Carsharing in the Roanoke Valley

Prepared by the Roanoke Valley-Alleghany Regional Commission for the
Roanoke Valley Area Metropolitan Planning Organization

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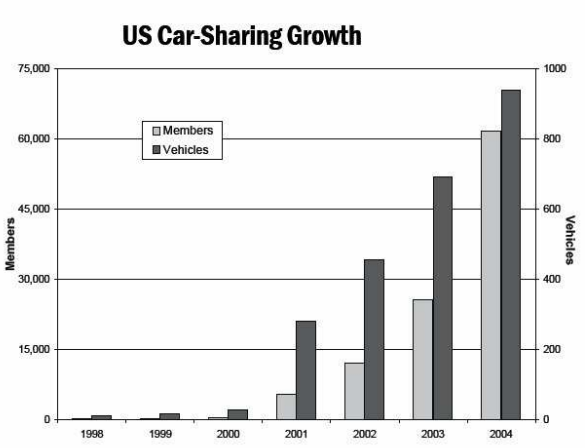
What is Carsharing?

Illustration 1: Carshare space in Portland, Oregon

Carsharing is, in essence, a short-term automobile rental service, primarily though not exclusively targeted to urban residents for short or infrequent trips. Unlike a traditional rental service, where a one or more hub locations (such as an airport terminal) house many vehicles which are rented out for multi-day or high-mileage trips, carsharing generally involves a dispersed network of vehicle locations, each location housing a small number of vehicles, intended to serve a single geographic area, such as a neighborhood or business site. Membership in a carsharing program grants the user access to any vehicle in the network, at any network location. Access can be granted through any number of means, from simple sign-up sheets to more sophisticated technology, but the success of Zipcar – the largest and fastest-growing carshare program in the country – would suggest that a robust online reservation system is the best way to manage access to the inventory.

In general, though not exclusively, carshare programs are run as for-profit businesses deriving revenue from membership fees; therefore, carshare programs must maintain an inventory that keeps the company profitable. A certain amount of flexibility is required by customers of carshare programs, understanding that a car may not always be available at the exact moment they desire.



Source: Shaheen, Schwartz & Wipyewski (2004); Susan Shaheen, unpublished data. Note that 2004 data are for December, while 1998-2003 figures reflect June data points, meaning the chart overstates the rate of increase from 2003 to 2004.

On the whole, carsharing has increased significantly over the past several years. The graph on the right, from the Transit Cooperative Research Program Report 108 shows growth in membership of carshare programs to nearly 75,000 by 2005. By 2008, *Slate.com* reported Zipcar (one of many carshare programs, but the largest national service) alone had grown to 225,000 members and was seeing growth of 4 to 5 per cent a year (Matlin 1). The Slate.com article points out that the sharp increase in gas prices in 2008 began to cut into Zipcar's profit margin, but some of that was offset by the membership increase. Business model aside, this indicates that, where it is available, carsharing is an option that drivers will turn to in an effort to mitigate their increased costs. It's also worth noting that, given the pricing scheme used by Zipcar, it was not necessarily less expensive to drive a vehicle, since the hourly rate and per-mile price were inelastic and did not change with the per-gallon price of gas; rather, the switch to carsharing lowered the overall cost of car

ownership. The more expensive per-mile cost was more than offset by the savings in insurance, maintenance, and financing.

The above-mentioned *Transit Cooperative Research Program Report (TCRP)108* offers a detailed survey and review of carsharing programs within the United States and Europe, including various legal definitions of carsharing that influence how localities might develop ordinances to encourage them, financing models, and other analysis, though it is important to recognize that the report was published in 2005 and, as was shown in the paragraph above concerning Zipcar's membership growth, the 2008 gas price spike drastically transformed the transportation market. This report will apply some of the results from the TCRP report along with transportation demand management data from the RIDE Solutions program to get a sense of the role carsharing could play in the region's transportation market.

Carsharing and Transportation Demand Management

Though not in itself a transportation demand management mode – the nature of carshare usage and customers suggest that most carshare trips will be single-occupant vehicle trips – a carshare program can contribute to a broader transportation demand management strategy in three significant ways:

Encourages Trip Chaining: Because of the advanced planning required to reserve a vehicle, and the per-mile charge that often accompanies a rental above and beyond the monthly membership fee, carshare users are likely to make more efficient trips each time they check out a vehicle. Without immediate access to a personal vehicle, carshare users are likely to make more conservative decisions about whether a not is necessary, or to replace more spur-of-the-moment trips with bicycle or pedestrian trips. In addition, the rental price structure often involves a minimum hourly rate (for example, most Zipcar packages charge a per-mile and minimum $8/hour rate), providing a financial incentive for renters to keep their trips short and efficient.

Contributes to Transit Oriented Development and Urban Density: Carsharing can contribute to transit-oriented development in two ways:

First, by placing carshare vehicles at or near the terminus of transit routes, it encourages multi-modal trips; that is, a commuter with a carshare option may choose to take transit for a leg of their journey, then complete the journey in the shared vehicle. With this option available, residence patterns along transit lines are encouraged with a cost-saving incentive. This can be a particularly good fit in areas where routes terminate in less dense developments, making route extension or express bus shuttles to neighborhoods or shopping centers financially unfeasible. An example of this structure in The Roanoke Valley Area Metropolitan Planning Organization (RVAMPO) might be the terminus of Valley Metro routes 31 and 32 to Vinton, both of which terminate at a shopping center. Within a mile of the end of the route are a number of other shopping and employment destinations, including the Blue Hills Industrial Park. Until 2009 one of these other shopping centers held a Kroger grocery store (corner of King Street & Orange Avenue), but the location was closed in favor of a larger-scale location farther down Orange Ave., meaning riders have lost transit access to the supermarket. One or more carshare vehicles stationed at the shopping center parking lot could provide last-mile

service to the new grocery store location, employment, and other shopping destinations at a cost significantly less than a shuttle or vanpool.

Second, where carsharing is coordinated with residential development in urban centers, it is possible for developers to reduce the number of parking spaces required to serve a residential complex. The Transit Cooperative Research Program (TCRP) has calculated that a single carshare vehicle replaces 14.9 vehicles directly when carshare members sell a vehicle (TCRP Report 108, p. 4-11). This number increases if carshare members who delay the purchase of a first or second vehicle are included.

To get a sense of how this would improve urban density, let's consider that a small residential development that might normally provide 1.4 spaces per unit (Wilson 80) would now only need to provide 1 space per 15. At an average of 320 square feet per space, a complex of 15 units would save 4,480 square feet in parking, or roughly 6 small apartments. Though it's safe to say that every saved parking space will not translate to additional residential units – thus increasing population density – this additional space could be put to use providing green space, fitness facilities, community rooms, or other amenities that would make urban living more attractive. Of course, these are hypothetical numbers, and it is unlikely that a developer would choose to use the minimum number of spaces per the TCRP analysis, but one gets a sense of how implementation of carsharing within a project would grant a developer significant freedom to minimize parking.

It is also worth noting that in regions where zoning requires a minimum number of parking spaces per residential square footage, and a cost of $12,000 per parking space (Wilson 83) an exception for such zoning for developers who implement carsharing can be a powerful financial incentive. Roanoke City's zoning currently utilizes parking maximums, meaning that the financial incentives, while still present, are much more voluntary.

Daytime Travel Options for Commuters: Many times, downtown employees have access to the widest array of sustainable transportation options. Because downtowns generally offer the largest employment density, the possibility of finding a carpool match is increased, and avoiding parking fees becomes a built-in incentive for seeking out carpoolers. Transit is also an option, with downtowns in being well-served in general by fixed-route, express, and commuter bus service; in Roanoke this is particularly true, since Valley Metro works on a hub-and-spoke system in which all routes begin and end at the downtown Campbell Court facility, including the Smart Way bus that links the Roanoke and New River Valley regions. Most of the neighborhoods within a mile of the central business district are served by one or possibly two routes. Downtowns also tend to border on denser neighborhoods; the image to the right, for example, illustrates that the 20 or so blocks that form the urban core are surrounded by additional gridded neighborhood streets. Such conditions make bicycle commuting safer and more attractive since, even in the absence of formal bicycle routes or designated bike lanes, neighborhood roads serve as *de facto* bike routes due to the lack of traffic and relatively low speed (over 30 miles of Portland's on-street bike accommodations, for example, are *bike boulevards*, or neighborhood streets with signage and wayfinding rather than separate on-street bike facilities).

However, there are cases when downtown employees are unable to take advantage of these options due to the nature of their work. Occasional trips throughout the day for meetings, sales calls, deliveries, and so forth necessitate access to a vehicle, even if the trips are rare or short. In these cases, access to a carshare vehicle could allow an employee to commute into and out from work in an HOV mode and still have access to a car during the day.

Carsharing and Mobility

In general, carsharing in considered in the context of a transportation demand management or sustainable transportation strategy or system; that is, a model of transportation options that reduces the number of vehicle miles traveled within a region, the number of vehicles a region, and the number of automobile-centric developments (i.e., parking lots) within a region. However, it is important to note that the presence of carsharing can actually increase single-occupant vehicle trips in some cases:

> *At the same time as car-sharing may reduce vehicle travel among some members, it provides easier access to a vehicle for members who did not previously own a car. While some car-sharing trips may have been otherwise made by rental or borrowed cars, or by taxi, others are likely to represent new vehicle trips. Members may use car-sharing to access new destinations, or substitute for trips previously made by transit, bicycle or walking. (TCRP 4-16)*

The pricing structure of carsharing, as we have seen earlier, is significantly less than car ownership; while this serves as an incentive for car owners to sell their primary or secondary vehicles and take advantage of a wider variety of transportation modes, it also lowers the barrier to entry for lower income individuals or households for whom outright ownership was out of the question. While, as the TCRP notes, this might cause previous, cleaner trips to be replaced with more SOV trips, the losses in transportation demand are made up in social mobility, access to employment opportunities, and greater inclusion into the region – low income, transit-dependent families are no longer limited to areas served by the bus. In our region, this could result in more permeability of jurisdictional boundaries between Roanoke City and Roanoke County, since those boundaries often indicate the terminal of Valley Metro bus routes.

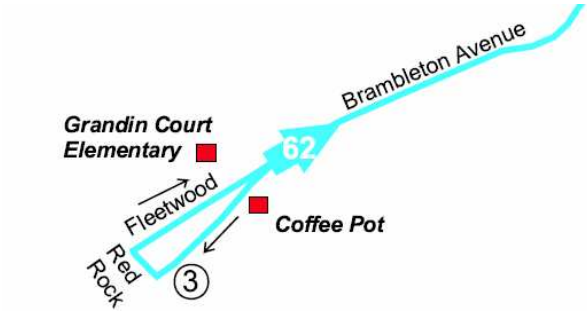


Illustration 2: A detail from Valley Metro Route 61/62, the terminus at Red Rock Rd.

By way of illustration, consider Valley Metro Route 61 and 62, with the terminus at the intersection of Brambleton and Red Rock. Unlike other Valley Metro routes with a terminus at the City/County border – Routes 51 and 55 both terminate at Tanglewood Mall, for example – the terminal of this route is not a destination; the intersection of Brambleton and Red Rock Rd. houses a gas station and a small shopping center containing an Asian market and a pizza place. The real destination is a mile down the road at the intersection of Brambleton and Electric Rd., which holds a much larger shopping center with a grocery and department store, a Goodwill retail store, a fast food restaurant, and medical/dental center, and more. However, transit-dependent individuals must walk a mile down the busy four-lane Brambleton Ave., without sidewalks, to reach these shopping and employment opportunities. In theory, a carshare vehicle location at the Red Rock transit stop could expand mobility options for those individuals.

Looking into the future, carsharing could be an important mobility service in an aging population. The MPO's 2009 Long Range Transportation Plan scenario entitled "*What Happens When the "Baby Boom" Generation Retires?" i*ncludes carsharing – along with traditional ridesharing, paratransit, and others – as a strategy in addressing the mobility lower-income but able-bodied retirees.

Feasibility in Roanoke

Regional Precedent

The service area of RIDE Solutions extends beyond the Roanoke MPO to include the PDC boundaries of both the Roanoke Valley-Alleghany Regional Commission (RVARC) and the New River Valley Planning District Commission (NRVPDC). In August of 2009, Virginia Tech, which lies in the NRVPDC, implemented carsharing on campus via the U Car Share program. It is assumed that any effort to implement carsharing within the Roanoke Valley would begin by pursuing expansion with U Car Share to make the best use of existing fleet resources and reservation technology.

RIDE Solutions Program Findings

In 2009-10, RIDE Solutions staff participated in a long-range transportation demand management planning (LRTDMP) process to complement the MPO's long-range transportation planning (LRTP) process. In general, the plan focused on RIDE Solutions as a sustainable transportation service. Many of the preconditions that lead to the success of TDM services in other, larger markets (high traffic congestion, long commute times, a general dissatisfaction with

commute) don't exist in this region. However, the 2007 Virginia State of the Commute study did show that commuters in Roanoke had a strong interest both in saving money (66% of commuters surveys said this was i*mportant* or *very important*) and in "being green" (60% responded that decreasing pollution was i*mportant* or *very important,* the second most important reason behind saving money). It is primarily in that light that RIDE Solutions views the implementation of carsharing in the region.

In addition, RIDE Solutions met with a small focus group of individuals who had expressed an interest in carsharing via Facebook, upon which RIDE Solutions maintains a Fan page. The meeting largely confirmed the findings of the LRTDMP in regards to carsharing.

Carsharing will be an important strategy to deal with downtown residential growth

RIDE Solutions staff believes that, though the primary users are likely to be downtown employees during the day, the program will require some use by downtown residents during evenings and weekends to be successful. Indeed, over time, downtown residents are likely to become the primary user as their numbers grow. In the past several years, downtown Roanoke has seen significant growth in its residential offerings, including over 200 new living units with the development of the Hancock Building, Cotton Mill Lofts, Candy Factory, and others. The current renovation of the old Patrick Henry Hotel into 100+ affordable apartments continues the trend of residential growth. Further, with the growth in residential capacity there will be additional pressure on existing parking capacity and conflict between residents and downtown employees.

In an effort to forestall development of productive property into unproductive parking to meet the residential demand, the City of Roanoke and downtown developers would be best served by partnering to implement carsharing, if it has not been implemented, or to grow it. This should be done through a mixture of incentives and accommodating zoning regulations on the part of the city, and creative marketing and education on the part of developers.

Carsharing will be most highly used by commuters who need a vehicle during the day

As noted above, residential users will be an important component of the *growth* of a carsharing program, but the TDM case for *implementing* carsharing sooner rather than later relies on adopters in the downtown employee market. As notes in the section above, there is a strong case for carsharing as part of the current Transportation Demand Management program mix for downtown; the presence of the Campbell Court Transfer Station for Valley Metro buses, proximity to greenways and other safe bike routes, proximity to walk able neighborhoods, all suggest that there is some demand that could be met immediately.

Because RIDE Solutions sees carsharing as necessary for a fully-realized TDM program in the MPO area, any carsharing program implemented would receive significant marketing, outreach, and incentive support from RIDE Solutions. For example, RIDE Solutions members already have access to a Guaranteed Ride Home program that pays for up to four taxi rides a year in cases of emergency on days they carpool, take transit, bike or walk to work. Downtown employees might receive a kind of "reverse" Guaranteed Ride Home, with RIDE Solutions subsidizing a portion of their carshare program membership so long as they use a sustainable commute mode a certain number of days a week (the Guaranteed Ride Home program requires two days a week, but it is likely a more significant commitment would be required to justify the expense of carshare subsidization).

Carsharing would also be an integral part of the RIDE Solutions employer outreach program, encouraging businesses to incentivize carsharing by subsidizing membership, primarily by moving dollars from "free" parking into those memberships. In downtown Roanoke, the average monthly parking rate is $30. The minimum Zipcar monthly membership fee is $50. Employers currently paying for their employee's parking could cover over half the membership fee by simply shifting those dollars. In addition, certain employers with fleet vehicles – such as the City of Roanoke and Carilion Clinic – would be encouraged to switch out fleet vehicles with carshare memberships, at once growing the carshare fleet and divesting themselves of the liability of maintaining their own vehicles.

Carsharing will initially be most successful in the urban core

Only downtown Roanoke has sufficient mix of employment density during the day and residential density during the evening to support carsharing. In addition, the 7,000-space off-street parking capacity in public and private lots, and an additional 670 on-street spaces, provide more than sufficient opportunity for appropriate citing of the carshare vehicles.

The urbanized area of Roanoke does contain several village centers with higher levels of density, mixed-use development, and centralized public parking in which a carshare vehicle could be located; however, none of these neighborhood-centric locations appear to have *sufficient* density to support a vehicle. Indeed, because the village centers have been specifically designed as walkable/bike able communities, with staple businesses like restaurants, pharmacies, and groceries readily available, a formal, regional carsharing program would likely be used rarely at the outset of the program. Over time, as the user base grows from early adopters into more conservative market segments, there could be an opportunity to experiment with carshare locations in the Grandin and Crystal Spring village centers, downtown Salem and Vinton, and perhaps heavy employment and shopping locations such as Keagy Village and Tanglewood Mall.

That said, an initial launch of carsharing should include the institutes of higher learning in the region: Jefferson College of Health Sciences, Roanoke College and Hollins University. Virginia Western Community College, as a commuter school and therefore a destination point rather than an origin point for students, is unlikely to be a good fit for carsharing. Of the three previously mentioned schools, Hollins University is the best candidate for carsharing as both a trip reduction and mobility option, since Hollins currently lacks regular transit connection, pedestrian, or bicycle access to the urban core. Hollins, like Roanoke and Ferrum, does provide an evening and shuttle through Valley Metro, but service is limited in scope and connects primarily to downtown Roanoke. Providing a carshare option will not only provide students access to shopping and social opportunities during the week, but could also provide the largely carless Hollins students access to internship and employment opportunities throughout the valley. This would have a secondary benefit of deepening ties between students and the region, encouraging them to remain after graduation.

Carsharing in Roanoke will require fleet conversion to carsharing

Though Roanoke's urban core has many demographic qualities that lends itself to a likely carshare market, it's unlikely that the existing market size would be large enough to make a carsharing program sustainable and profitable. An examination of the markets of existing programs show that they tend to concentrate on major metro areas and universities where carlessness or a car-lite lifestyle is more common (or even required in the case of universities, where first and second year students are often forbidden to have a car on campus). U Car

Share in Blacksburg is an example of this, focused as it is on the Virginia Tech campus rather than the town of Blacksburg in general.

Roanoke's best opportunity would be to "seed" the market through the conversion of some existing vehicle fleet to carshare vehicles. This could happen across one or more major businesses in the region with operations near downtown Roanoke, including the City itself, Carilion Clinic, Coca-Cola Bottling, and others.

Replacing fleet vehicles with carshare vehicles can offer a win-win scenario in the right circumstances, with fleet owners saving money on maintenance and insurance, while making vehicles that might otherwise sit idle available to the public.

Conclusion

Though not intended to be an in depth market analysis of the feasibility of any one carsharing program, this study nonetheless indicates that Roanoke has a strong potential for supporting carsharing within the urban core. Besides providing mobility options and contributing to reducing vehicle trips, which supports the many sustainability goals being pursued by Roanoke City, Roanoke County and the City of Salem, carsharing is also an important quality of life amenity and would be an important part of the region's toolkit in attracting and retaining young professionals, creating new employment opportunities for existing residents, and pursuing wise development policies that make the best use of existing land while retaining green and natural space. As the latter has become an important regional branding effort through the Roanoke Regional Partnership and its Roanoke Outside program, this benefit should not be overlooked.

Reference

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