What Carsharing Needs Now: Research Needs, Policy Support, and Industry Steps

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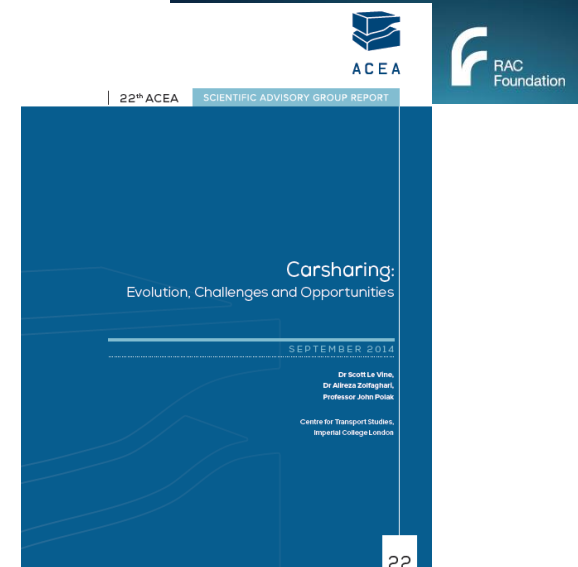
3rd World Collaborative Mobility Congress (wocomoco)

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About me (briefly)

- Research Associate (Imperial College, UK), Assistant Professor (SUNY New Paltz, NY, USA), Visiting Professor (Southwest Jiaotong University, Chengdu, China)

- In addition to Carsharing: "Peak Car" and, more recently, Automated Cars

- Main general-audience pieces on Carsharing:
  - 2012: *Car Rental 2.0*
  - 2014: *Carsharing: Evolution, Challenges, and Opportunities*
  - 2015: *Guest Editorial of [Transportation] Special Issue on Shared-Mobility*

Car Rental 2.0
Car club innovations and why they matter

ACEA | RAC Foundation

22th ACEA SCIENTIFIC ADVISORY GROUP REPORT

Carsharing:
Evolution, Challenges and Opportunities

SEPTEMBER 2014

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22

My 'proof-of-concept' (not 'final-word') academic papers on Carsharing

- 2014: *A new approach to predict the market and impacts of round-trip and point-to-point carsharing systems*
    - http://dx.doi.org/10.1016/j.trd.2014.07.005

- 2014: *Predicting new forms of activity/mobility patterns enabled by shared-mobility services through a needs-based stated-response method: Case study of grocery shopping*
    - http://dx.doi.org/10.1016/j.tranpol.2013.12.008

- 2014: *A pareto-efficient market-clearing mechanism for shared-mobility systems*
    - http://dx.doi.org/10.1504/IJATM.2014.06529

    These are behind paywalls. However if you email me (slevine@imperial.ac.uk), I can send you the 'pre-print' of any of these papers; this does not violate the publishers' copyright.

Reflections on the Carsharing Phenomenon

Some distinctive aspects of Shared-Mobility

- 'Sharing' doesn't describe CS behaviour very well: We're talking, in general, about sequential, technology-enabled vehicle access. Responsibility and Benefits of vehicle-access are (usually) held temporarily by each user, rather than 'shared'.

- Local government serves as 'gatekeeper' for many types of carsharing systems

- Service innovation is outpacing our analytical capabilities: Large uncertainty in predicting the success/failure of individual carsharing initiatives

- Fleet-ownership enables unique possibilities (e.g. car2go/Bosch's R&D on automated parking)

- Despite rapid growth, we remain a relatively small part of the Urban Mobility scene (London: ratio is 1K private cars for every 1 CS car, and Carplus estimates CS has reduced car ownership by roughly 1-2%)

- Many consumer products are being 'shared' (or 'servicised'), but not all: Today we *own* smartphones, whereas in the past we *used* public-phone booths

- Novel types of congestion: When private-car-traffic exceeds road-capacity, journey times become unreliable but all journeys are completed. When CS-demand exceeds capacity, some users (those who booked first) are unaffected while others are not serviced.

- CS is a quite 'pure' form of road pricing, and can (at large scale) offer traffic-management benefits

6

Research Needs

(after highlighting two pieces of new research)

Mosaic profile of London car club members: key types

Type	% of London members	% of London population	Description
Metropolitan High-Flyers	25%	9.4%	Young professionals in their 20 and 30s renting in inner London boroughs.
Uptown Elite	15%	8.3%	Established home owners living in accessible inner suburbs where they enjoy the attractions of city life.
Penthouse Chic	12%	3.4%	Singletons living in flats in prestige central locations with high incomes and outgoings.
World-Class Wealth	10%	4.5%	Global high flyers and privileged families living luxurious lifestyles.
Crowded Kaleidoscope	7.4%	9.5%	Multi-cultural households with children renting social flats in over-crowded conditions.
Flexible Workforce	7.0%	8.7%	Self-starting young renters ready to move to follow worthwhile incomes in service sector.
Inner City Stalwarts	6.8%	5.8%	Longer-term renters of inner city social flats who have witnessed many changes.
New Foundations	1.9%	0.8%	Couples with middle incomes living in newly built flats in both inner and outer London, many with children.
Central Pulse	1.7%	0.9%	Young graduates starting out, often living in rented flats in lower income parts of inner London boroughs.

http://www.carplus.org.uk/tools-and-resources/annual-survey-of-car-clubs/

One-way carsharing's evolution and operator perspectives from the Americas

Susan A. Shaheen[1] · Nelson D. Chan[2] · Helen Micheaux[3]

Table 1 Lessons learned from early one-way carsharing systems

Service	Location	Operation dates	Lessons learned
Procotip	Montpellier, France	1971–1973	Failed due to lack of proper control systems and technological issues
Witkar	Amsterdam, Netherlands	1974–1986	Failed because of high costs, lack of governmental support, and technological limitations
Liselec/ Yélomobile	La Rochelle, France	Since 1993	Successful due to continued governmental support
Praxitèle	Saint-Quentin-en-Yvelines, France	1997–1999	Failed because of high costs and low demand
CarLink II	San Francisco Bay Area, USA	2001–2002	Terminated after transfer from pilot to third-party operator due to financial concerns; limited scale
UCR IntelliShare	University of California, Riverside, USA	1999–2010	Successful due to advanced technologies and support from agencies and industry
Honda DIRACC	Singapore	2003–2008	Terminated due to declining service quality

9

Research Needs

- Continued efforts to document CS impacts via alternative methods (in contrast to self-reported behaviour). For instance, Prof Catherine Morency has done some work looking at car-ownership impacts via Canadian Census data.

- Standardised forecasting techniques. For instance, the UK DfT's Transport Analysis Guidance currently classifies carsharing as: *"A soft measure…which cannot be modelled explicitly"* in transport scheme appraisal. (Dr Francesco Ciari of ETH-Zurich is active in this line of research).

- Develop standards for incorporating shared-mobility monitoring into major public-sector travel surveys (e.g. UK's Nat'l Travel Survey)

- Document impacts on spatial patterns of economic activity (e.g. High Street versus Big Box versus Online)

Policy Support

Policy Support

- Overriding need is to enable experimentation, competition, learning and investment, while retaining flexibility

- In tandem with formal contractual language, broad 'official' statements of objectives can signal longer-term intent. Statements from national gov't can also help local gov'ts feel comfortable enabling CS (e.g. UK's Sharing Economy Review in Autumn 2014)

- In my opinion, focus on car-ownership/traffic-levels/impacts-on-use-of-public-transport/CO_2 is unduly restrictive. The appropriate criterion is whether CS initiatives pass the cost-benefit test, which in principle also takes account of many other economic and social impacts.

Industry Steps

Industry steps

- At some point, we will need to address our 'social equity' problem. This is complex; one strategy is to migrate towards 'actuarially-fair' personalised insurance pricing.

- Strong, independent and trusted Industry Bodies are needed to mediate between local gov't and operators:

  - Principles / Codes of Practice / Transparent formulae for payment rates / Standards for information-sharing

  - Archiving (in searchable format) contracts between local gov't and CS operators (in many cases these are public documents)

  - Mediation services

  - Secure online forums for information-exchange

To sum up...

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- All 3 groups of us (Policymakers, Researchers, and the Industry) have big items on our 'to do' list, and interdependence is unavoidable

- Shared-mobility is a money-generator for the public sector (compare, for instance, to HS2 & Crossrail), and therefore ideally suited for the Age of Austerity

- Given the present pace of evolution in shared-mobility services, 'letting a thousand flowers bloom' – which is currently the stated mobility-services strategy of several automakers – seems about right to me

- The final frontier: The busy 'soccer parent' ferrying kids, running errands, and commuting: What innovative services can we offer him/her?