

Carsharing Trends and Research Highlights

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OVERVIEW



- About TSRC
- Growth Trends in the Americas
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- One-way Research
- College/University Study
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TRANSPORTATION SUSTAINABILITY RESEARCH CENTER

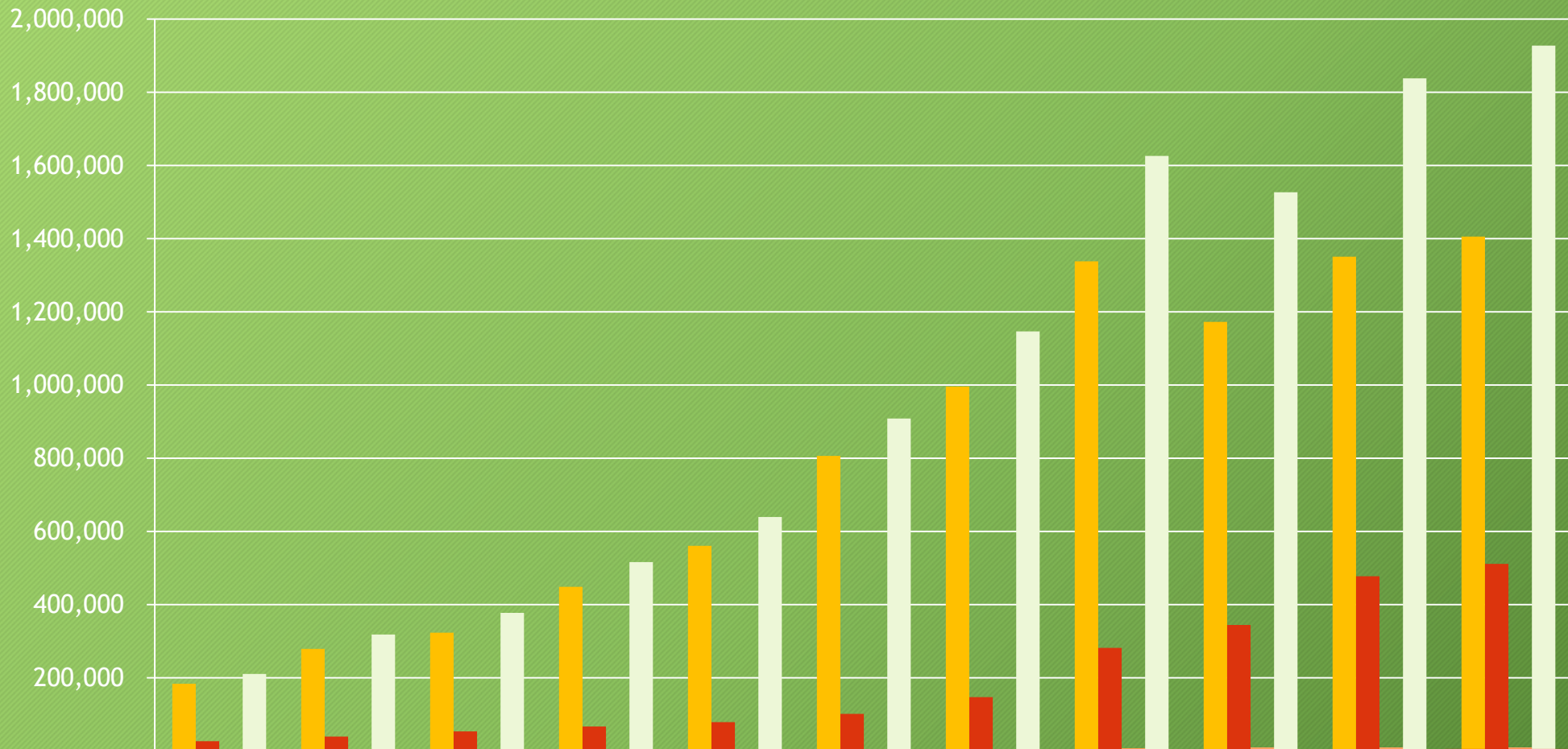


- Founded in 2006
- TSRC conducts global research on a wide-array of topics:
 - Advanced vehicles and fuels
 - Energy and infrastructure
 - Goods movement
 - Innovative mobility
 - Mobility for special populations
 - Transportation and energy systems analysis
- Published 100 research studies
- Leader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

North American Membership Growth



Members



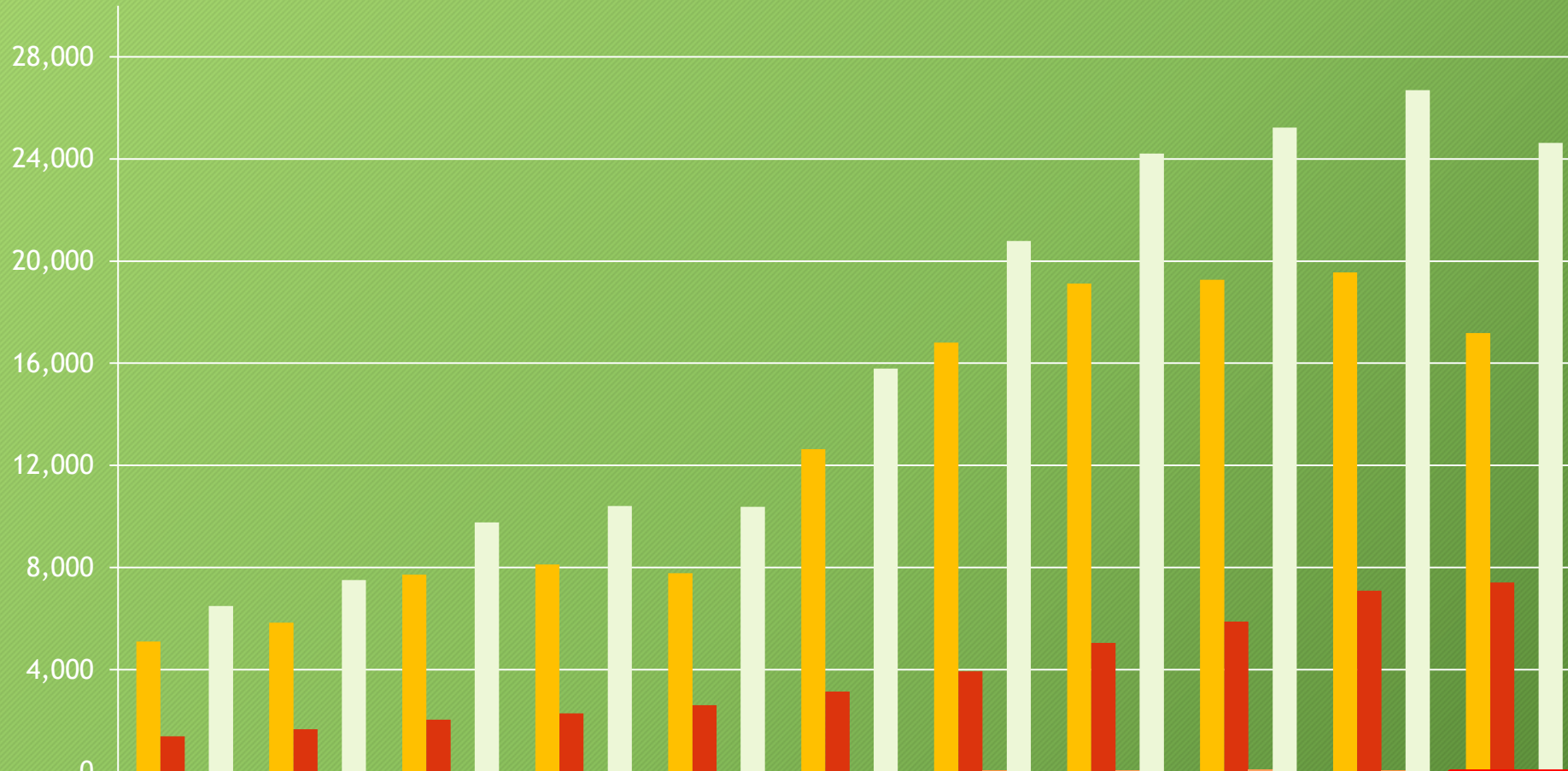
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 (Jan)
■ U.S. (n=21)	184,292	279,234	323,681	448,574	560,572	806,332	995,926	1,337,803	1,172,490	1,351,051	1,405,447
■ Canada (n=17)	26,878	39,664	53,916	67,526	78,856	101,502	147,794	281,675	344,403	477,528	511,654
■ Mexico (n=1)						750	2,654	6,174	9,639	9,275	10,127
■ North America (n=39)	211,170	318,898	377,597	516,100	639,428	908,584	1,146,374	1,625,652	1,526,532	1,837,854	1,927,228

(Shaheen and Cohen 2017)

North American Vehicle Growth



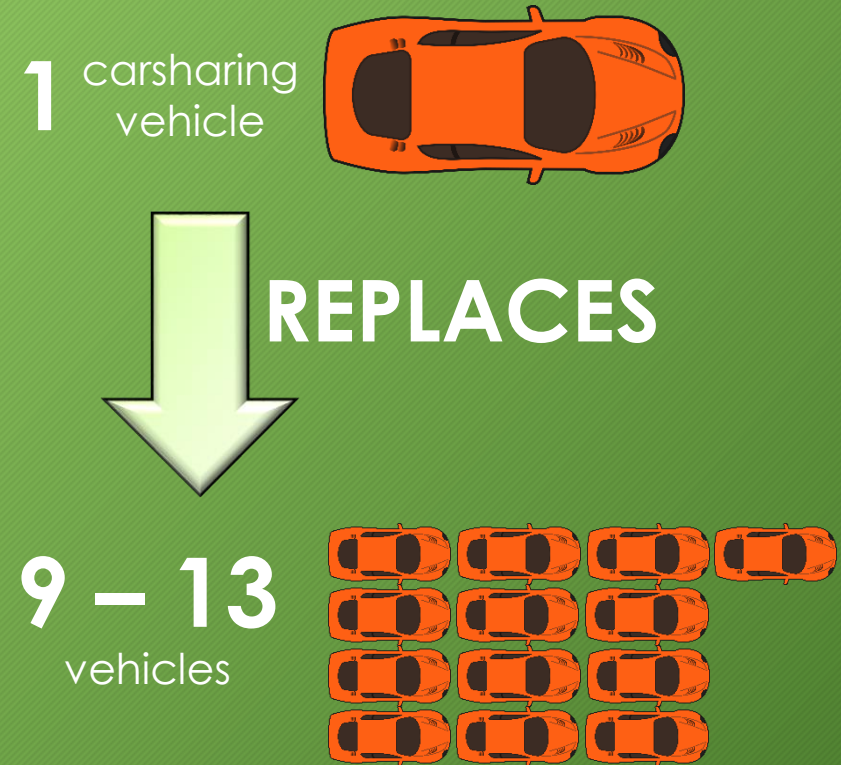
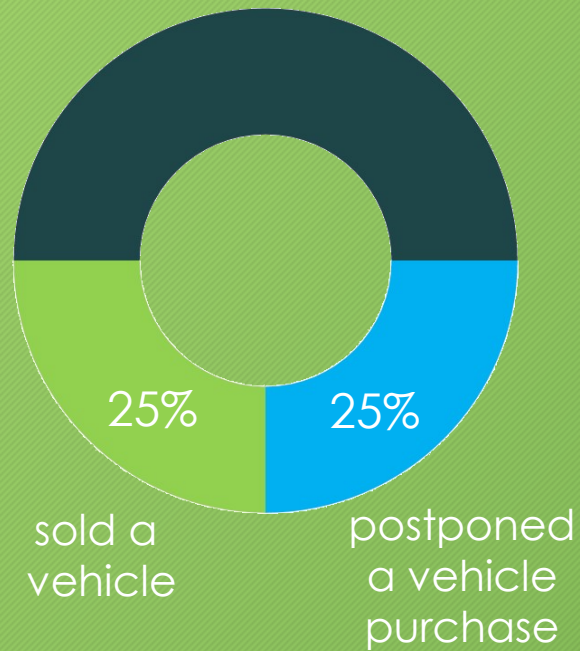
Vehicles



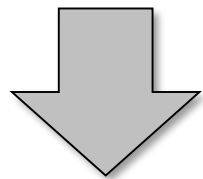
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 (Jan)
■ U.S. (n=21)	5,104	5,840	7,722	8,120	7,776	12,634	16,811	19,115	19,270	19,555	17,178
■ Canada (n=17)	1,388	1,667	2,046	2,285	2,605	3,143	3,933	5,048	5,881	7,093	7,412
■ Mexico (n=1)						18	40	47	73	43	39
■ North America (n=39)	6,492	7,507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

(Shaheen and Cohen 2017)

Roundtrip Impacts: North America

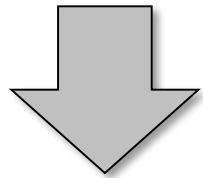


Roundtrip Impacts: North America



.58 - .84 metric tons
34% - 41%

Reduction of GHG emissions per year for one household



27% - 43%

Reduction of VMT per year considering vehicles sold and purchases postponed



\$154 - \$435

Monthly household savings per US member after joining carsharing



public transit and non-motorized modes

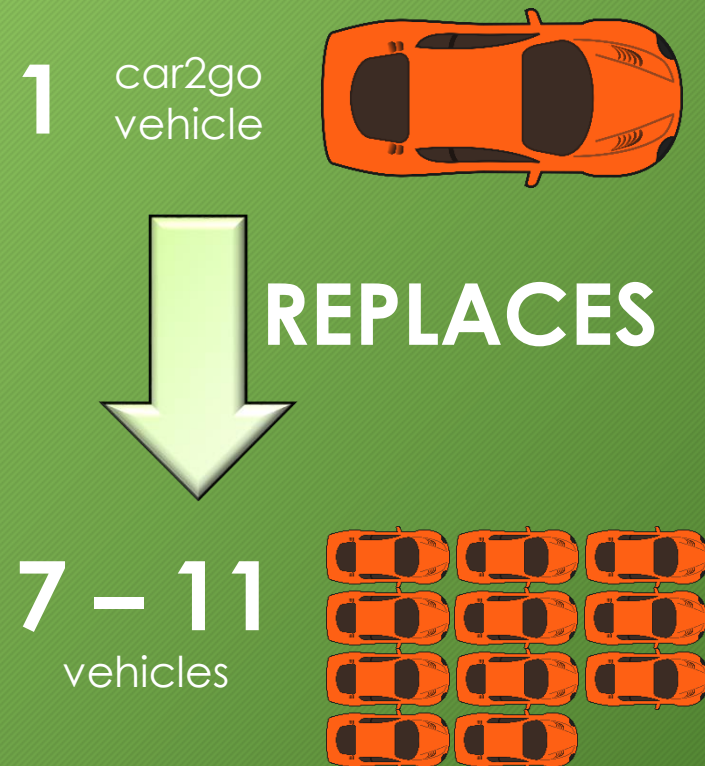
More users increased (than decreased) their modal use; including bus, rail, walking, biking, and carpooling

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



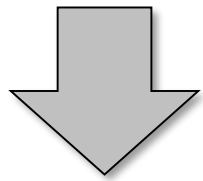
One-way Impacts: North America



VEHICLE IMPACTS FROM FREE-FLOATING ONE-WAY CARSHARING

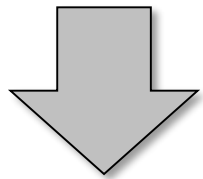
City	Vehicles Shed (sold)	Vehicles Suppressed (foregone purchases)	Total Vehicles Removed per Carsharing Vehicle	Range of Vehicles Removed per Carsharing Vehicle
Calgary, AB (n=1,498)	2	9	11	2 to 11
San Diego, CA (n=824)	1	6	7	1 to 7
Seattle, WA (n=2,887)	3	7	10	3 to 10
Vancouver, BC (n=1,010)	2	7	9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

One-way Impacts: North America



4% - 18%

Average reduction of GHG emissions per year per car2go household



6% - 16%

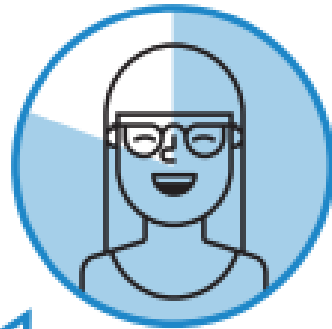
Average reduction of VMT per year per car2go household

Recent Study of Zipcar's College/University Market: Fall 2016



OWNING IT

80%
of uni Zipsters



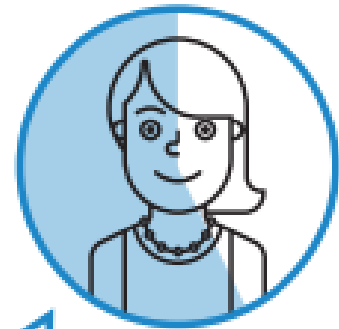
**DON'T OWN
A CAR**

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

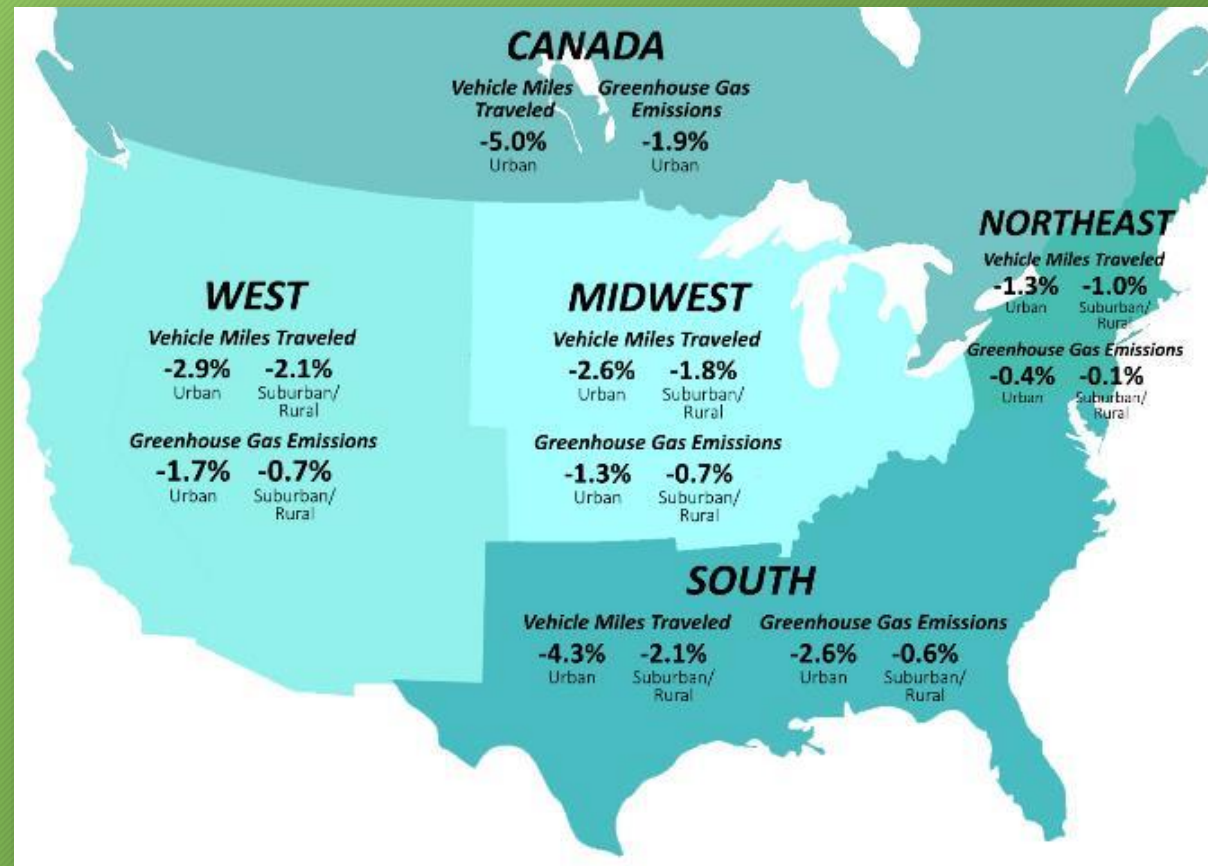


↓ **-0.1% to -2.6%**

Reduction of GHG emissions

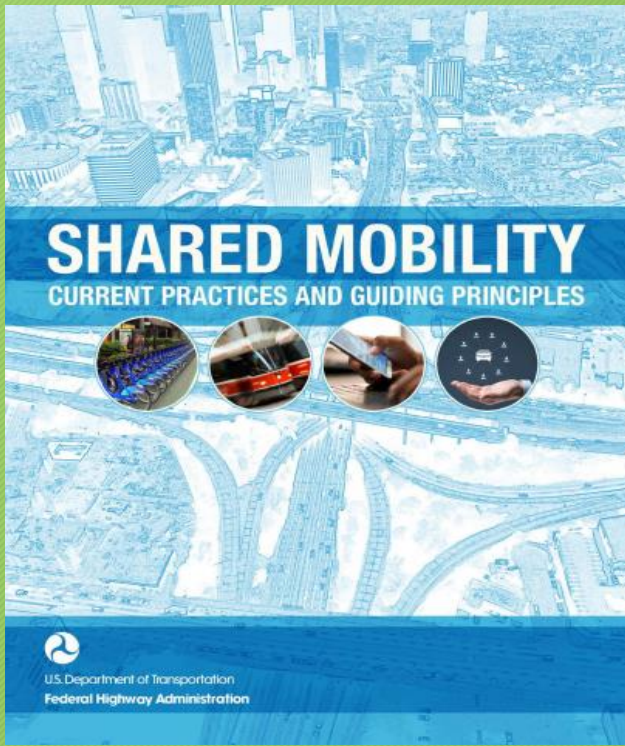
↓ **-1% to -5%**

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

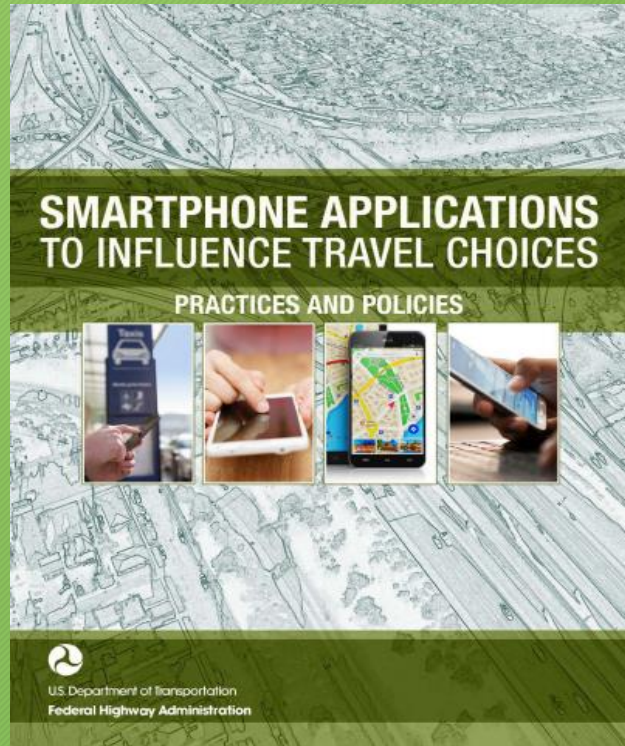


(Stocker et al. 2016)

Recent Reports



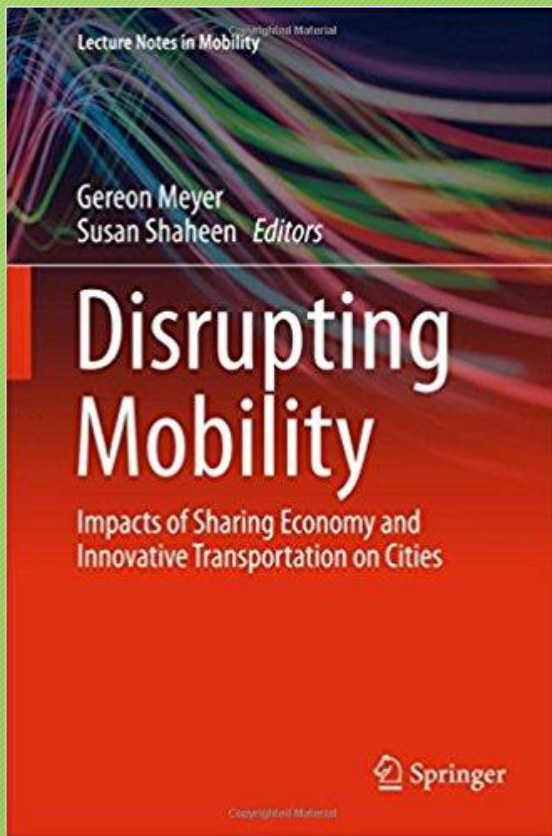
<https://ops.fhwa.dot.gov/publications/fhwahop16022/fhwahop16022.pdf>



<https://ops.fhwa.dot.gov/publications/fhwahop16023/fhwahop16023.pdf>



<https://www.planning.org/publications/report/9107556/>



Available at:

<https://www.amazon.com/Disrupting-Mobility-Impacts-Innovative-Transportation/dp/3319516019>

Recent Book



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

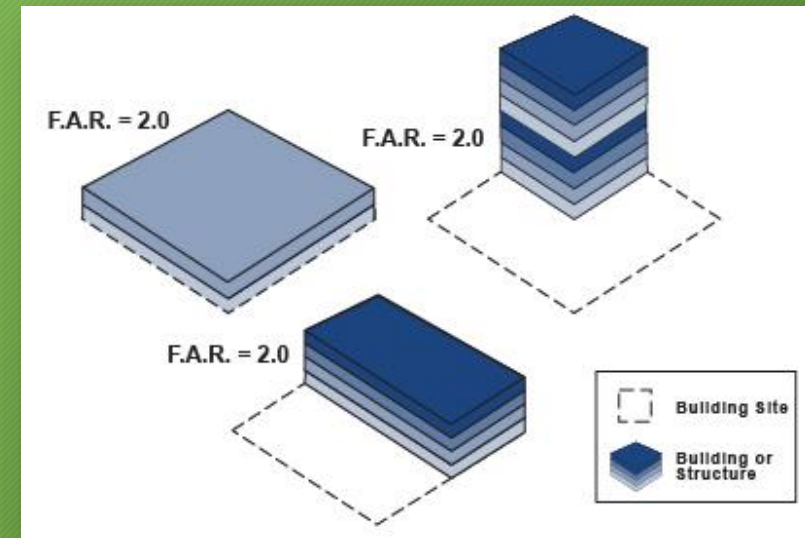


Parking-Specific Policies

- 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 Planning and Public Policy



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



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LAST WEEK IN INNOVATIVE MOBILITY

May 1st - May 7th, 2017

VEHICLES
Intel partners with BMW to develop and test an autonomous driving platform for automobile manufacturers. Intel's end-to-end software development kit simulates millions of driving miles to optimize autonomous driving algorithms. Intel's recent acquisition, Mobileye, will contribute its computer vision and high definition mapping technology to the platform.

VEHICLES
Electric bus maker Proterra begins testing autonomous technology on its Catalyst bus in Reno, Nevada. Created by the University of Nevada, Reno's Autonomous Robotics Lab, the Catalyst collects data using LIDAR, cameras, and other sensors while a human drives the vehicle. A simulation engine will use the sensor data to train algorithms for future autonomous public transit vehicles.

MICROTRANSIT
Microtransit startup Bridj shuts down after a potential buyer pulls out of negotiations. Bridj offered on-demand rides in 14-seat vans that were routed based on real-time demand. Bridj launched in Boston in 2014 and was operating in limited capacity in Austin and Washington, D.C. It had also completed a one-year trial in Kansas City.

CARSHARING
GM expands its carsharing service, Maven, to provide weekly car rentals specifically for on-demand service contractors. Called Maven Glo, the service is launching in San Diego with a fleet of 100 Chevrolet Bolt electric vehicles. Rentals will be available to drivers working for GrubHub, Instacart, Roodle, Uber, and Lyft for the cost of \$230 per week, with insurance, unlimited miles, charging, and maintenance included.

RIDESHARING
French ridesharing startup BlaBlaCar launches a carpooling app for daily, short-distance commuters in select French cities, called BlaBlaLines. The service matches commuters making similar trips and assigns a location along the driver's route, at which the rider must wait to be picked up. BlaBlaLines does not charge commission on fares, which are paid in cash.

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Innovative Mobility Research (IMR) is based at the Transportation Sustainability Research Center (TSRC) at the University of California, Berkeley

Created By: Jessica Lazarus

INNOVATIVE MOBILITY CARSHARING OUTLOOK

CARSHARING MARKET OVERVIEW, ANALYSIS, AND TRENDS Winter 2016

TRANSPORTATION SUSTAINABILITY RESEARCH CENTER - UNIVERSITY OF CALIFORNIA, BERKELEY

By Susan Shahnen, Ph.D. and Adam Cohen

Worldwide Carsharing Growth Continues

As of October 2014, carsharing was operating in 33 countries, five continents, and an estimated 1,531 cities with approximately 4.8 million members sharing over 104,000 vehicles. Europe, the largest carsharing region measured by membership, accounts for 46% of worldwide membership and 56% of global fleets deployed. The world's second largest carsharing market, North America, accounts for 34% of worldwide members and 23% of vehicle fleets. In 2014, Mexico maintained the highest member-vehicle ratios (131:1), followed by 107:1 in Italy.

Recent Events

Disrupting Mobility

In November 2015, the Massachusetts Institute of Technology, the University of California, Berkeley, and the London School of Economics co-hosted the Disrupting Mobility Summit in Boston, Massachusetts. The summit provided an interactive forum for leading executives, government representatives, and academics to discuss sustainable transportation. To watch recorded video sessions from the summit, please visit: <http://www.disrupting-mobility.org/video>

For more information about the summit, please visit: <http://disrupting-mobility.org>

(Note: Numbers reflect business-to-consumer (B2C) carsharing only, including one-way operations.)

Acknowledgments



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