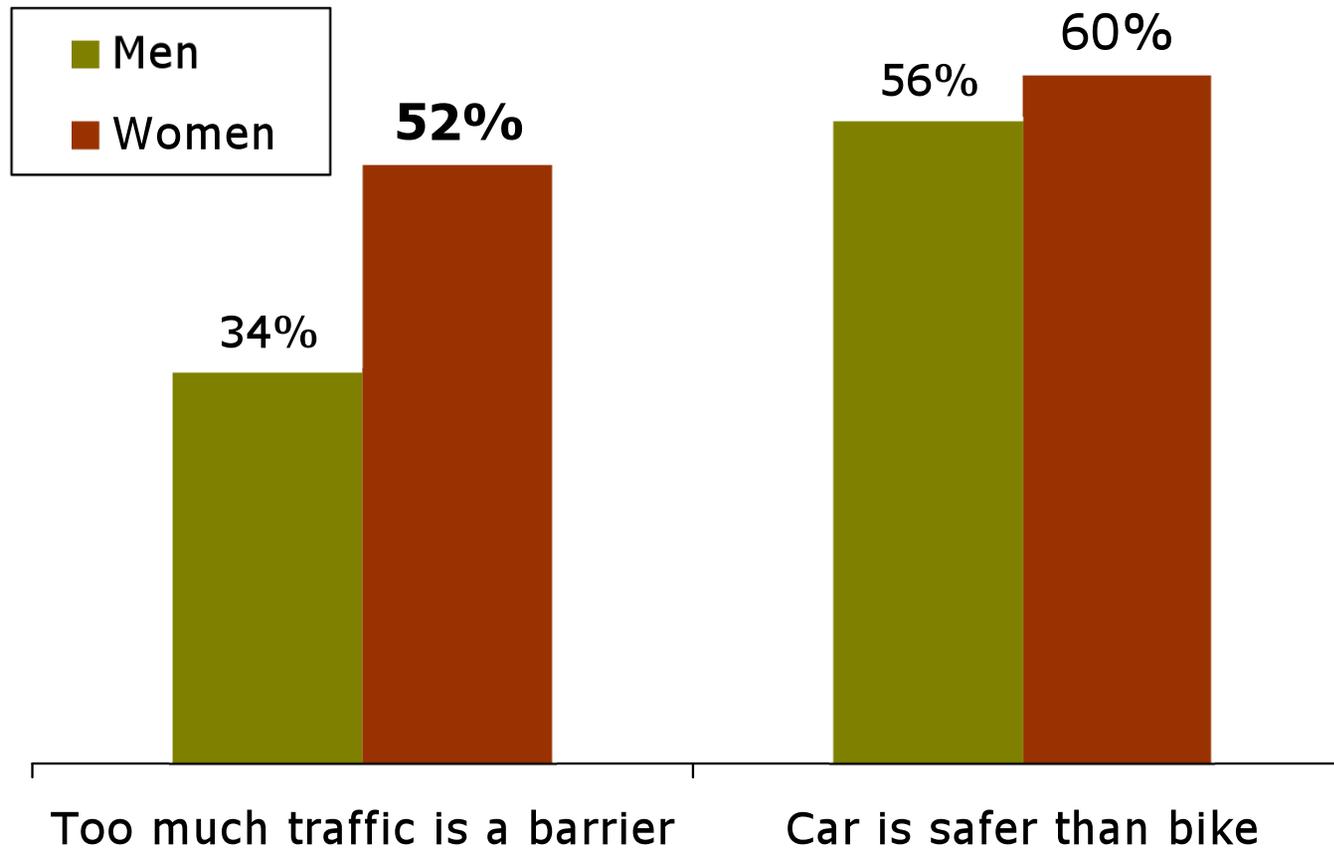
- Research Objectives
- Research funded by
  - Active Living Research Program of the Robert Wood Johnson Foundation
  - Oregon Transportation Research & Education Consortium (OTREC)
- Two-phase study
  - Random phone survey of Portland, OR region adults
  - GPS on adult bicyclists
- Presentation
  - Some particularly relevant findings from phone survey
  - Focus on GPS data findings

# Why aren't people cycling more?

Do any of the following environmental barriers keep you from biking or biking more?	Of people who want to cycle more, % of category that identified this barrier		
	Non-cyclists	Recreation Only Cyclists	Infrequent Utilitarian Cyclists
<b>Too much traffic</b>	<b>60%</b>	<b>65%</b>	<b>40%</b>
No bike lanes or bike trails	33%	47%	28%
No safe places to bike nearby	33%	38%	18%
Too many hills	28%	36%	32%
Distances to places are too great	26%	29%	27%
Poorly maintained streets or rough surfaces	27%	20%	10%
No interesting places to bike to	26%	20%	14%
n (weighted)	168	81	90

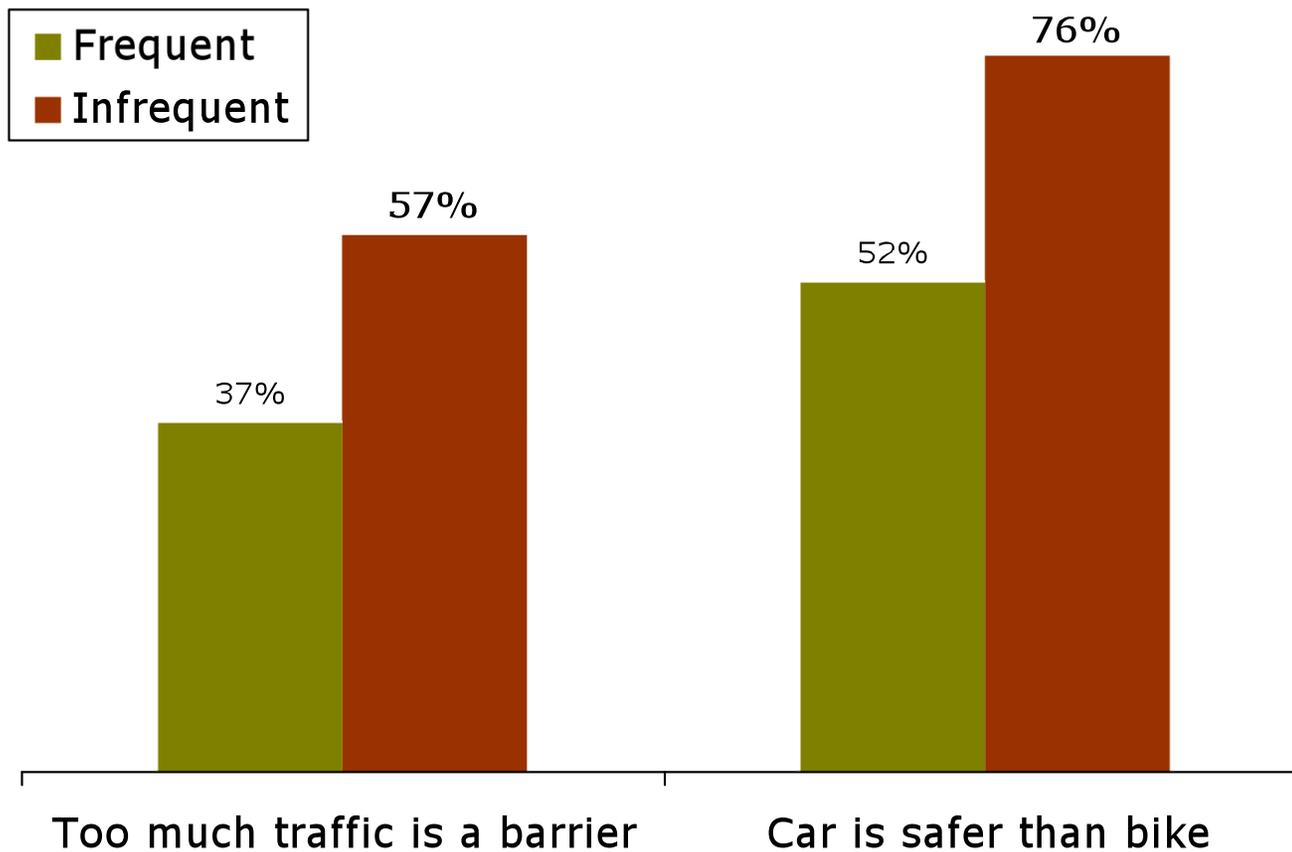
Source: random phone survey

# Traffic is a particular concern for women



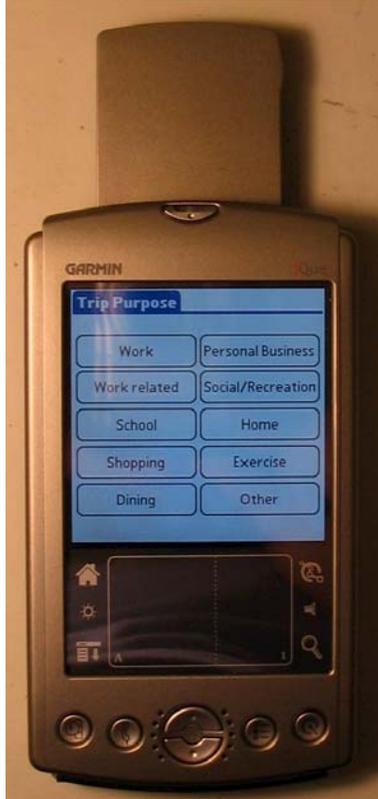
Source: random phone survey

# Traffic and safety concerns are holding back infrequent cyclists

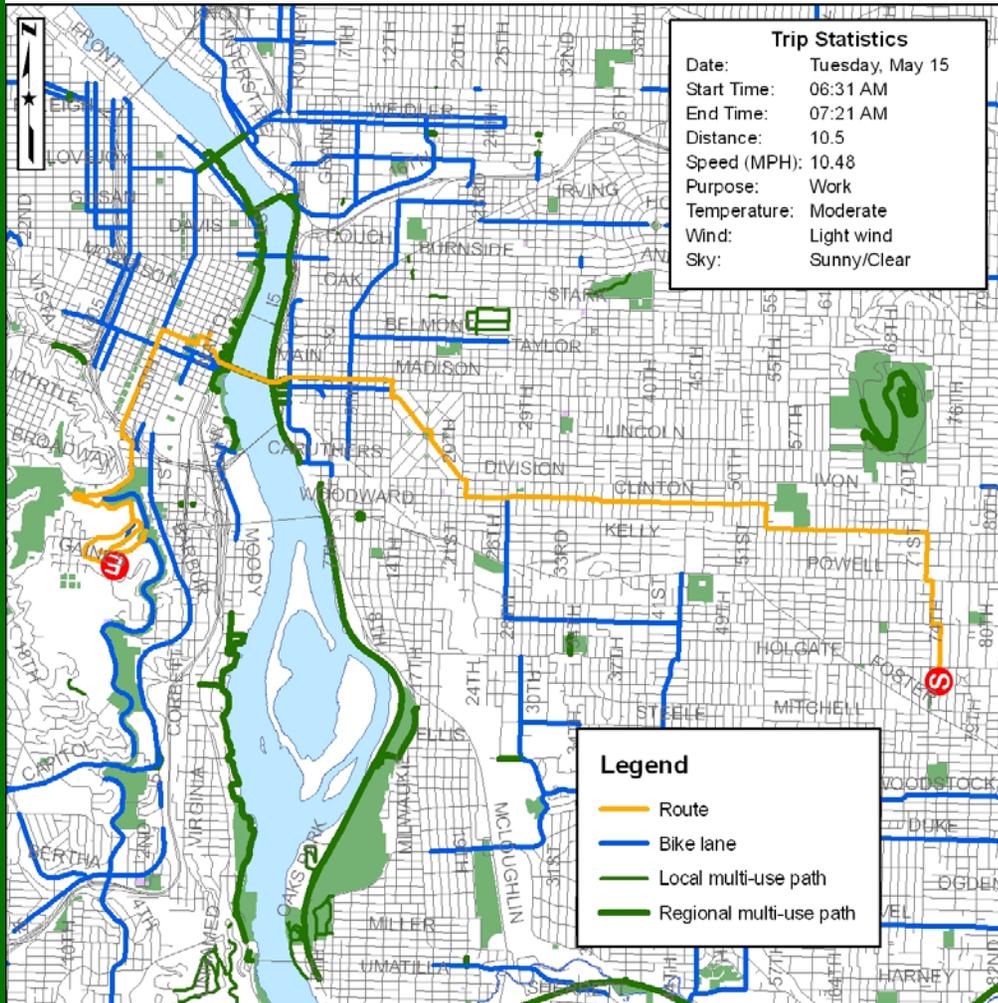


Source: random phone survey

# GPS data collection

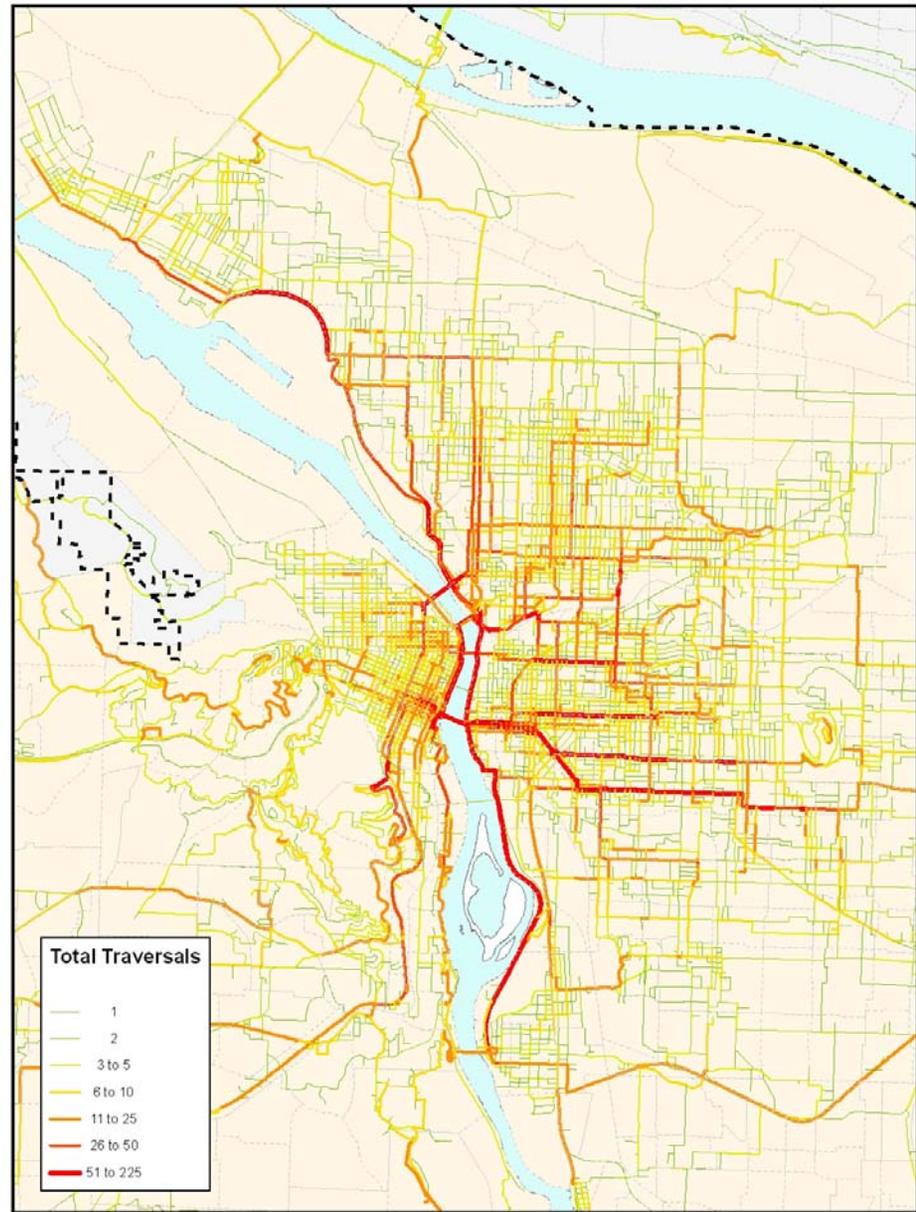


- 164 people in 2007
  - Keep GPS for 7 days
  - Take on all bike trips (a few exceptions)
  - Not representative sample of the population
- Participant entered some data
  - Trip purpose and weather
  - If taking bike on transit

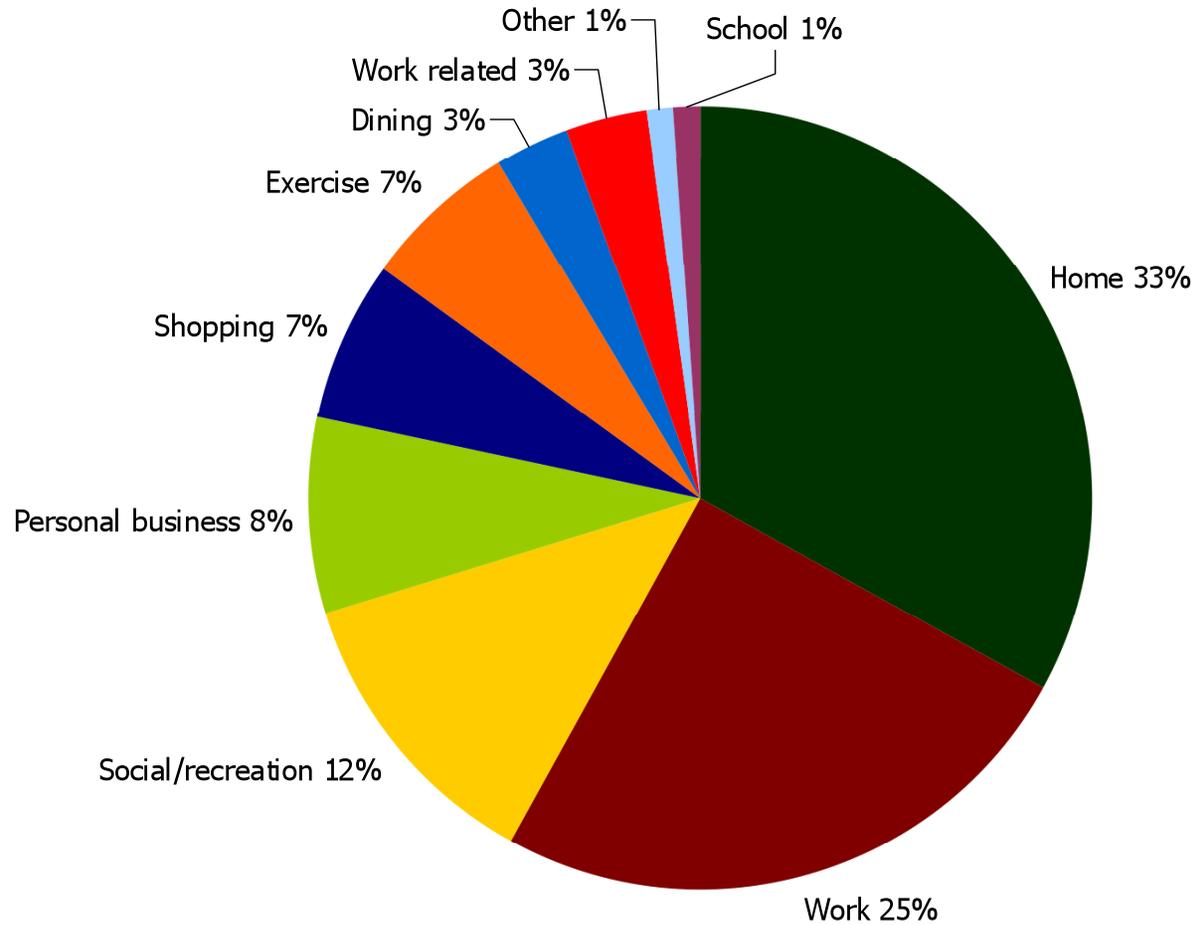


- Follow up on-line survey
  - Accuracy of route
  - Route choice decisions
  - Missing data

- 1,777 bike trips that were 100% on bike
  - of 1,952 total



# Trip destinations



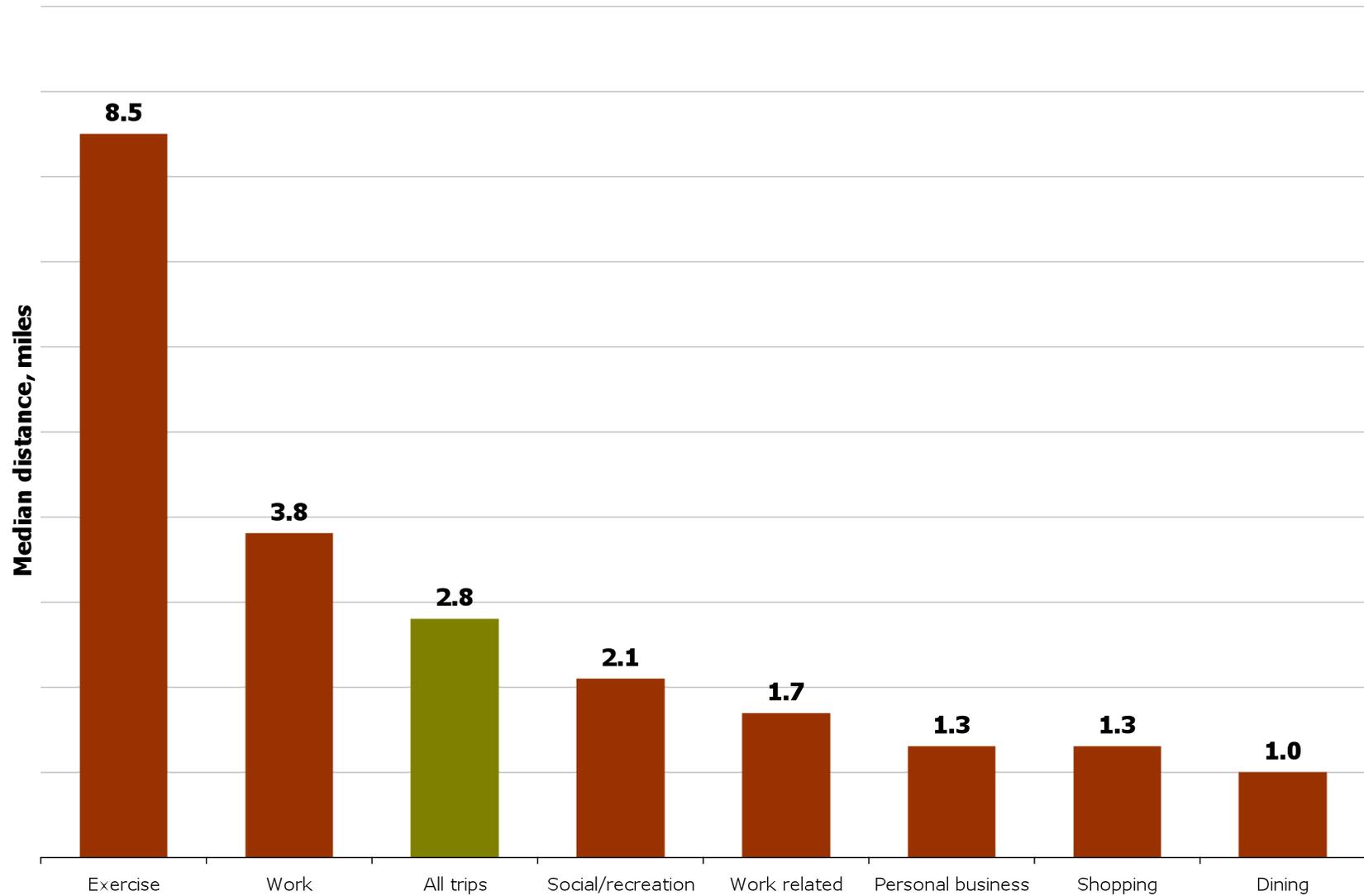
*Excludes trips involving transit*

# Half of bike trips are 3 miles or less

	<u>% of trips</u>	<u>Cumulative</u>
1 mile or less	22%	22%
>1 to 2 miles	18%	40%
>2 to 3 miles	13%	53%
>3 to 4 miles	12%	65%
>4 to 5 miles	8%	72%
>5 to 6 miles	6%	79%
>6 to 7 miles	5%	83%
>7 to 8 miles	4%	87%
>8 to 9 miles	2%	89%
>9 to 10 miles	2%	92%
Over 10 miles	8%	100%
N	1,777	

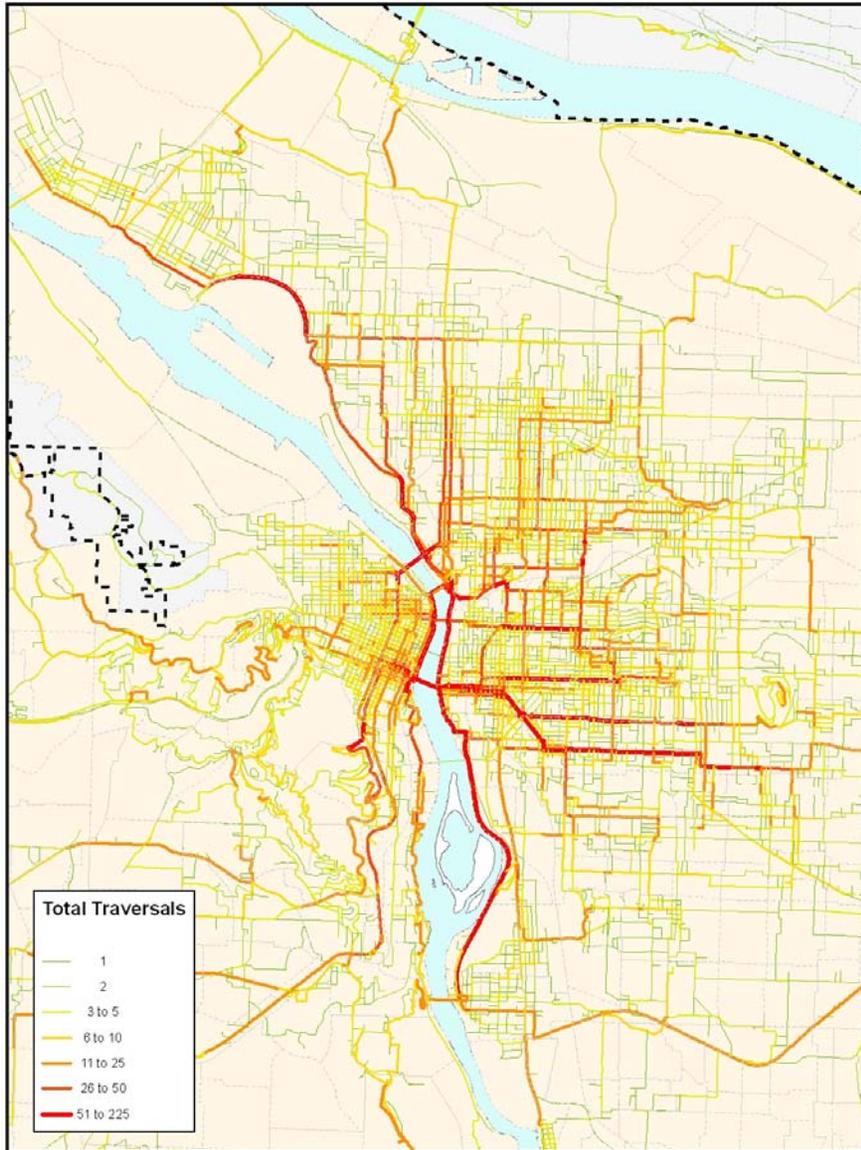
*Excludes trips involving transit*

# Trip distance by purpose

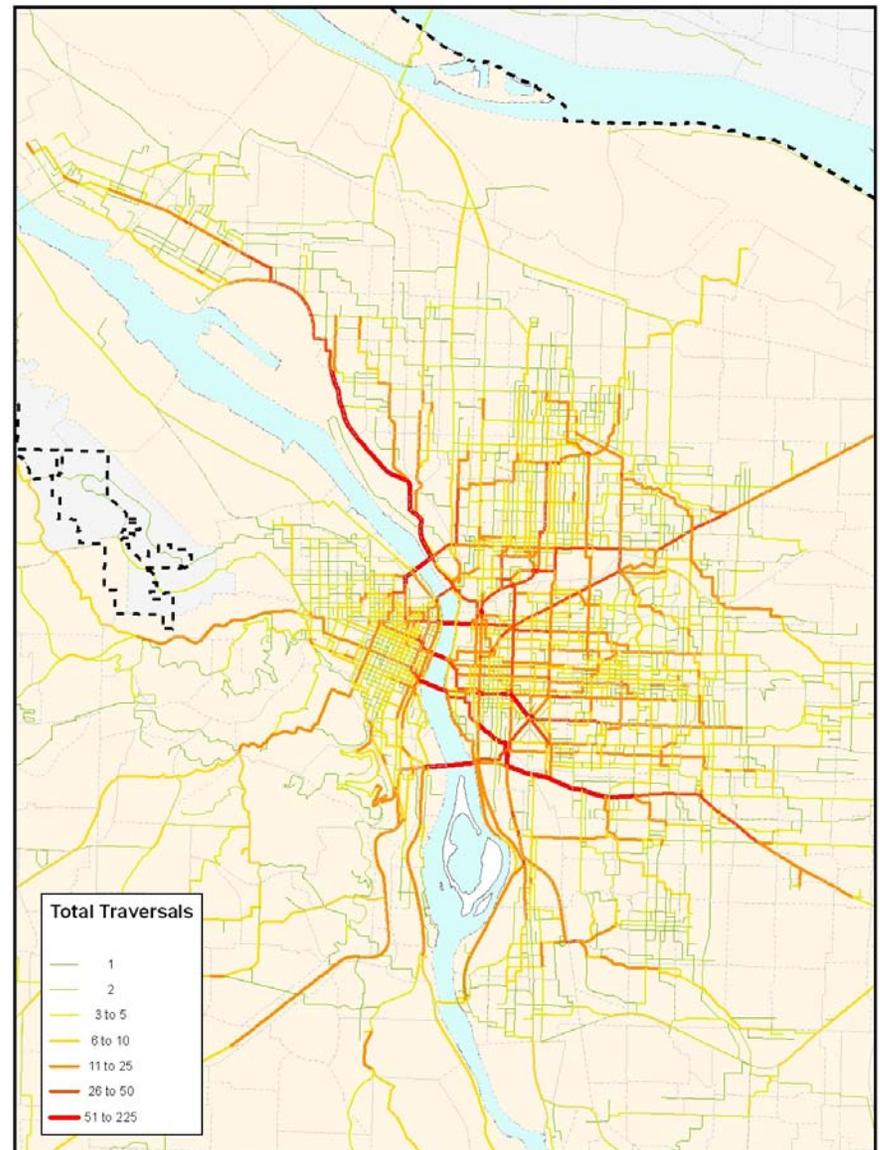


*Excludes trips involving transit*

## Actual Trips



## Shortest Paths



# Cyclists are using bike infrastructure

	<b>% of utilitarian bike travel (miles)</b>
	<u>Actual Routes</u>
<b>Roads without bike facilities</b>	<b>48%</b>
Primary arterials/highways, no bike lanes	3%
Secondary arterials, no bike lanes	16%
Minor streets, no bike lanes	28%
Driveways, alleys, unimproved roads	1%
<b>Bike infrastructure</b>	<b>51%</b>
Primary arterials/highways, with bike lanes	9%
Secondary arterials, with bike lanes	15%
Minor streets, with bike lanes	3%
Bike paths	14%
Bike boulevards	10%
<i>Total miles of travel</i>	<i>6,131</i>

*Excludes trips involving transit, trips with the main purpose of exercise, organized rides, and trips starting and ending at the same place*

# Cyclists are going longer distances to use bicycle infrastructure

	% of utilitarian bike travel (miles)		% of network
	Actual Routes	Shortest Path Routes	
<b>Roads without bike facilities</b>	<b>48%</b>	<b>66%</b>	<b>92%</b>
Primary arterials/highways, no bike lanes	3%	15%	4%
Secondary arterials, no bike lanes	16%	21%	13%
Minor streets, no bike lanes	28%	29%	63%
Driveways, alleys, unimproved roads	1%	1%	12%
<b>Bike infrastructure</b>	<b>51%</b>	<b>34%</b>	<b>8%</b>
Primary arterials/highways, with bike lanes	9%	9%	3%
Secondary arterials, with bike lanes	15%	13%	2%
Minor streets, with bike lanes	3%	2%	1%
Bike paths	14%	6%	2%
Bike boulevards	10%	4%	<1%
<i>Total miles of travel</i>	<i>6,131</i>	<i>4,629</i>	

*Excludes trips involving transit, trips with the main purpose of exercise, organized rides, and trips starting and ending at the same place*

# Comparing Men and Women

	Men			Women		
	Actual Routes	Shortest Path Routes	Diff.	Actual Routes	Shortest Path Routes	Diff.
Arterials without bike lanes	20%	38%	-18%	15%	32%	-16%
Roads with bike lanes	30%	25%	+4%	24%	22%	+2%
Off-street paths	15%	6%	+8%	12%	5%	+7%
Bike boulevards	8%	4%	+5%	13%	5%	+8%
Low traffic streets (including bike blvds)	36%	31%	+5%	51%	42%	+9%
<i>Total miles of travel</i>	<i>4,003</i>	<i>2,904</i>		<i>2,097</i>	<i>1,686</i>	

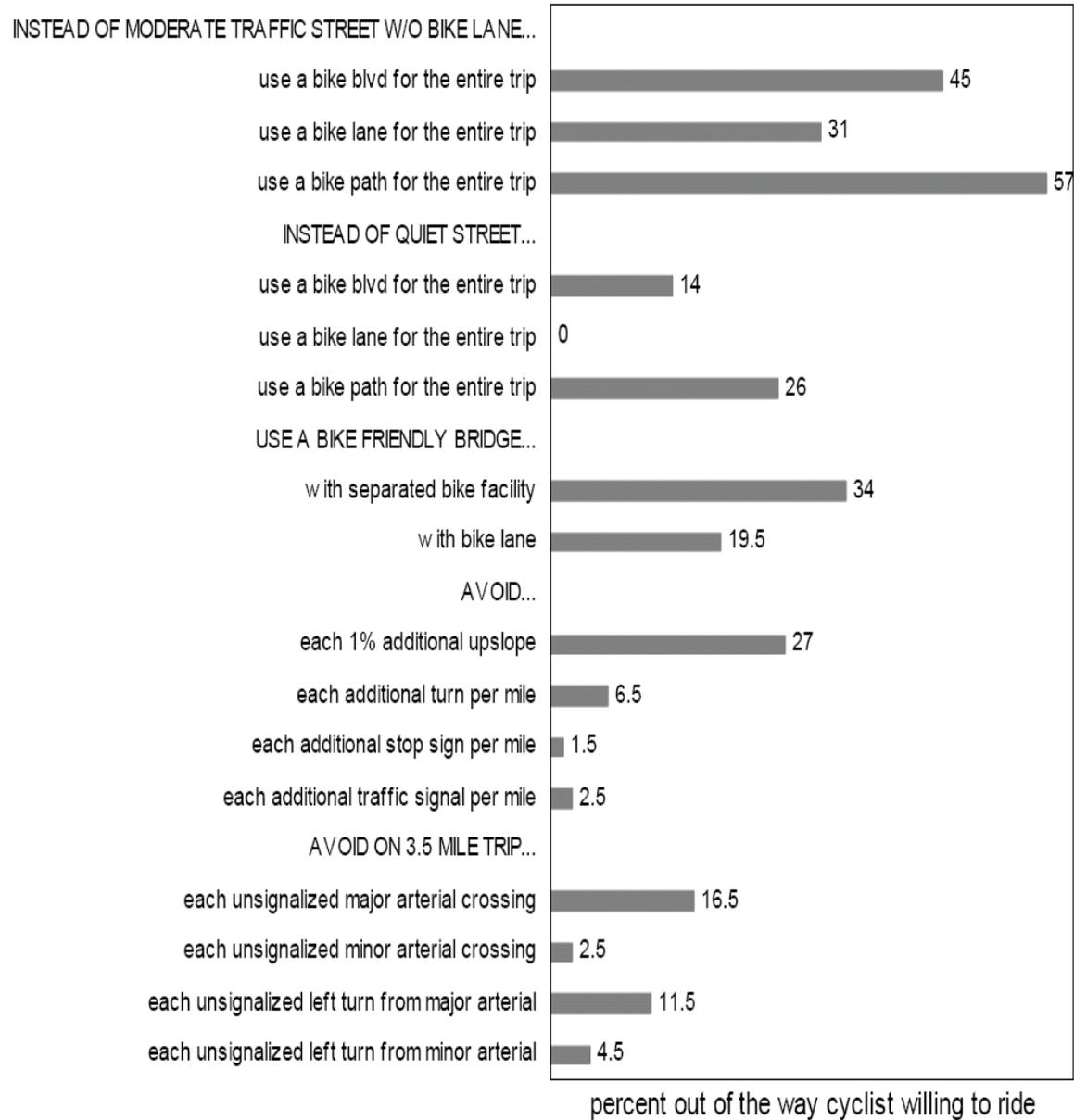
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# Priorities for route choice

	Mean score	
	1=not at all imp, 5=very imp	
	Men	Women
Avoiding streets with lots of vehicle traffic	<b>3.46</b>	<b>3.77</b>
Minimize total distance	<b>3.31</b>	<b>3.73</b>
Riding in a bike lane	2.98	2.97
Reducing wait time due to stop signs/ lights	2.59	2.70
Riding on signed bike routes	2.60	2.68
Riding on an off-street bike trail/path	2.19	2.31
Avoiding hills	<b>1.92</b>	<b>2.28</b>
N (trips)	863	762

*Excluded transit and exercise trips*

# How far would a cyclist go to...





# Conclusions

- Bicyclists can meet their daily physical activity needs through cycling for transportation
- Bicycle infrastructure is important
- Not all infrastructure is equally attractive to all cyclists
- Land use likely plays an important role

# More to come...

- Stay tuned for more analysis
  - Jennifer Dill  
<http://web.pdx.edu/~jdill/>
  - Project site:  
<http://www.ibpi.usp.pdx.edu/bikegps.php>