TOOLS TO BALANCE SUPPLY

Rail~Volution - October 22, 2013
Dan Bertolet – VIA Architecture and Planning
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
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
• 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• Existing data are outdated and/or too general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
When these findings are applied to a typical suburban project with 150 units, **roughly $800,000 would be spent on unused parking.**
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
• 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
- 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

Elasticity at $130
Countywide: -9%  Urban: -47%

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

- Map-based
- Parcel-level estimates
- Customized scenario-building
- Impact of unbundling rent and parking price

www.rightsizeparking.org
Map Based Instructions and Video

Search

View Regional Parking Use

Technical Background

Instructions and Video

Map
Select a Parcel or Area

View Parking Ratio

Build a Scenario
The present 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.

<table>
<thead>
<tr>
<th>NUMBER OF UNITS</th>
<th>AVERAGE RENT ($)</th>
<th>RESIDENTIAL AREA (50 FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDIOS:</td>
<td>20</td>
<td>$975</td>
</tr>
<tr>
<td>1 BEDROOMS:</td>
<td>60</td>
<td>$1,150</td>
</tr>
<tr>
<td>2 BEDROOMS:</td>
<td>60</td>
<td>$1,450</td>
</tr>
<tr>
<td>3+ BEDROOMS:</td>
<td>10</td>
<td>$1,575</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>150</td>
<td>$1,275</td>
</tr>
</tbody>
</table>

NUMBER OF AFFORDABLE UNITS: 20

MONTHLY PRICE PER STALL ($) $50

Adjust Building and Parking Specifications → Update → View Change in Parking Ratio
Adjust Location Characteristics

Update

View Change in Parking Ratio
### Parking Impacts

<table>
<thead>
<tr>
<th>Impact</th>
<th>Estimated Utilization (From Alcoves)</th>
<th>Compared To (User Input)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimated Parking Use Ratio:</strong> 1.09</td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Surface Parking</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capital Costs (Land &amp; Construction):</td>
<td>$1,339,505</td>
<td>$1,850,850</td>
</tr>
<tr>
<td>Monthly Costs per Residential Unit (Including O&amp;M):</td>
<td>$92</td>
<td>$120</td>
</tr>
<tr>
<td>Annual GHG Emissions from Construction and Maintenance (kg CO2e):</td>
<td>11,561</td>
<td>15,975</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Structure Parking</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capital Costs (Land &amp; Construction):</td>
<td>$2,860,084</td>
<td>$3,962,925</td>
</tr>
<tr>
<td>Monthly Costs per Residential Unit (Including O&amp;M):</td>
<td>$195</td>
<td>$255</td>
</tr>
<tr>
<td>Annual GHG Emissions from Construction and Maintenance (kg CO2e):</td>
<td>28,171</td>
<td>38,925</td>
</tr>
<tr>
<td>Estimated Annual VMT of Building Residents:</td>
<td>1,608,353</td>
<td>2,222,330</td>
</tr>
<tr>
<td>GHG Emissions from Vehicle Use of Residents (kg CO2):</td>
<td>653,799</td>
<td>903,330</td>
</tr>
</tbody>
</table>
RESOURCES

Right Size Parking Calculator
www.rightsizeparking.org

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

Dan Bertolet
VIA Architecture and Planning
dbertolet@via-architecture.com
206-284-5624

Daniel Rowe
King County Metro Project Manager
Daniel.Rowe@kingcounty.gov
206-263-3586
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%

<table>
<thead>
<tr>
<th>Cost/Stall</th>
<th>Parking Spaces</th>
<th>Parking Ratio</th>
<th>Levels of Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>$150</td>
<td>75</td>
<td>0.5</td>
<td>1.3</td>
</tr>
<tr>
<td>$100</td>
<td>150</td>
<td>1.0</td>
<td>2.6</td>
</tr>
<tr>
<td>$50</td>
<td>300</td>
<td>1.5</td>
<td>3.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stall Margin</th>
<th>Profit Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>$150</td>
<td>23% 19% 15%</td>
</tr>
<tr>
<td>$100</td>
<td>21% 15% 9%</td>
</tr>
<tr>
<td>$50</td>
<td>19% 11% 3%</td>
</tr>
</tbody>
</table>