MOBILITY & THE SHARING ECONOMY: AN INTRODUCTION

Susan A. Shaheen, Ph.D.
Transportation Sustainability Research Center
University of California, Berkeley
December 16, 2014
Overview

- Key Trends
- What is Shared Mobility?
- Forms & Understanding
- Key Policy Takeaways
- Summary
- Acknowledgements
Declining revenues, licensed drivers

Increase in Public/Private Partnerships & Alternative Funding Models

~28% without Driver’s Licenses (16-34 yrs old)
The trend is clear:
Access trumps possession.
Access is better than ownership
- Kevin Kelly
Decline In Traditional Ownership Model Of Material Goods
Rise In Renting, Subscription & Pay-Per-Use

New Models
Subscription & Membership vs. Ownership
Users are looking to transportation to meet multiple needs beyond getting to their destination

Convenience & Cost First, Green Is A Perk

User Behaviors & Preferences
A New Direction
Our Changing Relationship with Driving and the Implications for America’s Future

Recent U.S. Studies
Changes in Driving & Role of Apps, Sharing
UNDERSTANDING THE MILLENNIAL MINDSET

Millennials & Mobility: Understanding Millennials Living in Urban Areas

TCRP J-11 Study
Millennials in Motion
Changing Travel Habits of Young Americans
and the Implications for Public Policy

U.S. PIRG
Frontier Group
**Shared-use mobility:** Mobility services that are shared among users including:

- Traditional public transportation services, such as buses and trains;
- Vanpools, carpools, shuttles, ridesourcing/TNCs;
- Carsharing, bikesharing, scooter sharing in all its forms; and
- Flexible goods movement

→ Can be b2c and p2p
Roundtrip Carsharing: A fleet of autos used for round trips that require users to pay by hour or mile.

Peer-to-Peer Carsharing: Shared use of private vehicle typically managed by third party.

One-Way Carsharing: A fleet of autos used for point-to-point trips, facilitated by parking agreements.

Fractional Ownership Carsharing: Individuals sublease or subscribe to a vehicle owned by a third party.
Carsharing Membership Growth: Americas

Shaheen and Cohen, 2014
### Carsharing Vehicle Growth: Americas

![Graph showing vehicle growth in the Americas from 2003 to 2014](image_url)

<table>
<thead>
<tr>
<th>Year</th>
<th>Brazil (n=1)</th>
<th>Mexico (n=1)</th>
<th>Canada (n=20)</th>
<th>United States (n=23)</th>
<th>The Americas (n=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>0</td>
<td>0</td>
<td>397</td>
<td>696</td>
<td>1,093</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>0</td>
<td>521</td>
<td>907</td>
<td>1,428</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>0</td>
<td>599</td>
<td>1,192</td>
<td>1,791</td>
</tr>
<tr>
<td>2006</td>
<td>0</td>
<td>0</td>
<td>779</td>
<td>2,561</td>
<td>3,340</td>
</tr>
<tr>
<td>2007</td>
<td>0</td>
<td>0</td>
<td>1,388</td>
<td>5,104</td>
<td>6,492</td>
</tr>
<tr>
<td>2008</td>
<td>0</td>
<td>0</td>
<td>1,667</td>
<td>5,840</td>
<td>7,507</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>0</td>
<td>2,046</td>
<td>7,722</td>
<td>9,768</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>2,285</td>
<td>8,120</td>
<td>10,417</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>2,605</td>
<td>10,019</td>
<td>12,642</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>3,143</td>
<td>12,634</td>
<td>15,835</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>3,933</td>
<td>16,811</td>
<td>20,830</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
<td>5,048</td>
<td>19,115</td>
<td>24,266</td>
</tr>
</tbody>
</table>

Shaheen and Cohen, 2014
N.A. Vehicle Holdings: Key Findings

- Between 9 to 13 vehicles removed, including postponed purchase
- 4 to 6 vehicles/carsharing vehicle sold due to carsharing
- Most shift due to 1 car households becoming carless
- Second largest shift, 2 car households become 1 car households
- 25% sell a vehicle; 25% postpone purchase
- Net CO₂ reduction of 27% observed and 43% full impact (average)

Martin, Shaheen, Lidicker, 2010
N. American Carsharing Report

greenhouse gas emission
impacts of carsharing in north america

transweb.sjsu.edu/project/1029.html
Scooter Sharing: An operator-owned fleet of motorized scooters made available to users by the hour or minute.
Public Bikesharing: Fleet of bicycles for short, point-to-point trips usually found at stations

Closed Community Bikesharing: Campuses and closed membership, mainly roundtrip

Peer-to-Peer Bikesharing: Rent or borrow hourly or daily from individuals or bike rental shops

Bikesharing Exponential growth in urban areas
Worldwide & US Bikesharing: October 2014

- **772 cities/communities** with IT-based operating systems
  - 815,000 bikes
  - Over 37,500 stations
- **US: 62 cities** with IT-based systems
  - 22,000 bikes
  - Over 2,000 stations

Source: Russell Meddin, 2014
Bikesharing Statistics: North America
as of January 1, 2013

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Canada</th>
<th>Mexico</th>
<th>North American Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of programs</td>
<td>22</td>
<td>4</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Total Number of users</td>
<td>884,442</td>
<td>197,419</td>
<td>71,611</td>
<td>1,153,472</td>
</tr>
<tr>
<td>Number of members</td>
<td>41,695</td>
<td>53,707</td>
<td>71,611</td>
<td>167,013</td>
</tr>
<tr>
<td>Number of casual users, 1-30 Day</td>
<td>842,747</td>
<td>143,312</td>
<td>0</td>
<td>986,059</td>
</tr>
<tr>
<td>Number of bicycles</td>
<td>7,549</td>
<td>6,115</td>
<td>3,680</td>
<td>17,344</td>
</tr>
<tr>
<td>Number of kiosks</td>
<td>800</td>
<td>492</td>
<td>307</td>
<td>1,599</td>
</tr>
<tr>
<td>Number of docks</td>
<td>12,955</td>
<td>10,506</td>
<td>7,487</td>
<td>30,948</td>
</tr>
</tbody>
</table>

Shaheen et al., 2014
Carpooling: Grouping of travelers into a privately owned vehicle, typically for commuting

Vanpooling: Commuters traveling to/from a job center sharing a ride in a van

Real-time ridesharing services: Match drivers and passengers, based on destination, through app before the trip starts

Ridesharing Evolving system of services and operators
As a result of my use of bikesharing, I drive a personal vehicle (e.g., car, SUV, etc.) ...

Shaheen et al., 2014
Currently, how often do you check out a bikesharing bicycle?

- **Minneapolis Saint-Paul, N = 618**
- **Salt Lake City, N = 72**
- **Montreal, N = 1090**
- **Toronto, N = 1010**
- **Mexico City, N = 3330**

**Shaheen et al., 2014**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Minneapolis Saint-Paul</th>
<th>Salt Lake City</th>
<th>Montreal</th>
<th>Toronto</th>
<th>Mexico City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than once a month</td>
<td>10% 14%</td>
<td>15% 18%</td>
<td>5% 20%</td>
<td>3% 7%</td>
<td>4% 6%</td>
</tr>
<tr>
<td>Once a month</td>
<td>15% 25%</td>
<td>10% 13%</td>
<td>7% 13%</td>
<td>7% 4%</td>
<td>6% 12%</td>
</tr>
<tr>
<td>Every other week</td>
<td>27% 25%</td>
<td>10% 13%</td>
<td>12% 23%</td>
<td>19%</td>
<td>12%</td>
</tr>
<tr>
<td>1 to 3 days per week</td>
<td>29% 24%</td>
<td>30% 23%</td>
<td>24%</td>
<td>19%</td>
<td>30%</td>
</tr>
<tr>
<td>4 to 6 days per week</td>
<td>13% 13%</td>
<td>24% 19%</td>
<td>7% 4%</td>
<td>7% 4%</td>
<td>21%</td>
</tr>
<tr>
<td>Once a day</td>
<td>1% 0%</td>
<td>7% 22%</td>
<td>7% 4%</td>
<td>7% 4%</td>
<td>7% 21%</td>
</tr>
<tr>
<td>More than once a day</td>
<td>5% 7%</td>
<td>22% 15%</td>
<td>15%</td>
<td>15%</td>
<td>21%</td>
</tr>
</tbody>
</table>
N. American Public Bikesharing Report

Ridesharing in North America: A Snapshot (July 2011)

- 612 carpooling services
- 153 vanpooling services
- 127 services offer both carpooling & vanpooling
- Includes both online and off-line programs

Chan and Shaheen, 2011
Ridesourcing/TNCs:
A service that allows passengers to connect with and pay drivers who use their personal vehicles for trips facilitated through a mobile application.
Key Findings: Modal Shift

How would you have made this trip if Uber/Lyft/Sidecar were not available?

- 92% would have still made the trip
- 8% induced travel effect
- 33% would have taken public transit (bus or rail)
- 4% named public transit station as O/D, suggesting some use ridesourcing to access transit
- 20% avoided driving after drinking

Rayle et al, 2014
Key Findings: Wait Times

About how long did you wait for your ride (from the time you made the request to the time the vehicle arrived)?

Percentages of wait times less than or equal to 10 minutes:

<table>
<thead>
<tr>
<th>Wait Times</th>
<th>Ridesourcing</th>
<th>Taxi (Phone)</th>
<th>Taxi (Street Hail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-F 4am-6pm</td>
<td>93%</td>
<td>35%</td>
<td>39%</td>
</tr>
<tr>
<td>M-F (6pm-4am)</td>
<td>92%</td>
<td>16%</td>
<td>33%</td>
</tr>
<tr>
<td>S-Su</td>
<td>88%</td>
<td>16%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Rayle et al, 2014
Ridesourcing White Paper

What's the difference between people who use taxis and people who use ridesourcing in SF?

Submitted by Kendra K. Levine on Thu, 2014-08-28 17:00 in Articles  Data  Planning  Travel Behavior

Released This Summer!

Corporate Regional Shuttles: Employer-funded regional transit, closed systems, limited stops

Local Shuttles: Employer or development agreement service, door-to-door, closed systems, workplace to transit hub
Key Policy Takeaways

Consistent shared-use definitions and standards

- Confusion
- Lack of a consistent policy framework
- Further social & environmental benefits understanding needed

Public funding for shared-use mobility

- Dollars likely to continue to decrease before they increase
- Other means to generate capital and ongoing revenue
- Dialogue should shift from politically-charged discussion toward: job creation, increased efficiency, and economic growth
Key Policy Takeaways (Cont’d)

- Public transit integration
  - Better linkages through multi-modal connections & technology
  - Commuter tax break for shared-use modes
  - Create *more flexible* platforms for integrated mobility
  - Hurdles: equity, competition, data privacy, logistics (splitting revenues)
  - Need: joint-fare payment, updated policy framework, and improved relationships with elected officials
Other Key Issues Identified

- Social equity—system planning and business model development
- “Scaling”—Challenges exist to mainstreaming
- Parking and insurance remain obstacles
- Must balance open data sharing with privacy (individual and industry levels)
- Preparing for the future (e.g., autonomous vehicle, data aggregation, models, etc.)

Source: Google, 2014
Summary

- Shared-use mobility services are continuing to grow
- Challenges remain (e.g., equity, scaling the market, blurring lines, inconsistent policy framework, parking/insurance)
- New services emerging that can help to integrate shared-use mobility modes (e.g., RideScout and TransitScreen)
- More public transit integration needed
- Need to balance open data with privacy
- Prepare for the future (modeling, AVs, etc.)
Acknowledgements

- Shared-use mobility providers from across the Americas
- Mineta Transportation Institute (MTI), University of California Transportation Center, Caltrans, and US DOT
- Nelson Chan, Matthew Christensen, Rachel Finson, and Elliot Martin, TSRC
- Timothy Papandreou, SFMTA
- Sharon Feigon, Shared-Use Mobility Center
- Russell Meddin, Philadelphia Bike Share