Travel Behavior of Baby Boomers in Suburban Age Restricted Communities

TRB Conference
Impact of Changing Demographics on the Transportation System

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Outline

• Research Context and Questions
• Research Methodology
• Descriptive Statistics
• Modeling Behavior
• Implications and Further Research
Travel Behavior of Baby Boomers in Suburban Age-Restricted Communities

Context

- Age-restricted communities (55+)
  - Increasingly prevalent across USA & MA
  - Little studied in terms of travel & activity behavior
- Baby boomers largely suburban and auto-dependent.
- Suburbia may not be conducive to active lifestyles; lack of
  - Density
  - Local attractions (mixed uses)
  - Regular transit
  - Quality sidewalks

Research Purpose

Increase our understanding of:
- Residential preferences of suburban baby boomers
- Influence of residential location on travel and activity behavior, focusing on differences between:
  - Age-restricted communities (RCs)
  - Typical suburban neighborhoods (TNs)
Research Design

Quasi-Experimental: Matching 20 RCs with surrounding TNs

Mail-back Survey

- Sampled households (HH) with one or two inhabitants aged 55-65 years
  - Purchased a commercial mailing list to target HHs
  - $5 cash compensation mailed with survey

- Instrument
  - Attitudinal questions (residential and travel preferences)
  - Demographic and socioeconomics
  - Retrospective trip counts (mode and purpose) over past week (each HH member)
  - A single day travel diary (weekday) (each HH member)

- Size: 7000 envelopes mailed out
  - 1,284 useable HH responses (1,700 diaries)
  - 363 HHs in RCs, 921 HHs in TNs

Spatial Analysis: GIS

- Derive measures of accessibility to employment and attractions
- Neighborhood density & other physical characteristics (e.g., street networks)

Summary of Findings

- Surveyed HHs in RCs and TNs similar in age, income, etc.
- RCs associated with more walking and more visits to neighbors
- RC HHs generate more trips per week and more local trips, and more trips with auto passengers
- RC residents more likely to walk from home or visit neighbors
- HH preferences for neighborliness influences RC choice
- HH preferences for walking does not influence RC choice
- Living in RC has greater influence on making visits to neighbors than on walking
Findings: Travel Summary

Median Weekly Distance by Car (miles)

Findings: Social and Leisure Trips

- RCs have lower share of HHs making 0 local trips during the week
- RC HHs make on average more social and leisure trips (locally and regionally)

<table>
<thead>
<tr>
<th>Trip type</th>
<th>Local</th>
<th>Regional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero trip rate (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td>21.9</td>
<td>1.1</td>
</tr>
<tr>
<td>TN</td>
<td>30.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Median trips</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>TN</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Mean trips</td>
<td>3.8</td>
<td>7.4</td>
</tr>
<tr>
<td>RC</td>
<td>2.8</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Travel Behavior of Baby Boomers in Suburban Age-Restricted Communities
Findings: Years of Residence

![Histogram showing distribution of years of residence for TN and RC residents.]

- RC residents appear more likely to:
  - take local trips by walking or cycling
  - visit a neighbor

- Local activity and neighbor visits not correlated with retail accessibility or street network characteristics

Findings: Local Trips and Neighborliness

<table>
<thead>
<tr>
<th>Activity</th>
<th>RC</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk/cycle locally at least once last week</td>
<td>67%</td>
<td>59%</td>
</tr>
<tr>
<td>Visit a neighbor at least once last week</td>
<td>51%</td>
<td>34%</td>
</tr>
</tbody>
</table>

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Findings: Traveling as Car Passenger

<table>
<thead>
<tr>
<th>Mode</th>
<th>TN</th>
<th>RC</th>
<th>NHTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private vehicle driver</td>
<td>87</td>
<td>79</td>
<td>89</td>
</tr>
<tr>
<td>Private vehicle passenger</td>
<td>6</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>Motorbike</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Public transport</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Walk</td>
<td>5</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

Travel Behavior of Baby Boomers in Suburban Age-Restricted Communities

Modeling Behavioral Differences

Examine RC/TN effect on 2 behaviors:

- **Local activity**: defined as resident made one or more walking/biking trip per week
- **Neighborliness**: defined as resident visited neighbor one or more times per week

Analytical Challenge: Risk of inferring false causality

- Our premise: neighborhood setting influences individual’s activity behavior
- Alternative possibility: individual’s preference for activity behavior influences neighborhood choice
- Technically: sample selection bias and endogeneity
Modeling Behavioral Differences

Three modeling approaches

• **Statistical Control Model**
  - Accounts for endogeneity through inclusion of attitudes such as “Enjoy driving” or “Enjoy walking/biking” as explanatory variables

• **Instrumental Variable Model**
  - Reduces endogeneity by including a separate instrumental variable
  - Instrumental variable constructed from a model of residential choice (RC or TN)
    - Utilizing residents’ attitudes towards neighborhood characteristics

• **Nested Logit Model**
  - It allows joint estimation of residential choice and travel outcomes.

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Nested Logit: Resulting model structures

Local activity model:
- Activity levels are conditional upon residential location
- Residing in RC increases local activity trips

Neighbor visits model:
- Residential location conditional on neighborly tendencies
- Residents choose RC because they want to be neighborly
### Travel Models: Local Activity

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Control</th>
<th>IV</th>
<th>NL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$t$</td>
<td>$p$</td>
</tr>
<tr>
<td>N’hood</td>
<td>0.31</td>
<td>2.49</td>
<td>*</td>
</tr>
<tr>
<td>Retired</td>
<td>0.49</td>
<td>3.95</td>
<td>***</td>
</tr>
<tr>
<td>Health</td>
<td>0.50</td>
<td>3.25</td>
<td>**</td>
</tr>
<tr>
<td>Enjoy driving</td>
<td>-0.12</td>
<td>-2.25</td>
<td>*</td>
</tr>
<tr>
<td>Enjoy walking/biking</td>
<td>0.35</td>
<td>7.89</td>
<td>***</td>
</tr>
<tr>
<td>Like sidewalks</td>
<td>0.25</td>
<td>5.57</td>
<td>***</td>
</tr>
<tr>
<td>Two bikes</td>
<td>0.40</td>
<td>3.13</td>
<td>**</td>
</tr>
<tr>
<td>One vehicle</td>
<td>0.31</td>
<td>2.29</td>
<td>**</td>
</tr>
</tbody>
</table>

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

### Travel Models: Neighborliness

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Control</th>
<th>IV</th>
<th>NL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$z$</td>
<td>$p$</td>
</tr>
<tr>
<td>N’hood</td>
<td>0.34</td>
<td>2.44</td>
<td>*</td>
</tr>
<tr>
<td>Retired</td>
<td>0.66</td>
<td>5.8</td>
<td>***</td>
</tr>
<tr>
<td>Male</td>
<td>-0.36</td>
<td>-3.33</td>
<td>**</td>
</tr>
<tr>
<td>Two bikes</td>
<td>0.29</td>
<td>2.3</td>
<td>*</td>
</tr>
<tr>
<td>Health rest.</td>
<td>0.54</td>
<td>8.85</td>
<td>**</td>
</tr>
<tr>
<td>Prefer sidewalk</td>
<td>0.13</td>
<td>2.86</td>
<td>**</td>
</tr>
<tr>
<td>Prefer space around home</td>
<td>-0.14</td>
<td>-2.85</td>
<td>**</td>
</tr>
<tr>
<td>Years resident</td>
<td>-0.01</td>
<td>-2.39</td>
<td>*</td>
</tr>
<tr>
<td>Low income household</td>
<td>0.87</td>
<td>2.05</td>
<td>*</td>
</tr>
<tr>
<td>vehicles2</td>
<td>0.31</td>
<td>2.4</td>
<td>*</td>
</tr>
</tbody>
</table>

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
In Summary

- Analytically
  - For local activity, residents do not apparently self-select into neighborhoods; RCs seem to induce more local activity
  - For neighborly visits, residents apparently choose into RCs because of preferences for neighborliness

- After controlling for preferences, little effect of RC on local activity

- Difference between RC and TN is greater in the case of neighborliness than for local walking/biking

Limitations

- Imprecise dependent variables
  - Including due to use of retrospective weekly travel, interpretation of questions, etc.

- Neighborliness may be more associated with short tenure than RC, per se
  - RC residents, having lived there for shorter time, may be more inclined to get to know neighbors

- Fairly crude measures of built environment used
  - None of them significant in models

- Models have fairly low explanatory power
Implications and Further Research

- Can RC neighborliness tendency be replicated?
  - More detailed analysis of community and social effects of RCs

- Further analyze Travel Diary Data
  - Mode choice, trip lengths, chaining

- Investigate apparent RC inclination towards ride-sharing
  - Again, possible sign of social capital present in RCs

- More detailed characterization of built environment
  - E.g., tree coverage, network characteristics, etc.

- Better travel data collection instruments
  - Non-intrusive, non-burdensome, but complete (ideally, multi-day)

- Expand to look at other aging adult locations (e.g. NORCs)

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