Peer-to-Peer CarSharing:

The Drawbacks & Benefits of an Emerging Carsharing Model
And its Potential Application to Chittenden County

June 2014

Introduction

As CarShare Vermont considers how to advance our mission to reduce car dependency and increase access and mobility within the state, it is important to stay up-to-date regarding national trends and models for extending carsharing opportunities into new markets. Personal Vehicle Sharing, or Peer-to-Peer Carsharing (P2P), is a new transportation option that is gaining momentum both within traditional carsharing markets (i.e. dense urban environments) as well as testing the boundaries of suburban and rural carsharing.

The following report considers recent advancements in the industry and provides a synopsis of the potential benefits and drawbacks of P2P adoption nationally and within Chittenden County.

Types of P2P Carsharing

P2P is defined as "short-term access to privately owned vehicles." There are four models of P2P that have developed in the United States, including:

- Fractional ownership
    - Individuals sublease a vehicle owned by a third party (usually a dealership or carsharing organization) and pay for a portion of the vehicles expenses. This model allows access to vehicles and individual might not otherwise be able to afford.
- Hybrid P2P-traditional carsharing
    - Individuals join a carsharing organization that maintains a fleet of shared vehicles, including some privately owned vehicles, and pays for usage. Car owners earn a portion of the proceeds for sharing their vehicle with other carshare members.
- P2P carsharing
    - Members of P2P organizations have access to privately owned vehicles, which are made available for temporary use by car owners for a fee.
- P2P marketplace
    - P2P exchanges are conducting via online technology between car owners and car users. This model may include the sharing of other products and services.

How P2P CarSharing Works

P2P carsharing can involve the installation of in-vehicle technology to allow self-access via key fob, smart card, or smart phone, or involve the physical transferring of keys between the owner of the vehicle and the P2P member. P2P car owners post their vehicles availability online through a platform managed by a third party organization (i.e. the P2P operator), and P2P members are able to search for available vehicles using real time information.

Most P2P operators provide comprehensive insurance, 24/7 roadside assistance, and conduct some kind of background check to ensure P2P users are safe drivers. They also have eligibility criteria for both the cars they accept into the P2P network (i.e. certain age, mileage, etc.) as well as who is allowed to join (i.e. minimum age requirements, clean driving record, etc.). These criteria vary slightly, but for the most part are consistent with the eligibility criteria used by traditional carsharing operators.

Rental profits are spilt between the P2P organization and the car owner and the amount of profit sharing varies among each P2P operator. Some allow car owners to set the price of the hourly and daily rentals and others provide more structured guidance (see Appendix 1 for a comparison of carsharing modes).

The Evolution of P2P CarSharing in the United States

The first hybrid-P2P program was launched in 2001 by Ego in Boulder, CO with their Lonation Program. It added privately owned vehicles into their carsharing fleet and offered car owners driving credits in exchange. Significant P2P expansion in the U.S. began in 2010 with the launch of RelayRides and continued in 2011 with the launch of Getaround. These companies put P2P carsharing into the national limelight and raised the profile significantly.

As of June 2013, there were nine P2P operators, three planned, and eight defunct in the United States. Some have contributed P2P growth to the prevalence of the new “sharing economy” that has been made possible by technology and the ability for individuals to use the internet and social media to connect and share more freely. It has also been said that P2P signals an even greater shift in how people, especially Millennials, view car ownership. Cars have become less of a status symbol that is directly connected to identity, and more as a tool to get from point a to b. Personal vehicles that sit parked idly in driveways are seen as an underutilized resource that could be used more efficiently for the benefit of the individual owner as well as the community at large. (Shaheen, et.al, 2012)

The Potential Benefits of P2P CarSharing

The concrete benefits of P2P carsharing still remain to be thoroughly studied and documented—in part because operators have been willing to share their data—but P2P operators assert that P2P could help extend the range of traditional carsharing into more suburban and rural environments, which do not have the same level of population density and access to public transit. This could theoretically help reduce car ownership levels and VMT impacts in these areas and also help expand the demographics served by traditional carsharing.

P2P also generally offers a wider selection of vehicle types, locations, and driving rates when compared to traditional carsharing. In addition, P2P organizations can be successful with a lower member to vehicle ratio because the organization does not take on the huge expense of purchasing the vehicle and thus does not take on as much risk or need to earn as much revenue to break even. This further supports its application in less dense areas where a traditional model is not sustainable.

The potential to earn money and reduce environmental impacts are the primary motivating factors for individual car owners to participate in P2P programs. Generally, any profits made are split between the owner and the P2P operator. Income made from P2P car rentals is taxable, but car costs can be deducted from the profits helping individuals to break even in terms of the costs to own and maintain a car. (Shaheen, et.al, 2012)

The Potential Drawbacks of P2P CarSharing

There are a few potential drawbacks to consider before proceeding with the promotion of P2P. The first relates to CarShare Vermont's goal of reducing car dependency and removing unnecessary cars from our community. Research shows that two car households might be the most likely to adopt P2P because they have one vehicle that often sits idle during the day. However, this may mean that households would have incentive to hold onto these extra vehicles in the hopes to make a profit; and vehicle ownership is the primary factor that contributes to excess driving. Some P2P operators claim that car owners can make upwards of $10,000 per year by placing a personal vehicle in a P2P network. This possibility is very enticing to car owners, but whether or not that level of profit is an attainable goal remains to be seen. Further examination is needed to understand the impacts of this.

Also, for P2P to be successful and generate a profit, vehicle owners have to take on partial responsibility of marketing their car's availability among their networks to

ensure usage. Lack of on-street signage and car branding greatly reduces visibility of this service, which makes raising awareness more challenging. P2P operators rely heavily on word-of-mouth and social media to reach new audiences and grow membership. However, P2P adoption can often be limited due to lack of trust. Many car owners are unwilling to make their cars (one of their most expense assets) available to complete strangers for fear of damage, theft, etc. Systems have been put in place to allow car owners to rate P2P users in the effort to help build trust, but there is also worry that these systems might encourage discrimination if car owners can choose whom to rent to based on Facebook profiles or other demographic information (not to mention the fact that by simply requiring access to Facebook and a smart phone some P2P companies are already limiting who can use the service based on who has access and can afford the technology). Some P2P companies allow car owners to create a specific friend circle, which makes their vehicle available only to people that they have granted access to.

Another concern raised by experts in the industry is in regards to balancing earned revenue vs. the cost of the service for the user. If P2P wants to remain less expensive then traditional carsharing, more rentals are needed to generate the same returns. However, if too many people place their cars in P2P networks, no one will make a profit because they will be competing with each other. Simultaneously, P2P also struggles with limited availability within the fleet if car owners only make their vehicles available at non-peak times (e.g. weekday evenings) when there is less demand.

In addition, investing in vehicle technology is costly ($500-1000 per unit), but without this technology, operators are not able to remotely lock/unlock, enable/disable ignitions, check vehicle status, etc., which increases the risk for the car owner. These things have to be weighed when deciding whether or not P2P is feasible and sustainable in the long-term. (Shaheen, et.al, 2012)

And finally, what is probably considered the largest barrier to P2P adoption is that car owners in most states currently take on a certain amount of financial risk allowing P2P members to access and use their vehicles. Many states do not allow private vehicles to be used commercially and some insurance companies will actually waive coverage if a vehicle is being used for “commercial purposes” (Shaheen, et.al, 2012). In Massachusetts, a Relayrides member learned this the hard way when her vehicle was involved in a fatal accident. Although Relayrides provides 1 million dollars in liability insurance coverage, this accident caused damage well beyond this amount. The uncertainty of whether or not a vehicle owner’s insurance would be responsible for the additional damages is a major source of contention and confusion. The results of this case are still not available but some insurance companies are taking a firm stance and refusing coverage in these situations. In response, the state of New York also went so far as to issue a

cease and desist warning to consumers in an effort to protect its citizens from this potential liability. (Lieber, R., April 2012).

Recent legislation in California, Oregon, and Washington (AB 1871 – enacted on 1/1/2011, HB 3149 - enacted on 1/1/2012, and HB 2384 - enacted on 6/7/2012 respectively), has helped to address these liability concerns. This legislation marks a turning point for P2P carsharing and exempts P2P vehicles from being designated as commercial vehicles. This limits personal liability for the car owner and also protects car owners from having their insurance waived so long as they are connected with a P2P organization that provides insurance coverage. To be exempt from commercial laws, the revenue earned through P2P rentals cannot exceed the overall cost of owning the vehicle. However, in states where this legislation does not apply, P2P users are still at risk if their vehicle is involved in an accident while being used by an individual not covered under the owners car insurance company. Also, vehicle maintenance is often still the responsibility of the car owner and may not be as consistent. This can make the service less safe and less reliable for the user further adding to concerns regarding liability. (AB, 1871, 2011, AB, 2384, 2012, & AB, 3149, 2012)

The Impacts of P2P Carsharing

As we consider the social and environmental impacts of P2P carsharing, it is important to hear directly from its users. An analysis of 224 P2P vehicle owners was conducted in Portland, OR and showed that P2P is reaching a more diverse membership (i.e. low income, people of color, non-U.S. citizens) compared to traditional carsharing markets. This is good news considering the concerns mentioned previously regarding potential discrimination and limited access based on socio-economic status. The study concluded that increased access might be due to the fact that P2P has a larger geographic range and serves communities that are not served by traditional carsharing organizations. There is often no joining or membership fees and sometimes lower driving rates (for older vehicles), which removes some of the barriers that might prevent people from being able to join a traditional carsharing organization.

It is also interesting to note that 44% of respondents self-reported that the amount they drive did not change as a result of putting their vehicle in a P2P network, but that their driving may have shifted to different times of day. However, 36% say that they do take transit more, 50% bike more, 40% walk more. Not surprisingly, P2P car owners in general are more inclined towards this multimodal behavior compare to the rest of the population. However, as mentioned before, P2P carsharing may encourage some car owners to keep cars unnecessarily in the hopes that they will generate significant cash flow. Sixty-two percent of respondents said that they

could get by with owning fewer cars then they currently had, and 63% agreed that they spend too much money owning and driving their cars. Seventy-one percent joined because they don't drive their cars very often and see it as an unused resource (these are the people who arguably could shed a vehicle), and 84% simply wanted to make money. If P2P carsharing did not exist would these households get rid of these vehicles? It is hard to say, but definitely worth further exploration as we consider the long-term impact of P2P carsharing and the net benefits.

Public Perceptions of P2P Carsharing

In the spring and summer of 2013 an intercept survey was conducted in San Francisco and Oakland, CA to determine public perceptions of P2P carsharing. There were 300 respondents, and no incentives provided for participation. Here are the results:

- 58% of respondents would be willing to use a P2P service but only 27% would be willing to rent out a vehicle.
- Younger people are slightly more inclined to use P2P than older people.
- P2P seems to have higher adoption rates in communities with fewer public transit options.
- People who use public transit more often tend to be more open to P2P in general.

This information is helpful as we consider what communities might be well suited for P2P carsharing. The study also shows that more outreach is needed to build awareness of P2P so that people feel comfortable using it. And most importantly, additional legislation is needed nationwide to protect car owners from potential liabilities and expand current adoption rates. (Ballus-Armet, I., 2013)

Application to Chittenden County

Whether or not P2P carsharing would be successful in Chittenden County remains to be seen. If CarShare Vermont launched a P2P carsharing model, it would be important to first understand how much of the population is aware of our current service model. Lack of awareness about carsharing in general would be a barrier to adoption and must be overcome through extensive outreach. Even in places like San Francisco and Oakland, CA where carsharing is very prominent, studies have clearly shown that not everyone understands what it is or is willing to participate.

Prior to widespread adoption and devotion of resources, we also need to better understand the environmental impacts of P2P carsharing and whether its promotion is in the best interest of our mission to reduce VMT and car dependency

within the state. Susan Shaheen, the leading researcher on carsharing, is attempting to conduct further research in this area but the large P2P companies have not been willing to share their data despite touting that the impacts of their service mirror those of traditional carsharing organizations like CarShare Vermont. Some progress has been made on this front and a study is expected sometime in 2014. When this data becomes available it may shed light on whether or not peer-to-peer carsharing is accurate in its portrayal of the community wide benefits of the service.

CarShare Vermont would not introduce a P2P model without undertaking the significant VT insurance legislation needed to better safeguard car owners from potential liabilities. While our peers on the west coast have already set some precedence, this would require some legwork.

In our effort to ensure a safe and reliable service for users, CarShare Vermont would also need to manage vehicle maintenance or require a minimum level of servicing that car owners must provide. A hybrid P2P model like what Ego tried in Boulder/Denver might be worth further exploration because it uses privately owned cars and incorporates them into a traditional carsharing fleet. This would make operations fairly seamless while reducing the overall operating expense of the service. However, the car would still have to earn enough revenue to cover its operational costs, and this may be a risk for us if a vehicle is not used sufficiently. Another important consideration, the few members who have inquired about "loaning" us a vehicle for this type of scenario own relatively old vehicles (i.e. they would not be compatible with our technology) and are looking to recoup more money than we could offer.

Perhaps most importantly, the logistics of how individuals would access these shared vehicles is something we would need to consider in very rural and suburban areas. Even in communities right outside of Burlington, homes are more spread out and it may be difficult for individuals to easily get to the P2P vehicle that, in some instances, could be miles away. Lack of adequate bus service, sidewalks, and bike lanes would add to these challenges. Perhaps this is the most important take-away of this exploration of the P2P model, and that is that regardless of the model (traditional two-way, P2P, or hybrid P2P), carsharing is proven to be the most successful and effective at meeting its social and environmental goals where a certain minimum population density exists. And with this density comes the necessary modes that make carsharing viable—transit, safe and accessible sidewalks, and decent bike infrastructure. In communities where it is difficult to get around without a vehicle, residents would be hard pressed to access any shared vehicle.

Conclusion

Additional research is needed to determine whether the potential benefits of P2P carsharing outweigh the potential risks and drawbacks. If further research shows that P2P can yield the same environmental and social benefits as traditional carsharing, it may provide an opportunity to expand our network in communities where we know carsharing can be successful, and perhaps beyond. Where P2P seems most promising is in its ability to increase mobility for those who might not otherwise have access to traditional carsharing programs as these people are often marginalized by their lack of transportation options. However, the same factors that make traditional carsharing unlikely in these more rural communities may also impede alternative models like P2P. Any attempt to advance carsharing (in all forms) in more rural and suburban communities would require a significant financial investment and ongoing subsidy.

References:

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Appendix 1

	Traditional Two-way Carsharing	Hybrid P2P-traditional Carsharing	P2P Carsharing	P2P Marketplace	Fractional Ownership
Overview	CarShare Vermont: members have access to all vehicles in CSVT's fleet. Costs include membership and driving fees, which include gas and primary insurance. Organization does all fleet maintenance and repairs, and provides 24/7 customer service and roadside assistance. Service area currently in Burlington and Winooski, Vermont.	Ego CarShare: owners sign an agreement and loan their cars to Ego for a set period of time. The cars are incorporated into Ego's fleet and owners receive $300 to $400/month in driving credits to use fleet wide. Ego takes care of all maintenance while the car is in the fleet and also provides primary insurance and 24/7 roadside assistance.	RelayRides: Primary insurance and 24/7 roadside assistance provided by RelayRides. Car owners set availability, mileage limits, pick up/drop off location, and choose whom to rent to. They also create description and post pictures. Profits spilt 75/25 between owner and RelayRides. Relayrides also arranges P2P rentals at the SFO airport to arriving travelers when P2P car owners are away. Free airport parking, a car wash, and $20 towards a car rental provided to car owners. All rental profits kept by Relayrides.	JustShareIt: Borrowers can rent cars, boats, and other vehicles. 35% of profits go to JustShareIt. Insurance provided to people in CA, VA, TX, and OR. In other states you have to provide your own insurance. 24/7 roadside assistance provided. Owners can choose whom to rent from. Services area all of U.S.	Upshift: members share lease payments on a vehicle to share, and Upshift provides sharing technology, reservation system and insurance coverage. Monthly payment determined by projected mileage usage of cars (by each member). Costs projected to be about as much as a monthly cellphone plan. Upshift will pick-up and deliver vehicles before and after trips.
Revenue & Pricing	Fixed rates set by the organization/company managing the vehicles. Members pay membership fees, hourly and mileage costs. Because vehicles are owned by the organization, revenue isn't split with a separate vehicle owner.	Fixed rates set by the organization/company managing the vehicles. Members pay membership fees, hourly and mileage costs. Vehicle owners are compensated for "renting" their car to the carsharing company, which is a cost factored into total revenue.	Vehicle owners set prices for using their car, and split profits with managing company. Members only pay for usage based on rates set by vehicle owners, no membership fees.	Vehicle owners set the price of using their car, which can vary greatly. No application or membership fees for users. A percentage of profits go to the marketplace organization, with the rest going to the vehicle owners.	Monthly payments determined by "share" use of vehicle (member who his higher usage needs will pay more).
Insurance	Primary insurance provided for all drivers while using carshare vehicles.	Primary insurance provided for all drivers while using carshare vehicles.	Secondary insurance coverage is provided.	Primary insurance provided for drivers while using carshare vehicles in certain states, options to purchase insurance in other states.	Insurance provided.
Vehicle Availability	Cars are made available at all times of the day, including overnight. Availability purely dependent on other member usage, not on vehicle owner preferences or needs.	Cars are made available at all times of the day, including overnight. Availability purely dependent on other member usage, not on vehicle owner preferences or needs.	Availability set by vehicle owners. Vehicle availability may be limited to off-peak times (vehicle owner may need car during peak hours).	Vehicle availability may be limited to off-peak times (vehicle owner may need car during peak hours). Emergency situations where the owner may need to use the car unexpectedly could come up, leaving the user without a car.	Cars are made available at all times of the day, including overnight. Availability purely dependent on other member usage, not on vehicle owner preferences or needs.

Vehicle Pick-up	Specific locations where members pick-up and drop-off cars. Location determined based on member location densities, projected need, etc.	Specific locations where members pick-up and drop-off cars. Location determined based on member location densities, projected need, etc.	Specific locations where members pick-up and drop-off cars. Location determined by vehicle owner.	Specific locations where members pick-up and drop-off cars. Location determined by vehicle owner.	Upshift staff pick-up and drop off vehicles to members before and after trips.
Vehicle Safety & Maintenance	Organization takes car of all routine maintenance and repairs to vehicles. All cars are maintained to the same high standards making them reliable and safe.	Organization takes car of all routine maintenance and repairs to vehicles. All cars are maintained to the same high standards making them reliable and safe.	Reliance on personal vehicle owners to take on routine maintenance and repairs to the vehicles. Increased risk for drivers who may not be driving a car that has been properly maintained.	Reliance on personal vehicle owners to take on routine maintenance and repairs to the vehicles. Increased risk for drivers who may not be driving a car that has been properly maintained.	Organization takes car of all routine maintenance and repairs to vehicles. All cars are maintained to the same high standards making them reliable and safe.
Technology	In-vehicle technology installed to allow for members so self-access vehicles. Members are issued a personal key device that allows them access to a car when they have it reserved. No in-person key exchange needed.	In-vehicle technology installed to allow for members so self-access vehicles. Members are issued a personal key device that allows them access to a car when they have it reserved. No in-person key exchange needed.	No in-vehicle technology installed. Arrangements are made between car owner and member to exchange keys before and after trips.	Some vehicles have in-car technology installed so key-exchange is not necessary (vehicle owners have the option to install this technology for a small fee). Otherwise, sharers can leave keys in the car or do an in-person key exchange.	
Environmental Impacts	Impacts have been documented, and show that traditional carsharing reduced GHG emissions (and avoided potential future emissions), decreased vehicle miles traveled, and resulted in a significant decrease in vehicle ownership by carshare users.	Many of the same (as traditional carsharing) environmental impacts are projected, though there isn't strong supporting data yet. Some researchers suspect that P2P carsharing encourages people to hold onto cars that they would have otherwise sold in order to make a profit off of renting them out.	Many of the same (as traditional carsharing) environmental impacts are projected, though there isn't strong supporting data yet. Some researchers suspect that P2P carsharing encourages people to hold onto cars that they would have otherwise sold in order to make a profit off of renting them out.	Many of the same (as traditional carsharing) environmental impacts are projected, though there isn't strong supporting data yet. Some researchers suspect that P2P carsharing encourages people to hold onto cars that they would have otherwise sold in order to make a profit off of renting them out.	Many of the same (as traditional carsharing) environmental impacts are projected, though there isn't strong supporting data yet. Impacts unclear, as this type of carsharing is newest to the scene.