



Can Housing and Accessibility Information Influence Residential Location Choice and Travel Behavior? An Experimental Study

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Travel behavior change

- Strongly focused on travel-specific factors
 - Subsidies/cost, information, infrastructure
- Travel is largely habitual
 - Automaticity of response
 - Depth of deliberation decreased, simplified decision making process
- Once we decide where to live, travel mode options set

Hypotheses

- Bundled housing and accessibility information to individuals seeking homes will lead to more transit-friendly and accessibility-rich location choices
- Location impacts translate to changes in SOV, transit use, and ped-bike modes

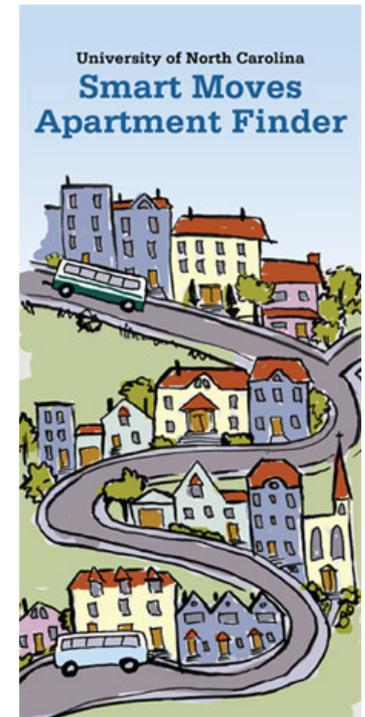
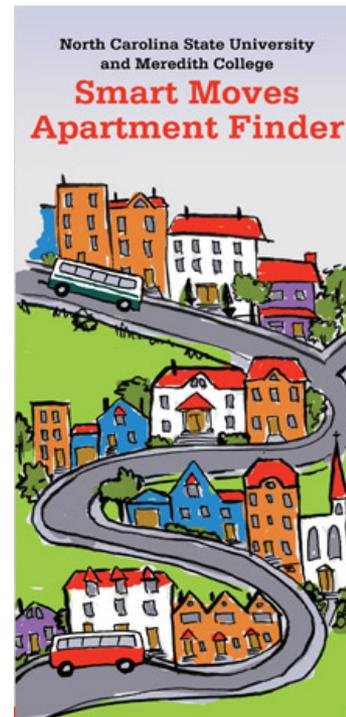
Methodology

■ Experimental approach

- Subjects: Incoming graduate students to UNC-CH and NCSU

■ Intervention →

- Apartment Complexes
- Transit Routes
- Bike paths
- Distance to campus
- Tips on how to ride the bus
- Phone numbers
- Fare information





NCSU Kick Gas Apartments Map

- ~ NCSU Wolfline Routes
- ~ CAT Routes
- ~ Triangle Transit
- ~ Trails & Greenways
- ▲ Apartment Communities
- 🚗 Park & Ride Lots
- NCSU Campus Locations
- Shopping Centers
- Apartment Shuttle Transfers

Popular NCSU Campus Stops: Routes Served

1	1 4 5 6 7a 8 9 A B 4 12 105
2	4 5 7 B 12
3	5 B 12 301 305
4	1 5 7 7a 8 9 A B 301 305
5	1 3 5 7 7a 8 9 A B 11 11C
6	9 11 A B
7	1 11 A 11 11C
8	8 11
9	8 11 A

- ~ Wolfline Routes
- ~ CAT Routes
- ~ TTA Routes

Intervention administration

Registrar provided contact information for 1,600 students at each university

Travel survey completed by students in the experimental and control groups

Students join experimental group, receive a map in the mail, and answer questionnaire about the map

April

May

June

July

August

Sept

October

Brief email contact with the students in the experimental group

Travel Survey

- Personal Characteristics
 - Gender, student status, age, etc.
- Travel Details
 - To and from the campus, familiarity with transit, etc.
- Housing information
 - Type of housing, desired housing type, etc.

Outcomes

■ Travel behavior

- Daily solo VMT to campus (self-reported and GIS)
- Modal use (for any leg of trip to campus)

■ Residential location

■ Access to transit

- Average network and bird's eye distance to closest transit stop (mi)
- Within ¼-mile of a transit stop (%)
- Average number of bus stops within a ¼ and ½ mile of residence

■ Pedestrian and bicycling friendliness

- Average network distance to campus (mi)
- Population density (population/acre)
- Connectivity or effective walking distance

Participation rates

	Overall		NCSU		UNC	
	Control	Exper.	Control	Exper.	Control	Exper.
Initial	-	303 (19%)	-	154 (19%)	-	149 (19%)
Completed Survey	322	121	170	92	152	85
After data cleanup	189	103	85	45	104	58

Results

N=292	Sign expectation	Cont.	Exper.	% Δ	P<0.1
VMT to campus (SR)	✓	9.5	5.8	39%	
VMT to campus	✓	8.5	5.3	38%	
Use of other modes (Tr)	✓	62.9	65.0	3%	
Distance to closest stop	✓	1.58	0.27	83%	
Within ¼ mi of stop	✓	75%	84%	12%	✓
Stops within ¼ mi	✓	4.1	5.0	22%	✓
Distance to campus	✓	6.69	5.40	19%	
Density	✓	1,522	1,699	12%	
Connectivity		0.275	0.274	0%	

Results for NCSU subgroup

N=130	Cont.	Exper.	% Δ	P<0.1
VMT to campus (SR)	14.5	4.5	69%	✓
VMT to campus	13.4	6.8	49%	✓
Use of other modes (Tr)	53.9	55.6	3%	
Distance to closest stop	2.46	0.24	90%	
Within ¼ mi of stop	72%	87%	21%	✓
Stops within ¼ mi	4.4	5.3	20%	
Distance to campus	8.21	3.48	58%	✓
Density	1,633	1,917	17%	
Connectivity	0.267	0.258	3%	

Discussion

- Prior research simulation (lab) suggested similar effects
 - Both found that individuals located closer to transit stops
 - We found a greater reduction in travel distance from the residence to the campus (NCSU)

Discussion

- NCSU students selected residences closer to the university after viewing the map, while UNC students did not
 - Parking availability
 - Size of the catchment area
 - Transit accessibility
- Consistent with emerging approaches

Maps and Views

Map

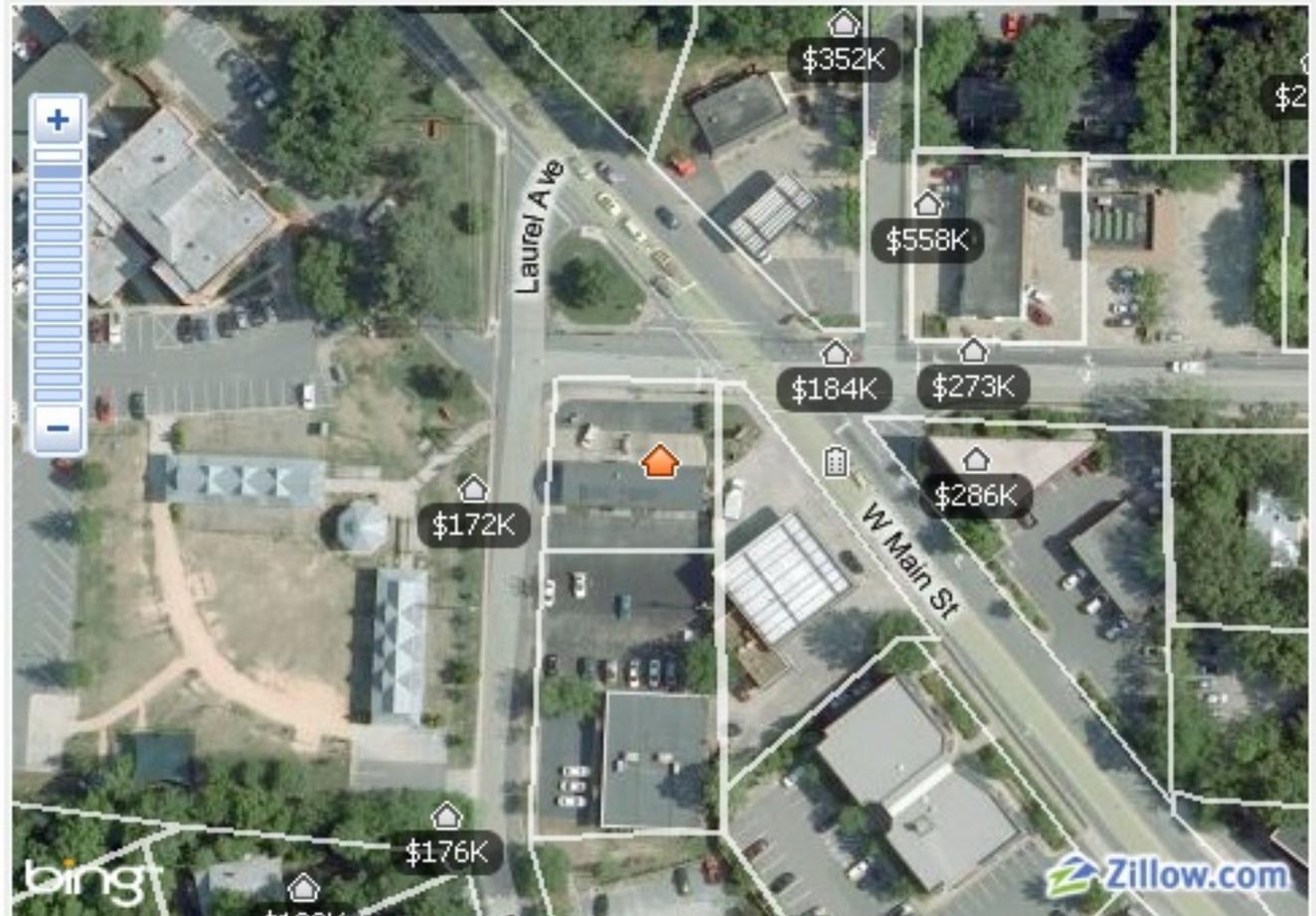
Bird's Eye View

Street View

- Zestimates
- Schools
- Grocery Stores
- Coffee and Bakery
- Parks
- Restaurants
- Gas Stations

 **Walk Score™**
88
Very Walkable

 **Drive time** 



▶ [View home on larger map](#)

Local amenities provided by [Google](#)

Discussion

- Findings with the University population may not be applied to the general population
- Overall travel effects unknown
- Challenges of using experimental methods in open systems
- Potential limited power to detect differences

Conclusion

- Potential of approaches to influence travel via upstream decisions (location)
 - Average NCSU student travels 4.2 to 6.2 fewer miles per day when traveling to the university campus
 - Reduction of 50%-68% VMTs