

# Transit-Oriented Development and Commute Mode in Portland

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## What's Transit Oriented Development?

- High density
- Land use mix
- Pedestrian friendliness
- Closeness to transit



## TODs in Portland

- Orenco Station
- Beaverton Round
- Elmonica/SW 170<sup>th</sup> Ave

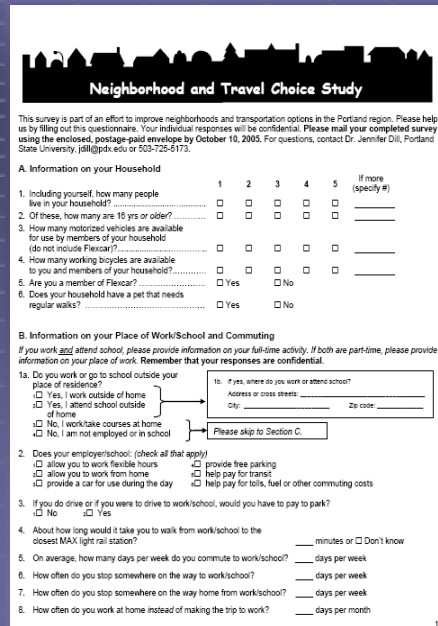


## Research Questions

- Do residents of TOD commute to work by MAX?
- Do they over or underestimate the walking distance to the nearest MAX station?
- If so, does that influence their commute mode?
- What are other factors that influence their commute mode choice?

# Survey

- Neighborhood and Travel Choice Study
- Conducted on Mar & Oct 2005
- Responses rate = 28%



**Neighborhood and Travel Choice Study**

This survey is part of an effort to improve neighborhoods and transportation options in the Portland region. Please help us by filling out this questionnaire. Your individual responses will be confidential. Please mail your completed survey using the enclosed, postage-paid envelope by October 10, 2005. For questions, contact Dr. Jennifer Dill, Portland State University. [jdill@psu.edu](mailto:jdill@psu.edu) or 503-725-6173.

**A. Information on your Household**

	1	2	3	4	5	If more, (specify #)
1. Including yourself, how many people live in your household?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Of these, how many are 15 yrs or older?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. How many motorized vehicles are available for use by members of your household (do not include Flexcar)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. How many working bicycles are available to you and members of your household?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Are you a member of Flexcar?	<input type="checkbox"/> Yes <input type="checkbox"/> No					
6. Does your household have a pet that needs regular walks?	<input type="checkbox"/> Yes <input type="checkbox"/> No					

**B. Information on your Place of Work/School and Commuting**

If you work and attend school, please provide information on your full-time activity. If both are part-time, please provide information on your place of work. Remember that your responses are confidential.

1a. Do you work or go to school outside your place of residence?

☐ Yes, I work outside of home

☐ Yes, I attend school outside of home

☐ No, I work/take courses at home

☐ No, I am not employed or in school

1b. If yes, where do you work or attend school?

Address or cross streets \_\_\_\_\_

City \_\_\_\_\_ Zip code \_\_\_\_\_

☐ Please skip to Section C.

2. Does your employer/school? (check all that apply)

☐ allow you to work flexible hours ☐ provide free parking

☐ allow you to work from home ☐ help pay for transit

☐ provide a car for use during the day ☐ help pay for tolls, fuel or other commuting costs

3. If you do drive or if you were to drive to work/school, would you have to pay to park?

☐ No ☐ Yes

4. About how long would it take you to walk from work/school to the closest MAX light rail station? \_\_\_\_\_ minutes or ☐ Don't know

5. On average, how many days per week do you commute to work/school? \_\_\_\_\_ days per week

6. How often do you stop somewhere on the way to work/school? \_\_\_\_\_ days per week

7. How often do you stop somewhere on the way home from work/school? \_\_\_\_\_ days per week

8. How often do you work at home instead of making the trip to work? \_\_\_\_\_ days per month

# Survey Results

Respondents who answered...

- Worksite address
- Estimated walking time from work/school to the closest MAX station



Sample size: 106

## 3 components of the analysis

1. Calculated the network distance to the closest station from worksite
2. Calculated difference between
  - Estimated walking time
  - Calculated walking time using GIS
3. Regression analysis to identify factors

## Methodology

### **Step 1 Geocoding work addresses**

1. Valid work addresses (70%)
2. Intersections (30%)
  - a. Nearest taxlots
  - b. Intersections

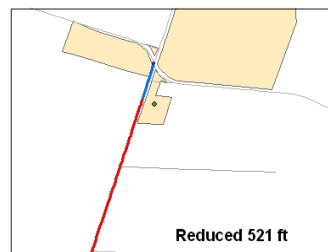
### **Step 2 Taxlots vs. Intersections**

- Intersection – Digitized
- Taxlots – NEAR function
- Calculated the network distance to nearest station
- Calculated the difference

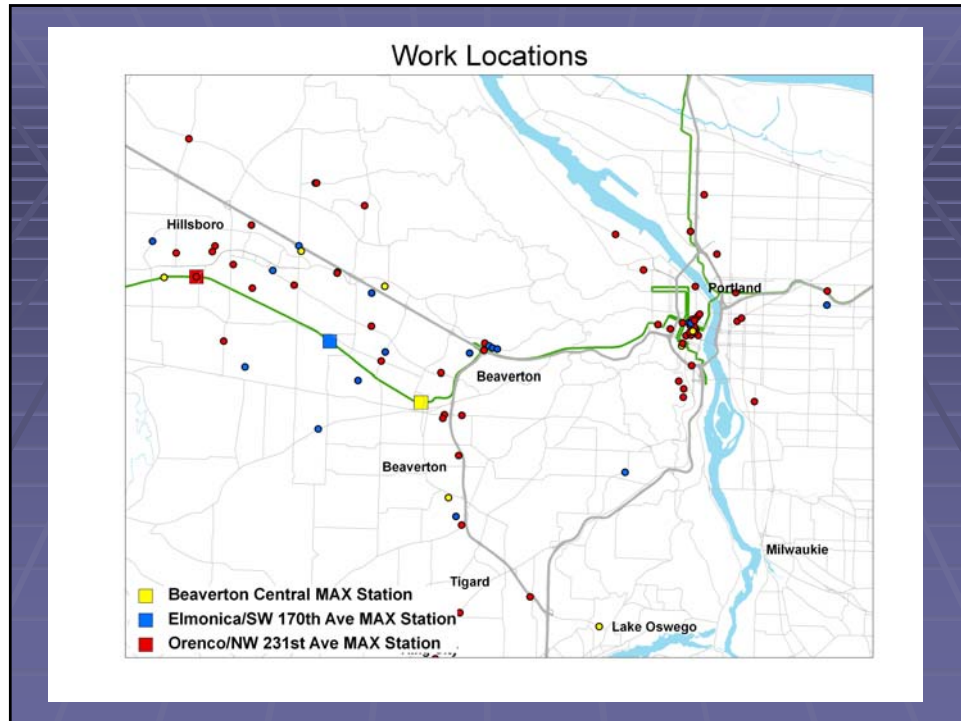
## Step 2 Result

■ Sample size	36
■ Average length difference	212 ft
■ Median length difference	134 ft
■ Difference > 1,000 ft	4

Taxlots vs. Intersection



0 500 1,000 2,000 Feet



### Step 3 Network Distance

- From worksite to the closest MAX station

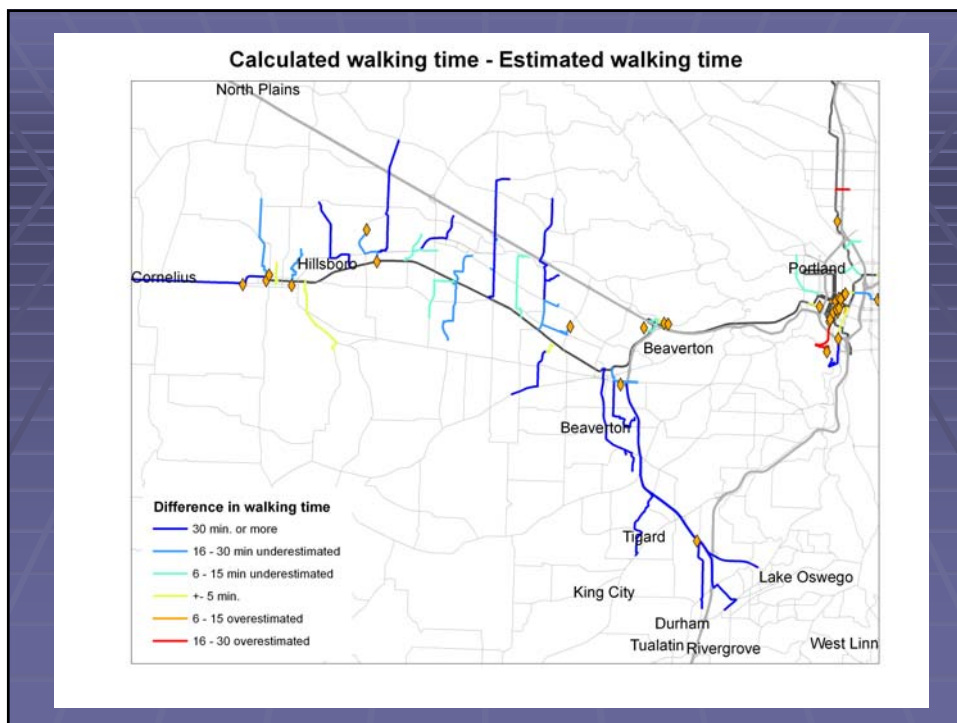
### Step 4 Convert length into time

- Walking speed = 3.16 ft/sec

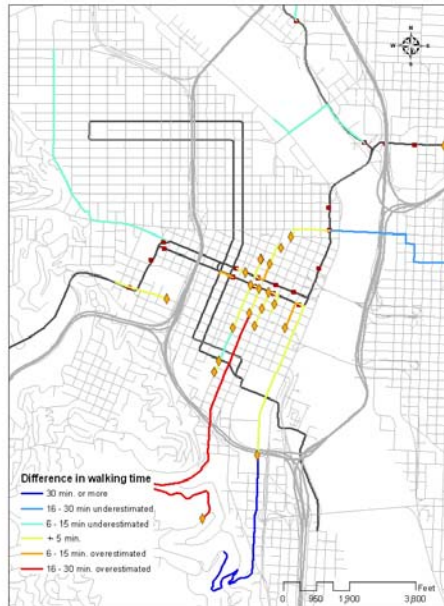
### Step 5 Calculate difference in estimated and calculated walking times

# Walking time differences

Time difference	N
30+ min overestimated	0
15 – 30 min overestimated	16
5 – 15 min overestimated	18
Same	37
5 – 15 min underestimated	6
15 – 30 min underestimated	1
30+ min underestimated	19



Calculated walking time - Estimated walking time



### 3. Commute Mode Choice

What factors influence people's commute mode choice?

#### Commute mode --- 2 days or more

Drive alone	60	57%
MAX	46	43%
Bus	4	4%
Walk	4	4%
Bike	1	1%



## Binary Logistic Regression Model

### Factors

- Difference in walking time
- Pay to park at worksite
- Employer help pay for transit
- Number of days they make stops on the way from work
- # of vehicles

## Results

The probability of commuting by MAX increases...

Walking time difference	B	Probability
+ - 5min*	5.2	186
5 -15 min.*	3.8	36
15 – 30min	3.5	32
Over 30min	2.9	18

- \* Statistically significant

## Results

The probability of commuting by MAX decreases...

Factors	B	Probability
Employers pay for transit	-2.4	0.94
Pay to park	-2.8	.058
# of days to stop on the way	-1.1	.321
# of vehicle	-1.9	.144

They are all statistically significant

## Limitation/Conclusion

- Small sample size
- Taxlots vs. Intersections
- Accurate walking time estimation because they actually walk
- No explanations for huge differences in walking time