Performance Measures for Assessing Transit-Oriented Development

Michael S. Bomba, Ph.D.
University of North Texas
Center for Economic Development and Research
http://cedr.unt.edu

April 14, 2015
UNT Center for Economic Development & Research

- Established in 1989
- Conducts economic analysis and public policy research
- Growing emphasis on transportation research
  - TOD
  - Toll Roads
  - Freight
  - NEPA Compliance
- Small staff of professional and student researchers

Image Credit: University of North Texas.
Characteristics of Transit-Oriented Development

Goal to manipulate travel behavior through the urban form

- Typically mixed-use development
  - Residential and retail, sometimes office too
  - Occasionally TODs are employment only
- Served by mass transit
  - Almost always served by light or commuter rail
- Walkable or bike-friendly
  - Stores and services within walking distance and easily reachable

Image Credit: City of Austin.
Characteristics of Transit-Oriented Development

• Higher densities
  – Multistory apartments, condominiums, or townhomes
  – Retail at street level/No large blank spaces along the street

• The stereotype of TOD residents is largely true (Dill, 2008; Arrington and Cervero, 2008):
  – Single or a couple
  – Childless
  – Often female
  – Young or retired
  – Own fewer cars or no car
Moving Ahead for Progress in the 21st Century Act (MAP-21)

- Authorized for two years starting October, 2012
- Extended to May 31, 2015 by the Highway and Transportation Funding Act of 2014
- MAP-21 requires states, MPOs, and transit agencies to establish performance targets
- TOD Planning Pilot Grants – (20005(b) of MAP-21)
  - $20 million over two years
  - Funding delayed applications submitted November 2014

Potential Performance Measures for TOD

- Reducing regional VMT
- Shifting travel mode choice
  - Home-to-work
  - Non-home-to-work
- Connectivity with other transportation modes
- Reduced pollutants and greenhouse gas emissions (GhG)
- Increased property values
- New economic activity

Image Credit: Federal Highway Administration.
Performance Measures for TOD

- Juxtapose against competing transit projects
- Local community needs and goals
- Transit agency goals and priorities
- Regional needs and goals
- Available funding from local, state, and federal sources
- MAP-21 language is generally vague on how to measure performance
- TCRP 56 *Performance-Based Measures in Transit Fund Allocation*
• 43% of current residents in Texas TODs reported decreased car usage
• 17% of TOD residents more likely to drive a car after moving to their current residence, but more likely to use a train (34.3%), bus (20.2%), walk (53.7%), and bicycle (18.8%)
• Self-selection may explain mode shifts and reduced VMT
  – Require the proper built environment
Shifting Commuter Mode Choice – Work Trips

• Residents in and near TODs are more likely to use transit
• Texas TOD residents slightly less likely to use car compared to control group (89.1% vs. 92.5%) but drove fewer trip miles
• Texas TOD residents more likely than control group to use train, bus, walking, or biking to commute to work

Photo Credit: Dallas Area Rapid Transit.
Shifting Commuter Mode Choice – Non-Work Trips

• Residents in traditional neighborhoods more likely to walk to the store (Lund, 2003; Handy, Cao, and Mokhtarian, 2006)
• Trip distance may be a more important factor than urban design (Boarnet and Sarmiento, 1998; Krizek, 2000)
• Self-selection of TOD/neotraditional residents, more inclined to replace driving trips (Boarnet and Crane, 2001; Lund, 2003; Krizek 2003)
• Texas TOD residents more likely to use a train or bus for non-work trips
  – Shopping, sporting events, dining/entertainment
Connectivity with Other Transportation Modes

Photo Credits: Dallas Area Rapid Transit.
Reduced Pollutants and Greenhouse Gas (GhG) Emissions

- Reduced VMT and mode shifts of TOD residents logically leads to reduced emission of air pollutants and GhG
- 17% of U.S. CO\(^2\) emissions are due to passenger vehicles
- Dallas-Fort Worth area designated as moderate nonattainment for ozone
  - Another piece in the puzzle for reducing emissions

Photo Credit: The Sierra Club.
Increased Property Values

• 2014 study compared estimated property values around more than 60 DART stations to a control group
  – Found appraised property values around DART stations to be $1.5 billion vs. $0.6 billion in the control areas
  – Most of the difference was due to multifamily development
• Estimated property taxes paid around DART stations totaled $36.4 million vs. $14.3 million in the control areas

Photo Credit: Dallas Area Rapid Transit.
New Economic Development

• Economic impacts from transit
  – Construction
  – Operations
  – New business activities
• TODs create an environment that attracts the “creative class”
• Depending upon scale and location, can attract major employers

Image Credit: Trinity River Vision.
Conclusions

- Overall, TOD has a positive impact on efforts to reduce congestion and VMT
- Preaches to the converted
  - Behavior shifts occur mostly for a self-selected subgroup
  - However, this subgroup is a grossly underserved market
- Residents of Texas TODs are reducing their use of automobiles and increase their use of alternate modes
- Key performance measures are reduced VMT, travel mode shifts, multimodal connectivity, increased property values, and economic development opportunities
Suggestions for Moving Forward

• Municipalities should seek to reduce TOD developers’ risk
  – Streamlining and predictability of the permitting and inspection processes
  – Some incentives may be justified

• Intra-regional transit agencies must continue to link and coordinate regional transit infrastructure and service
  – Avoid further fragmenting of local transit services and infrastructure
  – Losing connectivity, efficiencies, and economies of scale

Image Credit: Dallas Area Rapid Transit.
QUESTIONS?
Bibliography


Bibliography (Continued)


2010 Survey of Texas TOD Residents

• Surveyed TOD residents in Dallas, Fort Worth, and Austin
  • 427 responses, 14.2 percent response rate
• Also surveyed control group of 600 residents from Dallas and Collin Counties