

9. Car sharing schemes

9.1 Introduction

Car sharing schemes aim to encourage individuals to share private vehicles for particular journeys¹. They include a range of different initiatives, including informal encouragement for arrangements for sharing trips which, to some extent, happen spontaneously anyway, between individuals at neighbourhood, workplace and even household level; formal schemes with elaborate arrangements for trip matching, often focused on commuting journey; and organised linking with an ethos somewhat similar to hitch-hiking, often aimed at encouraging sharing for longer-distance leisure journeys. Some schemes are open to all and usually operate via internet based sites, whilst others involve initiatives confined to members of particular organisations and often combine websites with a more explicit management element. This chapter in principle includes all these activities, though the case studies focus mainly on schemes promoting car sharing for journeys to work.

There are many active schemes in the UK, and a number of major companies who offer car sharing software and support. For example, Intrinsic and JamBusters provide software which requires administrative support. In contrast, Liftshare and Share-a-journey provide Internet based software systems which do not require day-to-day management. Local authorities often choose to buy in to one of these types of scheme, which can then be locally organised and branded, although some have chosen to develop their own. Some local authorities have primarily developed car sharing as a component of their work on company travel plans, including the City of York Council and Cambridgeshire County Council.

There are also schemes run for business parks, and numerous schemes run by individual organisations for their employees - schemes run by Egg Financial Services in Derby, and by Marks & Spencer's Financial Services in Chester were highlighted as particularly successful initiatives in recent work on travel plans, (Cairns et al, 2002).

There has also been some interest in encouraging car sharing for the journey to school, with reports of success at promoting car sharing for travel to independent schools from Buckinghamshire, Cambridgeshire and Camden Council.

In some instances, the boundary between car sharing and public transport use becomes blurred. For example, the company Vipre promotes a concept they call 'Driveshare', where they provide a vehicle for a group of up to 8 employees, who then travel to work together, with employers sometimes contributing to the cost of the vehicle and the fuel. Some school travel plans involve the use of minibuses driven by parents (who sometimes take it in turns to drive). In other situations, the relationship between car sharers and public transport use is specific - with, for example, ticket discounts for car sharers on public transport.

¹ It is often more common to use the term 'car pooling' or 'ride sharing' in other countries, with car sharing often being used as the term for car clubs (as defined in Chapter 8).

The next sections of this chapter review the available literature about car sharing. Subsequent sections then describe the findings from our main case studies – Bucks Carshare and CARSHAREMK – as reported to us during interviews in summer 2003, together with some other data gleaned in the course of the project relating to specific schemes and the opinions of car share scheme providers.

9.2 Overview of car sharing literature

There is a very long tradition of observations that the average occupancy of cars is rather low, typically in the range 1-2, this being one of the reasons for their disproportionate effects on congestion. Smeed and Wardop (1964) calculated that for small and medium sized towns, the potential use of fully occupied small cars could approach standards of efficiency of road space normally only associated with buses.

Policy interest in car sharing was particularly apparent following the fuel price increases in the early and mid-1970s, and schemes were initiated in a number of countries, with results that were becoming apparent towards the end of the decade: work published at that stage rather tended to conclude that success was limited and complex, and interest declined for a period (especially as fuel costs also declined in real terms) except for the rather special focus on HOV lanes in the USA, where this instrument tended to attract the attention shared among a much wider range of policy instruments in European countries.

UK work on car sharing in the late 1970s and early 1980s was rather downbeat about the potential for car sharing. For example, Bonsall (1980) drew a conclusion which is typical of the rather low-key assessments on car sharing generally: namely, that *'car-sharing schemes are unlikely to have more than a marginal effect on congestion, parking requirements or energy use'*.

His own calculations suggested, in the absence of special incentives and fixed transport costs, a typical organised car sharing scheme would attract 8% of city centre workers, with a disproportionate number of those having longer than average journeys to work, and only about a third being those who would share driving (as opposed to giving or receiving lifts). Allowing for the fact that it would not be possible to match all applications, he then estimated that a scheme based on 21,000 city centre workers might lead to 1.5% of them becoming car sharers, resulting in an overall reduction in peak period vehicle kilometres of 0.3%. He further estimated that a scheme based on longer-distance commuters might lead to 5% becoming sharers, and a reduction in peak period vehicle kilometres of just over 1%. He argued that free parking near work would increase participation, and that major increases in fuel prices and public transport fares could potentially lead to a doubling of impacts.

Bonsall's work also drew attention to a problematic finding that up to half the number of future car-sharers might be abstracted from public transport, although in an earlier study (Bonsall 1979), he highlighted that this could be beneficial if public transport was over capacity at peak times.

Dix et al (1983), using social research methods based on qualitative interviewing, suggested that another potentially negative effect could be greater use, by other household members, of cars that had been left at home due to car-sharing for journeys

to work. However, whilst this is clearly a potential risk, earlier work by Vincent and Wood (1979) seems to suggest that the scale of effect is relatively small.

Specifically, they analysed 1975/76 National Travel Survey data. This showed that only about 3% of car drivers travelling to work are typically taking it in turns with other drivers (what they termed 'car-pooling'), with the majority of car passengers being unable to drive themselves. However, this was still estimated to be saving over 10 billion vehicle kilometres per annum. Vincent and Wood also showed that the families of car poolers made limited use of the pool car on those days when it was left behind for off-peak use, with additional travel being only an extra 10km per week, on average. They also highlighted that there could be significant gains from, say, a 10% increase in car occupancy, but argued that perceived motoring costs might need to double in order to achieve this.

Meanwhile, Ab Rahman (1993), has reviewed corresponding experience in the USA. He also highlights that, although car sharing was first introduced in the mid 1960s, it only became of mainstream interest during with the 1973 oil crisis. This led to the enactment of the Emergency Highway Energy Conservation Act in January 1974, which aimed to

'... conserve fuel, decrease traffic congestion during rush hours and enhance the use of existing highways and parking facilities...' and to '... encourage the use of car pools in urban areas by means of programmes which included funding of car pool demonstration projects, and the encouragement of local authorities to establish schemes by various means including dissemination of information and technical guidance'.

Federal grants and other supporting measures were subsequently initiated.

From subsequent experience, Ab Rahman concludes the following:

"The United States experience suggests that ridesharing will only increase significantly if there exist clear incentives for the participants. The most important incentives to ride-sharing appear, in practice, to be reserved road space and parking space, and the absence of a convenient alternative mode e.g. where there are no public transport services. The reservation of road space for high occupancy vehicles is therefore essential..."

He also identified a number of other factors that would need to be in place for car sharing to be attractive to commuters. These included increases in the price of petrol; incentives such as preferential parking spaces; efficient management of the scheme; and promotion by the employer. He noted that 'the personal touch is an important element in any car sharing matching service' and 'efforts for ride sharing should be concentrated within recognized groups, rather than spread across the community. New pools are largely formed when participants have a clear affinity with each other'. Ab Rahman also highlighted that spontaneous formation of a car sharing group could be equally as important as sharing achieved via an official matching service, and that loss of flexibility for individuals is the most significant drawback of car sharing.

A recent European assessment was carried out by the project ICARO (Increasing Car Occupancy Through Innovative Measures And Technical Instruments). Its final conference report, ICARO (1999) drew conclusions from demonstration projects in ten locations (4 in Switzerland, and in Graz, Rotterdam, Pilsen, Brussels, Salzburg and Leeds). Its tone, like the earlier work, was rather cautious. Conclusions were as follows:

'It could be said that the potential of car-pooling to dramatically change current mobility patterns and traffic conditions seems to be, at best, limited. But it is worth [introducing] as a complementary and inexpensive measure, especially for some specific conditions: rather big affected areas with high numbers of daily commuters, and significant concentration of working places in some central areas'. (Monzón and Aparicio, in ICARO 1999)

There was also some quantitative assessment of the magnitude of potential impact:

'The existing modal split shows a car occupancy rate in Europe of between 1.14 and 1.2....The potential of car-pooling is quite respectable' (The potential was described as an increase in car occupancy of 13%, for home to work journeys). 'It should be mentioned that about one-fifth of this potential could be a shift from public transport' (Samner, in ICARO 1999)

The only ICARO project in the UK involved the trial of an urban high occupancy vehicle lane in Leeds, primarily for buses, coaches and cars carrying 2 or more people, (as reported by Leeds City Council 1999a,b and 2002, and LTT 1999). The lane was introduced in two sections in May 1998, over a stretch of about 2 kilometres, on a major dual carriageway into central Leeds from the north west of the city (the A647). A partnership with the police was developed, to ensure enforcement. The scheme was made permanent in November 1999.

At about the same time (October 1998), as part of the EU INTERCEPT project, a trial HOV lane was introduced on the A4174, a two-lane dual carriageway. It is located on the westbound stretch between Bromley Heath roundabout and the Bristol Road (B4427). It forms part of the Avon ring road, located in the northern fringe of Bristol. This HOV lane was also subsequently made permanent by South Gloucestershire Council.

With the Leeds HOV lane, during the trial period, the effects of the lane were extensively monitored over an area of 15km². Results showed that there was a significant initial reduction in traffic on the A647, and a small decrease across the whole of the area during the first few months of the scheme. However, a year after introduction, traffic had returned to above pre-scheme levels. This was partly because of improved traffic signal efficiency, which returned additional capacity to general traffic. Journey times for both HOV and non HOV traffic improved, with gains being 4 minutes and 1.5 minutes respectively for the 5km trip from the Leeds Outer Ring Road to the Inner Ring Road. Monitoring across a cordon of 4 inbound routes showed that vehicle occupancy was virtually unchanged, although there had been some redistribution of vehicles between the routes, with more HOVs using the A647 and choosing to travel at peak time. Specifically, the average car occupancy rate on the A647 increased from 1.35 (before the scheme) to 1.43 in June 1999. Meanwhile, bus

operators had increased the number of morning peak hour services using the route from 20 (in 1997) to 33 (in 1999), and were reporting some increases in patronage.

A results update will be published by Leeds shortly, based on their 2002 survey results. These are expected to show that whilst morning peak car occupancy remains at 1.43 on the A647, bus occupancy has risen by approximately 20% since June 1999. Unfortunately, journey times have also risen, caused in part by a 9% traffic increase on the A647 since opening. However, HOV journey times remain 2½ minutes faster than non-HOV times for the 5km journey (Dixon 2004).

The scheme continues to be considered successful because of the maintained journey time improvements for bus users and car sharers.

Since that project, there has been relatively little interest in high occupancy vehicle lanes in the UK, although this appears to be changing. The DfT are expected to publish a local authority guidance note on HOV lanes soon. Leeds (and partners²) are about to conclude what promises to be a successful research project into the detection of car occupancy by camera. Moreover, in early July 2004, it was reported that the Government is considering introducing HOV lanes on several motorways during rush hours, with the M1 and M3 being identified as potential candidates (BBC News 4/7/04).

In addition to the renewed interest in HOV lanes, there has been considerable development of car sharing schemes by individual employers, and some literature evidence about this is reviewed in the next section.

Meanwhile, the general potential for car sharing was reviewed again by Bonsall in 2002 for the Department of Transport, Local Government and the Regions and the Motorists Forum. This work included literature review (with the conclusion that there was relatively little useful literature), interviews with experts, and surveys of public attitudes and experiences. This time, Bonsall's conclusions were more optimistic, including statements that:

- *“Car sharing can make a useful contribution towards reduction in traffic levels*
- *Car sharing can potentially offer a more cost-effective method of providing mobility to certain communities than is possible with conventional public transport,*
- *Car sharing can make a useful contribution towards reducing the need for parking spaces at places of employment, and*
- *Potential exists for an increase in the number of organised car sharing schemes”.*

Bonsall also highlighted that the amount of informal sharing is always likely to be greater than that of organised sharing, and reiterated the concern that formal schemes may abstract revenue from conventional public transport.

² The HOV MONitoring project (HOVMON) is funded by the UK Department for Transport and involves a collaboration between Golden River Traffic, Laser Optical Engineering, Leeds City Council, Photonics Consultancy and the University of Sussex.

Like Ab Rahman, (and despite experience in Leeds), Bonsall argued that car sharing is likely to be encouraged by priority measures for high occupancy vehicles. Bonsall also identified the value of demand management measures as a stimulus for car sharing – namely, the introduction of workplace parking levies and road-user charging. He also suggested that ‘good practice’ for introducing organised car sharing schemes was already relatively well established.

9.3 Literature evidence about car sharing in the context of workplace travel plans

As highlighted earlier, employer-led car sharing schemes represent only a small subset of car sharing schemes. However, there has been considerable interest and development of such initiatives in the UK, with impressive levels of resulting increases in car sharing being reported. Cairns (2000) reviewed 10 schemes introduced by employers to encourage car sharing on the commuting journey. This study was later extended to examine experience at 20 organisations, and reported as part of a wider Department for Transport study of workplace travel plans (Cairns et al, 2002). The results are shown in table 9.1

In terms of effects on modal shift, the report concludes:

“The available data show that, of the 14 companies with schemes that enable them to identify formally registered, active sharers, on average, 14% of staff have become active sharers. Schemes asking people to car share on an irregular basis have achieved the highest levels of take-up – and the two reported here (Marks and Spencers Financial Services and Computer Associates) have persuaded about a third of their staff to become active sharers.”

For organisations where *overall* levels of car sharing (including formal and informal sharing) have been measured, on average, an additional 3% of staff had been encouraged to start car sharing. This is a small absolute number, although given the previously low levels of car sharing in the organisations represented here, it is still a 23% increase over previous levels. Six of the 10 organisations that had been most successful in encouraging people to actively share through formal schemes were, of necessity, excluded from the analysis, as they did not have data about overall levels of car sharing by their staff. Consequently, the average figure of 3% is thought to provide a very conservative measure of the potential for achievable change. Finally, it is notable that one of the organisations – Orange at Temple Point – had recorded a drop in overall levels of car sharing. This is because staff relocated from an out-of-town site to a town centre site, where the range of public transport options, cycling and walking opportunities were significantly greater. Hence, the drop in car sharing should probably be interpreted as a success, since it had been replaced by an increase in staff using other, more sustainable modes.

Table 9.1: Monitored levels of car sharing for commuting

Organisation	Overall % of staff car sharing		% -point change	Active car- sharers in formal scheme
	Before	After		
Computer Associates	6	12	6	34*
Marks and Spencer Financial Services	--	--	--	31*
Egg	20	26	6	26
Pfizer	18	20	2	20
AstraZeneca	--	--	--	18
Addenbrooke's NHS Trust	--	16	--	16
Government Office for the East Midlands	--	10	--	10
Boots	--	--	--	8
Plymouth Hospitals NHS Trust	--	--	--	7
University of Bristol	12	14	2	6
Vodafone	8	--	--	6
Agilent Technologies	26	26	0	4
Wycombe District Council	15	17	2	2
Buckinghamshire County Council	16	18	2	1
Nottingham City Hospital NHS Trust	2	11	9	--
Orange (Almondsbury Park)	6	14	8	--
Bluewater	20	24	4	--
Oxford Radcliffe Hospitals NHS Trust (JR site)	17	18	1	--
BP	4	4	0	--
Orange (Temple Point)	14	8	-6	--
Stockley Park	--	--	--	--
Average	13	16	3	14
National travel survey comparison	22			

Notes:

- For the organisations with *, this is the proportion of staff who have registered to car share one or more days per week.
- -- means that the information was not available, or that it would not be appropriate.
- From staff travel surveys, overall levels of car sharing have sometimes been calculated by doubling the number of car-passengers (since each must arrive with a driver), and including them in addition to staff who officially identify themselves as car sharers. An alternative approach would have been to try and get comparable proportions of car-passengers for each organisation. The former approach was adopted for ease of comparison with proportions of staff in formal schemes (where there are usually few measures of car sharer occupancy rates), and because some staff travel surveys do not ask about car passengers, but only about car sharers and single occupancy vehicle drivers.
- The number of sharers in a formal scheme may be significantly lower than the total proportion of staff arriving at the site in a shared vehicle, if many do not join the official scheme.

There were also various other insights from the report:

- The ratio of registered sharers to active sharers ranged from 11:1 to 48:31 - a very substantial difference. A low ratio was assumed to be due to software problems with matching people, or lack of critical mass, or a lack of incentives for existing car sharers are to join.
- It was common for car sharing to encourage more than two people to share a car, with one scheme specifically targeting 3+ sharers
- Most schemes reported growth over time- from 2% to 8% of staff in one case, and from 5% to 18% in another. However, it was also noted that the length of time a scheme had been running for did not seem to be a particularly important determinant of its overall success.

- It was difficult to assess how car sharing interacts with other modal choices for commuting. There are some arguments that it may undercut more sustainable modal choices, and opposing arguments that it may encourage people to make a transition away from the car, eventually resulting in more use of other sustainable modal choices. It was hard to identify evidence on this topic from the organisations studied.

In terms of determining how many people registered to car share, the study suggested that the following were the most important factors:

- **specific incentive payments and/or direct relief from parking charges.**
The success of Egg was particularly notable in this respect, since car sharers have been exempt from paying a 75p a day parking charge, and this has been the only motivation provided to encourage car sharing. (Note that they did not have any kind of scheme to match up potential partners). Computer Associates and Marks and Spencer were providing substantial financial payments to car sharers (approx £300-400 p.a., and £100 p.a. respectively)
- **Events to encourage car sharers to meet, particularly major launch events**
Both Computer Associates and AstraZeneca held a major launch event in the cafeteria at lunch time. Computer Associates matched people at time, using a large plasma display screen which helped to encourage others to follow suit. In addition to their initial launch, Astra Zeneca held a 'Happy birthday car share' event, a year into the scheme, which helped to boost use.
- **dedicated parking spaces in the most attractive spots**
Various organisations mentioned that when implemented during the scheme, dedicated spaces had helped to promote sharing, and to provide a visible reminder of the scheme.

In addition to key success factors, many organisations highlighted a few other factors which they felt were important to be in place to encourage people to join, although they were unlikely to guarantee success by themselves. These were:

- a guaranteed ride home
- a small gift such as a voucher for registering
- publicity

In terms of the costs of offering car sharing, companies reported the following:

- cost of setting up a database - £3000-£10,000, but typically £5000.
- cost of guaranteed ride home - maximum quoted £700 per annum
- demarcating dedicated parking - £200 for 12 spaces per annum
- staff time once the scheme was operating - 0.5 days per week
- incentive payments to staff, ranging from approx £100-£1000 p.a. per car sharer.

Most other costs, such as publicity, were being absorbed within the general travel plans budgets.

In addition to the general work on employer car sharing schemes by Cairns et al (2002), there has also been more specific research into the issue of vanpooling by

Enoch (2003). He defines vanpooling as being the situation where a group of 7-15 people commute together on a regular basis in a minibus, driven by a voluntary driver from the group, with expenses shared amongst the group and/or sometimes partially paid for by their employer. Enoch reports that such schemes are considered to be very successful in the US and are starting to take off in the Netherlands. However, he expresses reservations about their suitability for the UK, because:

- A special license is required to drive a van carrying more than 8 passengers (compared with 14 in the US).
- Employer supported van pools would be taxed as a benefit-in-kind, and the main driver would have been considered, for tax purposes, to have been allocated a company car (and would therefore have to pay tax accordingly).
- Insurance companies seem reluctant to back schemes, (although their accident record is generally good).
- Both the public, and policy makers, are relatively uninformed about the concept.
- Vanpools in the US appear to work best where employees for the same company live relatively close to each other but more than 25km from their workplace, and it is unclear how often this situation would apply in the UK.

Nonetheless, despite these issues, Enoch argues that Vipre's 'Driveshare' concept (mentioned in the introduction) which is based on the idea of lift sharing in smaller vehicles, should have some potential in the UK, and that many of the institutional issues could be addressed.

9.4 Selection of car sharing case studies

In selecting case studies for this project, we were keen to look at schemes that were not for the members of only one organisation, and where some sort of monitoring data were available about use and effects on trip-making.

The following locations were considered in spring 2003:

- Bucks CarShare, a scheme covering the whole county of Buckinghamshire, run by the county council
- CARSHAREMK, a scheme focused on Central Milton Keynes
- a scheme for Park Royal, an industrial estate in northwest London
- Liftshare, the national site (which also operates branded websites for other organisations and areas),
- CarShareDevon, a scheme run by Liftshare for Devon County Council
- Airport Carshare, a scheme run by Vipre for BAA airports, and
- Share-a-journey, which also offers services for member organisations

Availability of data about the effects of schemes on car sharing behaviour favoured the first two mentioned, the schemes run by Buckinghamshire County Council and Milton Keynes Council, as the primary case studies.

During the course of interviews for other case studies in Cambridgeshire and York, we also received information about;

- CamShare, a county wide scheme for employees in Cambridgeshire
- CarShareYork, a City of York scheme, which has been primarily marketed for journeys to work, but can be used for any journey.

In our final selection, we ended up with managed schemes, that have primarily focused on work trips. This is partly because data about the effects of schemes largely relies on scheme management – internet based schemes where people make their own arrangements do not usually yield data about subsequent trip matching. So far, managed schemes have probably tended to focus on the journey to work because of the way in which they have historically developed, and, in some cases, because there is a belief that the national internet-based sites will 'take care' of other types of trip³.

During the course of the project, there has also been further communication with company representatives from Intrinsic and Liftshare, (Gibson 2003 and Claburn 2004 respectively), which has yielded additional useful information about their activities.

The following sections summarise the information gathered about the schemes that were not our main case studies. Section 9.5 then describes our chosen case studies in more detail.

9.4.1 Liftshare

Liftshare, at Liftshare.com, was established in 1997, and reported over 53,000 members by May 2004, with over 6.6 million journeys registered on their website for the coming twelve months⁴. Their website enables the arrangement of specific lifts on-line, including click-on national and local maps of where members are based, though the density of members in a specific locality may be low.

As well as the national scheme, Liftshare also provides separately branded car-sharing schemes to about 300 businesses and communities, including locally branded Internet sites for many local authorities and national sub-sites aimed at the school run, students, those in London and those based in rural communities. Within locally branded sites, some then offer further sub-sites with restricted access for secure private groups. For example, within a local authority site, it is possible to have a subsite which can only be accessed by employees from the same business park, who can choose to only show their details to each other.

Where communities contain individuals who do not have internet access, it is possible for schemes to have a local administrator (who can manually input the members journey details and search for matches on their behalf), or scheme organisers can purchase a call centre licence from Liftshare, who perform the same service. Claburn (2004) notes that the enthusiasm, marketing and project management skills of those running the local schemes can often be a key factor in determining their success.

Liftshare believe that their approach of creating sites that are part of one network, rather than a series of stand-alone schemes, is also an important part of achieving success, in that it can help to gain critical mass faster, provides a common user

³ Note that this belief seems rather out of keeping with opinions expressed elsewhere about the importance of publicity and complementary parking regimes. It may reflect the fact that car sharing is also at a relatively early stage of development in the UK at the moment.

⁴ It should be noted that many of these are regular, repeat trips, such as the journey to work, since the average number of registered journeys per member is 125.

interface in different location, enables synchronous updating of shared information pages and can generate economies of scale in terms of costs.

Liftshare's website (accessed May 2004) reports that approximately 34% of all journeys registered result in successful matches, with a higher rate – 43% - for branded liftshare schemes for specific communities. Their site also reports an estimate that they are saving about 18 million miles of car travel a year. They plan a promotional event under the name 'National Liftshare Day' on 14th June 2004.

In terms of costs, Clabburn (2004) highlights that schemes are largely designed to run themselves so the administrator only needs to use them to monitor uptake, although they can play a more direct role in accessing the data if they require. 'Typical' set up costs are reported as follows:

- Schools start from £20 per year
- Small businesses: £400 set up and £200 running costs per year
- Medium sized businesses: £600 set up and £300 running costs per year
- Large businesses: £1000 set up and £500 running costs per year
- Branded schemes start from £3000 set up and £1000 running costs per year

The most expensive scheme they have set up was for a group of 13 London boroughs (www.gatewaytoshare.com) and cost around £22,000 (including the cost of a five year licence). It should be noted that these figures do not include marketing costs, which Clabburn highlights can be highly variable and, in his experience, do not always directly relate to take up. In general, he comments that:

“The cost of setting up an automated liftshare scheme varies from £400 - £8,000 depending upon the specification and each scheme must pay an annual licence of around 25% of the set up cost.

The liftshare journey matching facility is fully automated. Therefore once the scheme has been set up, no further input is required by the group administrator. However most administrators typically spend a day a month monitoring their schemes and dealing with questions from their members.

Effective marketing is usually the key to the success of a scheme and we advise companies to budget on £5 per employee for marketing and incentives”.

Finally, Clabburn (2004) notes that one of their fastest growing schemes has been 2carshare.com, a South Gloucestershire branded scheme, which now has 1800 members. This scheme is particularly notable since it has included promotion work above the HOV lane on the A4171 (described in section 9.2). It has also involved the launch of a 'Park and Share' car park at Longwell Green, on the outskirts of Bristol, which has 200 car parking spaces and cycle stands.

9.4.2 CarShareDevon

CarShareDevon was launched in March 2003. It is provided by Liftshare for Devon County Council, and covers the whole of Devon. It includes public access sub-sites for those based in and around Torbay, Plymouth and the rest of Devon, and for those

planning to attend the North Devon Walking Festival. It also provides the portal into specific sites for Devon County Council, Plymouth City Council, Torbay Council, Royal Devon and Exeter Health Care, Plymouth University, and a cluster of organisations called '4 Front North Devon' (including Barnstaple Civic Centre, North Devon College and Devon District Hospital).

It was extensively marketed, including 40 temporary road signs on regular commuting routes; 'saucy' radio adverts; 116 bus back adverts; adverts on the back of car park tickets; 5000 leaflets sent out with NHS Trust wage slips; leaflets sent to all staff at Plymouth University; contact with 511 larger employers with more than 50 staff; publicity on all outgoing council franked mail; displays at the Devon County Show and in large libraries; and a message from the Chief Executive of Devon County Council placed on the bottom of wage slips for all 24,000 staff.

By May 2003, 388 members were registered. This was seen as being rapid take-up, partly attributed to the marketing work. Most of those registering seemed to be interested in finding matches for regular trips to work and further education. The Travelwise officer reported that it was one of the most effective things she had done, and that she feels car sharing is particularly appropriate for large rural local authorities such as Devon. By June 2004, 1673 members had registered, (Smith 2004).

9.4.3 CamShare

As part of the work of the Cambridgeshire Travel for Work Partnership (which is focused around workplace travel planning), a countywide car sharing facility has been established in collaboration with Liftshare. This was launched in summer 2002 with the involvement of five pilot employers, representing a total of 13,000 employees. It cost £15,000 to set up. Employers pay to register, and also pay a yearly licence fee to use the scheme. It is up to employers to promote the scheme at their workplace, to provide a guaranteed ride home, and to consider marking out dedicated parking spaces (which some are doing). One perceived weakness with the system is that there are not countywide incentives for using it.

By summer 2003, about 350 potential sharers had registered, and 230 were considered to be live members. However, between the end of November 2002, and mid January 2003, 161 searches were made but only two e-mails were sent seeking fellow car sharers. It is believed that some people may be using the system to find potential sharers and then making their own arrangements. It is also felt that some time will be needed to build up a critical mass. At the time of our interview, the system was being expanded so that employees are not limited to only finding matches with other employees at the same organisation (as they were at the time).

9.4.4 CarShareYork

City of York Council have funded a Liftshare-based car sharing scheme, which was launched in March 2003. It was being particularly promoted to staff at the hospital, the University of York, the College of St John and the council itself, but was also available city-wide. The site was mainly dealing with journeys to work but could be

used for any journey. In the first three months, 150 people registered through the site, but, at the time of our interview, there were no figures on the level of active use.

9.4.5 Intrinsic

Intrinsic supply software to organisations who want to introduce car share schemes, primarily in the UK, Europe and the USA. Their software requires that each scheme is managed, and their belief is that managed schemes are more expensive, but generate higher levels of car sharing.

In the UK, they work closely with the company Vipre, who are implementors of car share schemes. In the last three to five years, Intrinsic has seen a 3-4 times growth in their number of customers, and suggest that companies are encouraged to invest in schemes such as car sharing during times of growth, site changes, or economic prosperity.

They believe that financial incentives, co-operative company cultures, good consultation processes and appropriate parking regimes are all important to the success of car sharing schemes, and that schemes take 2-3 years to establish. The Director of Intrinsic (Gibson, 2004) commented that they have had particular success working with the Benelux countries, which he partly attributes to a greater sense of employer responsibility towards their employees. In the UK, it is felt that many companies spend too much money writing travel plan documents, and not enough money on introducing appropriate measures.

9.4.6 Airport Carshare (BAA)

In 2000, the BAA Heathrow travel plan was (re)launched, and this was followed by the launch of 'Airport Carshare' in April 2001, a scheme run by Vipre. Potentially, 60,000 members of staff at Heathrow were eligible to join and offered small incentives (such as Boots vouchers and sun visors) to do so. By November 2001, there were 1034 registered members (representing 88 companies) at Heathrow, and 268 car pools had formed (involving 587 people), as reported by McInroy (2001).

Data from the website (www.airportcarshare.co.uk), in Spring 2003, suggested that there were 2100 members, representing 120 companies, and that more than 60% of members were actively sharing for an average of 3 days a week.

Latest data from the website (accessed May 2004) shows that the scheme has subsequently been extended to employees at Gatwick, Stansted, Southampton, Glasgow, Edinburgh and Aberdeen. There are also clearer incentives as all members are now offered priority parking bays in BAA managed car parks, an emergency ride home and a range of discounts from local companies (including motoring organisations, shops and various theme parks). There are also (undated) reports of over 80 members of the Aberdeen scheme, almost 90 members of the Southampton scheme, over 100 members of the Edinburgh scheme and 200 carshare groups at Gatwick.

9.4.7 Park Royal CarShare Scheme

Park Royal is a 600ha industrial estate in north west London. In spring 2003, there were 35,000 people there, working for 1,800 companies. A car share scheme was introduced for the whole estate, operated by Vipre on behalf of the Park Royal Partnership. By spring 2003, 300 people had registered and 80-100 were regularly car sharing. However, there were reported problems with funding marketing of the scheme, and there were felt to be problems incentivising the scheme to the same extent that would be possible for an individual company.

9.4.8 Share-a-journey

Share-a-journey was set up in 2000. It promotes its services to members, and member organisations then encourage staff or visitors to register on the site. In spring 2003, there were 12 member organisations (mostly public sector clients), and 1500 individuals had registered. Most were registering for a regular trip (principally commuting) although about 5% were registering for occasional journeys. Most were registering, on average, 1 or 2 journeys, although a few had registered up to 10⁵. The scheme does not generate data about whether this leads to shared journeys. Share-a-journey has been involved in developing a scheme for 15-20,000 regular visitors to the Eden project ('passport holders' who live within 50-60 miles), and a lift-sharing scheme for the school run for private schools in Cambridgeshire, in collaboration with Cambridgeshire County Council.

The Director of Share-a-journey (Cutler 2003) feels that the growth of car sharing will be slow unless the government does more to promote it, and that there is a danger that companies are joining schemes in order to 'tick a box' for workplace travel planning. Specifically, he argues that national government could aid the growth of car sharing by the use of preferential parking; prioritising the use of road space including the development of more HOV lanes in areas with car share schemes; inclusion of passenger numbers in the pricing of congestion or road user charging schemes; and large scale promotion of the concept of car sharing by campaigns "on a level equivalent to the current 'Think!' speed reduction campaign". Cutler believes that a cultural shift is needed, such that solo driving starts to be seen as something to feel guilty about. He also feels that concerns about car sharing competing with public transport are overstated since, in many situations, there are no public transport alternatives, and because the majority of commuter travel is currently done by car, such that achieving a major growth in car sharing would inevitably impact on car users.

9.5 Details of chosen car sharing case studies

Information on our chosen car sharing case studies was collected in summer 2003, and is as follows.

⁵ It should be noted that repeat trips are only counted once. For example, someone logging a work trip would only register 'one journey'. Meanwhile, the number of trips removed per year would relate to how often they subsequently car share.

9.5.1 Buckinghamshire County Council

Buckinghamshire County Council began researching the potential for car-sharing in 1998, in parallel with the development of the county's own workplace travel plan. Their car-sharing scheme, Bucks CarShare, was launched in March 2000, based on Intrinsic software.

Although originally launched as part of the county council's travel plan for its own employees, Bucks CarShare is open to anyone in Buckinghamshire. The scheme aims to match people for regular trips rather than 'one-off' trips – generally for the journey to work although recently the council has started promoting Bucks CarShare for school trips. Publicity for car-sharing emphasises the financial benefits to car-sharers – if you car-share, you can save enough money for a 'free' holiday or slap-up meal. Buckinghamshire Business Watch, an organisation representing the interests of local businesses, is responsible for scheme administration. Buckinghamshire Economic Partnership has helped to promote the scheme.

County council staff may be attracted to join Bucks CarShare because the council provides a few dedicated, parking spaces for sharers in the multi-storey car park adjacent to County Hall (although only certain staff are eligible to park there, and all parking for those staff is free). For employees of other organisations, the incentives to join are fairly limited: there is a free prize draw every year but no other benefit. However, the council is currently discussing with Aylesbury Vale district council the possibility of offering car-sharers half-price parking in local authority car parks.

The key issue for Bucks CarShare has been to try to get a critical mass of people registered on the database. With the current number of registrees, matching of journeys is difficult. To increase the number of people registered, the Travel Choice team has started automatically entering people's names into the car-sharing database unless they specifically choose to opt out, when they sign up to schemes associated with Buckinghamshire's general workplace travel planning.

9.5.2 Milton Keynes Council

CARSHAREMK was originally set up and managed by MK Sustainable Transport Ltd. This company was a partnership between Milton Keynes Council and English Partnerships. The scheme was launched in 2002, on the same day as a major expansion of parking charges across the town centre. It was established using Intrinsic software.

The scheme has been primarily targeted at commuters, and was launched with substantial publicity. Initially it was funded from planning obligations obtained from a new retail and leisure development in the city centre (Xscape). In summer 2003, future funding was expected to come from the central area parking revenue.

Members can park free in central Milton Keynes, if they car share. To qualify, two registered sharers must display their individual but linked permits together in the windscreen of the vehicle. There are designated car sharer parking bays distributed around the town centre in prime sites, and sharers can also park free in the standard bays. In comparison, central parking charges for non-sharers are about 20p per hour in standard bays or 80p per hour in premium bays. Sharers also receive discounts on the

bus services (typical fares of over £1 are reduced to 55p). There is a 'Gold card' which gives extra benefits for heavy users.

There were plans to expand the scheme to a wider initiative involving Bedfordshire and Northamptonshire⁶.

9.6 Staffing and budgets for car sharing

Budgets for individual employer schemes have been discussed in section 9.3. The set up and running costs for area wide schemes can be different.

The car sharing schemes in Buckinghamshire and Milton Keynes have developed in different ways: one scheme has been very much 'hands-on' as far as the local authority is concerned, while the other has been 'arms length'.

In Buckinghamshire, initial research to develop the scheme took place in-house. Project co-ordination is still carried out mainly by local authority officers, as a small part of their wider workplace travel planning responsibilities, although an outside organisation, Buckinghamshire Business Watch, is contracted to run the journey-matching software.

In Milton Keynes, initial research and development work was contracted out to a consultancy rather than being done in-house. The scheme is now co-ordinated by an independent organisation, Milton Keynes Sustainable Transport Ltd, which receives half its funding via the council and half via the regeneration agency English Partnerships. Apart from providing funding and managing the contract with the project co-ordinator, the local authority has little hands-on responsibility.

The cost (in money and time) of setting the schemes up has also been markedly different. Table 9.2 compares the staffing and budgets for the two schemes.

Buckinghamshire spent £15,000 on setting up their scheme, mainly on purchasing software. Staff time researching how the scheme might work took up an estimated 5% of one person's time for about 18 months. Milton Keynes spent considerably more, including funding for a consultant to research how the scheme might operate. We estimate that set up costs were approximately £35,000. There were no significant in-house staff costs in the local authority.

⁶ Since our interviews, we have been informed that the council took over MK Sustainable Transport in April 2004, and that CarShareMK is now funded through Central Milton Keynes parking revenue (Harper 2004). Meanwhile, Claburn (2004) reports that the CarShareMK scheme is not being expanded, and that, instead, in March 2004, Liftshare were awarded a contract to set up car sharing services for Milton Keynes, Northamptonshire and Bedfordshire, to provide schemes that cover all individuals, 50 businesses and 150 schools.

Table 9.2: Comparison of budgets and staffing for car sharing schemes in Milton Keynes and Buckinghamshire (summer 2003)

	Milton Keynes	Buckinghamshire
Length of time scheme has been running	1 year	3 years
Staff time in local authority once scheme established	0	0.2 fte
Staff time in outside agencies, once scheme established	1 fte	<0.1 fte
Start-up costs	£35,000~	£15,000
Annual running cost, including salaries^	£69,500	£12,500
Annual running cost to local authority	£34,730#	£12,500
Annual equivalent of start-up plus running costs*	£70,725	£13,025
Cost to date	£104,859	£41,250
Cost to date, with start-up costs annualised*	£71,084	£26,775

~ In the first 7 months, £75,917 were spent. Given a running cost in the subsequent year of £69,500, or £5,800 a month, this implies that initial set up costs were about £35,000.

^ Salary costs are based on the assumption of an average salary of £25,000. In the case of Milton Keynes, 0.43% of this figure has been added (i.e. £10,750) to the annual budget of £58,711. In the case of Buckinghamshire, 0.2% of this figure has been added (i.e. £5000) to the annual budget of £7,500 a year.

Based on the information that half of the costs for the scheme come via the local authority.

* Calculated assuming that start-up costs are annualised at 3.5%

There have also been differences in budget and staffing in terms of operating schemes. In Buckinghamshire, running costs were reported to be £7,500 a year (much of which was being spent on promotion), plus local authority staff time which was reported to be equivalent to one day a week, (although shared between two people). We estimate the total cost to be in the order of £12,500 a year.

In Milton Keynes, running costs were reported to be £58,711, plus part of the coordinator's salary. We estimate the total cost to be about £69,500. The scheme was being managed by Graham Simpkins at MK Sustainable Transport Ltd with a part time assistant, adding up to one full-time equivalent member of staff. Their roles were described as: enrolling members; publicising the scheme; dealing with day-to-day problems; negotiating deals (e.g. with transport operators); and assessing and reviewing the location of reserved parking bays. Gibson (2003) commented that some of the costs of the scheme related to time spent involving the retail sector, and generating personalised materials for the scheme (such as the cards that go on the windscreen). He felt that these have contributed to the success of the scheme. However, the website developed for the scheme was relatively expensive, and it has been questioned whether there were substantial benefits from it.

These figures can be compared with the earlier information reported from Clabburn (2004) in section 9.4.1. This suggested that set-up costs were in the order of £400-£8,000.

Once set up, Clabburn highlighted that the annual license would be 25% of this (ie. £100-£2000), and that administrator time spent is typically one day per month. Assuming an average salary cost of £25,000, and an average of 240 working days per year, this would imply a total running cost of £1,400-£3,300. This is dramatically cheaper than the annual running costs of the schemes in Buckinghamshire and Milton Keynes. However, it does not include funding for marketing.

Clabburn also recommended a marketing and incentives budget of £5 per employee. In the case of Buckinghamshire, this would justify a further spending of £10,500 on County Hall staff alone, and in the case of Milton Keynes, it would justify spending of £50,250 in order to target all car drivers entering the central area during the AM peak hour. Combined with the previous information about software and administrator costs, this would result in figures which are still lower, but not that dissimilar to the actual budgets reported for the schemes.

It is not clear whether the spending in Buckinghamshire and Milton Keynes has been distributed in this fashion or not. Given that, at the time of our interview, they were both 'managed' schemes, it would be expected that their running costs would be higher anyway. Moreover, Intrinsica's comments highlight that there may be other costs, particularly when establishing schemes, such as securing the involvement of key sectors of the local community.

Significantly, these discrepancies highlight that those wishing to introduce car sharing need to think carefully about the different elements of the scheme. The 'operations' part of the scheme will undoubtedly be an essential component, but the associated marketing and promotion activities are likely to represent a considerably bigger expenditure of time and money⁷.

9.7 The scale of car sharing schemes

According to the 1999/01 National Travel Survey, out of 1019 trips per person per year, 407 are made as a car driver and 231 are made as a car passenger. In other words, approximately a third of car use is passenger travel. Notably, passenger journeys are also, on average, slightly longer (8.8km as compared with 8.7) although the difference is fairly minimal.

We also obtained more specific statistics about travel for work. National Travel Survey data indicates that 82 cars are used for every 100 people travelling to work by car. Of these 100 people, 69 drive alone, 13 are drivers with at least one passenger, and 18 are passengers. In other words, 31% of those travelling to work by car are sharing a vehicle, and average car occupancy amongst commuters who already car share is 2.4 people per vehicle.

As highlighted by Vincent and Wood (1979), very few of these arrangements may represent the situation where drivers take it in turns to drive (and therefore clearly

⁷ It should be noted, however, that software operations are not always smooth, even with schemes provided by the major providers. Both Camshare and Bucks Carshare have reported issues which needed resolution with the providers, and it is important that technical hitches do not nullify the effects of publicity and marketing work.

remove a vehicle from the road). However, arguably, if they were unable to share, one option for at least some of these people might be to acquire and drive their own vehicle. The effects of car sharing on car use are discussed further in the next section. Meanwhile, these figures highlight that sharing (of some sort) is already a widely established practice adopted by millions of people every day.

It is also significant to establish how successful formal car sharing schemes have been at attracting members. Table 9.3 gives an indication of the scale of some of the car sharing schemes operating in the UK.

Table 9.3: Scale of car sharing schemes in the UK

	Start date	Duration (months)*	Most recent data about registrees (and possible market)
Bucks CarShare	Mar 00	39	407 (All in Buckinghamshire eligible to register. Strong promotion to 2100 council staff)
CARSHAREMK	Aug 03	10	1200 (Commuters working in central Milton Keynes targeted. Pre-scheme 11,658 car drivers and passengers entering central Milton Keynes in the peak hour)
CamShare	Aug 02	11	350 (5 employers representing 13,000 staff initially involved)
CarShareYork	Mar 03	4	150 (All in York eligible to register. Mainly promoted to 4 organisations)
Park Royal CarShare			300 (35,000 people working in 1800 companies)
Airport Carshare	Apr 01	23	At Heathrow, 2100 representing 120 companies. (60,000 staff at Heathrow). At least 650 further members from related BAA schemes.
CarShareDevon	Mar 03	15	1673 (Everyone in Devon)
Liftshare	1997	72+	> 53,000 members and 6.6 million journeys. (All of the UK – approx 48 million adults)
2CarShare.com	n/a	n/a	1800 (Everyone in South Gloucestershire)
Share-a-Journey	2000	36	1500 (from 12 member organisations, potential target market unspecified)

* Duration refers to the approximate length of time that the scheme had been running at the time for which we have monitoring data (which is different for different organisations). The most recent data about registrees is then given in the following column.

These figures demonstrate, that in terms of getting people interested:

- There is no clear relationship between the length of time scheme has been running and the number of members. For example, the Milton Keynes scheme has over three times the number of members of the Cambridge scheme, despite running for a similar length of time, and drawing on a similar pool of people. CarShareDevon

reported that they were particularly pleased with their initial take-up (388 members in 2 months), compared to experience from a similar scheme in Norfolk, which Devon attributed to their own, substantial publicity.

- There does not seem to be a clear relationship between the potential pool of members that the scheme can draw on and the number who actually register.

A number of the schemes have provided some insight into growth over time. In particular, Figure 9.1 is taken from Liftshare's website, whilst Figure 9.2 gives information about growth rates in Buckinghamshire and Milton Keynes.

This graph is taken from Liftshare's website.

Figure 9.1 Information from Liftshare's website

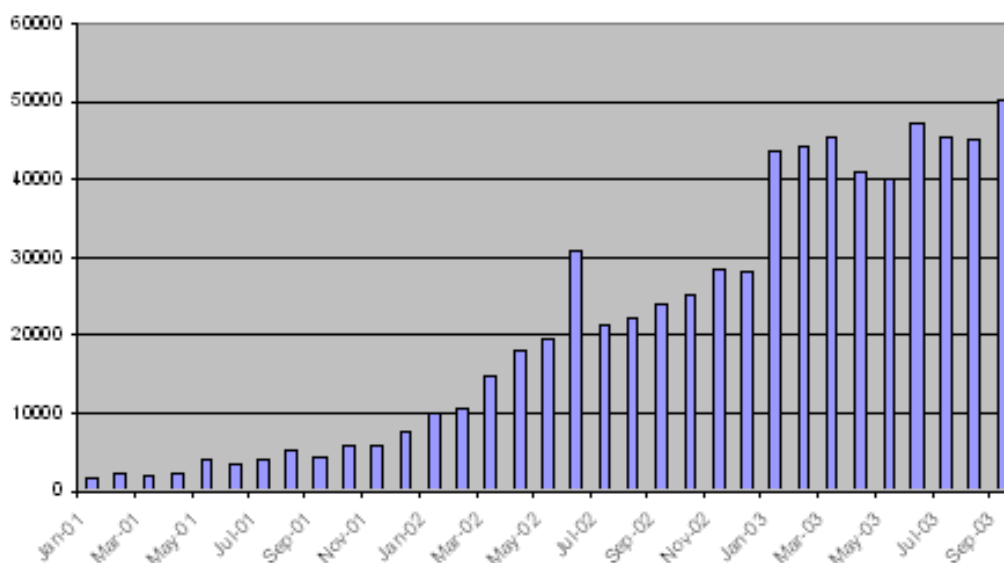
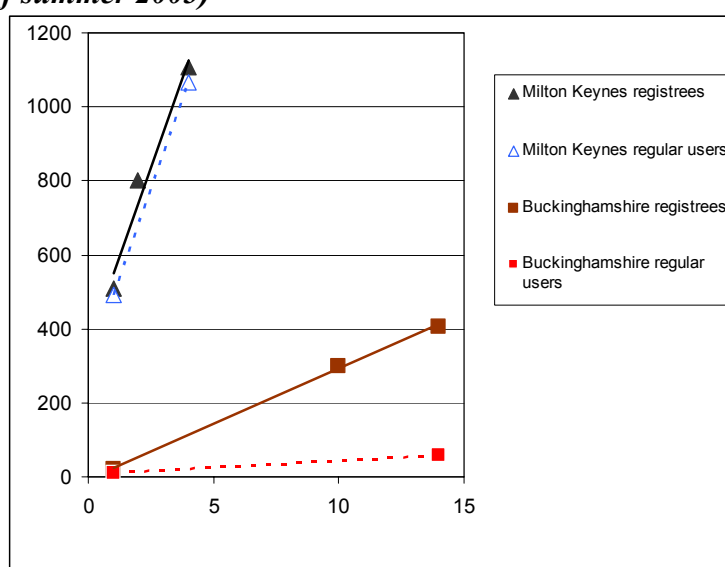


Figure 9.2: Comparative growth rates of the Milton Keynes and Buckinghamshire schemes (as of summer 2003)



Note: x axis gives the number of months that the schemes had been running.

Taken together, these graphs demonstrate that schemes usually show growth, but the speed of that growth varies dramatically. Moreover, it is not always linear, and people drop out, as well as joining schemes.

In summary, this section indicates that formal car sharing schemes differ substantially in terms of the numbers of members they attract. This has also been indicated in earlier work – as discussed in section 9.3 in relation to car sharing schemes put in place by individual employers. Given that the duration of a scheme, and the total number of potential members, do not appear to account for the number of members that car share schemes attract, it is important to identify the other factors which generally account for success or failure. These are discussed further in section 9.12.

9.8 Effects of car sharing on car use

Data about the effectiveness of car share schemes is often relatively limited. This is partly because some schemes simply offer a web based matching facility, which does not enable the operator to identify whether matches result or not.

A recurrent problem in interpretation of the impact of car sharing is the (often unknown) degree of car-sharing that has been taking place informally before a scheme is initiated, and would continue to happen in the absence of a scheme, or is prompted to take place but does not get recorded in the scheme. Where schemes offer few incentives, it is probable that publicity may encourage sharing although sharers may not necessarily be prompted to join an official scheme. Where there are incentives to join (other than to find a fellow sharer), it is probable that many existing informal sharers will join in order to capitalise on the benefits.

It is also often difficult to get information about whether there are any non car drivers in car share schemes, and how many people are typically sharing per car share car. Formal car sharing schemes and car sharing publicity may also lead to the perpetuation of 'good' travel habits – e.g. non purchase of a household car or the continuation of sharing arrangements which might otherwise have lapsed. Again, assessment of such effects is problematic.

A further issue is the relationship between car sharing and other modes, and that promoting car sharing may undercut the market for more sustainable means of travel. As highlighted in the literature review, there are arguments which endorse this as a legitimate concern, and counter arguments which suggest that car sharing may facilitate the transition towards more sustainable travel, and provide a useful strand in a general sustainable travel options package. It is very difficult to draw evidence about this from the case studies, although it is notable that, in the case of Milton Keynes, car sharers have been offered reduced fares on the buses, with typical discounts of 45%, and increases in bus use were being reported.

The information that we do have is given in the following table.

Table 9.4 Information about the impacts of car sharing on car use

Buckinghamshire	Of the 407 members reported in summer 2003, 60 people had matches and were sharing regularly. Thirty were working for the
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	<p>Council and 30 were from a range of other businesses. The scheme administrator estimated that, of all members, no more than 20 people were informally car sharing before they joined the scheme. 41% of those joining had not provided a car registration number, suggesting they may have been non-car owners or did not wish to drive. Average car occupancy amongst those sharing is not estimated to be much above 2. The interviewee commented that car sharing was tending to be a more attractive option for people who live further away from work, and was mainly been undertaken for commuting. He also commented that car sharing tends to encourage people to leave work on time, therefore reducing the potential for evening peak spreading.</p> <p>According to the county council's own travel plan surveys, overall car sharing within the county council has risen by a greater amount than those officially sharing via the scheme. Specifically, in June 2003, 153 people classified themselves as car passengers and 210 described themselves as 'car sharers', with an implied increase of about 110 people (+3.7%) sharing vehicles compared with August 1998. Moreover, this is against a county trend of decreasing car sharing for commuting.</p>
Milton Keynes	<p>Of the 1200 members registered in summer 2003, over 90% were routinely using the scheme, and one count suggested that 8% of central parking was official car sharers, which would represent the majority of the membership. Members were coming from a broad social and economic spectrum, involving a full range of car types. Average car occupancy amongst those sharing was 2.25. The majority of share journeys were for commuting, but there was also some use for other purposes at weekends. Some non drivers were known to have joined the scheme as a way of reducing transport costs. Some people were car sharing in one direction, as part of making their transport options more flexible.</p>
CamShare	<p>Of the 350 members reported in spring 2003, 230 were considered to be live members. However, in a recent three month period shortly after the start of the scheme, only 2 e-mails had been sent seeking fellow sharers, although 161 searches were made. Those running the scheme commented that people are potentially making arrangements off-line.</p>
Park Royal Carshare	<p>Of the 300 members registered in spring 2003, 80-100 were reported to be regularly sharing.</p>
Airport Carshare	<p>Of the 2100 members reported for the Heathrow scheme in spring 2003, more than 60% of members were reported to be sharing regularly, on average for three days per week. Earlier data (from November 2001) suggested that the average size of a car pool was 2.2 people.</p>
Liftshare	<p>In May 2004, 34% of all journeys registered were resulting in successful matches, with 43% for branded Liftshare schemes for specific communities.</p>
Share-a-journey	<p>In spring 2003, about 95% of people were registering for a regular trip (mainly a commute trip), although about 5% were registering for occasional journey.</p>

In addition to the information above, Intrinsica (Gibson, 2004, personal communication) consulted four of their clients about the degree of informal sharing that was probably occurring before official car share schemes were put in place. The results were as follows:

- the Meteorological Office in Bracknell employs 400 people. Before the official car share scheme was introduced, they had 15 dedicated car park spaces for sharers. It was very rare for these places to be fully used.
- At Bristol Airport, the car share manager estimated that maybe 3-4% staff were informally sharing before the introduction of the car share scheme.
- EDF Energy (previously London Electricity) has sites at both Soton Park in Exeter and Aztec West in Bristol. They reported that informal sharing was very low before the introduction of the Intrinsica based scheme.
- BAA estimated that 4% staff were previously sharing before the introduction of a formal car share scheme.

(It should be noted that these results all presumably relate to levels of sharing with other employees from the same site).

Combined with the information from the literature, the following conclusions emerge:

- Schemes vary hugely in the ratio of members to active sharers. This is presumably a result of how schemes are set up. For example, in Milton Keynes, it is probable that many existing sharers will have registered to get the incentives. In the case of Cambridgeshire, it is probable that people will only register if they are actually looking for a match, which is why the number of resulting car share matches is much lower. Liftshare's information highlights that matches are likely to be higher where schemes are focused on a particular community.
- Almost all interviewees were clear that it is important to have a critical mass of members registered on any car share scheme in order to increase the probability of being able to make a match.
- The relationship between formal and informal sharing is complex. For example, in both Buckinghamshire and Cambridgeshire, the scheme has probably increased the amount of informal sharing, even though such matches have not been officially sanctioned through the scheme. Meanwhile, national statistics (as reported in section 9.7) highlight that per-scheme levels of some kind of sharing must usually be higher than scheme operators perceive, although it is plausible that much of this sharing is not between people employed in the same place. Instead, one obvious type of sharing would be between different household members, where one drops the other one off at work on the way to their own employment. Given this, it is plausible that the levels of sharing reported by individual organisations amongst their employees may indeed be 'new' sharing, although this conclusion becomes less likely for schemes covering a wider area.
- Sharing seems to be most common for work journeys, although there is also some evidence of its being used for occasional trips or non work travel.
- People who car share often do not do so every single day, with an average frequency of three times a week being reported from experience at Heathrow.
- It is probable that car sharing schemes for commuters will reduce their ability to travel at non peak times (on the days that they share), and, on those days, it also seems likely that they will be less inclined to chain their work trip with other journey purposes.
- Car sharers may often be travelling relatively long distances to work.

- Schemes can attract non drivers, and the way which schemes are set up may help to determine whether they are complementary or competitive in relation to other sustainable modes. Formal arrangements giving car sharers discounts on public transport may be beneficial, based on Milton Keynes experience.

9.9 Other effects of car sharing

In terms of other effects, the following were reported from the case studies, and are broadly endorsed by the literature:

- **Improved access to work, improved flexibility of travel options and reduced social exclusion**

In Buckinghamshire, in at least one instance, a new employee has been able to accept a job due to the car share scheme, as they lived in a rural area, and would not have been able to get to work without it. The interviewee also mentioned that there was the potential to encourage car sharing for shopping trips from surrounding villages, thereby increasing transport options for some residents. In Milton Keynes, some non drivers who had joined the scheme reported that it had improved their options. Bonsall's work has highlighted that car sharing may be a particularly cost effective way of providing mobility to certain types of community that are difficult to serve with conventional public transport. Liftshare's website highlights the potential social inclusion benefits offered by car sharing.

- **Financial savings for the organisation**

Buckinghamshire Council has saved money from the reduction in car parking spaces, which they estimated as being a saving of £25,000 a year due to car sharing.

- **Financial benefits for the individual**

Both Buckinghamshire and Milton Keynes reported that individuals were saving money as a result of the car sharing schemes, and this is likely to be particularly true for sharers making longer than average journeys.

- **Improved work-life balance**

In Buckinghamshire, it was reported that car sharers are more likely to adopt the discipline of leaving the office on time, which is presumed to result in an improved work-life balance.

- **Improved sociability**

Car sharing is potentially associated with increased sociability for members, and the Liftshare website (accessed spring 2003) reported that at least one marriage had resulted from the scheme. In contrast, the Buckinghamshire interviewee highlighted that people are concerned about their own space, and that car sharing promotion needs to address this issue. The work reported in section 9.3 highlights that events where car sharers can meet informally, before signing up to official arrangements, may help to allay concerns about the nature of potential car share partners, and allow people to make more personally suitable arrangements.

9.10 Synergies between car sharing and other policies and issues

In terms of synergistic effects, the following were noted:

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- **Improved ability to sell other transport policies**
Both Milton Keynes and Buckinghamshire commented that the car share scheme benefitted from being a transport policy which could help to cut traffic but was not seen as 'anti car'. Hence, people were less likely to be antagonistic towards it, and it might also help to provide a bridge for selling other sustainable transport policies. It is notable that car sharing in Milton Keynes was launched on the same day as an expansion of parking charges, because the two were seen as synergistic.
- **Synergy with school and workplace travel plans**
Car share schemes are often seen as an explicit part of workplace travel plans, and are starting to become an explicit component of school travel plans. For example, Bucks CarShare was publicised to schools in October 2002, and, as a result, one independent school set up its own car-sharing scheme and three schools asked for more information. At the time of the interview, the council had recently been publicising car-sharing to sixth-formers. Camden and Cambridgeshire have also reported success at promoting car sharing amongst pupils travelling to independent schools, and Liftshare and Share-a-journey both operate sites aimed at the school run.
- **Synergy with other soft measures**
As well as synergy with school and workplace travel plans, car sharing may be seen as a generally important component of a package of soft measures. In Devon, the scheme was being done by the TravelWise officer, who said that she felt it was one of the most effective things she had done in the last five years. However, there are also concerns about the relationship with public transport as discussed earlier, with discounts on public transport for car sharers potentially helping to ensure that schemes are complementary.
- **Synergy with other hard measures**
As highlighted previously, dedicated and/or free parking, petrol pricing, priority road space and other demand management measures may all help to encourage car sharing. This is discussed further in section 9.12.2.

9.11 Relationship between car sharing spending and impact

In evaluating the relationship between cost and impact for the Milton Keynes and Buckinghamshire car sharing schemes, we estimated the total car mileage saved over the period each scheme had been running, based on the assumption that impact increased linearly, from zero in the first year to current levels. Even if no more money were to be spent, we assumed there would be some impact in subsequent years, but that this would decline at the rate of 40% a year.

Some of the costs associated with car sharing schemes are clearly one-off costs, and these were treated as capital and annualised at 3.5%, with a cumulated total calculated

for the length of time that the schemes had been running. (These were largely small-scale costs, covering items such as computer software). All other costs were treated as revenue. Cost figures take account of total expenditure over the period each programme has been running. (They have been previously defined in section 9.6).

Table 9.5 sets out the calculation.

Table 9.5 Calculation of relationship between cost and impact for car sharing schemes (summer 2003)

	Milton Keynes	Buckinghamshire
Active car sharing members (current year)	1080~	60
Net distance saved in current year* (km)	4929100	273800
Car distance saved since scheme set up~ (km)	9858200	821500
Total cost to date #	£71084	£26775
Cost per km saved (pence)	0.7	3.3

~ Calculated as 90% of sharers currently registered.

* We assume conservatively that a car sharers journey-to-work distance is in line with the national average distance of a car driver commuter journey. This is 16.3km according to the 1999/01 National Travel Survey. At 240 working days per year, and a car occupancy rate of 2.4 (in line with national average car occupancy for commuters who car share), annual distance saved is 4564 kilometres per car sharer.

~ 'Car distance saved since scheme set up' assumes linear behaviour change in car kilometres saved, from zero in year 1 to current year figure, plus some behaviour change in future years, declining by 40% per year after current year if no further money is spent.

Total cost to date includes start-up costs annualised at 3.5% and running costs. It is based on the information given in section 9.6.

The cost per kilometre saved is slightly under 1 penny in Milton Keynes, and about 3 pence in Buckinghamshire. These figures may be overestimates, since there is qualitative data suggesting that people who have longer than average journeys are more attracted to car sharing, though this may well be balanced by the fact that some car sharers will not share every day. The issue of informal sharing also complicates matters – in Buckinghamshire, inclusion of the stimulation of informal sharing would reduce the average cost per kilometre saved, whilst in Milton Keynes, the fact that at least some people in the scheme were probably previously sharing would increase the average cost per kilometre saved.

The cost-effectiveness of the Buckinghamshire scheme is also lower because active users make up a rather small proportion of those registered on the car sharing scheme. If about two thirds of those registered on the scheme were active, the cost per vehicle kilometre would fall to the same level as in Milton Keynes. This may partly be related to the issue of critical mass (which has limited the amount of potential sharing), which, in turn, may be partly due to the lack of incentives offered.

As discussed in section 9.6, it is not entirely clear why the set-up costs and running costs in Milton Keynes were so much greater than in Buckinghamshire. Although there is a case for increased spending in Buckinghamshire in order to promote the scheme, it is not clear that the extra spending in Milton Keynes has been used in this fashion. Intrinsica also commented that both the Buckinghamshire and the Milton Keynes scheme might reach more people if potential members were able to register on line as well as via paper registration (the system in place at the time of the interviews). Consequently, it may be possible to set up successful schemes that

operate more cheaply than in Milton Keynes, or that operate for the same cost but have an even greater impact, although we cannot conclude this with any certainty.

9.12 Future impact of car-sharing

The future impact of car sharing depends on three factors:

- The speed with which local authorities or others can expand existing schemes, and set up new schemes.
- Implementing measures which make schemes effective
- The number of places where car sharing schemes could be suitable.

These issues are discussed in turn in the following sections.

9.12.1 Potential expansion of existing schemes

In summer 2003, the Buckinghamshire and Milton Keynes interviewees both felt that growth of their own schemes was likely to be steady, and at a similar rate to growth so far.

Buckinghamshire: In Buckinghamshire, it was felt that a larger publicity budget and greater levels of staffing would result in higher levels of take-up, although there were no plans for this. If spending in Buckinghamshire remained at existing levels, with no major additional incentives, the interviewees felt that it was realistic that the scheme might have 800 members by 2006 and 1600 by 2011. Assuming linear growth, this implies 1960 members by 2015. The maximum size of the target market was put by the Buckinghamshire interviewee at 20% of people driving to work (assuming that car-sharing continues to be mainly targeted at this journey purpose). In Buckinghamshire 153,811 people usually drove to work in 2001. If the scheme grew at the predicted rate, it would involve just over 1% of car drivers by 2015, well under this estimate of the maximum number of people likely to share. This suggests that the growth rate in Buckinghamshire is not constrained by a lack of potential car sharers.

Milton Keynes: In Milton Keynes, it was suggested that a major increase in the budget would enable effective marketing of the scheme to larger employers, which would probably more than double the number of people registered. However, there were no plans to increase resources to enable this. If growth is linear, the scheme would have 4700 members by 2010 and 7700 members by 2015. In Milton Keynes, 67,986 people usually drove to work in 2001. If the scheme grew at current rates, it would involve about 11% of former car drivers by 2015. Although this sounds ambitious, it may not be unrealistic if the parking incentives are maintained. It should also be noted that it would represent a very high proportion of those driving into Central Milton Keynes, and therefore presumes some expansion of the scheme into other areas, as was being considered at the time of the interview.

9.12.2 Key factors determining the scale of schemes

As discussed in section 9.7, there do not seem to be any 'inherent' determinants of how effective car sharing schemes are. Instead, it seems that the details of the scheme

act as a key determinant on its success. Particular factors that seem to determine the success of schemes are as follows:

- **Parking, financial incentives and road priority**

The most important success factor in Milton Keynes seemed to be the parking/financial benefits of using the scheme - car sharers could park free, saving up to £5 per day or 80p per hour. In contrast, in Buckinghamshire, only a small number of county council employees are eligible for dedicated parking spaces if they are car sharing (whereas the scheme was targeted countywide) and there are no financial savings. At the time of the interview, the council was hoping that recently introduced parking arrangements would make a difference to interest in the scheme, and they were discussing further changes to parking payment regimes that could encourage sharing. Cambridgeshire and Park Royal both commented that they felt unable to incentivise car sharing appropriately ('in the way that an individual company might be able to') and that this was limiting the effectiveness of schemes. Meanwhile, the success of the South Gloucestershire scheme (as reported in section 9.4.1) may partly reflect their decision to develop a dedicated 'Park and Share' car park, as a location where people can meet to combine their journey. Several interviewees also mentioned that high occupancy vehicle lanes might help to encourage car sharing.

- **Publicity**

Both CarShareDevon and Milton Keynes highlighted the importance of publicity in promoting their schemes. Clabburn (2004) also emphasised the importance of enthusiasm and marketing skills of scheme promoters, whilst Cutler (2004) argues that national awareness raising is needed to create a climate that is conducive to car sharing. Buckinghamshire and Park Royal both commented that lack of budget for publicity was a problem for their schemes. CarShareDevon has been particularly proactive, as described in section 9.4.2. The work on schemes run by individual organisations (as reported in section 9.3) has highlighted the particular importance of launch events.

- **Critical mass**

If schemes are to promote new matches between people, it is clearly important that they have enough people on the system to make finding a match possible. In some cases, this has meant adjusting software so that it can match for 'pass by' trips as well as trips from the same origin. Buckinghamshire also highlighted that, on materials associated with their general workplace travel plans scheme, they ask participants to opt out of being registered for car sharing, as opposed to asking them to opt in.

- **A committed organisation**

The Share-a-journey interviewee commented that some organisations joined the scheme to be able to 'tick the box' as part of developing a travel plan, and saw this as an easy option. In these circumstances, he felt the schemes were unlikely to be successful. In Milton Keynes, the substantial budget and the links between the car sharing scheme and other areas of transport policy, may reflect that it is given a high priority, and help to explain the success of the scheme. In general, small incentives and offering employees a guaranteed ride home are associated with successful car sharing schemes in individual organisations, partly as a way of showing that the organisation recognises and supports car sharing.

- **Identity**

It is clear that car sharing schemes can work when people are not all employed by the same organisation. However, it seems plausible that schemes are more successful where their identity is one which people can more closely relate to. Liftshare's experience highlights that it is easier to find matches where schemes are for a specific community, and Ab Rahman reported that experience from the USA had found this to be the case.

9.12.3 Where schemes might, or might not work

In Milton Keynes, at the time of the interview, there were plans to extend the current scheme to Milton Keynes General Hospital, as part of their travel plan, and to the area around the railway station (aiming to affect people commuting into London). It was also felt that a scheme covering several counties could be valuable, (see the footnote in section 9.5.2 about recent developments).

The Milton Keynes interviewee suggested that car sharing works best in medium-sized towns with significant numbers of town-based employees and a traditional 'hub and spoke' structure. In towns smaller than Milton Keynes, he suggested commute distances and parking might not be such important issues, and hence car sharing schemes might not be implemented (although this is not borne out by Bucks CarShare, many of whose members work in the small town of Aylesbury). In larger towns and cities, he suggested that public transport might obviate the need for car sharing schemes.

The Buckinghamshire interviewee suggested that car sharing works best where people are travelling relatively long distances. The Devon interviewee commented that car sharing was particularly appropriate in large rural areas.

It is notable that both of our case study areas have relatively high levels of car ownership and use. Buckinghamshire has one of the highest proportion of households owning 2 or more cars in the country, and the development of Milton Keynes was based around facilitating car-based accessibility. This implies that car sharing may be particularly appropriate in areas where there are currently high levels of car dependency.

9.13 Key issues for scaling up car sharing

In addition to the issues discussed in section 9.12.2, the interviewees identified the following factors as potentially helping to promote car sharing:

- **A stronger steer from government that this is an important area of policy interest.**

It was felt that future guidance on local transport plans could highlight the value of car sharing, and the parking regimes and road space prioritisation which give benefits to sharers. Cutler (2004) further argues that those introducing congestion or road user charging schemes should be encouraged to include passenger numbers in their pricing, such that solo drivers pay more.

- **A national advertising scheme**

It was felt that a national advertising scheme to promote car sharing could be helpful, particularly if it was aimed at businesses with the message that car sharing can help cut parking costs and individual petrol costs. Cutler (2004) argues that such advertising needs to be “on a level equivalent to the current ‘Think!’ speed reduction campaign” and should aim to form part of a cultural shift, whereby solo driving becomes less socially acceptable.

To these points we add a further strategic consideration. There are a number of different models of schemes to promote car sharing. As well as differences in incentive regimes, there are a number of different ways in which schemes can be organised. These include at least three types: (a) schemes which have a tight local catchment, whose members have a high degree of awareness and knowledge of each other, with minimum management resource; (b) web-based schemes where there is also minimum management, but for reasons of software rather than knowledge; and (c) organised schemes involving professional managers and substantial publicity budgets which may operate for small communities or over considerably larger areas. These models may correspond better with different types of area, but the costs and impacts may both be different, with major implications for estimating value for money.

9.14 Policy implications relating to car sharing

In terms of national steps to promote car sharing, the following emerge as potential suggestions:

- More national guidance (for example in local transport plan guidance) could be provided about car sharing, including appropriate parking regimes and other complementary measures that can be put in place to ensure that it forms part of the general sustainable transport package.
- Advertising, particularly to businesses, about the benefits of car sharing could be undertaken in association with other publicity and marketing about workplace travel plans, or as part of more general travel awareness work.

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