Electric Vehicle (EV)
Carsharing in A Senior Adult Community

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Presentation Overview

• Study background
• Rossmoor Senior Adult Community overview
• Study methodology
• Study results
• Summary
• Acknowledgements
Study Background

• Drivers 65 years+ is expected to double to 57 million by 2030

• Many destinations too far to walk, alternatives (taxis) too expensive, and public transit/specialized transportation services limited

• Research partnership with Nissan Motor Co. to study feasibility of EV carsharing program in senior adult community
Rossmoor Overview

- Rossmoor Senior Adult Community is a non-profit gated community of approximately 9,500 senior residents in Walnut Creek, CA
- Spans 1,800 acres with 6,700 residential units in:
  - 12 condominiums
  - 3 cooperatives
  - 1 single-family-detached home development
  - Congregate living condominium for less-able residents
- Transportation services are provided for residents and paid for through residents’ monthly fee
  - Fixed-route bus
  - Dial-a-bus
  - Paratransit
- Rossmoor’s population by age
  - 24% are 65-74 years
  - 34% are 75-84 years
  - 27% are 85-94 years
Study Methodology

Data were collected in three phases:

• Dec. 2009: In-depth household interviews
  – 7 participants
• Sept. 2010: Four focus groups
  – 31 participants
• February – May 2011: Surveys
  – Community-wide survey inserted in The Rossmoor News (30 minutes to complete)
    • 357 participants
  – Clipboard/short survey administered outside Rossmoor’s Gateway Clubhouse (six questions)
    • 86 participants
Household Vehicles Per Housing Type

- **Single-car households**:
  - Interview (n=7): 86%
  - Focus group (n=31): 72%
  - Community-wide survey (n=357): 65%

- **Two-car households**:
  - Interview (n=7): 0%
  - Focus group (n=31): 35%
  - Community-wide survey (n=357): 25%

- **No-car households**:
  - Interview (n=7): 0%
  - Focus group (n=31): 0%
  - Community-wide survey (n=357): 3%
Driving Trips Per Month in Miles

Please indicate how many driving trips you take per month that are approximately the distance in miles indicated in each column *(five or more trips/month)*

*Results for community-wide survey only. Other instruments did not ask this question.*
# Travel Destinations More Than Once Per Week

**Please indicate the destinations you travel to inside of Rossmoor more than once a week**

<table>
<thead>
<tr>
<th>Destination</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway Clubhouse</td>
<td>67%</td>
</tr>
<tr>
<td>Library</td>
<td>28%</td>
</tr>
<tr>
<td>Gym</td>
<td>65%</td>
</tr>
<tr>
<td>Visit friends</td>
<td>59%</td>
</tr>
<tr>
<td>Theater</td>
<td>33%</td>
</tr>
<tr>
<td>Other</td>
<td>69%</td>
</tr>
</tbody>
</table>

*Results for community-wide survey only. Other instruments did not ask these questions.*

**Please indicate the destinations you travel to outside of Rossmoor more than once a week**

<table>
<thead>
<tr>
<th>Destination</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Walnut Creek</td>
<td>63%</td>
</tr>
<tr>
<td>Library</td>
<td>9%</td>
</tr>
<tr>
<td>Visit friends</td>
<td>37%</td>
</tr>
<tr>
<td>Theater</td>
<td>4%</td>
</tr>
<tr>
<td>Medical appointments</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>59%</td>
</tr>
</tbody>
</table>

*Results for community-wide survey only. Other instruments did not ask these questions.*
How many hours would you use a carsharing vehicle for an average daily trip?

- 75% of respondents used the carsharing vehicle for 2-4 hours.
- 15% used it for approximately 1 hour.
- 4% used it for less than 1 hour.
- 6% used it for more than 4 hours.

*Results for community-wide survey only. Other instruments did not ask this question.*
Trip Planning and Carsharing Interest

Do you typically plan your driving trips in advance?

- Yes: 100% (Interview n=7), 70% (Community-wide survey n=337)
- No: 0% (Interview), 9% (Community-wide survey)
- Sometimes: 0% (Interview), 21% (Community-wide survey)

Would you be interested in a carsharing system at Rossmoor?

- Yes: 49% (Clipboard/Short Survey n=85), 38% (Community-Wide Survey)
- No: 25% (Clipboard/Short Survey), 16% (Community-Wide Survey)
- Maybe: 35% (Clipboard/Short Survey), 36% (Community-Wide Survey)
Anticipated Use of Carsharing Vehicle

How often would you use a carsharing vehicle?

<table>
<thead>
<tr>
<th>How often a vehicle would be used</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once a week</td>
<td>12%</td>
</tr>
<tr>
<td>2-3 times per week</td>
<td>28%</td>
</tr>
<tr>
<td>Everyday</td>
<td>7%</td>
</tr>
<tr>
<td>Twice a month</td>
<td>16%</td>
</tr>
<tr>
<td>Once a month or less</td>
<td>8%</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>8%</td>
</tr>
<tr>
<td>Never</td>
<td>22%</td>
</tr>
</tbody>
</table>

n=308

*Results for community-wide survey only. Other instruments did not ask this question.
Optimal Location for Carsharing Access

Participants chose Gateway Clubhouse as optimal location for carsharing vehicles

- Centrally located
- Ample parking
- Frequent on a regular basis by transportation services and most residents
## Methods to Access Carsharing Vehicles

<table>
<thead>
<tr>
<th>Access Methods</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privately-owned golf cart</td>
<td>11%</td>
</tr>
<tr>
<td>Rossmoor bus</td>
<td>37%</td>
</tr>
<tr>
<td>Rossmoor Dial-A-Bus</td>
<td>13%</td>
</tr>
<tr>
<td>Ask for a ride</td>
<td>15%</td>
</tr>
<tr>
<td>Carpool</td>
<td>5%</td>
</tr>
<tr>
<td>Borrow a friend’s vehicle</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>18%</td>
</tr>
</tbody>
</table>

*Results for community-wide survey only. Other instruments did not ask this question.*
Comfort Level

- Safety: High
- Driving: High
- Plugging-in: High
- Smart keys and PIN code access: High
Reservation Systems

• 62% willing to use an Internet-based system
  - Provides information on vehicle availability, charging status, and vehicle reservations
• 46% prefer to use a phone-based system
• 100% (focus group) prefer to have both options available
Vehicle Range

How much of a range would be long enough to accommodate most of your trips?

How much of a range are you willing to travel knowing that the vehicle driving range is 100 miles?

n=269

n=261
Willingness to Pay

Willingness to Pay per Hour

Willingness to Pay for Monthly Membership
Summary

• Majority interested in EV carsharing program and felt very comfortable with IT and EV technology
• Many already drive shorter distances and combine trips (within Nissan Leaf EV range)
• Central and convenient location chosen for carsharing (Gateway Clubhouse); many would use 2 to 3 times a week
• If pilot program successful, other senior adult communities might benefit and improve resident mobility through carsharing
Acknowledgements

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