

Using the Real Estate Market to Establish Streetcar Catchment Areas

*Case Study of Multifamily Residential Rental
Property in Tucson, Arizona*



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Outline

- A brief history of streetcars
- Fixed guideway transit and real estate values →
 - **Literature review and research gap**
- Tucson case study description
- Model
- Results
- Implications

A brief history of streetcars

1820s-1880s horse-drawn
"omnibus"

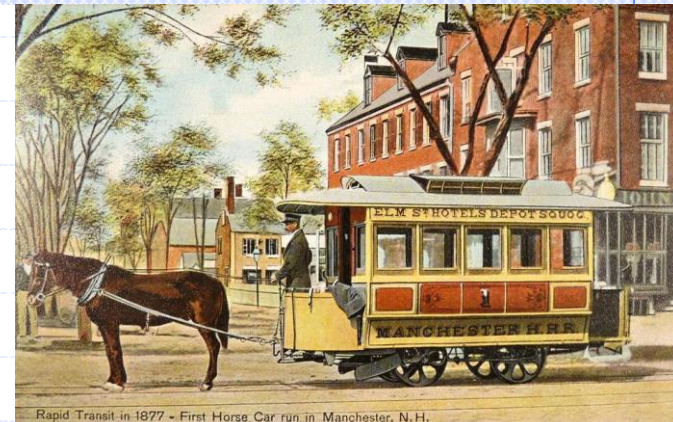
1860s-1890s steam and cable

1890s-present electric

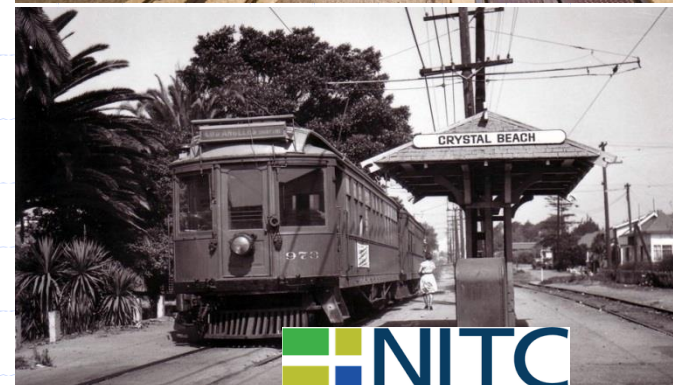
"Streetcar" suburbs

1950s onward cars = decline

2000s Revival of the
"Modern" streetcar



Rapid Transit in 1877 - First Horse Car run in Manchester, N.H.



The (skimpy) Literature on Streetcars and Real Estate Value

- Markets should capitalize transit investment into rents and value
- Only one article includes streetcars: “Transit and Real Estate Rents,” Nelson, *Transportation Research Record* 2017
- Using distance bands, prior research in Salt Lake County found price premium to **1.25 miles.**

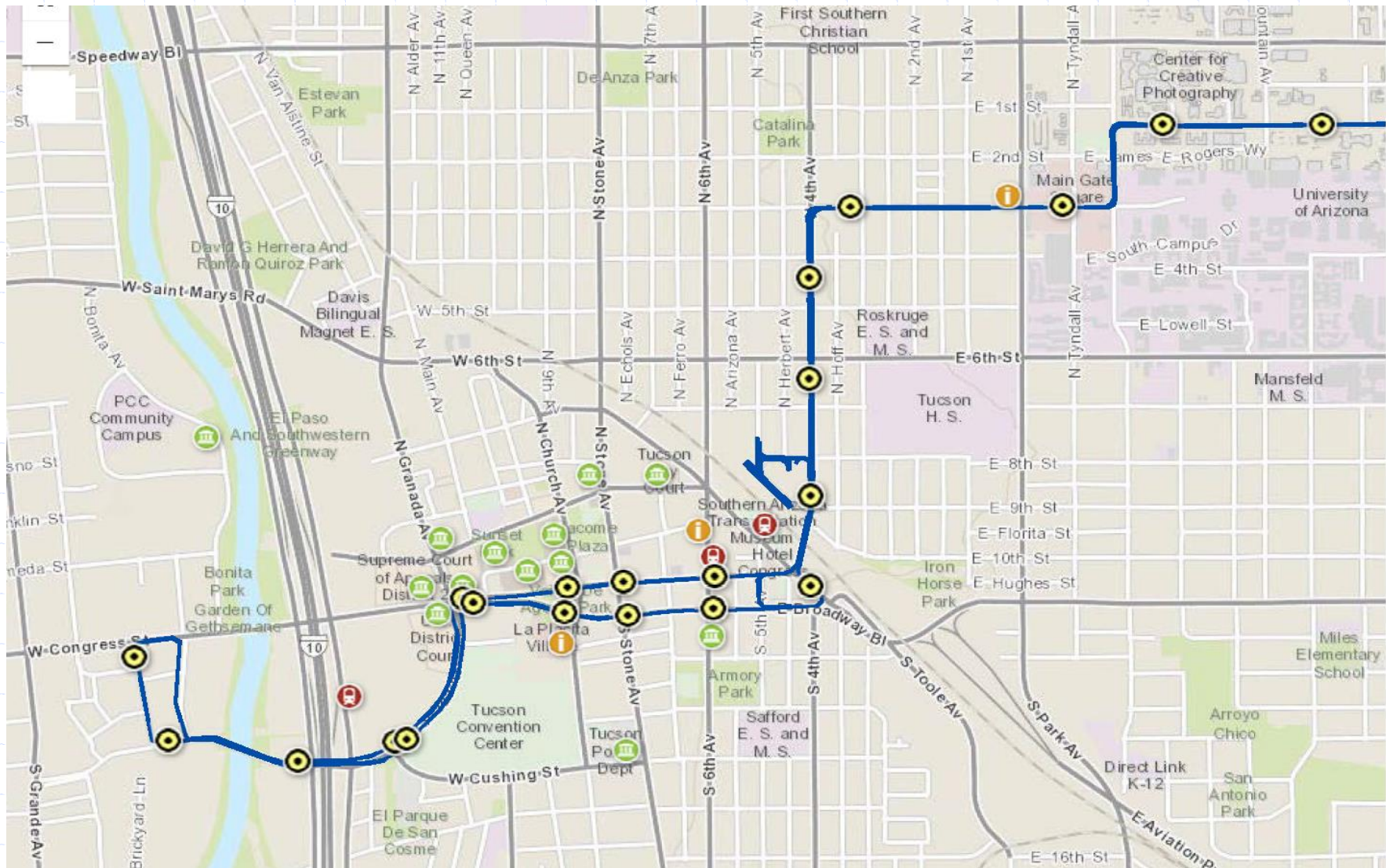
Limitations

- Very wide distance bands
 - **0 to <0.50 mile**
 - **0.50 to 1.0 mile**
- No socioeconomic controls
- No centrality controls
- But otherwise a pretty good study ... 😊



Tucson SunLink Modern Streetcar

- Inaugurated July 2014
- System is 3.9 miles (6.3 km)
- 21 stations (both directions)
- Connects medical center to main campus along commercial route to downtown and the west side redevelopment area



Research Question

Is there an association between apartment rents and proximity to streetcar stations?

Model

$$R_i = f(B_i, S_i, L_i)$$

where:

R is the price of rent per square foot for property i ;

B is the set of building attributes of property i ;

S is the set of socioeconomic characteristics of the vicinity of property i ; and

L is a set of location attributes of property i comprise of distance to the CBD as well as distance to streetcar stations based on distance bands.

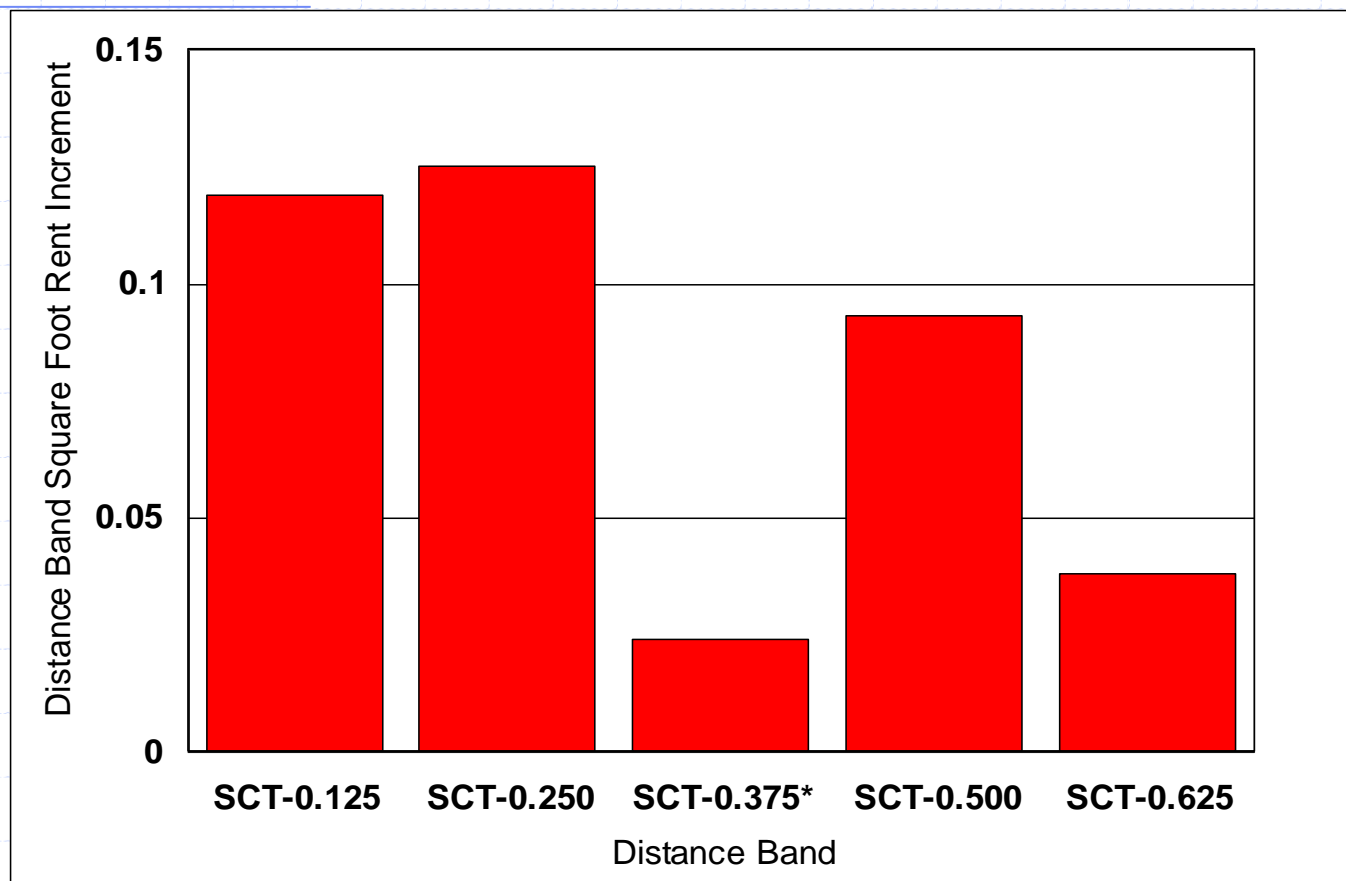
Variable	Specification, Predicted Sign	Data Source
Dependent Variable		
Asking rent per square foot	Continuous, logged	CoStar
Building Attributes		
Average Unit Size in Square Feet	Continuous -	CoStar
Gross Leasable Square Feet	Continuous +	CoStar
Effective Year Built	Continuous +	CoStar
Student-Restricted	Binary (rent restriction is the referent) +	CoStar
Socioeconomic Characteristics		
Percent Not White Non-Hispanic	Percent x 100 +	American Community Survey 2015
Median Household Tract Income	Continuous x 1,000 +	American Community Survey 2015
Location		
Distance to CBD, miles	Continuous -	GIS measure from parcel centroid to CBD centroid
Experimental Variables		
Distance to Nearest CRT Station in One-Eighth Mile Increments to 1.50 miles	Binary +	GIS measure from parcel centroid to station centroid

Results

Variable	Coefficient	p
Constant	-2.030	*
Building Attributes		
Average Unit Size	0.000	*
Gross Leasable Area	3.486E-007	*
Year Built	0.001	*
Student Restricted	-0.113	*
Socioeconomic Characteristics		
White Percent, Block Group	0.001	*
Median HH Income, Block Group	3.874E-007	
Location		
Distance CBD, miles	-0.010	*
Experimental Variables		
Streetcar < 0.125 mile	0.119	*
Streetcar 0.125-0.250 mile	0.125	*
Streetcar 0.250-0.375 mile	0.024	
Streetcar 0.375-0.500 mile	0.093	*
Streetcar 0.500-0.625 mile	0.038	*
Streetcar 0.625-0.750 mile	0.026	
Streetcar 0.750-0.875 mile	-0.032	
Streetcar 0.875-1.000 mile	-0.028	
Streetcar 1.000-1.125 mile	0.006	
Streetcar 1.125-1.250 mile	-0.002	
Performance		
Cases	574	
Adjusted R2	0.352	
F-ratio	19.27	*

* p < 0.10

Distance Band Results



Implications

- There may be fundamentally different market responses between LRT and streetcar systems.
- Tucson streetcar system is very new so the full extent of market responsiveness to the streetcar may be years away.
- There are many physical barriers limiting access of rental housing to streetcar stations especially across Speedway.
- Full market responsiveness may be inhibited by existing detached residential neighborhoods and planning restrictions preventing the market from building more multifamily structures farther away.

Future Research

- Extend to office, retail and other land uses.
- Expand methodology to other streetcar systems.
- Investigate change in value with respect to streetcar proximity over time.