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Finding Purpose in Shared Mobility

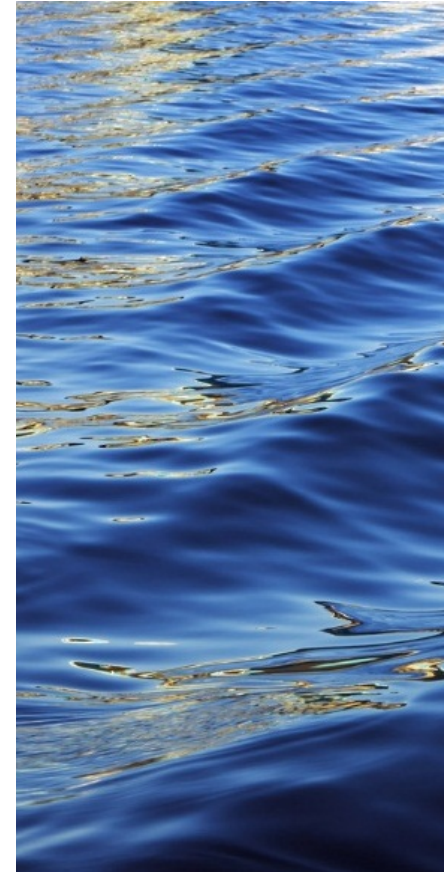
Shaping and Maximizing
Societal Benefits



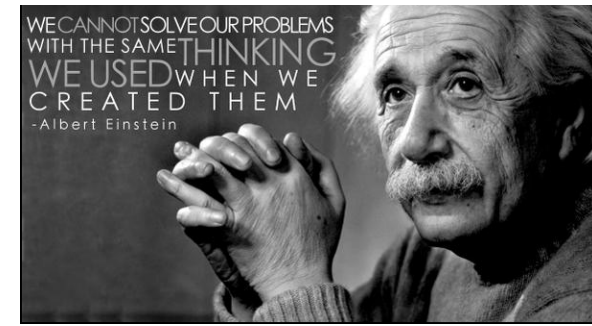


Finding Purpose in Shared Mobility: Shaping and Maximizing Societal Benefits

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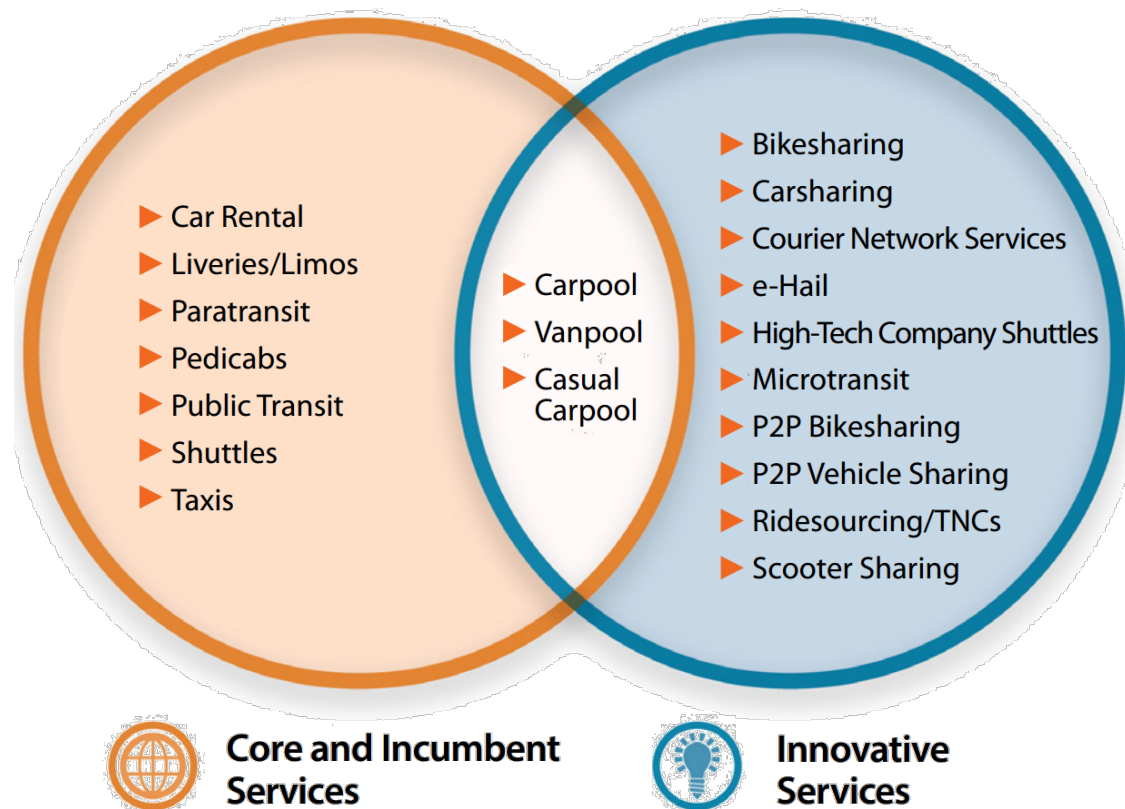
Overview



- Defining shared mobility
- Social and environmental impacts (positive/negative)
- Key questions related to the transition of SAVs
- Upcoming studies and current reports

Defining Shared Mobility

Shared mobility—the shared use of a vehicle, bicycle, or other travel mode—is an innovative transportation strategy that enables users to have short-term access to a mode of transportation on an as-needed basis.



Shared Mobility Impacts



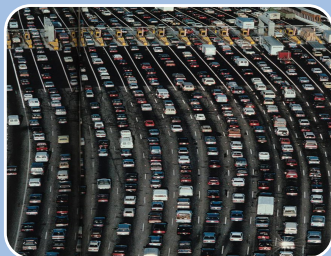
Environmental Effects

- Can yield lower GHG emissions via decreased VMT, low-emission vehicles, carbon offset programs
- Can reduce vehicle ownership



Social Effects

- Offers “pay-as-you-go” alternative to vehicle ownership
- Reasonable for college students and low-income households
- Can increase mobility of low-income residents, disabled, and college students
- Provides car use without bearing full ownership cost



Transportation Network Effects

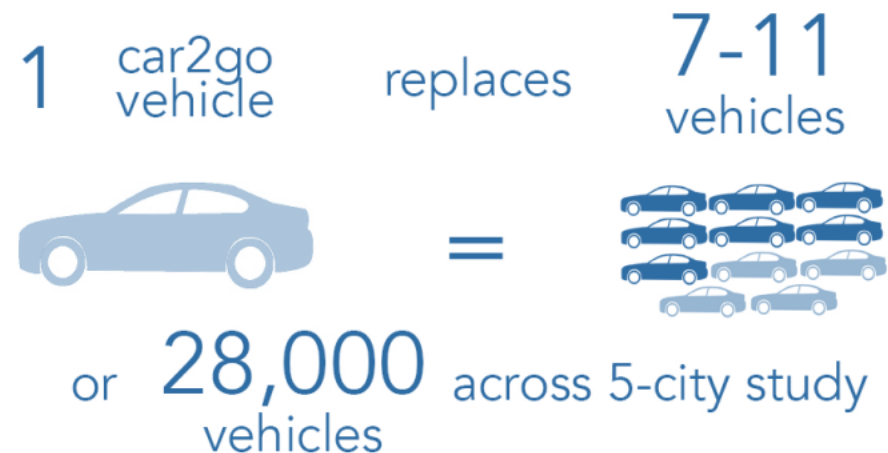
- Takes cars off the road via reduced VMT, forgone/delayed vehicle purchases or sale of vehicle
- Reduced parking demand
- Can complement/complete with alternative transportation modes, e.g., public transit, walking, biking, etc., and can help address first and last mile issue

One-Way Carsharing Study

ONE-WAY CARSHARING IMPACTS

Member Vehicle Holdings

2% - 5%	sold a vehicle
1 - 3	vehicles sold per car2go vehicle
7% - 10%	postponed a vehicle purchase
4 - 9	vehicle acquisitions suppressed per car2go vehicle



Reduction of VMT and GHG emissions



6% - 16%

Average reduction of VMT per car2go household



4% - 18%

Average reduction of GHG emissions per car2go household

One-Way Carsharing: 5-Cities

City	Vehicles Sold	Vehicles Suppressed (foregone purchases)	Total Vehicles Removed per Carsharing Vehicle	Range of Vehicles Removed per Carsharing Vehicle	% Reduction in VMT by Car2go Hhd	% Reduction in GHGs by Car2go Hhd
Calgary, AB (n=1,498)	2	9	11	2 to 11	-6%	-4%
San Diego, CA (n=824)	1	6	7	1 to 7	-7%	-6%
Seattle, WA (n=2,887)	3	7	10	3 to 10	-10%	-10%
Vancouver, BC (n=1,010)	2	7	9	2 to 9	-16%	-15%
Washington, D.C. (n=1,127)	3	5	8	3 to 8	-16%	-18%

Impacts of N. American Bikes sharing

BIKESHARING IMPACTS



Bikesharing members in larger cities rode the bus less, attributable to reduced cost and faster travel associated with bikesharing.

Across all cities surveyed, increased bus use was attributed to bikesharing improving access to/from a bus line.



Rail usage increased in small cities (Minneapolis-St. Paul) and decreased in larger cities (Mexico City, Montreal, and Washington, DC) - all larger regions with denser rail networks. Shifts away from public transit in urban areas are often attributed to faster travel times and cost savings from bikesharing use.

 5.5% sold or postponed a vehicle purchase  58% Increased cycling  50% of bikesharing members reduced personal auto usage

Recent Study of Zipcar's College/University Market: Impacts

OWNING IT

80%

of uni Zipsters



DON'T OWN
A CAR

43%



SOLD OR PUT OFF
BUYING A CAR

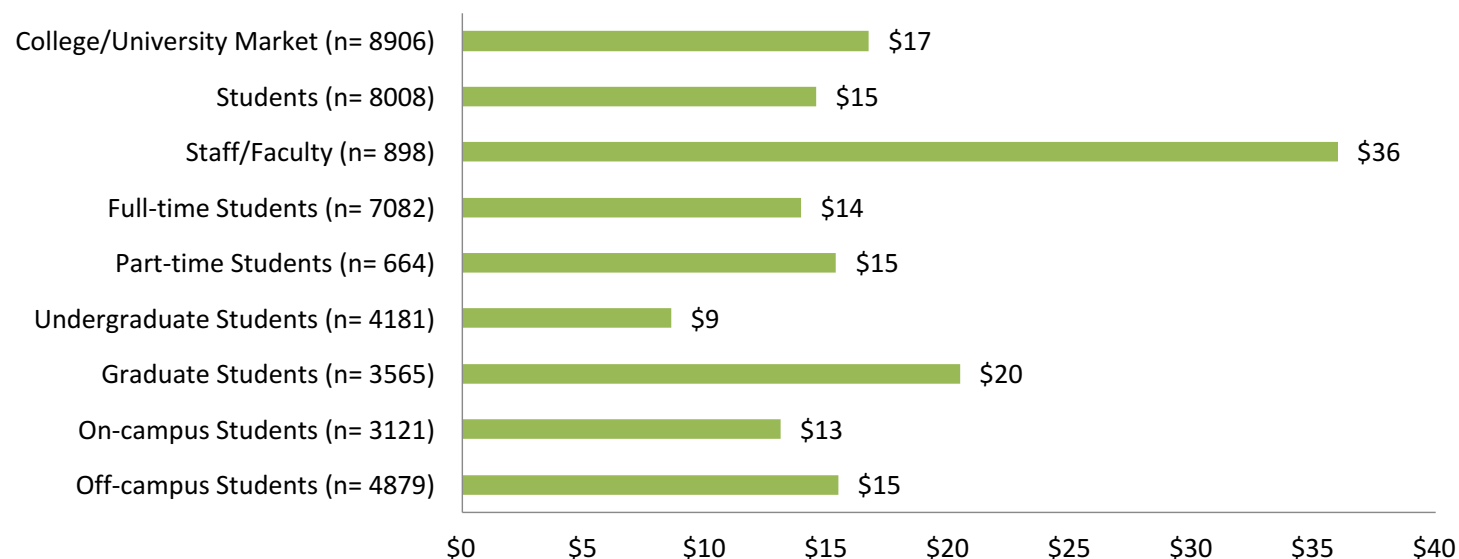
40%



ARE LESS LIKELY
TO BUY A CAR

n=~10,000

Average Monthly Savings on Transportation Expenses Due to Zipcar



- **43% of college/university market respondents say they save money on transportation due to Zipcar**
- **Groceries/food and savings are the two most popular spending categories of saved money across all respondents**

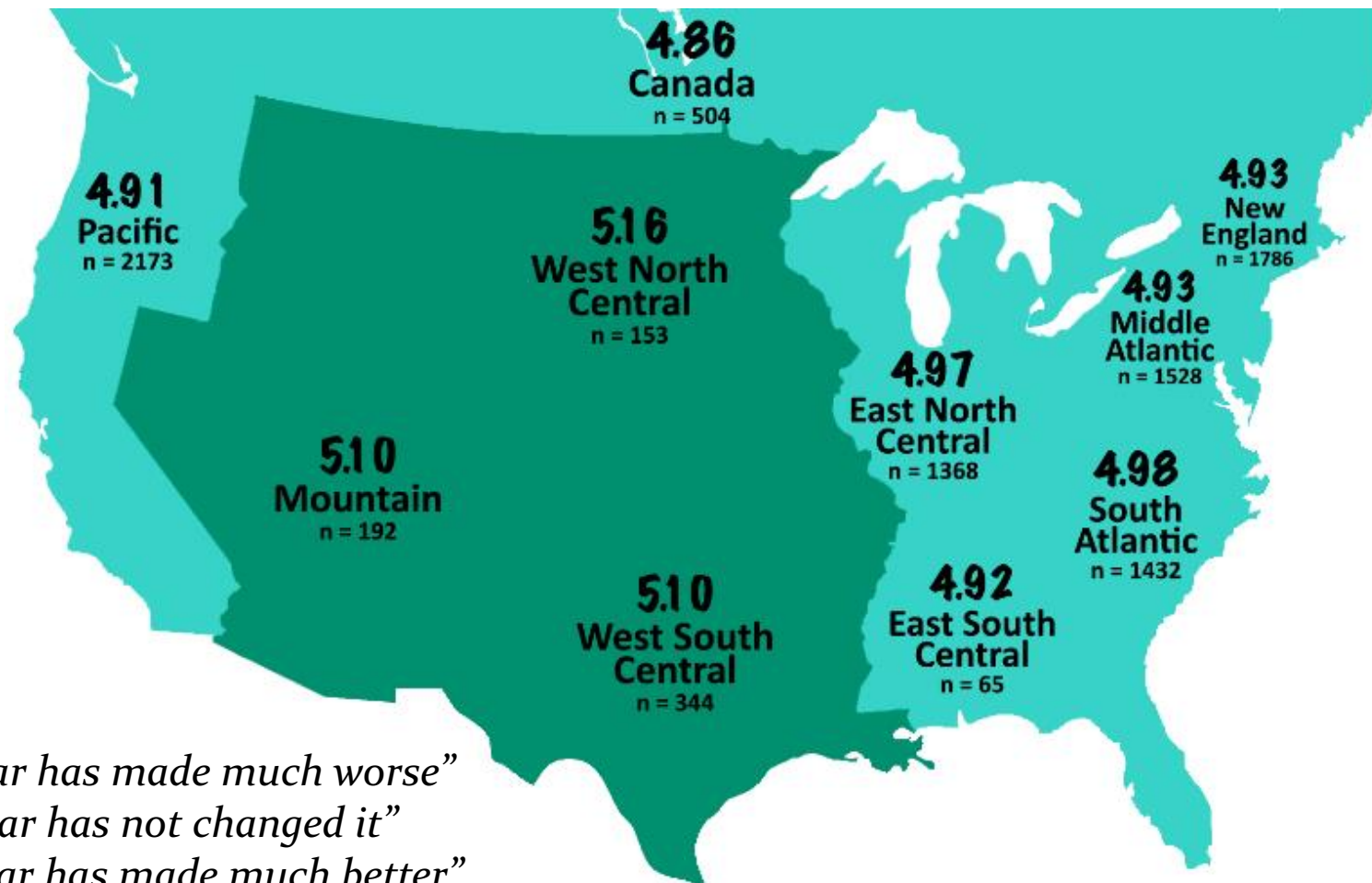
Impact of Zipcar on Members' Quality of Life: Average QoL Impact Scores

College/University Market QoL Impact Scores (N = 9523)		
QoL Metric	Average	Standard Deviation
Variability in Experiences	5.15	1.14
Accessibility	4.99	1.22
Flexibility	4.98	1.11
Privacy	4.96	1.16
Freedom	4.92	1.08
Nature/Biodiversity	4.81	1.14
Comfort	4.80	1.09
Social Justice	4.68	1.08
Financial Control and Predictability	4.60	1.13
Social Relations	4.57	1.04
Leisure Time	4.52	1.02
Safety	4.48	1.05
Environmental Quality	4.48	1.02
Serenity/Lightheartedness	4.46	1.02
Money/Income	4.41	1.19
Health	4.35	0.95
Overall	4.95	1.00

- All mean changes in QoL are positive changes.
- Overall impact (4.95) is about 1 full point higher than the neutral not changed (4) answer.
- Variability in Experiences (5.15) is the highest rated average QoL score

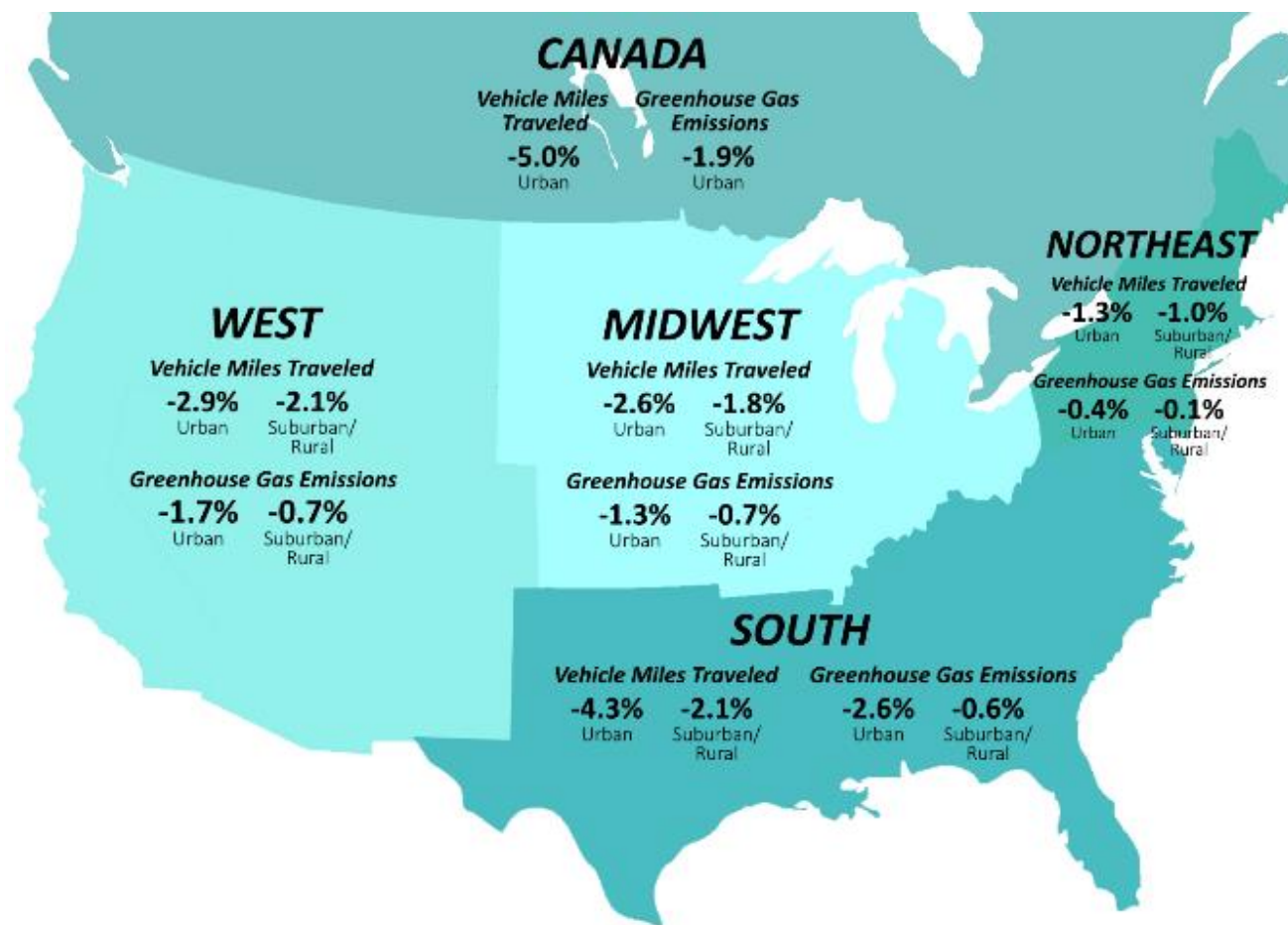
1 = "Zipcar has made much worse"
4 = "Zipcar has not changed it"
7 = "Zipcar has made much better"

Impact of Zipcar on Members' Quality of Life: Average Overall QoL Impact Scores by U.S. Census Division



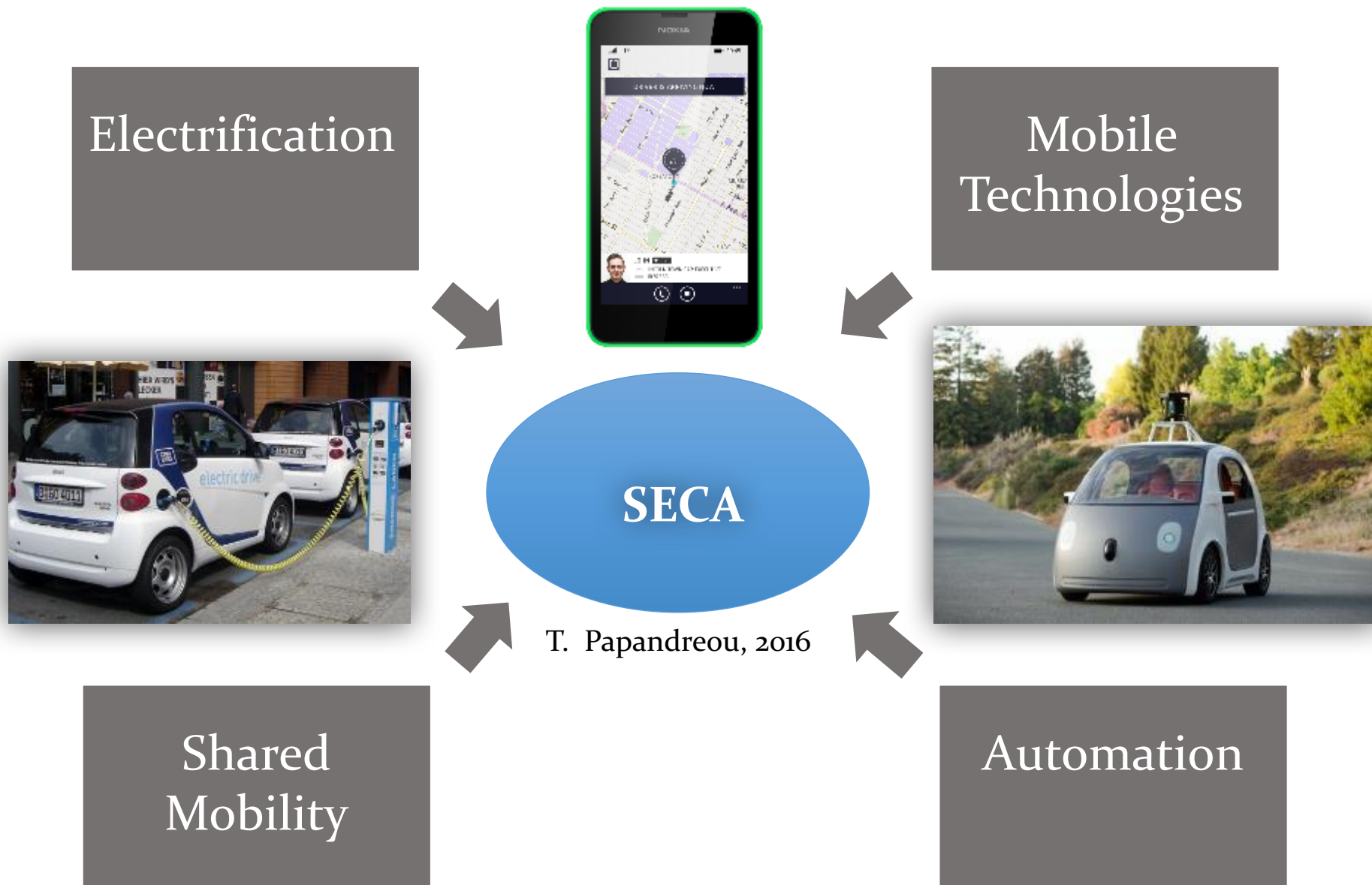
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Impact on Vehicle Miles Traveled (VMT) and Greenhouse Gas (GHG) Emissions



- VMT reduction ranges from -1% to -5%
- GHG reduction ranges from -0.1% to -2.6%
- VMT reductions are greatest in urban land-use contexts
- Members at Southern and Canadian campuses have the greatest VMT reductions

Convergence



Possible SAV Impacts: Opportunities

- Enhanced safety (elimination of human-factors)
- Increase vehicle occupancies (freed capacity, right-sized vehicles, closer spacing, etc.)
- Reduce per mile cost (over privately-owned vehicles)
- Unlock urban space dedicated to parking for other uses
- Downsize number of privately-owned household vehicles
- Reduce GHG emissions



Possible SAV Impacts: Challenges

- Increased VMT (due to induced demand b/c lower costs, modal shift away from public transit, longer commutes, roaming AVs, etc.)
- Will people give up private ownership?
- Increased urban sprawl
- Congestion solved?



Need for Public Policy

- Public policy can help shape impacts as shared mobility transitions to SAVs
- Key areas include policies that:
 - Encourage higher passenger occupancies
 - Enable and enhance access to services to digitally impoverished and unbanked users
 - Reduce congestion and support environmental sustainability
 - Leverage pricing to manage demand and enable maximum network efficiency

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Last Week In Innovative Mobility
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TECHNOLOGY
NVIDIA and VW collaborate to apply artificial intelligence technology to broader transportation challenges. The organizations had previously partnered to develop driverless vehicles and will continue to use machine learning applications for urban traffic flow optimization.

RIDESOURCING
Uber and Yandex combine their Russian ridesourcing business. Both companies stated they would join forces in Russia, Armenia, Azerbaijan, Belarus, Georgia, and Kazakhstan to create a company that will operate in 127 cities. Russia's federal anti-monopoly regulatory body states the action would need approval as it potentially poses risk to competition.

APPS
TransLoc and Google announce partnership to ensure accurate public transportation data are integrated into Google Maps. This partnership will allow TransLoc to manage larger volumes of real-time transit information for agencies and vastly improve access to public transit information for riders.

PUBLIC TRANSIT
Paris launches autonomous EV shuttle service pilot program. Two companies, Navya and Keolis, are partnering with the Parisian government to offer the service free of charge. The shuttles carry up to 15 people each and will operate three different daily routes. The pilot will run until at least December of this year.

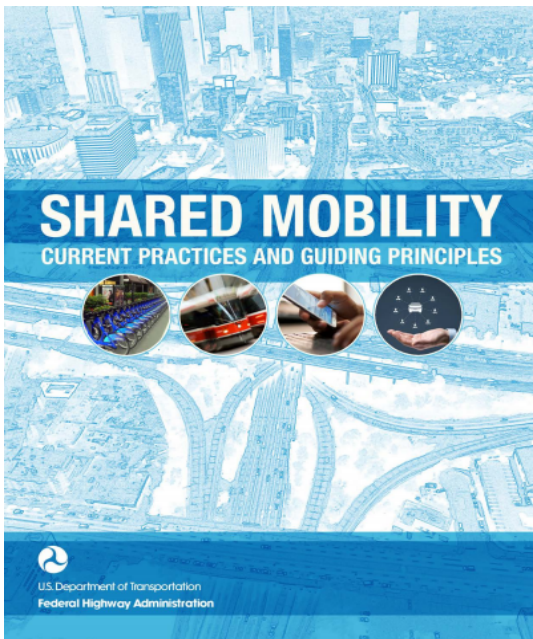
BIKESHARING
Seattle allows private bikesharing on city streets, with as many as 10 companies planning to launch under the new program. Interested companies must roll out a minimum of 500 bikes and pay an operations fee to the city. This may lead to hundreds of thousands of dollars in public revenue. Helmet laws will still be enforced for users of the systems, but companies are not required to provide such helmets.

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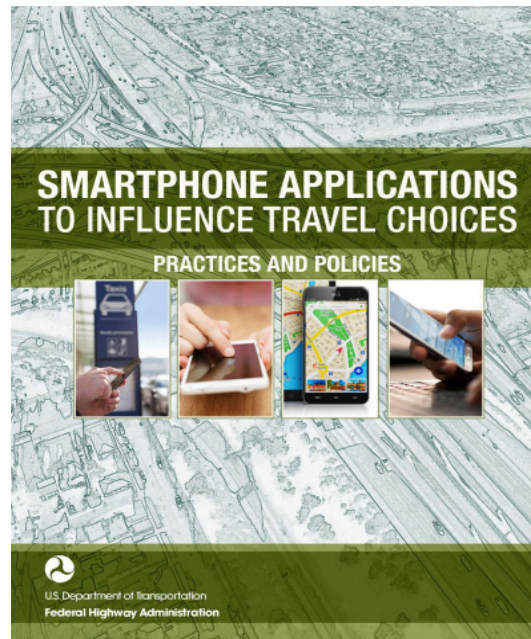
Innovative Mobility Research (IMR) focuses on the future of mobility and is based at the Transportation Sustainability Research Center at the University of California, Berkeley

innovative mobility

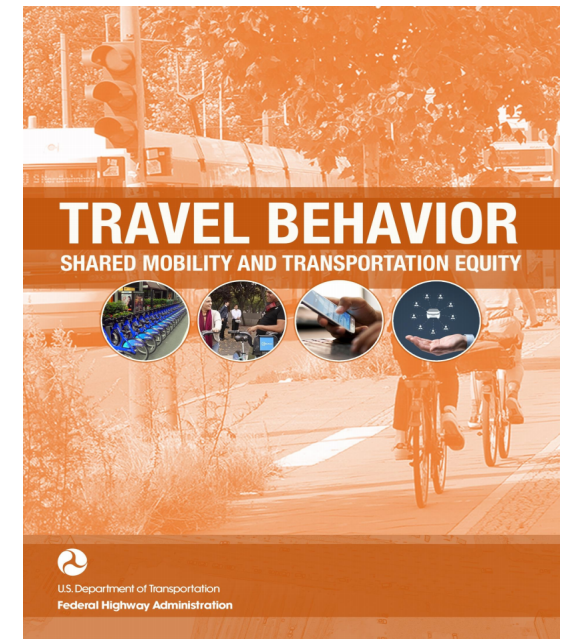
Recent Reports



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



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



https://www.fhwa.dot.gov/policy/otps/shared_use_mobility_equity_final.pdf

Recent Reports

Mobility on Demand

Operational Concept Report

www.its.dot.gov/index.htm

Final Report – September 2017
FHWA-JPO-18-611



<https://rosap.ntl.bts.gov/view/dot/34258>

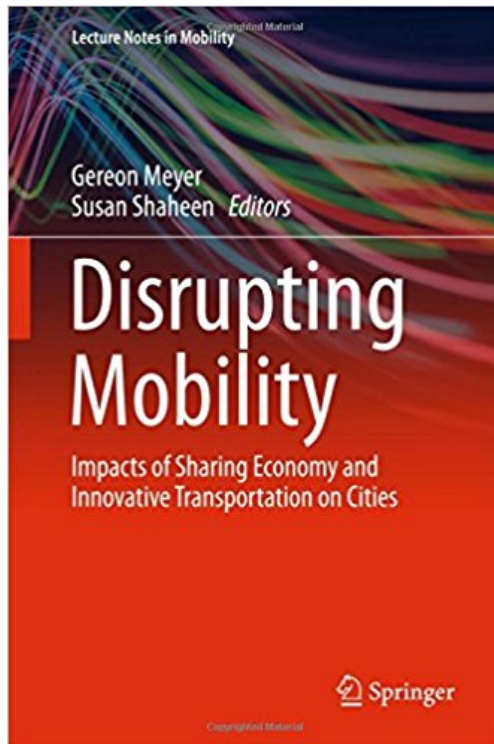


<https://www.planning.org/publications/report/9107556/>



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Transportation Sustainability
RESEARCH CENTER

Disrupting Mobility (2017)



Available at:

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

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