Transit Oriented Development: What Does the Research Tell Us?

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About the Voorhees Transportation Center (VTC)

- Established in 1998 to honor the legacy of Alan M. Voorhees, a leading 20th Century transportation planner with ties to Rutgers University
- Created to conduct research that explores transportation linkages to other public policy areas and provide a forum for informed public discussion of transportation policy issues facing the state and nation
Primary Activities

- **Policy-oriented Research**
  - Statistical analysis of data
  - Program evaluation
  - Applied planning studies

- **Education and Training**
  - Continuing education for career professionals
  - Student involvement in research studies

- **Service**
  - Dissemination of research to transportation experts & policy makers
  - Annual distinguished lecture on current policy topic
  - Media outreach
TOD Research at VTC

- Transit Village Program Monitoring & Evaluation
- Transit Friendly Development Newsletter
- Eliminating Barriers to Transit-Oriented Development
- Benefits of Transit-Oriented Development
- Economic Impacts of the RiverLine
- An Evaluation of Property Values in New Jersey Transit Villages
- Land Development at Selected Hudson-Bergen Light Rail Stations
Presentation Outline

- What is TOD?
- What trends are influencing demand for TOD?
- What does research tell us about TOD impacts?
  - Household Characteristics
  - Transit Use
  - Auto Ownership
Transit-Oriented Development

BACKGROUND AND CONTEXT
What is TOD?

- Mixed land use
- Compact
- Pedestrian and bicycle friendly
- Oriented to a public transit facility
The concept of TOD is not new

Montclair, NJ

Electric railways in Union County, NJ

Trenton to New Brunswick Fast-line
Basic TOD Site Design

- Geographic scale:
  - ¼ to ½ mile of station
  - Corresponding to a transit access “walk shed”

TAD (Transit-Adjacent Development)
Factors Encouraging Dispersed Development

- Ubiquity of automobiles and highway investment
- Land use regulations
- Tax policies
- Amenities of low-density neighborhoods
- Land costs
- Travel factors
  - e.g., growth in two-earner households
Factors Encouraging Compact Development

• Demographics
  – Aging population
  – Decreasing household size
• Traffic congestion
• Immigration and internationalization
• Positive examples of more dense development
• Changing preferences and tastes
Transit-Oriented Development

HOUSEHOLD CHARACTERISTICS
TOD Resident/Tenant Characteristics

- Majority of TOD residents in new transit systems are smaller, childless households

<table>
<thead>
<tr>
<th>System Size</th>
<th>One Person Households</th>
<th>Families of Three or More People</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transit Zones</td>
<td>Metro Area</td>
</tr>
<tr>
<td>Small</td>
<td>51%</td>
<td>27%</td>
</tr>
<tr>
<td>Medium</td>
<td>38%</td>
<td>26%</td>
</tr>
<tr>
<td>Large</td>
<td>38%</td>
<td>24%</td>
</tr>
<tr>
<td>Extensive</td>
<td>34%</td>
<td>27%</td>
</tr>
</tbody>
</table>

- TOD residents typically own fewer cars
  - Twice as likely to not own any car and own half as many cars as their metro region counterparts

Source: Center for Transit Oriented Development, 2004
Household Size in New Jersey TODs

Source: Chatman & DiPetrillo (2010); based on 10 communities; new housing 2000-2009
School Enrollment Impact of TOD

- TODs house more single person and smaller households than other types of housing
  - Fewer school-age children
  - Less financial burden on local schools

- Analysis of 32 TOD projects in 5 states:
  - Average generation rate of 0.03 per unit or 3 school aged children per 100 units
  - Range of generation rates 0.00 to 0.12 or 0 to 12 school aged children per 100 units

School Enrollment Impacts in NJ

- National trends hold true in NJ
- More single person & smaller HHs
- Fewer kids than other types of housing

- 10 NJ TODs
  - Total of 2,183 units – all rental
  - 47 school aged children
  - Generation factor of 0.02

School Enrollment in NJ TODs

Source: Chatman & DiPetrillo (2010); based on 10 communities; new housing 2000-2009
School Enrollment Impacts in NJ

- 94% of households in new TODs have no children in NJ public schools
- Number of public school children in new housing near stations (½ mile) is about 60% lower than new housing ½ to 2 miles away – 50% lower when controlling for local school quality

Source: Chatman & DiPetrillo (2010); based on 10 TODs; new housing 2000-2009
Transit-Oriented Development

AUTO OWNERSHIP AND TRAVEL CHARACTERISTICS
Land Use Influences Travel Demand

Built Environment

- Density
- Diversity
- Design

4th D – Destination Accessibility

Travel Demand

- Trip Rates
- Mode Splits
- Trip Distances

\[ \text{Vehicle Miles Traveled} = \text{X} \]
Table 1.18. 2000 auto ownership for selected TODs.

<table>
<thead>
<tr>
<th>Community</th>
<th>Cars/Household</th>
<th>TOD Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington County, VA</td>
<td>1.4</td>
<td>County</td>
</tr>
<tr>
<td>Court House</td>
<td>1.1</td>
<td>Suburban Center</td>
</tr>
<tr>
<td>Clarendon</td>
<td>1.3</td>
<td>Suburban Center</td>
</tr>
<tr>
<td>Rosslyn</td>
<td>1.1</td>
<td>Suburban Center</td>
</tr>
<tr>
<td>Ballston</td>
<td>1.2</td>
<td>Suburban Center</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td>1.1</td>
<td>County</td>
</tr>
<tr>
<td>Church/24th</td>
<td>1.1</td>
<td>Urban Neighborhood</td>
</tr>
<tr>
<td>Embarcadero</td>
<td>0.5</td>
<td>Urban Neighborhood</td>
</tr>
<tr>
<td>Cook County, IL</td>
<td>1.4</td>
<td>County</td>
</tr>
<tr>
<td>LaSalle</td>
<td>0.7</td>
<td>Urban Downtown</td>
</tr>
<tr>
<td>Chicago/Fullerton</td>
<td>1.1</td>
<td>Urban Neighborhood</td>
</tr>
<tr>
<td>Chicago/Berwyn</td>
<td>0.7</td>
<td>Urban Neighborhood</td>
</tr>
<tr>
<td>Evanston/Davis</td>
<td>1.0</td>
<td>Suburban Center</td>
</tr>
<tr>
<td>Evanston/Dempster</td>
<td>1.2</td>
<td>Suburban Neighborhood</td>
</tr>
<tr>
<td>Evanston/Main</td>
<td>1.3</td>
<td>Suburban Neighborhood</td>
</tr>
</tbody>
</table>

Source: Dittmar and Ohland, 2004
Auto Ownership in NJ TODs

Vehicles Available per Household

- In new hsg within ½ mile
- In older hsg within ½ mile
- In new hsg ½ to 2 miles
- In older hsg ½ to 2 miles

No cars | 1 car | 2 or more cars

Source: Chatman & DiPetrillo (2010); based on 10 communities; new housing 2000-2009
TOD Housing and Transportation Performance

- Residential TOD trip generation rates are significantly lower than non-TOD development (based on ITE manual)
  - 44 percent lower overall
  - 49 percent lower in AM peak period
  - 48 percent lower in PM peak period

- Trip reduction effects of TOD housing derive from:
  - Residential self-selection
  - Presence of in-neighborhood retail located between residences and stations that facilitate transit-pedestrian trip-chaining
  - “Car-shedding”

TOD & Travel Characteristics

• TOD commuters are 2-5 times more likely to use transit for both commute and non-work trips than non-TOD residents in the same region
  - Mode shares range from 5-50 percent or more for work trips and 2-20 percent for other trip purposes
  - Transit connectivity and destination accessibility increase transit share

• TODs have about 3.5 times more walking and cycling than MSAs
  - Walk/bike mode share for work trips 11.2% in TODs versus 3.2% in regions

Trends in Transit Commuting in TODs

Transit Commute Mode Share (% of Trips)

Source: Renne (2005); based on 103 TODs in 12 MSAs
Transit Commute Mode Share in NJ TODs

Source: Chatman & DiPetrillo (2010); based on 10 communities; new housing 2000-2009
Concluding thoughts

- Forces beyond Somerville and NJ are likely to shape future demand for housing and commercial development in our State
  - Singles will soon be the new majority
  - Older people will outnumber young people by mid-century
  - Generation X and Y value sustainability and community living
  - Foreign-born population is growing
  - All of these groups value walk-ability and use transit more

- Places that are prepared to harness these shifting trends will likely perform best as the economy recovers

- Research indicates that the benefits of TOD outweigh the costs

- Change is difficult especially in uncertain times

- Somerville appears poised for success
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