Transit Oriented Development

Right Sizing TODs & Travel

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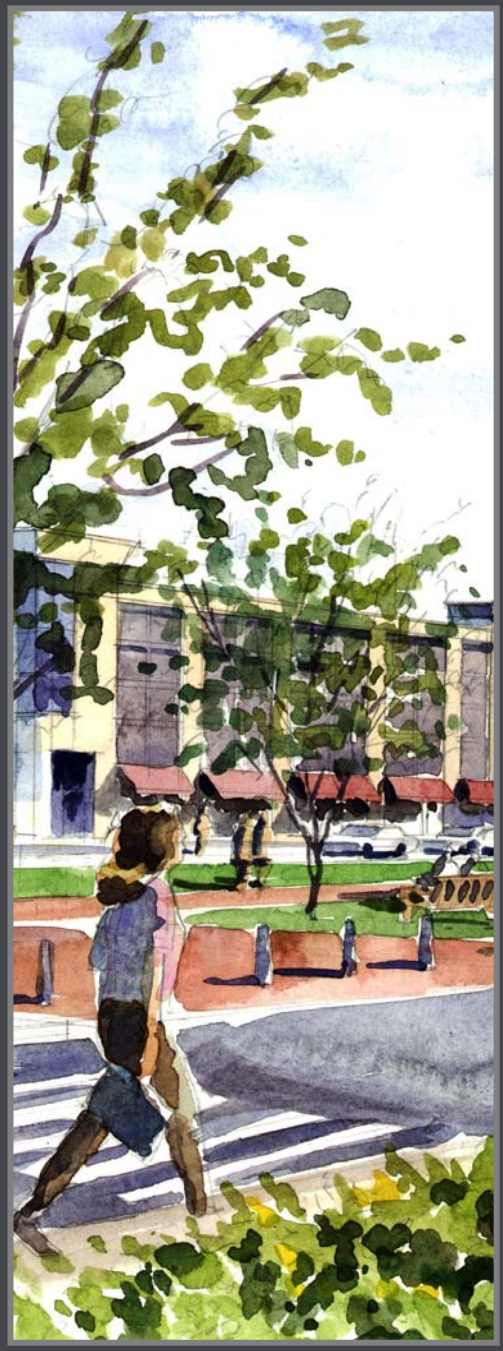
TCRP Report 128

Effects of TOD on Housing, Parking, & Travel



Mission Bay, San Francisco

Agenda

- TOD & Travel
- Parking Puzzle
- Latest TOD & Parking Research
- Testing for Urban Form
- Implications
- Dissemination

TODs and travel

TODs create less traffic

- TOD residents are:
  - Twice as likely not to own a car as US Households
  - 5 times more likely to commute by transit than others in region
- Self-selection:
  - Responsible for up to 40% of TOD ridership bonus

Portland Travel Behavior

Area	*Transit Modal Share*	*Non-auto Modal Share*	*VMT per Capita*	*Auto Ownership per Household*
Mixed Use/ Good Transit	**11.5 %**	**41.9 %**	**9.80**	**0.93**
Remainder of Region	**1.2%**	**12.7%**	**21.79**	**1.93**
Difference	**942%**	**230%**	**45%**	**48%**

Metro 1994 Travel Behavior Study

Mixed use + good transit results in much lower automobile use

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Rosslyn Ballston Corridor

- Development since 1980
  - 25m square feet office
  - 14,400 residential units
- Station areas
  - 25% county housing
  - 37% county jobs
- Transit Access
  - Arlington: 73% walk, 13% by car
  - Fairfax: 15% walk, 58% by car

Land use can change transportation behavior

TOD Parking Puzzle

The TOD Parking Puzzle

- TODs behave differently, yet
  - No definitive industry TOD parking ratios exist
  - Lenders tend to require conventional ratios in TODs
  - Developers tend to build TODs w/ conventional ratios

Changing parking key to TOD benefits being fully realized

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Downtown Salt Lake

W. Oakland BART

Hazelwood, Portland

$75b opportunity lost?

- Past 11 years $75b in invested in US rail transit
- Market & planning support for TOD
- Many of the hoped for benefits not realized
  - Less time stuck in traffic
  - Lower housing costs
- TODs parked oblivious to transit
  - Most TODs being required to be built & parked like auto-oriented development

South Waterfront, Portland

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Parking a Huge Challenge

- The difference between TOD & TAD
- Often a deal breaker financially
  - Structured space costs 4 to 10 fold more
  - $17,500 per space for simple parking structure
- Parking a barrier to urbanism / walkability

TOD Parking Research

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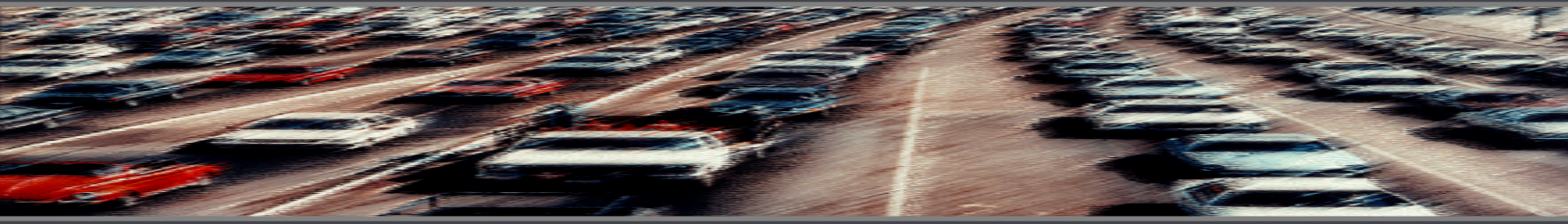
TCRP Report 128

- Detailed look at 17 built TODs
- All multi-family residential
- Four US Metro areas
  - Washington, DC
  - Philadelphia / NJ
  - San Francisco
  - Portland
- Measured actual performance
  - Trips compared to ITE

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_128.pdf

Disconnect with ITE guidance



- Suburban bias w/ existing parking standards
  - Assumes everyone drives
  - Based on limited observations – from Florida
- Overstates TOD trip generation
  - A result is higher development fees
  - 24 hr based rates 50% high
- Parking likely overstated by same amount

TOD housing generates 50% less traffic than conventional housing

ITE Trip Manual

6.67 trips per unit

Detailed counts

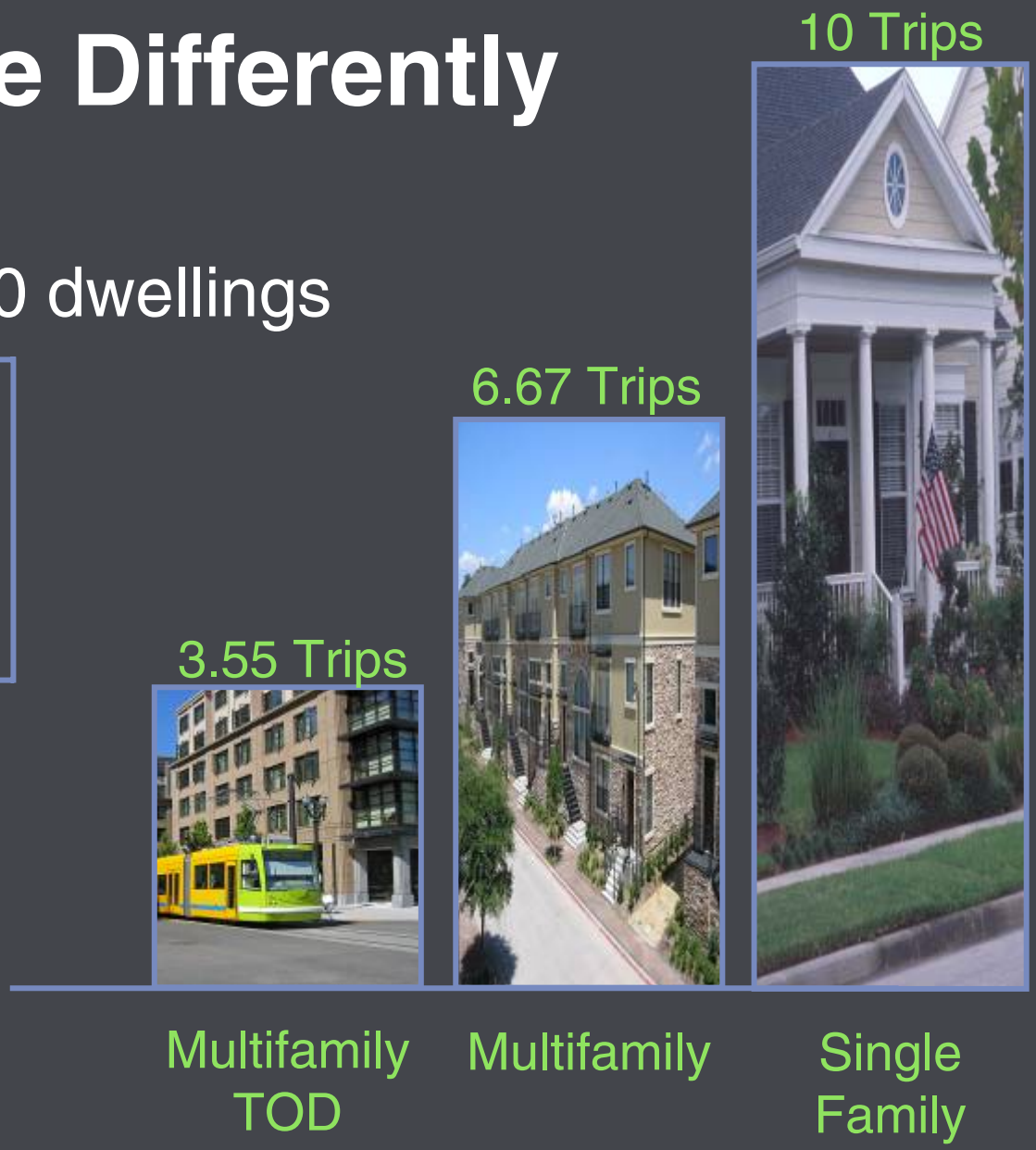
of 17 residential TODs

3.55 trips per unit

TODs behave Differently

Daily car trips for 50 dwellings

• SF	500
• MF	333
• TOD MF	177



Philadelphia / NJ TOD Case Studies

- Averaged 27% below ITE 24 hr rates
- Lower density projects
- Served by commuter rail
  - limited mid-day & evening service

Washington DC TOD Case Studies


Lenox Park


Quincy Plaza


Meridian @ Braddock


Gallery @ Virginia Square


Avalon @ Grosvenor

Washington DC TOD Case Studies

- Greatest reduction from ITE 24 hr rates
  - Ranged from 30 to 92% below
  - On average over 60% below
- Meridian @ Braddock Station averaged one vehicle trip for every two units
  - 920 ft from station

Portland TOD Case Studies


Collins Circle


Gresham Central


Quatama Crossing


Center Commons


The Merrick

Portland TOD Case Studies

- Averaged 40% below ITE 24 hr rate
- Collins Circle less than one trip per unit
  - Over 200 units per acre
- Closer to the core better the performance

Actual percent less traffic than ITE 24 hr rate:

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Portland TODs included TOD research

SF Bay Area TOD Case Studies

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SF Bay Area TOD Case Studies

- All east bay “suburban” locations on BART
- Averaged 48% below ITE 24 hr average
- Montelena Homes less than 2.5 trips per unit
  - 55% commute by transit
  - 950 ft from S Hayward BART

Testing the implications

Testing the implications

- 8 acre theoretical site
- Four TOD-housing building products
  - Garden Apts
  - Townhomes
  - “Texas Donut”
  - 6-story Mid-rise
- Test two parking ratios
  - 2.2 spaces per unit
  - 1.1 spaces per unit
  - Both transit friendly

TOD Prototypes

Garden Apartment

- Density: 24 to 32 units per acre
- Height 2 to 3 stories
- Surface parking

Gresham Central Apartments, Gresham Oregon

TOD Prototypes

Townhome

- Density: 36 to 48 units per acre
- Height: 2 to 3 stories
- Surface parking

Cameron Hill Townhomes Silver Spring, Maryland

TOD Prototypes

Texas Donut

- Density: 90 to 120 units per acre
- Height: 4 to 5 stories
- Residential wrapped around structured parking

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Eastside Transit Village, Plano, Texas

TOD Prototypes

6 Story mid-rise

- Density: 100 to 120 units per acre
- Height: 6 stories
- Freestanding parking structure

Mission Bay, San Francisco, California

Garden Apts

2.2 Spaces per unit	1.1 Spaces per unit

Lower ratio

- + 33% in Density
- + 60 units
- $98,000 parking saving

Townhomes

2.2 Spaces per unit	1.1 Spaces per unit

Lower ratio

- + 33% in Density
- + 96 units
- $736,000 parking saving

“Texas Donut”

Mid-Rise Apts

2.2 Spaces per unit	1.1 Spaces per unit	2.2 Spaces per unit	1.1 Spaces per unit

Lower ratio

- + 20% in Density
- + 162 units
- $5.3m parking saving

Lower ratio

- + 20% in Density
- + 225 units
- $12m parking saving

Implications

Case Study Implications

Going from 2.2 to 1.1:

- 20 to 33% higher residential density
- More units + lower parking costs (5 to 36% lower costs)
- Higher transit ridership
- More opportunity
  - Higher developer profits
  - Greater housing affordability
  - More projects financially feasible

Right Sizing TOD Parking

- New standards to reflect TOD should result in:
  - Developers paying lower fees and exactions
  - Diminished need to expand roads
  - Transit agencies realizing increased ridership
  - The public paying less for TOD housing
  - 20 to 33% increase in TOD density

San Francisco Mission Bay, Portland S. Waterfront