Policies to attract drivers out of their cars for short trips

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Abstract

This paper examines the policies and personal actions that might attract motorists out of their cars onto the alternatives for short trips. The analysis is based on the results of surveys carried out on a project for the UK Department of the Environment, Transport and the Regions. The various events that car drivers say could attract them to an alternative are examined. The actions associated with each of the alternatives to the car are identified. According to the respondents, the most significant action to reduce the number of car trips would be to improve public transport. The potential impact of the implementation of all the actions identified on the number of short car trips nationally is calculated. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

This paper discusses ways in which policies can be used to attract motorists out of their cars for short trips (less than 8 km or 5 miles). The analysis is based on a project entitled 'Potential for mode transfer of short trips' carried out at University College London (UCL) for the Department of the Environment, Transport and the Regions (DETR). The focus is on what people say would attract them to the alternatives rather than on policies such as congestion, charging or workplace parking levies to make motoring less attractive. However, this work is useful in the context of such policies because it is important to know which alternatives are likely to be chosen and what aspects are likely to hinder their adoption. Also, if policies to reduce car use produce revenue which can be spent on the alternatives, it is very useful to know where to target such spending in order to maximize the attraction of the alternatives to the car and reduce adverse reactions. It should be stressed that it is recognised that the policies identified here are very unlikely, on their own, to induce the scale of changes implied by the respondents. They would need to be linked to policies to make car use less attractive.

In the next section the nature of short trips is discussed; then the study which has produced the data being analysed here is described. This is followed by discussion on the alternatives to driving. Next the factors which would encourage motorists to reduce their car use are considered; then the factors, both policies and personal actions are related to the alternatives. This is followed by some calculations of the possible effects at a national level if such policies or actions were adopted.

2. The nature of short trips

Before discussing the new work carried out in the course of the project mentioned above, it is appropriate to consider the nature of short trips and some of the issues associated with them. A literature review plus analysis of data on short trips from the UK National Travel Survey was carried out as part of the project (Mackett and Robertson, 2000).

According to data from the National Travel Survey (NTS) for 1997/99 (Department of the Environment, Transport and the Regions, 2000a), over 70% of trips in Great Britain are less than 8 km in length and over half of these are by car. The car is used for 17% of trips of less than 1.6 km (1 mile). Walking is very popular for trips of less than 1.6 km (1 mile) but rarely used for trips of over 4.8 km (3 miles). Cycling is used for only 2% of trips in Britain, and most of these are less than 8 km (5 miles). The number of short trips is decreasing, but the number by car is increasing. Because 35% of trips are short and by car and because this number is increasing, it is appropriate to consider ways of reducing them.

The use of the car for short trips in Britain does not seem to be significantly different from other countries in western

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Europe (based on analysis of data in Solheim and Stangeby (1997); Hillman (1997)).

Many households in Great Britain have adopted a lifestyle that is dependent on the car. One of the main factors underlying the growth in the use of the car for short trips is the increasing use of the car to take children to school and other activities. This may be helping to make children more car dependent (Mackett, 2001). Introducing congestion charging and workplace parking levies, which are current policies of the British Government, would have a significant impact on the number of short trips in urban areas (Lex Services plc, 1999). It seems likely that the former will be more successful, unless all public parking is strictly controlled. The policies that people say will do most to reduce their car use are charging more for petrol, charging to enter city centres and restricting entry to city centres (Railtrack, 1998). There are a variety of actions that companies, local authorities and individual households can undertake to reduce car use. Similarly a wide range of factors to attract car users to alternative modes can be identified (Mackett and Robertson, 2000). However, these sources of information tend to be based on the general views of the respondents rather than on the alternatives for actual trips currently made by car. They do not always link together explicitly the alternatives with the factors required to make them be chosen for the car trips. Also, they do not focus specifically on short trips. To establish sound information on these factors there needs to be special surveys of the type carried out in the project being described here.

3. The project

The project on which the results being described here was based was carried out between May 1998 and July 2000 with the survey work carried out in the second half of 1998. The survey work was sub-contracted to Steer Davies Gleave (SDG).

A two-stage procedure for the surveys was adopted. The surveys were carried out in five areas selected on the basis of the type of area, from dense urban to rural, and the topography, from flat to hilly. The latter was significant because it might affect perceptions about cycling and walking. The first stage, the travel survey, involved the collection of household and person information, and involved household members keeping a travel diary for a 2-day period. From these travel diaries short trips by car were identified for detailed discussion at the second stage, the in-depth interview. The 2-day periods were allocated to the households in such a way that data were collected over all days of the week within the sample.

The travel surveys required the random selection of households in three areas within each of London, Leeds, Ipswich, Hereford and Dorset using the Postcode Address File (PAF). The following procedure was adopted: a pre-contact letter was sent to these households in the name of the

DETR. The letter explained the nature of the survey, stressed the need for co-operation and informed the recipients that an interviewer would visit them within the following week or so. At that meeting the interviewer completed a form describing the details of the household, vehicle ownership, and various administrative information associated with the survey. In addition, the interviewer also left behind a 'memory jogger'. This is a simple form on which the respondents recorded all travel for their two travel days in terms of the destination, arrival and departure time and odometer reading for car trips. This was used at the next interview stage to help the respondents to recall the trips which they had made, not for detailed recording of information. Appointments were made to speak to each member of the household aged 10 years or over at an agreed time after the travel days.

At the follow-up interview travel information was collected about each household member over the two day period, including where they travelled to, how they travelled, how far it was, when they travelled, and the purpose of the journey. Information on vehicle-driving licence holding and income was also collected.

The data were examined to see which households had made short trips by car over that period. From these, households were selected at random for in-depth interviews about their short car trips. This included prompted unstructured questions on the range of alternatives, including modes of transport, travelling elsewhere and somebody else travelling.

The data were coded by SDG and sent to UCL where further checks were carried out. The data were used to create an Access data base for analysis. As indicated above, the data are available at two levels: the travel survey and the in-depth survey. At the first stage 2488 households were approached by SDG, distributed between the five areas. The response rates varied between the areas. The lowest was in London at 30.8%, with rather higher rates elsewhere, giving an overall average of 48.1%. This is lower than, for example, the National Travel Survey which has an overall rate of over 70%. It has not been possible to determine why the response rates were so low.

At the in-depth stage, 377 people were interviewed by SDG. There were a total of 1624 car driver trips made by 310 people, an average of 5.2 each, and 263 car passenger trips made by 99 people, an average of 2.7 each (32 people made both types of trip).

In the in-depth survey, information about each trip was collected in unstructured form with the interviewers using a series of prompts about factors such as the alternative modes that might be used, whether someone else could make the trip, and whether the objective could be met in some other way. The data on each trip were coded by SDG to four categories:

- The reasons why cars were used for the trip;
- The alternatives to using the car;

Table 1
The alternatives considered by car drivers

Alternatives	Total alternatives mentioned		All likely alternatives mentioned		Likely alternatives weighted	
	No.	%	No.	%	No.	%
No alternative	173	6	351	14	351	22
Modal alternatives						
Walk	1071	37	808	32	500	31
Bus	956	33	806	32	496	31
Cycle	301	10	240	9	114	7
Taxi	174	6	98	4	48	3
Train or tube	53	2	52	2	26	2
Public transport (not specified)	48	2	41	2	26	2
Motorcycle	8	0	8	0	4	0
Tram	2	0	2	0	1	0
Other alternatives						
Somebody else make the trip	75	3	73	3	34	2
Would not make the trip	68	2	50	2	25	2
Total	2929	100	2529	100	1624	100

- The probability of adopting that alternative (high or low);
- The event that would have to happen to make the person adopt the alternative.

This paper will focus on the alternatives to the car for car drivers and what would have to happen, policy intervention or personal action, to make them adopt the alternative. Only drivers will be considered because their actions largely dictate the number of cars on the road (and car trips being made especially for the benefit of passengers are included as escort trips). The full report on the survey results, plus a review of the literature on this topic, is available from Mackett (2000).

4. The alternatives to driving for short trips

Each respondent was asked to identify the alternatives which he or she considered to be available. Prompting was used to ensure all possibilities including non-travel alternatives such as home delivery and telecommuting were considered.

The respondents mentioned a total of 2929 alternatives for the 1624 car driver trips. In 400 cases these were mentioned in order to be rejected. Excluding these left the total of 2529 realistic alternatives. These were combined in order not to give extra weight to those car drivers who happened to mention several alternatives by allocating each trip a weighting which is the reciprocal of the number of alternatives. This implies that each alternative identified by a respondent is regarded as equally likely. This ensures that the results are not biased towards those identifying several alternatives. These three sets of alternatives (total, likely and weighted) are shown in Table 1.

The dominance of walk and bus as alternatives is clear. Cycle comes third, followed by taxi. For 173 trips no possible alternatives could be identified despite prompting by the interviewer. A further 178 alternatives were mentioned, but

only to be ruled out explicitly. This means that for a total of 351 trips no viable alternatives were mentioned. When the alternatives are weighted to ensure they sum to 1624 there are still 351 for which there is no alternative. This means that the car drivers could not identify any alternatives for 22% of the trips. For the other 78%, walk was identified in 31% of cases, bus also 31%, cycle 7% and taxi 3%. Two per cent of the trips could be transferred to train or tube and another 2% to public transport (not specified further). A few people mentioned motorcycle and tram, but the numbers were so small that they will not be considered further in this analysis. This means that over 75% of the car driver trips could be replaced by another mode. Four percent of trips would not be made: half of them because someone else would make the trip, for example a neighbour could collect a child from school, and half would be replaced in some other way.

5. What would make people reduce car use for short trips?

In this section the actions or events that might make car drivers switch from their cars to the alternatives will be considered.

Table 2 shows a list of 29 events that car drivers say would have to happen to make them switch. It can be seen that 21% of the alternatives required no specific event to make the driver choose the alternative. This means that no specific policy intervention by the government is likely to influence these trips. However, this does not mean that publicity about the benefits of the alternatives would not be useful. Of the 57% of trips for which there are events identified, the single largest one is improvement to bus routes, identified in 11% of cases. This is followed by the weather having to improve mentioned in 7% of cases; at 6% come 'Bus frequency improved' and 'Personal organisation improved'.

Table 2
The events that have to happen to make car drivers switch from their cars

Event	No.	%	Grouped action
No alternative	351	22	No alternative
No specific action	336	21	No specific action
Bus routes improved	170	11	Improve bus services
Weather improved	113	7	Improve the weather
Bus frequency improved	103	6	Improve bus services
Personal organisation improved	89	6	Take personal action
Local travel has to be made safer for children	67	4	Improve dependents' travel
No lift offered	46	3	Take personal action
Travel during daylight hours	41	3	Take personal action
Cost of travel reduced	39	2	Reduce the cost of travel
Perception of public transport improved	33	2	Improve bus services
Bus information improved	31	2	Improve bus services
Local travel made safer	29	2	Improve walking facilities
Delivery service provided	28	2	Reduce the need to travel
Facilities for cyclists improved	26	2	Improve cycling facilities
Local shops improved	22	1	Reduce the need to travel
Local facilities improved	20	1	Reduce the need to travel
Public transport operated all night	18	1	Improve bus services
Train frequency and service improved	10	1	Improve rail services
Cancel visit to relative or friend	10	1	Cancel activity
Transport improved for the old and disabled	9	1	Improve dependents' travel
Buy a bicycle	7	0	Take personal action
Street lighting improved	6	0	Improve walking facilities
Local train service introduced	5	0	Improve rail services
Public transport links improved	5	0	Improve bus services
Facilities provided at work	3	0	Improve cycling facilities
Cancel business meeting	3	0	Cancel activity
Telecommuting becomes available	2	0	Reduce the need to travel
Cycle at lunchtime	2	0	Take personal action
Cancel social activity	2	0	Cancel activity
Total	1624	100	

Examination of the events listed in Table 2 shows that there are a number of themes and some overlap between them. A number relate to various aspects of improvement to public transport. Several relate to changes in individual behaviour. It is also clear that the number of car trips is fairly small in most cases. Hence there is a need to group the events. A scheme for this is shown in column four of Table 2. The 30 events (including 'No alternative') have been grouped into 12 'actions'. 'No alternative' and 'No specific action' are kept separate. Of the other events, 'Weather improved' and 'Cost of travel reduced' do not fit into any convenient groupings, and so have been left on their own. The other events have been grouped into eight actions: 'Improve bus services', 'Take personal action', 'Improve dependents' travel', 'Reduce the need to travel', 'Improve walking facilities', 'Improve cycling facilities', 'Improve rail services' and 'Cancel activity'.

These actions have been classified as either collective or non-collective actions as shown in Table 3. The former are the actions that may be undertaken by the government or other organisations such as public transport operators which affect groups in society. The non-collective actions either require individual action, or, in the case of 'Improve the weather', nothing can be done.

Table 3 also shows the number of car driver trips which each of these actions potentially would reduce. The table also shows who would be responsible for taking the action. As before, there are 22% of car driver trips for which there is no alternative. There are 21% for which no specific action is required: in many cases this just requires the person involved to make the effort of using an alternative. The largest category at 22% is 'Improve bus services', which would require action from public transport operators.

The fourth category is 'Take personal action' with 11%. This would require the individuals concerned to organize their patterns of activities differently or to buy a bicycle. Here the onus is on the individual to take action, but there may be a role for education. The fifth category at 7% is 'Improve the weather'. The next category is 'improve travel for dependents' which applies to 5% of trips. Generally this means making it easier and safer to use public transport by children and the elderly. The seventh category is 'reduce the need to travel', with 4%. This involves providing delivery services for shopping, providing better local shops and facilities and introducing telecommuting.

Table 3
Responsibility for implementing the actions to reduce car driving

Action	Collective?	No.	%	Responsibility
No alternative	–	351	22	–
No specific action	No	336	21	Individuals
Improve bus services	Yes	360	22	Public transport operators; central government; local government
Take personal action	No	185	11	Individuals
Improve the weather	No	113	7	Nobody
Improve dependents' travel	Yes	76	5	Public transport operators; central government; local government
Reduce the need to travel	Yes	72	4	Local government; retailers
Reduce the cost of travel	Yes	39	2	Public transport operators; central government; local government
Improve walking facilities	Yes	35	2	Local government
Improve cycling facilities	Yes	29	2	Local government; employers
Improve rail services	Yes	15	1	Public transport operators; central government; local government
Cancel activity	No	15	1	Individuals
Total		1624	100	

Only 2% of car drivers suggested that reducing the cost of the alternatives would make them change from the car; 2% say that they would drive less if walking facilities were improved and another 2% say that they would drive less if cycling facilities were improved. This includes the provision of more infrastructure in the form of cycle lanes and street lighting and employers could provide more in the way of changing and showering facilities at the workplace for cyclists. Finally, 1% of car drivers say that they would cancel their activity and not make a trip at all.

From this analysis it seems that central and local government action could reduce about 38% of short car driver trips, with assistance from local transport operators and retailers. About 33% of car driver trips would require initiatives by the individuals concerned, and about 29% are not likely to be reduced either because the driver is unwilling to consider an alternative or because the weather in this country cannot be changed.

6. Actions to encourage the use of the alternatives

6.1. The effects of the actions on the alternatives for car drivers

It is possible to see the alternatives associated with the various actions, as shown in Table 4. For those trips for which walk was identified as an alternative, it would be action by those individuals which would bring this about in 65% of cases since it is assumed that 'No specific action' means that they simply have to motivate themselves. The government could encourage such action by means of publicity campaigns. It can do nothing about the weather, so it seems unlikely that these 17% of potential new walking trips will be realised. However, about 16% of the potential walking trips could be encouraged by local government action by making it easier to walk, particularly with children and the elderly and by encouraging the development of local shops and services. Use of the bus could be encouraged by improving services according to 69% of the potential users. Another 7% would

Table 4
Contribution of each action to producing a shift to each of the alternatives by car drivers

Action	No alternative	Walk	Bus	Cycle	Taxi	Train or tube	Public transport (not specified)	Someone else make trip	Would not make trip	Total
No alternative	100	0	0	0	0	0	0	0	0	22
No specific action	0	39	15	28	44	6	42	3	0	21
Improve bus services	0	0	69	1	0	9	49	0	0	22
Take personal action	0	26	3	16	4	17	0	25	27	11
Improve the weather	0	17	1	19	0	0	0	0	0	7
Improve dependents' travel	0	5	7	4	0	8	3	25	0	5
Reduce the need to travel	0	6	2	8	0	5	0	47	38	4
Reduce the cost of travel	0	0	2	0	52	3	0	0	8	2
Improve walking facilities	0	5	1	1	0	0	5	0	4	2
Improve cycling facilities	0	0	0	24	0	0	0	0	4	2
Improve rail services	0	0	0	1	0	53	0	0	0	1
Cancel activity	0	2	0	0	0	0	0	0	20	1
Total	100	100	100	100	100	100	100	100	100	100
Number	351	500	496	114	48	26	26	34	25	1624

Table 5
Overall effects of actions on the transfer of car driver trips to the various alternatives (percentages of all car driver trips)

Action	No alternative	Walk	Bus	Cycle	Taxi	Train or tube	Public transport (not specified)	Someone else make trip	Would not make trip	Total
No alternative	22	0	0	0	0	0	0	0	0	22
No specific action	0	12	5	2	1	0	1	0	0	21
Improve bus services	0	0	21	0	0	0	1	0	0	22
Take personal action	0	8	1	1	0	0	0	1	0	11
Improve the weather	0	5	0	1	0	0	0	0	0	7
Improve dependents' travel	0	2	2	0	0	0	0	1	0	5
Reduce the need to travel	0	2	1	1	0	0	0	1	1	4
Reduce the cost of travel	0	0	1	0	2	0	0	0	0	2
Improve walking facilities	0	2	0	0	0	0	0	0	0	2
Improve cycling facilities	0	0	0	1	0	0	0	0	0	2
Improve rail services	0	0	0	0	0	1	0	0	0	1
Cancel activity	0	1	0	0	0	0	0	0	0	1
Total	22	31	31	7	3	2	2	2	2	100

like it to be made easier to use bus with children and the elderly. Reducing the cost of using it would only influence 2% of potential users. For 15% no specific action is required: this suggests that they are potential users who need to be made aware of the potential benefits of bus use.

Fewer people would choose cycling rather than walking or using public transport, but the main specific factor that would encourage them to do so would be improving cycling facilities which was mentioned by 24% of potential cyclists. The weather is even more of a deterrent to potential cyclists than to potential walkers with 19% of the former saying that it would need to improve; 44% of potential cyclists recognise that they either need to take personal action or that there is nothing specific that needs to be done to make them cycle. In many cases they probably have to find their old bicycles in the garage and get them going again.

The majority of potential taxi users are deterred by the cost. Some people could probably manage without owning a car if they felt able to use taxis occasionally.

Use of the train or tube has a similar pattern to potential bus use, but with more people needing to take action by improving their own organisation, presumably because it would take longer to travel by rail. Once again, cost is not a major factor with only 3% of potential rail users mentioning it.

Those who mentioned public transport without being more specific were also less specific about the action that would be required to encourage them to use it. This suggests that they were rather vague about the possible alternatives. Given that they were a small number this does not present too much of a problem. However, many of them wanted an improvement to public transport.

Reducing the need to travel would be the main factor that would allow someone else to make the trip: presumably if it were a shorter trip, then there would be less need to accompany children by car. Similarly, if it were easier for children and the elderly to use other modes, the car would not have to be used to take them in some cases.

Of those who would not make the trip at all, for some

people, there would need to be a reduction in the need to travel such as the introduction of a delivery service, or the activity would have to be cancelled. Others would need to take personal action such as making a phone call.

Whilst this is very interesting, it should be borne in mind that some of the alternatives would attract small numbers of car drivers. It is useful to see what actions would actually make a difference to the number of car drivers. Table 5 shows the relative overall effects, by showing the percentage of car drivers that would switch to a particular alternative in response to a given action. This is similar to Table 4, but the whole table sums to 100%, not just the individual columns.

It can be seen that improving bus services to encourage bus use is the specific action most likely to attract people from their cars, being mentioned in 21% of cases. After that, it is personal action to make people walk, identified by 8%, which increases to 20% if those not able to identify a specific action are included. Next, at 5%, comes the effect that improving the weather would have on encouraging walking if it were possible, and no specific action to encourage bus use. The former is very unlikely while the latter probably depends on increasing awareness of public transport and making it easier to use. These actions, plus those who would not identify an alternative, cover 73% of car driver trips. The other 27% is scattered across the alternatives and actions, particularly walk, bus and cycle which accounts for a further 19% of the car driver trips. This suggests that most actions to encourage alternatives to the car for short trips are not going to have a large effect. This does not necessarily mean that they are not worth doing, but they are not going to have much effect overall and probably should be focused on niche markets or be implemented without using many resources.

6.2. Actions to encourage the transfer of drivers to walking, cycling and bus

The effects of the various collective actions on the main

Table 6
Effects of collective actions on switching to walk, bus and cycle by car drivers (percentages of all car driver trips)

	Walk	Bus	Cycle	Total for walk, bus and cycle
Bus routes improved	0	10	0	10
Bus frequency improved	0	6	0	6
Perception of public transport improved	0	2	0	2
Bus information improved	0	2	0	2
Public transport operated all night	0	1	0	1
Public transport links improved	0	0	0	0
Improve bus services	**0**	**21**	**0**	**21**
Local travel made safer for children	2	2	0	3
Transport improved for the old and disabled	0	1	0	1
Improve dependents' travel	**2**	**2**	**0**	**4**
Delivery service provided	0	0	0	0
Local shops improved	1	0	0	1
Local facilities improved	0	0	0	1
Telecommuting becomes available	0	0	0	0
Reduce the need to travel	**2**	**1**	**1**	**3**
Reduce the cost of travel	**0**	**1**	**0**	**1**
Local travel made safer	1	0	0	2
Street lighting improved	0	0	0	0
Improve walking facilities	**2**	**0**	**0**	**2**
Facilities for cyclists improved	0	0	2	2
Facilities provided at work	0	0	0	0
Improve cycling facilities	**0**	**0**	**2**	**2**
Train frequency and service improved	0	0	0	0
Local train service introduced	0	0	0	0
Improve rail services	**0**	**0**	**0**	**0**
Total	5	25	2	32

alternatives of walk, bus and cycle are shown in Table 6. This shows the number of trips from the survey disaggregated into the detailed events as shown in Table 2. Table 6 emphasises that it is actions to improve bus services which are most likely to be effective in reducing the number of short car trips. It can be seen that improving bus routes and bus frequencies are the only collective detailed events that were identified by the respondents for more than 5% of the car trips. Improving travel for dependents, both the young and the old, could cause a shift to walk and bus of about 2%. This mainly means improving safety for walking and security, both when walking and on buses.

The respondents indicated that reducing the need to travel would cause a small shift to all three alternatives, particularly walking. Reducing the cost of travel would not cause much difference, and would only affect bus out of these three alternatives. According to the surveys, improving walking and cycling facilities would each cause a reduction of about 2% in car driver trips. Examples cited by the respondents were: making it safer to walk and improving lighting for walking, and proving better on-street facilities for cycling, and showering and changing facilities at work for cyclists. Overall, it can be seen that collective actions could lead to a transfer of up to 25% of these car trips to bus, 5% to walk and 2% to cycle.

The differences between the totals for collective actions in Table 6 and the totals for each mode shown in Table 5 are the effects of the non-collective actions. The biggest difference is for walk (31% total, 5% collective, making a

difference of 26%), compared with a difference of about 5 or 6% for the other two cases.

7. The traffic implications of these effects

7.1. Calculation of the impacts at a national scale

All the analysis so far has been in terms of the trips in the survey. It is possible to estimate the effects on all short car trips in Great Britain. It must be recognised that interpreting the results from 377 interviews at a national scale implies some rather large assumptions. The respondents were selected at random from stratified samples in the five areas to represent different types of areas ranging from dense urban to rural, and so the results are representative of a large proportion of areas in Britain. It should also be borne in mind that the focus of this work is short trips (less than 8 km or 5 miles), and so some of the policies and other actions would also reduce the number of longer trips, so some of the estimates may be on the low side for this reason. Against this must be balanced the fact that the actions mentioned here are very unlikely, on their own, to reduce car use. They need to be associated with policies to discourage car use, such as congestion charging and workplace parking levies. What these results show is the relative impacts of the various actions and where the emphasis in funding and education should be placed in trying to provide attractive alternatives to the car.

Table 7
Travel by car drivers from the National Travel Survey (NTS), per head and scaled up for Great Britain. Source: Trips per head—National Travel Survey (NTS), 1996–98; Population of GB—Transport Statistics Great Britain, 1999. Note: The population of Great Britain has been taken as 57.3 m. The annual distance for short trips has been calculated using the mean distance travelled in the three distance bands (0–1 mile, 1–2 miles and 2–5 miles), using figures supplied as special tabulations from NTS.

| | Average annual travel driven by car per head | | Total annual travel driven by car in Great Britain | |
	Short trips	All trips	Short trips	All trips
Number	231	409	13236 million	23436 million
Distance (km)	796	5612	45591 million	321579 million

Table 7 shows the total number of trips and the total distance driven by car per head from the National Travel Survey. The total number of trips and distance driven by all car drivers has been calculated by multiplying these figures by the population of Great Britain, 57.3 million. These figures are all approximations, but are sufficiently precise for the purpose of demonstrating at a national scale, the possible scale of the impacts identified in the survey. It should be noted that only car driver trips are being considered here as the purpose of these calculations is to estimate the possible reduction in car traffic. Including car passenger trips would introduce an element of double counting. Car trips being made especially for car passengers are taken into account because they are 'escort' trips.

The table shows that while short trips make up 56% of all trips, they represent about 14% of all the distance travelled. This means that a reduction in the number of short trips will have a much smaller impact on the total distance travelled.

7.2. The impacts on short car trips at a national scale

Tables 8 and 9 show the effects at a national scale of the various actions identified previously in Section 5.

Table 8 shows not only the reduction in the number of trips but also the reduction in distance by car that could occur. The millions of short trips and millions of kilometres of short trips that could potentially be reduced have been calculated by applying the equivalent percentage reductions found in the survey to the national figures for short trips shown in Table 7. The percentage figures are shown to one decimal place to show the relative impacts of all the actions, some of which would otherwise appear as zero. It should be borne in mind that a reduction of 0.1% would mean over 13 million fewer short car trips or 45 million fewer car km, neither of which are trivial. Few of the actions would be introduced in isolation, so the figures permit the calculation of the possible cumulative effects.

It can be seen that overall, these actions could lead to a reduction of about 39% in the number of short trips, and a similar reduction in the distance travelled on these trips. Scaling by the figures for all trips in Table 7 suggests that such reductions would be equivalent to a reduction of about

Table 8
Effects of collective actions on reductions in total short trips by car annually in Great Britain

| | Reduction in trips | | Reduction in distance | |
	Million trips	%	Million km	%
Bus routes improved	1390	10.5	5142	11.3
Bus frequency improved	847	6.4	3517	7.7
Perception of public transport improved	265	2.0	1075	2.4
Bus information improved	251	1.9	927	2.0
Public transport operated all night	146	1.1	663	1.5
Public transport links improved	40	0.3	142	0.3
Improve bus services	**2939**	**22.2**	**11466**	**25.1**
Local travel made safer for children	556	4.2	1276	2.8
Transport improved for the old and disabled	79	0.6	354	0.8
Improve dependents' travel	**635**	**4.8**	**1630**	**3.6**
Delivery service provided	225	1.7	682	1.5
Local shops improved	185	1.4	605	1.3
Local facilities improved	159	1.2	431	0.9
Telecommuting becomes available	13	0.1	45	0.1
Reduce the need to travel	**582**	**4.4**	**1763**	**3.9**
Reduce the cost of travel	**318**	**2.4**	**1110**	**2.4**
Local travel made safer	238	1.8	399	0.9
Street lighting improved	53	0.4	90	0.2
Improve walking facilities	**291**	**2.2**	**489**	**1.1**
Facilities for cyclists improved	212	1.6	576	1.3
Facilities provided at work	26	0.2	132	0.3
Improvements cycling facilities	**238**	**1.8**	**708**	**1.6**
Train frequency and service improved	79	0.6	399	0.9
Local train service introduced	40	0.3	154	0.3
Improve rail services	**119**	**0.9**	**553**	**1.2**
Total	5122	38.7	17720	38.9

Table 9
Effects of non-collective actions on reductions in total short trips by car annually in Great Britain

	Reduction in trips		Reduction in distance	
	Million trips	%	Million km	%
No specific event	2740	20.7	9525	20.9
Weather improved	913	6.9	2724	6.0
Personal organisation improved	728	5.5	2132	4.7
No lift offered	371	2.8	1155	2.3
Travel during daylight hours	331	2.5	1110	1.7
Cancel visit to relative or friend	79	0.6	360	0.8
Buy a bicycle	53	0.4	193	0.4
Cancel business meeting	26	0.2	167	0.0
Cancel social activity	13	0.1	74	0.2
Cycle at lunchtime	13	0.1	35	0.1
Total	5267	39.8	17477	38.3

22% in the total number of car journeys and about 5% in the total distance travelled by car. (It should be noted that these calculations ignore the fact that many of the actions would also cause reductions in some longer trips.)

As discussed previously, the largest reduction in the number of short car trips would come from improvements to bus services, where about 22% of these short car trips, and about 25% of the total distance travelled by car on such trips could be reduced.

Of the ways of improving bus services, improving the coverage of bus routes and the frequency of buses would do most, and are the only detailed events of those discussed here that would reduce the distance travelled nationally by car for short trips by over 5%. Improving the perception of public transport and providing more information about bus services would have effects on car use greater than most of the other specific actions listed.

The second largest group of actions would be to make travelling with dependents, particularly children, safer and easier. The first of these, making local travel safer for children applies almost equally to walking and bus as alternatives. It reflects a combination of concern about road safety and danger from strangers. It could reduce the number of short car trips by over 4%, and the distance by over 3%. The next category is important because it could mean fewer trips, not just fewer car trips. Reducing the need to travel on short trips could reduce the total number of car trips by over 4% and reduce the distance travelled by about 4%. The main contributor would be providing a delivery service, but improving local shops and other facilities would also help. Telecommuting is not seen as a major contributor to reducing car use, but probably would have a larger effect on longer trips.

Reducing the cost of travel on short trips could reduce the number of car trips and the distance travelled by over 2%. Most of these would use a taxi as an alternative. This is an example where the action would also reduce the number of longer trips. Short trips are likely to be fairly cheap, so it is unlikely that cost is a major factor in deterring people from using the alternatives, except, as already mentioned, taxi,

which may be the only viable alternative for some trips, particularly for those with mobility difficulties, such as some elderly people.

Improvements to the facilities for walking and cycling could each reduce the number of trips by about 2% and the distance travelled by slightly less. By definition, these would tend to be very short trips, particularly the ones that could be walked.

Finally, improvements to rail services could reduce the number of short car trips by just under 1%, and the distance travelled by about 1%. This would involve both improving existing services and introducing new local services. One would expect this to have a greater effect on longer trips.

The non-collective actions in Table 9 have been included for comparison so that the level of possible control that the government and other agencies have can be seen. It can be seen that the overall totals in Tables 8 and 9 are similar, suggesting that if the 21% or so of car trips for which it is claimed there is no alternative are discounted, collective action could remove about half the remaining trips. It may be possible to do something about the trips classified as non-collective actions. For example, while it is not possible to improve the weather in this country, it may be possible to mitigate the worst effects, for example by providing more bus shelters.

8. Conclusions

Alternatives to the car were identified from the surveys for 78% of the car driver trips, leaving 22% for which no alternative could be identified despite extensive prompting by the interviewers. According to the surveys, of all the short trips by car drivers, about 31% would transfer to walk, 31% would go by bus and 7% would cycle. About 4% might not travel at all if it were not possible to go by car, with about half of these involving travel by others. Quite a lot of the latter are escort trips, so the person being taken by car would travel by themselves using another means of travel.

For car drivers, it has been calculated that about 38% of short car trips could be shifted with action from central and local government, in association with other organizations. About 33% would require personal action, and about 29% could not be reduced. Of the 38% which can be reduced with government action, most (about 26%) would be to public transport and so would need the co-operation of public transport operators. The rest would need assistance from retailers to provide more local shops, while help from employers would be required to provide facilities at work for cyclists and walkers, such as showers and lockers. Local government would have a role to play by encouraging the development of more local shops and other facilities (and preventing the development of more decentralised facilities). The 29% which could not be reduced can be divided between the 22% for which there is no alternative and the 7% which would require an improvement in the weather to make them shift.

The action that would do most to attract drivers away from their cars is to improve bus services; 21% of short car driver trips could be attracted to bus. The main actions that are required are improvements to the route pattern (10%) and improvements to frequency (6%). Another 1% would like them to operate all night. This demonstrates a key difference between the car and public transport: the car is available when you want it and goes where you want it to. Hence there is a need to make public transport more like the car in terms of its spatial and temporal characteristics. It is likely that many car drivers never use public transport. It is important to improve their perception of public transport and to provide better information. Some car drivers want buses to be made safer for children to use: this is an area when perceptions need to be changed. Only a small number of car drivers (1%) wanted buses to be made cheaper. Another 5% identified buses as an option, but did not identify any specific action. These people could probably use the bus now but prefer to use their cars out of convenience and availability. Improving bus services would reduce the number of work and shopping trips more than other trip purposes.

Improvements to the route pattern and frequency of buses can happen under present legislation. Local authorities can invite operators to tender for socially-necessary routes, that is, ones which the market does not provide. This may require extra funding from central government to help cover the extra costs. It is also important that the quality of bus journeys improves to reduce the difference from a car; then the improved services need to be marketed to improve the perception of public transport and greatly improved information needs to be made available. In Britain, local authorities and public transport operators are being encouraged to set up 'Quality Bus Partnerships' to meet this type of need.

It is much more difficult to provide investment to encourage walking and cycling. Only 5% of car driver trips would be influenced to change to walking as a result of collective actions. These are mainly to do with making walking safer and the creation of more local centres so that trips could be walked rather than be by car. Most of those who said that they could walk did not identify any specific action that would cause them to shift. This implies that they could walk, but use the car because it is available and convenient. This suggests that there is a need to encourage people to walk by making them aware of the benefits, for example, through education and publicity. Some people recognised that they needed to improve their own (or their children's) organisation. Some others could walk, but would have to do so during daylight hours. It may be that some of them would walk if the streets were made safer, perhaps by means of better lighting and encouraging more activity of a non-threatening form on the streets. Government and other bodies can help by increasing awareness of the benefits of walking. Many of these ideas are included in the British Government's advice to local authorities to encourage walking (Department of the Environment, Transport and the Regions, 2000b).

Similarly, there is little public action that will attract people out of their cars on to bicycles: 2% of drivers said that improvements to cycling facilities would be required to make them transfer. Another 2% could transfer, but did not identify any specific action that would make them do so. The British Government has a National Cycling Strategy (Department of Transport, 1996), to encourage more cycling.

A significant factor that deters many people from walking and cycling is bad weather. Whilst nothing can be done about improving it, an alternative approach would be to make travelling by bus in bad weather more attractive by providing more bus shelters and a more reliable service.

As indicated above, the organizations that have most potential to encourage drivers out of their cars are bus companies. The legislation already exists to provide socially-necessary routes, but there will need to be funding to provide more routes and greater frequency. In the long run, with sufficient transfer of car trips to bus, such enhancements may become self-financing, but in the short run there may need to be an injection of cash. Reducing fares would do little to attract car users to buses.

Taxis are perceived as expensive. There is no great advantage in encouraging taxi use if it simply means that a self-driven car trip is replaced by a taxi trip. But if some people gave up their cars because they felt able to use a taxi when none of the other alternatives was suitable, this could lead to a significant decrease in the number of short trips. Also, a taxi trip instead of a car trip may be potentially beneficial because car trips may involve searching for a parking space which may add to congestion. Substituting taxi trips for private car trips should reduce the demand for parking spaces. (Taxis driving around empty, looking for passengers, of course, add to unnecessary trips by car on the road).

There may well be a case for encouraging taxi-sharing as

a way of reducing costs. Given the need to increase the route pattern and frequency of buses and the perceived high cost of taxis there seems to be scope for the introduction of demand-responsive services, based on large cars or mini-buses particularly for shopping and social trips. These could involve such vehicles operating between a fixed pair of points but with flexible routes so that passengers can be delivered to their doors to overcome the problems of carrying heavy goods and fears about personal safety, and helping to reduce the impact of bad weather.

Other bodies which have a role to play are retailers and employers. The former need to provide more local shops so that customers can walk or cycle more easily. The problem of carrying heavy goods can also be alleviated by the expansion of delivery services. These need to be organised rationally, so that several car trips are replaced by one van trip. Employers can help by providing showering and changing facilities for those who cycle or walk; they can also help by negotiating more convenient bus services with operators as part of their company travel plans.

Local government has a role to play by improving the facilities for cycling and walking, including better street lighting, and by increasing the provision of bus services by inviting operators to tender to provide significantly enhanced services. Central government's role is to provide leadership through funding, publicity and, where necessary, legislation.

The survey results have been scaled up using factors from the NTS so that the effects on traffic at a national level could be estimated. The various actions identified in the surveys could reduce the total number of short car trips by about 39% and the equivalent distance travelled by a similar amount. Actions which increase bus use could reduce the total number of short car trips by about 22% and the distance travelled on such trips by about 25%. Actions which increase walking and cycling could reduce the number of short car trips by about 2% each, and the distance travelled by car on such trips by about 1–2% each.

Overall, the actions and policies discussed here could make a significant difference to the number of short car trips, and to the total distance travelled by car on such trips. The key question is whether the actions that the respondents mentioned would actually make people transfer from their cars. The answer is: probably not without strong policies to reduce car use. What the results here show is that if such policies were introduced, there would be alternatives for the majority of short car trips, and that there would be a noticeable difference in the levels of traffic on the road.

From these findings the following recommendations are made:

- Bus services should be improved in terms of route coverage, frequency and hours of service, for example, by means of Quality Bus Partnerships;
- Car drivers should be made more aware of bus services, both specific services and generally;

- The perception of the safety and security of children travelling unaccompanied should be increased, for example, by re-introducing bus conductors;
- Taxi-sharing should be encouraged;
- Demand-responsive public transport services should be introduced especially for shopping and social trips;
- Car drivers should be made more aware of the benefits of walking and cycling;
- Walking and cycle facilities should be improved, including better street lighting;
- Employers should be encouraged to provide showering and changing facilities for their employees who cycle and walk;
- The effects of bad weather should be ameliorated by installing more bus shelters and improving the reliability of bus services;
- Neighbourhood planning should be used to help develop more local shops and facilities;
- Delivery services from shops should be expanded in a way that ensures that one van trip replaces several car trips.

Implementation of these recommendations will not, on their own, cause significant numbers of drivers to reduce their use of the car, but, linked with policies aimed at reducing car use, they do offer considerable scope for reducing car use for short trips. In particular, they indicate where action should be concentrated in order to maximize the impact of policies to reduce car use.

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