Impacts of Bus Rapid Transit (BRT) on Residential Property Values

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Impacts of BRT

- Background
- Hypothesis & Methods
- Research Results
BRT Elements

Integration of Elements

Running Ways  Stations  Vehicles  Fare Collection  ITS  Service and Operating Plans  Branding
BRT in the U.S.
Property Value Impacts of BRT

• Can bus rapid transit (BRT) impact surrounding land uses and property values?
• Can the impacts be similar to light rail?
• Issue of permanence of services & facilities
Most previous studies address impacts of rail modes on property values
  – Isolate effect of distance from transit (either right-of-way, stations, or both)
  – Typical results find positive impacts on property values from nearby rail transit, but magnitudes are relatively small

Several studies on BRT systems outside the U.S. (Bogotá, South Korea)

To date, only two published quantitative modeling studies on property value impacts of BRT in the U.S.
Hypothesis & Method

• Hoped to find statistically significant, positive impacts on surrounding property values from BRT, with magnitudes approaching those found for rail transit modes.

• Use GIS to create the data sets and assist with analysis.

• Estimate impacts of BRT stations on surrounding property values using regression analysis.
  – Isolate the effect of distance to nearest BRT station from all other (measurable) factors that determine property values.
What Factors Explain Sale Prices?

• Property characteristics
  • Living area, lot size, style, bedrooms, bathrooms, age, assigned parking spaces (for condos), condition

• Neighborhood characteristics
  • Income and other relevant Census variables, city ward and/or neighborhood boundary effects, crime data

• Locational characteristics
  • Distance to relevant locations such as the CBD and other employment centers, parks or other places of interest, freeway access, transit stations (key variable), transit alignment
Data

- Parcel data from appropriate county or city department (sometimes a third party)
  - Relevant distance variables and buffers can be generated using GIS
- U.S. Census data
- Other data as available such as neighborhood/ward boundaries, crime data, etc.
First U.S. Study: Pittsburgh

- Pittsburgh Martin Luther King, Jr. East Busway
- Property values *rise* closer to the stations, holding all other factors constant
  - A single-family home 1,000 feet away from a station is assessed approximately $9,745 *less* than a property 100 feet away, all else constant
Second U.S. Study: Boston Silver Line

- Branded as part of MBTA’s rapid transit system
- Low-floor 60 ft. CNG vehicles
- Exclusive bus lanes
- 10-minute peak frequency
- 15-minute off-peak frequency
- Real-time passenger information
- Transit signal priority
- Phase I Washington Street opened July 2002
As the first phase of the Silver Line, this corridor was selected for research. Replaced MBTA Route 49. Two routes operate along the corridor: SL4 & SL5. Provide two options into Downtown Boston. 14 stations. 15,500 daily boardings. Over $650M in development: retail, residential, office, medical.
Boston Rapid Transit
Boston Silver Line
Boston Silver Line

Silver Line BRT (Washington Street)
Alignment in Relation to Central Business District

- Condominium Parcels 2007-2009
- Silver Line Stations
- Silver Line Washington Street
- Quarter Mile Buffer
• Sale prices increase closer to the stations, holding all other factors constant

• Estimated premium is 7.6%
  — A condo 1,000 feet away from a station sells for $45 per square foot less than a condo 100 feet away, all else constant (mean sale price: $600/sq. ft.)

• No sales premium for distance to the corridor prior to the Silver Line opening
Third U.S. Study: Cleveland HealthLine

- 7.1 miles, 15,000 daily riders
- Exclusive bus lanes
- Transit signal priority
- Median stations
- Off board fare collection
- 5-minute peak frequency
- Near level boarding
- Real-time passenger information
- Replaced Route 6 – 60% ridership increase
- Opened October 2008
Cleveland’s BRT Experience

**SPORTS**

Josh Cribbs isn’t supposed to be in the Pro Bowl, but don’t tell him that.

**FORUM**

Our presidential picks

**TRAVEL**

Ah, the spa
Where to pamper yourself this year

More than $537 in coupons

**SUNDAY PLAIN DEALER**

**BREAKING NEWS: CLEVELAND.COM**

**FEBRUARY 10, 2008**

**NEWS MINUTE**

**NATIONAL**

Final chapter in writers strike?
Striking Hollywood writers could be back to work Monday. A look at the contract, and PD television critic Mark Dawidziak gives background on why the two sides came to an agreement. Details, A13

**SUNDAY ARTS**

Grammys often miss the mark
The Grammys have a history of not picking edgier acts, such as Amy Winehouse, who is up for awards in six categories. A look at tonight’s ceremony. Details, J1

**BUSINESS**

Disaster works for them
Resilience Capital, a Brookwood company, invests in failing manufacturing companies. Details, G1

**METRO**

ER wait times bore less painful
Waiting time for care in a Greater Cleveland emergency room is less

**THE REBIRTH**

Euclid Corridor project has already brought $4.3 billion in new investment to the city
Euclid Avenue Before BRT
Euclid Avenue After BRT
Euclid Avenue After BRT
Economic Development

University Loft Apartments
Economic Development
Cleveland HealthLine Results

- In 2008, the year the HealthLine opened, a single family home 2,000 feet away from a station sold for $8,300 less than a home 1,000 feet away.
  - Only significant at the 90 percent level of significance
- Represents approximately 6% of the mean sale price of $131,289
- Results are inconclusive for 2010-2011
  - 2% premium is not statistically significant
  - Might be due to relatively low number of homes sold near the corridor in those years
Home Sales 2010-2011
Summary

• Recent research on BRT in Pittsburgh, Boston, and Cleveland shows that proximity to BRT stations can have a positive effect on residential property values and sale prices.

• These effects are very similar to those shown in the literature for LRT.

• What induces the premium: mode or service quality?

• Future research
  • More case studies
  • Additional spatial analyses such as spatial regression methods