

Rail~Volution - October 22, 2013
Dan Bertolet – VIA Architecture and Planning



Right Size Parking

TOOLS TO BALANCE SUPPLY



OUR PROJECT

Optimize parking in multifamily buildings

- Best practices research
- Parking utilization surveys
- **Online demand calculator**
- Stakeholder engagement
- Model code
- Parking management, TDM, and pricing strategies
- Demonstration projects
 - Public sector
 - Private sector



OUR PARTNERS

U.S. Department
of Transportation
**Federal Highway
Administration**



**Washington State
Department of Transportation**



WHAT IS RIGHT-SIZE PARKING?

Right-sizing parking means striking a balance between parking supply and demand.

- **Oversupply** can be an impediment to achieving a wide range of community goals
- **Undersupply** can create the risk of neighborhood impacts and loss of real estate marketability



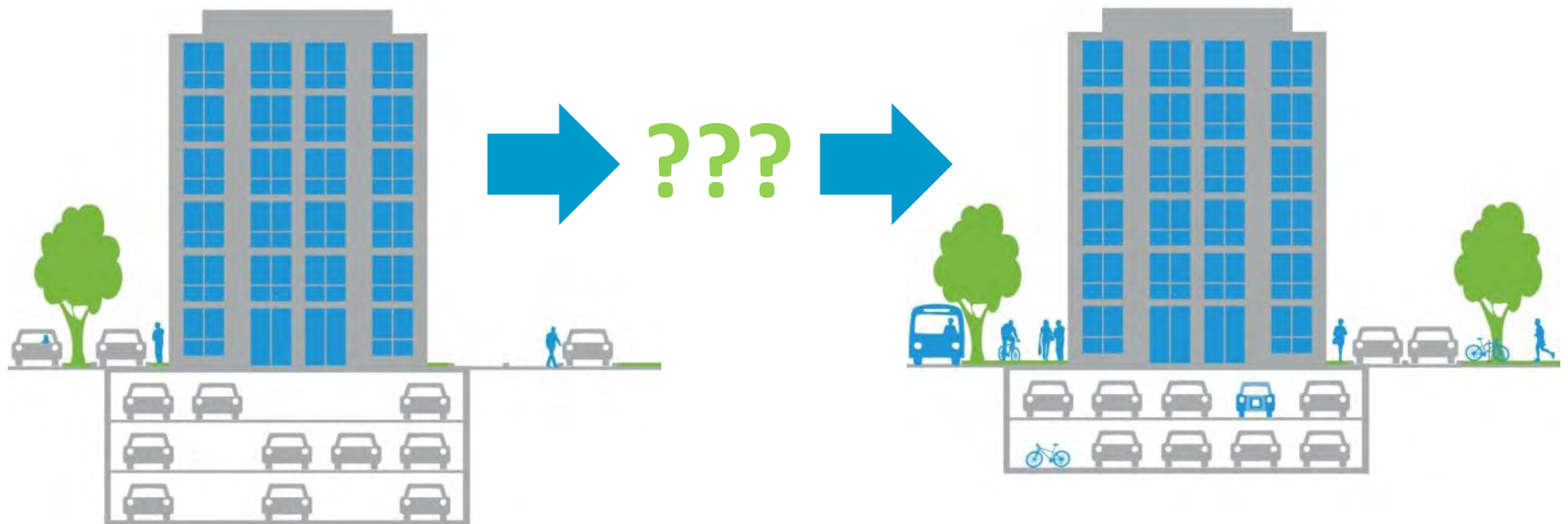
WHY DOES RSP MATTER?



- Parking is expensive to build
- The cost of parking raises housing prices
- Excess parking compromises active transportation modes, transit efficiency, and urban design
- Parking encourages driving, which congests roadways and increases greenhouse gases emissions

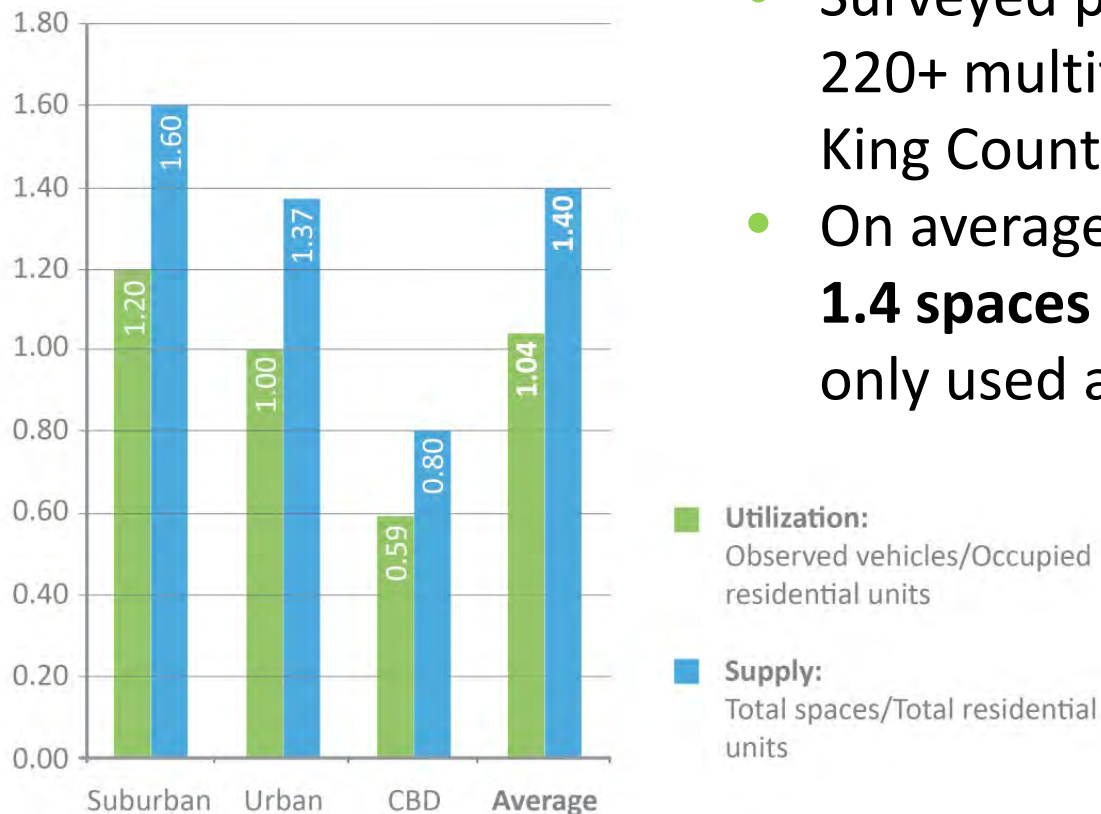


WHAT'S THE PROBLEM?



- Limited understanding of what determines parking demand
- Existing data are outdated and/or too general
- Tools need to reflect evolving land use/transportation trends
- Dysfunctional market for parking

UTILIZATION SURVEY



- Surveyed parking utilization at 220+ multifamily buildings across King County
- On average, parking is supplied at **1.4 spaces** per dwelling unit, but is only used at **1.0 spaces** per unit

When these findings are applied to a typical suburban project with 150 units, roughly \$800,000 would be spent on unused parking.

PREDICTIVE MODEL

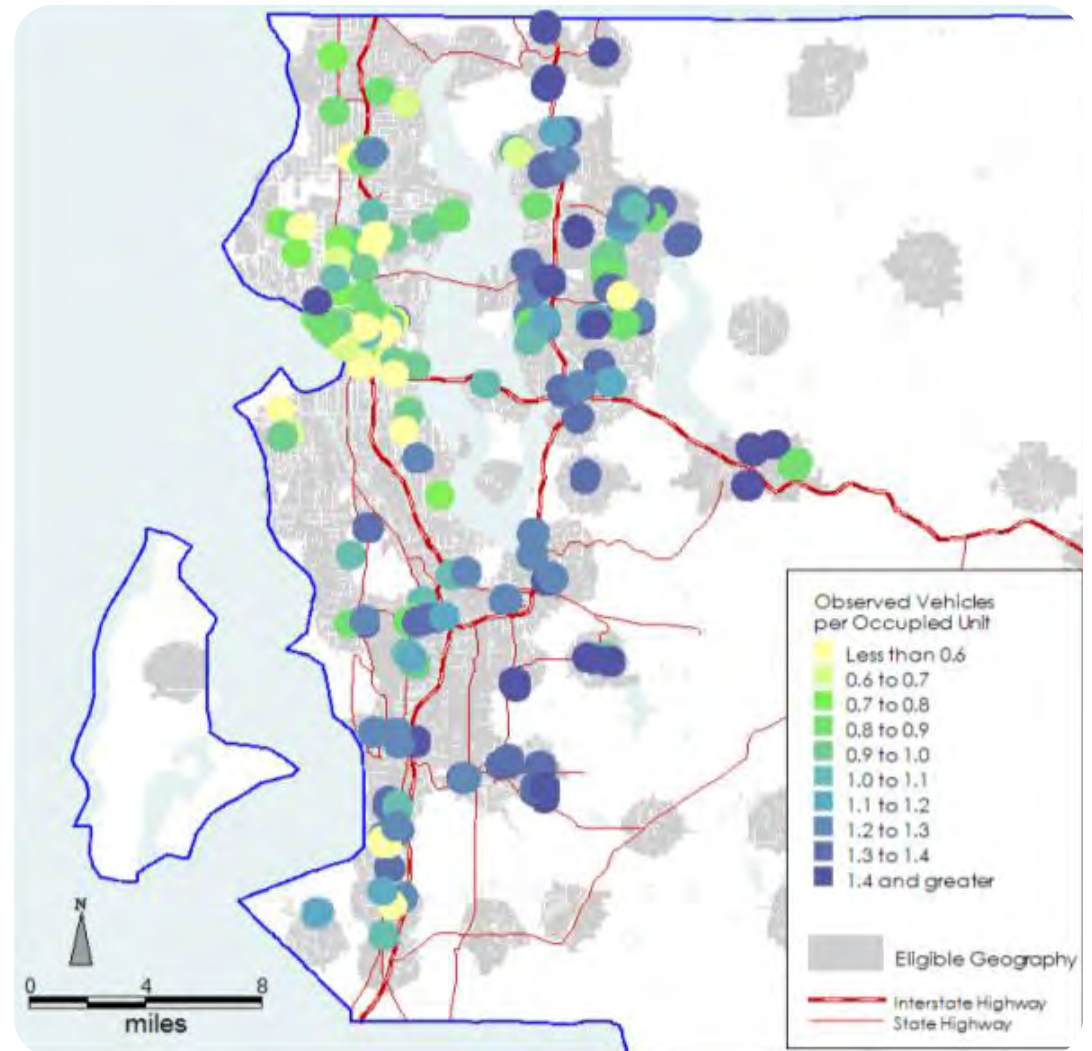
GEOGRAPHIC VARIABLES

- transit service
- population + job density

BUILDING VARIABLES

- bedroom count
- parking price
- affordable units
- residential density
- average rent

$$R^2 = .80$$



DEMONSTRATION PROJECTS

Policy and Model Code



- Develop model code, parking management, and neighborhood mitigation strategies designed to promote RSP outcomes

Pricing and TDM



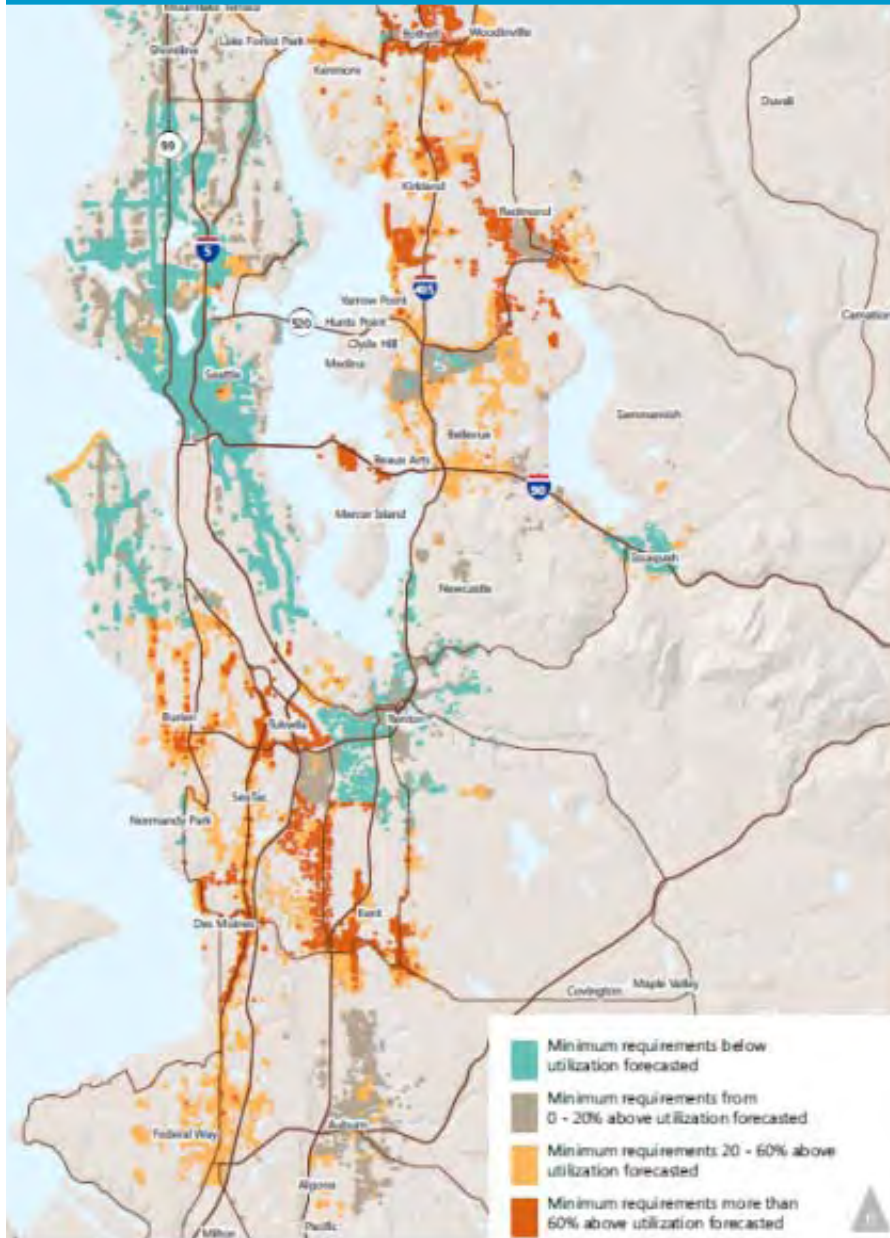
- Assess the market for pricing and financing parking
- Develop TDM strategies to support a balanced parking supply

District Shared Parking



- Assess potential for district shared parking based on supply
- Develop tools to price parking and connect customers

CODE GAP ANALYSIS



- Compare King County Cities' code with RSP model predictions
- 61% of all parcels have requirements > RSP prediction
- Outside Seattle: 82% of parcels have requirements > RSP prediction;
- Outside Seattle: cities require 43% more parking than is predicted by the RSP model

MODEL CODE

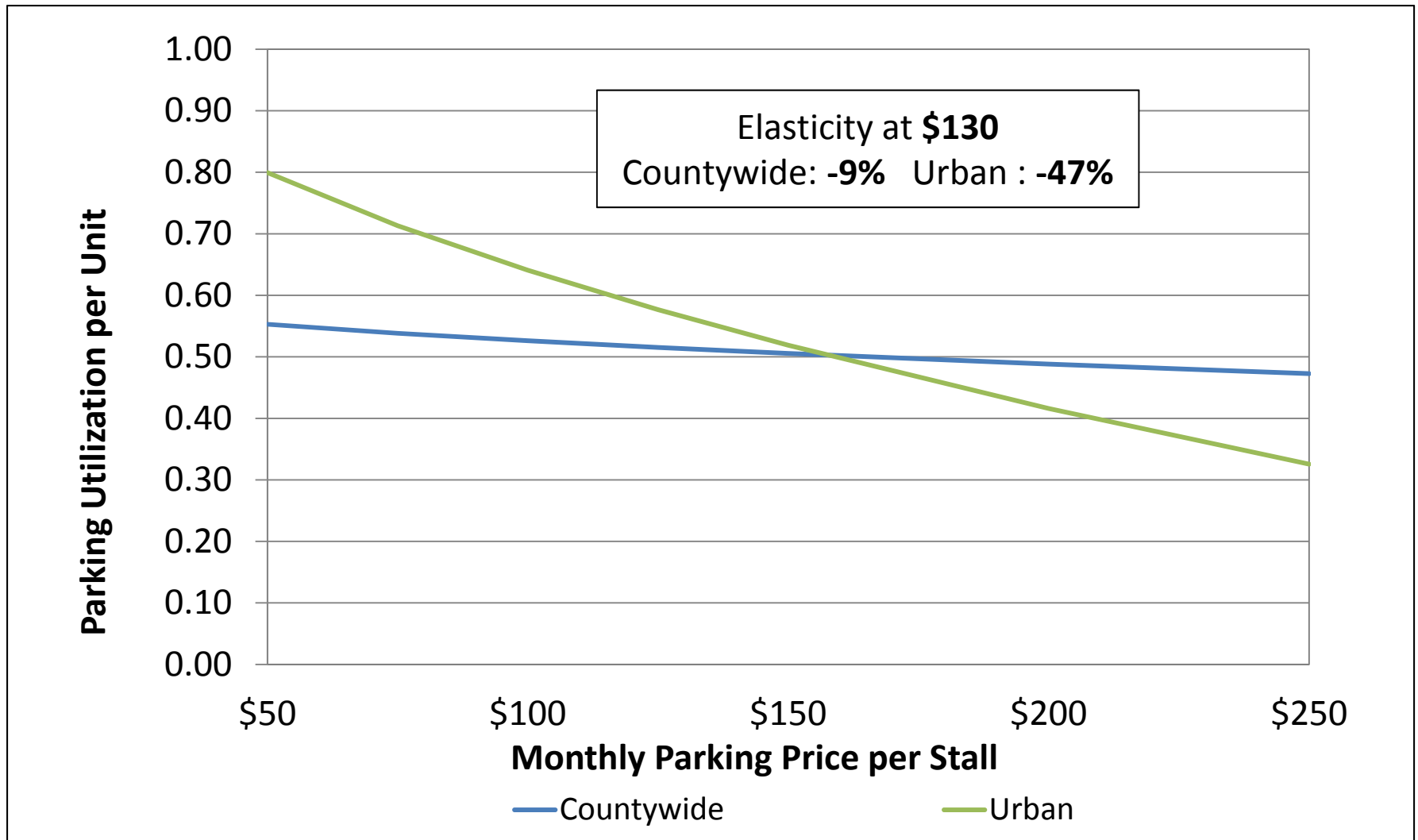
- Market-based Approach
 - Remove parking minimums
 - Tie to neighborhood mitigation and on-street management
- Context-based Approach
 - Place typology → Set base minimum
 - Apply context-based adjustments
 - Unit size, tenant type, transit proximity, unbundling, shared/remote parking, in-lieu fee, car-share, bike parking, resident TMP, transit supportive design, etc.
- Pilot projects launched in September
 - 4 King County cities, \$100k total funding
 - Code improvements, on-street management, shared parking

PARKING PRICING



- 62% of properties surveyed unbundled parking price from the price of rent
- Residents charged more than 10% of monthly rent for parking used only half as many spaces as residents charged less than 5%

PARKING PRICING ELASTICITY

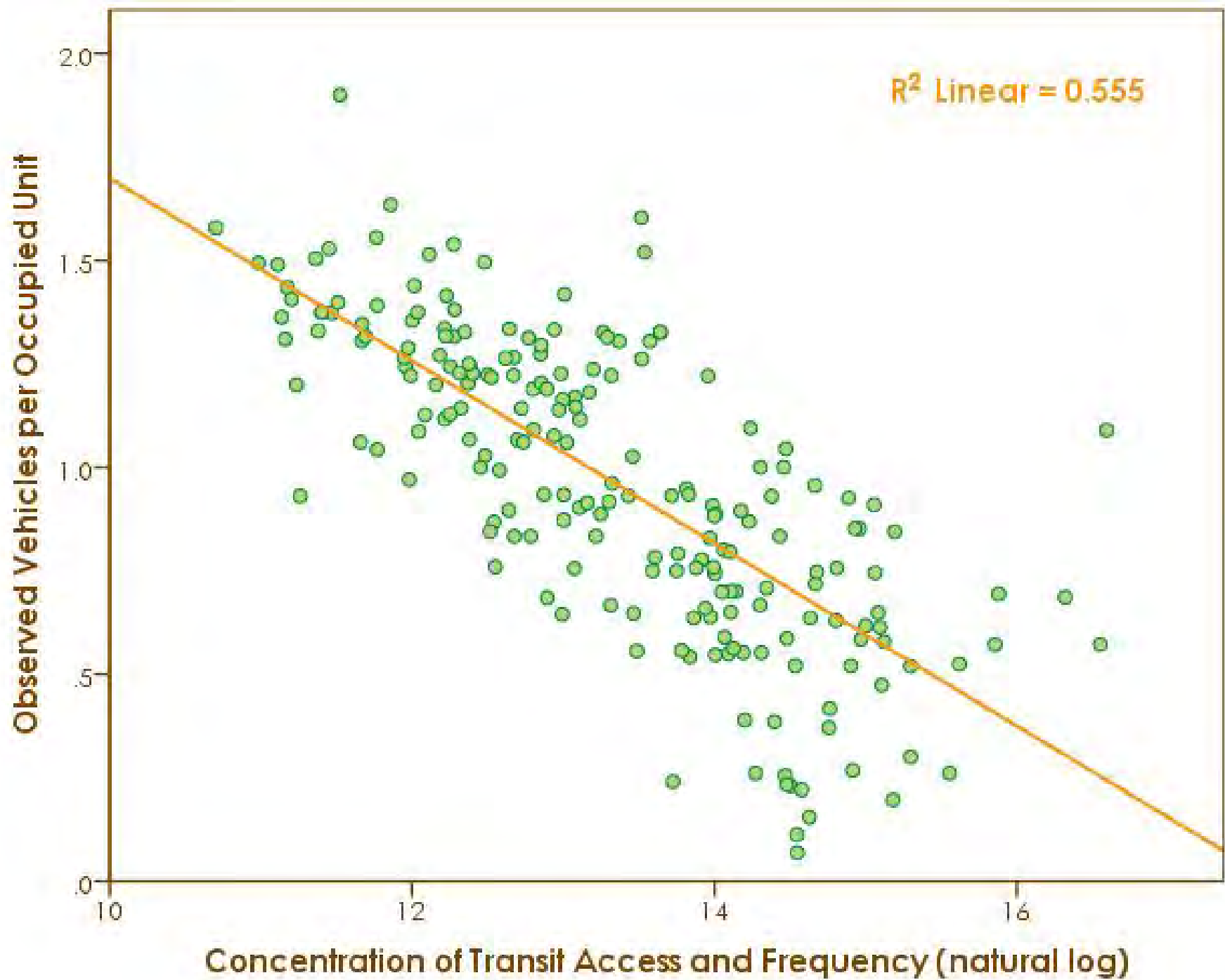


STATISTICAL MODEL



Independent Variable	Transformation	Coefficient	Individual R Square	Stepwise R Square
Constant	NA	1.980910	NA	NA
Gravity measure of Transit Frequency	Natural log	-0.066639	55.5%	55.5%
Percent of Units designated Affordable	Square root	-0.022966	27.6%	67.1%
Average Occupied Bedroom Count	Inverse	-0.360291	34.3%	73.7%
Gravity measure of Intensity (population + jobs)	Inverse	35,353.047567	53.3%	76.2%
Units per Residential Square Feet	Inverse	0.000139	17.1%	78.7%
Average Rent	Inverse	-154.420722	6.7%	80.0%
Parking Price as a fraction of Average Rent	Square root	-0.334655	18.1%	81.0%





THE RSP WEB CALCULATOR

The screenshot shows the 'Right Size Parking' web calculator interface. The main map area is highlighted with a red dashed border. A search bar at the top left contains the text 'Enter a location...'. A sidebar on the left contains a table for 'Parcel-level estimates' and a section for 'Impact of unbundling rent and parking price'. A 'Map-based' label points to the search bar. A 'Parcel-level estimates' label points to the sidebar table. A 'Customized scenario-building' label points to the 'Number of Affordable Units' input field. An 'Impact of unbundling rent and parking price' label points to the comparison table at the bottom.

Map-based →

Parcel-level estimates

Scenario	Number of Units	Monthly Rent (\$)	Required Parking (Spaces)
1 Bedroom	20	\$975	550
1 Bedroom	60	\$1,150	750
2 Bedroom	60	\$1,450	950
3+ Bedroom	10	\$1,575	1200
TOTAL	150	\$1,275	126,000

Customized scenario-building →

Number of Affordable Units: Monthly Price per Rent Unit:

Impact of unbundling rent and parking price →

How can unbundling (or) parking influence parking/rent ratios?

The parking ratio can be lower (or) higher to help control parking costs (and/or) rent costs (and/or) total costs (and/or) rent/rental ratio.

Price of Unbundled Rent (\$/sq ft)	Unbundled Rent (\$/sq ft)	Monthly Cost to Rent (\$/sq ft)	Required Parking Ratio
Bundled Parking = \$0/sq ft	\$1,319	\$1,319	0.92
Unbundled Parking = \$202/sq ft	\$1,141	\$1,297	0.77

www.rightsizeparking.org

Search

View Regional
Parking Use

Technical Background

Right Size Parking
King County Multi-Family Residential Parking Calculator
TOOLS TO BALANCE SUPPLY

Enter a location...

Parking/Unit Ratio (Number of Stalls)
< 5 Stalls > 1.5 Stalls

No Parcels Selected

Building & Parking Specifications | Location Characteristics | Parking Impacts

WELCOME!

The King County Right Size Parking Calculator allows you to view estimated parking/unit ratios for multi-family developments throughout urban areas of King County, WA (Seattle area). The calculator is based on a powerful model developed from current local data of actual parking use. While it is intended to help support and guide parking supply and management decisions, it should not be viewed as a definitive answer. Rather, it should be seen as a resource to inform discussions, weigh the factors impacting parking demand, and help consider the proper provision of parking.

Watch this short tutorial on the calculator here: [Watch Tutorial](#).

FIND YOUR AREA

Enter a location above or use the zoom and pan tools on the map. To select parcels, you must zoom in close enough to see individual parcels boundaries. Once you're close enough, the selection tools in the upper right of the map will become active.

SELECT YOUR PARCEL(S)

Map Satellite

Map data ©2013 Google - Terms of Use Report a map error

Instructions
and Video

Map Based

View Parking Ratio

Right Size Parking King County Multi-Family Residential Parking Calculator
TOOLS TO BALANCE SUPPLY

Enter a location...

Parking/Unit Ratio (Number of Stalls)
< .5 Stalls > 1.5 Stalls

1 Parcel Selected Parking/Unit Ratio: 1.09

Building & Parking Specifications | Location Characteristics | Parking Impacts

The preset values below represent regional average values (from field work) for building and parking specifications. These represent the default values for which all parking use ratios are estimated.

	NUMBER OF UNITS	AVERAGE RENT (\$)	RESIDENTIAL AREA (SQ FT)
STUDIOS:	<input type="text" value="20"/>	<input type="text" value="\$975"/>	<input type="text" value="550"/>
1 BEDROOMS:	<input type="text" value="60"/>	<input type="text" value="\$1,150"/>	<input type="text" value="750"/>
2 BEDROOMS:	<input type="text" value="60"/>	<input type="text" value="\$1,450"/>	<input type="text" value="950"/>
3+ BEDROOMS:	<input type="text" value="10"/>	<input type="text" value="\$1,575"/>	<input type="text" value="1200"/>
TOTAL:	150	\$1,275	125,000

NUMBER OF AFFORDABLE UNITS:

MONTHLY PRICE PER STALL: (\$)

Map | Satellite

Map data ©2013 Google - Terms of Use Report a map error

Build a Scenario

Select a Parcel or Area

1 Parcel Selected

Parking/Unit Ratio **1.09**

Building & Parking Specifications | Location Characteristics | Parking Impacts

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	NUMBER OF UNITS	AVERAGE RENT (\$)	RESIDENTIAL AREA (SQ FT)
STUDIOS:	20	\$975	550
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2 BEDROOMS:	60	\$1,450	950
3+ BEDROOMS:	10	\$1,575	1200
TOTAL:	150	\$1,275	125,000

NUMBER OF AFFORDABLE UNITS:
20

MONTHLY PRICE PER STALL: (\$)
\$50

UPDATE RESET

Adjust Building and Parking Specifications

Update

View Change in Parking Ratio



1 Parcel Selected

Parking/Unit Ratio 1.09

Building & Parking Specifications Location Characteristics Parking Impacts

Jobs: Concentration Low to High

237,250
182,560
127,240
71,920
16,800

26,260
Job concentration similar to:
Kent East Hill

Transit Service: Concentration Low to High

1,864
1,514
1,366
1,218
1,070

1,293
Transit service concentration similar to:
University District or Lower Queen Anne

UPDATE RESET

Google

N 182nd St
Midvale Ave N
Interurban Trail
W/A-99
N 180th St
N 180th St
Stone Ave N
N 178th St
Stone Ave N

Adjust Location Characteristics

Update

View Change in Parking Ratio

1 Parcel Selected Parking/Unit Ratio **1.09**

Building & Parking Specifications | Location Characteristics | **Parking Impacts**

Impact	Estimated Utilization (From Model)	Compared To (User Input)
Estimated Parking Use Ratio:	1.09	<input type="text" value="1.5"/>
Total Stalls:	163	225
Surface Parking		
Total Capital Costs (Land & Construction):	\$1,339,505	\$1,850,850
Monthly Costs per Residential Unit (including O&M):	\$92	\$128
Annual GHG Emissions from Construction and Maintenance (kg CO2e):	11,561	15,975
Structure Parking		
Total Capital Costs (Land & Construction):	\$2,868,064	\$3,962,925
Monthly Costs per Residential Unit (including O&M):	\$185	\$255
Annual GHG Emissions from Construction and Maintenance (kg CO2e):	28,171	38,925
Estimated Annual VMT of Building Residents:	1,608,353	2,222,330
GHG Emissions from Vehicle Use of Residents (kg CO2):	653,766	903,336

[UPDATE](#)

↑
View Impacts

RESOURCES



Right Size Parking Calculator
www.rightsizeparking.org



Metro Transit's Right Size Parking Website
kingcounty.gov/RightSizeParking

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Research Objectives

1. Identify independent variables, both from a theoretical framework and a practical development and planning standpoint, to be tested in regression analysis
2. Conduct variables' significance in predicting parking use
3. Develop a model using regression analysis, maintaining that all variables be significant and highly correlated.
4. Develop a website tool enabling interactive use of the model by interested stakeholders



Demonstration Project: Pricing/TDM

Project Revenue: Parking Price Elasticity

Urban Project Pro Forma

- 25,000 sf site
- 6 story building
- 640 sf/unit
- Underground parking
- Land at \$100/sf
- Unit rent at \$2.2/sf
- Cap rate at 5%

Project Description			
Residential Units	150	150	150
Parking Spaces	75	150	300
Parking Ratio	0.5	1.0	1.5
Levels of Parking	1.3	2.6	3.9
	Cost/ Stall	Profit Margin	
	\$150	23%	15%
	\$100	21%	9%
	\$50	19%	3%