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ATTITUDES TOWARDS TRAFFIC MANAGEMENT IN RURAL AREAS

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Abstract

With rising car ownership and use, traffic problems in rural areas will also inevitably increase. Illustrated by examples from U.K. National Parks, common manifestations of rural traffic problems are identified and the need to control rural traffic is justified. In presenting a taxonomy of rural traffic management measures, it is argued that their success or failure depends not only on their design, but also on people's attitudes towards such measures and the problems themselves. The principal objective of the paper is to determine those attitudes through the analysis of driver and visitor surveys conducted in two national parks in the UK. The policy implications of the results are then considered.

A PERSPECTIVE ON THE RURAL TRAFFIC PROBLEM

Growth in car ownership in selected European countries over the four year period 1990-1994 is illustrated in Table 1. It shows that in many countries, growth over this period has reached double figures. In emerging European economies such as Estonia, Turkey and Poland, as well as in some more developed economies such as that of Portugal, the growth rate is over 35%. Figures on car ownership per thousand population, which are also shown in Table 1, highlight the potential for even greater growth which exists in many countries. The extreme case would probably be that of the U.S. where there are 537 cars per thousand population (United Nations, 1996). Arguably, since car ownership per capita is often related to economic development, this figure can be imputed as an indicator of the level to which most other countries might aspire or even might eventually attain. Although these figures relate to car ownership rather than use, the relationship is such that an increase in one inevitably leads to an increase in the other, though the correlation need not necessarily be perfect.

Table 1. International car ownership (selected countries)

Country	Population in 1995 (millions)	Number of cars in 1990	Number of cars in 1994	% increase 1990-1994	Cars per thousand population 1994
Austria	8.05	2991	3479	16	432
Belgium	10.14	3864	4210	9	415
Bulgaria	8.40	1317	1588	21	189
Denmark	5.23	1590	1611	1	308
Estonia	1.48	242	338	40	228
France	58.14	23550	24900	6	428
Greece	10.46	1736	2074	19	198
Hungary	10.23	1945	2177	12	213
Ireland	3.58	798	939	18	262
Luxembourg	4.10	192	229	19	559
Netherlands	15.46	5509	5884	7	381
Poland	38.59	5261	7153	36	185
Portugal	9.83	2552	3532	38	359
Spain	39.21	11996	13734	14	350
Turkey	62.53	1650	2862	73	46
UK	58.60	21485	21740	1	371

Source: United Nations (1996)

The growth in traffic in the UK is forecast to continue at a rapid rate for the next 20 years. A Department of Transport forecast published in 1989 indicated that traffic in Britain was expected to rise by somewhere between 83% and 142% by the year 2025 (DoT, 1989). Although these forecasts were revised very slightly downwards in 1997, it is still the case (using 1996 as a base) that traffic is expected to increase by about 52% by 2025 (DETR, 1997). This report also focused

attention on the fact that their prediction represented an average across the whole UK network, but that the growth of traffic on rural roads would be even faster than that in urban areas. To enumerate the implications of the 1989 forecasts for the rural road network, Stokes et al (1992) calculated that traffic on rural roads might be expected to increase by somewhere between 127% and 267% by 2025. In their Rural White Paper, the Department of the Environment/MAFF (1995) admitted that if the 1989 forecasts were to come to fruition, "the steepest increases in traffic, especially in leisure and commuting traffic, would probably take place in the countryside, with unacceptable consequences in many areas".

As elsewhere in the world, some of the worst traffic problems in the UK occur in those areas dedicated as National Parks. The eleven National Parks in the UK generate over 100 million visitors per year, of whom around 90% are car-borne. Traffic in all National Parks has grown remarkably over the past few decades with a particular surge in demand occurring in the 1980s, concomitant with an accelerated growth in UK car ownership. As an example, in Dartmoor National Park, traffic has grown by 31% between 1985 and 1992, with average annual 24-hour traffic flows increasing at each of the six permanent counter sites around the National Park (Devon County Council and Dartmoor National Park Authority, 1994). In the Lake District, traffic counts at various locations have indicated an increase in traffic of between 30% and 50% since 1980 (Lake District National Park Authority, 1995).

Especially during peak periods (which may last several weeks in the Summer), certain locations within National Parks have traffic levels which are totally unacceptable. On-street parking, in particular, spoils the special character of the underlying environment that has attracted visitors in the first place. In certain situations, air ambulances are required to attend accidents because access is denied to conventional road ambulances by parked cars blocking the roads surrounding the area where an incident has occurred. Congestion and environmental degradation are already serious problems in many National Park blackspots.

The volume of National Park traffic and its attendant problems is sourced jointly by both residents within the parks themselves and by visitors that are attracted to them. The resident population and number of visitors per annum for each of the eleven National Parks are shown in Table 2, giving some idea of the latent demand from each source. In all the UK National Parks, the majority of visitors (usually around 90%) arrive by car. Whilst it is clear that the source of some traffic-related problems (perhaps even substantial ones) may be attributed to the commuting and recreational activity of residents, the majority of such problems are related to the voluminous demand for car use amongst the visitors that are attracted to the parks.

THE TRAFFIC MANAGEMENT SOLUTION

As has been the case in urban and inter-urban areas, over the last fifty years National Parks have consistently taken measures to increase the physical road capacity to meet ever-increasing demand. Such measures have included roadbuilding, road widening and road straightening as well as other engineering-based remedies such as junction changes and the creation of roundabouts. The building of new roads and the widening or straightening of existing roads do not sit well with the purpose and philosophy of the National Parks and so has all but ceased in recent years.

Table 2. The National Parks of Great Britain

National Park	Area (square km)	Population 1981	Approximate number of Visitors per annum (millions, unless otherwise stated)
Northumberland	1,031	2,200	2m visitor days/year
The Lake District	2,292	40,000	14
The North York Moors	1,432	27,000	13
The Yorkshire Dales	1,760	18,600	6
The Peak District	1,404	37,400	22
Snowdonia	2,171	23,800	10m visitor days/year
The Pembrokeshire Coast	583	23,000	13m visitor days/year
Brecon Beacons	1,344	32,200	4m visitor days/year
Exmoor	686	10,000	2.5m visitor days/year
Dartmoor	945	29,100	10
The Norfolk and Suffolk Broads	288	5,500	1.5

Source: The Edwards Report (1991) and various others, reported in Cullinane (1996).

In the National Parks, where the situation is such that increasing the supply of roadspace is neither a viable nor a desirable option, alternatives to the *do nothing* option must be sought. Given that the wholesale banning of cars is also neither a politically acceptable nor an economically feasible option, the answer appears to rest in methods of traffic demand reduction through management or control.

The term "traffic management" encompasses a wide range of measures ranging from simple weight restrictions on certain roads to integrated schemes which simultaneously involve both restrictions to car access and improved public transport provision. Most traffic management measures can be categorised under the headings of "carrots" or "sticks". The former are synonymous with "pull" measures which invariably relate to the provision of alternative means of transport, the incentives to use these alternative modes and the marketing of these modes. "Sticks", on the other hand, are "push" measures which involve discouraging or preventing the use of cars. Some of this type of measure, such as the downgrading of road classification or the implementation of road hierarchies are difficult to place under the "stick" category because they work at more of a psychological level and are advisory as opposed to being compulsory. However, they do not provide the car user with the incentive to use an alternative form of transport and, therefore, have more of the characteristics of the "stick" than the "carrot". Table 3 illustrates some of the traffic management measures that have been applied in UK National Parks and explains their main objective.

The success of such measures in reducing traffic is likely to depend on whether people perceive there to be traffic-related problems in National Parks, their attitudes towards traffic management measures and the nature of their aggregate behavioural response to both the problems themselves and the traffic management measures which have been, or are proposed to be, implemented to alleviate them. The remainder of this paper tackles these three issues.

DATA COLLECTION

A total of three surveys were undertaken in two of Britain's National Parks; the Lake District and Dartmoor. The first two of these surveys (henceforth referred to as the drivers' surveys) comprised 297 car drivers in the Lake District National Park and 390 car drivers in Dartmoor National Park. Data was collected randomly from drivers in four car parks in each National Park. The precise choice of car park location was made in collaboration with the relevant National Park transport officer on the basis of which were in areas suffering the worst congestion problems. The third survey (henceforth referred to as the visitor survey) comprised 406 responses from a random sample of visitors, though not exclusively car drivers, to the Lake District.

The surveys took place in both National Parks in the week beginning 18th August 1997. Potential respondents were approached by a researcher and asked to complete the questionnaire themselves and, following completion, hand it back directly to the researcher. Using this method (a hybrid between a self-completion questionnaire and face-to-face interviews) it was hoped that the benefits of both methods could be reaped whilst avoiding the disadvantages. In the event, the refusal rate was minimal and, as a result, there is reduced risk of bias in the responses received arising, for example, from non-responses.

RESULTS

Perceptions of traffic-related problems

Respondents in the drivers' surveys were asked to state the extent to which they thought that selected traffic-related impacts were a problem. The results, shown in table 4, illustrate that the majority of respondents perceived that there were problems related to congestion and the spoiling of surroundings by traffic. Many people also thought that there were problems of noise, pollution and safety. By multiplying the "very big problem" frequencies by 5, the "quite a big problem" frequencies by 4 etc, a weighted score is obtained. This shows that all issues except noise were viewed as being more of a problem than not and that congestion was perceived as being the main problem, followed by the spoiling of surroundings.

With the exception of pollution, neither sex nor age of respondent made any difference to perceptions of traffic-related problems. In the case of pollution, the 61+ age group were statistically less likely to think of it as a problem, whereas for the 24-44 age group, the opposite was the case. This may reflect the comparative environmental awareness of the two age groups.

Respondents were also asked to state which issue they viewed as being the biggest problem. The results in table 5 again confirm that congestion is perceived as being the biggest problem in both parks, while spoiling the surroundings is identified as the second biggest problem in both. That traffic poses a problem was also confirmed in another question in the survey where the majority opinion was in agreement with the statement that there was "too much traffic in this National Park."

Table 3. A Taxonomy of Traffic Management Measures

STICKS	
Measure	**Objective**
Weight restrictions	To discourage access to unsuitable vehicles which might cause unwarranted congestion, personal safety problems or damage to infrastructure such as unsound bridges.
Advisory routes for lorries and coaches (includes advisory one way systems)	To encourage use of most appropriate scale roads and minimise potential congestion/safety problems caused by, for example, two coaches meeting in a narrow lane.
Road hierarchy (with appropriate signing)	To encourage the use of the most appropriate roads by the different types of road user (e.g. through traffic, holiday traffic)
Parking controls	To encourage off-road parking in order to reduce congestion and to minimise the visual intrusion of parked vehicles whilst still enabling access to the attraction. Also used to encourage use of alternative forms of transport .
Signposting	To ensure that drivers take the most appropriate route. Good signing is necessary to discourage additional mileage resulting from "being lost".
Road classification downgrading (e.g. from A road to B road)	Psychological deterrent to the use of certain roads by certain types of road-user. Also a deterrent at the development planning stage
Traffic calming (e.g. road humps, gateways, speed restrictions, chicanes, introduction of street furniture)	To decrease the priority given to road vehicles and to encourage space sharing by all modes (including walking and cycling).
Vehicle exclusions	To improve the physical and human environment for visitors
CARROTS	
Measure	**Objective**
Improving the provision of public transport (including park and ride schemes)	To encourage the use of energy efficient, space efficient and environmentally efficient transport instead of cars.
Cycle routes and footpaths	As above
Education/Marketing	To persuade car users that it is better to leave the car at home and make the journey by some other mode

Source: Cullinane (1996)

Table 4. Perceived extent of traffic-related problems (% in brackets

Problem	very big problem	quite a big problem	don't know	not a very big problem	No problem at all	Total	Weighted score
Congestion	178 (26)	268 (40)	92 (14)	116 (17)	23 (3)	677 (100)	3.7
Noise	63 (10)	176 (27)	116 (17)	241 (36)	66 (10)	662 (100)	2.9
Pollution	117 (18)	172 (26)	168 (25)	141 (21)	68 (10)	666 (100)	3.2
Safety	97 (15)	227 (34)	148 (22)	145 (22)	45 (7)	662 (100)	3.3
Spoils the surroundings	129 (19)	245 (37)	100 (15)	155 (23)	38 (6)	667 (100)	3.4

Table 5. Respondents' perceptions of what is the biggest traffic-related problem

	Lake District		Dartmoor	
	Number	Percent	Number	Percent
Congestion	138	52	115	32
Noise	5	2	17	5
Pollution	45	17	42	12
Safety	22	8	81	22
Spoiling surroundings	57	21	104	29
Total	267	100	359	100

In the visitor survey, safety was viewed as being the main problem, with congestion second, pollution third, spoiling of the surroundings fourth. Noise was identified as the least of the problems. Analysis of the survey indicated a significant relationship between mode of transport used to get to the Lake District and respondents' perception of traffic-related problems, with public transport and cyclists having different perceptions than car drivers.

The results in this section are similar in some respects to those contained in the report on all National Parks by Steer Davies Gleave (1997). Their analysis revolved around focus group discussions with people who had visited National Parks in the previous year. They found that environmental problems were rated as second in importance to congestion and, in their survey, parking. Their report, however, goes on to say that even these problems were perceived to exist only during certain times of the year and at certain places. Since the surveys analysed herein took place exclusively at probably the busiest time of the year, this paper cannot comment on the veracity of this conclusion. It is clear, however, from the results of our surveys and of these focus group discussions that traffic-related problems are seen by a great many people as being of major concern during the summer. By definition, this is when most tourists visit and bring much-needed revenue to the parks. If their concerns over traffic-related problems detract from their enjoyment of the National Parks, this may well have an economic impact, both in the short and in the long-term. These problems may also detract from the "special character" of the park and threaten its future, particularly if actions are taken (e.g. road straightening and widening or the erection of traffic signs) to cater for the increased demand for car use associated with the car-driving public.

Table 3 illustrated that there are a range of measures available for controlling traffic and suggested that they can be divided into carrots and sticks. We now consider the attitudes of respondents towards some of these measures, starting with the sticks.

Attitudes towards "stick" traffic management measures

Speed limits.

Except in a few areas where lower speed limits have been specially designated, speed limits in the National Parks are currently the same as they are elsewhere, i.e. 30mph in built-up areas and 60mph elsewhere. It can be seen from Table 6 that the majority of drivers believe both that people

drive too fast in the national parks and that speed limits should be different in National Parks than elsewhere. This suggests that there is some support for the notion that National Parks are sufficiently special to warrant specific speed limits which are independent of nationally applied standards and regulations. Given that in the UK there are extremely few 20mph zones anywhere, there is surprisingly little disagreement that 20 mph limits (equating to approximately 32km/h) should be introduced both in villages and on minor roads in National Parks. Neither gender, age, nor the particular National Park surveyed had any statistical effect on the results.

Table 6. Drivers attitudes towards speed and speed limits (% in brackets)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
People drive too fast in the national park	183 (28)	225 (35)	139 (21)	87 (13)	18 (3)	652 (100)
Speed limits in villages should be reduced to 20 mph	194 (30)	271 (41)	103 (16)	68 (10)	21 (3)	657 (100)
Speed limits on minor roads should be reduced to 20mph	114 (18)	191 (29)	153 (24)	157 (24)	32 (5)	647 (100)
Speed limits should be no differenl in national parks	46 (7)	55 (8)	140 (22)	255 (40)	147 (23)	643 (100)

Closure of country lanes.

The Countryside Commission in the UK advocates the establishment of "quiet lanes" where the priority is switched from cars to walkers, cyclists and horse riders. The responses to statements made in the drivers' surveys, shown in Table 7, reiterates yet again that, even amongst drivers, there is considerable support for this notion.

Table 7. Extent of support for the closure of country lanes (% in brackets)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
People should be able to drive on any road in the national park (incl. small lanes)	73 (11)	131 (20)	127 (20)	229 (35)	87 (14)	647 (100)
Lanes should be confined to walkers, cyclists and access only	147 (23)	195 (30)	151 (23)	116 (18)	42 (6)	651 (100)

More drivers disagree than agree that cars should be allowed access to any road in the National Park including small lanes. There is also majority agreement, though not to any considerable extent, that lanes should be designated for the sole use of walkers and cyclists and for access only. In the Lake District visitor survey, 74% of respondents agreed with the statement "some country lanes should be restricted to walkers, cyclists and access only", and a massive 87% agreed with the statement "some country lanes should be closed to large vehicles (e.g. coaches, caravans and lorries)". To reiterate, therefore, there seems to be considerable support for the policy of closing at least some country lanes in National Parks. Indeed, this has already been accomplished on a very small scale in some parks (e.g. at Under Loughrigg in the Lake District and around Derwentwater in the Peak District).

As was illustrated in Cullinane et al (1996) in relation to the proposed closure of a five-mile stretch of road around Burrator reservoir in Dartmoor National Park, the closure of roads is often, however, very difficult to actually implement due to the multi-faceted and sensitive political issues involved. In this case, a plan to close the road to traffic merely on Summer Sundays and Bank Holidays had to be dropped because of the level of opposition to the scheme from local residents who feared a possible parking displacement effect, as described in Cullinane and Polak (1992) and Young (1990), which they perceived would result from a change in permissible parking areas, rather than an actual reduction in parking capacity.

There are some instances in the UK where villages in National parks have been made into traffic-free zones (for example, Hawkshead in the Lake District). This is also the case in some of the Alpine villages in Switzerland and elsewhere (Anderson, 1993). As pressure mounts to reduce the negative impacts of traffic, an ever-increasing acceptance of such measures, both in villages and in the countryside, is relatively easy to envisage.

Parking pricing and restrictions

As highlighted in Black et al (1993), another means of attempting to dissuade people from using their cars is to manipulate the quantity and price of parking. By decreasing the quantity and/or increasing the price, available parking capacity is rationed in such a way that certain people will be encouraged to use other modes of transport. As a solution to traffic-related problems, this approach seems not to form a natural part of the common psyche of the travelling general public. Respondents to the Lake District visitor survey were asked how far they agreed with the statement "If more people visit the national park, more car parks will have to be built." Fifty percent of respondents agreed with this statement, with 21% strongly agreeing and only 27% disagreeing.

In an effort to test the potential effectiveness of increasing parking charges in National Parks, respondents to the drivers' surveys were asked what they would do if car parking charges doubled. There was virtually no difference in responses between the National Parks and the pooled results, shown in Table 8, illustrate that most people would not change their behaviour, with a substantial percentage (24%) stating that they would search for parking alternatives where they would not have to pay. In fact, only 12% of drivers said they would use public transport more if car parking charges doubled. Given that this would be the desired outcome, raising parking charges would appear not to be a very efficient method of traffic management. On the contrary, as is often the case in an urban context (see Axhausen, 1988 and Cullinane, 1993), it might actually encourage even greater car use and congestion as drivers engage in longer searches for cheaper or free parking.

Table 8. What drivers would do if parking charges doubled

	Lake District	
	Number	**Percent**
Would not change behaviour	289	44
Use Public Transport more often	81	12
Visit the park less	129	20
Search for free parking	156	24
Total	655	100

In the drivers' surveys, respondents were asked to state how many places in the National Park they expected to park on the day of the survey. Table 9 shows that the majority of people in both surveys were intending to park in more than one place. The Lake has discussed the idea of charging people less for staying parked longer in the same place in order to try and dissuade people from this form of "grazing" behaviour. It is proving difficult, however, to persuade the local authorities of the benefits of implementing this idea.

Table 9. How many places do drivers expect to have parked by the end of the day of the survey

	Lake District		Dartmoor	
	Number	Percent	Number	Percent
1	103	36	175	46
2	85	30	90	24
3	61	21	72	19
4	28	10	27	7
5	8	3	13	4
Total	285	100	377	100

Attitudes towards "carrot" traffic management measures

Park and Ride (P&R)

One much-heralded way of reducing car traffic is to introduce park and ride (P&R) services. Respondents to the Lake District (LD) visitor survey were asked about the likelihood of their using a cheap and frequent P&R service if one were available. The results are shown in Table 10.

Table 10. Likelihood of respondents using park and ride service (% in brackets)

Type of Park and Ride Scheme	Very likely	Likely	Don't know	Unlikely	Totally unlikely	Total
From the boundary of the LD to major centres within it	69 (19)	125 (35)	64 (18)	45 (12)	57 (16)	360 (100)
Within the LD to travel to nearby centres	78 (22)	146 (40)	82 (23)	25 (7)	30 (8)	361 (100)

Table 10 shows that there is general support for such services but with greater support for those that might operate within the park than schemes covering greater distances and which might

operate from the boundary of the park to a destination within it. Only 15% of respondents stated that they would be unlikely or very unlikely to use a within-park P&R service. This is very much lower than the proportion found in the survey undertaken as part of the Burrator reservoir project in the Dartmoor National Park, reported in Cullinane et al (1996), where a similar style of P&R scheme was proposed. It must be noted, however, that the presence of a policy response bias is virtually inevitable and that actual users of a P&R service are likely, therefore, to be considerably below the proportion suggested by the responses received in such a hypothetical context.

When analysed by age and sex, there was no significant difference in expressed likelihood of using a P&R from the boundary of the park. The only difference here, as might be expected, is that those visitors that came to the Lake District by public transport were more likely to use a P&R than those who arrived by private transport.

When the figures for the likelihood of using a within-park P&R service were analysed, it was found that those who had used public transport to or within the park in the past year were significantly more likely to use the P&R than those who had never used public transport. Again, this result is only to be expected, as long as public transport provision, particularly of bus services, is generally perceived as being of reasonably high quality.

Table 11 shows how the likelihood of using a P&R service to a major attraction within the Lake District would be affected by various factors.

Table 11: Factors affecting the likelihood of using a park and ride service to a major attraction within the Lake District National Park

Factor	Major effect	Fair effect	Don't know	Not much effect	No effect	Total	Mean score
Cost of park and ride	119 (33)	123 (34)	73 (20)	33 (9)	14 (4)	362 (100)	3.83
Security in the park and ride car park	135 (38)	144 (40)	52 (14)	20 (6)	9 (2)	360 (100)	4.04
Frequency of the park and ride	138 (39)	165 (47)	43 (12)	5 (1)	3 (1)	354 (100)	4.21
Cost of parking at destination	105 (29)	167 (47)	66 (18)	14 (4)	6 (2)	358 (100)	3.98
Availability of parking at destination	119 (33)	184 (51)	49 (14)	7 (2)	3 (1)	362 (100)	4.13
Restricted car access at destination	80 (26)	161 (52)	66 (19)	14 (4)	6 (2)	327 (100)	3.90

Improving public transport

Improving public transport is another proposed solution to traffic problems by reducing private car use on the road network. The results of the surveys indicate, however, that it would take a great

deal to make many people even consider using public transport or even for it to enter their consciousness as a feasible proposition. Interestingly, a question was included in the pilot for the drivers' surveys to try and assess drivers' perceptions of various aspects of public transport. The intention was to gain some insight into what changes are needed in public transport provision to make them even contemplate switching modes. On the basis of the results from the pilot, this question had to be omitted from the final survey because drivers, in fact, consistently refused to answer, stating instead that they had no perceptions of public transport; that it was outside their realms of experience and so they could not comment on it! With attitudes like this, it is difficult to see how, by improving public transport alone, a significant modal switch can be affected.

This notion is supported by Table 12 which shows drivers' responses to questions relating to the use of public transport. Perhaps encouragingly, only 8% of driver respondents on Dartmoor (D) and 18% of driver respondents in the Lake District (LD) agreed that public transport is "really for people without cars"! However, 50% of driver respondents in the Lake District and 42% of those in the Dartmoor survey agreed that unless they could get to their destination by car they would not go at all. In the case of the Lake District, 29% of drivers strongly agreed with this statement. Furthermore, only 29% of respondents to the Lake District driver survey and 33% to that of Dartmoor agreed that they would have used public transport if they could have. It should be noted that the driver survey in the Lake District took place in locations which were fairly accessible to, what can be considered, good quality public transport provision; it was not administered in remote car parks off the beaten track of the public transport network.

Table 12. Extent to which drivers agree with statements (% in brackets)

		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Public transport is really for people without cars	LD	19 (7)	32 (11)	69 (25)	90 (32)	69 (25)	279 (100)
	D	16 (4)	16 (4)	54 (15)	216 (59)	67 (18)	369 (100)
Unless I could get here by car, I would not come at alll	LD	81 (29)	59 (21)	44 (16)	60 (21)	36 (13)	280 (100)
	D	68 (18)	89 (24)	45 (12)	117 (32)	50 (14)	369 (100)
If I could have got here by Public Transport, I would have used it	LD	30 (11)	49 (18)	71 (27)	76 (29)	39 (15)	265 (100)
	D	34 (9)	89 (24)	84 (23)	118 (33)	41 (11)	366 (100)

In the Lake District visitor survey, respondents were asked to rank the top three factors, in order of importance, which deterred them from using public transport. The rank order in which respondents placed various factors is as follows: 1) Frequency, 2) Price, 3) Extent of network, 4)Availability of information, 5) Speed, 6) Reliability, 7) Ease of entry to and exit from vehicles 8) Cleanliness.

As might be expected, frequency and price are by far the most important factors deterring people from using public transport. Again, however, it should be emphasised that many people just did not answer this question; instead writing answers such as simply "I prefer to use my car" or "I have a car, so why should I use public transport?"

Getting some respondents to even contemplate the use of public transport as an option, let alone persuading them to actually use it, will not be an easy task. This was a conclusion also reached by Steer Davies Gleave (1997) who stated that "Public transport provision was not generally regarded as a credible alternative to the car by residents or visitors, other than potentially as a 'fun' part of

the visitor experience. For car owners, travelling to National Parks by means other than car was not considered a practical experience".

CONCLUSIONS

The results of this analysis show that both residents and visitors to the Dartmoor and Lake District National Parks perceive that traffic-related problems do exist, with congestion and the spoiling of surroundings identified as the two most important problems. Many people also felt that the issues of traffic safety, pollution and noise could also be classed as problems.

It is hypothesised that appropriate traffic management measures may make a significant contribution to solving or alleviating traffic-related problems. The results suggest it will be extremely difficult to attract car trips to public transport simply by improving the quality of the service offered by, or the image of, public transport modes. In general, car drivers seem to contemplate the car as the sole viable modal option when undertaking journeys within the National Parks surveyed. If behaviour is a reflection of attitudes, then to influence a modal switch away from the private car and towards public transport, we will need to fundamentally influence public attitudes towards the car.

With respect to "stick" traffic management measures, it was widely accepted, even amongst drivers, that National Parks constituted a "special case" requiring the exercise of quite stringent local regulatory powers. Indeed, the attitudes of both visitors and drivers towards both stricter speed limits, especially on smaller roads and in villages, and towards the specific dedication of some minor roads as car-free zones for the exclusive use of pedestrians, cyclists and riders, were positive.

In the final analysis, it would seem that no single measure, either "carrot" or "stick", will alone achieve the objective which is sought. The best hope for achieving the overall objective, as has often been found to be the case in the more widely investigated urban context, is to develop and implement a carefully considered and integrated package of traffic management measures which comprise both "carrots" and "sticks".

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