Economic Development Generated by BRT in the Americas

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Topics Today

- BRT Overview: The BRT- Economic Link
- Example Projects
- Latest Research
- Project Considerations
What is BRT: A System of Components

- Vehicles
- Running Ways
- Stations & Stops
- ITS & Fare Payment
- Service Plan
Transit Oriented Development (TOD) or Public Transport Oriented Development (PTOD)

“…moderate to higher density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment…”

—Technical Advisory Committee to the California Statewide TOD Study
Why TOD?

- “Transit-Oriented Development has the potential to reduce parking per household by approximately 20%”
  —Caltrans study

- “TOD commuters typically use transit 2 to 5 times more than other commuters…”
  —FTA study
BRT Is Attractive to Developers and Retailers

- Significant TOD generated:
  - Ottawa Transitway
  - York Viva
  - Cleveland Health Line
  - Boston Silver Line
  - Pittsburgh East Busway
  - Denver: 16th Street Mall
  - L.A. Orange Line
  - Curitiba Surface Metro
  - Bogota TransMilenio
York Viva: Downtown Markham

- Groundbreaking August 2007
- 243-acre site located in the York Region, a wealthy suburb of Toronto
- 4,000 new condominiums and townhouses
- 4.2 million sq. ft of office space
- Simcoe Promenade (higher-density mixed-use zoning along pedestrian/bus street)
- Served by VIVA BRT system
Ottawa Transitway has stimulated development of shopping centers and business parks:

- St. Laurent Mall: Highest Gross per Sq. Ft. In Ottawa, 30% Modal Split
Cleveland: Who Says BRT Can't Generate Development?

$4.3 billion announced

REBIRTH ON EUCLID AVENUE

Over the past century, Euclid Avenue has gone from being Cleveland’s most prestigious address to a Main Street riddled with blight. Now, thanks in part to the Greater Cleveland Regional Transit Authority’s Euclid BRT project, the avenue is reborn as the backbone of the city’s new economy. But while a transformation in the works, nothing is guaranteed. The national economy, the location of the much-discussed Medical Mart and disruptive highway work by the Ohio Department of Transportation could blunt the multi-billion-dollar investment now gathering momentum. Shown below is an overview — by no means exhaustive — of construction projects in the Euclid Corridor area.

What’s driving the development? Clevelanders say Euclid Avenue and adjacent blocks are benefitting from a “perfect storm” of positive factors including:

- The rising price of gasoline, which is encouraging denser, pedestrian-oriented development around the AIA stations.
- Federal and state stimulus programs have made it viable for developers to undertake deals of early 21st-century scale and magnitude.
- Continued growth at the city’s big medical centers and at Cleveland State and Case Western Reserve universities.
- The attraction of downtown’s walkable lifestyle; even millennials, once known by realtors and developers as a target, are competing with prices in newer apartment developments.
- The possibility for much lower labor costs by the steady influx of hospital employees and take-off initiatives plus the growing ability to directly invest among others and empty-rentals.

Potential sites

- Public Square to Inner belt ($1.3 billion)
  - Archeologists’ Regina Hotel
  - S25 Eulich Bns. garage
  - Sen. Dick Street
  - Colonial Arcade renovation
  - 600 Euclid Avenue
  - Amherst complex
  - Cleveland Athletic Building, 1925-1936
  - 350 Euclid Avenue
  - Corner House
  - E. 12th Street
  - Casa Mate
  - E. 11th Street
  - E. 10th Street
  - E. 9th Street
  - E. 8th Street
  - Euclid Avenue
  - Mentor
  - E. 7th Street
  - E. 6th Street
  - E. 5th Street
  - E. 4th Street
  - E. 3rd Street
  - E. 2nd Street
  - E. 1st Street
  - Euclid Avenue
  - Euclid Avenue
- Midtown ($7.3 billion)
  - Towers by the Cuyahoga County Courthouse
  - Trinity Catholic Church
  - CSU student center
  - CSU main classroom building
  - Trinity Catholic Church
  - CSU administrative complex
  - CSU residence center
  - CSU extension center
  - CSU student center
  - CSU residence hall

University Circle ($1 billion)

- Cleveland Clinic
- Cleveland Heights Public Library
- Cleveland Museum of Art
- Cleveland Museum of Natural History
- St. Vincent Charity Medical Center
- University Hospitals
- Case Western Reserve University
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Cleveland Silver (Health) Line Economic Impact:

By 2025:

- 7.9 million sq. ft. in commercial development
- 5400 + new or renovated residential units
- $1.3 billion in capital investments
- $62.1 million in annual local taxes
- $1.98 million in annual GCRTA sales tax revenues
- 13,000 new jobs

Source: Greater Cleveland RTA
Boston Silver Line:
$1.2 billion around Phase 1

- $250 million in new construction
- $93 million in rehabilitation
- 1,731 new or rehab housing units
- 900 designated as “affordable”
- 128,000 sq. ft. new/renovated retail
Boston Silver Line Phase 2: $700 Million in Development

Not including announced Fan Pier ($3 bil) development
Denver 16th Street Mall

- Opened 1982:
  - Urban development project
  - 1-mi. exclusive corridor
  - Frequent electric shuttle service
  - Express bus stations anchor both ends
  - Now connected to LRT

Results:

- 60,000 riders/weekday
- The real development catalyst in downtown Denver
- 18-hour commercial days
Pittsburgh Busways and Development

1983-1996

- 54 developments
- Fair market value of $302 million
- New construction and renovation
- Retail, office and residential uses most common
Pittsburgh TOD since 1996

- Development continues to occur
- Another $203 million completed
- Additional development under construction or planned
- Some developments are transit-adjacent, not transit-oriented
Los Angeles: North Hollywood Development Near Orange Line

- Near terminus of both Orange BRT and Red (metro) Lines
- • NoHo Commons Mixed Use $200 million
- 438 apartments
- 200+ loft condos
- 60,000 sq ft. retail space
- Redeveloped master plan, ped access
BRT Can Help Shape Land Use

Curitiba: Transit/Land Use

High-Density Transit Spine

Low-Density Family Neighborhoods
Bogota, Colombia: TransMilenio

- 1.4 mln passengers/weekday
- 25p ticket!
- 26 mile investment, expansion underway (Phase 3)
- Complex route structure, management scheme
- Auto restriction strategies are key
- Future: Metro under study
Land Use Integration Essential to TransMilenio’s Success
## Selected BRT System Experience

<table>
<thead>
<tr>
<th>City (BRT Service)</th>
<th>TOD Policies?</th>
<th>Economic Value</th>
<th>Influencing Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston (Silverline)</td>
<td>Yes</td>
<td>$700 mil now, 3.7 bil + announ.</td>
<td>Pent-up demand, redevelopment policies</td>
</tr>
<tr>
<td>Bogota (Transmilenio)</td>
<td>Strong master planning and ped, bicycle amenities</td>
<td>??</td>
<td>By 2015, 80% of residents will live &lt;500 m of a station.</td>
</tr>
<tr>
<td>Cleveland (Silverline)</td>
<td>Yes</td>
<td>$800 mil now, $2.4 bil + est.</td>
<td>Major redevelopment policies, planning</td>
</tr>
<tr>
<td>Curitiba (Linghinero)</td>
<td>Strong master planning + auto use curbs</td>
<td>??</td>
<td>Strict land use policies + CBD car use restrictions</td>
</tr>
<tr>
<td>Denver (16th St. Mall)</td>
<td>Yes</td>
<td>$1 bil + est.</td>
<td>Pedestrian mall + links with regional transit</td>
</tr>
<tr>
<td>Eugene, OR (EmX)</td>
<td>No</td>
<td>Few million</td>
<td>Joint development in one terminal station</td>
</tr>
<tr>
<td>Las Vegas (MAX)</td>
<td>No</td>
<td>Few $100K</td>
<td>Joint development of one added station</td>
</tr>
<tr>
<td>York (Viva)</td>
<td>Yes in select areas</td>
<td>$3 bil in phases</td>
<td></td>
</tr>
<tr>
<td>Los Angeles (Orange)</td>
<td>Yes in select areas + bicycle amenities</td>
<td>$500 mil (w/ Red Line)</td>
<td>Major redevelopment policies, rail links</td>
</tr>
</tbody>
</table>
Land Use Impacts of BRT Study

Victoria Perk, PhD (pending)
National BRT Institute
University of South Florida Center for Urban Transportation Research (CUTR)
Previous Work

- No recent quantitative modeling studies on property value impacts of BRT in the U.S.
- 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
First Results

• Larger data set—including parcels within 5 miles of East Busway corridor

• Signs and magnitudes of most coefficients as expected

• Every 100 feet closer to a station increases market value of single-family home by $84

• Result is non-linear – takes effect at 1,800 feet from the nearest station then increases as distance falls

• Results statistically significant at the 5% level (95% confidence) using heteroskedastic-robust standard errors
First Results, cont’d

• Using larger data set—included parcels only within one half-mile of East Busway corridor
• Signs and magnitudes of most coefficients as expected
• Every 100 feet closer to a station increases market value of single-family home by $1,000
  • Magnitude is much larger than expected
• Results statistically significant at the 5% level (95% confidence) using heteroskedastic-robust standard errors
Second Results

• In response to presentation of first results, used only parcels located in between the Allegheny and Monongahela Rivers, and within one half-mile of East Busway corridor
• Signs and magnitudes of most coefficients as expected
• Every 100 feet closer to a station increases market value of single-family home by $1,600
  • Magnitude is much larger than expected
• Results statistically significant at the 5% level using heteroskedastic-robust standard errors
Caveats

- Results only valid for Pittsburgh’s East Busway corridor using these data
- Magnitude of key coefficient (distance to BRT station) is much larger than expected
- Spatial autocorrelation may be introducing bias to the key coefficient
  - Not able to correct for spatial autocorrelation in this effort
- Multi-family residences and commercial properties not examined
- Due to data limitations, a cross-section (one point in time) analysis was employed
  - Ideally, a before-and-after scenario would be used
Coming Work

- Address caveats discussed previously
- Refine method and apply to other cities
  - Boston
  - Cleveland
  - Los Angeles
  - Eugene…
Pittsburgh

- Over $500 million
- Commercial, residential, office, medical, recreational
<table>
<thead>
<tr>
<th>Community</th>
<th>Type of Development</th>
<th>Type of use</th>
<th>Construction or Redevelopment</th>
<th>Value of Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilkinsburg</td>
<td>Apartments*</td>
<td>Residential</td>
<td>New</td>
<td>$1,340,000</td>
</tr>
<tr>
<td></td>
<td>Bank</td>
<td>Bank</td>
<td>New</td>
<td>$76,000</td>
</tr>
<tr>
<td></td>
<td>Convenience Store*</td>
<td>Retail</td>
<td>New</td>
<td>$210,000</td>
</tr>
<tr>
<td></td>
<td>Drug Store*</td>
<td>Retail</td>
<td>New</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fast food restaurants (6)*</td>
<td>Retail</td>
<td>New</td>
<td>$832,000</td>
</tr>
<tr>
<td></td>
<td>Hospital*</td>
<td>Medical</td>
<td>New</td>
<td>$5,526,000</td>
</tr>
<tr>
<td>Homewood</td>
<td>Community College*</td>
<td>Institutional</td>
<td>New</td>
<td>$275,000</td>
</tr>
<tr>
<td></td>
<td>Farmers Market*</td>
<td>Retail</td>
<td>Redevelopment</td>
<td>$900,000</td>
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<tr>
<td></td>
<td>Single family residence*</td>
<td>Residential</td>
<td>New</td>
<td>$1,871,000</td>
</tr>
<tr>
<td></td>
<td>Single family residences*</td>
<td>Residential</td>
<td>New</td>
<td>$1,484,000</td>
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<tr>
<td>Point Breeze</td>
<td>Research and engineering offices</td>
<td>Office</td>
<td>New</td>
<td>$32,366,900</td>
</tr>
<tr>
<td></td>
<td>University offices</td>
<td>Office</td>
<td>Redevelopment</td>
<td></td>
</tr>
<tr>
<td>Shadyside</td>
<td>Apartments*</td>
<td>Residential</td>
<td>Redevelopment</td>
<td>$20,000,000</td>
</tr>
<tr>
<td></td>
<td>Apartments*</td>
<td>Residential</td>
<td>New</td>
<td>$2,600,000</td>
</tr>
<tr>
<td></td>
<td>Hospital, Medical offices, parking garage</td>
<td>Medical/parking</td>
<td>New</td>
<td>$43,798,000</td>
</tr>
</tbody>
</table>

* Development clustered at the stations.
Any of these may provide incentive or disincentive for new developments or concentration of ongoing development along transit corridors.

- Local land use plans, policies, zoning, and capital improvement programs
- Financial and non-financial incentives (e.g., density bonuses, tax incentives, streamlined development application process, loan support etc.)
- Structure of tax revenues for local jurisdictions
- Experience of the transit agency and other local institutions
Basic TOD Design Principles for BRT:
Similar to Rail TOD Design

- Design Appropriately for Corridor Demand:
  - Passenger Demand
  - Travel Times
- Design for Network Effects:
  - Interconnections with other modes
  - Good signage and passenger info
  - Parking
- Design for Access
- Design for Permanence
  - (Ideally, A “Sense of Place”)
Range of Station Options

Center Platform
Eugene, OR EmX

Side Platform
Brisbane
SE Busway
Station Security

Brisbane SE Busway
Consistent Branding: Strong Graphics, Iconic

Brisbane: S.E. Busway
Complex Route = Bypass Lane Or Off-Line Stations = Limited TOD

Bogota TransMilenio

Los Angeles Busways
START SMALL,
THINK BIG!
Other Lower-Risk Development Strategies

- On-Board Wi-Fi (L.A., Miami, various European and Asian cities)
- On-Board and Station Advertising with Next-Bus Info helps attract retail
- Carts, kiosks in stations
Lessons

- Establish planning vision and policies early
- Coordinate with all stakeholders early
- Location, location, location
- Station Plans: design for the pedestrian
- Ridership might not help development
- Same TOD Strategies As LRT, CR, HR
  - Think “sense of place”
Relevant U.S. Industry Standards Development

- BRT Station Design Recommended Practices:
  - All suggested aspects
  - In draft
- LEED-ND and APTA TOD Recommended Practices
- BRT Branding and Image Recommended Practices:
  - Affects signage and other aspects of station design
  - Out for industry ballot
- Climate Change testing protocol just begun
Questions?

Thank you