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DEMAND RESPONSIVE TRANSPORT: A REVIEW OF SCHEMES IN ENGLAND AND WALES

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DEMAND RESPONSIVE TRANSPORT: A REVIEW OF SCHEMES IN ENGLAND AND WALES

Abstract

Local Authority administered Demand Responsive Transport (DRT) schemes are increasingly prevalent in England and Wales, partly as a result of the growth in the availability of Government funding. However insufficient research has been undertaken into the nature of these schemes and their performance making it difficult to predict their future role. In this respect, a survey was undertaken in order to collect data on the background, operation and performance of DRT schemes in England and Wales. It found that DRT schemes are often designed in an attempt to tackle social problems caused by poor accessibility, and that they took time to become established, to achieve their objectives and to reach an acceptable performance in terms of subsidy level. The paper concludes that Local Authority led DRT schemes have a role to play but that lessons learnt from schemes currently in operation must be heeded by those contemplating new scheme development.

Introduction

Numerous DRT services operate in the UK, however their future is now uncertain as funding streams are coming to an end. The time would therefore seem appropriate for taking stock of what the DRT schemes are doing and how they are doing it in order to discern a strategy for the future.

The aim of this paper is to investigate the current situation of publicly funded DRT schemes in England and Wales. Specifically it investigates how and why DRT schemes have been established, including data on their design and operation, the catalysts for the schemes and their objectives. Finally it considers the current performance of the schemes.

The section below provides a brief summary of the relevant literature followed by an outline of the method used to collect the data. This consisted of a survey which was sent to a carefully selected number of local authorities who run DRT schemes. The findings from this survey are then presented along with discussion of the results and finally conclusions are developed.

Literature

DRT *'provides transport ''on demand'' from passengers using fleets of vehicles scheduled to pick up and drop off people in accordance with their needs'* (Mageean and Nelson, 2003, p.255). DRT has been seen as *'an intermediate form of public transport, somewhere between a regular service route that uses small low floor buses and variably routed highly personalised transport services offered by taxis'* (Brake *et al*, 2004, p. 324). Essentially DRT can be defined as an intermediate and highly flexible mode of transportation giving rise to a wide variety of uses.

There are a number of reasons why DRT has become an increasingly popular transport tool over recent years. They include an increasing dissatisfaction with conventional public transport provisions (Enoch *et al*, 2004, Mageean and Nelson, 2003), more dispersed land use patterns (Enoch *et al*, 2004), the lack of adaptability of conventional bus and taxi services (Ambrosino *et al*, 2004) and an increasing governmental interest in improved social service transport and reducing social exclusion (Ambrosino *et al*, 2004, Mageean and Nelson, 2003).

DRT is seen by some as a tool that could fill the gap between a fixed route bus and a taxi in order to meet the needs of certain members of the population (Mageean and Nelson, 2003). For example Romanzzo *et al*, 2004, suggest that viable markets exist for DRT as an alternative transport method to be harnessed at times of weak demand thus serving those who want to travel at these times. This role is a little different to the one it occupies in the USA.

DRT can also be used a tool to promote modal shift and increase public transport integration. There is evidence that DRT has the potential to meet the needs of niche markets, such as hospital transport (SEU, 2003). Other suggested markets include shopping, commuting and leisure (Enoch *et al*, 2004). The Scottish Executive (2006) identified four potential categories for DRT services that encompass all of the aforementioned markets: premium value services, for example airport transfers; high value to agency services, for example Joblink transport; high care needs, for example patient transport and best value public transport for example rural services. The report concluded that, in Scotland, *'there is potential for growth in all four main DRT markets: high care needs, high value to agency, best value and premium services, but to achieve this growth will require better targeting of public funding, resolution of some regulatory issues and improved joint working across sectors'* (p. 37).

One of the major problems facing transport planners considering DRT is the high cost of designing and running DRT services. Rural and Urban Bus Challenge funding (RBC/UBC, Government funding programmes aimed at increasing innovation in public transport) has been extremely useful in encouraging the set up of DRT schemes, though it is thought by some to have encouraged innovation more than cost effective long term schemes. The future is still uncertain for many DRT schemes established under Bus Challenge funding (Enoch *et al*, 2004).

There is a suggestion that DRT schemes can prove a useful tool for attaining public policy (i.e. social, economic and environmental) goals (SEU, 2003, Enoch, 2004, Scottish Executive, 2006) and that some funding programmes, for example The RBC/UBC, led to a number of DRT schemes being set up. However there is little documentary evidence referring to this type of scheme set up using challenge funding and the associated costs, benefits and effectiveness at achieving goals.

A survey was designed in order to gather data to enable investigation of some of the issues raised in the literature review.

Method

The contact details for the DRT schemes were obtained from a list of registered flexibly routed bus services operating in the UK provided by the Department for Transport (DfT). The respondents to the survey were Local Authority officers with responsibility for at least one DRT scheme. The survey was sent to thirty six local authorities responsible for a total of ninety nine registered schemes. The initial responses indicated that some of these schemes had ceased to exist since the DfT had produced the initial list and also that some of the registered schemes were services within a single scheme rather than entities themselves. A total of forty eight surveys were returned from twenty eight local authorities.

The survey was administered in December 2005 via email. Initial contact was made by telephone to obtain an email address. A period of two weeks was allowed before non respondents were contacted again by phone or email.

Design and Operation

This section explores the design and operation characteristics of the schemes listed in Table 1. It begins by looking at the funding source and the geographical type of the operational area. Next it reviews the operational characteristics including the route, the technology, the booking options and the fare levels. Finally it provides a summary of the design and operational lessons.

Table 1: Scheme context

Location	Age in Months	Subsidy**	No. of Vehicles	Subsidy level	Funding status
Rural (26)*	0-12 (6)	DfT (5)	1 (1)	£5+ (2)	Ongoing (1)
			2 (2)		March 2008 (1)
			3 (1)	£2-£5 (2)	Ongoing (1)
			4 (1)		March 2005 (1)
		LA (1)	1 (1)	£5+ (1)	Unknown (1)
	12-24 (9)	DfT (15)	1 (5)	£2-£5 (1)	2007 (1)
				£5+ (3)	March 2007 (1)
					2007/8 (1)
					Unknown (1)
				Unknown (1)	March 2007 (1)
			2 (1)	£5+ (2)	March 2006 (1)
			5 (1)		July 2006 (1)
			Unknown (2)	£2-£5 (3)	Unknown (2)
	24-36 (2)		1 (2)		March 2006 (1)
				£5+ (1)	Ongoing (1)
	36-48 (5)		1 (1)	£2-£5 (1)	2005 (1)
			2 (2)	£5+ (5)	Ongoing (1)
					2006/7 (1)
			5 (1)		Ongoing (3)
		LA (1)	1 (1)		
	48-60 (1)	DfT (3)	5 (1)		
	60+ (3)		2 (1)	£2-£5 (1)	2005 (1)
			4 (1)	£5+ (1)	Ceased (1)
		None (1)	2 (1)	£0 (1)	Unknown (2)
Rural, Suburban (4)	0-12 (1)	LA (1)	1 (3)	£2-£5 (1)	
	12-24 (2)	DfT (18)		£5+ (1)	March 2007 (1)
				£2-£5 (2)	Ongoing (2)
	60+ (1)		6 (1)		
Rural, Urban (2)	24-26 (1)		Unknown (1)	£2-£5 (2)	Unknown (1)
	48-60 (1)		4 (1)		March 2006 (1)
Rural, Urban, Suburban (4)	0-12 (1)		1 (2)	£0-£2 (1)	Ongoing (1)
	12-24 (2)			£5+ (1)	January 2007 (1)
			10 (2)	£2-£5 (1)	Ongoing (3)
	60+ (1)			£5+ (1)	

Urban, Suburban (5)	0-12 (4)		1 (1)	£2-£5 (1)	
			2 (2)	£5+ (2)	March 2008 (1)
					Ongoing (1)
			4 (2)	£2-£5 (2)	Dec 2004 (1)
	36-48 (1)				October 2004 (1)
Urban (7)	0-12 (1)		1 (2)	£5+ (2)	Ongoing (1)
	24-36 (4)				August 2006 (1)
			2 (1)	£2-£5 (3)	Nov 2005 (1)
			3 (1)		May 2006 (1)
		Other (1)	6 (1)		Ongoing (1)
	36-48 (2)	DfT (2)	2 (1)	£5+ (1)	Unknown (1)
			5 (1)	£2-£5 (1)	Ceased (1)

**** Figures in brackets refer to frequency of occurrences.***

*****'DfT' refers to schemes an element of funding from special UK Department for Transport grants e.g. Rural Bus Challenge, Urban Bus Challenge, or Rural Bus Subsidy Grant. These include schemes where local authorities also inputted money. 'LA' refers to schemes funded by the local authority where no DfT money was used. 'Other' refers to grants from non-Government sources. 'None' refers to schemes that are not subsidised.***

Table 1 lists contextual information about the schemes. The schemes are numbered to protect the identity of the respondents and enable the attribution of quotations during the analysis.

Funding

For the majority of scheme's funding came from the local authority or RBC/UBC grants, in a number of cases a combination of Local Authority and RBC/UBC as illustrated by Table 1. The 'Other' category included money from beneficiaries of the service, for example employers and, in one case, a Rural Enterprise Partnership. Many of the schemes' funding was due to cease in 2007 or earlier (Table 1.). Only a very small proportion had secured funding (usually from the local authority, but in individual cases both a developer and Kickstart were mentioned) following cessation of the original funding.

The results in Table 1 reinforce Enoch *et al*, 2004 which stated that Rural and Urban Bus Challenge grants had funded many DRT schemes. Two years on from the Intermode report the results indicate that the future for many of these schemes is still uncertain.

Geography

The twenty six of forty eight respondents questioned classified their schemes as operating in rural areas with seven classifying themselves in urban areas and fifteen operating in a combination of area types. Figure 1 represents the split in more detail.

The schemes are spread across seven of the English regions with one scheme in Wales. Four of the schemes operated in the East of England, seven in the East Midlands, two in the West Midlands, eleven in the North West, fourteen in the South West, Eight in the South East and one in Yorkshire and Humberside.

Figure 1: Geographical distribution of schemes

Route and schedule

The schemes exhibit three different types of route: fully flexible; semi flexible; and fixed and flexible. Those that were fixed and flexible were generally time (demand) dependent, operating on a flexible basis off peak and a fixed basis when demand was higher at peak times. The semi flexible services often had fixed routes in busier areas and flexible sections off route in areas of lesser demand.

Operating Hours

Most of the schemes operated over six days during the daytime and evening. A few exceptions operated on a Sunday or 24 hours a day. Fourteen of the forty three schemes that gave their operating hours operated for between 41 and 60 hours per week with 61 – 80 hours per week also being common operating hours. Four schemes operated for in excess of 120 hours.

Vehicles

The fleet sizes of the schemes are displayed in Table 1. Schemes usually had 8 – 16 seat vehicles that were manufactured by Volkswagen, Mercedes or Roehill.

The most common number of seats per scheme was 11 - 20, followed by schemes with 50+ seats and 21 – 30 seats. The schemes with 50+ seats were most common in rural areas. In all seat number bands excluding 31 – 40 there was an even split between those schemes operating on a fully flexible basis and those operating on a semi flexible basis. Furthermore the majority of vehicles in each category except 31 – 40 seats were operating on an on demand basis

Technology

Twenty nine of the forty five schemes that responded to this question used booking and routeing software, mainly Mobisoft with some using Trapeze or other alternatives. Slightly over half of the schemes in rural areas did not use any specialist software relying on pencil and paper booking or taxi software. Of those with software, five used Mobisoft, two Trapeze and two other software. All but one of the schemes in urban areas used some kind of booking software, usually Mobisoft.

None of the schemes with 1 – 10 seats used any software. Of those schemes with 11 – 20 seats, nine of the fourteen schemes used software or some kind. Only one of the six schemes with 21 – 30 seats and eleven of the twenty four schemes with 50+ seats used software of any kind.

Schemes with fully flexible routes were more likely than those with semi flexible routes to make use of software as were those that operated on demand as opposed to in any other way.

Booking

Figure 2 shows the booking options the DRT schemes offered.

Figure 2: Scheme booking method(s)

Most of the schemes offered phone booking often with hailing at a bus stop. Text message and internet booking were not common, however a proportion of the services did have websites featuring timetables and information.

Fares

Most of the schemes had variable fares (Table 2) based both on journey length and passenger type. The fares ranged from £0.30 for a single journey to £4.00 for a return, with one service offering a longer cross county journey priced at £12.00 for an adult return. Those services with flat fares ranged from £0.70 for a single to £5.00 for a return journey with the average being £1.00 - £1.50 for a single ticket. Less than half of the services offered a season ticket.

Table 2: Fare type

Fares	Response rate	Variable fare based on:	Season ticket offered

Flat	11	N/A	Yes: 4 No: 7
Variable	34	Journey length: 9	Yes: 17 No: 17
		Passenger type: 3	
		Both: 22	

Design and operational lessons

This section discusses the problems the respondents were faced with and reviews what changes to the design or operation of the scheme they would make with hindsight.

Design and operation: Problem issues

The respondents highlighted a wide range of problems with the design and operation of the DRT schemes ranging from problems with the users *'some local community groups felt that it should be for their specific use and not for the general population'* (1) and *'high public expectations can make the scheme difficult to deliver, people expect it to do everything all the time'* (30). To problems with getting tender bids *'few available taxi operators in the area lead to a small choice from the tender round'* (24) and problems with technology *'initially when introducing the scheme we did not have the computer software in place in time to give us enough time to design a system'* (2). Respondents had also experienced problems with building an acceptable level of patronage, vehicle breakdowns and reliability issues, integration into an established commercial network and limitations of booking systems.

Design and operation: Changes

Ideas about changes to design or operation ranged from *'not much as the scheme has gone from strength to strength'* (12) to *'try something else!'* (16). However other responses were more specific and concerned elements of the design of the schemes such as *'simplify the timetable and route, promote the interchange possibilities more, make more of the scheme demand responsive, provide more localised information for each village'* (13) and *'make it far more flexible with even less timing points from the start'* (28). Others concerned more peripheral issues paramount to the schemes success for example *'start promotion and awareness raising six months before*

launch' (29), *'more meetings with rural residents in the early stages of the scheme'* (27) and *'make sure there is enough lead in time before the scheme goes operational'* (3). Finally some of the changes were in relation to the operator side of the scheme for instance *'set up in an area where more taxi operators are willing to try a service'* (25) and *'build partnership with the Taxi/PHV operators and develop a scheme with them'* (43).

Catalysts and Objectives

This section initially examines the catalysts the respondents stated for selecting DRT as a transport tool. The respondents were asked to state what had motivated them to design and implement a DRT scheme. Catalysts differ from objectives because they are why DRT was chosen rather than what the DRT scheme was trying to do. Figure 3 below illustrates the spread of responses. The respondents were able to choose multiple answers to this question and were asked to justify their responses. These justifications are discussed in more detail below.

Figure 3: Scheme catalysts

Social

Many of the respondents cited social catalysts for commencing the scheme. The qualifying reasons given for this choice were wide ranging from the all encompassing '*to give otherwise excluded people a choice'* (1), to more specific statements. These centred on providing a travel option to reach activities and services. For example *'provision of transport service to supermarket, cinema etc'* (41) and *to provide access to services and facilities for a wide range of people'* (28). Some of the justifications centred around the type of users, for example, '*to provide a specialised service for older shoppers'* (33). The responses illustrated that characteristics can be widely variable.

Environmental

Many of the schemes also had environmental motivations centred around reducing the use of the private car '*to reduce the need for a second car'* (43) and '*to aid a reduction in car usage'* 48), *'encourage public transport usage by reducing car dependency'* (18) and *'to encourage modal shift away from the car in an*

environmentally sensitive area' (5). And in a similar vein *'to reduce car use in rural areas'* (25), *'to encourage modal shift by serving destinations not previously covered by public transport'* (43) and *'to encourage a shift away from the private car'* (18).

Increased accessibility

The respondents who chose this category justified their choice in a number of ways. For example *'DRT allows for a door to door service to be offered'* (41) and allows transport to access *'otherwise isolated residents'* (27). Furthermore it can be operated using '*fully accessible buses'* (18) and can easily be used to provide a feeder service to '*onward transport connections'* (25).

The flexibility offered by DRT services in relation to both scheduling and routing made some respondents believe it would improve accessibility in an area as indicated by statements such as '*DRT can operate at periods of low demand'* and '*it can offer a combination of fixed bus route at scheduled times and provide flexible demand responsive transport in between'*. One respondent simply stated that DRT was *'more flexible'* (43), others were more expressive. It was thought by one respondent that DRT would offer '*more flexible routes'* or from another angle *'fixed route services would not give the flexibility required'* (26).

Commercial Opportunity

Three of the respondents recognised the commercial opportunity of operating the DRT service for the local area. Reasons such as *'to keep people using local shopping facilities rather than travelling further a field'* (32) and *'to promote sustainable tourism in rural areas and encourage use of local shops'* (5).

Improved Cost Effectiveness

Certain respondents were operating the services to see if it could provide the same or better level of service than conventional transport tools for the same or reduced costs. For example *'to see if higher levels of service and flexibility can be offered for the same cost as a conventional bus'* (30) and cutting costs by using '*suitably sized vehicles to meet demand'* (43). It was also stated that DRT offered reduced costs because *'it would only travel when needed'* (12) and it could be '*integrated with special needs and schools transport'* (35). One respondent stated that it offered improved cost effectiveness because *'even a limited service each day is better than no service'* (11). It was predicted that DRT could provide a cost effective transport

solution in '*deep rural areas that are not conducive to operating a conventional bus service'*. This is further illustrated by the response *'the need for a bus service to cover a large rural area that provides a cost effective service for the whole community'* (14). For some DRT is seen as a way of making *'the most cost effective use of the available resource'* (15)

Funding Availability

The second most popular response was the availability of funding. Of the twenty six respondents who gave a qualifying statement for selecting funding availability as a motivation, twenty five mentioned either RBC or UBC in their qualifying statement. The only respondent who didn't mention RBC or UBC cited *'limited funding availability in small rural area'* (27) and was 100% funded by the Rural Bus Subsidy Grant.

Other

Nine respondents cited other reasons for choosing to operate DRT. These included; '*based on our experience with other services'* (1) *'to allow us to provide transport to pockets of isolation and feed into public transport through a network scheme'* (32) and because *'DRT is seen as a regeneration tool'* (46).

Three of the schemes were set up to *'test out DRT is the area'* (29), for example '*by using a taxi based solution and to find evidence of support for an evening taxi based flexible service'* (23). Although few of the respondents explicitly state that DRT is an experimental concept for them this is apparent in some of the responses.

Scheme objectives

Each respondent was asked to identify the objectives of their scheme, that is what the schemes was specifically set up to do, and rate to what extent the objectives were being achieved. Most of the respondents had between four and six objectives. The objectives were split into four categories: Social; Environmental; Economic; and Geographical, as seen in Table 3. The objectives have been categorised by their primary purpose, for example improving access to fresh food could be a social or economic objective. Where the objective states that the scheme aims to *'provide access to food shopping for older and disabled people'* (33), the objective would be classified as social because, although the service would increase patronage of local shops this is a secondary benefit of the objective. Where the objective states that it

intends to *'provide a service for tourists to visit the historic market town'* (11) it would be classified as economic, although it also has social benefits for those without a car and environmental benefits by providing a more sustainable transport option for those with access to a car. This method has been used during the categorisation of all the objectives but the classifications are very subjective.

Table 3: Objective category

Objectives	Response rate
Social	129
Environmental	12
Economic	16
Geographical	12

Social

The majority of the objectives fitted into the social category, they range from the unspecific *'Promote social inclusion'* (17), *'reduce rural area social exclusion'* (23) and *'provide public transport for socially excluded rural residents'* (27) to specific. For example *'to use the project to forge closer links with local community groups and involve these in defining and developing the services'* (43), *'to engage a community who currently have no realistic public transport'* (32) and *'enhance the quality of rural life by giving greater independence to youngsters, the elderly and mobility impaired '*(4). The majority of the social objectives related to increasing accessibility to locations that were currently inaccessible. This is illustrated by the following objectives: *'access to food shopping for older and disabled people'* (33); *'to provide people without private transport access to jobs'* (6) and *'to provide access to essential facilities for the local community'* (18).

Environmental

Twelve schemes had some environmental objectives although none had solely environmental objectives. Examples included *'modal shift'* (21), *'sustainable transport'* (22) and *'to help address environmental problems caused by individual car ownership using by providing sustainable modes'* (6). Where schemes had one or more environmental objective it was never the primary objective. In most cases the environmental objective was secondary or something that would occur as a result of

increased bus use. For example Scheme 4 had six objectives, both social and economic, except for one which was to *'reduce traffic into the rural villages and tourist spots'* (4). However this objective is not purely environmental because reducing traffic also has social benefits.

Economic

None of the schemes had primarily economic objectives. They were often secondary benefits attributable to social objectives. Improving access to facilities and services inherently has economic benefits (i.e. by improving access to jobs and by improving access to facilities such as shops). Some examples of economic objectives were to *'provide the most cost effective service for those remoter areas'* (12), *'to provide a cost effective service that balances patronage to service provision'* (14) and *'to use existing taxi provision in the area more efficiently'* (25). Also to *'meet employers demand for workers due to expansion'* (6). It appears that the social objectives would offer long term economic benefits, but this was not explicitly stated.

Geographical

The objectives classified as geographical were those that referred to providing a service to an area without bus services but made no mention of a social group or access to a specific service or activity. Six of the schemes primary objective did fit into the geographical category. This was usually due to the perception that DRT could provide a bespoke (made to measure) service ideal for the geography of the area. Examples of these objectives included '*provide the remoter areas with some level of service'* (1), *'low cost access form the rural area using taxi provision'* (23) and '*increase local bus services to small rural communities which generated low levels of passenger usage'* (13).

Current performance

This section will discuss the subsidy levels and financial sustainability of the schemes, then their performance in terms of their objectives. Finally it will discuss the overall performance of the schemes in terms of subsidy level and objective achievement.

Subsidy level

Table 1 showed that the majority of the schemes were operating at a subsidy level exceeding £2.00 per passenger trip, with slightly over half having a subsidy exceeding

£5.00 per passenger trip. £2.00 - £5.00 is viewed as an acceptable subsidy level within the industry, based on the cost of operating conventional bus services, although this is locally variable. Only one of the respondents schemes was breaking even.

Figure 4 shows that those schemes operating in a purely rural area had a higher incidence of subsidies exceeding £5 and a lower incidence of subsidies falling into the £2.00 - £5.00 range than those operating in an urban or mixed area. In addition schemes with less than twenty one seats were more likely to have higher subsidies than larger schemes.

Figure 4: Comparison of subsidy level and geographic characteristics

Whether the scheme offered a season ticket had strongest bearing on the subsidy levels. Fourteen of the twenty one schemes that offered season tickets were in the £2.00 - £5.00 subsidy range. Conversely eighteen of the twenty four schemes that did not offer any kind of season ticket had subsidies above £5.00.

Financial sustainability

All the respondents to this question were confident that the schemes would achieve financial sustainability in the medium (1-3 years) or long (3+ years) term. In total twenty eight out of the forty eight that responded to this question were hoping to achieve financial sustainability within the next three years. This included all the schemes that operated in solely urban areas and rural and suburban areas. It also included half of those operating in a rural area.

Objective Achievement

All of the schemes had some social objectives so it is difficult to define the objective most likely to be achieved, suffice to say that the schemes had a higher achievement rate for the objective listed first. Figure 5 illustrates the average level of objective achievement across the schemes. This was calculated by taking the percentage the respondent felt each of the scheme's objective's was being achieved and dividing it by the number of objectives. All but one of the schemes achieved in excess of 40% of their objectives. Only one scheme had a 100% objective achievement rate (Scheme 3). It must be noted however, that the figure reported here are a reflection of the opinions of the scheme managers regarding the extent to which they had achieved their objectives.

Figure 5: Objective achievement

Reasons given for not achieving objectives ranged in generality. For example respondents regarded a lack of demand for the service as a main factor in its failure to achieve the objectives. *'Very limited demand for the service in practice'* (16), *'patronage remains low because many employees are being recruited from outside the area in which the service operates'* (19), *'few journeys being made to employment areas which was the main reason for the previous bus route extension'* (45), '*problems increasing demand and usage of the services provided'* (27), '*not all areas can provide sufficient users to fill the vehicle'* (15) and *'the service is falling well short of anticipated success possibly because although the area is deeply rural it is inhabited mostly by commuters who have more than one car per household and therefore do not suffer the perceived isolation'* (17). Although one scheme had the opposite problem *'the door to door aspect of the service had proved to be so popular that on some occasions people have had to be turned down. Therefore some people who need the service are not using it'* (40). Five of the respondents had problems overcoming psychological barriers. For example *'in line with other experiences people are unwilling to take two buses for a journey as there is a perceived potential problem'* (1) and *'patronage levels are low and although we are unsure of why we believe it is due to people lacking confidence in using something new and different and taking time to grasp the concept'* (48).

Finally seven respondents had low achievement rates due to the recent start of the scheme. These respondents hoped to attain higher achievement levels in the future, for example *'the scheme has only just started running'* (23), and *'the route has only just become fully demand responsive'* (28).

Overall Performance

This section will attempt to identify the characteristics common to the more or less successful DRT schemes. Those that have been classified as more successful have lower subsidy levels and higher objective achievement, the converse being true for those classified as less successful.

The more successful schemes generally used some form of DRT technology and many of them offered more that one booking option. These schemes had generally been established for longer than the less successful schemes and were also likely to

operate for an above average amount of hours. Finally they were more likely to be based in an area that was not purely rural.

The less successful schemes were likely not to use any DRT technology and usually offered fewer booking options. Many of the schemes operated for fewer hours than was average. These schemes had generally been operating for a shorter time and were more likely to be in a rural area.

Conclusion

In terms of design and operation, most of the schemes were based in rural areas. The funding came predominantly from Rural or Urban Bus Challenge Grants and they were usually high technology. The main lessons those running the DRT schemes had learnt from the process was that DRT must have sufficient time invested at the planning stage and that the design used must not be over complicated and must be fit the purpose.

The survey revealed that most DRT schemes included in this study were established for two reasons. Firstly the availability of funding for innovative transport solutions and secondly to impact upon social policy goals that could be influenced by improved accessibility. The data indicated that many of the schemes have been partially successful in achieving these goals. However for those that were struggling to achieve the goals there are some common problems. These include generating sufficient demand and surmounting psychological barriers of prospective users.

DRT schemes included in this research are trying to meet social policy goals. However what is poignant is that those involved in the schemes feel they have a valuable role to play. Although the data does not fully support this assertion at present it has created a base on which to develop further research into the merits or otherwise of publicly funded DRT schemes in England and Wales. Furthermore it does make the tentative suggestion that in the right place, at the right time and with the right planning DRT could be a valuable tool in the future.

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