Collaborative Management in Neighborhood Transit Programs

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Active Communities / Transportation Research Group
TRANSPORTATION DEMAND MANAGEMENT
Road map

neighborhood

Eco Pass

economical, Ecological
Neighborhood Participation Levels

Why are some neighborhoods better at getting passes in the hands of residents than others?
Deeply Discounted Pass Programs

University Pass
Unlimited Access Pass

Business Pass
Unlimited Access Pass

Neighborhood Pass
Unlimited Access Pass for paying members

City-wide Pass
All residents are eligible for pass
Transit Pass Effectiveness

- 71 to 200% increase in initial ridership
- 2 to 10% growth in following years (Brown et al. 2001)
- 40% of growth in system-wide boardings attributed to ECO Pass (Nuworsoo 2004)

Nuworsoo, 200
www.arrowphotos.com
Boulder’s Neighborhood Eco-Pass (NECO)

- The NECO Pass functions as a co-op
- Neighbors pool funds, provide some or all residents with a pass
- 38 participating neighborhoods
  ~13,000 residents live in participating neighborhoods
  ~7,000 NECO passes

Get your Eco Pass today!
Neighborhood Characteristics

- NECO pass neighborhood median household income $70,000
- Well-established, single family residential neighborhoods
- Not college students / low income
- Average number of households: 160
- Median neighborhood contract price: $8,470
Organizing a NECO-Pass Neighborhood

1. Assume role of coordinator
2. Gauge interest level of neighbors, recruit help
3. Determine neighborhood boundaries
4. Transit agency (RTD) sets neighborhood cost
5. City of Boulder subsidizes 25 - 50%
6. Coordinator establishes pricing structure
7. NECO Pass provided to those who pay
NECO Pass Pricing

• Two basic funding mechanisms:
  – **Compulsory:** All households pay fixed amount through tax or HOA dues
  – **Voluntary:** Collect money from interested households or individuals
Voluntary NECO Pass Pricing Strategies

<table>
<thead>
<tr>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>All interested parties pay same price</td>
</tr>
<tr>
<td>Sliding scale with categories</td>
</tr>
<tr>
<td>Negotiated</td>
</tr>
</tbody>
</table>
## Example NECO Pass Price Chart

<table>
<thead>
<tr>
<th>Age group</th>
<th>Usage</th>
<th>Cost of Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>4 or fewer local trips/month</td>
<td>$25</td>
</tr>
<tr>
<td>Teen</td>
<td>5 to 10 local trips / month</td>
<td>$75</td>
</tr>
<tr>
<td>Teen</td>
<td>11 or more local trips / month</td>
<td>$100</td>
</tr>
<tr>
<td>Adult</td>
<td>1 or less local trips / month or one trip to the airport per year</td>
<td>$25</td>
</tr>
<tr>
<td>Adult</td>
<td>2 to 5 local trips / month or 2 to 6 trips to the airport</td>
<td>$75</td>
</tr>
<tr>
<td>Adult</td>
<td>6 to 10 local trips / month or 7 to 12 trips to the airport</td>
<td>$100</td>
</tr>
<tr>
<td>Adult</td>
<td>11 or more local trips / month or over 12 trips to the airport</td>
<td>$150</td>
</tr>
<tr>
<td>Adult</td>
<td>Daily commuter outside of Boulder County</td>
<td>$400</td>
</tr>
<tr>
<td>Senior</td>
<td>50% of adult rates above</td>
<td></td>
</tr>
</tbody>
</table>

[Suggested by North Wonderland Neighborhood](http://www.bouldercolorado.gov/files/Go%20Boulder/sample_ppform.pdf)
Neighborhood Participation Levels

Why are some neighborhoods better at getting passes in the hands of residents than others?
Survey

• Online survey sent to NECO Pass coordinators

Survey Sections

• Coordinator involvement
• Neighborhood organization
• Strategies for success

• 24 completed surveys (~50% response rate)
Survey Results – Predicting Success

- Middle / high school students
- Core group of regional commuters
- Hours of volunteer labor and perseverance
- City subsidy
- Level of organization
Survey Results –
Characteristics of Coordinators

• Motivated by their belief in transit and the NECO Pass program
• 60% retired or work from home
• 20% employed full-time in jobs outside the home
• 80 hours a year organizing neighborhood
• Assisted by 5 other volunteers
## Data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Residents Aged 6 to 17, Median Household Income, Density (Household/sq. km), Percent rental, Neighborhood area, Number of households,</td>
<td>2000 U.S. Census</td>
</tr>
<tr>
<td>Coordinator hours, Team size, Lowest price paid, Average price paid, Price structure,</td>
<td>Survey data</td>
</tr>
<tr>
<td>Distance to main transit corridor, Presence of neighborhood Web site</td>
<td>GIS, Google</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th></th>
<th>Stand. Coeff. (Beta)</th>
<th>T-stat</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Residents aged 6 to 17</td>
<td>0.944</td>
<td>4.131</td>
<td>0.003**</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>-0.715</td>
<td>-3.535</td>
<td>0.008**</td>
</tr>
<tr>
<td>Density</td>
<td>0.488</td>
<td>2.947</td>
<td>0.019*</td>
</tr>
<tr>
<td>Coordinator Hours</td>
<td>-0.480</td>
<td>-3.197</td>
<td>0.013*</td>
</tr>
<tr>
<td>Team Size</td>
<td>0.562</td>
<td>3.345</td>
<td>0.010**</td>
</tr>
<tr>
<td>Years of Success</td>
<td>0.413</td>
<td>2.814</td>
<td>0.023*</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01

Dependent Variable: Percent participation of neighborhood households

Model (F=8.324) p<0.005

Adj. R-Square = 0.758

Sample size = 19
Non-influential Variables

- Lowest price paid
- Average price paid
- Price structure
- Percent rental
- Distance to main transit corridor
- Neighborhood area
- Number of households
- Presence of neighborhood Web site
Conclusions

• Neighborhood characteristics are associated with higher participation
  – Children between the age of 6 and 17
  – Number of volunteers
• Assist practitioners identify locations where program may be replicated
• Lowest price paid NOT decisive factor in participation
• Coordinator skills / motivation may be an important factor
Next Steps

- Increase sample size
- Survey unsuccessful neighborhoods
- Survey NECO pass holders to understand motivations
- Compare with San Francisco?
Acknowledgements

- Chris Hagelin, City of Boulder Planning and Development Services
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How Price Strategy Impacts Deeply Discounted Neighborhood Transit Programs

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The Relevance of Excludability to TDM

Excludability provides a way to manage demand for public road space
– Makes driving more excludable
– Makes other modes less excludable
Typology of Goods

- Private Goods
- Common-Pool Resources
- Toll Goods
- Public Goods

Rivalrous

Excludable
Typology of Goods

Private Goods

Rivalrous

Toll Roads
Transit (uncongested)

Excludable

Common-Pool Resources

Public Roads
(congested)

TDM

Toll Goods

Transit Fare

Transit Pass

Public Goods

Public Roads
(uncongested)
Why is Excludability useful in studying TDM?

- A new way of looking at the familiar
- Qualitative
  - Can include factors other than price
  - Can be made quantitative
  - Not the only way to look at it!
Practical application of Excludability

- Quantifying excludability
  - Monetary costs
  - Time costs
  - Exclusive regulation or other metrics
  - Pricing strategies / neighborhood organization

- Relative price of transit pass as measure of excludability.