Carsharing Trends and Research Highlights

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Adam Cohen & Susan Shaheen, Ph.D.
Email: apcohen@berkeley.edu
Twitter: AskAdamCohen
Email: sshaheen@berkeley.edu
Twitter: SusanShaheen1
LinkedIn: Susan Shaheen
OVERVIEW

• About TSRC
• Growth Trends in the Americas
• Roundtrip Research
• One-way Research
• College/University Study
• Recent Reports
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• Acknowledgements
TRANSPORTATION SUSTAINABILITY RESEARCH CENTER

• Founded in 2006
• TSRC conducts global research on a wide-array of topics:
  • Advanced vehicles and fuels
  • Energy and infrastructure
  • Goods movement
  • Innovative mobility
  • Mobility for special populations
  • Transportation and energy systems analysis
• Published 100 research studies
• Leader international carsharing industry benchmarking and research since 1999
North American Membership Growth

(Shaheen and Cohen 2017)
## North American Vehicle Growth

### Vehicles

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S. (n=21)</th>
<th>Canada (n=17)</th>
<th>Mexico (n=1)</th>
<th>North America (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>5,104</td>
<td>1,388</td>
<td>18</td>
<td>6,492</td>
</tr>
<tr>
<td>2008</td>
<td>5,840</td>
<td>1,667</td>
<td>18</td>
<td>7,507</td>
</tr>
<tr>
<td>2009</td>
<td>7,722</td>
<td>2,046</td>
<td>40</td>
<td>9,768</td>
</tr>
<tr>
<td>2010</td>
<td>8,120</td>
<td>2,285</td>
<td>47</td>
<td>10,405</td>
</tr>
<tr>
<td>2011</td>
<td>7,776</td>
<td>2,605</td>
<td>47</td>
<td>10,381</td>
</tr>
<tr>
<td>2012</td>
<td>12,634</td>
<td>3,143</td>
<td>73</td>
<td>15,795</td>
</tr>
<tr>
<td>2013</td>
<td>16,811</td>
<td>3,933</td>
<td>43</td>
<td>20,784</td>
</tr>
<tr>
<td>2014</td>
<td>19,115</td>
<td>5,048</td>
<td>39</td>
<td>24,210</td>
</tr>
<tr>
<td>2015</td>
<td>19,270</td>
<td>5,881</td>
<td></td>
<td>25,224</td>
</tr>
<tr>
<td>2016</td>
<td>19,555</td>
<td>7,093</td>
<td></td>
<td>26,691</td>
</tr>
<tr>
<td>2017</td>
<td>17,178</td>
<td>7,412</td>
<td></td>
<td>24,629</td>
</tr>
</tbody>
</table>

*(Shaheen and Cohen 2017)*
Roundtrip Impacts: North America

- 25% sold a vehicle
- 25% postponed a vehicle purchase

1 carsharing vehicle replaces 9 – 13 vehicles

(Martin et al. 2010; Shaheen and Chan 2015)
Roundtrip Impacts: North America

- Reduction of GHG emissions per year for one household: 0.58 - 0.84 metric tons, 34% - 41%
- Reduction of VMT per year considering vehicles sold and purchases postponed: 27% - 43%
- Monthly household savings per US member after joining carsharing: $154 - $435
- More users increased (than decreased) their modal use; including bus, rail, walking, biking, and carpooling

(Martin et al. 2010; Shaheen and Chan 2015)
One-way Impacts: North America

Member Vehicle Holdings
- 2-5% Sold a vehicle
- 1-3 Vehicles sold per a car2go vehicle
- 7-10% Postponed a vehicle purchase / vehicle acquisition
- 4-9 Vehicles suppressed per car2go vehicle

(Martin et al. 2016)
# One-way Impacts: North America

## Vehicle Impacts from Free-Floating One-Way Carsharing

<table>
<thead>
<tr>
<th>City</th>
<th>Vehicles Shed (sold)</th>
<th>Vehicles Suppressed (foregone purchases)</th>
<th>Total Vehicles Removed per Carsharing Vehicle</th>
<th>Range of Vehicles Removed per Carsharing Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calgary, AB (n=1,498)</td>
<td>2</td>
<td>9</td>
<td>11</td>
<td>2 to 11</td>
</tr>
<tr>
<td>San Diego, CA (n=824)</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Seattle, WA (n=2,887)</td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>3 to 10</td>
</tr>
<tr>
<td>Vancouver, BC (n=1,010)</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>2 to 9</td>
</tr>
<tr>
<td>Washington, DC (n=1,127)</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>3 to 8</td>
</tr>
</tbody>
</table>

(Martin et al. 2016)
One-way Impacts: North America

Average reduction of GHG emissions per year per car2go household: 4% - 18%

Average reduction of VMT per year per car2go household: 6% - 16%

(Martin et al. 2016)
Recent Study of Zipcar’s College/University Market: Fall 2016

80% of uni Zipsters don’t own a car
43% sold or put off buying a car
40% are less likely to buy a car

n=~10,000

(Stocker et al. 2016)
Impact on Vehicle Miles Traveled (VMT) and Greenhouse Gas (GHG) Emissions

- Reduction of GHG emissions
  - -0.1% to -2.6%

- Reduction of VMT
- VMT reductions are greatest in urban land-use contexts
- Members of Southern and Canadian campuses have the greatest VMT reductions

(Stocker et al. 2016)
Recent Reports

- [SHARED MOBILITY: CURRENT PRACTICES AND GUIDING PRINCIPLES](https://ops.fhwa.dot.gov/publications/fwhahop16022/fwhahop16022.pdf)
- [SMARTPHONE APPLICATIONS TO INFLUENCE TRAVEL CHOICES: PRACTICES AND POLICIES](https://ops.fhwa.dot.gov/publications/fwhahop16023/fwhahop16023.pdf)
- [PLANNING FOR SHARED MOBILITY](https://www.planning.org/publications/report/9107556/)
Disrupting Mobility
Impacts of Sharing Economy and Innovative Transportation on Cities

Available at:
Shared Mobility Policies

• Public Rights-of-Way
• Incentive Zoning
• Insurance & Taxation
• Transportation Demand Management
Public Rights-of-Way
Incentive Zoning for the Inclusion of Shared Mobility

Parking-Specific Policies
- Parking Reduction: Downgrading the required number of spaces in a new development
- Parking Substitution: Substituting general use parking for shared modes in either new or existing developments

Policies Allowing Increased Density
- Greater Floor-to-Area Ratios
- More Dwelling Units
- Greater Height Allowance
Shared Mobility as a Social Benefit:
Maximum government support based on the social and environmental benefits of shared mobility

Shared Mobility as a Sustainable Business:
Moderate government support balancing social and environmental benefits with revenue generating enterprises

Shared Mobility as a Business:
Shared mobility is treated like a business, and government provides a minimum level of support.
Upcoming Research

• North American and International Carsharing Market Outlooks (Summer/Fall 2017)
• Impacts Study of Lyft and Uber (Summer 2017)
  • Study will assess the impacts of travel behavior, vehicle ownership, VMT, modal shift, and GHG emissions
• P2P Carsharing Impact Study (Summer 2017)
• Bikesharing GHG Study (Fall 2017)
Upcoming Research

- U.S. Federal Highway Administration Studies of Mobility on Demand (Fall 2017)
- U.S. Federal Transit Administration Mobility on Demand Sandbox (2018-19)
  - $8 million funding for an array of mobility pilots with 11 partners (12 locations)
  - Booz Allen Hamilton and TSRC leading the independent evaluation for all sites
  - Measure project impacts and identify factors that may support or impede innovative transportation service models
Innovative Mobility Highlights, Carsharing Outlook, and Latest Research

Subscribe for the latest updates (Innovative Mobility Highlights, Carsharing Outlooks, Policy Briefs, Research Highlights and more!) at: imr.berkeley.edu (bottom of home page)
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