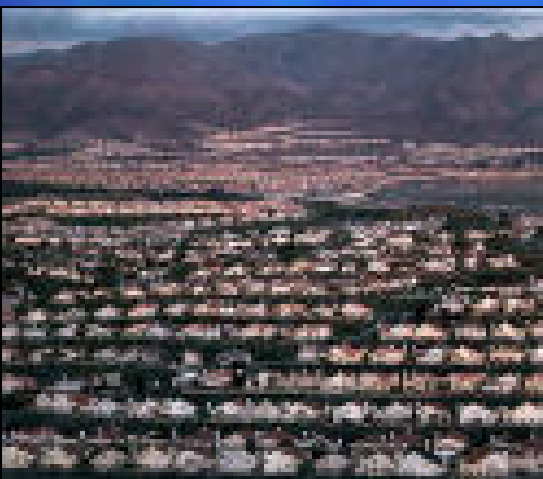


# Urban Metamorphosis

## From Car-Oriented Suburbia to Transit-Supportive Urban Centres

Robert Cervero

University of California, Berkeley



# *Looking North on Yonge Street Toward St. Clair Avenue*

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**1957**



**1981**

# *Yonge Street and Eglinton Avenue Intersection*



**1951**



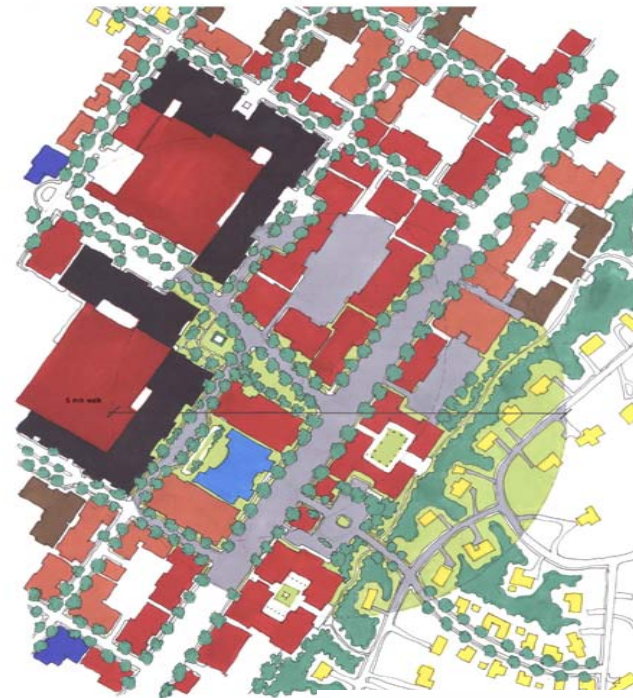
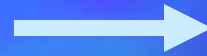
**1981**

# Urban Transformations



- “How do you create a City Centre out of all these parking lots? It’s clear the future will be *dense, vertical and transit-based*.” Janice Baker, City Manager.
- “The new Mississauga has started. The old Mississauga was car-oriented. Now we have to get rapid transit.” Edward Sajecki, Planning Commission.

# Car versus Foot Circulation



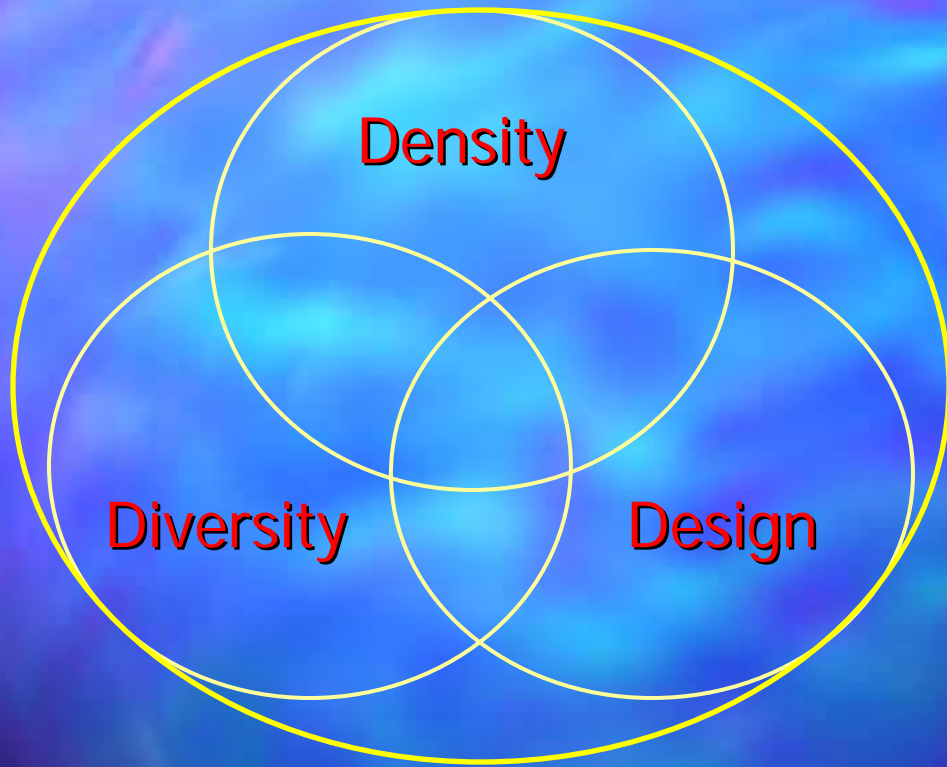
Suburban Retail



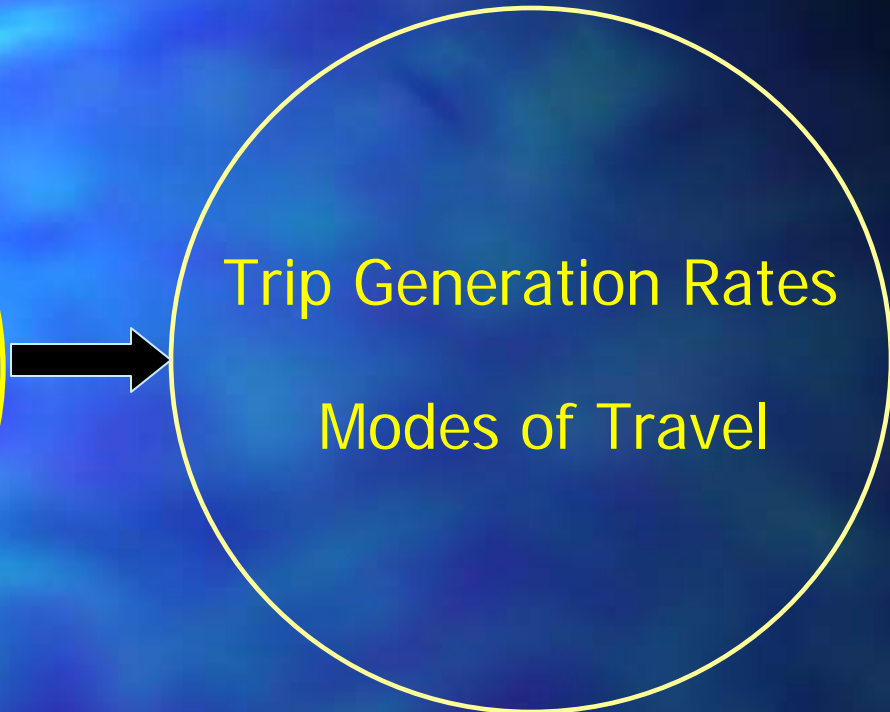
Enhanced Suburban Retail



## *3 D's of the Built Environment*

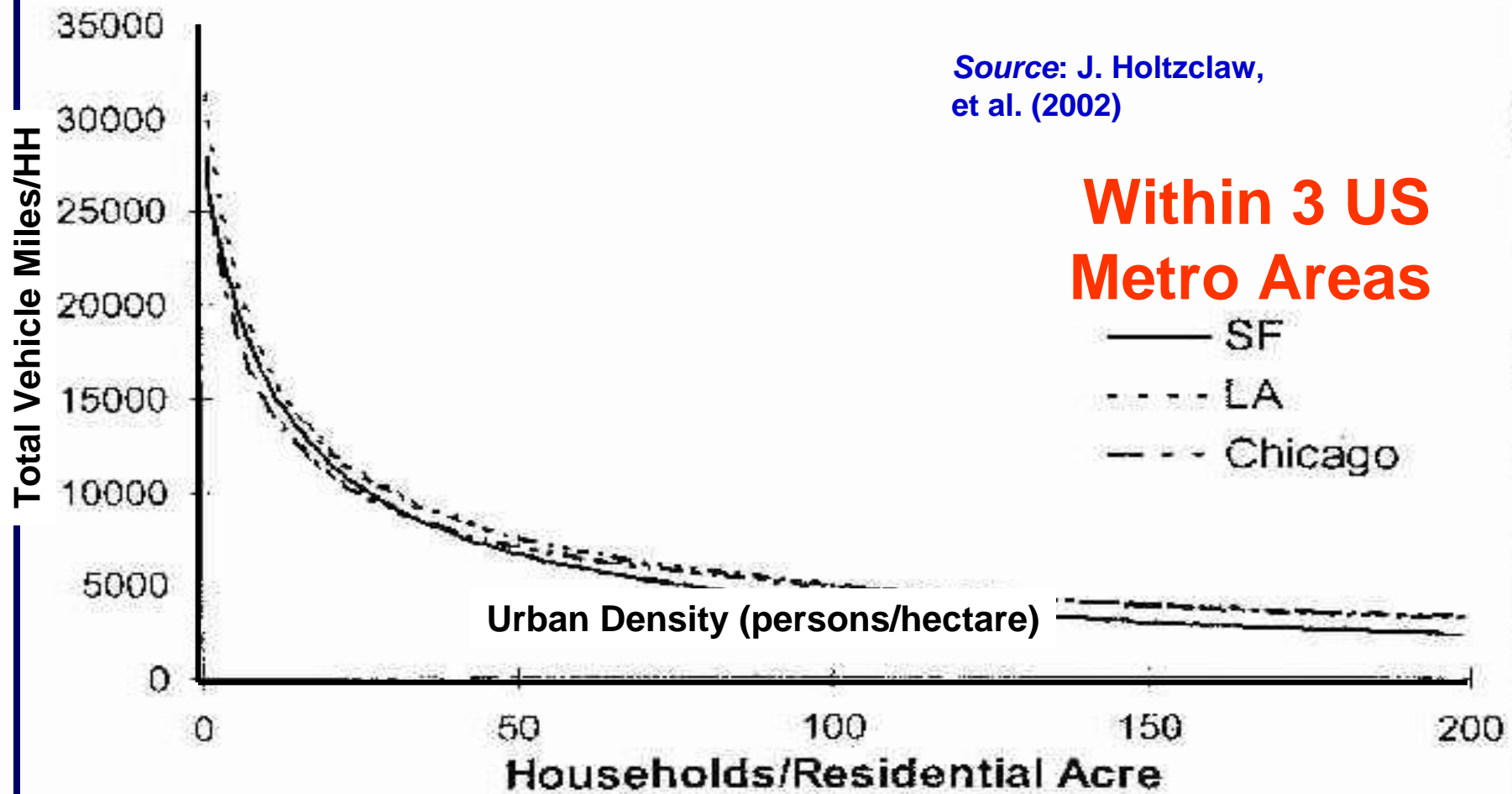


## *Travel Demand*



# Density & VMT/HH

## Driving vs Residential Density



# Corridor Types

Density gradients vary by type of Transit



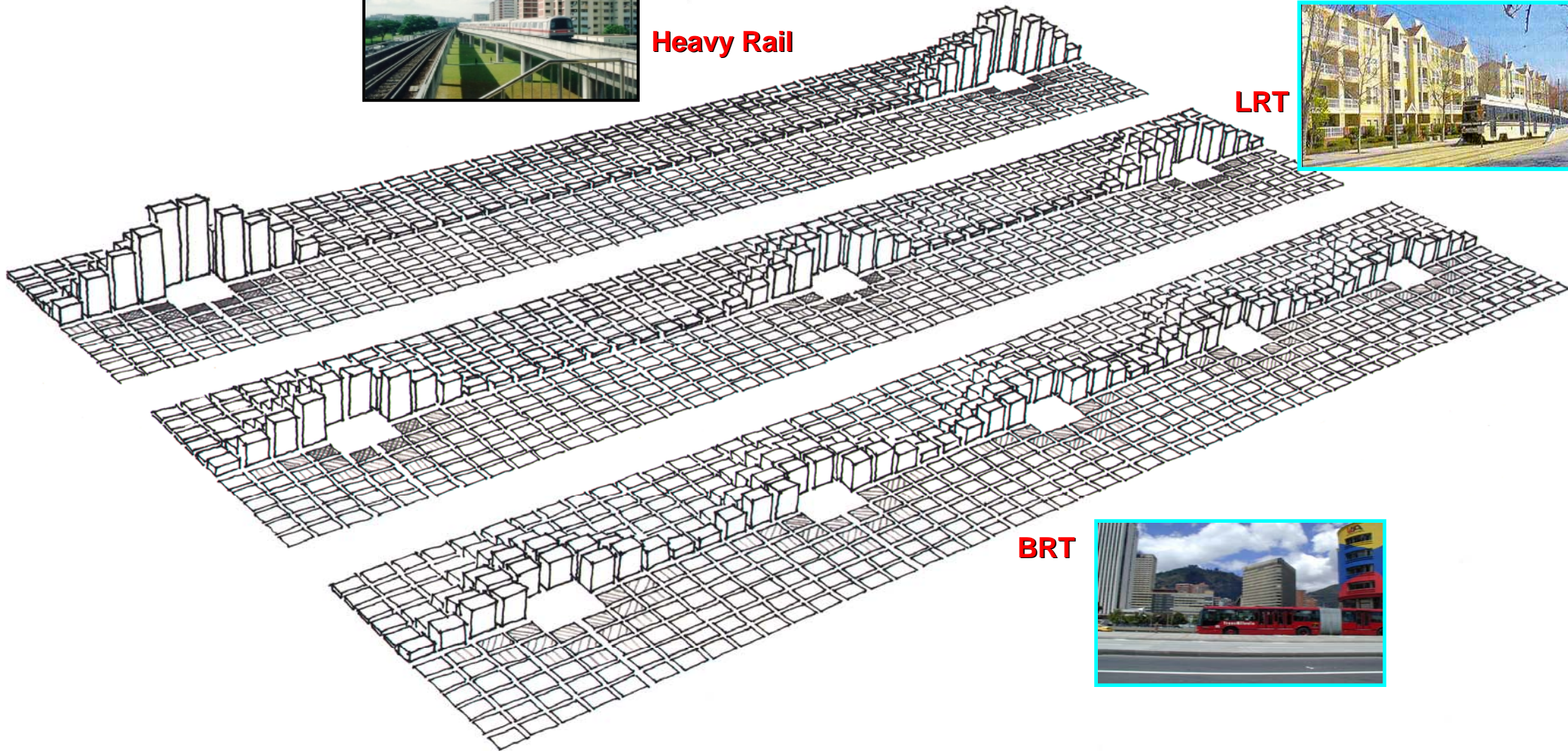
Heavy Rail



LRT



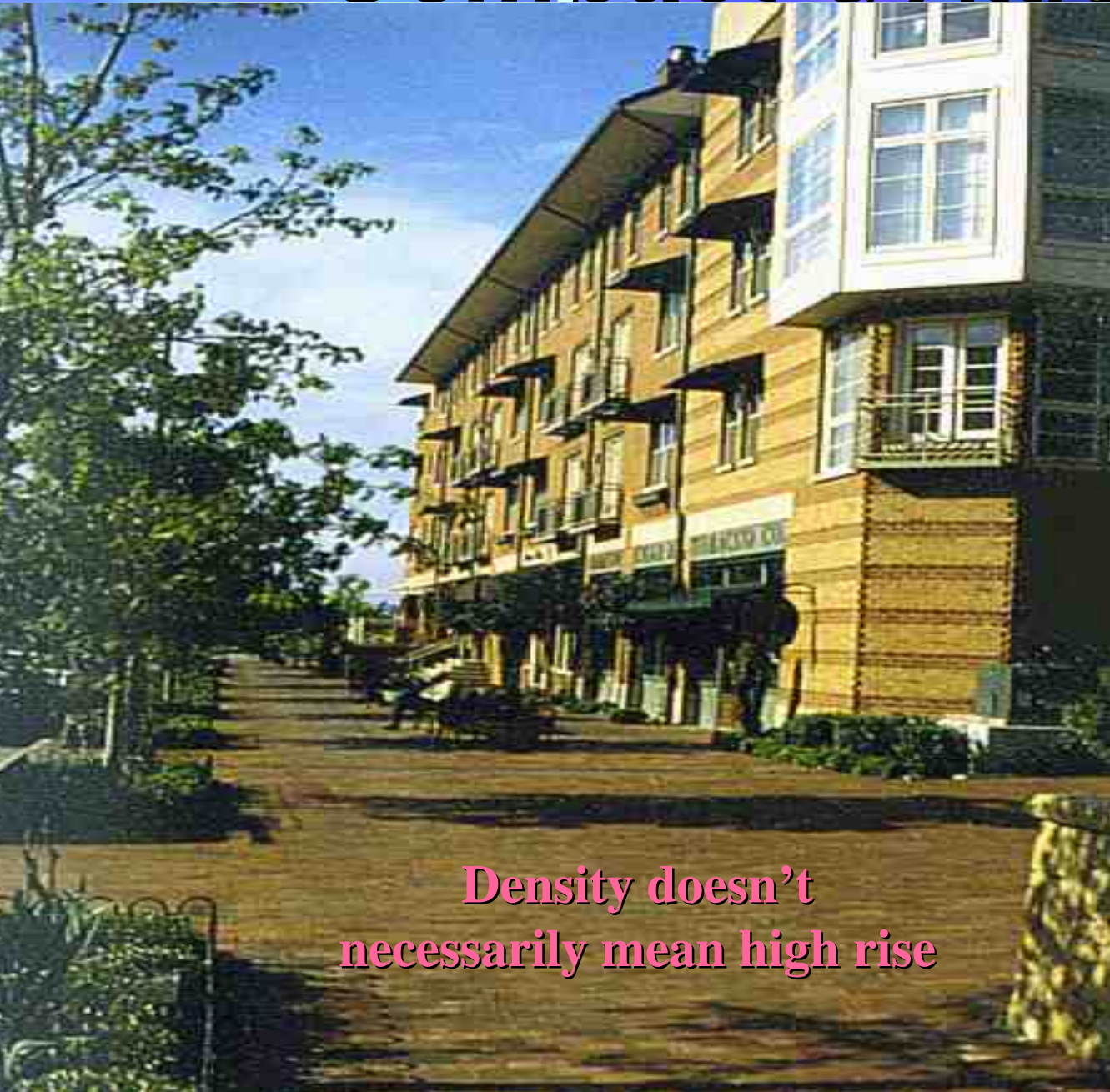
BRT





# ***Compact & Attractive***

**Suburban Dallas**



**Density doesn't  
necessarily mean high rise**



**Addison Circle  
Urban Village**

# DIVERSITY: *Mixing Uses*



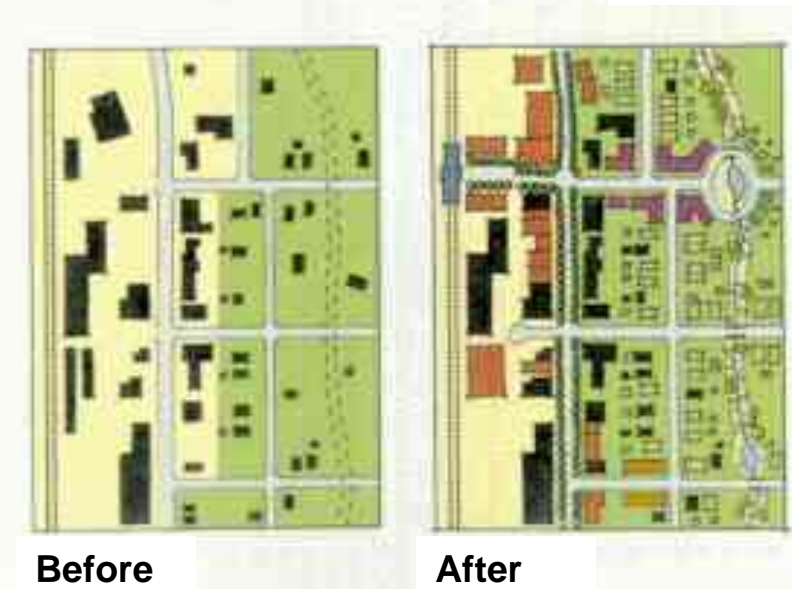
- ***Diversity*** = Greater Choice (uses, housing, work environments, travel)

- ***Inclusiveness/Co-benefiting land uses***

- retail in office complexes ...  
internal capture
- efficient trip-chaining –  
***e.g., child-care near transit***

- ***Supply-side benefits***

- shared parking
- spread demand/reduced infrastructure
- balanced, bi-directional flows



## Community Diversity: Jobs-Housing Balance

# Housing (Yellow) - Jobs (pink)



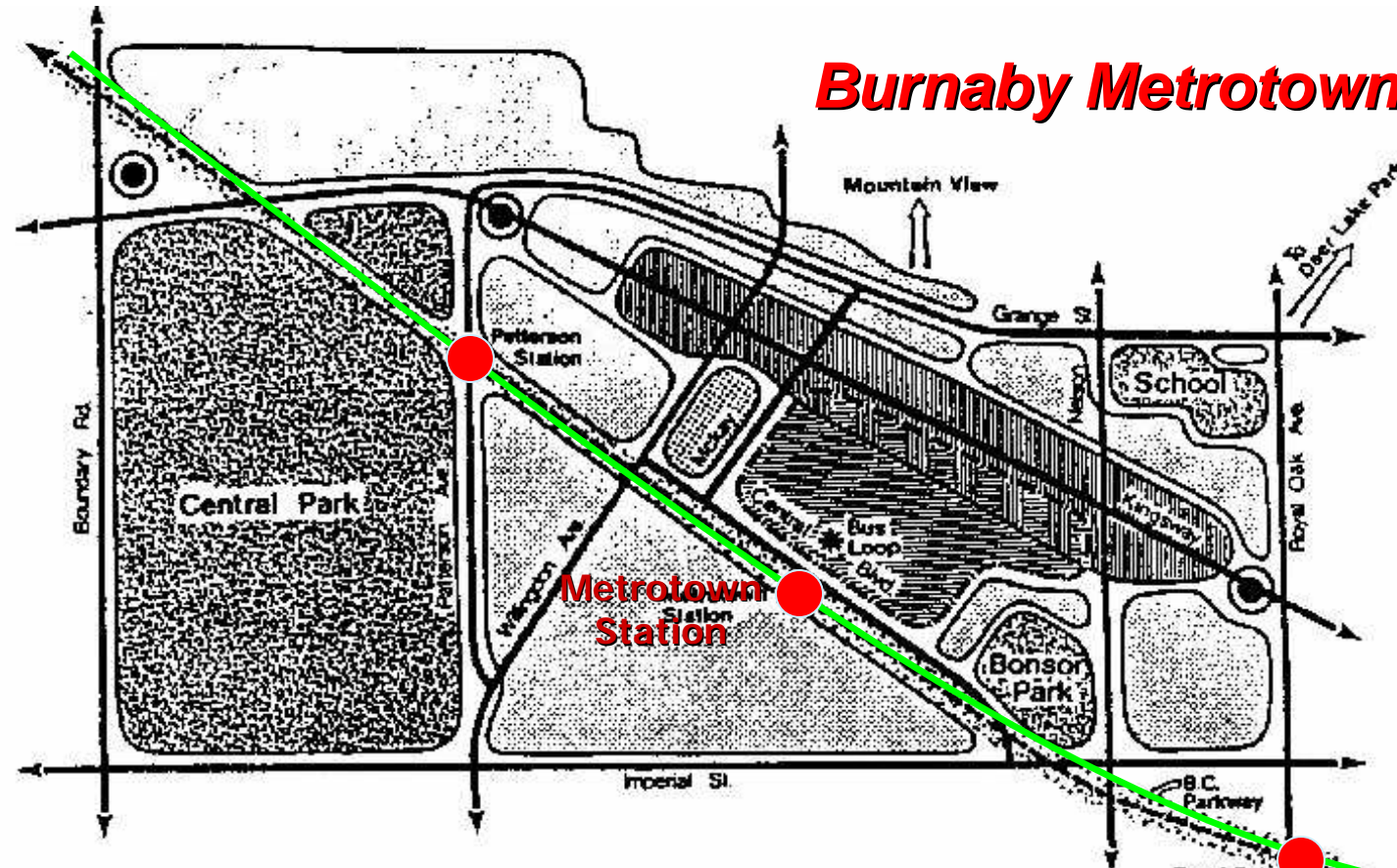
Downtown Vancouver 2004:  
140,000 jobs -- 100,000 residents

# Strategic Plan

- **Transit-First Policies:** 1990-97 – expanded services by 20% vs. cuts in eastern cities
- **Compact “complete” communities**
- **Town Centers:**
  - TDR & density bonuses used to raise densities
  - Off-street parking prohibited
  - Limited commercial building setbacks (ped scale)



## Burnaby Metrotown



### MOE

- *45% of workers take transit, > 3 times regional average*
- *25% of all trips by residents by transit, 2 times regional average*



## DESIGN

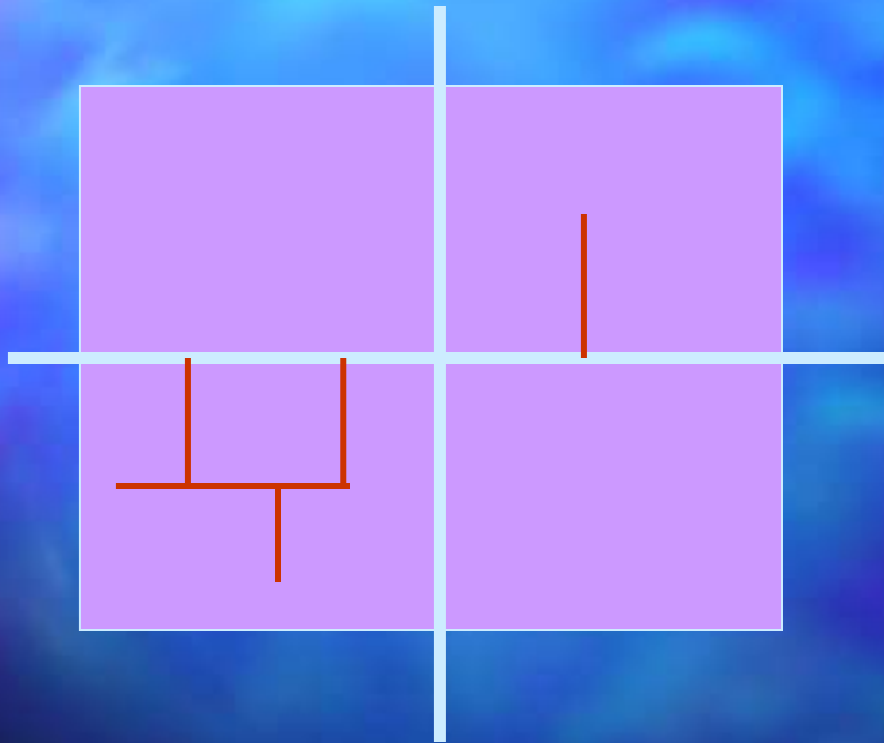
*Place making/Public spaces: memorable*

*“Soften” perceptions of densities*

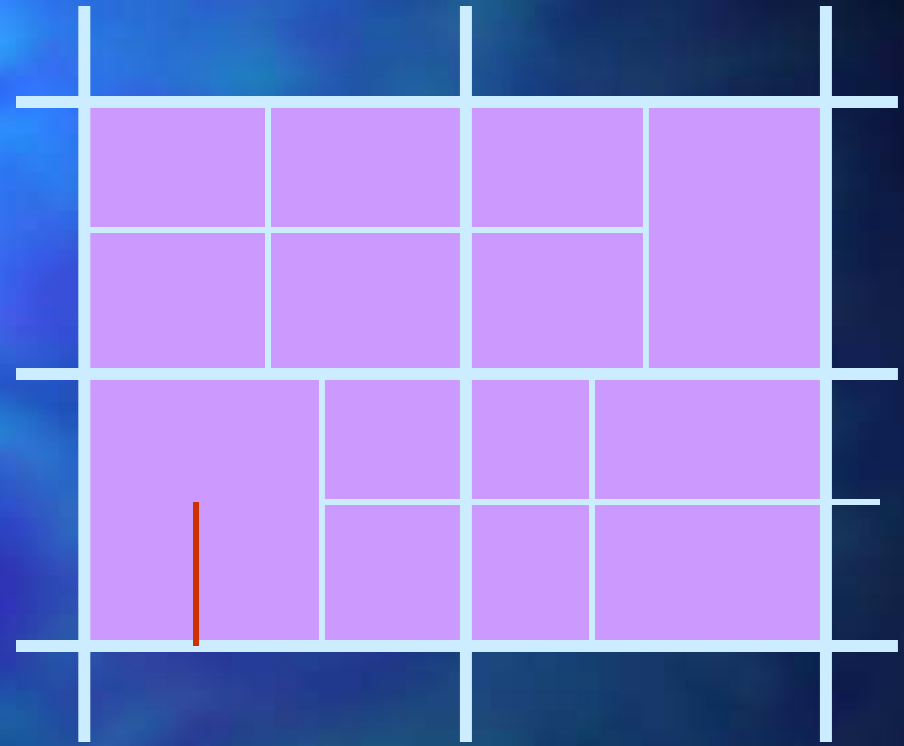
*Enhance walking environment*



# Breaking Up the Superblock



Poor



Good

# Traffic Calming

## Sheltering Neighborhoods from Traffic





# Rail-Served Urban Villages & Travel

3 D's (Density, Diversity, Design):  
U.S. studies show:

- **Urban Villages/TOD:**
  - 20%-40% lower VMT/capita &
  - 30%-40% higher transit capture rates



**Bethesda, Maryland**



**Mission Valley, San Diego**



# TOD

Transit Oriented  
Development  
TCRP H-27

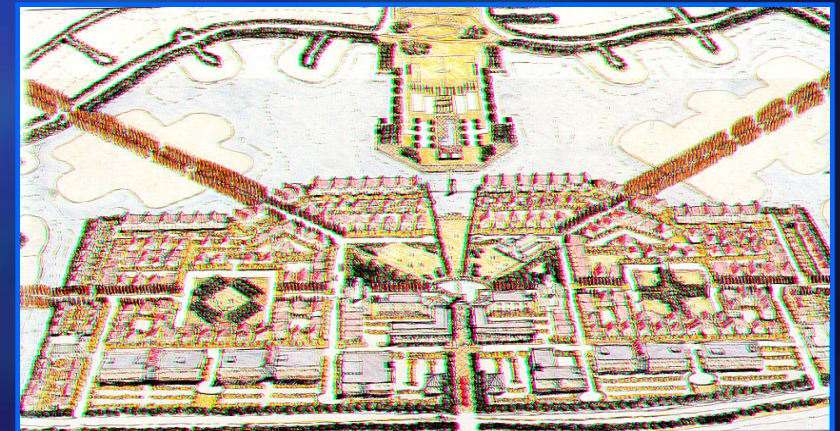


- Compact, mixed-use, walking-friendly settings that promote transit riding
- *Scope:* In US, ~ 100 TODs
- *Modal Make-Up:* Heavy Rail: **37%**; LRT: **31%**; Commuter Rail: **22%**; Bus: **8%**; Ferry: **2%**

AOD



TOD





## PORTLAND

**Orencia Station:  
LRT-Suburbs**



**CBD:  
Streetcar**



**JERSEY CITY  
LRT**

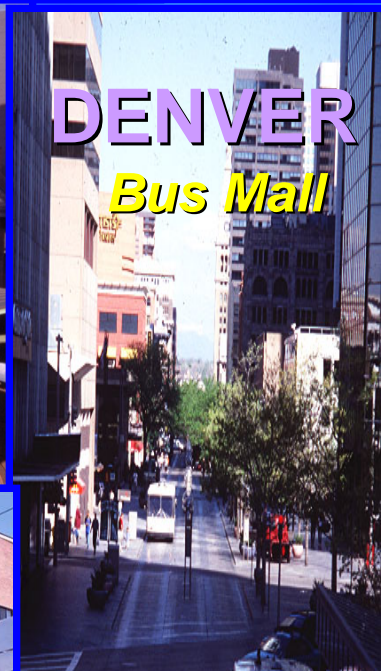


**SAN JOSE  
LRT Transdominia**



## DALLAS

**Mockingbird Station**



**DENVER  
Bus Mall**



**OAKLAND  
Fruitvale BART**



**BETHESDA  
Metrorail Subway**



**Plano Station**



**CHICAGO  
Metra Commuter Rail**

- Most cogent form of smart growth
- Consonant with changing demographics
- Market based: self-selection; results of efficient pricing



Photo Copyright 2001 Eric Haas

**TAD**



**Cisco Campus:  
San Jose**

# *Civic Places: Adaptive Uses*



# Co-habiting Streets

Strasbourg



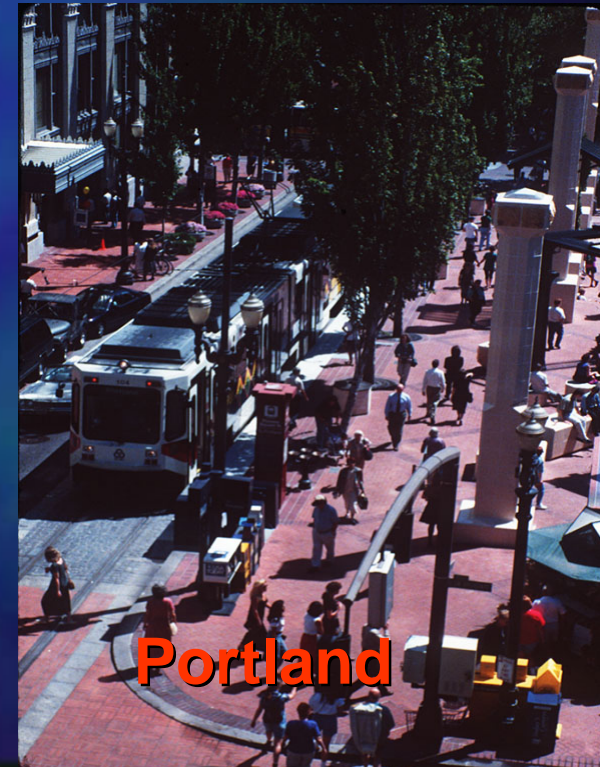
Strasbourg



Melbourne

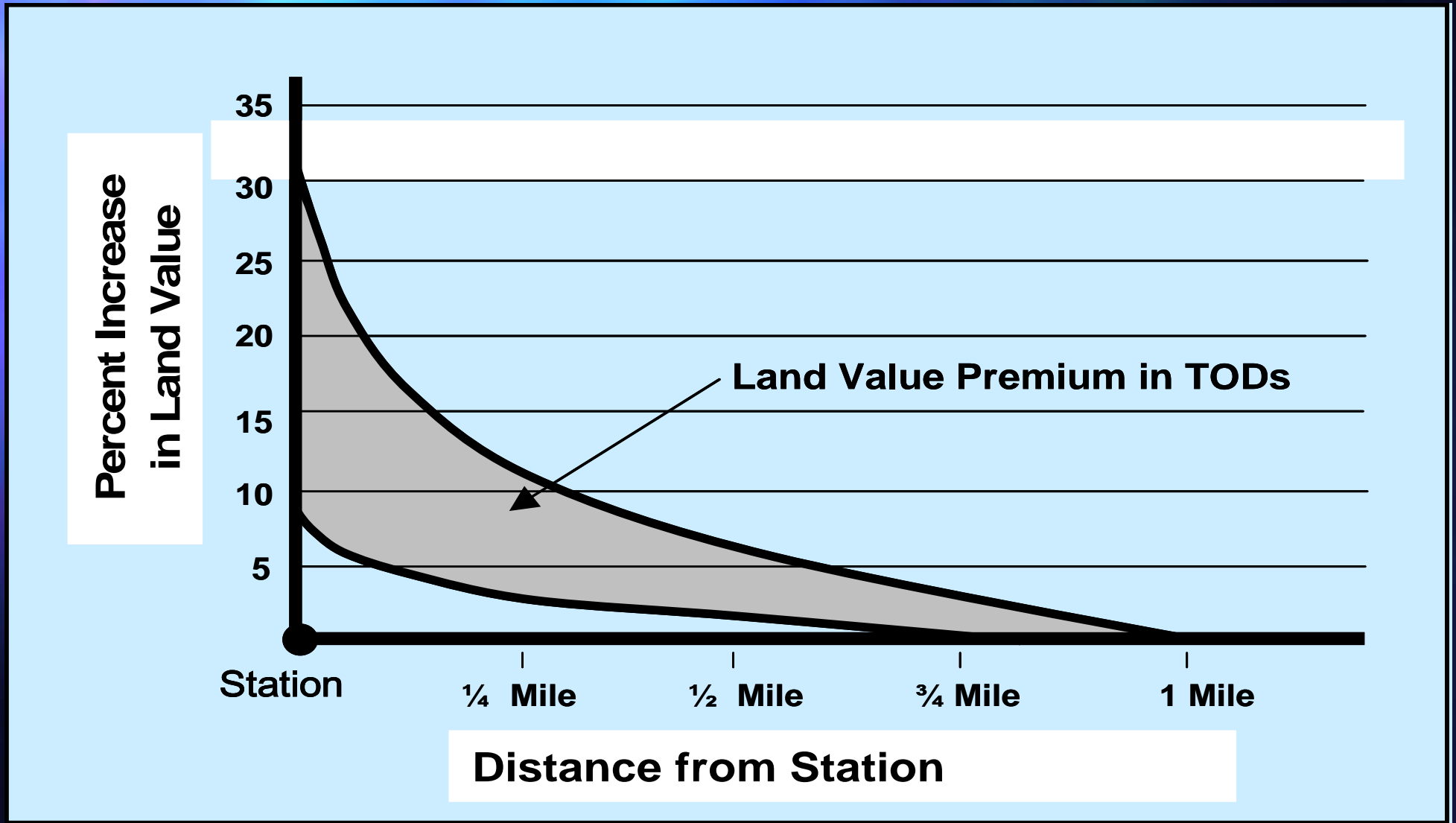


Karlsruhe

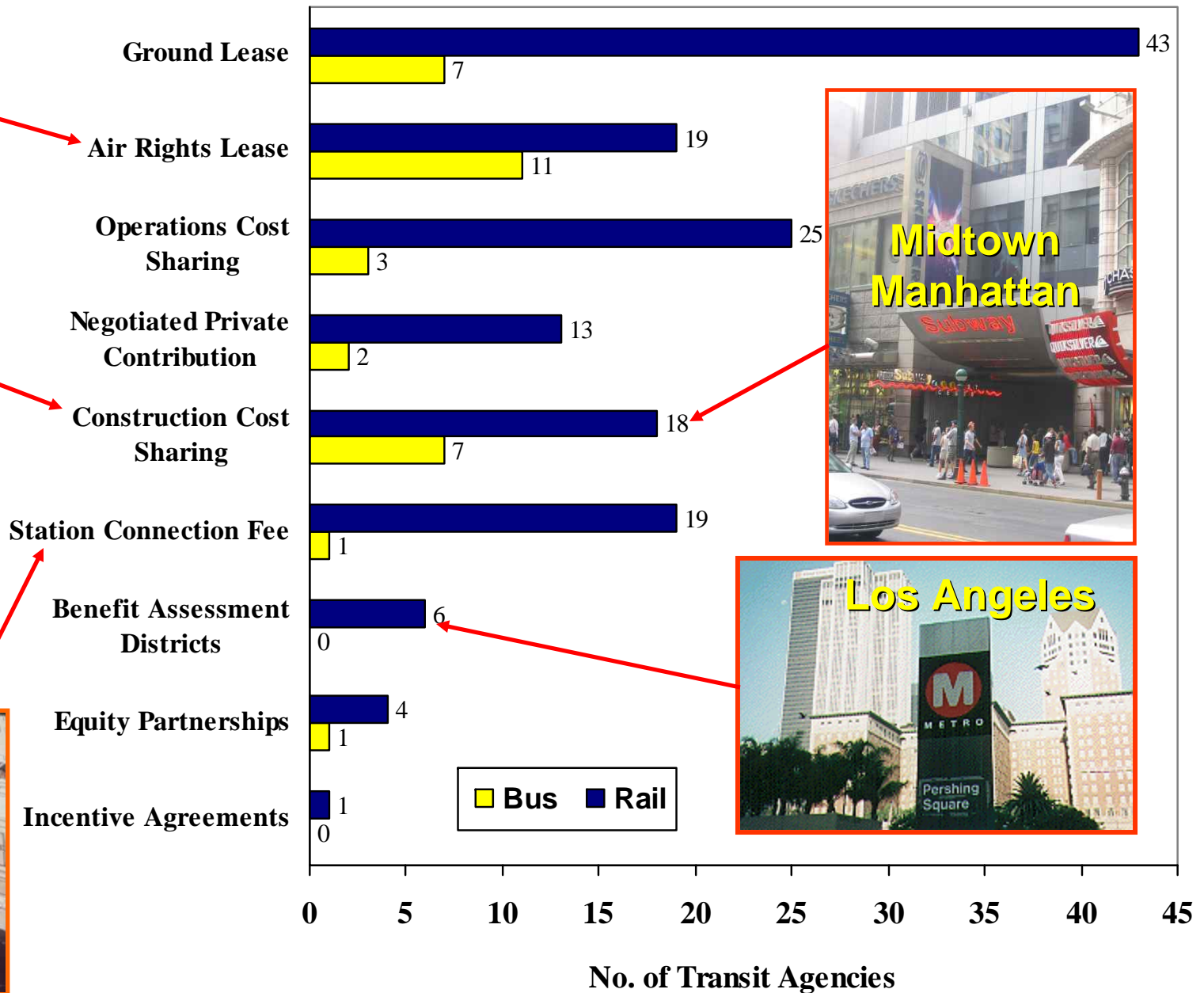
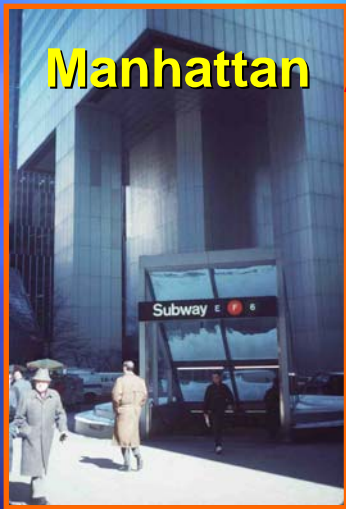
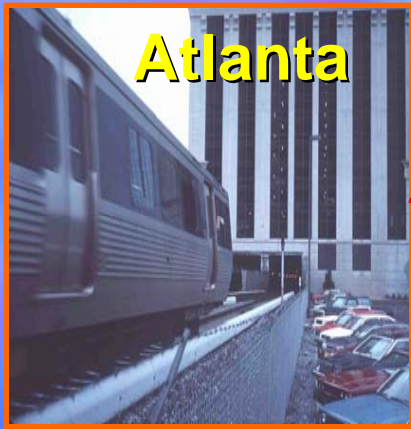


Portland

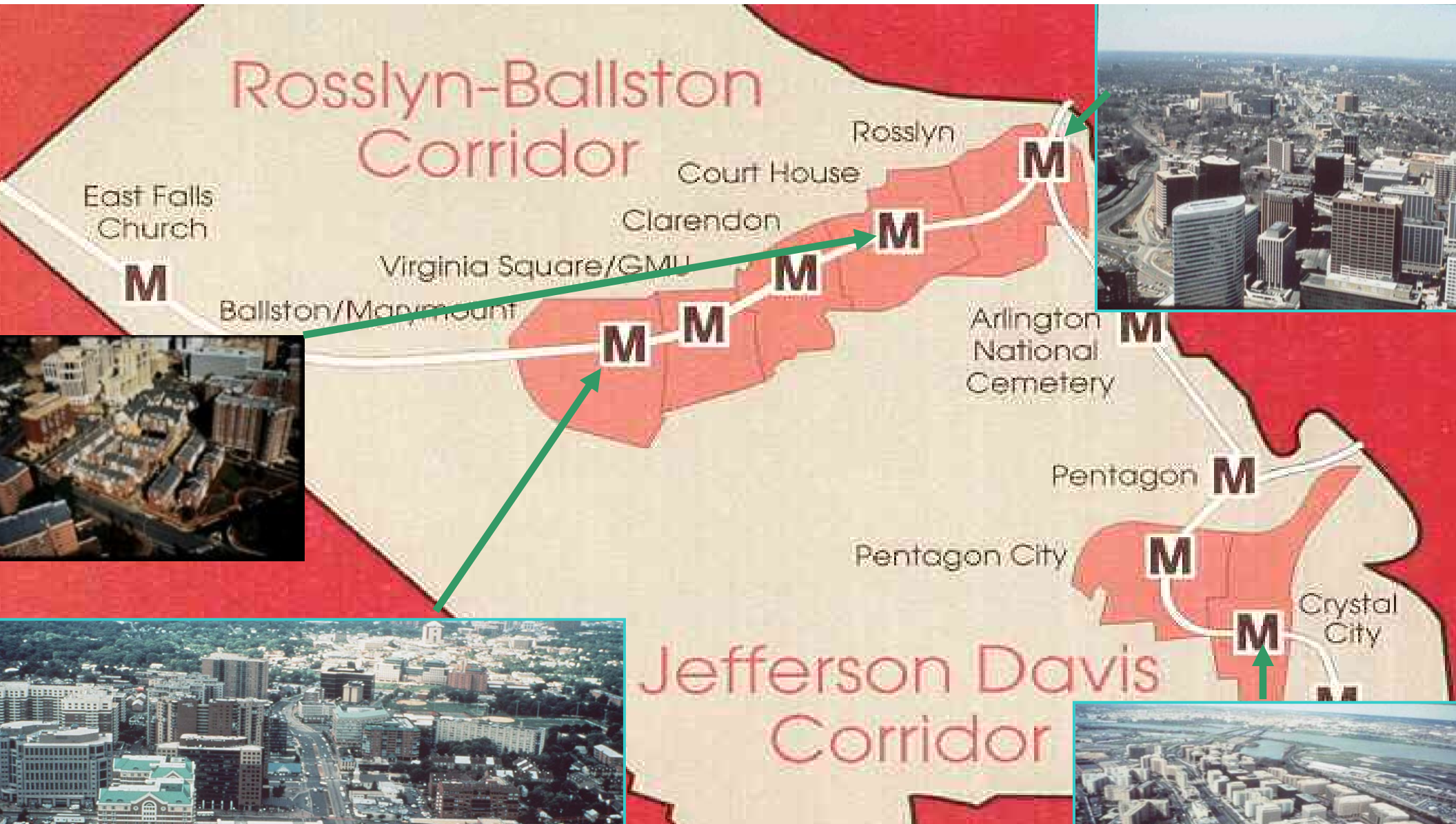
# Benefits of TOD: Land Value Premiums



# U.S. Transit Joint Development Types, 2002



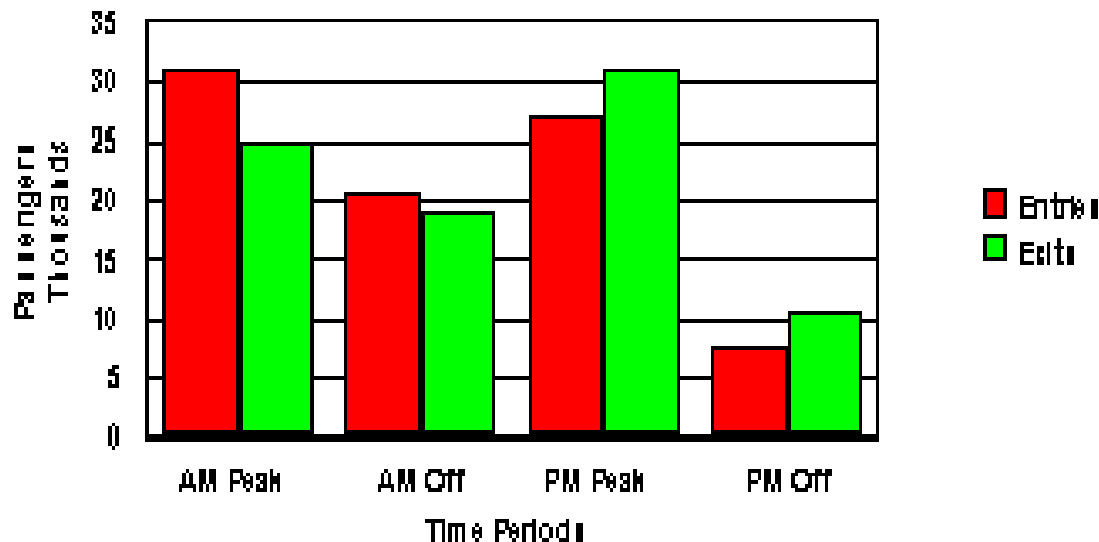




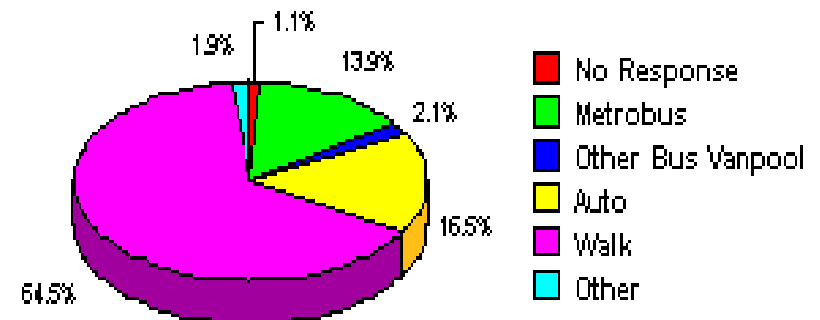
- **1960-2000:** 26,550 housing units added (25% bonus)
- **Corridors:** 52% of County tax base on 11% of land area
- **Density:** Suburban standards would require 7 times area

# The Ridership Payoff

## Arlington Metrorail Stations Ridership by Time Period



## Ballston Metrorail Station Mode of Access and Egress



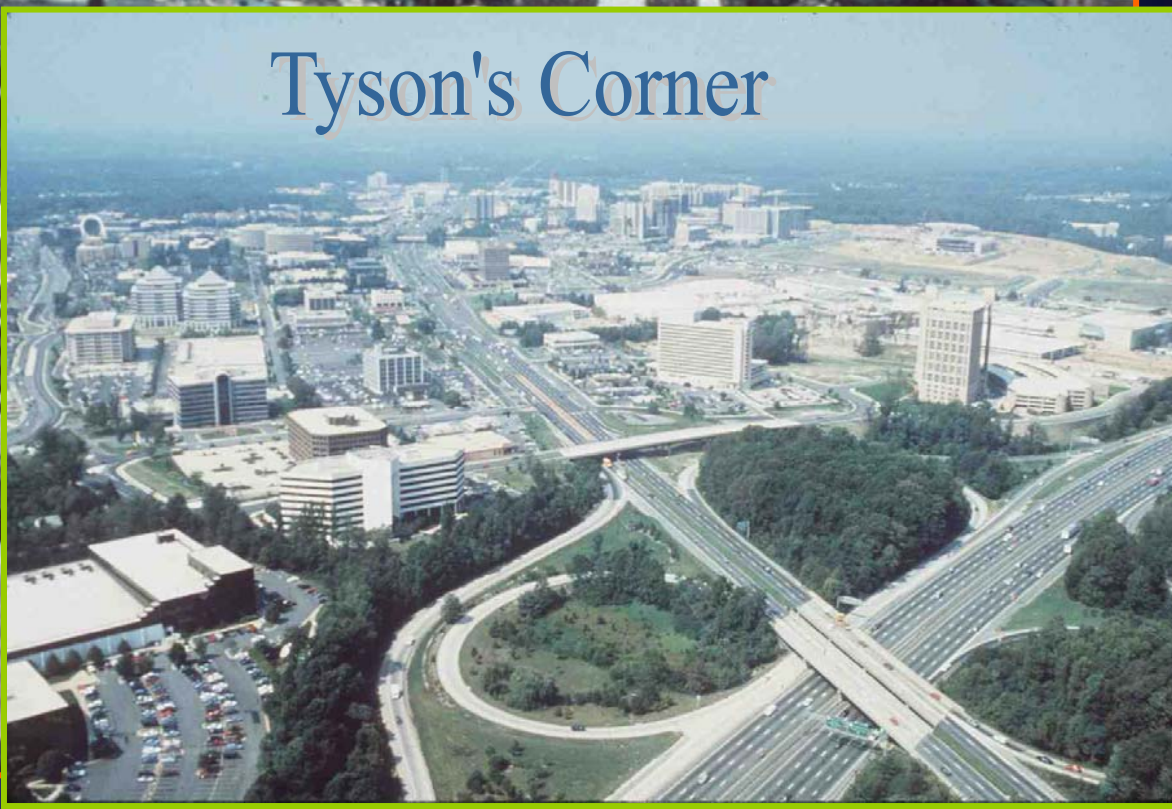
- **Balanced Development = Balanced Flows**
- **39% of residents use transit to commute**
- **~ 2/3 access by “non-motorized transport”**
- **5-miles of bike-lanes on corridor – “Green Connectors”**

**Rail-Served Ballston enjoyed a 19% commercial-office rent premium over Tyson's Corner over a 12-year period**

**Ballston**



**Tyson's Corner**



# White Flint Metro Center: Mega Joint Development Project



Three Adjustments = estimated 45% vehicle trip reduction

- ✓ Mixed-use reduction: 10%-25%
- ✓ Proximity to transit reduction:
  - 40% for apartments
  - 50% office (am peak); 28% office (pm peak)
  - 25% retail
  - 5% cinemas
- ✓ TDM: 10%-23%

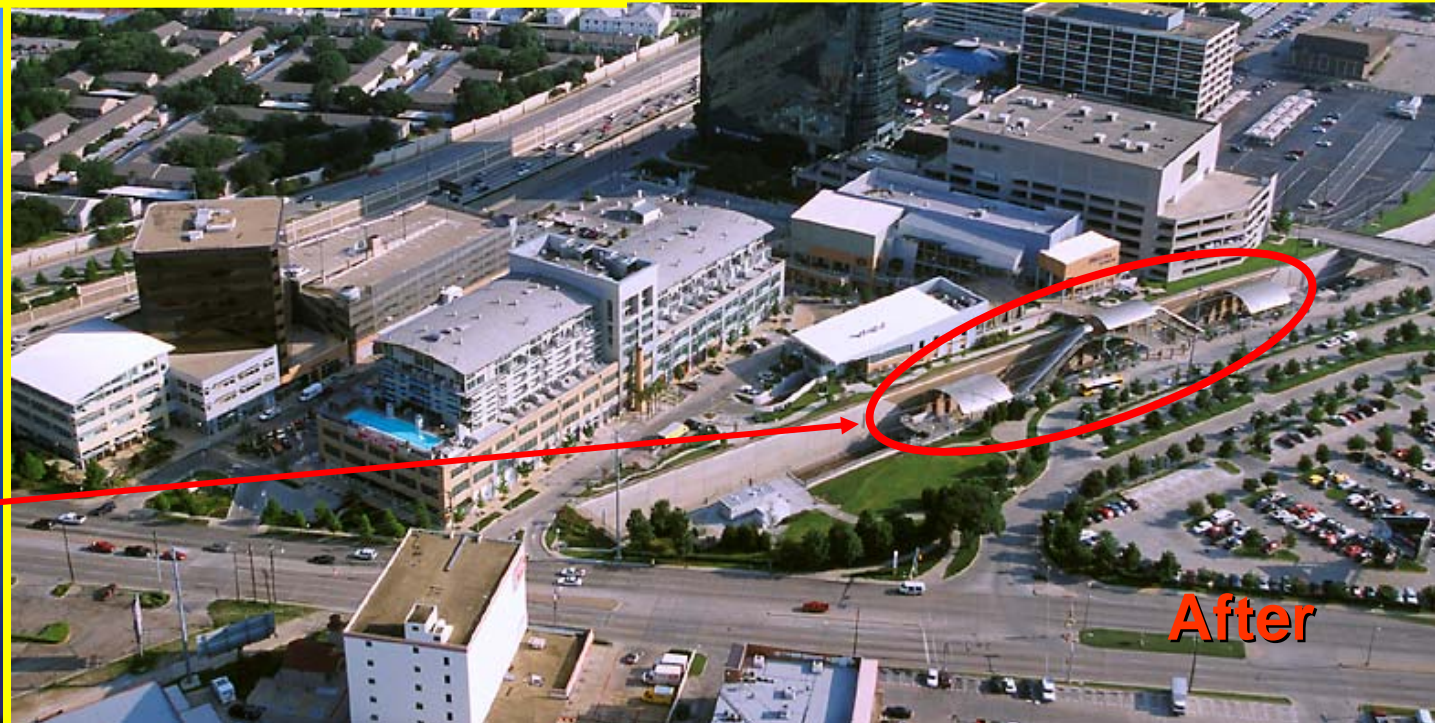
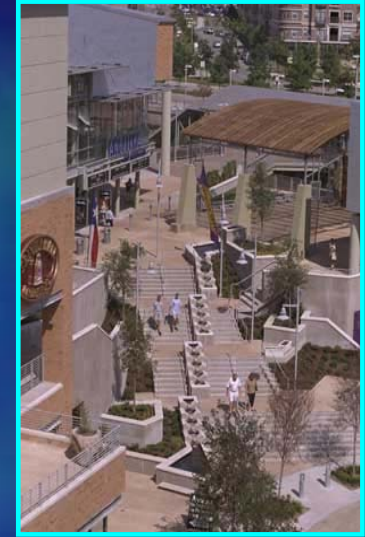
# Duckhorn





**Before**

# Mockingbird Station DALLAS TX



**After**



## *Plano Transit Village*



## ➤ Adaptive Re-Use for Housing

- Industrial Buildings



- Parking Lots

- Convert 500 parking spaces to:

- 195 housing units
- retail plaza
- child-care center
- community rec center

- Leveraged by:

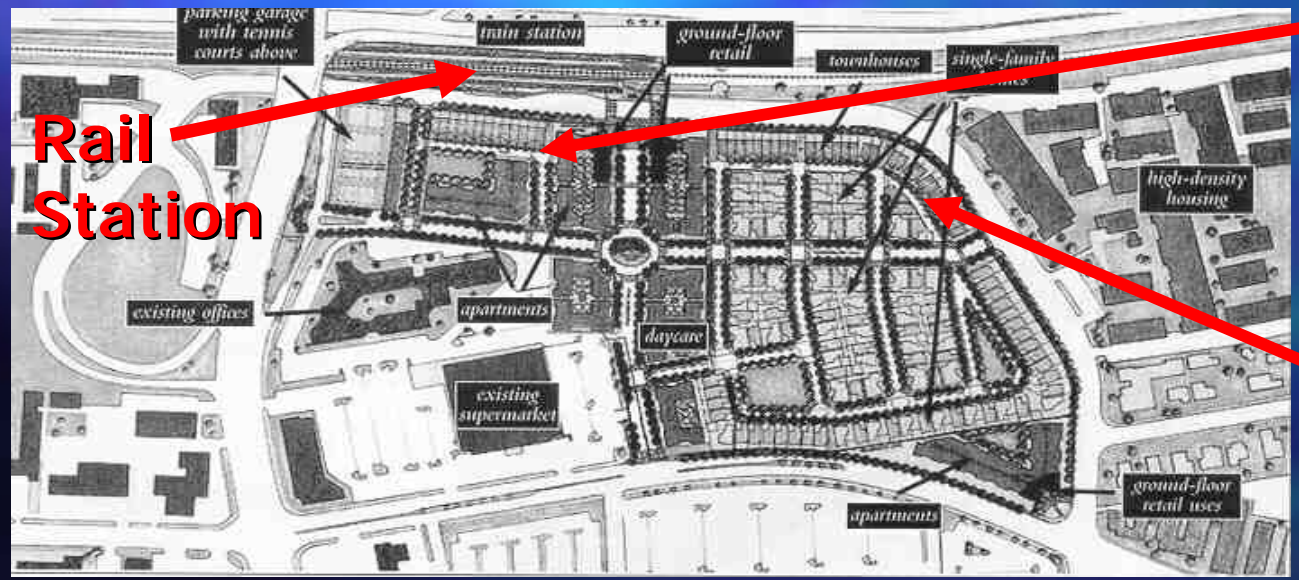
- Tax-exempt bonds
- Tax credits & Grants
- Mixed-Use Zoning





# Transit-Oriented Housing *on a former Shopping Mall Site:*

## *Mountain View, CA*



# ***Variable Development Fees***

**Santa Clara County:**

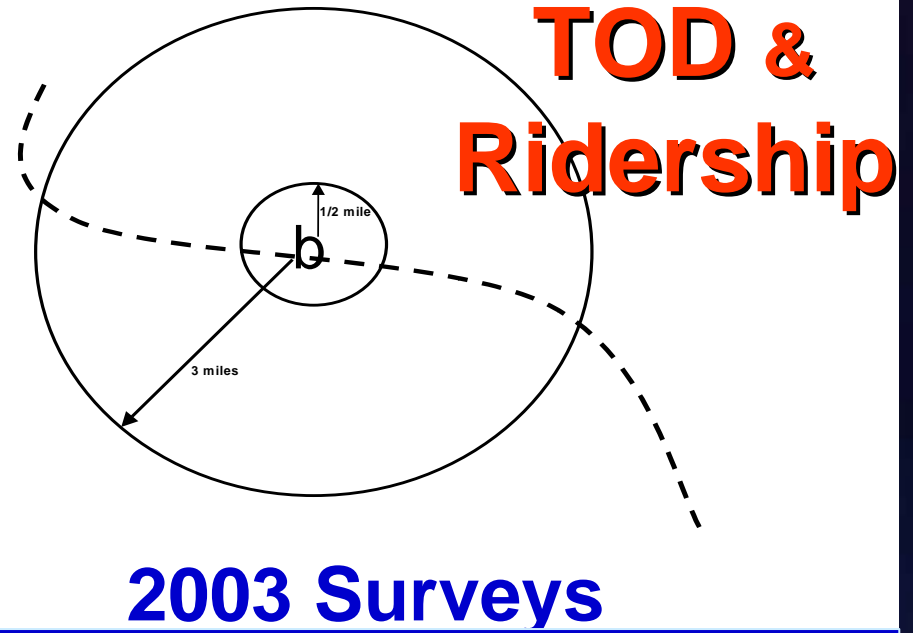
## **Trip Rate Adjustments for Transit-Based Housing**

<b>Trip Reduction Strategy</b>	<b>Maximum Trip Reduction</b>
<b>Mixed-Use Development Project</b>	
<i>with housing and retail components</i>	<i>13.0% off the smaller trip generator<sup>3</sup></i>
<i>with hotel and retail components</i>	<i>10.0% off the smaller trip generator<sup>4</sup></i>
<i>with housing and employment</i>	<i>3% off the smaller trip generator<sup>5</sup></i>
<i>with employment and employee-serving retail</i>	<i>3% off employment component<sup>6</sup></i>
<b>Effective TDM Program<sup>7</sup></b>	
<i>Financial Incentives</i>	<i>up to 5.0%<sup>8</sup></i>
<i>Shuttle Programs<sup>9</sup></i>	
<i>- Project-funded dedicated shuttle</i>	<i>3.0%</i>
<i>- Partially-funded multi-site shuttle</i>	<i>2.0%</i>
<b>Location Within 2,000-Foot Walk of Transit Facility<sup>10</sup></b>	
<i>Housing near LRT or Caltrain Station</i>	<i>9.0%*</i>
<i>Housing near a Major Bus Stop<sup>11</sup></i>	<i>2.0%*</i>
<i>Employment near LRT or Caltrain Station</i>	<i>3.0%*</i>
<i>Employment near a Major Bus Stop<sup>11</sup></i>	<i>2.0%*</i>

# Portland: Human-scale transit; Small parcel infill

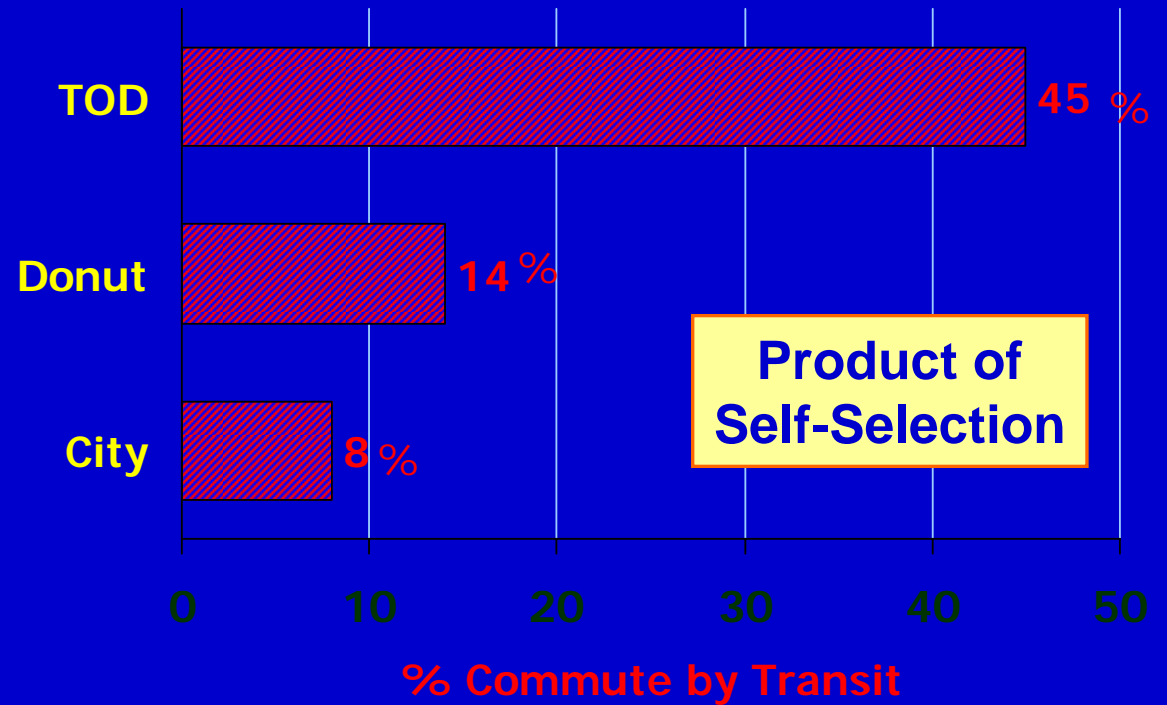
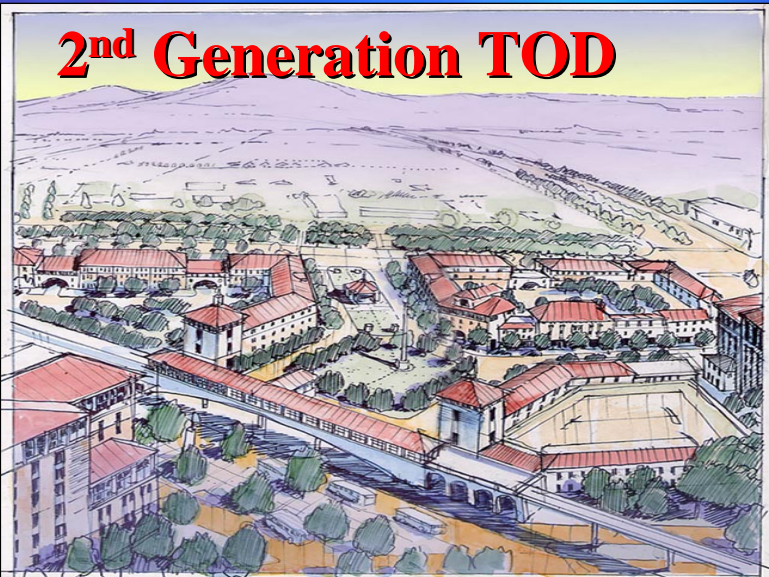


- Downtown Portland: employment up 73% since downtown plan adopted in 1978
- Infill occurring much faster than anticipated (26% residential, 53% retail)

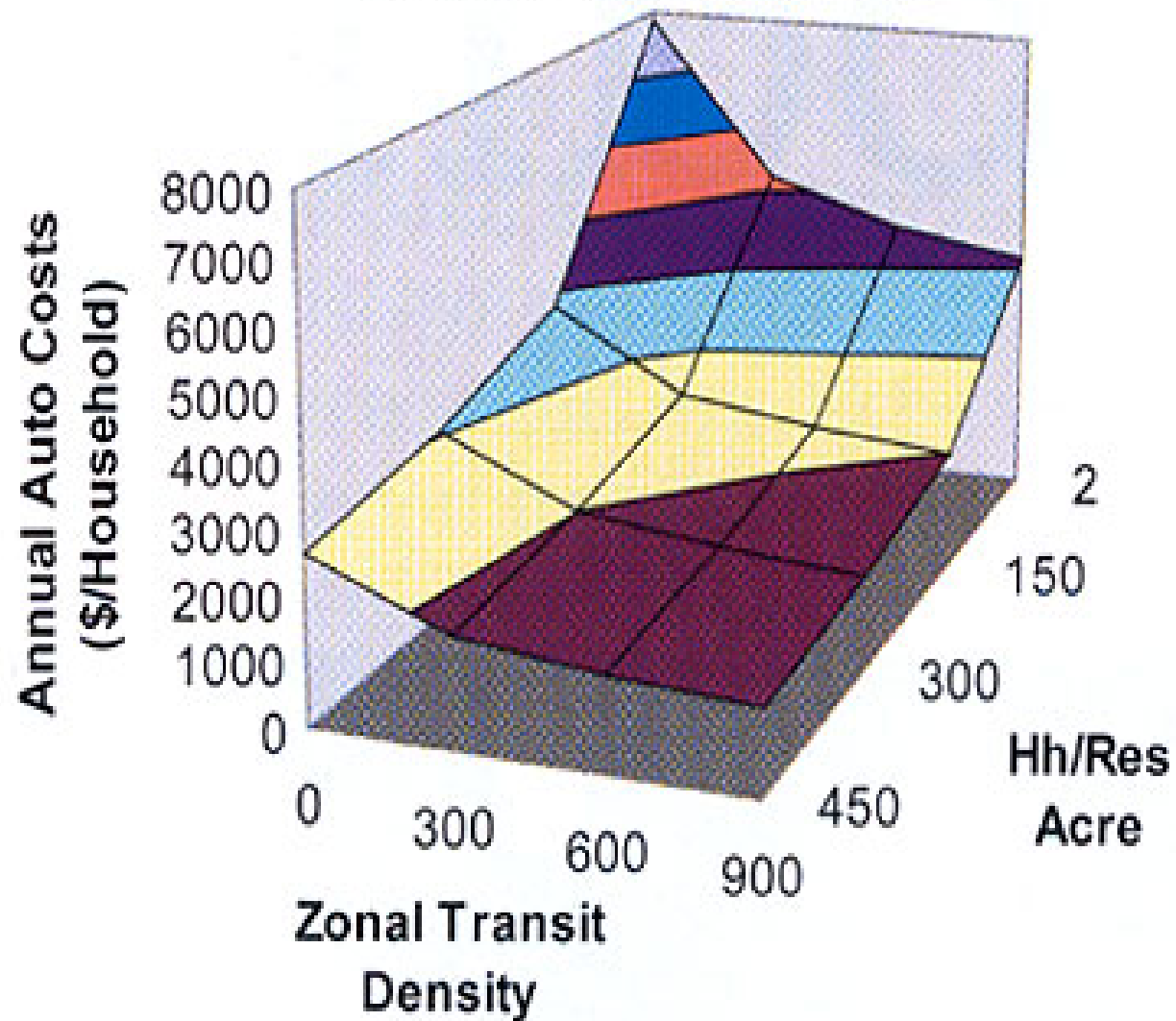


## *Pleasant Hill BART*

### **2<sup>nd</sup> Generation TOD**



## Impacts of Density and Transit on Auto Costs San Francisco Bay Area



## Parking/TOD Connection

- *Parking demands of TOD* – much lower
- *Flex Standards* – allow for fewer cars per DU based on proximity to transit: Bethesda developers receive a “transit credit” reduction up to 35% in required parking for projects near Metrorail

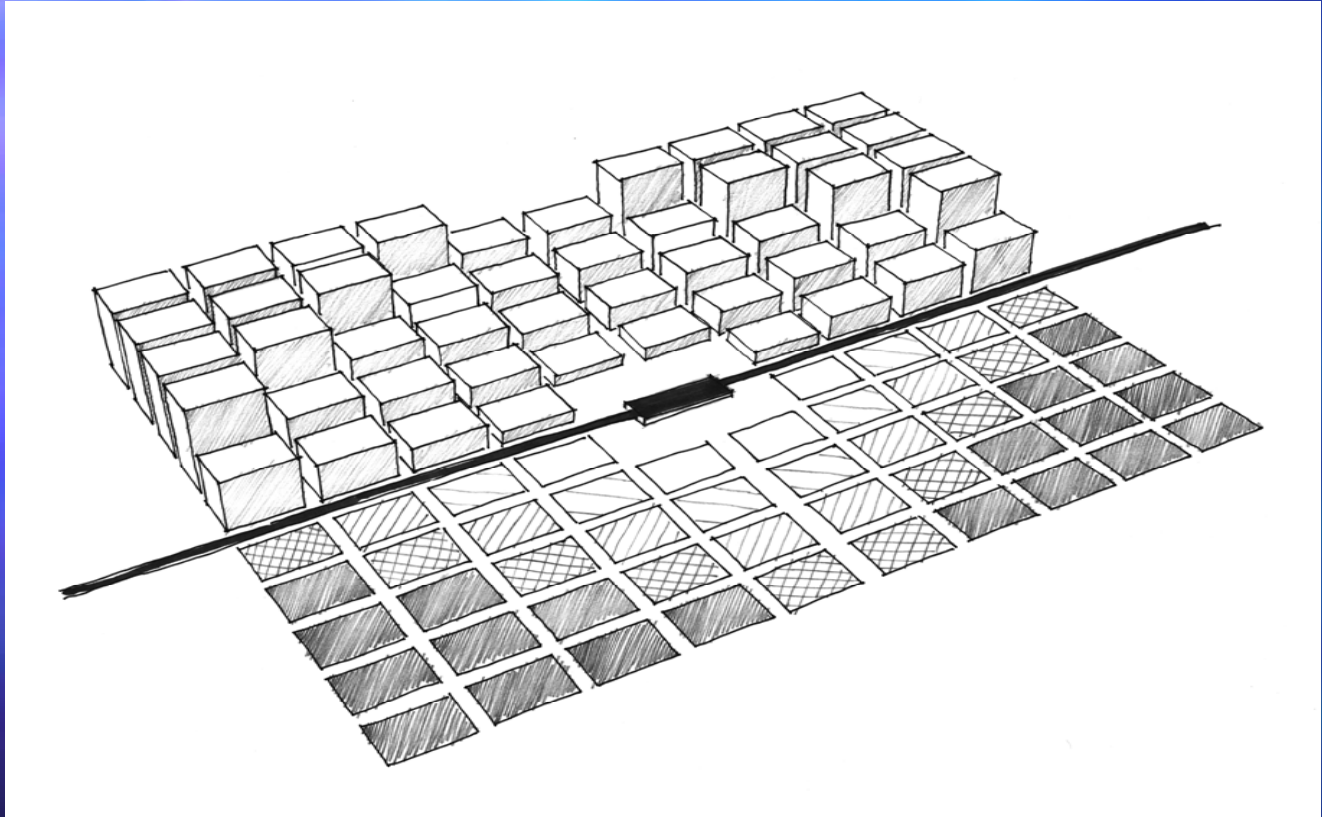
**Market Common,  
Arlington VA:**  
On-street parking  
with nice landscaping;  
penciled out



## *Alma Place*

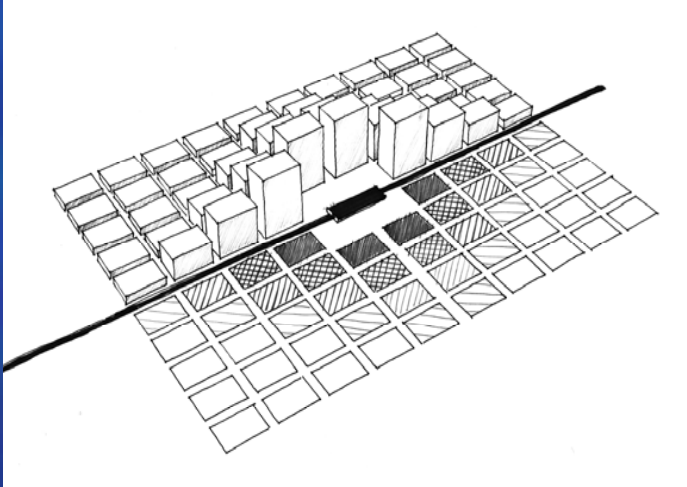
*2 blocks from rail;  
Demand = 1 space  
per 2 DUs*





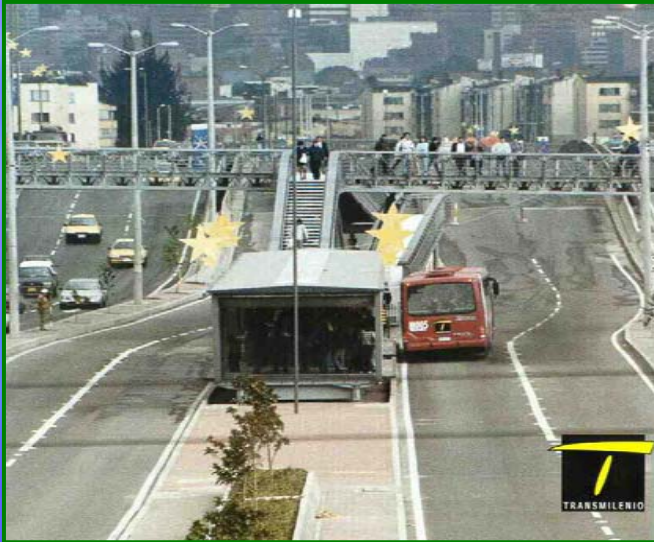
**Parking Density**

- **Parking density should be inversely proportional to the density of other uses.**



**Development Density**

## ➤ Green Connectors:





# Moving Mississauga Forward with Regional Connections

