



UNIVERSITY OF CALIFORNIA *Berkeley*
Transportation Sustainability
RESEARCH CENTER

Overview of Trends and Shared-use Mobility Research

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AERIS Workshop

October 22, 2014

Overview

- Trends: transportation & climate change
- Overview of Shared-use Mobility Research
 - Carsharing
 - Bikesharing
 - Ridesharing
- Summary
- Acknowledgements



Trends

- Historic rising demand for automobiles and increased VMT
- Fossil fuel dependency
- Transport sector:
 - 28% of U.S. GHG emissions
 - ~40% of GHG emissions in California
- Transport emissions expected to grow faster than all sectors
- Climate change
- Advancements in information technology
- Growth of the Sharing Economy



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



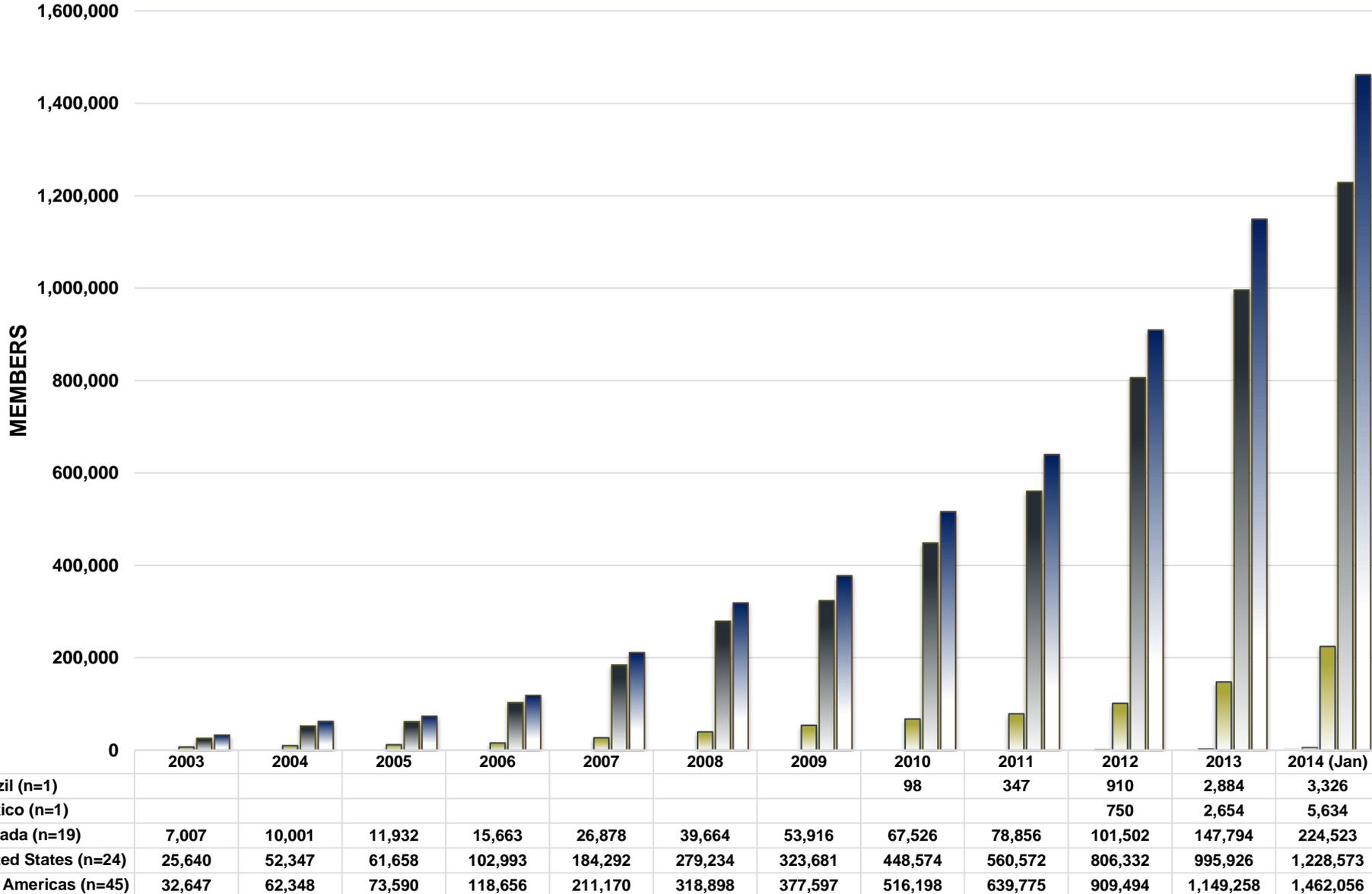
One-Way Carsharing:
A fleet of autos used for point-to-point trips, facilitated by parking agreements



Fractional Ownership Carsharing:
Individuals sublease or subscribe to a vehicle owned by a third party

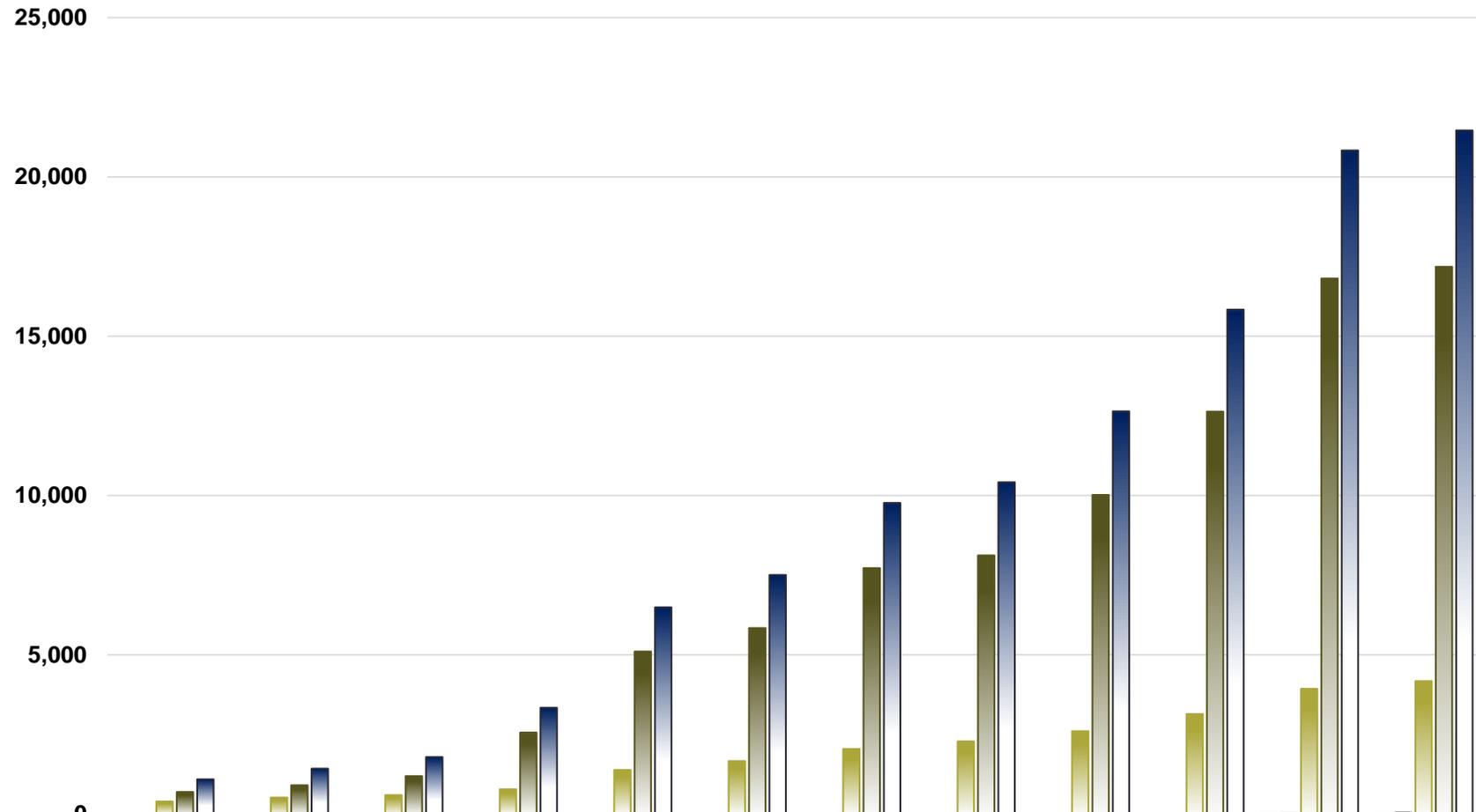


Carsharing Membership Growth: Americas



Shaheen and Cohen, 2014

Carsharing Vehicle Growth: Americas



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 (Jan)
■ Brazil (n=1)								12	18	58	46	56
■ Mexico (n=1)											40	50
■ Canada (n=19)	397	521	599	779	1,388	1,667	2,046	2,285	2,605	3,143	3,933	4,174
■ United States (n=24)	696	907	1,192	2,561	5,104	5,840	7,722	8,120	10,019	12,634	16,811	17,179
■ The Americas (n=45)	1,093	1,428	1,791	3,340	6,492	7,507	9,768	10,417	12,642	15,835	20,830	21,459

2008 N. American Carsharing Survey

Key Findings

- Between **9 to 13 vehicles removed**, including postponed purchase
- **4 to 6 vehicles**/carsharing vehicle **sold** due to carsharing
- 25% sell a vehicle; 25% postpone purchases
- Net CO2 reduction of **~27%**

Martin, Shaheen, Lidicker, 2010





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

Worldwide & US Bikesharing

June 2014

- **712 cities** with IT-based operating systems
 - ✓ **806,200 bikes**
 - ✓ **37,500 stations**
- **47 new city programs** since January 2014
- **US: 56 cities** with IT-based systems
& 2 universities
 - ✓ **20,100 bikes**
 - ✓ **2,000 stations**

Source: Russell Meddin, 2014



Some Public Bikesharing Impacts

City	Change in Vehicle Ownership	Respondents Driving Less Often
Montreal	-3.60%	36.30%
Toronto	-2.00%	25.40%
Washington DC	-2.10%	41.0%
Minneapolis-Saint Paul	-1.90%	52.4%

Shifts in Public Transit

- Research has shown that shifts to and from public transit exhibited trends that were different and distinct among cities.
- There was a net shift away from Bus in all cities, but this was more pronounced in the larger cities.
- There was a net shift away from Rail in 3 of 4 cities, with Minneapolis showing a net shift towards rail.





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



Ridesourcing:
A service that allows passengers to connect with and pay drivers who use their personal vehicles for trips facilitated through a mobile application

638 North American Ridesharing Services (July 2011)



612 carpooling

153 vanpooling



Ridesourcing: Some Early Understanding

- Between May and June 2014, surveyed 380 users at three “hot spots” in San Francisco: Mission, Marina, and North Beach districts
- Of all trip responses, 67% were social/leisure (bar, restaurant, concert, visit friends/family); 16% were work; 4% were to or from the airport; and 10% were other (e.g., doctor’s appointment, volunteer)
- Appears to substitute for longer public transit trips but otherwise complements transit
- Ridesourcing users tend to be younger, own fewer vehicles, and more frequently travel with companions than taxi users



Summary



- Land use, auto ownership, fossil fuel dependency related to growing GHG emissions
- Transportation contributes ~30% of GHG emissions in US & ~40% in California
- Reduction strategies include: fuels, technologies, and demand management/land use
- Many strategies rely on ITS technologies



Summary



- As carsharing continues to grow, so does the number and type of usage and ownership models (e.g., round-trip, one-way, peer-to-peer etc.)
- Exponential growth of bikesharing in urban areas
- Bikesharing maybe a targeted approach to increase transit ridership in small and medium cities and free transit capacity in larger more dense cities.
- Renaissance in ridesharing being driven by real-time ridesharing services and ridesourcing.



Acknowledgements

- Carsharing and bikesharing organizations
- Mineta Transportation Institute (MTI), Caltrans, and US DOT
- MRPI, UCOP sustainability grant
- Karen Philbrick, MTI
- Susan Shaheen, Elliot Martin, Nelson Chan, and Rachel Finson, TSRC
- ITS America





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