



Right Sizing Parking for Sustainable Suburbs

Greg Newmark | Center for Neighborhood Technology
Makeover Montgomery II | May 9, 2014



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WHAT'S THE PROBLEM?

- Smart Growth requires density and continuity
- Suburban parking policies undermine those goals



MULTI-UNIT RENTAL

- Gives more housing options to residents
- Increases diversity, economic activity, land intensity
- Advances affordable housing objectives



STAKEHOLDER CONCERNS

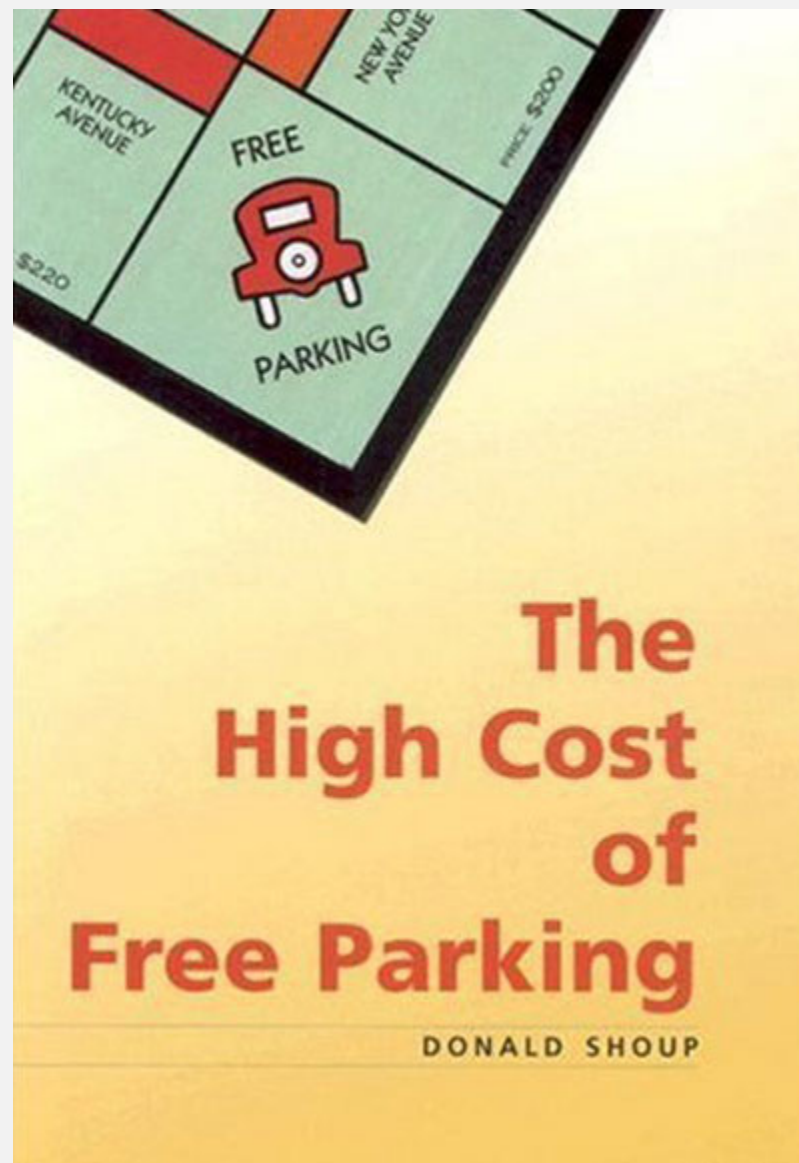
- Developers want to minimize off-street parking
- Neighbors want to minimize parking spillovers
- Planners want to adjudicate this tension



**Off-Street Parking
Requirements**

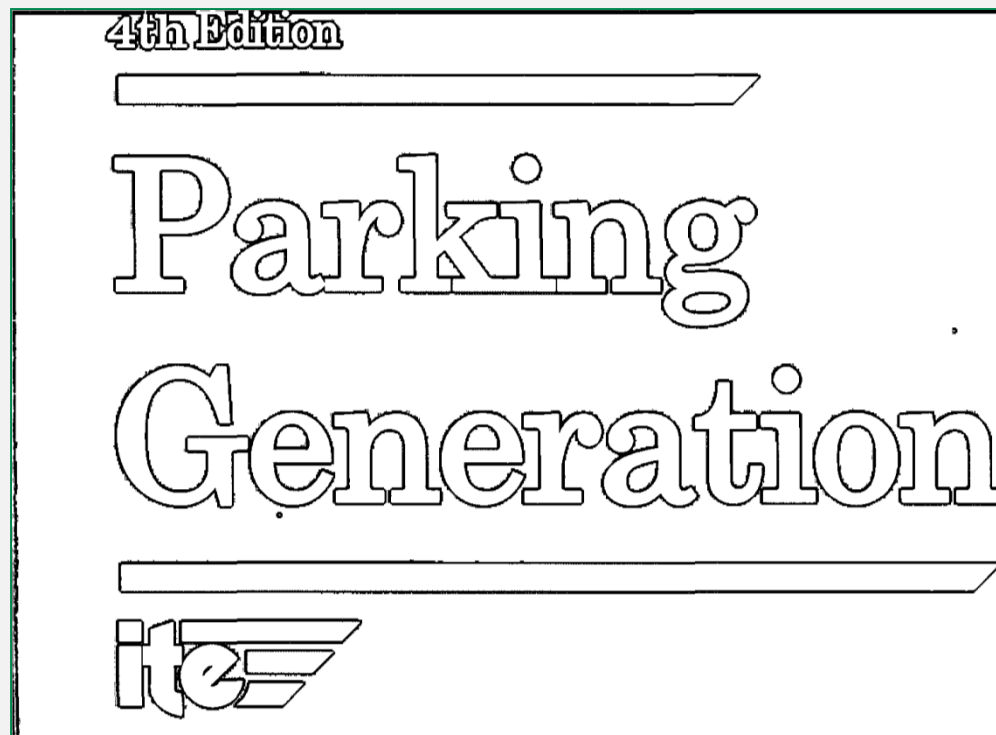
PARKING MINIMUMS

- Add construction cost
- Reduce density
- Reduce value
- When minimums result in excess parking supply



SHIFT IN THINKING

- FROM: Parking minimums are inherently bad
- TO: Our ability to predict parking demand is bad



ITE GUIDE

- 7 Buildings
- 2 Cities
- 3 Years

Study Sites/Years

Chicago, IL (1969); Chicago, IL (1978); San Diego, CA (1996)

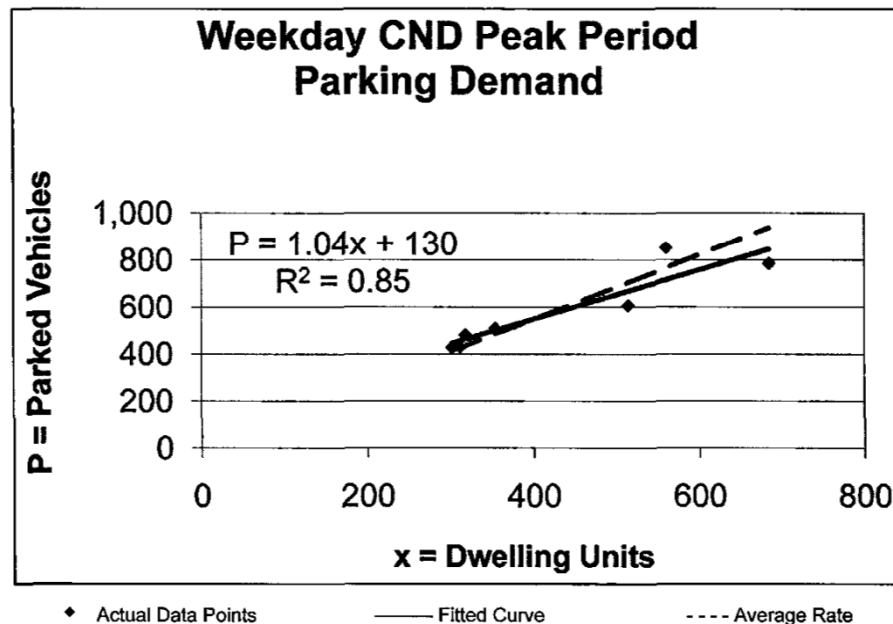
- No Suburban
- 1 Predictor



Land Use: 222 High-Rise Apartment

Average Peak Period Parking Demand vs. Dwelling Units
On a: Weekday
Location: Central City, Not Downtown

Statistic	Peak-Period Demand
Peak Period	12:00–5:00 a.m.
Number of Study Sites	7
Average Size of Study Sites	435 dwelling units
Average Peak Period Parking Demand	1.37 vehicles per dwelling unit
Standard Deviation	0.15
Coefficient of Variation	11%
Range	1.15–1.52 vehicles per dwelling unit
85th Percentile	1.52 vehicles per dwelling unit
33rd Percentile	1.38 vehicles per dwelling unit



KING COUNTY RIGHT SIZE PARKING PROJECT

- King County, FHWA, ULI, WSDOT, CNT



Tools to balance supply.

RESEARCH OBJECTIVES

- Develop a robust data base on parking demand
- Collect data for possible predictor variables
- Estimate regression model
- Develop a website tool for stakeholders

Map-based →

Parcel-level estimates →

Customized scenario-building →

Impact of unbundling rent and parking price →

Scenario	Number of Units	Monthly Rent	Monthly Parking	Total Monthly Revenue
Bundled Parking + \$0/0	150	\$1,319	\$0	\$1,319
Unbundled Parking + \$20/0	150	\$1,140	\$1,297	\$2,437



DATA SET: RENTAL UNITS

218 surveyed facilities

- 32,760 rental units
- 10 to 735 rental units per facility (118 median)
- 37% of the facilities had low income units
- 3% had senior units
- 95% occupancy rate

Unit breakdown

- 13% studio apartments
- 43% one-bedroom apartments
- 38% two-bedroom apartments
- 6% three-bedroom apartments

DATA SET: PARKING SPOTS

All spots designated for building residents

- On-site and off-street
- Reserved on-street spots
- Off-street, off-site satellite locations

Parking availability

- 4 to 939 parking spots per facility
- 164 parking spots per facility was the median

FINDINGS

- Parking lots were substantially overbuilt

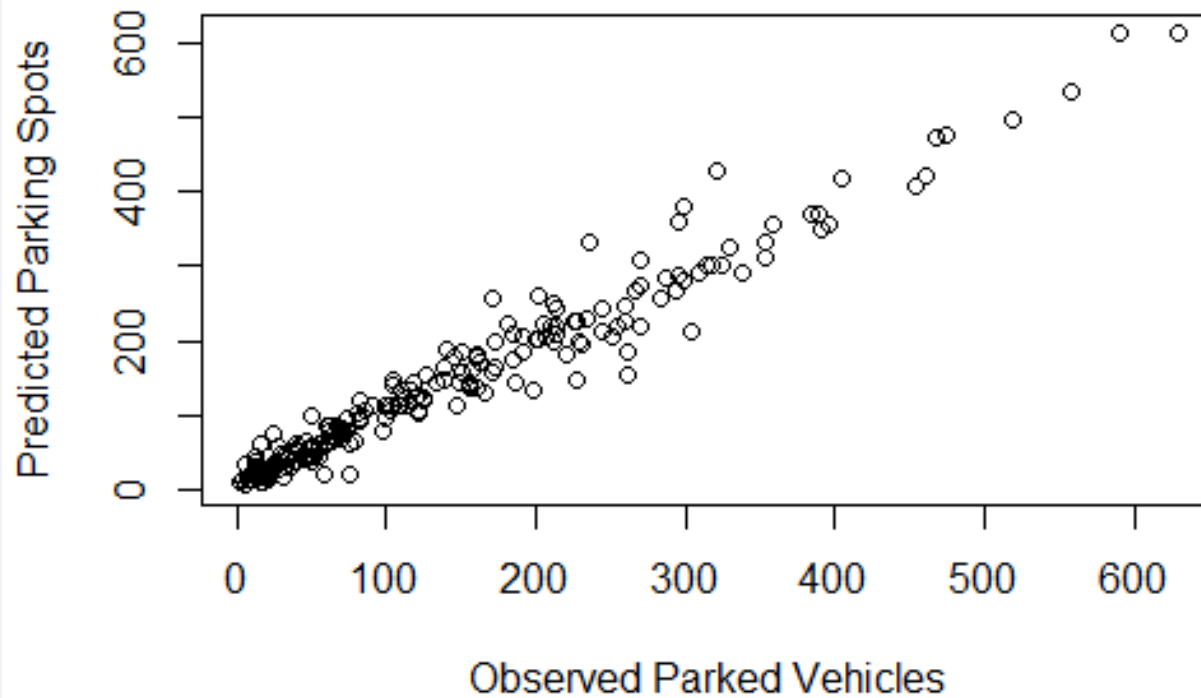


NEW REGRESSION MODEL

- Predicts absolute spots rather than ratios
- Designed to better address projects discussions
- Good for unit variation, bad for overall attributes
- Requires scaling variable (i.e. facility bedrooms)



NEW REGRESSION MODEL



MODEL COEFFICIENTS

Dependent Variable: Parking Spots Filled	Estimate	Std. Error	t value	Pr(> t)
Studio Apartments	0.852	0.089	9.599	0.000
One Bedrooms	0.848	0.055	15.495	0.000
Two Bedrooms	1.340	0.096	13.970	0.000
Three Bedrooms	1.593	0.172	9.279	0.000
Affordable Units	-0.258	0.048	-5.345	0.000
Senior Units	-0.366	0.177	-2.071	0.040
[Square Footage per Rent Dollar] * Bedrooms	0.080	0.034	2.342	0.020
[Monthly Parking Price per Spot] * Bedrooms/10 ³	-0.764	0.000	-4.587	0.000
[Jobs in 30min Transit Commute] * Bedrooms/10 ⁶	-0.141	0.000	-2.676	0.008
[Average Block Size Squared] * Bedrooms/10 ³	0.536	0.000	4.629	0.000

Multiple R-squared: 0.979, Adjusted R-squared: 0.978
 F-statistic: 948.9 on 10 and 200 DF, p-value: 0.000

FUTURE ENHANCEMENTS

- Travel Demand Management Variables
- Availability of Car/Bike Sharing
- Consideration of Parking Supply

GreenTRIP Parking Database DRAFT

ABOUT HOW TO GUIDE ABOUT THE DATA EVENTS

Choose a Map Legend Search for a location on the map

**Coming Soon!
July 2014**

Showing 4 buildings that meet your criteria Show All View Report

Number of Units	Unit Type	Majority Unit Size	Unit Affordability Rent Majority	Development Type
<input type="checkbox"/> Any	<input type="checkbox"/> Any	<input type="checkbox"/> Any	<input type="checkbox"/> Any	<input type="radio"/> Any
<input type="checkbox"/> 20 - 50	<input type="checkbox"/> Family	<input type="checkbox"/> Studio	<input type="checkbox"/> Dedicated Affordable Housing	<input type="radio"/> Mixed Use
<input checked="" type="checkbox"/> 50 - 100	<input checked="" type="checkbox"/> Senior	<input type="checkbox"/> 1 BR		<input type="radio"/> All Residential
<input checked="" type="checkbox"/> 100 - 200	<input type="checkbox"/> Mixed	<input type="checkbox"/> 2 BR		
<input type="checkbox"/> 200 +	<input type="checkbox"/> Disabled	<input type="checkbox"/> 3 BR		
	<input type="checkbox"/> SRO			

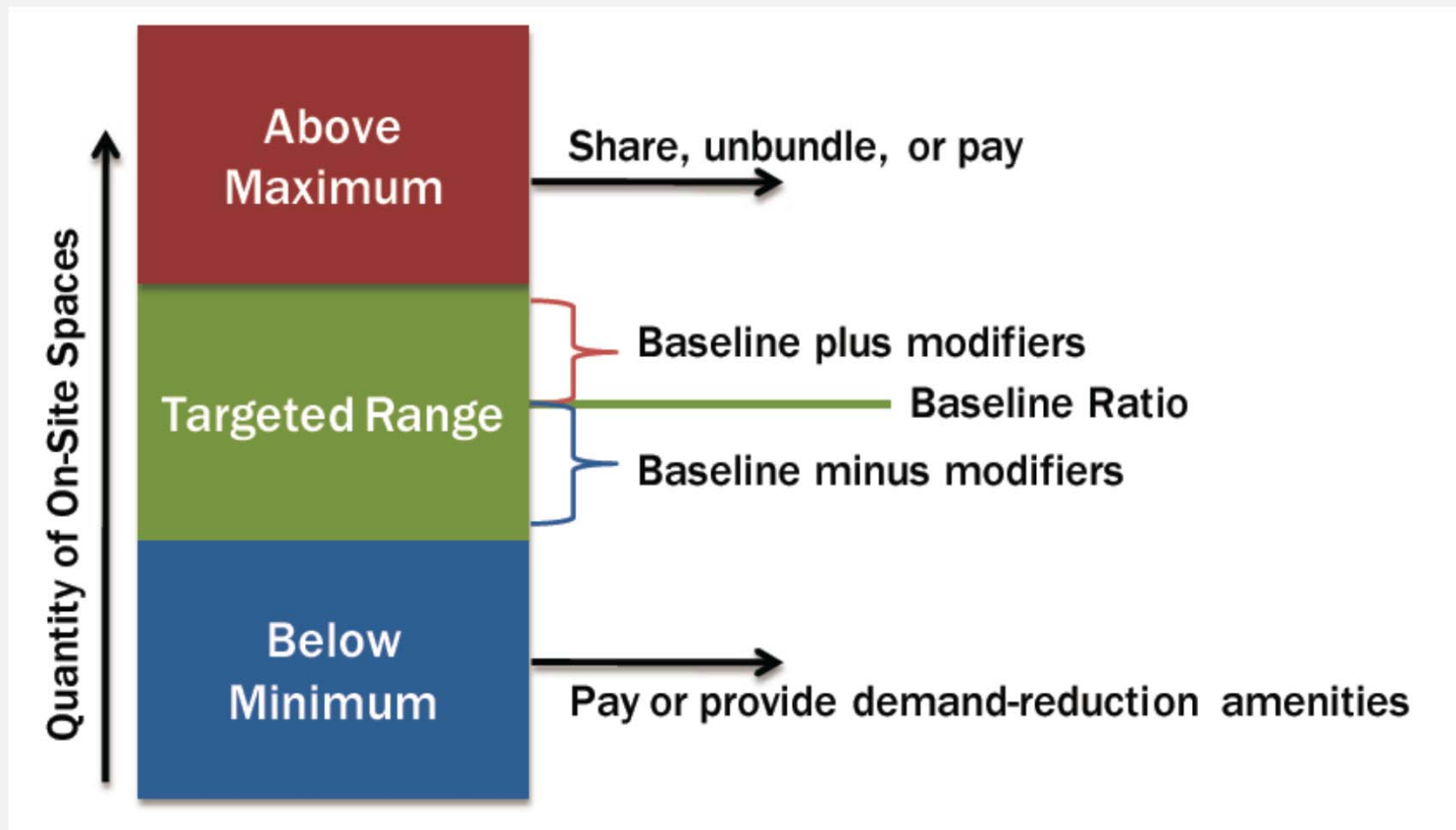
TRANSFORM
GreenTrip
modernizes
planning by
eliminating
excessive parking
and
focusing on giving
people
more and better
transportation
choices

MONTGOMERY COUNTY

- Long history of planning innovation
- 4 Parking Lot Districts (PLD)
- Recently revamped the zoning code

	Within a PLD		Outside PLD
	Min	Max	Min
Studio	1.00	1.00	1.00
1 Bed	1.00	1.25	1.25
2 Bed	1.00	1.50	1.50
3 Bed	1.00	2.00	2.00

PARKING POLICY IN PLDs



Source: Montgomery County Parking Policy Study, 2011, Nelson Nygaard Consulting Associates

ADJUSTMENTS

- 50% adjustment factors for restricted housing
- Reduced minimums for unbundling parking

	Within a PLD	
	Bundled Min	Unbundled Min
Studio	1.00	0.50
1 Bed	1.00	0.50
2 Bed	1.00	0.75
3 Bed	1.00	0.75

CONCLUSIONS

- New zoning code very promising
- Difficult to expressly include pricing levels, transit supply, and urban form in zoning
- Hope it encourages more multi-use rental



FUTURE RESEARCH

- Compare predicted demand for proposed buildings, using our model, to new zoning code to test appropriateness of ranges
- Expand data set to other cities
- Assess model transferability

THANK YOU

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