

# An Economic View of Parking Structures as Land Uses



Richard Willson, Ph.D. FAICP  
Department of Urban and Regional Planning  
California State Polytechnic University, Pomona

# Parking economics is weird economics

## Minimum parking requirements

- Codes distort market-based evaluation of parking supply
- Parking is not a separate economic decision
- Plentiful supply frequently ensures that no market price can be established

## Parking costs are hidden

- Capital cost of parking may not be separately analyzed in pro forma
- Operating costs of parking may be blended
- Lease structures hide costs, which are embedded in rents, prices, lower land values, etc.

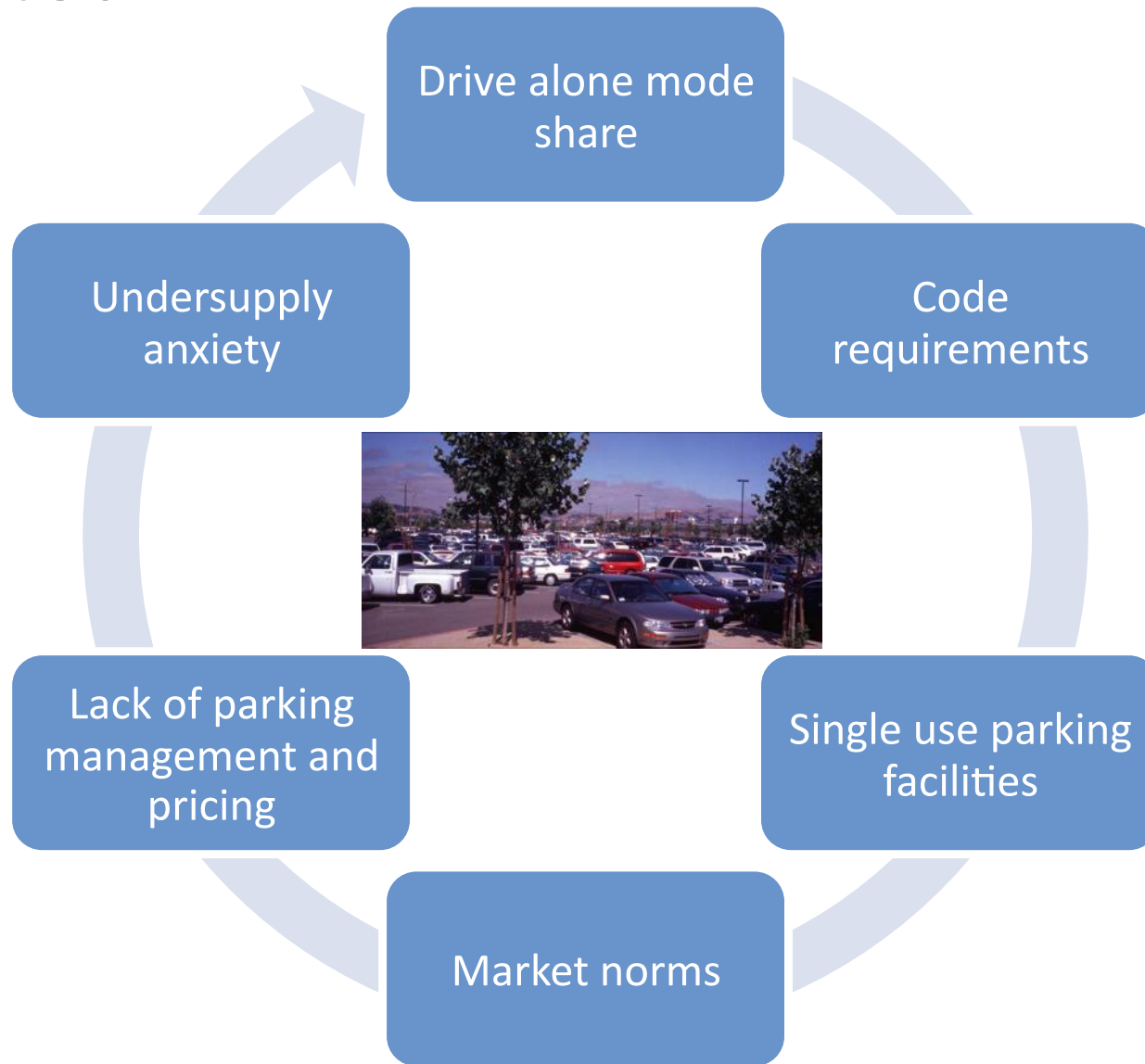
## Indirect effects on land uses

- Density and associated land value
- Project cost and affordability
- Adapting to tight sites

## Parker behavior

- Space search behavior
- Space preferences
- Alternative perceptions of costs

# Why parking economics are distorted....







Imagery Date: Nov 16, 2009

34°04'16.34" N 117°33'35.20" W elev 0 m

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Eye alt 2.75 km

# Benefits of parking structures

## Land use efficiency

- Surface spaces ~ 350 sf per space
- Parking deck ~ 175 sf per spaces
- 4 story structure ~ 87 sf per space

## Shared parking

- Reduce walking distance from parking to destination
- Strategic locations for sharing
- Scale justifies active parking management

## Design integration

- Ground floor retail and wraps; façade treatments
- Use of roofs for energy production, sides for urban agriculture
- Less runoff, urban heat island effects than surface parking

## Enabling density

- Structures allow higher project density, increasing ROI
- Preserve land for open space, bio swales, etc.



# Problems with parking structures...

## Cost

- \$12,000 – \$41,000 + per space, rising as enhancements added
- *Net* space added metric
- Operating costs

## Monolithic land use

- Bulky single use structures (usually)
- More land area used per access even than other modes
- Impacts on streetscape, pedestrian and bicycle safety

## Modal bias

- Prioritizes vehicle access over other kinds of access
- Expense of structures may exhaust access resources
- Fewer requirements for other access modes

## Use efficiency

- The “empty top deck” syndrome
- Complex space search



# Cost issues

## Capital

- Land
- Structure
- Impact of layout on efficiency

## Operating

- Utilities
- Maintenance
- Labor

## Opportunity cost of land use foregone

- Tax revenues from other land uses
- Local employment foregone
- Synergistic effects



# Wilbur Smith/MTC capital cost analysis

Parking type	Spaces	Construction cost per space	Construction cost per space w/ land @ \$500,000	Construction cost per space w/ land @ \$2,500,000
Surface	125	\$7,000	\$9,000	\$25,000
Deck	250	\$13,000	\$14,000	\$22,000
4 levels above ground	500	\$24,400	\$24,900	\$28,900
3 levels underground	375	\$38,500	\$39,883	\$45,167

# Wilbur Smith conclusions

When are structures justified by land costs?

- Single level decks @ \$2 million per acre
- Structures @ \$5 million per acre
- Underground @ \$10 million per acre

What are the net annualized costs per year?

- \$205 - \$1,934 @ \$500,000 per acre
- \$858 - \$2,262 @ \$2.5 million per acre

Transportation opportunity costs

- Transit enhancements
- Bicycle improvements and programs
- Pedestrian improvements and programs

# Alternative pricing notions

## Operating costs

- Where market price is zero
- Good first step, easy to explain
- Fairness to non drivers

## Annualized capital cost + operating cost

- Where site costs are not born by parking developer
- Magnitude surprising to many stakeholders

## Annualized capital cost (w/ land cost) + operating cost

- The price if a parking structure was to “pencil” on its own

## Market price

- Driven by supply and demand conditions
- Distorted by minimum requirements, which artificially inflate supply, zero in many suburban locations

# Case study: parking versus TOD in BART system

1:1 replacement of surface parking when TOD developed

- Few projects penciled out
- Low ground lease revenue to BART

Conceptual blocks

- Developer “owes” parking rather than access
- No tool to assess replacement parking

Analytic tool

- Revenues – fares, parking, ground rent
- Costs – parking, train, other access
- Other goals – context, other BART goals





# MacArthur case study

Willson, R. and V. Menotti (2007) "Commuter Parking Versus Transit-Oriented Development: Evaluation Methodology." (2007) *Transportation Research Record: Journal of the Transportation Research Board*, No. 2021. (pp. 118-125)

## Context

- 0.1 spaces per rider
- 51% non-auto access
- 9,500 people w/in ½ mile; 5,600 jobs
- Parking free and 100% occupied

## Scenarios

- Medium density TOD, status quo parking
- Medium density TOD, 50% replacement, \$1 per day (half of spaces)
- Higher density TOD, 50% replacement, \$3 per day charge (all spaces), bus access improvements

# Evaluation of MacArthur Alternatives

Scenario	Medium density TOD, status quo parking	Same TOD, 50% replacement, \$1/day for ½ spaces	Higher density, 50% replacement, \$3/day, + bus access
Net boardings (daily)	+962	+638	+1,411
Net revenues (annual)	\$495,910	\$763,000	\$1,316,791
Net costs (annual)	\$111,301	-\$50,522	\$229,478

# Many places have enough parking for the next 25 years, *right now*

“We will build no parking before its time”

- Parking construction as the exception rather than the norm

Parking *structures* when:

shared, priced, and support densification, economic development, and good design

Compare parking structure costs with market for other access modes and their cost...



