# ROAD USER ATTITUDES AND THE SAFETY OF CYCLISTS

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Master of Philosophy

# THE UNIVERSITY OF ASTON IN BIRMINGHAM

## JUNE 1990

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#### SUMMARY

Studies of cyclists' involvement in road accidents have tended to concentrate on the behaviour of those involved. and the types of manoeuvers undertaken. This research looks not at the behaviour of road users, but at their attitudes towards each other and aspects of the road network. The safety of cyclists deserves attention for two reasons. First, because of the numbers killed and injured each year. Secondly, because many of those measures which seek to improve conditions for cyclists also benefit the urban environment; by restricting vehicle speeds and traffic access, thereby improving the quality of life for local residents. Repertory grid analysis revealed differences in attitude between those who drive, cycle or both drive and cycle. Postal questionnaire returns from 1000 motorists and cyclists, a majority of whom were members of a cycling organisation, indicate that there are marked differences in attitudes towards cycling as a mode of transport and a variety of measures which seek to restrain traffic and encourage cycling. These are dependent upon whether respondents drive, cycle, drive and cycle, or use neither form of transport, and their age group.

#### KEY WORDS

road user cyclists attitudes road safety

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For Tom and Hannah

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#### 1. INTRODUCTION

## 1.1 INTERDISCIPLINARY HIGHER DEGREE SCHEME

The IHD Scheme was initiated at the University of Aston in 1968 as a means of offering a multidisciplinary approach to postgraduate research. Viewed as a response to the Swann Report of 1968 which called for new experiments with PhD degrees, it was considered to be a fairly radical with industry, initiative. In collaboration public services or other organisations within which a student was placed, a supervisory team was drawn from two different academic faculties, and included a member of the participating organisation. Using the techniques of science and social science, the aim was to investigate the topic at hand and contribute to knowledge in such a way as to be useful to the collaborators.

To date, over 150 PhDs and 27 MPhils have been awarded through the scheme covering a broad range of subjects. These can be loosly classified as follows:

Chemical Industry, Commerce, Energy, Engineering Design and Development, Food and Biological Processes, Information, Management Planning, Manufacturing, Personnel, Public and Independent Bodies.

During the course of this project, the ethos of the IHD scheme has changed. It is no longer to provide a broad base for research covering many differing collaborators, from pressure groups to the armed forces, but is to concentrate on issues arising within information technology. This is largely as a result of changing attitudes within the university and tinancial pressures.

The collaborating organisation in this project is Friends of the Earth Ltd., London. The supervisory team is drawn from both the university and sponsoring organisation, and depending on the subject of the research, students may obtain supervisors from different disciplines. The

supervisory team for this research originally consisted of the following:

Mr M. Harris - Civil Engineering Dr A. I. Glendon - Applied Psychology Dr D. Van Rest - IHD Mr A. Clarke - Friends of the Earth

The team has changed considerably over the years. First, Mr Harris left to be replaced by Mr White, Drs Van Rest and Glendon both took sabbaticals, and Mr Clarke left to take up a position in the United States. The final team which was reassembled earlier this year (1990) consists of:

Mr J. White - Civil Engineering Dr A. I. Glendon - Applied Psychology Division Mr D. Mathew - Transport and Environmental Consultant, formally with FoE

#### 1.2 FRIENDS OF THE EARTH

Friends of the Earth Limited (FoE), was established in 1971 as a campaigning organisation to promote policies which protect the environment. Campaigns are pursued locally, nationally and internationally to influence policy and decision makers at all levels, and thus lead to changes in public opinion and ultimately, in the law.

There are 300 local FoE groups throughout England and Wales (FoE Scotland is a separate organisation), and approximately 180,000 registered supporters. The groups are financially independent and whilst supporting national campaigns, are free to decide their own policies and priorites and to initiate local action. Financing is through registered supporters, donations, grants, special appeals and trading operations. In 1981, FoE Trust was developed under charitable status to conduct non-political educational and research work.

A total of twelve people sit on the FoE Board of Directors. Some members are elected by local groups whilst others are appointed by the Board. It has a Strategy Committee which considers specific matters relating to the campaigns, a Personnel Committee and Finance Committee. Every day running of the campaigns is left to a Management Committee, Apart from campaigners consisting of senior staff at FoE. the staff consists of those in and their assistants, administration, finance and trading, plus a large number of indispensible volunteers who are essential for the Additionally, FoE is able operation of the organisation. to call on a number of consultants with specialist knowledge, if required.

FoE is now an important and widely respected pressure group with supporters and friends in many areas. Direct relations have been formed with government departments, MPs, MEPs and other institutions who both offer and request advice. The number of specific campaigns and campaign areas change over the years, but are currently directed at:

Energy Countryside and Agriculture Air Pollution Tropical Rain Forests Cities For People (formerly Transport) Water and Toxics

It is clear from the above list that campaigns operate from the micro to macro level; from aiming to improve the quality of life for urban citizens by reducing traffic access, to halting the destruction of rainforests in Brazil and Malaysia. There should be room for both types of campaign within such an organisation. Whilst the grander and often more appealing projects attract undoubted support, the local, mundane issues are of equal importance to those affected and their environment, and might otherwise be neglected.

Insofar as the interests of FoE appear many and varied, they all reflect a common thread; a deep regard for the environment in the widest sense, and concern over the damage being caused daily through conflict between people and their environment, whether city street or rain forest.

In 1984, transport was still a recognised campaign area with cycling an important component. It is only since 1987 that the campaign title changed to 'Cities for People', and the areas of concern widened appropriately. Formally, the main issues consisted of:

1. the promotion of cycling as a form of transport on economic, social and environmental grounds,

2. campaigns to save rural bus services from further cuts,

3. an integral public transport policy incorporating a comprehensive network of British Rail and buses,

4. opposition to continuing large-scale trunk road construction, and to a national transport policy which favours the private motorist over and above all other forms of transport.

FoE employed a full-time cycle campaigner to lobby local authorities and central government to improve facilities and to encourage cycling. Apart from providing information and advice on all cycling matters, it also serviced the Cycle Campaign Network, an affiliation of sixty groups spread throughout the county who meet twice yearly. Additionally, FoE used to publish 'Bicycles Bulletin', a quarterly magazine distributed to all County and District Council Surveyors and Planning Departments, Transport Committees, MPs, and any individuals or organisations expressing an interest, both here and abroad.

Since the early 1970s there had been a large increase in bicycle ownership, accompanied by a somewhat smaller rise

in use and an increase in the number of cycling accidents. FoE Birmingham (Pushbikes) was already sponsoring a PhD at Aston on cycle planning in the West Midlands (Davies 1987), and suggested that a further study could be set up to investigate cycle safety; FoE Limited proposed sponsoring the research. It was from this background that the project was initiated.

#### 1.3 THE PROJECT

'Doctorate in Cycle Safety - Friends of the Earth step up campaign to improve conditions for Britain's cyclists' was the headline of a FoE press release to publicise my appointment (FoE 1984). Seen as a complement to David Davies' then current work at Aston, also in IHD (Davies 1987), the original title of the project 'Ways Of Improving Cycle Safety' proved to be exceedingly broad. The original brief:

1. assessing the effectiveness of highway engineering measures to protect the cyclist, and

2. influencing the attitudes and perceptions of all types of road user towards one another,

was at least two distinct pieces of work, and it took many months before the area of investigation was narrowed sufficiently to render the research manageable.

An early exercise at Aston in coping with complex systems (Checkland 1981) emphasised the enormity of the task. A root definition was formalised, but was so extensive as to be unworkable. Appendix 1 illustrates the results of this early work and myriad of differing directions in which it led. The root definition has since been abandoned for obvious reasons, also because of the change in emphasis and

title of the project. However, after minor alterations the following remain pertinent:

Customers those trying to influence policy processes, or policy makers themselves

Actors myself and other colleagues

Owners Friends of the Earth

Transformation facts about road user attitudes into reports for policy makers

Environment activities of other organisations in relevant areas.

## 1.4 ACTION RESEARCH

The type of research conducted by students at IHD is often recognised as 'Action Research', since they are generally brought into an organisation to look at a specific problem. Using definitions of research as supplied by Cherns (1979), where he differentiates between pure basic, basic objective, operational, and action, the latter would certainly appear to be the most appropriate description for this study. However, many different definitions of action research abound, and within the type exist a number of contexts.

Halsey (1972) suggests it is a:

small scale intervention in the functioning of the real world, usually in administrative systems, and the close examination of the effects of such interventions(p165)

In this way it brings together research and action or administration, which have differing interests. Research values precision, control, replication and attempts to generalise from the observation of specific events, whereas action or administration is concerned with operations in the real world, moving from generalisations to specifics. Action research brings together the two different approaches, and five distinct forms are identified:

1. The social planning model, which gives the central planner the opportunity to obtain 'field tested' information on the effect of centrally directed change, the action is a pilot for future effort.

2. Research, or the development of theoretical knowledge, where causal information can be added to correlational study, undertaken with limited publicity.

3. The 'get something done' or political approach which is in response to a recognised problem. The emphasis is on action, the tactics are chosen to keep the issue in the public eye and to enlist support for larger scale action, or until funds become available.

4. The diversionary approach, which also aims to be highly visible to act as a palliative, by placating political pressure for more radical change and diverting attention away from the real problems.

5. The multiplier approach, which combines a number of elements from the other four, attempting to identify outcomes that may occur.

The work of organisations like FoE fits neatly into the 'get something done' approach, whereas the work of their adversaries, often governments or industry, belongs to the diversionary model. Both are largely public relations exercises; in the first case to demonstrate that the proposed action is popular or necessary; in the second, to pretend that serious enquiry is already under way. However, because the issue with which I was involved at FoE was neither related to the functioning of the organisation nor a problem specific to it, the most applicable model

although not the most compatible, was that of the research approach.

As Marris and Rein (1967) recognised in their analysis of the American community action programmes, the principles of action and research are so different and mutually exclusive that attempts to link the two are likely to lead to conflict and the domination of one over the other. This theme was also discussed by Rapoport (1970) who identified three particular difficulties for those engaged in action research. The second is of particular interest.

Known as goal dilemmas, there is firstly the time lag of 'good research' which may be too long for action orientated customers to maintain. Pressure groups in particular, often work on a rapid progression of events which require an instant response. Additionally, if one becomes involved in a helping situation in the organisation, a degree of detachment and control may be sacrificed, in return for gaining a sense of sympathy and identification with the Certainly, working within an organsiation like FoE, host. has to be broadly sympathetic with the aims, one but attempt also to be removed sufficiently so that the research is not compromised on the charge of bias. As Rapoport recognised, one has to persuade the action wait longer than they deem necessary clients to for reports, whilst convincing other researchers that the work one is doing does have academic merit, although it may appear unconventional.

#### 1.5 EVOLUTION OF THE PROJECT

In view of the above discussion and the broadness of the original project title, many months were to pass before a framework for the research began to take shape. Every cyclist consulted had at least one proposal or area of investigation which they felt, was vital to the study. The subject of cycling had been received with renewed enthusiasm during the past few years, and a large amount of literature was available on this and related topics. Much work appeared to have been carried out on cyclists' behaviour, the efficacy of education programmes and possible engineering measures. Indeed, the four Es of education, engineering, enforcement and encouragement as identified in the Geelong Bike Plan (1979) and by Hudson (1979) became a very popular way of viewing cycling issues. Discussions were frequent on which of these areas or combinations of areas could be of most benefit to the cyclist, and the integrated approach was heralded.

This explosion of information and interest merely served to aggravate my problem; namely what type of research on cycling would be most useful and suitable given my committment to both Aston and FoE. Work carried out for FoE only serves to illustrate the wideness of the brief: ranging from Children in Traffic, Women and Transport, an assessment of driving tests in other countries, and 'The Guide To Cycle Friendly Motoring', (FoE 1986) written with Jan Fox.

Returning to the press release (FoE 1984), two distinct areas for investigation had been specified: engineeering measures, and attitudes and perception. Given my background in social sciences, the latter held far more appeal. Additionally, work into engineering was under way in the Netherlands where there was far more experience of traffic restraint as illustrated by the 'woonerf' concept, and in Germany with the Cycle friendly Towns project centred around Detmold and Rosenheim. Thus it was to the attitudes of road users the research turned, particularly as a limited amount of work seemed to have been completed in this area.

## 1.6 CONCLUSION

This chapter has introduced the IHD scheme at Aston, the sponsoring body of FoE in London, and some of the issues which arise out of this type of research. It has emphasised the extreme breadth of the project as originally conceived, and shown briefly how the 'narrowing down' process determined that it was road user attitudes which should be examined.

Chapter 2 looks at some of the relevent literature in this field, whilst discussing the concept of safety for cyclists and limitations of accident statistics, whether cycling should be encouraged and an introduction to attitude studies.

A study into road user attitudes carried out with the assistance of employees of the London Borough of Camden is described in detail in Chapter 3. This includes the methodologies used; both group discussion and questionnaire which comprised of two distinct parts, the first of traditional survey design, the second, a repertory grid exercise. Results from the first part are contained in Chapter 3, whilst the repertory grid results and a discussion of the methodology can be found in Chapter 4.

From the results and experience of the Camden Study, the main survey was planned. Chapter 5 examines the methodology; including sampling technique, questionnaire design and piloting of the document. Frequency counts for the number of questionnaires returned are also given.

The main results of this survey are detailed in Chapter 6. By dividing respondents into particular groupings; cyclist, cyclist/driver, driver or those who use neither form of transport, differences in opinion towards cycling and driving may be ascertained.

Chapter 7 summarises the results and discusses the implications which arise from the findings. Recommendations are made within the concept of the four Es, whilst Chapter 8 briefly reiterates the main findings and suggests areas for further research.

#### 2. REVIEW OF LITERATURE

## 2.1 INTRODUCTION

In choosing the title 'Road User Attitudes And The Safety Of Cyclists', a number of questions immediately arise. What is meant by 'the safety of cyclists'? Is it something which can be measured? Which road users are to be examined, and why? Why look at their attitudes but not their behaviour, or the education of cyclists, or the effect of traffic engineering schemes? Because the title itself is in need of explanation, what follows is not just a literature review but more an analysis of the research to provide the raison d'être for the resulting subject, study.

To set the scene and in common with other documents on road safety, some statistical detail of accident and casualty numbers and rates is provided, taken largely from Road Accidents Great Britain 1988 (RAGB). Traditionally, road safety research has approached the subject through in-depth studies of accident statistics and if nothing else, they provide the reader with some idea of the extent of the problem. As a caveat, the drawbacks associated with dependency on these figures, and their implicit philosophy are examined, asking the vital question 'what is safety'?

A discussion of cycling as a form of transport follows, questioning whether it should be encouraged and looking at subsequent consequences from both a safety and environmental view. Discussion next turns to attitudes to determine the influence which they may have onour relations with the transport network, and to look at work to date which has focused on the attitudes of cyclists and other road users.

#### 2.2 STATISTICAL DETAIL

In 1988, 227 cyclists died as a result of a road traffic accident, 4652 were reported to be seriously injured and a further 20970 slightly injured. As a percentage of all deaths on the road, cyclists constituted 4.5 percent, and 7.3 percent of those reported to be seriously injured, although accounting for only 1.36 percent of kilometres travelled. Rates for fatal and serious injuries per 100 million kilometres travelled differ greatly depending on the means of transport employed, as Table 2.1 illustrates. This shows the level of danger faced by cyclists and twowheeled motorcycle riders compared with users of other types of vehicle since 1978. We have met the vulnerable road user.

One might presume that cycling in Britain is more hazardous than any other type of road travel except motorcycling. The figures which follow certainly act to reinforce this view but before continuing, two warnings concerning the use of these statistics should be given. First, it is highly unlikely that the roadside counts undertaken by the Department of Transport (DTp) fully represent the amount of cycling on minor roads, thus numbers of kilometres travelled may be grossly underestimated.

Likewise, no consideration is taken of the level of underreporting of cycling casualties. Numbers of fatal injuries are accurate, since by virtue of their severity these become known to the police. And it is on the basis of the police accident records, 'Stats 19', that the offical road accident statistics are formulated. However, the picture for serious and slight injuries is not so complete . A number of studies have addressed this problem by comparing Stats 19 data with that received from local hospitals and the level of under-reporting has, in some cases, been put alarmingly high at 73 percent overall; 25 percent for serious injuries and 75 percent for slight injuries. (See for example Bull & Roberts 1973, Pedder 1981, Mills 1987).

TABLE 2.1 Casualty rates for fatal and serious injuries by road user type, rate per 100 million vehicle kilometres TABLE 2.1

. 85 . 86 . 87	4.7 5.0 4.9 93 96 89	10 9 10 224 213 189	0.5 0.5 0.5 7 6 6	1	0.3 0.3 0.3 4 4 4	0.2 0.3 0.2 3 3 3 3
3 184	1 5.4 0 103	0 10	0.5	0.1	4 0.3	0 0 0
8.	5 5. 3 10.	21	0	ò	0	0
. 82	4.6	217	0	0.1	0	0.0
.81	5.7	11 223	0.0	0.1	0.4	0.0
.80	5.9	13 265	0.0	0.1	0.4	0.0 0
62.	7.0 115	16 299	0.7	0.1 3	0.5	0.4
. 78	0 0 3 9 3 9 3	16 314	0.8 10	0.0	0.4	0.4
	Syclists Killed KSI	rwWV riders Killed KSI	Car drivers Killed KSI	Bus or coach drivers Killed KSI	.GV drivers Killed KSI	lGV drivers Killed KSI

KEY: KSI Killed/Seriously Injured, TWMV Two-wheeled Motor Vehicle, LGV Light Goods Vehicle, HGV Heavy Goods Vehicle

From RAGB 1988, Table 8 p.66

Noting where these accidents are taking place, and to whom is important. Looking at figures for killed/seriously injured cyclists, since these are least affected by underreporting, the age split is shown in Table 2.2. The number of casualties has been dropping although the casualty rate has increased and one immediately obvious fact is the alarming number of children aged 14 and under who are represented in this table. Almost 24 percent of all cyclists' deaths in 1988 were to children under the age of 14, and 80 percent of these were boys. Indeed, the importance of traffic deaths to child pedestrians and cyclists, as a percentage of all accidental deaths to children can be seen in Table 2.3. Child. pedestrians are included in these figures, because it it believed that many of those features of the transport system which contribute to cyclists' accidents are also of direct consequence to pedestrians.

a	age group	к	% of all cyclists K	rate per 100000	% SI cy	of all clist SI
	0-9	12	5.3	0.3	355	7.7
	10-14	42	18.5	1.3	913	19.7
	15-16	14	6.2	1.0	487	10.5
	17-19	12	5.3	0.5	410	8.9
	20-29	33	14.5	0.4	866	18.7
	30-39	20	8.8	0.3	472	10.2
	40-49	21	9.2	0.3	386	8.3
	50-59	30	13.2	0.5	328	7.1
	60-69	22	9.7	0.4	233	5.0
	70+	21	9.2	0.4	171	3.7

TABLE 2.2 Killed and seriously injured cyclists in 1988 by age group

From RAGB 1988, Table 29 P.83

For adults, casualty rates are very similar between the ages of 20 to 70 plus, of between 0.3 and 0.5 per 100,000 population, although those between 20 to 29 are conspicuous by their level of over-involvement, probably as a result of greater exposure.

TABLE 2.3 Child road deaths as a proportion of all deaths to children in 1988

AGE GROUP	0-4	5-9	10-14
MALE all accidental deaths	186	166	185
road deaths (registered)	47 ·	106	125
road deaths (registered) as a % of accidental deaths	25%	64%	68%
FEMALE all accidental deaths	139	57	57
road deaths (registered)	46	42	44
road deaths (registered) as a % of accidental deaths	33%	74%	77%
ALL CHILDREN all accidental deaths	325	223	242
road deaths (registered)	93	148	169
road deaths (registered) as a % of accidental deaths	29%	66%	70%
% of road deaths which are cyclists/pedestrians	77.4%	83.8%	77%

From RAGB 1988, Table 11 p.69 and Table 29 p.83

Studies have looked in some detail at who is to 'blame' for these accidents, and a report by the Metropolitan Police (1975) suggested a distinct difference between children and adults, in that it was the behaviour of the child which predominantly caused accidents involving child cyclists. An alternative which one may argue is that these represent the tragic result of a complex road system designed by and for adults. A majority of accidents involving adult

cyclists could be attributed to the behaviour of the other vehicle driver. More recent work by Henson (1988) who has concentrated on accidents at T-junctions, substantiates this approach. However, the whole question of blame is problematic, and is discussed in greater detail later in this chapter.

Of the cycling accidents reported in 1988, the great majority involved one other vehicle. This was predominantly the car, and accounted for 51 percent of cyclists killed. Yet HGVs, involved in a mere 3 percent of two-vehicle accidents with a cyclist, were responsible for 16 percent of all deaths to cyclists, illustrating the latters' vulnerablility and the inequality of different transport modes.

76 percent of cycling accidents on built-up roads took place at or within 20 metres of a junction. Approximately 57 percent of these occured at T or staggered junctions, with a further 12 percent at roundabouts and 16 percent at crossroads. Of actual manoeuvers, 67.5 percent of cyclists were recorded to be 'going ahead other', the next largest category was 'turning right or waiting to', accounting for 12 percent of casualties. Interestingly this category of 'going ahead other' accounts for 63 percent of all reported two-wheel vehicle accidents, whether motorised or not. For vehicles other than two-wheel, the figure is only 48 percent.

On non-built up roads, these proportions change. Only 48 percent of reported accidents took place at or within 20 metres of a junction. Of these, 38 percent were at a T or staggered junction, with 25 percent at roundabouts and a further 10 percent at crossroads. Over 8 percent occurred at a slip road, compared with 0.6 percent on built-up roads.

The rate of fatal accidents involving cyclists on nonbuilt up roads, at 10 per 100 million vehicle kilometres, is far higher than the 3.8 recorded for built-up roads. For all injury severities though, the rates are reversed from 595 per 100 million vehicle kilometres in built up areas to 304 in non-built up areas. It is not suprising that an increased risk of collision exists in built-up areas given the infinite number of possibilities for accidents to occur. But they are of a less serious nature due to the low speeds at which traffic progresses, especially when compared with the faster speeds encountered on non-built up roads.

Hence, a vast proportion of accidents happen in built-up areas and during the day. The peak hours for cycling casualties during weekdays are from seven to nine in the morning, and three to eight in the evening, with a particular surge between four and six, which clearly reflects exposure times. At weekends the pattern differs, with casualties distributed more evenly, midday to late afternoon being the worst hours.

Using statistical detail alone it is possible to give the reader some idea of the importance of accidents involving cyclists. Over twenty-five thousand people were reported to be injured in 1988 as a result of a cycling accident, 227 of those fatally. And the true number of incidents and injuries was probably much higher. Not only is this of concern on the humanitarian grounds of pain and suffering caused, it is also financially very expensive. The following figures are taken from an article in RAGB 1988 by K. McMahon, where the difficulty of putting an accurate cost on an accident or casualty is discussed.

TABLE 2.4 Average cost of road accidents and cost per casualty 1988

COST £	FATAL	SERIOUS	SLIGHT	ALL
per casualty	551,600	16,720	340	12,210
per accident	610,320	21,410	2,010	17,670
built-up roads per accident	576,490	19,800	1,720	12,720
non built-up roads per accident	646,620	25,020	2,940	32,290

## 2.3 SAFETY

For many years, road accident statistics like those above have been used to illustrate how safe or unsafe the traffic network or a specific road might be. Any reduction in the number of injured is greeted with delight by those working in the field, and pronouncements are made about the roads becoming 'safer'. If the accident rate is low, then a road is deemed to be safe. This is the traditional way in which black spot treatment, for example, has worked. A section of road or juction with a particularly bad accident rate will have remedial work carried out upon it in an attempt to rectify the situation. It is now argued that this may in turn, lead to behavioural changes which obviate the engineer's remedy (Wright and Boyle 1984, Adams 1985). Statistics may provide a useful introduction to the extent of road traffic accidents, but do they give a true picture of whether or not a road is safe?

The accident record of motorways is a cogent example. They are usually heralded to be the safest roads in Britain. Currently 14 percent of motor vehicle traffic is undertaken on motorways whilst they account for only 4.7 percent of road traffic fatalities and 2.4 percent of serious injuries. However, if one takes into account the absence of pedestrians, cyclists, children playing, dogs,

deliveries, shops, schools, hospitals etc., (the list is endless) then it is hardly remarkable that the rate of accidents per kilometre travelled is less than on all other roads. It should be of great concern that the rate is not much lower. It does not mean the road is any safer, rather that certain types of accidents are virtually impossible given who or what is permitted to use the motorway. The statistics do not make this obvious. And given the virtual absence of pedestrians on motorways it is perhaps suprising to discover that thirteen were killed and twentytwo seriously injured on motorways in Britain in 1988.

Because of the level of under-reporting, and failure to acknowledge the vast amounts of cycling carried out on minor roads especially by children, the statistics are severely limited. But there also exist more covert reasons for these limitations. A road may have an excellent accident record with regard to cyclists; none or very few accidents over a certain period. The automatic response is to presume that there is no problem. The less obvious is to look at the road and perceive it to be so dangerous that few people will venture to cycle there, an approach adopted by Adams in his 1987 paper on safety as an environmental issue.

People compensate for the amount of risk they are prepared to accept; if a road seems very dangerous with fast or heavy traffic, they will take extra care when crossing that road and not procede as they might on a quiet residential This is known as risk compensation. An example street. used by Adams is that if children played on the streets today in the same way they did 50 years ago there would be slaughter of unimaginable size. This slaughter does not because children today play in gardens, parks, happen playgroups, their homes, not on the street. These are too dangerous for such unrestricted access, thus children have had to adjust for the increased risk by loosing their freedom. Likewise, safety measures introduced such as

improved braking systems on cars, ultimately become performance benefits, they allow one to brake later and more violently than before.

Marsh and Collett (1986) identify this phenomenon, although not naming it as such. But they point out that one of the thrilling components of driving is the risk involved and that drivers clearly balance the level of risk they are prepared to take. If roads are made safer to drive on add more lanes, improve the surface, reduce traffic density - people are likely to drive faster. It follows that to achieve a real improvement in safety, it is necessary to make people feel they are at risk, even if they are not.

One step from risk compensation and risk homeostasis is encountered. Wilde (1982) and more recently Adams (1985) have detailed this theory which has been received with much hostility by many of those concerned with road safety. Basically it argues that people have an inbuilt tolerance of risk which is likely to differ according to ones age, personality, sex etc. The example used by Adams is that a young male motorcyclist will have a far higher tolerance of risk than a middle aged woman. And that if risk is removed from one area of someones life, they may seek risk through other activities. But this theory is notoriously difficult to test, and arguments continue regarding its' acceptance.

One may hazard a guess that the majority of people are unaware of the accident statistics for differing forms of transport or particular roads. They do not measure safety in this way. With all this discussion of safety it is perhaps time for a definition of the word. The Oxford Dictionary defines it as:

the state of being safe; exemption from hurt or injury, freedom from danger.

Now one may question, what is danger? From the same source:

#### liability or exposure to harm or injury, risk, peril.

Therefore, safety is not something which can be simply measured through numbers of accidents. In conversation with cyclists, it is whether or not they feel safe; their perception of safety or conversly, of danger that is of importance. In other words subjective safety, defined as

the safety of a person or a group of persons in certain situations, caused by certain factors, as experienced by a person or group of persons. (Kraay, Mathijssen & Wegman 1985 p25)

Cycle accidents are generally diverse and do not occur in easily identifiable clusters, despite the large proportion which take place at, or in close proximity to junctions. This would suggest that there are features common to the entire traffic network which cause it to be unsafe or dangerous for cyclists. This begs the question; is it the road user who is predominately to blame for accidents, or the design of the road system which is generally taken as given? Is it not a philosophy which promotes the building of roads and exhaustive use of the private motor vehicle which is the culprit? This has produced a system which is patently unsafe and unequitable for large numbers of people, particularly the most vulnerable; pedestrians, Friends of the Earth's response to cyclists and children. the Interdepartmental Review of Road Safety (1988) provides an interesting account of the relevant theories, whilst Pharoah (1983 p33) comments:

it makes little sense to describe the resulting casualties as "accidents"; they are the inevitable product of street layouts where vehicles are physically encouraged, and legally entitled, to travel at speeds of 30mph within a few feet of people's front doors.

Whitelegg (1983) argues that any solutions to road traffic accidents which unquestioningly accept the car as our primary form of land based transport must create a paradox. Accidents are themselves a basic disbenefit of the system, (as lung cancer is to smokers), but the very design features which create them are defended by an extremely powerful road lobby, whose interests and all pervasive influence have been admirably documented by Hamer (1987).

It was noted earlier how child cyclists are usually claimed to be at fault in accidents in which they are involved. To expect children to behave in a totally logical fashion when faced with a potentially lethal traffic system, with which many adults are unable to cope, is unrealistic as Sandels (1975) has long emphasised. Van Shagen (1984), Howarth (1981), Spencer and Blades (1985) and Wallin (1979) all provide a varied introduction to the capabilities of children in traffic, whilst Howarth and Lightburn (1981) argue that in conflicts between child pedestrians and cars it is the child who more often takes avoiding action. Sabey and Taylor (1980) concluded that 95 percent of all traffic accidents were at least partially the result of road user behaviour. They did not consider the road system per se.

### 2.4 SHOULD CYCLING BE ENCOURAGED?

Many writers have emphasised the benefits which can accrue by increasing cycle use (Hudson 1982, Otto 1984, Friends of the Earth 1987a). Cycles are non-polluting both in fumes and noise. They do not consume valuable resources such as fuel, only the energy of the individual user, and the person on a bicycle is the most efficient traveller in consumption for the distance travelled. energy Additionally, a bicycle consumes only one-sixteenth the space of a car, thereby relieving traffic and parking With the escalation of interest in 'green congestion. issues', the cycle should be heralded as the ideal mode of transport; the answer to urban congestion and pollution, with provision made accordingly.

In some European States, this is already the case. The Netherlands for example, are equipped with an efficient and convenient cycle network accompanied by a fatal and serious injury rate for cyclists only half that of their British counterparts (Plowden & Hillman 1984). Certainly when cycling in Holland, one is aware of feeling safer and far more at ease compared with cycling in this country.

In 1981, the 'Cycle Friendly Towns' project centred on the cities of Detmold and Rosenheim was instigated in West The main aim of the project was to initite a Germany. shift in road users from car to bicycle, thereby improving the urban environment (Otto 1984). One necessity was to 'cycle friendly atmosphere', recognising that create a cycling is both safe and sensible as a means of short distance transport, and to take into account the needs of the cyclist at policy making levels. Results from the project suggest a substantial increase in bicycle use, of 13 percent in Rosenheim plus a corresponding shift in the modal split from 23 to 26 percent of all journeys being made by bicycle (Hulsmann 1987).

Brog and Erl (1984) questioned whether increased bicycle use, sometimes accompanied by a fall in car use, would actually lead to a decrease in the accident rate for cyclists. Through a study of data covering road use and accidents in the 'Cycle Friendly Towns', analysis concentrated on three factors: accidents per road user, per distance travelled and per unit of time. It was indeed found that as cycling increased the number of accidents involving cyclists rose, but that the accident rate decreased.

Interestingly, RAGE 1988 charts the opposite side of this equation in relation to Britain. Cyclist casualties fell in that year compared with 1987 and the 1981-85 average. Yet when taking into account the accompanying fall in cycle traffic, the 1988 accident rate shows a marked increase. Even allowing for under reporting and low estimates of kilometres travelled, even perhaps that more cyclists are reporting accidents in which they are involved, this is noteworthy. Is it a version of Smeed's Law for bicycles?

As an aside, some explanation is perhaps necessary. It was in 1949 that Professor Smeed published his first paper detailing the effect of increased motorised road traffic on road accident fatality rates. He periodically retested the data until his death in 1973, and his original formula continued to give an accurate picture, namely, that as the level of motorisation within a country increases, so the death rate per vehicle decreases. Thus, if one looks at data concerning the early stages of motorisation in Western Europe and the United States, the death rates per vehicle are very similar to those now experienced in the Third World where motorisation is a relatively new phenomena, and the number of cars per head of population far lower. An example of risk compensation, as a population becomes accustomed to the motor vehicle?

In contrast to the policies of many of our European neighbours whereby cycle use is actively being encouraged, the British Government has been reluctant to follow the continental example, arguing that it is necessary to make cycling safer before it should be encouraged. This would appear to be a chicken and egg situation: which comes first? And as it has been shown above, how do we measure safety, even if we can reach agreement on what safety is? It was in 1987 with publication of DTp Traffic Advisory Unit Leaflet 1/87 that there was some hint of change. The then Junior Minister for Roads and Traffic Peter Bottomley, appeared keen to champion the cause of the vulnerable user, but whether the official line is to encourage use or reduce the number of accidents is unclear. Unfortunately, they are incompatible.

It is necessary to appreciate that if cycling becomes 'safer' in the perception of road users, and more people are drawn to it as a mode of transport, cycling casualties are bound to increase. In the Netherlands, although death rates are lower for cyclists than in this country, the percentages of cyclists killed and injured as a proportion of all traffic casualties are much greater than in Britain, reflecting the far higher rates of use (ECMT 1986). Additionally, if subjective traffic safety is changed, the phenomena of risk compensation may be in evidence:

a reduction in the fear of traffic could lead to an increase in the number of accidents, because people will be less careful in traffic. (Kraay, Mathijssen & Wegman 1985)

Although cycling may appear hazardous for the cyclist, as a form of transport it is inherently safe, particularly so for other types of road users. For every bus or HGV driver killed in an accident, there were over 18 other fatal accidents involving buses or HGVs, whereas cyclists tend only to kill themselves (ECMT 1986, Plowden & Hillman 1984). As an example of this, in 1988, 115 cyclists were killed and 3155 reported to be seriously injured as a of a two vehicle collision with a car. result The corresponding number of car drivers killed and seriously injured were 1 and 23 respectively. The accident rates for pedestrians are also a useful illustration of this point, as shown in Table 2.5.
TABLE 2.5 Casualty rates for pedestrians involved in road accidents 1988

	rate per 100 million vehicle kilometres		
VEHICLE TYPE	FATAL	SERIOUSLY INJURED	
bicycle	0.1	2.6	
two-wheel motor vehicle	1.7	17.0	
car	0.4	4.4	
bus or coach	1.8	11.0	
light goods vehicle	0.5	3.6	
heavy goods vehicle	0.6	. 1.5	

From RAGB 1988, Table 26, p.80

It is clear that collison with a cycle enjoys the lowest rate of fatal injury, additionally so, since nearly all cycling is on those roads where pedestrians are likely to be present. This contrasts with the rate for motorised traffic, where motorways accomodate 14 percent of the annual mileage and pedestrians are rarely present. Thus it might be assumed following Brog and Erl's argument, that an increase in cycle use at the expense of motorised transport could be accompanied by a decrease in pedestrian fatalities.

One note of warning on the reality of this comes from West Germany where research in Nord Rhein Westphalia suggests that an increase in cycle usage is more likely to be at the expense of public transport than private (Holzapfel 1987). Evidence from the Netherlands however, does point to a reduction in car travel (Grotenhuis 1987) but a prerequisite for this would appear to be a general reduction in the speeds of motorised transport.

Many of those engineering measures which seek to improve the safety of cyclists and certainly heighten the cyclists' perception of safety, also contribute to the urban landscape as an environmental improvement. The experience of woonerven in Holland, and traffic calming measures in Japan are but two examples (SWOV 1985, IATSS 1982). A report from the Road Data Laboratory in Denmark (1987) in assessing traffic calming measures on a road in Vinderup concludes as follows:

satisfaction at living in Vinderup has increased,

the number and speed of the cars are far more acceptable and the nuisance presented by parked cars is smaller,

the feeling of safety has improved considerably for all categories of road users, but most notably for cyclists,

fewer people feel bothered by noise and air pollution.(p48)

Urban planners (Buchanan 1963, PICC 1974) have long discussed the negative consequences of the proliferation of the private car, especially when used for commuting. Krell (1981) argues that the car is in direct competition for space with environmental requirements by intrusion into city streets; creating hazards for children through parking and maintenance in residential areas, speed and density, the oil stains left on road and pavement, trapping litter, the clutter of signs, bollards and signals, the effects of vehicle emissions on people, plant life and buildings. Appleyard and Lintell's article (1972)on social interaction in three differing streets serves as a pertinent illustration of the devastating effects traffic can have in severing a community. And in 1964, Ritter drew up a caustic summary of the Man-Vehicle relationship (Table 2.6).

Untermann (1984) suggests the car becomes a temporary 'environment' when in use; supplying music, warmth, comfort to the occupants. The road is not of importance since it is the speed, efficiency and continuity of the trip which are of consequence. In contrast, cyclists and pedestrians are directly involved with the surrounding environment and can cope with highly complex visual messages in the form of shop fronts, advertising and building design.

TABLE 2.6 The Man-Vehicle Relationship; a summary of Man-Vehicle characteristics

	MAN	VEHICLE
SIZE	Small (toddler to adult variation).	Big (motor scooter to bus variation).
TACTILITY	Soft.	Hard.
SPEED & RANGE	Slow and small.	Fast and great.
MOMENTUM	Slight, safe.	Great, dangerous.
MOVEMENT	Organic.	Organic tendencies through driver only.
RHYTHM	Organic patterns, spontaneous.	Mechanical patterns, predetermined lines.
ROUTES	No site lines, suprise, sudden changes.	Site lines, curvature, junctions according to speed & formulae.
ECOLOGICAL	Harmonious.	Fuel disruptive to life, poisonous, destructive.
SOCIOLOGICAL	Needs security conducive to friend- ship & co-operation within narrow field and as a general characteristic.	Allows meetings of distant friends but where present is conducive to anti- social behaviour and disruptive of co- operative tendencies, particularly when driven.
DAMAGE	Care increases with damage. Injury and death irrevocable & therefore tragic. Average life, long.	Care decreases with damage. Injury and death mean insurance, scrap heap and a new car. Average life, short.

From Ritter (1964) p.10

Architecture has changed to take account of the increasing speed of traffic, so that new buildings tend to be larger, smoother and more shallow in design (Rapoport 1977). Passing motorists can see and identify each building, whilst the effect for the slower traveller on foot or bicycle is one of long monotonous buildings and boredom. Aesthetically, the street designed for people is far preferable to that designed for the car.

Yet despite sentiments such as those above, the low status commonly afforded the bicycle may be appreciated by skimming the pages of text books on transport planning. Wells (1975), Owen (1972) and most other mainstream books on the subject make no mention of bicycles or cycling. Some exceptions and their degree of interest are detailed below; traditionally however, that interest would appear limited.

Maltby and White (1982) speak of the decline in cycle use and increased accident risk especially amongst children, whereas Black (1981) went further, by quoting Hudson (1978) and discussing the main considerations in the planing of bicycle facilities. In 'Transport Policy', O'Sullivan (1980) talks of the advantages of using the bicycle for local travel, whilst the following observations require no additional comment:

The antipathy of drivers presents an added danger. Where bike riding is taken as an outward sign of liberalism in a community with a lot of truck driving rednecks, running bikes off the road becomes a sport and political gesture. Frustration with the low speed, unsteady progress, arrogance and indifference to traffic signals and rules of riders reinforces the temptation. (p.301)

Efrat's paper (1981) directly addresses the issue of planning for urban cyclists, covering requirements for use, segregation or integration with other traffic, and different levels of bicycle plans. In the same volume Solomon (1981) discusses public acceptance of plans to reduce traffic in residential streets.

From the above it may be surmised that it would indeed be beneficial to encourage cycling, on a number of different counts. But is there sufficient demand? Are there enough people prepared to cycle if the situation improves? Research has shown this to be so, as suppressed demand for cycling is known to be high. Many factors are thought to decision of whether to affect ones including cycle; topography, trip-length, rainfall, accident risk, availability of alternatives and life style. Waldman (1977) showed that the items having the most effect on cycling choice are danger and topography. He estimated that a very dangerous town which is otherwise average in regard to other factors would have only a 2 percent level of cycling, compared with 20 percent if it were safe.

Waldman illustrated how cycle use is low when a town is dangerous (6 percent), hilly (4 percent) or both, resulting in nil cycling. Although it can only be a peripheral transport mode therefore, in some regions, if a town is flat and safe up to 43 percent of people will cycle to Thus Birmingham and Salford, for example, could work. enjoy up to 20 percent of their residents cycling to work if it were perceived safe to do so. Similarly, planners in the U.S.A. have estimated that 50 percent of trips are under 3 miles in length, and could easily be undertaken by by most people bicycle (Untermann 1984). Yet unfortunately, cycling in present conditions is often neither safe nor enjoyable.

Evidence from the Continent supports this conclusion. In the Netherlands, it is estimated that 26 percent of all journeys to work are made by bicycle compared with only 3 percent in Britain. In relation to educational journeys the difference is even more dramatic; 61 percent in the Netherlands compared with only 5 percent in Britain (Hillman 1984). In certain towns such as Groningen in northern Holland, bicycles account for 50 percent of all journeys.

### 2.5 WHY ATTITUDES?

Given the above discussion, one may question why attitudes are of any interest. Should one not be concentrating on the implementation of particular environmental schemes and monitoring the effects of traffic restraint? This is undoubtably of importance, and is currently underway both in this country and overseas; organised and financed by local and central governments, development agencies and the like.

However, it may be argued that unless such schemes are received with some enthusiasm, they are likely to be of limited value. A network of roads may be devised whereby a vehicle is unable to travel at more than a few kilometres per hour, but unless some element of awareness as to the needs of other users is introduced, the scheme may be abused and vociferous public opinion be directed at it's removal. (For example, the removal of some traffic restraining measures in Somers Town, London Borough of Camden, as a result of local opposition from motorists).

Likewise, although flaws in the 'behaviour' approach towards traffic accidents exist especially on the theoretical level of who is to blame, it remains a fact that we have to interact within the existing framework. Major changes to the fundamental way in which we use transport, however desirable, and challenges to our expectations of particular modes, essentially the private car, are unlikely in the forseeable future.

There is much controversy concerning the degree to which attitudes may affect behaviour, or vice versa, and their relation to the prevailing social structure (Lemon 1973). But it is a familiar cry that attitudes should change, or that attitudes are at fault in a particular situation.

First, it is necessary to identify what is meant by 'attitude'. There are numerous definitions of the term and the following discussion merely touches the surface of a complex and difficult subject. In 1918, social psychology was defined as the scientific study of attitudes; although it is debatable whether study of attitudes can ever be called 'scientific'.

Allport regarded an attitude as:

a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. (Triandis 1971)

Whilst Oppenheim (1976 p105) suggests:

a state of readiness, a tendency to act or react in a certain manner when confronted with certain stimuli.

Some psychologists argue for a multicomponent definition of attitude, whereby it is thought to be reinforced by and exert control through three components: beliefs or factual knowledge of an object or person - the cognitive component, the emotional response - linked to ones feelings and evaluations, and the particular behaviour directed at a person or object - the action tendency approach (Cohen 1966, Katz 1967, Oppenheim 1976, Zimbardo 1980, Kahle 1984) Attitudes are seen as abstractions and may be held on different levels, but their strength is manifested when an attempt is made to change them.

There is opposition to the study of attitudes by those who feel that behaviour is mainly determined through social factors (Lemon 1973). It follows that attitudes do not have an independent influence upon conduct, and are thus regarded as a product of the social system, something which is learnt. Hence it becomes necessary to change the social system so that a different set of attitudes become

prevalent. But how is this carried out, and what is the relationship between attitudes and behaviour?

An alternative approach is of particular interest. Fishbein (1977) views an attitude as a relatively simple unidimensional concept, referring to it as:

The amount of affect for or against a psychological object.

Rather than attitudes having many different components as mentioned above, he prefers to define beliefs and behavioural intentions independently. Azjen and Fishbein (1977) suggest that a person's attitude towards an object influences his or her overall response, but does not necessarily predict any given action. A single behaviour is determined by the intention to perform that behaviour; the intention is a function of his or her attitude towards the behaviour and subjective norm. This may be defined as the subjectively perceived influence of the social environment on the subject's behaviour and can be illustrated schematically as shown below.



(Vogel 1984)

As an example, one may intend (have an attitude) to obey a 30 mile per hour speed limit on a built up road, but if the majority of traffic is moving in excess of that speed, the subjective norm dictates otherwise, and one exceeds the limit. In this way, attitude and subjective norm combine to form the behavioural intention, the only true determinent of behaviour. So it is not necessarily inconsistent for an individual to hold a favourable attitude towards an object but at the same time, believe that object to have some negative characteristics or qualities. This would also account for the changing attitudes road users have at any given moment; depending on whether the individual is cycling, driving, or a pedestrian.

Likewise, a person's attitudes towards an object influences the overall pattern of responses, but will not necessarily predict any action. The link between attitudes and behaviour has four different strands; the action, the target at which the action is directed, the context in which the action is performed, and the time at which it is performed. A person's attitude has a consistently high relation with his or her behaviour when directed at a specific target and specific action. But, demonstration of attitudinal change is not sufficient evidence of one's ability to change behaviour. It is but one facet of those required.

This model has been used by Vogel for a study of speed choice on Dutch motorways using sophisticated technology. Other types of attitude study have been carried out in the road safety field however, using traditional attitudinal surveys as discussion overleaf will testify. These often relate to problem motorists and assess their opinions towards speeding, drink/driving and similar traffic violations. A connection between attitudes and accident involvement has been detected (eg. Whitlock 1971).

In view of this, it is suggested that road user attitudes will have some not inconsiderable influence upon their ultimate behaviour be they cyclists, drivers or pedestrians, tempered by the subjective norm, intentions and the environment. And whether safety is regarded in terms of accident statistics, or more realistically in the subjective safety of the individual, those attitudes are likely to be of at least some relevance.

#### 2.6 REVIEW OF ATTITUDINAL STUDIES

Attitudinal research in road safety or 'human factors accident research' of which it is a facet, has been the relatively enduring with studying preoccupied characteristics of road users, usually drivers. Although the vast majority of serious road accidents are single events in a person's life with the accident repeater being accident comparatively rare person, research into a involvement (Whitlock 1971, Shinar 1978, Schulzinger and Tillman as detailed by Shaw and Sichel 1971) suggests that age, sex and personality of the driver all play their part. Thus, to quote Tillman, 'a man drives as he lives'.

Other researchers (Shaw and Sichel 1971, and Parry in same) conclude that driving offers almost unique opportunities for delusions of grandeur and anti-social behaviour. Many accidents occur not only because people drive as they live but as they would like to live. Perhaps there is more truth than one would wish for in the well known American cartoon of a mild-mannered character turning into a crazed maniac once behind the wheel of a car.

In a very entertaining book on the psychology of the car, Marsh and Collett (1986) approached the subject by stating that it is wrong to see the car as primarily a form of transport. Really, it is designed and perfectly fulfills the expressive function of the 'driving passion'. Not only do:

cars provide people with an opportunity to impress others, as well as themselves (p.115)

but any frustrations or anger one may feel find clear expression in the way we drive. They identify the 'dominance driver'; speeding away at traffic lights, refusing to back-off in a narrow street, driving right on ones back with blazing headlights, and through reference to earlier research detail it's use not only as an object of fantasy, but also a weapon (see also Spencer 1985).

De Silva (Shaw and Sichel 1971) argued that an important factor in accident susceptability was the attitude which led the driver to either keep out of accidents, or almost invite them. Defining this as 'safety mindedness':

a reflection not only of specific driving knowledge and experience, but also one's attitude towards life and one's fellow man,

it is pertinent to remember the theory of risk compensation; how people often need an element of risk in their lives, and will use safety benefits as consumer benefits. Indeed, Pandrey (1981) found that accident involved drivers held more unfavourable attitudes towards traffic police, other road users and concern for safety, and a more favourable attitude towards competitive speed, compared with non-accident involved drivers.

Further areas of study have included attitudes towards drinking and driving and various forms of correctional programmes (Cameron 1982, Cook 1985, Dunbar 1985, Liban 1987); speeding offences (Hogg 1977, Peltonemi 1982, Jenkins 1978) where it was found that many motorists displayed an ambivalent attitude towards speed limits accepting that they can be and often are exceeded; and the link between traffic offenders and other types of crime. In Willett's (1964) sample of 653 traffic offenders, the proportion of those with criminal records was three times the average for the general public.

None of the above research mentions cyclists or their safety although it is clear that any driver who is predisposed to commit traffic offences or to be overinvolved in accidents is likely to cause a particular problem for vulnerable users. However, limited attention has been paid specifically to the attitudes of cyclists or the bicycle as a form of transport, no doubt refelcting the low status it enjoys.

Finch and Morgan (1985) addressed the issue in some detail by concentrating on the views of a small sample of cyclists and non-cyclists in an assessment of their attitudes towards different aspects of cycling. They concluded:

that the low social status accorded to cycling by many adult respondents is a major dissuassive factor, at least as powerful as their expressed concerns about danger from other traffic and the physical discomforts involved.

thus emphasising the poor public image. Writing from the perspective of an American cyclist, Forester (1983) suggests that since Europeans regard:

bicycles not as real transportation vehicles but merely as pedestrian accelerators suitable only for short, low-speed trips that otherwise would be made by walking,

the prevailing attitude towards cycling is to see it as a second rate form of transport or childs amusement, producing cyclists who ride ineffectually, unsure of their role or position in the traffic network. The Highway Code (DTp 1987) would appear to reinforce this. The advice to cyclists on approaching a roundabout reads as follows:

You may, if you wish, follow the procedure in Rules 110-115 for roundabouts. But if, because of inexperience or for any other reason, you feel unable to do so, you should either stay in the left-hand lane of the roundabout and look out particularly for vehicles crossing your path to leave the roundabout, or get off your cycle and walk. (Para.143, p37)

Gilman's survey of 'Bicycle' readers (1985) and the 'Driver' magazine's editorial on 'Bad Attitude Drivers' (1983) illustrate some of the negative attitudes which the cycling and driving public hold towards each other. Cross and De Mille (1974) carried out a study of car-bicycle collisions in Santa Barbara to determine what caused these accidents. Suggesting that conflicting attitudes towards the rights and responsibilities of the cyclist may predispose road users to act in an unsafe way and to take unnecessary risks, they assessed two types of attitude using the bicycle-blaming test and unsafe practices inventory; the latter relating to cyclists only. No evidence was found to suggest that car drivers attitudes contributed directly or indirectly to accidents, but in contrast they concluded that cyclists attitudes did have an effect.

However, the age of the two samples involved differed considerably, with a mean of 18.2 for cyclists and 39.7 for motorists. Thus, the cycling sample contained a large proportion of child cyclists, and it has already been shown how their accident involvement is very different compared with that of adults. Finding that many of the drivers and cyclists in the sample had committed an offence which contributed to the accident; that knowledge of road law etc. was often lacking; that drivers were not actively searching for cyclists or expecting them to be in the traffic system or to carry out unpredictable actions; suggests that a wider measure of attitudes might have proved more useful. Certainly the 'unsafe practices inventory' should have been extended to car drivers. otherwise the suggestion that drivers attitudes' were not contributing to accident involvement is highly questionable.

Watkins (1984), Harland (1986) and Davies (1987) have all assessed attitudes towards various aspects of cycling: particularly hazards, weather conditions and the provision of cycle facilites. Harland determined a high level of disquiet concerning shared use of footways by pedestrians and cyclists:

the cyclists on the footway consider the pedestrians get in the way and pedestrians are concerned about being knocked down by cyclists and feel that cyclists don't give way,

although a majority of those questioned declared the sharing arrangements to be satisfactory. Opinions towards facilites have also varied, depending on the successful siting and maintenance of routes, traffic lights and other features (McClintock 1983, Graham 1988).

In general, it would appear that cyclists are often keen on the provision of cycle paths and environmental changes (Department of Transport 1986a and 1986b); the motorist less enthusiastic. Assessing the affects of changes in Vinderup, it was found that:

A little more than half the drivers felt negative and slightly less than half positive towards the principle of environmental adaption.

This was also the case in Rijswik, where the creation of woonerven in parts of the city were monitored and some degree of antagonism towards their implementation found. Pharoah and Russell's paper (1989) on traffic calming also addresses the perceived safety of residents in areas where schemes have been undertaken.

### 2.7 CONCLUSION

The purpose of this review was to draw together the various elements in the project title and show how they interrelate. Safety cannot simply be measured by accident statistics, for it is freedom from danger which is of real importance, or the subjective safety of the individual. Many of those measures designed to improve safety for the cyclist and other vulnerable users (whether or not this is achieved statistically) through traffic calming and restraint actually do much to improve the urban environment. Such measures are now well documented and have been implemented with varying degrees of success most notably in Continental Europe, but in this country also.

It would appear however, that little work has been carried out to date on the attitudes of drivers towards cyclists and the status of the cycle as a form of transport. Brooks (1985) has studied the lack of technical and social awareness of motorists in relation to motorcycling and found that differences certainly exist between the two groups. Thus, it seems highly probable that those who drive may possess different attitudes towards the rights and position of the cyclist in the traffic network, compared with cyclists themselves.

It is highly unlikely in the present political and economic climate that a revolutionary change to produce a transport network which is equitable to all users will come about. A research interest in developing knowledge in this area is therefore, justified. It is the identification of attitudes towards cyclists which constitute the aim of this research.

#### 3. CAMDEN STUDY

## 3.1 AIMS

The conclusion to the previous chapter discussed the need for further study in this area. It was shown that cycling appears to be regarded as an inferior mode of transport, and that cyclists are particularly vulnerable to injury in the traffic network. It seems likely that the attitudes of others towards cyclists; in relation to their rights and responsibilities as road users, and the use of measures to improve the situation for cyclists, whether on grounds of the environment or safety, may differ from the attitudes of If this is so, adverse attitudes cyclists themselves. towards cyclists may influence the behaviour of other road users; whether manifested as a general disregard and lack of awareness, or as more blatent hostility and intimidation.

The aim of the study therefore, was to isolate different transport user groups, and to draw direct comparisons between them. Areas of concern were:

a) to identify the way in which people view different modes of transport,

b) to determine the significance placed on selected traffic offences,

c) to identify what cyclists and others perceived to be difficulties on the roads, and problems caused by others,

d) attitudes towards driver and cyclist training,

e) attitudes towards engineering and environmental measures which seek to improve the environment and cycle safety.

#### 3.2 METHODOLOGY

### 3.2.1 ROAD USERS

It was necessary to determine which road users were of most interest to this study. Obviously 'cyclists' were to be the prime group, but cycling accidents range from single vehicle incidents to collisions with HGVs, cars, motorbikes and pedestrians. The probability of a cyclist being killed or seriously injured if involved in an accident with an HGV are very high; 16 percent of fatalities occured in this way in 1988, although accounting for only 3 percent of accidents. But it is with the private car that most incidents occur, thus the general motorist was chosen as the second category of road user.

Preliminary discussions were held with individuals and those involved in the road safety field, plus meetings with other researchers. The important issues for cyclists and drivers began to emerge; how cyclists feel their position is misunderstood, allowances not given to provide a safety margin, the excessive speed and aggressiveness of many drivers. The latter complained of the unpredictability of cyclists, their failure to indicate and apparent ignorance of the Highway Code.

# 3.2.2 AN EXPLORATORY STUDY

A small study was first undertaken to explore the issues and to draw together in some quantifiable form the type of comments uttered during general conversations. At that time, a phrase heard repeatedly in connection with driver behaviour was 'attitudes must change', thus it was also important for this study to identify such attitudes, particularly those which may affect cyclist safety. In view of this, it was felt that a combination of methods providing in-depth and qualitative information, some of which could also be quantified, would be most suitable.

Two methods were chosen; group discussions and selfcompletion questionnaires. A sample of drivers and cyclists was required, who would be willing to participate in discussions and then complete a questionnaire at a later date. An early decision concerning this study - that there would be no attempt to make the sample representative of the general public - was made. As only about forty participants were planned for this study, representativeness was not thought to be of importance. It was not to be a definitive study of attitudes, but an exploratory probe to test ideas and methodology, and to provide interesting data on which to build a larger survey.

From transcriptions of the discussions, a questionnaire was developed, using two distinct methods to look at attitudes. First, a number of attitude statements scored on a fivepoint semantic scale from agree strongly to disagree strongly. The statements were taken from comments in the discussions, some rewording with where necessary and covering a variety of areas; issues relating specifically to cyclists, environmental measures, enforcement of traffic law, driver and cyclist training. Comparisons could then be made between respondents' scores for individual items or groups questions, to determine of differences and similarities depending on a number of factors such as age, sex, cyclist or driver.

### 3.2.3 REPERTORY GRIDS

For a more qualitative analysis, the repertory grid was chosen as the second technique. Pioneered by George Kelly as the methodology to use in conjunction with Personal Construct Theory, it focuses on the individual subject by involving them in the formation of the grid and interpretation of the results. It is a very flexible and adaptable instrument; primarily used in clinical psychology it is now also widely used in other fields of applied psychology. Repertory grids do not seek to pigeonhole people into categories, rather to look at the individual as the irreducible unit, and their perception of specific issues on any one day (Bannister and Fransella 1980, Stewart 1981).

There are three components in a repertory grid; 'elements' which are the situations, events, people or objects upon which the grid is based; 'constructs' which are the ways in which the respondent differentiates and perceives the elements; and a 'linking mechanism' or measurement scale, to show how each element is assessed for each construct.

For their implementaion in this study, some variation was proposed. Instead of each respondent drawing up their own grid, a process which can take two or more hours, I decided to provide both elements and constructs from the group discussions. This enabled production of a standard grid, permitting analysis of comparisons. . As this was incorporated into general the self-completion questionnaire, some alteration in design was also necessary.

Using repertory grids in this way, however, introduced an additional number of considerations as documented by Pope and Keen (1981). If elements and/or constructs are provided rather than elicited from each respondent, it is vital to carry out an adequate amount of groundwork to obtain, what one hopes, are representative items. Group discussions are vital for their generation, and care has to be taken to choose situations or objects and ways of perceiving these, which the majority of the group will be able to understand and identify with. Otherwise judgements made about differences or similarities between responses could be inaccurate, even non-sensical.

Extensive preliminary work to establish a reasonable selection of elements and constructs had to be carried out. The meanings that I, as the researcher, put to the words describing these items may be completely different from those of the respondent. This indeed proved to be the case as later discussion will acknowledge; an interesting insight into the limitations of working with grids, especially for one who had no previous experience of the method.

It is essential for the elements to fall within the 'range of convenience' for the constructs. Each construct can only apply to or have meaning for a finite number of elements at any one time. If a construct fails to have meaning for a particular element, then it may produce a distorted set of relationships after analysis. This is particularly important when, as here, both constructs and elements are supplied. The possibility of something lying outside the range of convenience becomes far greater, thus caution is also necessary during interpretation.

Traditionally, interviewees have been involved in the interpretation process following completion of the grid. In this way, feedback and discussion between respondent and researcher can highlight many interesting issues and generate feelings in the respondent about the need for Additionally, one may claim that the study has action. been free from observer bias. Since follow-up discussions were not envisaged, these three factors were lost. However, since the purpose of the exercise was to extract information and opinions from the respondent, rather than counselling or therapy where feedback is understandably vital, this loss was not felt to be prohibitive.

### 3.2.4 SAMPLING

With the methodology determined, the first task was to obtain a sample. With collaboration at Friends of the Earth, it would have proved possible to recruit cyclists from the Cycle Campaign Network, London Cycling Campaign or FoE itself. This was felt to be undesirable, because cyclists belonging to such organisations were more likely to be aware of their position as cyclists and politically active in campaigning for their rights.

Another possibility was to canvas local bicycle shops and thus gather a selection of volunteers. Although providing a greater cross-section of the cycling public, the problem of where to hold the discussions arose. Meeting rooms are difficult to acquire locally, and at that time FoE had very limited accomodation, then only available during evenings. Also, to persuade people to give up an hour or more of their time to attend a group discussion, without providing any type of inducement whether financial or otherwise (a growing practice by market researchers) may well have proved insurmountable.

A similar situation arose with obtaining a sample of motorists. Although a number could have been found with little difficulty; at car parks, accessories shops etc., organising them into a coherent group at a mutually convenient time to participate in a discussion, was less easy.

In light of this, the Public Safety Department of the London Borough of Camden was contacted, to discuss the possibility of arranging a series of group discussions with employees. Following an initial meeting in September 1986, the response was favourable. The intention was to obtain forty volunteers from selected departments within the council consisting of twenty cyclists and twenty drivers.

Despite enthusiasm from the Public Safety Department, the discussions took far longer to organise than expected. Early problems occurred in gaining access to certain departments, whilst permission from others was tardy in arrival. Eventually volunteers were taken from Planning, Finance, Meals on Wheels and Window Cleaners.

Obtaining the required number of cyclists proved to be the next obstacle. Three departments returned twenty five volunteers; all of whom drove but only two who also cycled. Thus three discussion groups were held with between six and twelve respondents in each. It is important to view the term 'volunteer' somewhat loosely in this context. Because of support for the discussions by their superiors, the majority of those in two departments were 'volunteered' for the research and their concern, or lack of it, is perhaps more typical of the general public's attitude than the real volunteers.

The fourth department returned eleven cyclists available for group discussion, and a further number who would take part in the questionnaire alone. This meant that virtually all the cyclists came from one department which has an active policy to encourage cycling in the Borough. In hindsight, participation in the questionnaire but not in the discussions was unsuitable for the methods employed, causing some difficulties and an interesting dimension to later proceedings.

## 3.2.5 DISCUSSIONS

Discussions were chaired by myself, and recorded on tape with the permission of the participants. After a brief introduction to the research, volunteers were invited to give their opinions and engage in conversation about a variety of topics related to driving, cycling and road safety. Subjects differed slightly between groups depending on responses, but broadly the same issues were covered in each, as indicated above in 3.1.2.

The cassettes were then transcribed (a transcription of one of the discussions can be found in Appendix 2), and the questionnaire compiled (Appendix 3). This had three parts:

a) factual information on age, sex, driving amd cycling experience, accident and violation involvement,

 b) a series of thirty-one attitude statements taken from comments of participants covering a range of related topics, scored on a five point scale,

c) a repertory grid with eleven elements and nine constructs. For ease of completion, it was arranged as nine individual grids relating to the nine constructs with a five point scale betweeen the opposing poles of the constructs.

Forty-six questionnaires were distributed in January 1987, thirty-six to participants of the group discussions. Thirty-six were returned. Of those who failed to return the questionnaire, two were 'long-term sick' and one reported to have left the employment. This gave an overall response rate of 78 percent.

### 3.3 GROUP DISCUSSIONS - RESULTS

### 3.3.1 DRIVING

Comments on why people drove were fairly predictable with the same comments reoccuring:

Privacy, convenience, independence.

For time really, we're all on tight schedules aren't we, if you waited for London Transport you'd never get anywhere.

Reliability. You can just get in your car and go, it's up to you to get to your destination.

People found driving generally enjoyable although challenging, and often expressed pleasure at the skills they had acquired through driving in London. It was recognised that because driving could be stressful, some people did not 'have the nerve', and might choose other forms of transport. The cost of motoring, from the expense involved in learning to drive to the purchase and running of a car were also thought to be prohibitive to some.

### 3.3.2 CYCLING

Motorists tended to think that people cycled mainly for reasons of fitness and finance. It was the cyclists, some of whom also drove, who mentioned the convenience, enjoyment, speed of travel and ease of parking, these comments relating directly to the reasons they chose not to drive. Some expressed ideological reasons for not using a car, commenting that bicycles are non-polluting and do not kill and injure thousands on the roads each year. Alongside the positive feelings by cyclists, some were very aware of the threat of death or serious injury in a cycling accident, 'You learn to live with the danger'.

Reasons for not cycling concentrated on the weather, the impracticalities of carrying heavy groceries or young children, and danger. Most motorists did not seem to consider cycling as an alternative means of transort for themselves. One group, the individuals in which nearly all had bicycles as children, had made in their eyes, the natural progression from the two wheels of childhood to four wheels of an adult.

## 3.3.3 CYCLISTS' ATTITUDES TOWARDS MOTORISTS

In general, cyclists had a very poor opinion of motorists. Numerous examples of aggressive drivers were cited, usually when challenged on bad behaviour. It was felt that they did not respect cycle lanes or care where they parked, and often failed to indicate. Many were thought to be totally unaware of the problems encountered by cyclists, leading to irresponsible behaviour which could result in a cyclists' injury, like opening car doors without checking first. Cases of harrassment to both men and women were reported; being sprayed with drinks, insulted and intimidated. Many traffic offences like speeding, illegal parking and drink/driving were perceived to be socially acceptable, exacerbating the cyclists' situation. There was a belief that the uneasy relationship between cyclist and motorist could easily end in aggression.

3.3.4 MOTORISTS' ATTITUDES TOWARDS CYCLISTS These were more ambivalent, it appeared that cyclists were given little thought. As one woman stated:

It's one of those things about driving a car, you feel so shut off from the outside that if you don't see a car there's nothing else big enough...unless there's a lorry.

Cyclists were not always seen and thus, often overlooked. Better safety precautions were suggested, using better lights and brighter clothing. They were thought to have poor road sense, and little or no knowledge of the rules of the road. This exasperated many who were somewhat selfrighteous of the training they had gone through to obtain a driving licence. Compulsory cycle training was mentioned, plus compulsory insurance, whilst the idea of a road tax was given an airing, with no consensus being reached. The response of one driver was to say, 'I don't think the two (cars and cycles) go together'.

Cyclists and motorists were also ready to criticise their own kind. All admitted that some were highly irresponsible and seemingly ignorant of the Highway Code. However, as the cyclists pointed out, an irresponsible cyclist usually harms only themself, the irresponsible driver is apt to harm others.

I personally find it frustrating because of this aspect, because of people's behaviour, one always has to assume the worst.

## 3.3.5 CHILDREN

Children playing or cycling in the streets were mentioned as a serious hazard by motorists, to some of whom the fear of injuring a child was very real. With the view that many children were far too young and unpredictible to be allowed on a bicycle, the following comments all came from women:

I think it should be made an offence for parents to allow their children out on the roads...and on certain roads like that one, I mean, you've got no chance of stopping.

My worst nightmare actually, is kids on bikes, or just running into the road.

Children shouldn't be allowed to go on the big roads.

## 3.3.6 TRAINING

This led onto training for cyclists, and all of those who spoke on the subject were in favour. 'Training for cyclists is essential' said one member of the cycling group, whilst there was a general feeling that it should be promoted and possibly introduced as a compulsory part of the school curriculum. How one trained adult cyclists was less clear. One or two suggested it should be linked to a licencing system, but the practicalities of this were felt to be limited. Again, motorists tended to compare the ease with which the cyclist could take to the road with their own 'struggle':

A motorist has to go through hell and high water to first of all get on the road. He's then got to pay all the taxes; road tax, insurance etc., and yet we have some perverse way of allowing small children to ride amongst us all. The British Driving Test was also criticised. Cyclists believed it neither taught awareness nor the notion of responsibility towards other road users, so that many drivers felt they had the 'unalienable right to go where they want'. They introduced the idea that some driving lessons, or part of the driving test, should be taken on a bicycle as a means of raising awareness.

This suggestion, though not overwhemingly supported by motorists, received some advocates as dissatisfaction with the driving test was widespread.

Hopeless. No night driving, no motorway driving. No parking.

It doesn't teach you to drive, it teaches you to handle the vehicle, after that the driving begins.

Comparisons were drawn with West Germany and Canada where the test was felt to be more stringent, and Ireland where, apparently, one has to carry a special plate on the car and restrict speed for a set period after passing the test. Special courses in specific driving situations were suggested, alongside use of simulation techniques. Whatever was taught in the lessons however, some felt one never drove again as one does for the test, and that learning came with experience. As one man commented:

The first thing you're going to do when you pass your test is bomb it, to see how fast your car goes.

With this type of attitude being freely expressed, perhaps the whole ethos of driving instruction needs to be examined.

### 3.3.7 ENFORCEMENT

Attitudes towards the police differed remarkably, with a range of views in all groups. In general, cyclists felt the police spent too much time on trivial cycling offences rather than dangerous motoring offences which could prove life threatening. However, the following comments taken from variouus groups illustrate the divergence of opinion:

The way the police can fine you on the spot is a liberty. If they dislike your face...

They've got too much power now, use(d) to give you a caution but the book's straight out now.

I think any devious method at all that they can come up with (is justified).

There was discussion in one group on the use of unmarked cars, automatic cameras and speed sensors, all acknowledged as commendable. The point was also made that more traffic police were needed, and that if government felt strongly enough about the issue, resources could be found.

Traffic Wardens were viewed with animosity when discussion of their role arose, since parking is a particularly thorny problem for London drivers. There was some feeling that as taxes were already paid by motorists, they should be permitted to park as they wished, within reason, facing little restriction. The policy of charging inner city residents for parking permits was also mentioned, a cause much comment and dissatisfaction since of suburban residents were not subject to the same penalty. Not suprisingly, the parking issue was of less consequence to the cycling group, although irresponsible parking was recognised as a problem.

## 3.3.8 SPEED

In built-up areas, speeding vehicles were gravely disliked by cyclists. Regarded as a great hazard, the consensus was that more effort should be put into slowing traffic down, perhaps through the use of cobblestones and road humps. In comparison, many drivers did not feel that speeding in residential areas was that hazardous. Most conceded that they often drove over 30mph in town to 'keep up with the traffic', justifying this by suggesting it could be just as dangerous going slowly as it was to go fast. For whom, was unspecified.

For most drivers, speeding was a phenomenon of the motorways; perhaps because they were then threatened by larger, faster cars, trucks and coaches. In effect, the driver in a small car on the motorway becomes the vulnerable user. Again, extremes of opinion could be found to illustrate the range of attitudes:

Speed limits are too low. They're making all these faster cars but it's still only 70.

whilst in a discussion of the speeds that cars can attain:

It seems ludicrous to produce cars which can go at that speed.

## 3.3.9 DRINK/DRIVING

Attitudes to this also differed widely. The cyclists were very aware of the hazards posed to them by drunk drivers, with several saying that if out in the evening, they would try to ensure they were home before closing time, to avoid cycling during the 'drinking hours'. One cyclist/driver explained that if he were drinking during the evening, he would take his bike rather than car knowing that if he had an accident on the bike at least he would harm only himself. Amongst drivers, comments ranged from:

You should never drink and drive, you might spill it!

hopefully said in jest, to the following:

I don't think there's anything wrong with one... We know it's wrong but we all do it... The minute they're pulled up for drink/driving they should have their licence taken off them, not wait till they go to court and find out if they're guilty. If you drink/drive, you deserve to lose it.

Disgust at the low level of penalty imposed for this particular crime was also expressed, as illustrated:

You can kill someone on the roads for two hundred quid!

## 3.3.10 ENVIRONMENTAL MEASURES

Cycle paths received support from all groups. Cyclists wanted more on main roads which could offer the most direct and quickest journey to ones destination, whereas their personal security on some back street routes was thought to be less than satisfactory. Drivers tended to prefer paths which removed cyclists from the main carriageway completely, advocating separation. They viewed the removal of cyclists from the road as one less hazard to contend with. Nevertheless, the following were expressed:

It's either the pedestrians or the car drivers. There isn't a place for them (cyclists) really, not in London traffic.

There's bus lanes already. There's not enough room to put cyclist lanes.

Wider environmental and engineering measures found favour with cyclists, particularly if they involved the restriction of vehicle speeds. Although some drivers were sympathetic, the overall feeling was that they would not want any measures implemented which might cause inconvenience or hinder ease of access. This was especially so of those for whom driving was an integral part of their employment.

## 3.4 GROUP DISCUSSIONS - INTERPRETATION

Any interpretation of the discussions is necessarily subjective as content analysis has not been carried out, but this does not detract from their importance. Because of their loose structure, they offered the one opportunity in the Camden Study for people to freely voice their opinions on a variety of topics related to driving and cycling.

After initial reticence, the majority of respondents spoke openly in three of the four groups, with some interesting dialogue between those with opposing views. In only one group did the discussion prove difficult to motivate, and was thus concluded prematurly within three-quarters of an hour; in contrast to the others which lasted a full hour and could have continued had time been available.

The reasons for this lack of enthusiasm have been speculated upon. Since those in the group were 'volunteered' rather than 'volunteers', it would appear that the subject matter held little interest for them and was rarely considered. Perhaps not suprising for a group of men, predominately in their twenties. Additionally, it should be remembered that I led the discussion groups. It is probable that being a woman had some effect on the reactions of those participating, especially in two of the groups: that mentioned directly above, and one other where the effect was felt to be favourable in eliciting frank and open conversation.

Those who described themselves as cyclists but also drove, were stongly allied to the cyclists' point of view, and all came from one department. Motorists who also cycled, of whom there were only two, participated in the motorists' discussion groups, and were less outspoken in their condemnation of drivers. This may have been because they were not in a group sympathetic to their experiences as a cyclist, and felt less free to air their grievences.

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ASTON UNIVERSITY LIBRARY AND INFORMATION SERVICES It was interesting to witness the behaviour of those in the groups. Some were quite domineering with strong opinions, others who were less confident of talking in a group, but would contribute if invited to join the discussion. At times there was heated debate, at others great hilarity over a certain comment. Two incidents in particular are worthy of note.

During discussion of whether or not cyclists should pay road tax, a very noisy and at times, personal argument broke out between three participants. Since none of those involved were cyclists and had shown limited enthusiasm for the discussion, it seems likely that the argument took place more through personal animosity (one of whom had already been baited on an earlier occassion), than through a deepseated commitment to either view.

An example of the power of peer group pressure was also observed in one group. Some respondents made very forceful and constructive comments about drink/driving, whilst implying that two of those present were guilty of the offence; whether convicted or not being unclear. After much laughter and giggling those in question, looking extremely sheepish, acceptepted the necessity and right of the law on this issue, to the obvious satisfaction of the others. Whether this experience would prevent them from drink/driving in future it is, of course, impossible to say. But it is suggested that their discomfort at the hands of their fellow employees will not be forgotten for some time.

In general, the tone of the discussions suggested that women were more concerned than men with road safety, being more aware of the problems and hazards encountered. Difficulties for pedestrians, the dangers posed for and by children playing in the streets or on bicycles were all mentioned, plus the aggressive stance of many drivers. Women drivers were particularly outraged by aggressive men who drove much too close to the car in front and too fast

for conditions, whilst female cyclists talked of the verbal abuse and harrassment to which they were often subjected.

One was left with the impression that some young men, whether driver or cyclist, were more reckless and perhaps less caring for themselves. Unfortunately, this sample contained only two men over the age of forty, both of whom were interested in the subject. Thus comparisons between them and their younger counterparts could not be made. It was mainly those in their early twenties who displayed more negative traits. It remained to be seen whether differences in attitudes would be apparent according to mode of transport, sex or age.

### 3.5 QUESTIONNAIRE RESULTS - PARTS A AND B

The analysis of the first two sections of the questionnaire was conducted manually, and confined to the calculation of individual and group means for each item. As the sample size was so small and unrepresentative, a more detailed analysis was not thought to be necessary.

The total number of respondents was 36, 22 women and 14 men. Table 3.1 shows the age distribution, with over 50 percent of the sample under 30. It was immediately evident that cyclists and drivers are not discrete categories, as the discussions had indicated.

TABLE 3.1 Age distribution of respondents

AGE	U25	25-29	30-39	40-49	50+	U/K
NUMBER	5	14	11	З	2	1

TABLE 3.2 Cycling and driving frequency of respondents

	Number	5 X or more per week	1 to 4 X per week	less than once per week
DRIVER	31	18	6	7
CYCLIST	20	8	6	6

N = 36

15 (42 percent) of respondents both drove and cycled, whereas only 5 did not have a driving licence. Principal forms of travel were as follows:

car or	van	18
bicycle	e	8
public	transport	10

Since half the sample drove in the course of their work, this accounts for the very high car usership figures, especially amongst women. 4 of the 5 unable to drive cited public transport as their primary mode of transport.

### 3.5.1 ACCIDENTS AND TRAFFIC OFFENCES

Few incidents of traffic offences or accidents were reported so they are dealt with individually. Two traffic offences were recorded: one by a motorist with a bald tyre, the other a cyclist who went through red traffic lights and received a £10 fine. Accidents were more common with five respondents, all cyclists, detailing nine incidents between them. None were reported to be serious but serve to highlight the vulnerability of the cyclist.

A London Transport bus forced me onto a high kerb and I sprained my ankle in an attempt to stay on.

The driver of a parked car opened the driver's door when I was passing. I went over the door into the road and was just missed by other traffic.

I was knocked off my bike by cars entering side streets and car drivers not looking where they were going. (Cyclist involved in 4 accidents)

Car pulled out of turning without looking and I had to swerve to avoid hitting another stationary vehicle.

From the above quotes it is clear where the cyclists apportion the blame for their accidents. Anyone involved in several incidents over a five year period however, should also be examining their own behaviour.

### 3.5.2 ATTITUDE STATEMENTS

Turning to the attitude statements, many differences were slight and varied in magnitude of agreement or disagreement with a statement as shown in Table 3.3, ie., all means for that statement lying between 1 and 3 (agree strongly and unsure) or 3 and 5 (unsure and disagree strongly). Male and female scores were very similar, but substantial differences were apparent depending on mode of transport. Because of the small number of respondents involved and their unrepresentativeness, statistical analysis to determine whether differences were significant were not undertaken.

Cyclists do not belong on city streets

Drivers fell between 'not sure' and 'disagree', cyclists and especially cyclist/drivers were extremely close to 'strongly disagree'.

If cyclists want more facilities, they ought to pay road tax

A score of mild agreement from drivers, a vehement rejection by the five cyclists and a 'disagree' from those with dual transport.

Private cars should be banned from city centres

This produced mild agreement from driver/cyclists, strong disagreement from drivers, and 'not sure' from cyclists. Women tended towards stronger disagreement than men.

Cyclists are one of the biggest hazards on the road

Agreement to this statment by drivers, disagreement by the other two groups.

The driving test is not strict enough

Drivers, cyclists and women veered towards disagreement, driver/cyclists and men towards agreement.

Cyclists should ride close to the kerb so as not to get in the way of motor vehicles

Agreement from drivers and women, disagreement from driver/cyclists and men. Cyclists unsure.

Where a cycle path is available, cyclists should have to use it

All in agreement with this statement, but whereas drivers strongly agreed, those who also cycled were much closer to the score of 'not sure'.

There should be more environmental measures to slow down and restrict traffic

Drivers were unsure veering slightly towards disagreement. Cyclists agreed, whilst driver/cyclists were in strong agreement.

Adult cyclists cause most of the accidents they are in

Drivers tended to agree, cyclist/drivers disagreed and cyclists were vehemently opposed.

The next two statements were greeted with a higher score of disagreement by those who both drove and cycled, than by those who just drove;

The traffic police have too much power Speed limits are too low
whereas they returned a higher score of agreement than 'drivers only' to the following four statements:

Half the time motorists just don't see cyclists It's easy to feel really cut off from the rest of the world when driving There should be more cycle lanes on main roads

Drivers do not consider other road users enough.

Meanwhile, drivers agreed more than did other groups with the next two statements :

Cyclists should be trained before they are allowed on the roads,

The car is one of the most dangerous weapons about

Because the cycling only group was so small, slight variations in means compared with other groups have not been noted. But for the following statements, differences were more marked. For the first three, the two driving groups were in virtual agreement; favouring the statement. Cyclists were unsure but substantially more favourable than other respondents towards the idea that prospective drivers should have some of their driving lessons on a bicycle.

Random breath testing should be allowed Cyclists should be insured

It is up to the cyclist to ensure they can be clearly seen

People should have some of their driving lessons on a bicycle to see what it's like for the cyclist.

Group responses to the attirude statements. TABLE 3.3

Mean scores categorised by sex of responsent and mode of

transat		MEA.	N SCORE	PER GROU	۵.	
	1 = ag	MALES F	RMALES	- disagre	e strong	Ly DPTVEP
ATTITUDE STATEMENTS RESI	ONDENTS			AINO	ATNO	CYCLIS
The traffic police have too much power	3.5	3.57	3.45	3.0	3.4	3.86
You should always keep to the speed limit, regardless of how fas	+					
the other traffic is going	2.77	3.0	2.62	2.75	2.8	2.8
Half the time, motorists just don't see cyclists	1.82	1.7	1.9	2.27	1.4	1.43
It's easy to feel really cut off from the rest of the world when						
driving	2.82	2.5	3.05	3.06	3.2	2.23
Random Breath Testing should be allowed	2.26	2.07	2.38	2.25	3.2	2.0
There is no need to indicate unless other motor vehicles are						
around	4.0	4.0	4.0	3.61	4.2	4.07
Cyclists should be trained before they are allowed cn the roads	1.91	1.86	1.95	1.5	2.6	2.21
Cyclists do not belong on city streets	4.23	4.36	4.14	3.63	4.6	4.79
If cyclists want more facilities, they ought to pay road tax	3.43	3.57	3.33	2.75	4.6	4.0
Cyclists are second class citizens	4.5	4.38	4.56	4.29	4.4	4.79
People should have some of their driving lessons on a bicycle, t	0					
see what it's like for the cyclist	2.74	2.93	2.62	3.0	2.2	2.71
Speed limits are too low	3.64	3.42	3.77	3.44	3.4	3.93
Private cars should be banned from city centres	3.47	3.07-	3.73	4.25	3.2	2.66
As cyclists travel so slowly, it is all right to nip in fromt of						
them at junctions	4.25	4.28	4.23	3.75	4.4	4.66
There should be more cycle lanes on main roads	1.66	1.86	1.54	2.0	1.2	1.46
Cyclists are one of the biggest hazards on the road	3.08	3.14	3.05	2.13	4.2	3.93

	MEAN SCORE PER GROUP	e strongly 5 = disagree strongly MLES FEMALES DRIVERS CVCLISTS DRIVED/	ONLY ONLY CYCLIST	57 3.23 3.37 3.25 2.53	.07 2.9 3.37 3.2 2.47		46 2.73 2.4 3.2 3.6	57 2.5 2.13 2.8 2.8	21 2.05 2.5 2.0 1.73	43 1.9 1.37 2.4 2.86	64 1.95 1.56 3.0 1.8		77 2.5 3.07 2.2 1.47	78 2.55 2.62 2.4 2.93	07 4.45 4.19 4.6 4.34		07 2.64 3.06 2.6 2.66	93 4.14 4.31 4.0 3.73	21 1.77 1.69 2.6 2.06	21 3.77 2.81 4.6 4.0	93 1.9 1.87 1.8 1.93
		= agre	STN	7 2	2 3		3	3 2	1 2	1 2	0		3 1.	4 2	4.		e	2	4	ີ. ເບ	1 1.
itude	undent	AL	ESPONDE	2.9	2.9	ty .	3.0	2.5	2.1	2.1	1.8		2.2	2.6	4.3		2.8	4.05	1.9	3.52	1.9
TABLE 3.3 contd. Group responses to the att	statements. Mean scores categorised by sex of respo	and mode of transport.	ATTITUDE STATEMENTS R	The driving test is not strict enough	It is wrong of manufacturers to produce cars which can go so fas	Cyclists should ride close to the kerb so as not to get in the w	of motor vehicles	The car is one of the most dangerous weapons about	Drivers do not consider other road users enough	Where a cycle path is available, cyclists should have to use it	Cyclists should be insured	There should be more environmental measures to slow down and	restrict traffic	I would not cut in front of something bigger than my vehicle	Cyclists belong on the pavement with pedestrians	The driving test should include written questions with multiple	choice answers	It's okay to have a drink or two before driving or cycling	It is up to the cyclist to ensure they can be clearly seen	Adult cyclists cause most of the accidents they are in	I think I am a good driver/cyclist

Several attitude statements produced the type of result one would expect, with fairly predictible scores given the limitations of asking questions which have a socially preferable answer. Two which received similar scores were of particular interest, however, in view of current debates concerning their subject matter.

Cyclists belong on the pavement with pedestrians

received widespread disagreement whilst:

The driving test should include written questions with multiple choice answers

received a more ambivalent 'not sure' towards 'agree'.

It is probable that differences between the mean scores for men and women were due more to the distribution of cyclist/drivers than sex. The proportion of drivers to driver/cyclists was virtually reversed between the sexes; thus female scores tended towards the 'driver only', and male scores towards 'driver/cyclists.

TABLE 3.4 Mode of transport by sex of respondent

	Drivers only	Cyclists only	Cyclist/ Drivers	Number
FEMALE	11 50%	4 18%	7 32%	22
MALE	5 36%	1 7%	8 57%	. 14

### 3.6 QUESTIONNAIRE PARTS A & B - DISCUSSION OF RESULTS

It is necessary to clarify why the group containing those with a dual transport mode was often more strongly opposed to the driver only group than was that containing cyclists alone. The small size of the latter has been stressed, and in addition, 4 of the 5 cyclists used public transport as their principal form. Only one cycled daily. In contrast, the cyclist/driver group contained 7 respondents who cycled daily, plus another 3 who cycled between 1 and 4 times a week. Thus, they had greater experience and as a result, stronger feelings about the subject under review. Perhaps those who both drove and cycled were also more aware of the dangers and problems encountered on the roads.

Attitude statements indicating the greatest difference between drivers and those who also cycled, were those relating to the status of the cyclist and bicycle as a form of transport, and the use of practical measures to limit car use. Cyclists were seen as a hazard by many drivers; untrained, responsible for their accidents and a danger to themselves and others.

During discussions, traffic restraint was considered with This was bourne out in analysis, since mixed feelings. cyclists tended to be more sympathetic than drivers alone towards such measures. It should be remembered that the majority of cyclists in this study were drawn from a department actively pursuing a policy of road closures and Yet given the ease of travel which traffic management. such schemes afford the urban cyclist, it seems probable that widespread support from potential users would be forthcoming. For the motorist, however, these schemes place limitations on their previous freedom of movement, possibly adding to journey times. The drivers in this study seemed reluctant to, or at best unsure about rescinding their unresticted access to the road network for the benefit of others.

Drivers were unsure as to whether cyclists belonged on city streets although opposing vehemently the idea that private cars should be banned from city centres. They were in strong agreement that cyclists should have to use cycle paths when they are available. This has consequences for cycle planning and is discussed later in the report.

Where traffic enforcement arose, some individual scores from drivers indicated strong opposition towards traffic police. Interestingly though, random breath testing received widespread support amongst drivers; a practice the police have traditionally been reluctant to adopt for fear of harming their public image. The Institute of Alcohol Studies has since conducted a survey on the same issue and found much support throughout the country for the implementation of RBT (NOP Market Research Ltd. 1987).

All groups agreed that cyclists should be trained before being allowed on the roads, but the magnitude of agreement differed, with those who just cycled veering towards 'not Conversely, the two cyclist groups felt that the sure'. driving test should be stricter and contain multiple choice questions. Since many of these also drove, the introduction of a harder test, plus a theoretical section may not prove unpopular. Likewise, a training programme for all cyclists, not just children, would not automatically be rejected by the cycling public, although the implementation might prove problematic.

This would certainly be popular with drivers, some of whom appeared to barely tolerate cyclists for using the roads without being taxed, insured, trained, or knowledgable of the Highway Code. If facilities were to be installed for the cyclist, this group of motorists believed cyclists should pay road tax, to cover what they saw as additional expenditure, rather than reallocation of resources.

Overall, the driving/cycling group were more sympathetic than any other group to the issues under investigation. No doubt their employment strongly influenced their interest and opinions on the subject. However, it is also possible that as both drivers and cyclists, they were more aware of their shortcomings and the problems they posed to other users, although nearly all respondents had a very high opinion of their cycling or driving ability.

#### 4. REPERTORY GRID - RESULTS AND DISCUSSION

#### 4.1 INTRODUCTION

Results and interpretation of the data obtained from the repertory grid section of the questionnaire are detailed in this chapter. It was the first time that both I and the respondents had encountered the technique, and it proved to be an interesting exercise. The final part of the chapter examines the use of the repertory grid as a methodology in social research. The subsequent discussion considers respondents' reactions to it, the problems faced, the possible reasons for these and their future avoidance.

## 4.2 ANALYSIS OF THE GRIDS

All thirty-six respondents who returned their questionnaires had made some attempt to complete the repertory grid (Section C). Four had completed only two or three of the nine constructs, whilst one other respondent made various ommissions throughout the grids which rendered them invalid. This left thirty-one respondents' grids for analysis.

Construct 4, 'a challenge/not a challenge', caused difficulties in interpretation for four respondents, who left it incomplete. This construct was therefore omitted from the computer analysis of their grids. Similarily, one respondent failed to complete columns relating to the element 'car advertising'. This element was also omitted from this respondent's analysis. As a result, computer analysis was carried out at the Management Centre at Aston using Flexigrid on a total of thirty-one grids:

26 consisting of 11 elements and 9 constructs, 4 consisting of 11 elements and 8 constructs, 1 consisting of 10 elements and 9 constructs.

During discussion of the methodology it was noted how the repertory grid is not a means of compartmentalising people into specific categories. Nor is it a method for looking at people 'en masse', but at considering the individual as a discrete unit. Thus, averages and percentages are of limited meaning, and generalizations to a wider population cannot be made. But there is some virtue in looking at the grids overall to identify certain patterns within the responses. The discussion considers the group as a whole, by transport mode; driver only, cyclist only and driver cyclist, and also at individual scores within those groups to identify extremes and contradictions, as well as similarities.

Three types of analysis were carried out on the thirty-one individual grids using Flexigrid.

1. Correlations betweeen constructs, showing the number of times pairs of constructs correlated significantly.

2. Principal Components Analysis (PCA), conducted on the constructs, identifying a number of different factors in the responses, and describing relationships between factors in mathematical terms. By carrying out PCA on the constructs, the resulting factor scores relate the elements to the principal components and can be used as examples of the principal components.

3. Cluster Analysis (FOCUS), which looks for the strongest groupings within the grids in view of the similarity of responses, separately for both constructs and elements, and thereby creates a 'tree', drawing the various items together into identifiable clusters.

The following definitions of PCA and FOCUS are more succinct:

PCA searches out the greatest variation in the grid and imposes mathematical axes on these.

FOCUS relies on building up a series of hierarchical groups based on the strongest association of the matrix. (Easterby-Smith 1981)

It is necessary to state the maximum number of components required in PCA. These are identified in order of importance, and those appearing later are generally of limited significance. A maximum of three were requested in this analysis, and a substantial variation in the size and strength of components was apparent.

## 4.3 CORRELATION OF CONSTRUCTS

Correlation matrices for the thirty-one respondents are in Appendix 4, whilst the range of correlations between pairs of constructs can be seen in Table 4.1. For a correlation coefficient to be significant at the 5 percent level, .549 or higher was required. To be significant at 1 percent, a coefficient of .715 or above was necessary. A wide variation in response is apparent, with a number of construct pairings recording both significant positive and negative correlations at the 5 percent level or above as follows:

necessary/unnecessary with:	11.0	+-	766
socially acceptable socially unacceptable	+1.0	to	-700
enjoyable/unenjoyable	+859	το	-575
important to me/unimportant to me	+911	to	-589
always a hazard/not a hazard with:			
socially acceptable/socially unacceptable	+711	to	-939
important to me/unimportant to me	+798	to	-868
a challenge to me/not a challenge to me with	th:		
enjoyable/unenjoyable	+638	to	-962
responsible/irresponsible	+601	to	-836
important to me/unimportant to me	+583	to	-699
acceptable to me/unacceptable to me	+782	to	-822
socially acceptable/socially unacceptable ;	d+b.		
socially acceptable socially unacceptable s	1000		EOI
responsible/irresponsible	+903	to	-581
acceptable to me/unacceptable to me	+987	to	-638
responsible/irresponsible with:			
important to me/unimportant to me	+817	to-	-654

																		ble .			.mportant
												table			le			responsi	817	-654	1.000
												y accep			enjoyab	926	167		878	-466	896
									nge	1		sociall	836	-414		983	-581		987	-449	987
Study.						hazard			challen	370	-828		638	-962		601	-836		583	-669	782
he Camden			y			always a	896	-326	ίΟ.	171	-939		-072	-792		157	-929		798	-868	167
nts in t			necessar	236	-963		364	-873		1.000	-766		859	-575		970	076		911	-589	987
articipa		relaxing 926 -152		371	-913		408	-863		948	-232		955	132		905	-495		885	-510	940
thirty-one p	CONSTRUCTS	necessary		always	a hazard		a challenge			socially	acceptable		enjoyable			responsible			important	to me	acceptable

to me

-419

-301

230

-638

-822

-942

-177

-031

to me

TABLE 4.1 The range of construct correlation coefficients for the

However, Table 4.2 shows the number of times pairs of constructs correlate significantly at 5 percent or less. Thus, despite the wide range of corrrelations for given pairs of constructs it can be seen that although, for example, the pairing 'socially acceptable:responsible' has a range from +987 to -638, the data from twenty-eight respondents produced a significant positive correlation, twenty-five of these at the 1 percent level. Only one respondent produced a significant negative correlation.

Likewise with the construct pairings 'socially acceptable: acceptable to me' to which twenty-six responents produced a significant positive correlation and only one negative, and 'necessary: socially acceptable' to which the data from twenty-four respondents produced a correlation coefficient positive at 5 percent, and only one a significant negative correlation.

The constructs 'necessary', 'socially acceptable', 'responsible' and 'acceptable to me' were construed in a very similar way by the majority of respondents; their data returning very high positive correlations with many at the 1 percent level. 'Responsible:acceptable' returned the highest number of positive correlations at 1 percent (26), whilst the pairing 'socially acceptable:responsible' returned the highest number of positive correlations overall at the 5 percent level or above (28).

Data referring to the construct pairing 'relaxing: enjoyable' also displayed a large number of positive corrrelations, twenty-one significant at the 5 percent level, seventeen of these at 1 percent. When in pairings with the constructs 'necessary', 'socially acceptable', responsible' and 'acceptable to me', both 'relaxing' and 'enjoyable' showed a high incidence of significant positive correlations. The occasional significant negative correlations of pairings involving these six constructs may be regarded as extraordinary. They represent the data from one respondent, a female 'driver/cyclist' who did not

TABLE 4.2 The number of times pairs of constructs correlate significantly at the 5 percent level

+ indicates positive correlations, - indicates negative correlations, the maximum number of correlations is 31.

CONSTRUCTS								
necessary	relaxing +13 - 0							
	I	lecessar	٨					
always	0 +	0 +						
a hazard	-15	-23						
			always	a hazard				
a challenge	0 +	0 +	+11					
•	- 7	-10	01					
				a challer	ıge			
socially	+16	+24	+ 1	0 +	2			
acceptable	0 1		-19	9 -				
					sociall	y acceptal	ole	
enjoyable	+21	+18	0 +	+ 1	+24	4		
	0 1	- 1	-18	91	0 -			
						enjoyable		
responsible	+15	+26	0 +	++	+28	+23		
	0	0	-24	9 -	- 1	0 -		
						re	esponsible	
important	+ 4	+ 4	00 +	02 +	+ 4	+ 8	9 +	
to me	0 -	- 1	- 4	0 1	0	0 -	- 1	
							important to me	
acceptable	+18	+27	0 +	+ 1	+26	+26	+26 + 5	
to me	0 -	0	-20	80		0 -	0 - 0 -	

perceive that what was 'socially acceptable' was also 'responsible' or 'acceptable to her'.

Data from the construct pairing 'a hazard:a challenge' produced eleven significant positive correlations at 5 percent, four at 1 percent. In pairings with other constructs, 'a hazard' was primarily negative: twenty-four significant negative correlations with 'responsible', twenty with 'acceptable to me', nineteen with 'socially acceptable' and eighteen with 'enjoyable'. Thus, practices which were responsible, enjoyable, acceptable to the individual and socially were not a hazard.

Paired with other constructs, data from 'a challenge' produced few significant correlations, the majority of these being negative. Similarly, 'important to me' appeared as a particularly isolated construct. It tended towards significant positive pairings but these were limited in number; the most being with 'enjoyable' at the 5 percent level. It is interesting that 'important/not important' should display a lack of either positive or negative correlations significant at 5 percent, suggesting that the issues under discussion were of limited consequence to respondents, perhaps issues which were rarely considered.

As a result of the correlations, two disticnt groupings can be observed. The strongest consists of the constructs 'necessary', 'socially acceptable', 'responsible', 'acceptable to me', 'relaxing' and 'enjoyable'. The second contains the constructs 'a hazard' and 'a challenge', whilst 'important to me' is largely isolated.

# 4.4 PRINCIPAL COMPONENTS ANALYSIS

The three tables which follow, Tables 4.3, 4.4 and 4.5 show the results of PCA on the contructs. Three principal components were requested, but in the majority of cases only two were provided as the first proved to be a remarkably strong component, often comprising over 60 percent of the total variance.

factor scores provided by PCA were used to give The examples of those elements which load most heavily either positively or negatively on each principal component. Thus, in Table 4.3, the first respondent was a male aged twenty-four, whose first principal component accounted for 52 percent of the variance and was made up of the constructs; 'necessary/unnecessary', 'socially acceptable/ socially unacceptable', 'enjoyable/unenjoyable', 'responsible/irresponsible', and 'acceptable to me/ unacceptable to me'. This component is labelled 'positive aspects of the traffic network'.

Elements which loaded heavily on this component in a positive way were 'driving a car' and 'cycle paths', those loading heavily in a negative manner were 'to drink alcohol before driving' and 'children playing on the streets'.

Respondents have been split into three groups; drivers only, cyclists only and driver/cyclists, and are listed in order of age.

Patterns in the responses can immediately be seen. The first principal component, labelled 'positive aspects of the traffic network' and common to all respondents, always includes at least some of those constructs which were identified in the correlation analysis earlier as being significantly positively correlated; i.e. constructs 'necessary/unnecessary', 'socially acceptable/socially unacceptable', 'enjoyable/unenjoyable', 'responsible/ irresponsible', and 'acceptable to me/unacceptable to me'. Construct 'relaxing/stressful' often appears in this less frequently the construct 'important to grouping, me/unimportant to me'. 'A challenge to me/not a challenge to me' is included only once, 'always a hazard/not a hazard' never.

analysed by constructs and illustrated by those sex of each principal component (PC): showing age and Principal Component Analysis: elements which load heavily on respondent, driver only group TABLE 4.3



age and sex of by Principal Component Analysis: analysed by constructs and illustrated principal component (PC): showing on each those elements which load heavily respondent, driver only group TABLE 4.3 contd.



construct

( ) reversal of

analysed by constructs and illustrated by those of each principal component (PC): showing age and sex Principal Component Analysis: elements which load heavily on respondent, cyclist only group TABLE 4.4



PC PC positive loading on uo negative loading high high ELEMENTS: \* 4 5% construct at CONSTRUCTS: \* significant to PC ( ) reversal of KEY

TABLE 4.5 Principal Component Analysis: analysed by constructs and illustrated by those elements which load heavily on each principal component (PC): showing age and sex of respondent, driver/cyclist group



by of those elements which load heavily on each principal component (PC): showing age and sex Principal Component Analysis: analysed by constructs and illustrated respondent, driver/cyclist group TABLE 4.5 contd.



# 4.4.1 DRIVERS ONLY

There is considerable variation in the number of times elements load heavily on the component 'positive aspects of the traffic network'. First, positive loadings. Every one of the twelve respondents in this category included 'driving a car', seven included 'cycle lanes', eight 'presence of the traffic police' and three 'car advertising'. Elements 'driving fast' and 'riding a bicycle' produced ambivalent responses. For two drivers 'riding a bicycle' scored positively high, for another two negatively high. Other high negative loadings were recorded for 'people failing to indicate' and 'to drive after drinking alcohol', (eleven responses each) and 'children playing in the streets' (six respondents).

The second and, where available, third component in the driver only group acounted for between eleven and twentysix percent of the total variance. These components were diverse character, sometimes containing a single in construct such as 'important to me', 'enjoyable' or 'acceptable to me'. Other components contained a number of constructs. For example, the elements 'heavy traffic' and 'riding a bicycle' were positively loaded whilst 'driving fast' and 'not indicating' were negatively loaded against the component 'right that we contend with'. 'Driving a 'heavy traffic', 'driving fast' and 'drinking car', alcohol' were positively loaded, with 'car advertising' and 'cycle lanes' negatively loaded against 'dangerous but important'.

# 4.4.2 CYCLISTS ONLY

There were only five respondents in this category but their principal components closely matched those of the previous group. Data relating to elements was unavailable in two cases, but in the remaining three the elements loading most heavily on the component 'positive aspects of the traffic network' were 'riding a bicycle' and 'cycle lanes' (three cases) and 'driving a car' (two cases). For two cyclists 'riding a bicycle' and 'people failing to indicate' were

loaded positively on the second principal component labelled 'important that I contend with'.

# 4.4.3 DRIVER/CYCLISTS

As before, the component 'positive aspects of the traffic network' was much in evidence. Main positive element loadings on this component were 'riding a bicycle' and 'cycle lanes' (nine respondents each), 'driving a car' and 'presence of the traffic police' (six and four respondents respectively). High negative loadings were illustrated by 'people failing to indicate' (eleven responses) and 'to drive after drinking alcohol' (eight responses).

For each respondent, the second and third principal components were again charactersied by the inclusion of the constructs 'important to me/unimportant to me' and 'a challenge to me/not a challenge to me'. Hence, principal components are labelled accordingly. 'Important that I contend with' was characterised by the elements 'driving a car' and 'not indicating' by one respondent, 'driving a car' by one other. 'Car advertising' was negatively construed in relation to the component. 'Cycle lanes' were deemed 'indispensible to me' by two respondents, whilst the 'traffic police' were alternatively regarded as a 'positive aspect of the traffic network', 'important to me', 'unenjoyable' and 'a challenge'.

4.4.4 LOADING OF INDIVIDUAL ELEMENTS ON THE CONSTRUCTS Using PCA it was possible to determine how often each element was significantly loaded in either a positive or negative direction against each of the nine constructs. Taking the eleven elements individually, differences between the three groups (drivers only, cyclists only and driver/cyclists) can be identified.

Proportionately more respondents in the 'drivers only' group perceived 'driving a car' to be relaxing, necessary, socially acceptable, enjoyable, responsible, important to them and acceptable to them than those in the other two groups.

More respondents in the 'driver/cyclist' category saw 'heavy traffic' as unnecessary, unenjoyable, unimportant and unacceptable to them than respondents in the other two groups. For cyclists only, it rarely appeared as a significant element against any construct.

More 'drivers only' recorded 'driving fast' as being always a hazard and socially unacceptable than other respondents. Proportionately many more 'driver/cyclists' recorded it as being unimportant to them; somewhat suprisingly given the accepted danger cyclists face from fast traffic. This perhaps illustrates the ambiguity of opinion many road users face when they commonly use more than one mode of transport. What is of danger to the cyclist may become acceptable to the driver.

Proportionately more respondents in the two cycling categories saw cycling as relaxing, necessary, socially acceptable, enjoyable, responsible, important and acceptable to them. For three respondents in the 'driver only' group it was neither socially acceptable nor necessary, whilst it was recorded as 'unacceptable to me' by one driver.

The 'presence of the traffic police' recorded many more responses from respondents who only drove compared with the others, loaded both positively and negatively against the This element was often included in the constructs. the traffic network', component 'positive aspects of although five drivers also regarded the traffic police as a challenge. A limited response was forthcoming from the This could reflect the difference in age other groups. between respondents; the 'drivers only' group returned an 24.4 and 27 for of 35.5, compared with average age 'cyclists only' and 'driver/cyclists' respectively.

Very few significant responses of any kind were returned for 'car advertising'. The highest number came from five respondents who drove and another four who also cycled. They negatively related it to the construct 'important to me/ unimportant to me'.

Proportionately more respondents who cycled and more 'driver/cyclists' construed 'cycle lanes' as part of the component 'positive aspects of the traffic network', but only marginally so. This indicates drivers' acceptabiltiy of cycle paths, even though they may appear less enthusiastic about cycling itself.

Virtually all respondents, regardless of transport mode construed 'people failing to indicate' negatively in relation to the component 'positive aspects of the traffic network'. This illustrates the perceived anti-social nature of the practice, although all vehicle users (and cyclists are included here) are guilty of it. Very few respondents from the two groups containing drivers regarded it as important to them, whilst two of the three cyclists did. It is interesting to note the same response was not forthcoming from those in the 'driver/cyclist' category.

All three cyclists and a very large proportion of those who only drove recorded 'to drive after drinking alcohol' to be significantly negatively loaded against the component 'positive aspects of the traffic network'. 'Driver/ cyclists' recorded fewer significant responses to this element; again perhaps a consequence of age difference and resulting life style.

Although 'children playing in the streets' was perceived to be less contentious than the previous two elements, proportionatley more drivers recorded the element negatively against the main principal component. To a cyclist, children playing on the road are not necessarily a hazard or unacceptable, but to a driver in a vehicle which can do fatal injury to a child, the perception is understandably different. Additionally, since most of

those in the 'drivers only' category drove in the course of their work, often around local authority housing estates and other residential areas, plus having children of their own, they would be more aware of the dangers children faced and posed to them as drivers.

'Parked cars' proved to be an issue of limited importance, returning few significant responses of any kind. Proportionately more respondents in the 'cyclists only' group recorded this element in a negative manner to the main principal component, but given the small number in this group one can make no generalisations. It is perhaps suprising that more respondents in the 'driver/cyclist' category did not construe the element in this way since in conversation with cyclists, parked cars and the associated dangers are often mentioned.

One final item of note relating to PCA is that not one element was significantly loaded either positively or negatively against the Construct 'always a hazard/not a hazard' by individuals in both cycling groups. Even the elements 'people failing to indicate' and 'to drive after drinking alcohol' were unrepresented.

## 4.5 FOCUS ANALYSIS

By analysing constructs and elements independently, clusters of similar items can be identified and drawn together. The primary, secondary and minor clusters of both constructs and elements do not necessarily relate to each other; therefore, the major construct cluster will not always be illustrated by those elements in the major element cluster. For example, it was seen earlier using PCA how 'driving a car' loaded heavily in a positive on the main principal component for direction all respondents in the driver only group. Using the FOCUS analysis, 'driving a car' became an isolated element unrelated to any other element cluster for one half of the

driver only respondents. Results obtained from this analysis can be found in Tables 4.6, 4.7 and 4.8. As before, they are organised into the three transport modes and listed by age of respondent.

### 4.5.1 DRIVERS ONLY

If 'driving a car' was the most frequent element isolate, 'important to me / not important to me' emerged as the most frequently isolated construct, by a total of nine respondents. Constructs 'always a hazard/not a hazard' and 'a challenge to me/not a challenge to me' were commonly reversed by the programme in order to be incorporated in groupings with other constructs. Using as an example the first respondent in this group, his main construct cluster consisted of 'relaxing', 'not a hazard', 'not a challenge' and 'enjoyable'. The second cluster contained 'necessary', 'socially acceptable', 'responsible' and 'acceptable to me', 'with important to me' as an isolate.

Since 'driving a car' is recorded as an isolate by half this category of respondents, it is interesting to note into which category 'riding a bicycle' belongs. Viewed as an isolate by two respondents it is found in clusters accompanied by 'heavy traffic' on seven grids, 'presence of the traffic police' and 'car advertising' on six, and 'cycle paths' on five. Four respondents also produced clusters linking this element to 'to drink alcohol before driving' and 'children playing in the street'.

# 4.5.2 CYCLISTS ONLY

The isolation of the construct 'important to me/not important to me' is immediately apparent. 'A challenge/not a challenge' also appears as an isolate on three occassions; indeed, the familiar groupings of constructs are much in evidence. The element clusters produced a slightly different pattern compared with that of the 'drivers only' group. Looking in particular at the elements 'driving a car', 'riding a bicycle' and 'cycle

paths', in four out of five cases they were placed in the same cluster. Cycling and driving were rarely linked to the more hazardous elements, of 'people failing to indicate', 'driving fast' or 'to drink alcohol before driving'.

### 4.5.3 DRIVER/CYCLISTS

These respondents displayed the same isolates and reversals of constructs as discussed earlier. Thus, both the constructs 'a challenge to me/not a challenge to me' and 'important to me/not important to me' were regarded as isolates by seven respondents, whilst in every case 'always a hazard/not a hazard' was reversed to enable it's incorporation into a cluster.

With regard to elements, the majority of respondents included 'driving a car', 'riding a bicycle' and 'cycle paths' in one cluster, with 'people failing to indicate' and 'to drink alcohol before driving' forming the basis of another. These were often accompanied in the cluster by 'children playing in the street' and/or 'heavy traffic' and 'driving fast'. FOCUS analysis: similarities between constructs which form identifiable clusters, driver only group and sex, and seperately, similarities between elements: showing age TABLE 4.6



TABLE 4.7 FOCUS analysis: similarities between constructs which form identifiable clusters, and seperately, similarities between elements: showing age and sex, cyclist only group



FOCUS analysis: similarities between constructs which form identifiable clusters, group and sex, driver/cyclist and seperately, similarities between elements: showing age TABLE 4.8



### 4.5.4 DISCUSSION

Before discussing the way in which the repertory grid was used, it will be useful to briefly reiterate the results.

All three analyses using Flexigrid: correlation of constructs, PCA and FOCUS, illustrated the strong grouping of a number of constructs which have been labelled 'positive aspects of the traffic network'. Other groupings related more specifically to factors which are perceived to be hazardous and/or challenging, and factors which are important to the individual.

Elements relating to these combinations of constructs vary considerably between individuals and in some cases, between the three transport groups, although structures can be identified. For example, proportionately more respondents in the 'drivers only' group load 'driving a car' positively against the component 'positive aspects of the raffic network'. Proportionately more respondents who cycle including those who also drive, load 'riding a bicycle' in this way. Responses to several items, such as 'heavy traffic', 'driving fast', 'car advertising', 'children playing in the streets' and 'parked cars' are very mixed in both PCA and FOCUS. This would suggest that many features which are present in the traffic network are treated in a fairly ambiguous way by road users. Even the vulnerable cyclist does not necessarily see 'driving fast' as a hazard to them. It would appear that other variables, such as the age of the respondent, are a great influence in their perception of traffic situations.

Using PCA, 'the presence of the traffic police' was significantly positively correlated at the 5 percent level or above to the component 'positive aspects of the traffic network' by eight respondents in the 'driver only' group, three in the 'cyclist/driver'category and none in the 'cyclist only' group. Significance tests between the groups were not carried out because the numbers involved in the collection of the data were so small and unrepresentative of a wider population. However, by

categorising respondents into age bands of 29 years and under, and 30 years and over, data from proportionately more older respondents than younger respondents positively correlated this element against the primary principal component. This suggests that age group may have an important role to play in determining responses on this subject.

## 4.6 THE USE OF REPERTORY GRIDS AS A METHODOLOGY

The majority of respondents in this study coped well with the repertory grid section of the questionnaire. But as in any form of self-completion questionnaire, the respondents will usually find some way of commenting on the questions, giving responses which fall outside the required range of answers, and providing information which they feel the researcher should want. One section of this sample were very antagonistic towards the grid and critical of the content.

It was noted earlier how the method was originally used in clinical psychology and is thought to be most successful when the client devises his or her own elements and constructs, so that the grid has real meaning for that person. In this study, both elements and constructs were provided. Thus, there was an increased possibility that items chosen for inclusion on either matrix on the grid would fall outside the range of convenience; in other words, fail to have meaning when used in a certain context. This was a particular problem, given that a single questionnaire was constructed from the results of four group discussions.

It was shown above how the construct 'a challenge /not a challenge' and the element 'car advertising' both caused problems for respondents, who could not relate them to other statements. The latter referred to the advertising of cars on television, in newspapers and magazines as

highly desirable and prized commodities, sold on their performance and speed. This was one of the issues raised during discussions. In later talks with the representative of one group, it transpired that some respondents were confused as to what 'car advertising' meant, reading it instead, as the advertising on cars during motor sports.

In hindsight, it would have been possible to eliminate these problems by constructing the grid to exclude or explain such items. Yet to other respondents they did have meaning and could be associated with other variables.

A further consideration is that not all of those who answered the questionnaire took part in the discussions. For them, Sections A and B would have been straightforward acceptable, Section C possibly ambiguous. and Unfortunately, although the return envelopes were marked individually so that it could later be identified whether or not the respondent had also taken part in the discussions, some respondents went to great pains to so that identification was obliterate the markings, impossible. This, despite confidentiality etc., being stressed in an earlier letter to all those participating. Thus, it was not possible to determine whether those experiencing difficulty had participated in the discussion groups, or were new to the exercise.

Apart from the wording of the grid and confusion of those not present at discussions, there may have been other reasons for the antagonism. Those critical of the method were employed in work related to the subject of the questionnaire. They knew something of the issues raised and, it seems, were unwilling to give a quick and ready answer to the questions. By looking too deeply into the constructs, they could not provide an instant decision based on their own feelings as they knew 'too much' professionally about the subject. Similarly, since the majority of these respondents both drove and cycled, the feedback suggests that they had an ambivalent attitude towards the grids because of their dual transport use. Although they were asked to:

Place a tick in the box you feel is the closest to your opinion for each phrase on the scale

in reality, giving one's opinion was a difficult task to perform. This perhaps illustrates our attitudes as road users towards others. Depending on the mode of travel employed at any one time - be it car, bicycle, or as a pedestrian - expectations, and what is regarded as permissible behaviour can alter for the individual. To state an opinion can be problematic, because that opinion will change relative to the situation.

To those who have some knowledge of survey research and questionnaire design, the appearance of the repertory grid when laid out for self completion can be daunting, whilst what the research is attempting to determine remains In the standard format for attitude statements unclear. it is fairly easy to monitor ones response and give the type of answer one feels may be required. This is especially so in questions which have socially acceptable answers, where certain respondents may be inclined to answer statements in a particular way, rather than providing their personal opinion. When answering the repertory grid, the respondent is unable to judge the outcome of the analysis. The exercise may prove disconcerting as control over the output by the respondent is lost. It is possible that this aspect of the repertory grid caused some disquiet.

It is felt that the repertory grid proved a useful methodology for looking at issues concerned with attitudes. It may appear rather devious when used in this fashion, because in a self-completion format the researcher is

unable to explain fully the processes at work during completion of the grid. An alternative would have been to hold a second series of group discussions after analysis, to talk through the issues arising and explain how it worked in comparison with Section B. Yet it did provide information of a quantifiable nature on the perception of respondents towards the acceptability and responsibility of certain traffic situations, beyond that obtained from attitude statements alone.

# 4.7 CONCLUSION

This study did not aim to be representative of the driving and cycling public, and no generalisations will be made. As an exploratory study, a number of factors have emerged which indicate a divergence of interest between cyclists and motorists, particularly in relation to the possible use of engineering measures to slow down and restrict traffic access, and perceptions of cycling in terms of acceptabilty and responsibilty.

These early differences suggested that a further study exploring some of the issues would be of interest. Using a larger and more representative sample, a wider survey was planned for the following reasons:

a) to test for levels of significance where differences in attitude seem to be apparent,

b) to determine whether differences are due to mode of travel, age, sex, or a combination of variables,

c) to take special notice of the divergence in attitudes between driver only and driver/cyclist respondents,

d) to identify similarities in attitudes.

Such a study should indicate areas of agreement and disagreement between two groups which would appear to have conflicting interests. It should identify where important differences in opinion occur so that methods for narrowing the gulf may be suggested, and signify areas of agreement which may be used as a base on which to build greater acceptance.
# 5. METHODOLOGY OF THE MAIN SURVEY

# 5.1 CHOICE OF METHOD

The Camden Study produced some interesting results, suggesting that there were measurable differences in opinion between cyclists, driver/cyclists and drivers. These differences were not confined to the attitude statements alone; indeed, the repertory grid exercise highlighted certain issues which the more straightforward approach was unable to detect. Hence the use of repertory grids as a validating methodology in this research proved very useful.

To continue this investigation into drivers and cyclists there were two obvious paths which could be taken. First, to continue with the group discussions and repertory grids concentrating on the in depth and unrepresentative views of various small samples. Or second, to enlarge the study by obtaining a larger sample and opting for information of a more quantitative nature.

Both approaches had a number of factors for and against their choice. Repertory grids are time consuming in their construction, application and analysis. One cannot generalise from the results in the way that one may with traditional survey methods, and the practicalities of finding samples can be problematic. Other drawbacks have been discussed in some detail above. Whilst dispensing with in depth interviews, they provide a degree of qualitative information not usually obtained through large scale survey methodology. Additionally, the group discussions provided a wealth of detail, remarkably rich in comparison with the statistical techniques used to analyse large numbers of questionnaires.

The alternative direction would involve the design and piloting of a questionnaire that could be administered to large numbers of people in order to obtain quantitative information which could be readily analysed by computer,

using one of the statistical packages available. This type of survey has some obvious disadvantages, notably in the depth of information which can be gleaned from given questions, the problems of bias etc., which will be dealt with in more detail below. However, their greatest advantage is that they may be used to provide generalisations as to the attitudes and experiences of certain groups of respondents, which may be chosen on any number of criteria.

This final point was the deciding factor in choosing the ultimate direction of the project. However interesting the views of various individuals regarding the question of road safety and their attitudes towards cycling and driving, the sponsoring organisation required figures with which a particular case may be presented to the numerous bodies concerned in the field. Large scale survey methodology permitted this; at least to the extent that some generalisations to a wider population could be made. This was not the case with the highly interesting but totally subjective repertory grid.

Thus the decision was made to obtain a large sample and to carry out a quantitative survey using a questionnaire. Again, a choice had to be made regarding the type of questionnaire and how it was to be administered. Self completion or interview, semi-structured or structured, postal or some other method of distribution? For reasons of time, limitations on financial and other resources, and the sheer practicalities of reaching the greatest number of people; a fully structured self-completion postal questionnaire was the final result.

# 5.2 SAMPLING

As with the earlier study, the target population was identified as cyclists and motorists, while acknowledging that there would be a large overlap of respondents who used both modes of transport. Since it was intended to carry

out a postal questionnaire, a large sample was required to ensure a correspondingly high return. It was unlikely that the resources available would permit following-up those who failed to respond to the initial approach, thus maximum response was necessary.

It is generally accepted that the response rate from postal questionnaires is in the region of 10 to 20 percent. These figures can be improved upon by use of follow-up, or if the sample is chosen from membership lists of organisations or those who are known to be interested in the subject of the survey; rather than for example, the electoral register or other data base of the general public.

As the survey was concerned with cyclists' and drivers' attitudes, it made sense to approach organisations for a sample who catered for the needs of these groups, or held data on the target population. It was felt that a sample of 2000 people, consisting of 1000 cyclists, and 1000 motorists, (although in reality, many of those cycling would also drive and vice versa), should provide a useful response on which some meaningful results could be obtained.

# 5.2.1 CYCLISTS

Obtaining the co-operation of cyclists in the survey was not a difficulty, the problem lay in finding a large and representative group. The latest figures for bicycle ownership sugggest there are 11.2 million bicycles in the country (Morgan 1987). However, identifying the owners is not easy, and owning a bicycle does not automatically make one a cyclist, as Morgan discovered. One may also question whether it is correct to class someone who cycles just once or twice a year as a cyclist, when they are generally to be found in a car? Their attitudes are more than likely to be predominantly those of the driver.

It would have been possible to use the Cycle Campaign Network of which Friends of the Earth is a member and, until recently, organised. Yet it was felt that a sample obtained from this source would provide people who were heavily motivated in their commitment to cycling, very aware of the issues, and unrepresentative of cyclists in general on a number of issues.

Other possibilities were considered; such as using CCN contacts to distribute questionnaires through their local bicycle shops, or just using electoral registers. The first was discounted because of the lack of control it would bring into the sampling procedure, the second because the return was likely to be negligible and the practicalities of obtaining a nationwide sample from such a vast data base highly complex.

#### 5.2.2 CYCLISTS' TOURING CLUB

Instead, the Cyclists' Touring Club (CTC) was approached. Based in Godalming Surrey, it has existed for over 100 years as an organisation to promote cycling. It currently offers free third party insurance and legal aid to cyclists, protection of cyclists' rights in both town and country, organises rallies, tours and other events whilst producing a bi-monthly magazine, and has over two hundred local groups.

It was recognised that the average CTC member is not representative of the general cyclist. The members are overwhelmingly male, on their last analysis over 80 percent, and there is a high proportion of older members. They are more likely to use their bicycles for leisure than for commuting, and as with Cycle Campaign Network members, will have at least some interest in the topic of cycling, and be aware of some of the issues. But a suitable alternative to the CTC was difficult to comprehend since no other cycling organisation exists on such a scale or covers such a wide geographical area.

The CTC proved more than willing to assist, and my thanks go to Alan Leng for the assistance he provided. With a membership list of 30000 held on computer and constantly updated, a random sample of 1000 members was taken from the

lists by randomly stopping the computer on a run of the full list and printing out the appropriate details onto address labels. These were then sent by second class mail from Central London.

# 5.2.3. DRIVERS

Whilst this was being organised, attempts were made to secure a sample of 1000 motorists. Approaches were made to Driver Vehicle Licensing Centre, Swansea, the the Automobile Assoication (of which I am an Associate Member) and General Accident Life Assurance, which had been engaged in extensive publicity regarding road safety. On each occasion I wrote briefly explaining the project, my connections with Aston University, SERC and Friends of the Earth, requesting a sample from their data banks to balance against the sample of cyclists. Unfortunately, each organisation refused to co-operate, despite assurances regarding confidentiality etc. It is believed that FoE's involvement in the research may have been at issue here.

For reasons stated above, I was unwilling to attempt a sample of 1000 from the electoral register or telephone directories; instead going to a commercial market research company, details of which were obtained from the Journal of the Market Research Society. For a fee, they distributed throughout the country as part of their bi-monthly programme of surveys, envelopes containing the questionnaire, reply paid envelope and covering letter which explained the purpose of the research. Since their survey was conducted with 1500 people, interviewers were requested to hand the said envelopes to 2 in every 3 respondents.

The sample chosen by this company was carried out in two phases. In the first stage, the 629 constituencies in Great Britain were stratified by the Registrar General's Standard regions, by area type and by order of Conservative/Labour/Liberal-SDP voting ratios at the 1983 general election.

In the second stage, respondents were selected using quota sampling. They applied an interlocking quota on 'Men', 'Housewives' and 'Other Women', together with controls on Social Class (ABC1,C2,DE) and age (15-34,35-64,65+). There was also a control on the working status of women.

Obviously, there were a number of disadvantages in using this method of distribution, not least that unlike CTC members who would have some interest in the project, it was most likely that many of those approached via the market research company would be totally disinterested in the research, neither drive nor cycle, or have no intention of participating. Thus, response rates could be expected to reflect this inbalance, which indeed they did.

# 5.3 THE QUESTIONNAIRE

To encourage the maximum response from a single mailing of the questionnaire, plus limitations on resources, the questionnaire was kept as short as possible. Because of this it was necessary to be very aware of the information required; hence ruthless in the choice of questions, amount of factual detail obtained, and number of attitude statements to be included. The questionnaire was to cover the following items, and can be found in Appendix 5:

1) factual - age, sex, county, CTC member/quota sample,

2) does respondent cycle or drive - frequency of use, type of use, reasons for use or non-use of vehicle,

 what would do most to a) encourage more cycling, and b) make cycling safer,

4) attitude statements concerned with opinions towards cycling and issues which may influence cycling, with reference to traffic calming etc.

Since there was to be no follow-up and I had no means of knowing to whom the questionnaires were distributed, serial numbers were only allocated on return of the questionnaires. The envelopes used for this differed between the CTC and non-CTC samples, thereby enabling them to be classified as either CTC or non-CTC, without the need for an additional question. The answers were coded on the form, thus enabling easy transferal of information to the computer for analysis.

Respondents were asked to give their age group, their sex and the county in which they lived. The country was later split into ten regions, listed below.

London

South East England South West England East Anglia & Lincolnshire East Midlands West Midlands North East England North West England Scotland Wales, Northern Ireland and Eire

Next came a series of questions on cycling.

4. Do you own or ever ride a bicycle?

with a 'Yes' 'No' answer.

5. How often do you cycle?

Four possible answers were offered here from, 'not at all' to '5 times or more per week'. Those answering 'less frequently' or 'not at all' were directed to Question 8, others continued in numerical order. 6. Please tick up to 3 items on the following list which most accurately explain why you cycle.

The items were; 'inexpensive form of transport', 'enjoyment', 'health reasons', 'door to door convenience', 'speed of travel', 'poor public transport', 'independence' and 'ease of parking'; leaving space by 'other' for any alternatives to be written in. These categories were chosen following extensive preliminary work to determine the answers most frequently given by cyclists to this question.

# 7. For what purpose do you use your bicycle?

Respondents were asked to rank order from 1 to 4, 1 being the most frequent use of the bicycle, the following choices; 'journey to work', 'work or business use', 'shopping/school run etc.', 'leisure sporting or social activities'. It was already known that CTC members largely used their cycles for recreational purposes and this question was intended to indicate how they might differ from other cyclists in the sample.

8. Please tick up to 3 items from the following list which most accurately explain why you do not cycle or why you cycle less frequently.

The items offered for inclusion were as follows; 'danger from other traffic', 'polluted atmosphere', 'have long distances to travel', 'hilliness of local area or bad weather', 'lack of carrying capacity', 'cycling does not appeal to me', 'am physically unable to cycle', 'aggressive behaviour of motorists', 'do not have a bicycle', 'other'. These items, in common with all others offered in the questionnaire, arose out of preliminary research; the Camden Study and conversations/discussions with cyclists and drivers. 9. Which of the following items do you think would encourage more people to cycle?

Given the choice of 'encourage', 'have no effect' and 'discourage', the items were: 'more cycle paths', 'increase in cost of travel by car or public transport', 'better road surfaces', 'compulsory helmet wearing for cyclists', 'slower vehicle speeds', 'if cyclists could use pavements and other pedestrian facilities', 'if cycling had a better public image', 'better traffic law enforcement', 'restricting traffic in residential areas'. The above have been suggested at various times as a means to encourage cycling or make it 'safer'. Thus questions 10 and 11 asked respectively:

Can you please rank order from 1 to 3, 1 being the most important the 3 suggestions from Question 9 above which you feel would do most to encourage cycling (make cycling safer).

I wished to determine how far those measures which might be deemed to encourage more people to cycle, could also be viewed as a means of improving safety for cyclists. Obviously, there exists here an implicit notion of what 'safety' is. The meaning I put to the word may not be that understood by the respondents, as discussed earlier in the literature review. However, this was a risk that had to be taken, indeed it was possible to ascertain respondents' perceptions of what constituted safety by the answers given.

The next series of questions were indentical in construct to Questions 4 to 8 above, differing only in their content. Thus:

12. Do you have a full driving licence?

13. How often do you drive?

respondents answering 'less frequently' or ' not at all' being dircted to Question 16. 14. Please tick up to 3 items on the following list which most accurately explain why you drive.

These included 'enjoyment', 'carrying capacity of the vehicle', 'work needs', 'door to door convenience', 'poor public transport', 'independence', 'family obligations', 'speed of travel' and 'other'.

15. For what purpose do you drive?

offered the same responses as Question 7 whilst Question 16 asked respondents to:

Please tick up 3 items on the following list which most accurately explain why you do not drive or why you drive less frequently.

Possible responses consisted of the following: 'prefer an alternative form of transport', 'too expensive', 'good public transport', 'problems with parking', 'dislike driving conditions', 'have only limited access to a vehicle', 'bad driving behaviour of others', 'am physically unable to drive', 'have been disqualified from driving', 'do not have a vehicle', and 'other'.

Finally, nine attitude statements were offered for consideration, scored on a five point scale from 'agree strongly', 'agree', 'not sure', 'disagree' to 'disagree strongly'. The statements were taken from those in the Camden Study which returned the greatest difference in opinion between cyclists and motorists. They were as follows:

all cyclists should be trained,

cyclists do not belong on city streets,

the police should enforce road traffic law far more rigorously,

adult cyclists cause most of the accidents they are in,

the driving test should be more difficult,

cyclists are one of the biggest hazards on the road,

more engineering methods should be used to slow down and restrict traffic,

where a cycle path is available, cyclists should have to use it,

private cars should be banned from city centres.

# 5.4 PILOTING THE QUESTIONNAIRE

After initial compilation and discussions with various others involved in the research, the questionnaire was fully piloted on thirty people. These consisted of ten associates, and twenty employees of a local organisation of which the manager was a personal acquaintance. No one reported difficulty in understanding or completing the questionnaire, although one complaint received was regarding the size of the print. It is recognised that this was rather small, being the standard ten characters to the inch available on the Amstrad PCW8256, reduced by a half to enable the full questionnaire to be printed on one sheet of A4 paper. As resources were limited however, this particular complaint was not acted upon, as any enlargement of the typeface would automatically lead to a corresponding increase in costs.

Three items were added to the final draft as a result of the pilot. The first was the question asking which county the respondent lived in. The other two were very similar items which arose as a result of questions 8 and 16. On being asked:

why you do not cycle or why you cycle less frequently?

and:

why you do not drive or why you drive less frequently?

a sizeable proportion of respondents wrote in the 'other(please state)' section:

# 'don't own/have a bicycle/car'.

Although this information would have already been obtained from an earlier question, many respondents required this particular clause as a possible choice in their answer to these questions. Thus,

#### do not own a bicycle/car

was added to questions 8 and 16, so that the 'other' section could be left free for more interesting comments which might be forthcoming.

### 5.5 RESPONSE RATES

Of the 2000 questionnaires distributed, a total of 1020 were returned. As expected, the response rates of the two groups in the survey differed noticeably. As a result, almost three quarters of the questionnaires analysed came from CTC members.

TABLE 5.1 Frequency count of returns, by CTC membership

CTC Member	frequency	percent
YES	762	74.7
NO	258	25.3
	n=1020	100%

Given the large discrepancy in returns for the two groups, it must be emphasised that no attempt was made to weight the figures in order to balance out the CTC bias. It was considered more prudent to analyse the data as two distinct categories wherever possible, except where some other variable was considered to have had an overwhelming influence on the result.

CTC membership was further crosstabulated by the independent variables of sex of respondent, age group and region to produce Tables 5.2, 5.3 and 5.4, so illustrating where the greatest levels of bias lay. Responses by region and age group were well balanced. However, dividing the data by the sex of the respondent shows clearly the level of male predominance in the CTC. The ratio of female/male returns by CTC members is 1:3.9, for non-CTC members the ratio is 1:1.17, a far more even distribution.

TABLE 5.2 Crosstabulation of returns, sex of respondent by CTC membership

	all	respondents %	CTC %	non-CTC %	n=
male		73.2			744
row %			81.3	18.7	
column	%		79.6	54.0	
female		26.8			273
row %			56.8	43.2	
column	%		20.4	46.0	
n=			.760	257	1017

TABLE 5.3 Crosstabulation of returns, age group by CTC membership

	all respondents %	CTC %	non-CTC %
under 29	27.2	27	28
30-59	49.5	48	53
60+	23.3	25	19
	100	100	100

TABLE 5.4 Crosstabulation of returns, region by CTC membership

all	respondents %	CTC %	non-CTC %
London	7.3	7	8.9
South East	14.4	14.8	13.4
South West	12.8	14.2 .	8.7
East Anglia	7.6	7.7	7.5
East Midlands	6.4	5.3	9.4
West Midlands	12.6	12.7	12.2
North East	12.7	12.3	13.8
North West	8.2	8.1	8.7
Scotland	12.6	12.7	12.2
Northern Ireland/Wales	5.4	5.3	5.9

## 6. RESULTS OF THE MAIN SURVEY

#### 6.1 INTRODUCTION

Since the frequency counts for the number of respondents who drive, cycle, do both or neither, crosstabulated by age group, sex of respondent, geographical region and CTC membership are to be found in the previous section on methodology, this chapter concentrates on the differences between respondents as identified through the questionnaire.

Some discussion of the CTC bias is undertaken, additionally questionning what constitutes a driver or cyclist. Why people choose to, or not to cycle or drive is examined, using the independent variables of age group, sex of responent, region and CTC membership. Next, an analysis of the responses received to a series of questions asking how to encourage cycling and make cycling safer is undertaken.

Last, responses to the series of attitude statements appearing at the end of the questionnaire, using the same independent variables plus those of driver, cyclist, both and neither are analysed. Where suitable, Chi-square analysis ( $\chi_{2}$ ) was carried out on the data, and results of this analysis are indicated throughout the text. Additional results are in Appendix 6.

#### 6.2 CYCLING AND DRIVING

### 6.2.1 CYCLISTS

The first series of questions examined cycling; looking at cycle ownership, cycling frequency and the principal cycle use. Table 6.1 shows sex of respondent by cycle ownership and that significantly more men than women owned a cycle. Table 6.2, crosstabulating sex of respondent with cycling frequency shows that men cycled more frequently than women. 50 percent of male respondents claimed to cycle five times a week or more, compared with 36 percent of female respondents ( $\chi^2$  significant at 0.01 percent).

Crosstabulating cycling frequency by age group also revealed significant  $\chi_{2}$  results, with respondents under 30 years of age cycling more frequently than all others, and those aged 30 to 59 years cycling more frequently than elderly respondents. CTC members also claimed to cycle far more often than non-CTC cyclists; nearly 87 percent of CTC cyclists cycled at least once a week compared with 49 percent of non-CTC respondents.

CTC membership was also associated with the principal use to which the bicycle was put (Table 6.3) 54 percent of CTC cyclists chose 'pleasure' compared with 39 percent of non-CTC cyclists. A little over one third of each sample chose the option 'commuting'; the other major difference being in responses to 'duties' which substantially more respondents from the non-CTC sample chose. These differences were largely mirrored using sex of respondent as an independent variable. Thus, the same numbers of men and women used their bicycle for commuting, with proportionately more women choosing 'duties' and more men nominating 'pleasure'.

Crosstabulating cycle use with age group, 'commuting' returned more responses than 'pleasure' for the 20 to 29 age group, whilst for those aged 30 to 39 years, the two options returned very similar numbers of responses. For all other age groups; particularly those under 20 years and respondents aged over 60, 'pleasure' was obviously the prime reason for cycling.

TABLE 6.1 Ownership of cycle crosstabulated with sex of respondent

	CYCLIST					
SEX OF RESPONDENT	YES			NO ·		
	N	%	N	%		
male	646	(87.1)	95	(12.8)	741	
female	203	(74.6)	69	(25.4)	272	

CHI-SQUARE = 23.47 (p<0.0001)

TABLE 6.2 Cycling frequency: crosstabulated with a) sex of respondent b) age group and c) CTC membership

a) sex of respondent

			CY	CLING FH	REQU	ENCY			
SEX OF	5 °	rimes Week	1 T	TO 4 IMES	0	LESS FTEN	NC	T AT ALL	TOTALS
RESPONDENT	N	%	N	%	N	%	N	%	
male	323	(50.0)	227	(35.1)	81	(12.5)	15	(2.3)	646
female	72	(35.6)	72	(35.6)	48	(23.8)	10	(5.0	202
CHI-SQUARE = 2	23.17 (1	<0.0001)							

b) age group

			CY	CLING FH	REQU	ENCY			
	5 ° A	TIMES WEEK	1 ' T	TO 4 IMES	01	LESS FTEN	NC	T AT ALL	TOTALS
AGE GROUP	N	%	N	%	N	%	N	%	
under 30 years	133	(53.4)	72	(28.9)	40	(16.1)	4	(1.6)	249
30-59 years	195	(46.0)	163	(38.4)	58	(13.7)	8	(1.9)	424
over 60 years	67	(38.1)	64	(36.4)	31	(17.6)	14	(8.0)	176
CHI-SQUARE = 28.	23 (1	<0.0001)							

c) CTC membership

			CYC	CLING FI	REQU	ENCY			
	5 2	VEEK	1	TO 4	]	LESS	NO	TA TC	
CTC MEMBER	N	"LLR %	I. N	ITES %	NI.	PIEN %	N	ALL	TUTALS
		10	M	10	14	10	14	10	
yes	368	(49.9)	272	(36.9)	87	(11.8)	11	(1.5)	738
no	27	(24.3)	27	(24.3)	42	(37.8)	15	(13.5)	111

 $\underline{\text{TABLE 6.3}}$  Principal use of cycle crosstabulated by a) CTC membership b) sex of respondent and c) age group

a) CTC membership

	COMMUTE	WORK USE	DUTIES	PLEASURE	TOTALS
CTC MEMBER	N %	N %	N %	N %	TOTADO
yes	225 (34.7)	11 (1.7)	60 (9.2)	352 (54.2)	648
no	19 (35.2)	2 (3.7)	12 (22.2)	21 (38.9)	54

b) sex of respondent

			PRI	NCIPAL	CYCLI	E USE			
SEX OF	COI	IMUTE	WOR	K USE	DI	JTIES	PLE	ASURE	TOTALS
RESPONDENT	N	%	N	%	N	%	N	%	
male	192	(34.6)	12	(2.2)	45	(8.1)	305	(55.0)	554
female	52	(35.4)	1	(0.7)	27	(18.4)	67	(45.6)	147

~ 1	and searchers.		24
CJ.	age	81.00	E

			PRINCIPAL	CYCLE USI	Ξ	
AGE GROUP		COMMUTE	WORK USE	DUTIES	PLEASURE	ROW =
under 20 n=		21	2	7	38	68
row %		30.9	2.9	10.3	55.9	9.7
column	%	8.6	15.4	9.7	10.2	
20 - 29 n=		65	1	11	59	136
row %		47.4	0.7	8.0	43.1	19.5
column	%	26.6	7.7	15.3	15.8	
30 - 39 n=		56	3	15	59	133
row %		42.1	2.3	11.3	44.4	18.8
column	%	23.0	23.1	20.8	15.8	
40 - 49 n=		45	3	8	57	113
row %		39.8	2.7	7.1	50.4	16.1
column	%	18.4	23.1	11.1	15.3	
50 - 59 n=		42	4	8	63	117
row %		35.9	3.4	6.8	53.8	16.6
column	%	17.2	30.8	11.1	16.9	
60 - 69 n=		13	0	11	53	77
row %		16.9	0	14.3	68.8	11.0
column	%	5.3	0	15.3	14.2	
70 + n=		2	0	12	44	58
row %		3.4	0	20.7	75.9	8.3
column	%	0.8	0	16.7	11.8	
column n=		244	13	72	373	702
column	%	34.7	1.8	10.2	53.1	

#### G.2.2 DRIVERS

Table 6.4 shows driving status crosstabulated with sex of respondent. In keeping with national statistics in general, more men than women in the sample reported being able to drive. No differences in driving frequency were found between the sexes (Table 6.5a) although crosstabulations with age group indicated that the elderly drove significantly less frequently compared with those under sixty years of age - presumably because few respondents of that age would be using a vehicle for commuting or in the course of their work. Nearly twice as many non-CTC drivers drove at least five times a week compared with CTC drivers (70 percent and 39 percent respectively).

CTC members were significantly more likely to use a vehicle for 'pleasure' compared with non-CTC members, who were more likely to choose the options 'commuting' or 'work use' (Table 6.6). Using sex as the independent variable, responses resembled those referring to cycle use, with more men than women citing 'pleasure' as the principal use for their motor vehicle, and more women than men choosing 'duties'. Since this option included, for example, shopping and the school run, it reflects the greater role of women in household and family life.

Analysis by age group also returned responses similar to those above, with the option 'pleasure' of particular importance to the under 20 and over 60 age groups. Only 12 percent of respondents aged 40 to 49 years chose this as the primary use for a vehicle, by far the most important uses for them were 'commuting' and 'work use' (41 and 36 percent respectively).

TABLE 6.4 Ability to drive crosstabulated with sex of respondent

SEX OF RESPONDENT		YES		TOTALS	
	N	%	N	%	
male	563	(76.0)	178	(24.0)	741
female	173	(64.3)	96	(35.7)	269

CHI-SQUARE = 13.0 (p<0.0005)

 $\underline{TABLE~6.5}$  Driving frequency: crosstabulated with a) sex of respondent b) age group and c) CTC membership

a) sex of respondent

			DRJ	LVING FF	(EQUI	SNCY			
	5 1	IMES	1 1	ro 4	I	LESS	NC	DT AT	
SEX OF	А	WEEK	TI	MES	OI	FTEN		ALL	TOTALS
RESPONDENT	N	%	N	%	N	%	N	%	
male	257	(45.6)	185	(32.9)	75	(13.3)	46	(8.2)	563
female	81	(46.6)	49	(28.2)	25	(14.4)	19	(10.9)	174
CHI-SQUARE = 2	2.19 NS								

b) age group

			DR.	IVING FR	(DWa)	SINCI			
	5 1	TIMES	1 '	ro 4	]	LESS	NO	TA TC	
	А	WEEK	T	IMES	OI	FTEN		ALL	TOTALS
AGE GROUP	N	%	N	%	N	%	N	%	
under 30 years	76	(46.1)	47	(28.5)	33	(20.0)	9	(5.5)	165
30-59 years	220	(52.4)	115	(27.4)	51	(12.1)	34	(8.1)	420
over 60 years	42	(27.6)	72	(47.4)	16	(10.5)	22	(14.5)	152
CHI-SQUARE = 44.	.24 (1	o<0.0001)							

DETUING EDEQUENCY

c) CTC membership

		DRIVING FR	REQUENCY		
	5 TIMES	1 TO 4	LESS	NOT AT	
	A WEEK	TIMES	OFTEN	ALL	TOTALS
CTC MEMBER	N %	N %	N %	N %	
yes	217 (38.5)	209 (37.1)	83 (14.7)	55 (9.8)	564
no	122 (70.1)	225(14.4)	17 (9.8)	10 (5.7)	174

<u>TABLE 6.6</u> Principal use of motor vehicle crosstabulated by a) CTC membership b) sex of respondent and c) age group

a) CTC membership

			PRINCI	PAL USE	OF M	DTOR VEH	HICLE		
	CC	MMUTE	WO	RK USE	D	UTIES	PLE	ASURE	TOTALS
CTC MEME	ER N	%	N	%	N	%	N	%	
yes	120	(28.2	) 88	(20.7)	62	(14.6)	156	(36.6)	426
no	52	(35.6	) 37	(25.3)	27	(18.5)	30	(20.5)	146

CHI-SQUARE = 12.82 (p<0.0005)

b) sex of respondent

			PRINCI	PAL USE	OF MC	DTOR VEH	HICLE		
SEX OF	COI	MUTE	WO	RK USE	DI	JTIES	PLEA	ASURE	TOTALS
RESPONDENT	N	%	N	%	N	%	N	%	
male	129	(29.2)	98	(22.2)	55	(12.4)	160	(36.2)	442
female	42	(32.6)	27	(20,9)	34	(26.4)	26	(20.2)	129

CHI-SQUARE = 20.74 (p<0.0001)

c) age group of respondent

	PRINC	CIPAL USE OF	MOTOR VI	EHICLE	
AGE GROUP	COMMUTE	WORK USE	DUTIES	PLEASURE	ROW =
under 20 n=	5	3	2	14	24
row %	20.8	12.5	8.3	58.3	4.2
column %	2.9	2.4	2.2	7.5	
20 - 29 n=	31	21	10	35	97
row %	32.0	21.6	10.3	36.1	17.0
column %	18.1	16.8	11.2	18.8	
30 - 39 n=	44	26	22	27	119
row %	37.0	21.8	18.5	22.7	20.8
column %	25.7	20.8	24.7	14.5	
40 - 49 n=	46	40	13	13	112
row %	41.1	35.7	11.6	11.6	19.6
column %	26.9	32.0	14.6	7.0	
50 - 59 n=	35	27	19	26	107
row %	32.7	25.2	17.8	24.3	18.7
column %	20.5	21.6	21.3	14.0	
60 - 69 n=	10	6	11	37	64
row %	15.6	9.4	17.2	57.8	11.2
column %	5.8	4.8	12.4	19.9	
70 + n=	0	2	12	34	48
row %	0	4.2	25.0	70.8	
column %	0	1.6	13.5	18.3	
column n=	171	125	89	186	571
column %	29.9	21.9	15.6	32.6	
CHI-SQUARE = 116.	93 p(0,0001)				

TABLE 6.7 Crosstabulation of driving frequency by cycling frequency: numbers and percentage responses

	5 TIMES	1 TO 4	LESS	NOT AT	ROW
cycling frequency	A WEEK	TIMES	OFTEN	ALL	TOTAL
5 times per week N=	64	101	67	37	269
row %	23.8	37.5	24.9	13.8	43.3
column %	25.0	45.9	77.0	63.8	10.0
1 to 4 times N=	120	87	16	11	234
row %	51.3	37.2	6.8	4.7	37 7
column %	46.9	39.5	18.4	19.0	01.1
less often N=	64	25	4	9	102
row %	62.7	24.5	.3.9	8.8	16 4
column %	25.0	11.4	4.6	15.5	10.4
not at all N=	8	7	0	1	16
row %	50.0	43.8	0	6.3	2.6
column %	3.1	3.2	0	1.7	2.0
column total N=	256	220	87	58	621
column %	41.2	35.4	14.0	9.3	021

DRIVING FREQUENCY

CHI-SQUARE = 93.86 (p<0.0001)

Crosstabulating driving frequency with cycling frequency of those respondents who were both able to drive and owned a bicycle (Table 6.7), shows that the largest group of respondents drove at least five times a week and cycled between one and four times a week (120 out of 621 respondents). This probably reflects the recreational cyclist: commuting to work by car during the week and cycling for pleasure at weekends. The second highest number (101 out of 621 respondents) was that for respondents who cycled at least five times a week and who drove between one and four times: possibly the commuting cyclist and recreational/weekend driver.

#### 6.3 DRIVER OR CYCLIST?

What constitutes a driver or a cyclist? Through data obtained in the survey, this could be measured in two ways. First, whether or not a person owned or ever rode a bicycle and whether or not they could drive. Second, whether respondents drove or cycled at least once a week, termed frequency of use. Thus, an individual was classified as a driver or cyclist if they cycled or drove once or more a week. Depending on the combinations used, differing results were produced.

Table 6.8 illustrates how respondents were grouped when the data were classified in the two ways described above. By ability to drive/ownership of cycle the majority of respondents were 'cyclist/drivers' (62 percent). When classified according to frequency of use ie., that the respondent drove or cycled at least once a week, this figure dropped to 37 percent, despite 'driver only' and 'cyclist only' figures remaining fairly constant. The 'neither' group grew dramatically from 5 percent to 34 percent.

TABLE 6.8 Alternative classifications of respondents into 'cyclist/driver', 'cyclist only', 'driver only' and 'neither'

Classification	cycl dri	list/ lver	cyc]	list	dr	lver	ne	ither
	N	%	N	%	N	%	N	%
ability to drive/								
ownership of cycle	621	(62)	223	(22)	112	(11)	51	(5)
frequency of use/ cycle and/or drive								
at least once a week	370	(37)	186	(19)	104	(10)	346	(34)

Further divisions of these classifications were made using CTC membership (Table 6.9), sex of respondent (Table 6.10) and age group (Table 6.12) as independent variables. Chisquare results were in each case significant at the 0.01 percent level when analysed by both ability to drive/ownership of cycle and frequency of use. Comparisons the results from the two classifications were of particularly interesting. To look first at CTC members, analysis by ability to drive/ownership of cycle resulted in 73 percent of respondents being classified as 'driver/cyclists'. When analysed by frequency of use, this dropped to 46 percent, 23 percent of CTC respondents neither driving nor cycling a minimum of once a week.

28 percent of non-CTC members were classified as 'driver/cyclists' by ability to drive/ownership of cycle and 40 percent 'drivers only'. Analysis by frequency of use produced a suprising 68 percent who neither drove nor cycled a minimum of once a week. 'Driver only' and 'driver/cyclists' were reduced to 14 percent and 10 percent of respondents respectively. The 'cyclist only' figures for both CTC and non-CTC were the only ones to remain relatively constant.

Crosstabulating by sex of respondent showed a similar redistribution of respondents from the 'driver/cyclist' category to the 'neither' group when the data were subjected to alternate classifications of mode of transport. Whether analysed by ability to drive/ownership of cycle or by frequency of use, proportionately more men than women were classified as 'driver/cyclists', and more women than men as 'neither'. Cross checking with Table 6.9, it would also appear that some driver/cyclists were becoming 'drivers', and some 'drivers' were becoming 'neither'. In order to analyse further the transport differences of men and women, categorisation by ability to drive/ownership of cycle was crosstabulated by CTC membership to produce Table 6.11. Looking at non-CTC respondents, since these are likely to be more typical of the general population than CTC members; proportionately

more women than men cycled, more men than women drove, with the same proportion claiming to be driver/cyclists.

<u>TABLE 6.9</u> CTC membership crosstabulated by mode of transport classified according to a) ability to drive/ownership of cycle and b) frequency of use.

a) ability to drive/ownership of c	ycie
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			USER	R GROU	UP			
DRIVER/ CYCLIST		CYC	CYCLIST		DRIVER		NONE	ROW TOTAL
N	%	N	%	N	%	N	%	. %
551	(73.0)	183	(24.2)	10	(1.3)	11	(1.5)	755
70	(27.8)	40	(15.9)	102	(40.4)	40	(15.9)	252
	DI CN N 551 70	DRIVER/ CYCLIST N % 551 (73.0) 70 (27.8)	DRIVER/ CYCLIST CY( N % N 551 (73.0) 183 70 (27.8) 40	USER DRIVER/ CYCLIST CYCLIST N % N % 551 (73.0) 183 (24.2) 70 (27.8) 40 (15.9)	USER GROU DRIVER/ CYCLIST CYCLIST DI N % N % N 551 (73.0) 183 (24.2) 10 70 (27.8) 40 (15.9) 102	USER GROUP DRIVER/ CYCLIST CYCLIST DRIVER N % N % N % 551 (73.0) 183 (24.2) 10 (1.3) 70 (27.8) 40 (15.9) 102 (40.4)	USER GROUP DRIVER/ CYCLIST CYCLIST DRIVER I N % N % N % N 551 (73.0) 183 (24.2) 10 (1.3) 11 70 (27.8) 40 (15.9) 102 (40.4) 40	USER GROUP   DRIVER/ CYCLIST CYCLIST DRIVER NONE   N % N % N %   551 (73.0) 183 (24.2) 10 (1.3) 11 (1.5)   70 (27.8) 40 (15.9) 102 (40.4) 40 (15.9)

CHI-SQUARE = 406.49 (p<0.0001)

b) frequency of	use			USER	GR	DUP			
	DR	IVER/							ROW
CTC MEMBERSHIP	CYC	CYCLIST		CYCLIST		DRIVER		NONE	
	N	%	N	%	N	%	N	%	N
yes	346	(45.9)	164	(21.8)	68	(9.0)	175	(23.2)	753
no	24	(9.5)	22	(8.7)	36	(14.2)	171	(67.7)	253

CHI-SQUARE = 199.24 (p<0.0001)

TABLE 6.10 Sex of respondent crosstabulated by mode of transport: based on a)ability to drive/ownership of cycle and b) frequency of use

anaun

a) a	abili	ty	to	drive.	/ownershi	p of	cycle	
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		USER GROUP								
SEX OF	DRIVER/ CYCLIST		CYC	CYCLIST DRIVER			NONE		ROW TOTAL	
RESPONDENT	N	%	N	%	N	%	N	%	N	
male	491	(66.6)	152	(20.6)	69	(9.3)	26	(3,5)	738	
female	130	(48.5)	70	(26.1)	43	(16.1)	25	(9.3)	268	

CHI-SQUARE = 34.05 (p<0.0001)

b) frequency of use

				USER C	ROOT					
SEX OF	DRIVER/ CYCLIST		CYC	CYCLIST DRIVER		RIVER	NONE		ROW TOTAL	
RESPONDENT	N	%	N	%	N	%	N	%	N	
male	316	(42.9)	132	(17.9)	66	(9.0)	223	(30.3)	737	
female	54	(20.1)	54	(20.1)	38	(14.2)	122	(45.5)	268	
OUT COULDD										

CHI-SQUARE = 46.63 (p<0.0001)

TABLE 6.11 Sex of respondent crosstabulated by mode of transport, based on ability to drive/ownership of cycle a) non-CTC sample only and b) CTC sample only.

a) Non-CTC sample USER GROUP SEX OF DRIVER ROW RESPONDENT CYCLIST CYCLIST DRIVER NEITHER TOTAL male n= 39 17 62 19 137 row % 55.7 60.8 47.5 42.5 54.4 column % 45.0 28.5 12.5 14.0 female n= 31 23 40 21 115 44.3 57.5 row % 39.2 52.5 45.6 column % 27.0 20.0 34.8 18.2 70 Column total n= 40 102 40 252 column % 27.8 15.9 40.5 15.9

b) CTC sample USER GROUP SEX OF DRIVER ROW RESPONDENT CYCLIST CYCLIST DRIVER NEITHER TOTAL male n= 452 135 7 7 601 row % 82.0 74.2 79.7 70.0 63.6 column % 75.2 22.4 1.2 1.2 female n= 99 47 3 4 153 row % 18.0 25.8 30.0 36.4 20.3 column % 64.7 2.6 30.7 2.0 11 Column total n= 551 182 10 754 column % 73.1 24.1 1.3 1.5

Table 6.12 shows the alternative classifications of mode of transport crosstabulated by age group. Both analyses produced highly significant Chi-square figures, suggesting that there is an association between age and the choice of transport mode. A redistribution of 'driver/cyclists' to the 'neither' group was again obvious depending on the classification used. Age group had little effect on the scale of this redistribution.

# 6.3.1 THE 'NEITHER' CATEGORY

It is obvious from these results that a great many people in the sample either owned, had access to or were able to use a bicycle or drive a car, but did so only infrequently. For the non-CTC group, 'neither' became the largest category (68 percent), whilst almost one quarter of CTC members also belonged in this category. Despite this, it may be argued that however infrequently a respondent drove or cycled, the fact that they had in the past, used either or both forms of transport should be enough to qualify them as a cyclist or driver. It is worth returning to this definition in the future though, to observe the strength of feeling the 'neither' group articulated when answering the attitude statements. Likely to be predominately pedestrians and/or users of public transport, they would be certain to hold fairly strong views on the actions of drivers and cyclists alike.

<u>TABLE 6.12</u> Age group of respondents crosstabulated by mode of transport based on: a) ability to drive/ownership of cycle and b) frequency of use

a) ability to drive/ownership of cycle

			USER	GROUP		
		DRIVER				ROW
AGE GROUP		CYCLIST	CYCLIST	DRIVER	NEITHER	TOTAL
under 20 n=		26	48	3	1	78
row %		33	62.0	4.0	1.0	7.7
column	%	4.2	21.5	2.7	2.0	*
20 - 29 n=		116	56	18	5	195
row %		59.0	29.0	9.0	3.0	19.4
column	%	18.7	25.1	16.1	9.8	
30 - 39 n=		134	22	19	4	179
row %		75.0	12.0	11.0	2.0	17.8
column	%	12.6	9.9	17.0	7.8	
40 - 49 n=		116	18	22	6	162
row %		72.0	11.0	14.0	4.0	16.1
column	%	18.7	8.1	19.6	11.8	
50 - 59 n=		108	26	20	7	161
row %		67.0	16.0	13.0	4.0	16.0
column	%	17.4	11.7	17.9	13.7	
60 - 69 n=		72	20	13	9	114
row %		63.0	18.0	11.0	8.0	11.3
column	%	11.6	9.0	11.6	17.6	
70 + n=		49	33	17	19	118
row %		42.0	28.0	14.0	16.0	11.7
column	%	7.9	14.8	15.2	37.3	
column n=		621	223	112	51	1007
column	%	61.7	22.1	11.1	5.1	

CHI-SQUARE = 152.29 ( p<0.0001)

TABLE 6.12 contd. Age group of respondents crosstabulated by mode of transport based on:

b) frequency of use

			USER (	GROUP		
		DRIVER				ROW
AGE GROUP		CYCLIST	CYCLIST	DRIVER	NONE	TOTAL
under 20 n=		17	44	4	13	78
row %		21.8	56.4	5.1	16.7	7.8
column	%	4.6	23.7	3.8	3.8	
20 - 29 n=		57	47	24	67	195
row %		29.2	24.1	12.3	34.4	19.4
column	%	15.4	25.3	23.1	19.4	
30 - 39 n=		80	19	23 .	57	179
row %		44.7	10.6	12.8	31.8	17.8
column	%	21.6	10.2	22.1	16.5	
40 - 49 n=		74	17	18	53	162
row %		45.7	10.5	11.1	32.7	16.1
column	%	20.0	9.1	17.3	15.3	
50 - 59 n=		76	23	12	50	161
row %		47.2	14.3	7.5	31.1	16.0
column	%	20.5	12.4	11.5	14.5	
60 - 69 n=		44	14	9	46	113
row %		38.9	12.4	8.0	40.7	11.2
column	%	11.9	7.5	8.7	13.3	
70 + n=		22	22	14	60	118
row %		18.6	·18.6	11.9	50.8	11.7
column	%	5.9	11.8	13.5	17.3	
column n=		370	186	104	346	1006
column	%	36.8	18.5	10.3	34.4	

CHI-SQUARE = 134.04 ( p<0.0001)

# 6.4 WHY DO YOU CYCLE? WHY DO YOU DRIVE?

Four questions asked why people chose to drive, cycle or use neither form of transport; a choice of three responses out of nine or ten categories could be made. Respondents answered the 'why cycle/why drive' questions if they used the mode of transport specified at least once a week. Otherwise the 'why do you not cycle/cycle infrequently', ('not drive/drive infrequently') question was answered.

For each category ie., 'Why do you cycle?', 'Why do you drive?', Why do you not cycle?' and 'Why do you not drive?', crosstabulations of the data using the independent variables of CTC membership, sex of respondent, age group and region were carried out, although the SPSS programme used was unable to calculate  $\chi^{=}$  statistics from multiple response questions. A brief discussion will be useful to emphasise certain points.

# 6.4.1 REASONS FOR CYCLING

Tables 6.13, 6.14 and 6.15 show that the overwhelming reason chosen by respondents was 'enjoyment' (70 to 95 percent depending on independent variable), followed by 'health reasons', 'independence' and 'cheapness'. By CTC substantial differences could be membership, seen in responses to 'independence' which is of greater importance to CTC cyclists (45 percent) than to non-CTC cyclists (19 percent); 'cheapness' and 'convenience' which both scored higher with the non-CTC group (57 and 32 percent) than the CTC cyclists (41 percent and 22 percent). This is in keeping with the image of the CTC recreational cyclist, whereas non-CTC respondents were more likely to cycle for less aesthetic reasons.

When reasons for cycling is crosstabulated with sex of respondent, the CTC bias becomes evident, due to the predominance of male respondents in the CTC member group. Men were more likely than women to cite 'enjoyment' (90 percent compared with 78 percent) and 'health reasons' (58 percent compared with 43 percent), whilst proportionately more women chose the options of 'cheapness' (54 compared with 40 percent) and 'convenience' (28 compared with 22 percent).

By age group, 'cheapness' was of greater issue to the under 30s and 'speed' of importance to the under 20s. 'Cheapness' indicated a strong negative relation to age the older the respondent the less likelihood that this was chosen as an option. Over 50 percent of respondents aged 20 years and over chose 'health reasons', peaking at twothirds of those aged 40 to 49 years, whilst only one-third of younger cyclists under 20 years responded in this way. 'Independence' was a popular choice for those aged 50 years and over, particularly for the 60 to 69 age group.

Compared with other regions, cyclists from London showed greater preferences for the options 'cheapness' (52 percent), 'speed' (27 percent) and 'poor public transport' (14 percent); but less for 'enjoyment' (75 percent) and 'health reasons' (39 percent). This compares with between 86 and 95 percent responses for 'enjoyment' throughout all other regions excluding the South East, and between a little under one half and two-thirds for 'health reasons'. Outside London, the South East and East Anglia, 'poor public transport' and 'speed' were generally negligible issues. TABLE 6.13 'Why do you cycle'? Percentage responses crosstabulated by CTC membership and sex of respondent,

REASON	CTC MEMB	ERSHIP	SEX OF RE	SEX OF RESPONDENT			
	YES %	NO %	MALE %	FEMALE %			
cheapness	41.4	57.4	39.6	54.1			
enjoyment	89.0	72.2	90.4	77.7			
health reasons	54.5	59.3	58.0	42.6			
convenience	22.7	31.5	22.1	28.4			
speed	9.5	13.0	8.9	12.8			
poor public transport	5.5	3.7	5.0	6.8			
independence	44.7	18.5	42.1	44.6			
ease of parking	10.1	16.7	11.3	8.1			
other	5.0	3.7	5.7	2.0			
number of cases	655	64	560	148			

TABLE 6.14 'Why do you cycle'? Percentage responses crosstabulated by age group

REASON	U 20	20-29	30-39	40-49	50-59	60-69	+ 70
cheapness %	51.5	61.6	47.4	35.7	33.3	26.9	30.0
enjoyment %	83.8	84.8	85.0	89.6	91.5	91.0	90.0
health reasons %	35.3	50.7	55.6	67.0	58.1	55.1	55.0
convenience %	25.0	22.5	19.5	24.3	21.4	24.4	33.3
speed %	20.6	10.1	15.0	8.7	6.8	0.0	5.0
poor public transport %	4.4	8.7	6.0	2.6	4.3	5.1	5.0
independence %	44.1	35.5	35.3	37.4	47.9	59.0	53.3
ease of parking %	11.8	8.7	11.3	6.1	11.1	19.2	8.3
other %	2.9	0.7	8.3	6.1	6.8	5.1	3.3
number of cases	68	138	133	115	117	78	60
valid cases	709						

TABLE 6.15 'Why do you cycle'? Percentage responses crosstabulated by region

REASON	L	SE	SW	EA	EM
cheapness %	52.3	49.5	48.9	33.3	39.0
enjoyment %	75.0	79.6	90.0	86.0	87.8
health reasons %	38.6	49.5	46.7	50.9	53.7
convenience %	27.3	35.5	22.2	29.8	19.5
speed %	27.3	14.0	5.6	7.0	7.3
poor public transport %	6 13.6	9.7	4.4	7.0	0.0
independence %	43.2	29.0	33.3	47.4	48.8
ease of parking %	6.8	12.9	16.7	19.3	2.4
other %	6.8	5.4	8.9	5.3	4.9
number of cases	44	93	90	57	41
REASON	WM	NE	NW	S	W/NI
cheapness %	38.4	40.0	39.0	43.4	39.5
enjoyment %	91.9	92.5	88.1	94.7	94.7
health reasons %	58.1	61.3	64.4	61.8	60.5
convenient %	26.7	20.0	18.6	14.5	10.5
speed %	9.3	8.8	6.8	11.8	0.0
poor public transport %	3.5	1.3	3.4	2.6	5.3
independence %	45.3	51.3	44.1	42.1	60.5
ease of parking %	8.1	7.5	13.6	5.3	5.3
other %	5.8	5.0	3.4	2.6	0.0
number of cases	86	80	59	76	38
valid cases	664				

KEY: L London, SE South East, SW South West, EA East Anglia, EM East Midlands, WM West Midlands, NE North East, NW North West, S Scotland, W/NI Wales and Northern Ireland

6.4.2 REASONS FOR NOT CYCLING OR CYCLING LESS FREQUENTLY Tables 6.16, 6.17 and 6.18 show that apart from the large numbers of responses to 'no cycle', the principal reason for not cycling was 'danger'. CTC members were more likely to respond to the options 'air pollution' and 'unable/too old'. Rather strangely, nearly 18 percent of CTC members who did not cycle or cycled less frequently did not own a cycle, and 3.3 percent chose the option cycling 'does not appeal'. Conversely, over one quarter of non-CTC respondents chose 'does not appeal' and 'distance' as reasons for not cycling. Responses by sex of respondent were very evenly matched; the only differences being slightly more men than women citing 'distance' and more women than men claiming it 'does not appeal'.

Although 'danger' was again the principal reason chosen by most respondents for not cycling (excepting 'no cycle') for those under 30 years a different picture emerged. Thus, for the under 20s, 'hills and weather' became the main reason (58 percent) followed by one-third nominating 'lack of carrying' and 'does not appeal'. The number of cases in this group were particularly small, only twelve respondents, but the results were still of interest. For the 20 to 29 age group 'distance' (47 percent) became the principal stumbling block towards cycling, followed by 'danger' and 'lack of carrying capacity'. 'Driver behaviour' (30 percent) was of particular importance to those aged 60 to 69 years.

By region, 'danger' was a particular issue in London (65 percent), Scotland (53 percent) and the West Midlands (50 percent). Additionally, 'air pollution' was also of importance to London respondents (13 percent), whilst the numbers of respondents choosing hills and weather were especially high from the East Midlands (47 percent, despite not being known as one of the wetter, hillier parts of the country), Wales and Northern Ireland (57 percent) and Scotland (36 percent). About 30 percent of East Anglian, East Midland and Scottish respondents chose the option that cycling 'does not appeal'.

TABLE 6.16 'Why do you not cycle/cycle infrequently'? Percentage responses crosstabulated by CTC membership and sex of respondent

REASON	CTC MEI	MBERSHIP	SEX OF RI	SEX OF RESPONDENT			
	YES %	NO %	MALE %	FEMALE %			
danger	44.4	43.4	42.5	44.9			
air pollution	13.3	4.1	8.4	4.2			
distance	15.6	26.5	25.7	19.5			
hills and weather	26.7	23.0	24.6	23.7			
lack of carrying	14.4	17.3	15.6	17.8			
does not appeal	3.3	27.0	16.2	24.6			
unable, too old	25.6	10.7	19.2	10.2			
driver behaviour	18.9	17.3	18.6	16.1			
no cycle	17.8	65.8	47.9	55.1			
other	22.2	6.6	11.4	11.9			
number of cases	90	196	167	118			

TABLE 6.17 'Why do you not cycle/cycle infrequently'? Percentage responses crosstabulated by age group

REASON	U 20	20-29	30-39	40-49	50-59	60-69	+ 70
danger %	25.0	35.8	46.5	44.7	56.1	51.5	37.5
air pollution %	0.0	9.4	7.0	6.4	4.9	9.1	5.4
distance %	25.0	47.2	25.6	27.7	24.4	9.1	1.8
hills and weather %	58.3	18.9	41.9	25.5	24.4	6.1	17.9
lack of carrying %	33.3	30.2	18.6	19.1	7.3	9.1	7.1
does not appeal %	33.3	15.1	18.6	29.8	17.1	24.2	12.5
unable, too old %	0.0	0 0	4.7	8.5	12.2	21.2	46.4
driver behaviour %	8.3	11.3	16.3	19.1	19.5	30.3	16.1
no cycle %	50.0	50.9	37.2	48.9	61.0	60.6	50.0
other %	8.3	11.3	16.3	23.4	7.3	6.1	5.4
number of cases valid cases	12 285	53	43	47	41	33	56

TABLE 6.18 ' Why do you not cycle/cycle infrequently'? Percentage responses crosstabulated by region

REASON	L	SE	SW	EA	EM
danger %	65.2	42.5	38.7	43.8	36.8
air pollution %	13.0	7.5	6.5	6.3	10.5
distance %	30.4	25.0	19.4	31.3	47.4
hills and weather %	8.7	22.5	19.4	31.3	47.4
lack of carrying %	13.0	30.0	16.1	18.8	10.5
does not appeal %	17.4	15.0	19.4	31.3	31.6
unable, too old %	17.4	10.0	19.4	18.8	10.5
driver behaviour %	21.7	7.5	22.6	31.3	21.1
no cycle %	39.1	40.0	48.4	31.3	73.7
other %	8.7	10.0	6.5	25.0	5.3
number of cases	23	40	31	16	19
REASON	WM	NE	NW	S	W/NI
danger %	50.0	33.3	36.8	53.3	28.6
air pollution %	2.9	9.5	5.3	4.4	0.0
distance %	26.5	19.0	21.1	8.9	21.4
hills and weather %	17.6	23.8	21.1	35.6	57.1
lack of carrying %	11.8	16.7	21.1	6.7	28.6
does not appeal %	11.8	19.0	21.1	28.9	0.0
unable, too old %	14.7	14.3	15.8	20.0	14.3
driver behaviour %	23.5	14.3	21.1	15.6	7.1
no cycle %	58.8	59.5	63.2	48.9	50.0
other %	14.7	14.3	5.3	11.1	14.3
number of cases	34	42	19	45	14

KEY: L London, SE South East, SW South West, EA East Anglia, EM East Midlands, WM West Midlands, NE North East, NW North West, S Scotland, W/NI Wales and Northern Ireland
### 6.4.3 REASONS FOR DRIVING

Tables 6.19, 6.20 and 6.21 show that unlike cycling, there was no one option which commanded a majority of responses. Non-CTC respondents were more likely to choose 'enjoyment' (32 percent), 'convenience' (49 percent) and 'independence' (56 percent), whilst proportionately more CTC members chose 'carrying capacity' (57 percent) and 'speed' (39 percent). The sexes were very evenly matched, although proportionately more men than women chose 'family commitments' and 'carrying capacity'.

Crosstabulating by age group produced some interesting results. 58 percent of the under 20s chose 'enjoyment' compared with a low of 13 percent for the 30 to 49 year olds. The other group which expressed a greater element of enjoyment in driving was the over-70s (39 percent). Not suprisingly 'work needs' were of particular importance to those aged 20 to 59 years, whilst over one half of those aged over 50 years/pited 'convenience', compared with about one-third below that age.

'Independence' was a major option for the under 20s and over 60s (over 60 percent), with the response rate for 'family commitments' showing little variation for those aged 30 years and above (about one-third). 'Speed' was inversly related to age: the older the respondent the less important 'speed' became, producing extremes of 54 percent for the youngest age group and 8 percent for those over 70 years.

By region, 'enjoyment' was lowest in the North West (14 percent) and highest in the East Midlands (39 percent). 'speed' were highest in 'Poor public transport' and Scotland (27 percent and 48 percent respectively) and percent (29 and 40 percent Wales/Northern Ireland The number of respondents choosing the respectively). options 'family commitments' and 'speed' were lowest in London (27 percent) and the South East (21 percent).

TABLE 6.19 'Why do you drive'? Percentage responses crosstabulated by CTC membership and sex of respondent

REASON	CTC MEMBERSHIP		SEX OF RI	SEX OF RESPONDENT		
	YES %	NO %	MALE %	FEMALE %		
enjoyment	18.6	32.0	22.4	20.9		
carrying capacity	57.4	24.5	51.4	40.3		
work needs	39.3	46.3	41.0	41.1		
convenience	37.2	49.0	38.7	45.7		
poor public transport	19.3	19.7	17.4	25.6		
independence	39.5	55.8	42.5	48.1		
family commitments	27.1	31.3	30.5	20.2		
speed	38.6	27.2	35.5	36.4		
other	5.9	2.0	4.8	5.4		
number of cases	425	147	442	129		

TABLE 6.20 'Why do you drive'? Percentage responses crosstabulated by age group

REASON	U 20	20-29	30-39	40-49	50-59	60-69	+ 70
enjoyment %	58.3	26.8	12.6	12.5	19.0	27.7	38.8
carrying capacity %	37.5	46.4	57.1	48.2	41.0	50.8	55.1
work needs %	20.8	46.4	43.7	58.0	45.7	24.6	6.1
convenience %	33.3	25.8	34.5	36.6	51.4	52.3	55.1
poor public transport %	16.7	17.5	16.8	24.1	21.0	13.8	22.4
independence %	66.7	41.2	31.9	33.0	47.6	60.0	61.2
family commitments %	4.2	10.3	34.5	33.9	31.4	36.9	28.6
speed %	54.2	51.5	43.7	29.5	36.2	21.5	8.2
other %	8.3	9.3	4.2	4.5	1.0	6.2	4.1
number of cases	24	97	119	112	105	65	49

TABLE 6.21 'Why do you crosstabulated by region	drive'?	Percentage	responses		
REASON	L	SE	SW	EA	EM
enjoyment %	16.7	28.1	21.4	17.1	38.9
carrying capacity %	50.0	49.4	61.4	54.3	41.7
work needs %	36.7	48.3	32.9	40.0	33.3
convenience %	53.3	43.8	37.1	54.3	36.1
poor public transport %	16.7	24.7	12.9	17.1	22.2
independence %	53.3	32.6	45.7	48.6	55.6
family commitments %	26.7	21.3	28.6	34.3	22.2
speed %	26.7	21.3	28.6	34.3	22.2
other %	10.0	1.1	12.9	5.7	5.6
number of cases	30	89	70	35	36
REASON	WM	NE	NW	S	W/NI
enjoyment %	23.6	21.7	14.0	16.9	26.3
carrying capacity %	56.9	36.7	54.0	39.4	36.8
work needs %	31.9	48.3	38.0	46.5	42.1
convenience %	30.6	53.3	36.0	33.8	39.5
poor public transport %	15.3	10.0	18.0	26.8	28.9
independence %	48.6	43.3	52.0	35.2	47.4
family commitments %	30.6	35.0	34.0	26.8	26.3
speed %	36.1	28.3	36.0	47.9	39.5
other %	4.2	1.7	0.0	7.0	0.0

KEY: L London, SE South East, SW South West, EA East Anglia, EM East Midlands, WM West Midlands, NE North East, NW North West, S Scotland, W/NI Wales and Northern Ireland

60

50

71

38

72

number of cases

6.4.4 REASONS FOR NOT DRIVING OR DRIVING LESS FREQUENTLY Tables 6.22, 6.23 and 6.24 show that excluding the 'no car' category, no one reason predominated. By CTC membership, 'prefer other transport' and 'expense' were most popular (44 percent each) followed by 'dislike driving' (21 percent). The non-CTC sample returned different results. Although 'expense' was of importance to 43 percent of respondents, 31 percent chose 'bad driving by others' and 29 percent cited 'dislike driving'. When reasons for not driving were crosstabulated with sex of respondent the pattern of responses closely mirrored the CTC/non-CTC structure, with the same differences apparent, but percentages slightly altered. Thus, men responded closely in line with the CTC sample and women with the non-CTC sample.

'Prefer other transport', 'expense', 'dislike driving' and 'bad driving by others' were of greater importance to the mid-range age groups than to either extreme. The option 'no car' provided a very high response rate overall, particularly for those aged 50 years and above (between 67 percent and 82 percent). The youngest respondents obviously fell into the 'too young' category, and by the comments recorded in the 'other' option it was clear that many of these were either awaiting a driving test, taking lessons or intending to commence lessons as soon as possible.

By region, it was interesting to note that the responses 'prefer other transport' and 'good public transport' appear to be unrelated. As the majority of respondents were CTC members, evidently it was the bicycle they preferred, not the train or bus etc. Only in Wales/Northern Ireland were the response rates fairly similar for the two options (31 percent and 23 percent respectively).

'No parking' and 'limited access to a car' were relatively negligible in their response rates; likewise, only one respondent from the whole sample admitted to being

disqualified. A further two options which might have been expected to return similar response rates were 'dislike driving' and 'bad driving by others'. Apart from Scotland (15 percent), West Midlands (23 percent and 25 percent), the South East (26 percent and 22 percent) and London (15 percent and 10 percent), response rates were fairly dissimilar. A maximum of 15 percentage points between the two options was returned by the North West and Wales/Northern Ireland.

TABLE 6.22 'Why do you not drive/drive infrequently'? Percentage responses crosstabulated by CTC membership and sex of respondent

REASON	CTC ME	MBERSHIP	SEX OF RE	RESPONDENT	
	YES %	NO %	MALE %	FEMALE %	
prefer other transport	44.1	17.5	42.2	29.4	
expense	44.1	43.3	44.0	44.1	
good public transport	10.9	8.2	10.3	10.3	
no parking	7.5	13.4	7.8	11.0	
dislike driving	20.8	28.9	19.5	29.4	
limited access to car	7.5	7.2	6.0	10.3	
bad driving by others	14.0	30.9	15.6	22.8	
unable, too old	4.3	8.2	5.7	4.4	
disqualified	0.0	1.0	0.4	0.0	
no car	60.9	67.0	63.1	60.3	
too young	7.8	1.0	7.4	3.7	
other	8.7	10.3	7.8	11.8	
number of cases	322	97	282	136	

TABLE 6.23 'Why do you not drive/drive infrequently'? Percentage responses crosstabulated by age group

REASON	U 20	20-29	30-39	40-49	50-59	60-69	+ 70
prefer other transport %	18.9	39.8	49.2	50.0	42.6	35.6	29.0
expense %	22.6	56.1	39.0	56.3	44.4	48.9	33.9
good public transport %	3.8	8.2	8.5	14.6	7.4	15.6	16.1
no parking %	9.4	5.1	8.5	8.3	20.4	11.1	3.2
dislike driving %	0.0	14.3	27.1	33.3	40.7	26.7	24.2
limited access to car %	9.4	14.3	8.5	4.2	7.4	0.0	1.6
bad driving by others %	5.7	10.2	23.7	20.8	29.6	22.2	19.4
unable, too old %	1.9	1.0	1.7	6.3	5.6	6.7	16.1
disqualified %	1.9	0.0	0.0	0.0	0.0	0.0	0.0
no car %	43.4	60.2	57.6	47.9	66.7	82.2	79.0
too young %	49.1	0.0	0.0	0.0	0.0	0.0	0.0
other %	7.5	13.3	18.6	8.3	5.6	4.4	1.6
number of cases	53	98	59	48	54	45	62

TABLE 6.24 'Why do you not drive/drive infrequently'? Percentage responses crosstabulated by region

REASON	L	SE	SW	EA	EM
prefer other transport %	46.2	39.1	45.1	44.4	32.0
expense %	51.3	41.3	45.1	33.3	40.0
good public transport %	15.4	17.4	3.9	5.6	4.0
no parking %	10.3	8.7	7.8	11.1	12.0
dislike driving %	15.4	26.1	33.3	30.6	20.0
limited access to car %	7.7	10.9	9.8	2.8	4.0
bad driving by others %	10.3	21.7	21.6	16.7	32.0
unable, too old %	2.6	4.3	9.8	2.8	4.0
disqualified %	0.0	2.2	0.0	0.0	0.0
no car %	61.5	50.0	58.8	66.7	56.0
too young %	0.0	6.5	7.8	5.6	8.0
other % number of cases	10.3 39	8.7 46	3.9 51	8.3 36	8.0 25
REASON	WM	NE	NW	S	W/NI
REASON Prefer other transport %	WM 29.2	NE 39.3	NW 42.3	S 29.2	W/NI 30.8
REASON Prefer other transport % expense %	WM 29.2 35.4	NE 39.3 47.5	NW 42.3 53.8	S 29.2 43.8	W/NI 30.8 53.8
REASON Prefer other transport % expense % good public transport %	WM 29.2 35.4 6.3	NE 39.3 47.5 13.1	NW 42.3 53.8 11.5	S 29.2 43.8 8.3	W/NI 30.8 53.8 23.1
REASON Prefer other transport % expense % good public transport % no parking %	WM 29.2 35.4 6.3 12.5	NE 39.3 47.5 13.1 0.0	NW 42.3 53.8 11.5 3.8	S 29.2 43.8 8.3 12.5	W/NI 30.8 53.8 23.1 0.0
REASON Prefer other transport % expense % good public transport % no parking % dislike driving %	WM 29.2 35.4 6.3 12.5 22.9	NE 39.3 47.5 13.1 0.0 27.9	NW 42.3 53.8 11.5 3.8 19.2	S 29.2 43.8 8.3 12.5 14.6	W/NI 30.8 53.8 23.1 0.0 0.0
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car %	WM 29.2 35.4 6.3 12.5 22.9 8.3	NE 39.3 47.5 13.1 0.0 27.9 6.6	NW 42.3 53.8 11.5 3.8 19.2 3.8	S 29.2 43.8 8.3 12.5 14.6 6.3	W/NI 30.8 53.8 23.1 0.0 0.0 7.7
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car % bad driving by others %	WM 29.2 35.4 6.3 12.5 22.9 8.3 25.0	NE 39.3 47.5 13.1 0.0 27.9 6.6 18.0	NW 42.3 53.8 11.5 3.8 19.2 3.8 3.8	S 29.2 43.8 8.3 12.5 14.6 6.3 14.6	W/NI 30.8 53.8 23.1 0.0 0.0 7.7 15.4
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car % bad driving by others % unable, too old %	WM 29.2 35.4 6.3 12.5 22.9 8.3 25.0 2.1	NE 39.3 47.5 13.1 0.0 27.9 6.6 18.0 4.9	NW 42.3 53.8 11.5 3.8 19.2 3.8 3.8 3.8 3.8	S 29.2 43.8 8.3 12.5 14.6 6.3 14.6 8.3	<pre>W/NI 30.8 53.8 23.1 0.0 0.0 7.7 15.4 23.1</pre>
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car % bad driving by others % unable, too old % disqualified %	WM 29.2 35.4 6.3 12.5 22.9 8.3 25.0 2.1 0.0	NE 39.3 47.5 13.1 0.0 27.9 6.6 18.0 4.9 0.0	NW 42.3 53.8 11.5 3.8 19.2 3.8 3.8 3.8 3.8 0.0	S 29.2 43.8 8.3 12.5 14.6 6.3 14.6 8.3 0.0	<pre>W/NI 30.8 53.8 23.1 0.0 0.0 7.7 15.4 23.1 0.0</pre>
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car % bad driving by others % unable, too old % disqualified % no car %	WM 29.2 35.4 6.3 12.5 22.9 8.3 25.0 2.1 0.0 60.4	NE 39.3 47.5 13.1 0.0 27.9 6.6 18.0 4.9 0.0 65.6	NW 42.3 53.8 11.5 3.8 19.2 3.8 3.8 3.8 3.8 0.0 80.8	S 29.2 43.8 8.3 12.5 14.6 6.3 14.6 8.3 0.0 68.8	<pre>W/NI 30.8 53.8 23.1 0.0 0.0 7.7 15.4 23.1 0.0 69.2</pre>
REASON Prefer other transport % expense % good public transport % no parking % dislike driving % limited access to car % bad driving by others % unable, too old % disqualified % no car %	WM 29.2 35.4 6.3 12.5 22.9 8.3 25.0 2.1 0.0 60.4 2.1	NE 39.3 47.5 13.1 0.0 27.9 6.6 18.0 4.9 0.0 65.6 4.9	NW 42.3 53.8 11.5 3.8 19.2 3.8 3.8 3.8 3.8 0.0 80.8 11.5	S 29.2 43.8 8.3 12.5 14.6 6.3 14.6 8.3 0.0 68.8 4.2	<pre>W/NI 30.8 53.8 23.1 0.0 0.0 7.7 15.4 23.1 0.0 69.2 7.7</pre>

KEY: L London, SE South East, SW South West, EA East Anglia, EM East Midlands, WM West Midlands, NE North East, NW North West, S Scotland, W/NI Wales and Northern Ireland 6.4.5 It was also possible for respondents to give alternative answers to those provided by writing comments in the space beside 'other'. The most frequently given 'other' reasons are listed below with the number of responses following each category, plus a selection of quotes.

### WHY CYCLE?

environmental 10, sport/racing 9, companionship 6, touring/enjoy countryside 5, exercise 4, relaxation 2, drink/driving laws 2

Safety - as a woman I feel less vulnerable cycling than waiting at bus stops at night etc. I also cycle because it is ecologically sound, doing nothing to pollute or waste energy.

Carefree absorption of the environment as compared with the cares and blinkered driving of a car.

Can consume excessive amounts of alcohol without risk of loss of driving licence.

#### NOT CYCLE?

have a car/motorbike 8, lack of time 5, young family 3, lazy 3, journeys are within walking distance 3, do not want to 3.

Police attitude to traffic law enforcment Paranoia in face of grossly inconsiderate motorists. I have two young children and do not feel safe.

## WHY DRIVE?

bad weather 7, for holidays and cycle transport 5, laziness 3.

To prevent danger of using public transport late at night.

Social prowess of bicycle is exceeded by car.

NOT DRIVE?

taking lessons/awaiting test/not yet taken test 18, environmental 7, scared/nervous 3, husband/wife drives me everywhere 2.

Too many young people driving.

Private motoring is very wasteful of energy and resources and increases environmental damage.

Never had a car so don't miss it.

Do not wish to take part in mass murder and torture.

## 6.5 ENCOURAGE CYCLING? MAKE CYCLING SAFER?

The next series of questions was concerned with ways of encouraging cycling and making cycling safer. Question 8 asked respondents to identify which of a number of items would encourage more people to cycle. Using ownership of a vehicle or ability to drive as criteria for classifying respondents as drivers or cyclists etc., the results detailed in Table 6.25 were obtained. Several of the questions returned significant Chi-square results, suggesting a relationship between mode of transport and opinion towards the measures specified.

overwhelming support from received Cycle paths respondents, regardless of their method of travel. Increasing the cost of motoring was fairly evenly split between those who felt that it would encourage cycling, would have no effect. and those who felt that it Interestingly, proportionately more non-drivers than drivers thought that increasing driving costs would encourage cycling, a similar response obtained to the question asking about the introduction of better road surfaces.

Compulsory helmet wearing for cyclists was the one item negatively received by the vast majority. This also returned a high Chi-square, since the difference in magnitude of disagreement varied noticably, especially between 'cyclist/driver' and 'neither', indicating just how unpopular any move towards such a measure might prove.

Slower vehicle speeds were identified as a way of encouraging cycling by all except the 'driver' group. A large difference in opinion between them and the 'neither' group existed ( $\chi_{\Xi}$  significant at 0.01 percent), thought largely to be the result of self interest by car drivers, and the predominately older respondents who constituted the 'neither' group.

In comparison, cyclist use of pavements was disliked by this last group, whilst most favourably received by those who cycled. Again, the age of those in the 'neither' group is felt to have contributed to this result. The elderly in particular, do not treat the possibility of cyclists legitimately using the pavements with enthusiasm.

Over 71 percent of respondents who cycled and 86 percent of the 'neither' category agreed that a better public image was necessary to encourage cycling. Those who did not cycle, and whom one might wish to attract to using a bicycle were less convinced by the argument. Nearly half of the 'driver only' group felt that this would have no effect on encouraging cycling; this may be interpreted as having no effect on them as individuals.

Similar figures were returned for the item on better traffic law enforcement. At least 70 percent of respondents who cycled, and 86 percent of the 'neither' group agreed that this would encourage cycling, compared with only 49 percent of respondents who only drove. This result produced a Chi-square significant at 0.01 percent. Although differences between the groups were less apparent than for the item above, the question concerning traffic restraint also showed comparative levels of support which such a measure might expect from particular users, with drivers only less enthusiastic than other groups. TABLE 6.25 Response rates for factors likely to encourage or discourage cycling

	CYC	CLIST/	CYC	CLIST	DI	RIVER	NEI	THER	TOTALS
	N	%	N	%	N	%	N	%	%
CYCLE PATHS									
encourage	531	(86.8)	190	(88.0)	95	(88.8)	43	(86.0)	859
no effect	77	(12.6)	24	(11.1)	10	(9.3)	7	(14.0)	118
discourage	4	(0.7)	2	(0.9)	2	(1.9)	0	(0.0)	8
Chi-squar	re = 3	3.27 NS							
INCREASED COST	OF MO	DTORING							
encourage	279	(47.4)	110	(54.5)	41	(41.8)	25	(62.3)	455
no effect	304	(51.6)	89	(44.1)	53	(54.1)	14	(35.0)	460
discourage	6	(1.0)	3	(1.5)	4	(4.1)	1	(2.5)	14
Chi-squar	re = 1	13.42 (F	0.05	5)					
BETTER ROAD SUP	RFACES	5							
encourage	412	(68.4)	161	(74.9)	65	(64.4)	29	(72.5)	667
no effect	188	(31.2)	54	(25.1)	36	(35.6)	11	(27.5)	289
discourage	2	(0.3)	0	(0.0)	0	(0.0)	0	(0.0)	2
Chi-squar	re = 5	5.75 NS							
COMPULSORY HELM	ET WI	RARING							
encourage	11	(1.9)	10	(4.9)	14	(14, 1)	10	(25.0)	45
no effect	128	(21.6)	47	(22.8)	28	(28.3)	6	(15.0)	209
discourage	454	(76.6)	149	(72.3)	57	(57.6)	24	(60.0)	684
Chi-squar	- = 1	70.66 (1	\$0.00	001)	0.	(0110)			004
onr oquur		0.00 1							
SLOWER VEHICLE	SPEEI	DS							
encourage	357	(59.7)	131	(62.4)	37	(38.5)	35	(79.5)	560
no effect	240	(40.1)	78	(37.1)	58	(60.4)	9	(20.5)	385
discourage	1	(0.2)	1	(0.5)	1	(1.0)	0	(0.0)	3
Chi-squar	re = 2	27.06 (P	0.00	001)					
CVCLIST HER OF	DAVE	TENTO							
CICLISI USE OF	274	(46.6)	100	(52.0)	40	(11 7)	14	(3/ 1)	137
encourage	214	(40.0)	109	(95 4)	40	(21 2)	15	(26 6)	267
dicecureas	65	(42.0)	75	(11 7)	26	(07 1)	10	(20.3)	127
Chi-squar	-e = (	30.93 (1	24	001)	20	(27.1)	16	(29.3)	161
our oquu									
BETTER PUBLIC	MAGE								
encourage	442	(74.7)	156	(75.4)	56	(57.1)	31	(79.5)	685
no effect	150	(25.3)	51	(24.6)	42	(42.9)	8	(20.5)	251
Chi-squar	re = 1	14.8 (p<	0.002	3)					
BETTER LAW ENFO	RCEMI	ENT							
encourage	435	(72.5)	148	(71.2)	49	(49.0)	37	(86.0)	669
no effect	161	(26.8)	59	(28.4)	50	(50.0)	5	(11.6)	275
discourage	4	(0.7)	1	(0.5)	1	(1.0)	1	(2.3)	7
Chi-squar	re = 3	30.93 (I	<0.00	001)					
TRAFFIC PECTRAL	NT								
ANAPPIC RESIRAL	109	(71 6)	157	(74 1)	64	(62 7)	35	(81 4)	684
encourage	167	(27.0)	107	(25 0)	26	(35 5)	55	(16 6)	263
diocourses	101	(0 5)	00	(0.0)	30	(2.0)	1	(2.3)	200
Chi-equar	-e = '	10.11 NS	5	(0.9)	6	(2.0)	1	(2.0)	0
our oquar		MA							

The next two questions used the same variables but asked respondents to:

- rank order using only three of the above items, those they felt would do the most to encourage cycling, and
- rank order using only three of the above items, those they felt would do the most to make cycling safer.

6.5.1 RANK ORDERING OF MEASURES TO ENCOURAGE CYCLING The next series of tables show the results of these two questions. In Tables 6.27 and 6.31 the percentages for all three possible responses are combined, hence the column percentages total is in excess of 100 percent.

The single most important item deemed to encourage cycling by the respondents was undoubtedly provision of more cycle paths. It is apparent that these are exceedingly popular amongst drivers, to the extent that no other item even received percentage support in double figures from this category of road users.

Amongst cyclists themselves, although still the most popular choice, others were also recognised to be a means of encouraging cycling; namely slower vehicle speeds, a better public image and improved road surfaces.

When the rank ordering is combined to give a percentage figure, the importance which respondents place on cycle paths can really be identified. 84 percent of those in the 'driver only' group rank ordered cycle paths as either their first, second or third option. Interestingly, over one quarter of this group placed 'increased cost of motoring' amongst their three options, over ten percent more than cyclists who saw less possibility here for encouragement. This suggests that some motorists might be more vulnerable to rising costs than perceived by cyclists.

'Improved road surfaces' received much support, cyclists and drivers being in virtual agreement on this topic; the 'driver/cyclist' group and 'neithers' lagging behind. However, with regard to 'compulsory helmet wearing', it was only the 'neither' group which showed any degree of enthusiasm for а such a scheme, the majority of respondents acknowledging that it would not be instrumental in encouraging cycling.

'Slower vehicle speeds' presented an interesting picture. In the two groups containing cyclists, just over one third cited this option. Amongst drivers, only 26 percent were willing to nominate this, compared with 54 percent of respondents who used neither form of transport.

Receiving only mediocre support from all, 'pavement use' was followed on the questionnaire by a 'better public image for cycling'. As before, it was those already cycling who felt that an improvement in this was an important way of encouraging more people to take to the bicycle. A change in the public perception of the bicycle would be required before those currently unprepared to cycle but disclaiming the need for an improvement in image, would be prepared to do so. Doubtless it would not be recognised that the change in attitude of the individual came about as a result of the changing public image, particularly true of the young and more 'style' conscious. Especially note the changing consciousness of the public to 'green issues' now that they have been discovered by the media.

Improved traffic law enforcement was not perceived to be of great importance by 'drivers', whereas 'cyclist/ drivers' and the 'neither' group placed far more emphasis on this as a way of encouraging cycling. Those in the cyclists only group fell between the two extremes. As a 'cyclist/driver', one is perhaps more aware of the misdemeanors of motorists and low level of traffic crime detection; thus knowing the short comings of the system, one feels particularly vulnerable as a cyclist. This could also be an effect of age group, as respondents who only cycled were more likely to be younger and consequently, less positive towards law enforcement.

The last item on this list, and one also receiving similar support from all groups was that concerned with traffic restraint, recognised by a sizable percentage as an effective means of encouraging increased cycle use.

Tables 6.28 and 6.29 are further crosstabulations of the first choice in the rank order question. That concerned with CTC membership corresponds closely with those previously discussed. With reference to age, clear differences can be identified: most noticeably in those items relating to slower speed limits and improved law enforcement which respondents over 60 years of age were more enthusiastic about than younger respondents, and cycle paths which were chosen by one-third of respondents over 60 years compared with one half under that age. TABLE 6.26 Measures to encourage cycling: first choice by mode of transport, percentage responses

	USER GROUP						
OPTIONS	Driver/ Cyclist	Cyclist	Driver	Neither			
	%	%	%	%			
Cycle Paths	46.8	39.2	67.9	54.5			
Increase cost	5.4	5.5	5.7	6.8			
Road surfaces	9.0	10.6	6.6	11.4			
Helmets	0.0	0.0	0.5	0.0			
Slower speeds	10.1	12.9	6.6	11.4			
Pavement use	2.0	5.1	0.9	0.0			
Better image	12.4	12.4	4.7	. 0.0			
Enforce Law	8.2	9.2	0.9	11.4			
Restrict traffic	6.2	4.6	6.6	4.5			
Column total n=	613	217	106	44			

TABLE 6.27 Measures to encourage cycling: options 1,2 and 3 combined to show order of preference by mode of transport, percentage responses

	USER GROUP							
	Driver/	Cyclist	Driver	Neither				
OPTIONS	Cyclist %	%	%	%				
Cycle Paths	70.7	73.4	84.6	73.5				
Increase cost	19.9	14.4	26.4	21.0				
Road surfaces	38.4	47.6	53.8	28.1				
Helmets	1.0	1.5	2.0	9.5				
Slower speeds	36.1	37.3	26.2	54.2				
Pavement use	16.4	18.2	16.6	9.5				
Better image	36.7	36.3	24.5	16.7				
Enforce Law	41.8	35.0	23.7	44.7				
Restrict traffic	35.5	36.5	42.1	42.6				

TABLE 6.28 Measures to encourage cycling: first choice crosstabulated with CTC membership, percentage responses

	CTC MEMBE	RSHIP		
OPTIONS	YES %	NO %		
Cycle Paths	41.8	66.9		
Increase cost	5.5	5.4		
Road surfaces	9.1	9.5		
Helmets	0.0	0.4		
Slower speeds	12.6	3.7		
Pavement use	2.7	2.1		
Better image	13.4	3.3		
Enforce Law	9.2	. 2.9		
Restrict traffic	5.8	5.8		
Column total n=	747	242		

TABLE 6.29 Measures to encourage cycling: first choice crosstabulated with agegroup, percentage responses

	AGEGROUP				
OPTIONS	UNDER 29 %	30 TO 59 %	60 AND OVER %		
Cycle Paths	53.5	50.5	35.2		
Increase cost	5.8	5.6	4.6		
Road surfaces	10.5	7.4	11.6		
Helmets	0.0	0.2	0.0		
Slower speeds	5.8	9.5	18.5		
Pavement use	4.4	1.2	3.2		
Better image	10.9	11.5	9.7		
Enforce Law	4.7	7.0	13.0		
Restrict traffic	4.4	7.2	4.2		

275

Column total n=

RANK ORDERING OF MEASURES TO MAKE CYCLING SAFER 6.5.2 Turning next to the rank ordering of items to make cycling which again cycle paths safer, it was received overwhelming support, primarily from drivers (Table 6.30). Improved road surfaces and law enforcement received double figure support from the two cyclist groups (between 11.7 and 13.4 percent) along with lower vehicle speeds, which about 20 percent of all respondents chose, except drivers 'Compulsory use of helmets by only (16 percent). cyclists' was chosen as a safety measure by almost 12 percent of the 'neither' group, other respondents were less impressed with this option.

When combined percentages were analysed in Table 6.31; apart from cycle paths, it was 'road surfaces', 'slower speed limits' and 'improved law enforcment' which appeared strongest. The figures are largely similar to those in the 'encourage' section, so they will not be itemised or their merits discussed individually. It is of greater interest to note those differences in responses between the 'encourage' and 'safer' questions.

Thus, 'improved road surfaces', 'traffic law enforcement', 'slower vehicle speeds' and 'compulsory helmet use' were all recognised as contributing more to the safety of cycling than encouraging its use. Somewhat suprisingly, the 'restraint of traffic' was not included here, instead the results show that it is regarded more as a means of encouraging cycling than contributing to cyclists' safety.

Although of some importance when considering measures to encourage cycling, with regard to safety 'increased cost of motoring' and a 'better public image' for cycling were negligible issues. It may be ventured that even these items contribute in a secondary manner to the safety of cyclists; if a changing public image of the bicycle brings with it a greater awareness of cyclists' needs, and by increasing the cost of motoring drivers are dissuaded from making journeys they might otherwise have taken.

## 6.5.3 SELF INTEREST

For the sake of stating the obvious it should also be noted that all responses are governed by a large measure of self interest. Thus, one should not be suprised to find identifiable differences in the responses to particular questions, especially when those respondents often have opposing views towards their rights on the road network. This is also true of the last section of the questionnaire to be discussed, the nine attitude statements. TABLE 6.30 Measures to make cycling safer: first choice by mode of transport, percentage responses

	USER GROUP						
OPTIONS	Driver/ Cyclist	Cyclist	Driver	Neither			
	%	%	%	%			
Cycle Paths	45.1	39.8	61.0	52.4			
Increase cost	0.2	0.9	0.0	2.4			
Road surfaces	12.7	12.5	7.6	7.1			
Helmets	3.8	6.9	6.7	11.9			
Slower speeds	19.7	20.4	16.2	19.0			
Pavement use	1.3	2.8	0.0	0.0			
Better image	0.5	0.5	0.0	. 0.0			
Enforce Law	11.7	13.4	7.6	4.8			
Restrict traffic	5.0	2.8	1.0	2.4			
Column total n=	605	216	105	42			

<u>TABLE 6.31</u> Measures to make cycling safer: options 1,2 and 3 combined to show order of preference by mode of transport, percentage responses

		USER GR	OUP	
OPTIONS	Driver/ Cyclist	Cyclist	Driver	Neither
	%	%	%	%
Cycle Paths	68.0	65.9	78.7	69.5
Increase cost	1.5	2.3	2.0	5.0
Road surfaces	55.0	56.2	62.7	41.3
Helmets	22.5	15.8	29.3	31.4
Slower speeds	52.7	58.5	45.8	60.5
Pavement use	16.8	14.8	21.7	12.2
Better image	5.2	4.7	6.0	7.3
Enforce Law	48.9	49.3	28.3	36.6
Restrict traffic	29.4	32.6	25.7	36.5

·164

TABLE 6.32 Measures to make cycling safer: first choice crosstabulated with CTC membership, percentage responses

	CTC MEMBERSHIP	
OPTIONS	YES %	NO %
Cycle Paths	41.1	62.6
Increase cost	0.3	0.8
Road surfaces	12.6	9.2
Helmets	4.5	7.1
Slower speeds	22.4	10.1
Pavement use	1.8	0.4
Better image	0.5	0.0
Enforce Law	13.0	5.9
Restrict traffic	3.9	3.8
Column total n=	738	238

TABLE 6.33 Measures to make cycling safer: first choice crosstabulated with agegroup, percentage responses

AGEGROUP	
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OPTIONS	UNDER 29 %	30 TO 59 %	60 AND OVER %
Cycle Paths	46.9	50.0	36.5
Increase cost	0.4	0.0	1.4
Road surfaces	13.5	11.2	11.1
Helmets	5.8	5.5	3.4
Slower speeds	17.5	16.7	28.4
Pavement use	1.5	1.0	2.4
Better image	0.4	0.6	0.0
Enforce Law	10.5	10.6	13.9
Restrict traffic	3.6	4.5	2.9
Column total n=	275	492	208

#### 6.6 ATTITUDE STATEMENTS

A total of nine attitude statements were answered by respondents on a five point scale from 'agree strongly' to 'disagree strongly'. For analysis, these were collapsed into three groups consisting of 'agree', 'not sure' and 'disagree', primarily because when subdivided by CTC membership, mode of transport etc., the small number of respondents in the 'agree strongly/disagree strongly' categories had an adverse effect on the  $\chi^{2}$  calculation.

The statements will be examined individually using the categories of 'cyclist/driver', 'cyclist', 'driver', or 'neither', analysed by ownership of a car or bicycle/ability to drive, and frequency of use (that respondents were classified as drivers or cyclists if they drove or cycled a minimum of once a week). These are subdivided depending on CTC membership so that it is possible to examine the non-CTC sample alone. Although the analysis was also carried out using sex as an independent variable it was found to have little influence.

'Agegroup' was also used as an independent variable. This proved to have limited influence on the answers to some statements, but returned highly significant  $\chi_{2}$  results for others. Where applicable, tables have been included in the text; frequency counts have been appended.

## 6.6.1 Cyclists do not belong on city streets Table 6.34

Highly significant differences can be identified when respondents are classified according to mode of transport,  $\chi_2$  being significant at 0.01 percent. When divided by ability to drive/ownership of cycle, the opinions of the two groups containing cyclists showed a marked difference compared with the 'driver only' and 'neither' group. Over one quarter of those in the latter categories agreed with the statement, whereas over 90 percent of those in the cycling groups disagreed. When split by frequency of use it was the neither group which agreed most readily with the statement (16 percent).

If neither a regular cyclist nor driver, this would imply that these particular respondents were often pedestrians. Likely to be affected by cyclists' behaviour in town which could prove hazardous or aggravating to them, their response probably illustrates the pedestrians' dislike of cyclists. It should be remembered that analysis by frequency of use results in a large number of CTC members being incorporated into the 'driver only' and 'neither' groups, differences are more temperate.

Crosstabulating ability to drive/ownership of cycle with CTC membership so that the non-CTC sample could be observed, resulted in a non-significant  $\chi_2$  value, although differences could still be observed depending on mode of transport. By frequency of use,  $\chi^2$  was significant at the 0.5 percent level, indicating that regular cyclists felt particularly strongly. Despite CTC membership having a great effect upon the opinions of the cyclists in the sample, non-CTC cyclists and driver/cyclists largely disagreed with this statement. <u>TABLE 6.34</u> 'Cyclists do not belong on city streets'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use and d) frequency of use, non-CTC sample only

<ul> <li>ability to drive</li> <li>CATEGORY LABEL</li> </ul>	/owner AC	Ship of REE	UNSURE		DISAGREE		TOTAL	
	N	%	N	%	N	%		
driver cyclist	15	(2.5)	19	(3.1)	571	(94.4)	605	
cyclist	12	(5.6)	7	(3.3)	194	(91.1)	213	
driver	28	(26.4)	12	(11.3)	66	(62.3)	106	
neither	12	(29.3)	5	(12.2)	24	(58.5)	47	

CHI-SQUARE = 139.84 (p<0.0001)

b) ability to dr CATEGORY LABEL	ive∕owner AG	ship of REE	cycle, UN	cycle, non-CTC UNSURE		sample only DISAGREE		
	N	%	N	%	N	%		
driver cyclist	10	(14.7)	6	(8.8)	52	(76.5)	68	
cyclist	5	(13.2)	3	(7.9)	30	(78.9)	38	
driver	28	(28.6)	11	(11.2)	59	(60.2)	98	
neither	11	(35.5)	3	(9.7)	17	(54.8)	31	

CHI-SQUARE = 10.54 NS

CATEGORY LABEL	AG	AGREE		UNSURE		DISAGREE		
	N	%	'N	%	N	%		
driver cyclist	4	(1.1)	11	(3.0)	349	(95.9)	364	
cyclist	5	(2.7)	3	(1.6)	174	(95.6)	182	
driver	7	(7.1)	6	(6.1)	85	(86.7)	98	
neither	51	(15.9)	23	(7.2)	246	76.9)	320	

CHI-SQUARE = 78.8 (p<0.0001)

<pre>d) frequency of use, CATEGORY LABEL</pre>	non- A(	-CTC sample GREE	y NSURE DIS		SAGREE	TOTAL	
	N	%	N	%	N	%	
driver cyclist	2	(8.7)	0	(0.0)	21	(91.3)	23
cyclist	1	(4.8)	0	(0.0)	20	(95.2)	21
driver	6	(17.1)	5	(14.3)	24	(68.6)	35
neither	45	(28.8)	18	(11.5)	93	(59.6)	156
CHI-SQUARE = 19.24 (	p<0.0	005)					

## 6.6.2 Cyclists are one of the biggest hazards on the road Table 6.35

This statement returned highly significant  $\chi_{Z}$  responses, significant at 0.01 percent, regardless of the criteria by which mode of transport was classified. Those groups containing cyclists overwhelmingly disagreed with the statement, although more non-CTC cylists were inclined to agree or be unsure in their response compared with CTC members.

By ability to drive/ownership of cycle the 'drivers only' were quite evenly divided between agreeing and disagreeing with the statement, with only 11 percent unsure. By frequency of use however, the situation changed because a large proportion of CTC members then became categorised as 'driver only' and 'neither'. As with the previous statement, the effect of this was to diminish the scale of differences, despite remaining highly significant at 0.01 percent. Crosstabulating frequency of use with non-CTC respondents produced a drop in the significance level to 3 percent, with one-third of the 'neither' category and slightly fewer 'drivers only' agreeing with the statement, compared with only 5 percent of 'cyclists only'.

The fact that cyclists are regarded as a hazard may not necessarily be bad news for them. The driver who views cyclists as a hazard may be more careful when in their vicinity for example, allowing plenty of room when overtaking. When regarded in such a negative manner however, it is but one step to see cyclists as a problem that would be better removed from the streets, and to be antagonistic towards measures which could encourage more people to cycle. TABLE 6.35 'Cyclists are one of the biggest hazards on the road' Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use and d) frequency of use, non-CTC sample only

/owner AG	REE of	cycle UI	ISURE	DIS	TOTAL	
N	%	N	%	N	%	
43	(7.0)	39	(6.4)	528	(86.6)	610
9	(4.2)	12	(5.6)	192	(90.1)	213
45	(41.3)	12	(11.0)	52	(47.7)	109
8	(17.8)	8	(17.8)	29	(64.4)	45
	/owner AC N 43 9 45 8	/ownership of AGREE N % 43 (7.0) 9 (4.2) 45 (41.3) 8 (17.8)	/ownership of cycle AGREE UI N % N 43 (7.0) 39 9 (4.2) 12 45 (41.3) 12 8 (17.8) 8	/ownership of cycle         AGREE       UNSURE         N       %         43       (7.0)       39       (6.4)         9       (4.2)       12       (5.6)         45       (41.3)       12       (11.0)         8       (17.8)       8       (17.8)	/ownership of cycle       DIS         AGREE       UNSURE       DIS         N       %       N       %       N         43       (7.0)       39       (6.4)       528         9       (4.2)       12       (5.6)       192         45       (41.3)       12       (11.0)       52         8       (17.8)       8       (17.8)       29	/ownership of cycle       DISAGREE         AGREE       UNSURE       DISAGREE         N       %       N       %         43       (7.0)       39       (6.4)       528       (86.6)         9       (4.2)       12       (5.6)       192       (90.1)         45       (41.3)       12       (11.0)       52       (47.7)         8       (17.8)       8       (17.8)       29       (64.4)

CHI-SQUARE = 143.8 (p<0.0001)

owner AG	ship of REE	cycle, UI	cycle, non-CTC UNSURE		sample only DISAGREE		
N	%	N	%	N	%		
13	(19.1)	7	(10.3)	48	(70.6)	68	
2	(5.3)	7	(18.4)	29	(76.3)	38	
44	(44.0)	12	(12.0)	44	(44.0)	100	
7	(20.6)	7	(20.6)	20	(58.8)	34	
	owner AG N 13 2 44 7	Yownership of AGREE N % 13 (19.1) 2 (5.3) 44 (44.0) 7 (20.6)	Yownership of cycle, AGREE UI N % N 13 (19.1) 7 2 (5.3) 7 44 (44.0) 12 7 (20.6) 7	Yownership of cycle, non-CTC         AGREE       UNSURE         N       %         13<(19.1)	Yownership of cycle, non-CTC sample of AGREE       UNSURE       DIS         AGREE       UNSURE       DIS         N       %       N       %       N         13 (19.1)       7 (10.3)       48       2       (5.3)       7 (18.4)       29         44 (44.0)       12 (12.0)       44         7 (20.6)       7 (20.6)       20	Yownership of cycle, non-CTC sample only       DISAGREE         N %       N %       N %         13 (19.1)       7 (10.3)       48 (70.6)         2 (5.3)       7 (18.4)       29 (76.3)         44 (44.0)       12 (12.0)       44 (44.0)         7 (20.6)       7 (20.6)       20 (58.8)	

CHI-SQUARE = 28.95 (p<0.0001)

CATEGORY LABEL	AC	GREE	UN	ISURE	DIS	SAGREE	TOTAL
	N	%	N	%	N	%	
driver cyclist	21	(5.8)	28	(7.7)	316	(86.6)	365
cyclist	7	(3.9)	7	(3.9)	167	(92.3)	181
driver	15	(15.0)	4	(4.0)	81	(81.0)	100
neither	63	(19.1)	32	(9.7)	235	(71.2)	330

CHI-SQUARE = 54.14 (p<0.0001)

d) frequency of use, CATEGORY LABEL	non- A(	non-CTC sample AGREE		only UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	2	(8.7)	3	(13.0)	18	(78.3)	23
cyclist	1	(4.8)	3	(14.3)	17	(81.0)	21
driver	10	(28.6)	З	(8.6)	22	(62.9)	35
neither	54	(33.3)	24	(14.8)	84	(51.9)	162
CHI-SQUARE = 14.33	p<0.0	05)					

6.6.3 Where a cycle path is available, cyclists should have to use it Table 6.36

There were very significant differences in opinion towards this statement between those groups containing cyclists and the 'driver only' and 'neither' groups by all analyses. A large divergence appeared in the split between CTC and non-CTC cyclists, particularly when the ownership/ability to drive clause was used, with a large majority of the non-CTC sample advocating the compulsory use of cycle paths. The non-CTC 'driver only' and 'neither' groups were extremely enthusiastic: respectively 96 percent and 100 percent of respondents in these two categories agreed with the statement.

Differences were also apparent by frequency of use. Both the CTC and non-CTC samples returned significant  $\chi^2$ results at the 0.5 and 0.01 percent levels respectively, with proportionately more respondents in the 'driver only' groups advocating the compulsory use of cycle paths.

To the casual observer, cycle paths appear to be an excellent idea. They remove cyclists from direct conflict with other forms of vehicle traffic and were obviously very popular with drivers in this sample. Yet due to their planning and implementation the finished result is not always what one would wish. One needs to be a regular cyclist and in touch with current technologies to appreciate this, and recognize that the cycle path is not merely a device to remove cyclists from mainstream traffic. CTC members, receiving regular magazines containing articles about such measures are more likely to be conversant with the arguments than many others in the cycling population.

<u>TABLE 6.36</u> 'Where a cycle path is available cyclists should have to use it'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) frequency of use, non-CTC sample only

a) ability to drive/ownership of cycle

CATEGORY LABEL	AGREE		UI	UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	301	(48.5)	62	(10.0)	258	(41.5)	621
cyclist	117	(53.2)	13	(5.9)	. 90	(40.9)	220
driver	103	(92.8)	2	(1.8)	6	(5.4)	111
neither	45	(93.8)	2	(4.2)	1	(2.1)	48
CHI-SQUARE = 107.31	(p<0.	0001)					

b) ability to drive/ownership of cycle, non-CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	63 (90.0)	2 (2.9)	5 (7.1)	70
cyclist	32 (80.0)	0 (0.0)	8 (20.0)	40
driver	98 (96.0)	2 (2.0)	2 (2.0)	102
neither	37(100.0)	0 (0.0)	0 (0.0)	37
CHI-SQUARE = 21.23	(p<0.002)			

<u>TABLE 6.36 contd.</u> 'Where a cycle path is available cyclists should have to use it'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) frequency of use, non-CTC sample only

c) frequency of use

CATEGORY LABEL	AC	AGREE		UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	159	(43.0)	39	(10.5)	172	(46.5)	370
cyclist	91	(49.2)	12	(6.5)	82	(44.3)	185
driver	79	(76.0)	9	(8.7)	16	(15.4)	104
neither	237	(69.7)	19	(5.6)		(24.7)	340

CHI-SQUARE = 76.93 (p<0.0001)

d) frequency of use, CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	140 (40.5)	37 (10.7)	169 (48.8)	346
cyclist	76 (46.6)	12 (7.4)	75 (46.0)	163
driver	44 (64.7)	9 (13.2)	15 (22.1)	68
neither	75 (43.6)	17 (9.9)	80 (46.5)	172
CHI-SOUARE = 18 8	2 (n(0,005)			

e) frequency of use, non-CTC sample only DISAGREE TOTAL UNSURE CATEGORY LABEL AGREE N % N % N % driver cyclist 3 (12.5) 19 (79.2) 2 (8.3) 7 (31.8) 15 (68.2) 0 (0.0) cyclist 1 (2.8) driver 35 (97.2) 0 (0.0) neither 162 (96.4) 2 (1.2) 4 (2.4) 168

24

22

36

CHI-SQUARE = 40.56 (p<0.0001)

6.6.4 Private cars should be banned from city centres Table 6.37

Depending upon whether responses to this statement were crosstabulated by ability to drive/ownership of cycle or frequency of use, a very different picture emerged. Analysed by ability and ownership, a  $\chi_{Z}$  result significant at 0.01 percent was obtained, with those in the two cycling groups more likely than respondents who just drove to agree. The most enthusiastic group proved to be the 'neither' category, 51 percent as opposed to the 'drivers only' at 25 percent, again reflecting pedestrians' continual conflict with all forms of vehicular transport.

Similar results were obtained from the non-CTC sample with a  $\chi^2$  being significant at the 1 percent level. By frequency of use, significant results were only obtained when analysing CTC members alone. The 'neither' category agreed most readily with the statements, with 'driver/cyclists' and 'cyclist only' responding between the two extremes.

A significant  $\chi_{\mathbf{z}}$  result was also returned when analysing the data by age group. Respondents aged under 30 years were more likely to oppose the statement compared with those over this age. Thus, approximately one half of the under-30 respondents disagreed with the statement whilst one third agreed, whereas for respondents over 30 years the results were reversed; one third disagreed and one half agreed.

<u>TABLE 6.37</u> 'Private cars should be banned from city centres'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) age group

a) ability to drive/ownership of cycle

CATEGORY LABEL	AG	AGREE		UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	290	(47.3)	96	(15.7)	227	(37.0)	613
cyclist	99	(45.4)	42	(19.3)	.77	(35.3)	218
driver	27	(24.8)	11	(10.1)	71	(65.1)	109
neither	24	(51.1)	6	(12.8)	17	(36.2)	47
CHI-SOUARE = 35 30	5 (n(0,0	001)					

b) ability to drive/ownership of cycle, non-CTC sample only

CATEGORY LABEL	AGREE N %	UNSURE N %	DISAGREE N %	TOTAL
driver cyclist	26 (38.2)	9 (13.2)	33 (48.5)	68
cyclist	12 (30.8)	9 (23.1)	18 (46.2)	39
driver	23 (23.0)	10 (10.0)	67 (67.0)	100
neither	18 (50.0)	4 (11.1)	14 (38.9)	36

CHI-SQUARE = 16.11 (p<0.01)

<u>TABLE 6.37 contd.</u> 'Private cars should be banned from city centres'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) age group

c) frequency of use, entire sample

CATEGORY LABEL	AGREE		UN	UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	168	(45.9)	57	(15.6)	141	(38.5)	366
cyclist	86	(46.7)	34	(18.5)	64	(34.8)	184
driver	38	(37.3)	13	(12.7)	51	(50.0)	102
neither	147	(44.1)	51	(15.3)	135	(40.5)	333

CHI-SQUARE = 7.11 NS

d) frequency of use, CTC sample only

CATEGORY LABEL	ACN	AGREE		UNSURE		DISAGREE	
duduan analist	157	/AE 0)	EA	(15 7)	120	(00 E)	040
driver cyclist	107	(40.07	54	(15.7)	102	(30.57	545
cyclist	80	(49.1)	29	(17.8)	54	(33.1)	163
driver	26	(38.8)	11	(16.4)	30	(44.8)	67
neither	97	(57.4)	29	(17.2)	43	(25.4)	169
CHI-SOUARE = 12.53	(n(0)	)5)					

(b)	ave	grou	D
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CATEGORY LABEL	AGREE		UI	UNSURE		DISAGREE	
	N	%	N	%	N	%	
29 years and under	93	(33.6)	42	(15.2)	142	(51.3)	277
30 - 59 years	238	(47.4)	77	(15.3)	187	(37.3)	502
over 60 years	111	(51.4)	36	(16.7)	69	(31.9)	216
CHI-SQUARE = 24.16	(p<0.0	0001)					

# 6.6.5 Adult cyclists cause most of the accidents they are in Table 6.38

At an initial glance, it would appear that few respondents were willing to endorse this statement. A true picture only emerges however, when the 'unsure' category is taken into account. Over 40 percent of those in the 'driver only' groups analysed by ability to drive/ownership of cycle would not commit themselves to a firm opinion; even the 'driver/cyclist' and 'cyclist only' groups indicated an element of indecision. The 'neither' category were much closer to the drivers' attitude in their response.

The statement purposfully used the words 'adult cyclist' so that respondents would not be confused in their response by what is commonly regarded as the faulty behaviour of child cyclists (see p.26 above). It shows moreover, that a large degree of uncertainty regarding the causes of cycle accidents exists, which could well benefit from an educational programme to highlight the issues. <u>TABLE 6.38</u> 'Adult cyclists cause most of the accidents they are in'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only and c) frequency of use

a) ability to drive/ownership of cycle

CATEGORY LABEL	AGREE		UNSURE		DISAGREE		TOTAL
	N	%	N	%	N	%	
driver cyclist	10	(1.6)	124	(20.3)	476	(78.0)	610
cyclist	3	(1.4)	38	(17.9)	171	(80.7)	212
driver	8	(7.5)	43	(40.6)	55	(51.9)	106
neither	4	(10.0)	14	(35.0)	22	(55.0)	40

CHI-SQUARE = 54.5 (p<0.0001)

b) ability to drive/ownership of cycle, non-CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	3 (4.4)	20 (29.4)	45 (66.2)	68
cyclist	1 (2.6)	6 (15.8)	31 (81.6)	38
driver	8 (8.2)	42 (43.3)	47 (48.5)	97
neither	3 (10.0)	13 (43.3)	14 (46.7)	30

CHI-SQUARE = 16.04 (p<0.01)

c) frequency of use

CATEGORY LABEL	AGREE		UNSURE		DISAGREE		TOTAL
	N	70	N	70	N	70	
driver cyclist	4	(1.1)	71	(19.4)	291	(79.5)	366
cyclist	3	(1.7)	33	(18.3)	144	(80.0)	180
driver	2	(2.0)	28	(27.2)	71	(70:3)	101
neither	16	(5.0)	87	(27.3)	216	(67.7)	319

CHI-SQUARE = 22.65 (p<0.001)

6.6.6 The police should enforce road traffic law far more rigorously Table 6.39

This statement provoked little disagreement between the vast majority of respondents, regardless of transport mode. Drivers were slightly less likely to agree whilst the 'neither' group was more inclined to agree; the two categories containing cyclists lay between.

Primarily however, differences were the prerogative of age group, returning a  $\chi_{\mathbf{Z}}$  result significant at 0.01 percent. The older the respondent, the keener they were to see the stricter enforcement of traffic law and more certain of their opinion on the matter, returning the lowest proportion of 'unsure' responses. TABLE 6.39'The police should enforce road traffic law far morerigorously'.Responses crosstabulated by a) ability todrive/ownership of cycle b) ability to drive/ownership of cycle, non-CTCsample only c) frequency of use and d) age group

a) ability to dri CATEGORY LABEL	/e/ownership of AGREE		cycle UNSURE		DISAGREE		TOTAL
	N	%	N	%	N	%	
driver cyclist	488	(80.5)	70	(11.6)	48	(7.9)	606
cyclist	175	(79.5)	33	(15.0)	12	(5.5)	220
driver	74	(67.9)	19	(17.4)	16	(14.7)	109
neither	39	(88.7)	3	(6.8)	2	(4.5)	44

CHI-SQUARE = 15.58 (p(0.02)

<li>b) ability to drive CATEGORY LABEL</li>	lve/ownership of AGREE		cycle, non-CTC UNSURE		sample only DISAGREE		TOTAL
	N	%	N	%	N	%	
driver cyclist	47	(69.1)	8	(11.8)	13	(19.1)	68
cyclist	26	(68.4)	7	(18.4)	5	(13.2)	38
driver	65	(65.0)	19	(19.0)	16	(16.0)	100
neither	29	(85.3)	3	(8.8)	2	(5.9)	34

CHI-SQUARE = 6.93 NS

c) frequency of use	e ACDEE		HNCHDE		DIGAODEE		TOTAL
CATEGORI LADEL	N	%	N	%	N	NOREE %	TOTAD
driver cyclist	289	(79.6)	45	(12.4)	29	(8.0)	363
cyclist	147	(79.5)	28	(15,1)	10	(5.4)	185
driver	74	(74.7)	16	(16.2)	9	(9.1)	99
neither	265	(80.3)	36	(10.9)	29	(8.8)	330

CHI-SQUARE = 4.91 NS

11

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
29 years and under	191 (69.7)	47 (17.2)	36 (13.1)	274
30 - 59 years	395 (79.6)	66 (13.3)	35 (7.1)	496
over 60 years	195(89.9)	14 (6.5)	8 (3.7)	217
CHI-SQUARE = 31.81	(p<0.0001)			
# 6.6.7 More engineering measures should be used to slow down and restrict traffic Table 6.40

When analysed according to ability to drive/ownership of cycle, the 'cyclist only' and 'neither' groups were very enthusiastic regarding this statement, 65 and 74 percent respectively being in agreement. This is in contrast to the 'driver only' and non-CTC 'cyclist/drivers' who were ambivalent, veering towards disagreement with such measures. When respondents were classified according to frequency of use, differences were less apparent since a large number of infrequent drivers and cyclists were redistributed to the 'driver only' and 'neither' categories, although still significant at 0.1 percent.

A X<sup>2</sup> result significant at the 0.1 percent level was returned by the CTC sample crosstabulated by frequency of use. Proportionately more respondents in the neither' and 'cyclist only' categories wished to see increased use of engineering measures. 'Drivers only' were less keen, again 'driver/cyclists' responded between the two poles.

Using the independent variable of age group indicated that those over the age of 60 were greatly in favour of traffic restraint; more likely to be pedestrians they would have the most to gain. <u>TABLE 6.40</u> 'More engineering measures should be used to slow down and restrict traffic'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use d) frequency of use, CTC sample only and e) age group

a) ability to drive/ownership of cycle

CATEGORY LABEL	AC	GREE	UI	ISURE	DIS	SAGREE	TOTAL
	N	%	N	%	N	%	
driver cyclist	340	(55.7)	135	(22.1)	135	(22.1)	610
cyclist	141	(65.3)	46	(21.3)	. 29	(13.4)	216
driver	43	(39.8)	15	(13.9)	50	(46.3)	108
neither	32	(74.4)	5	(11.6)	6	(14.0)	43
CHI-SQUARE = 51.95	(n(0, (	0001)					

b) ability to drive/ownership of cycle, non-CTC sample only

CATEGORY LABEL	AGREE N %	UNSURE N %	DISAGREE N %	TOTAL
driver cyclist	23 (33.3)	17 (24.6)	29 (42.0)	69
cyclist	19 (50.0)	13 (34.2)	6 (15.8)	38
driver	38 (38.4)	13 (13.1)	48 (48.5)	99
neither	22 (68.8)	4 (12.5)	6 (18.8)	32

CHI-SQUARE = 26.66 (p<0.0002)

<u>TABLE 6.40 contd.</u> 'More engineering measures should be used to slow down and restrict traffic'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use d) frequency of use, CTC sample only and e) age group

c) frequency of use

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL	
	N %	N %	N %		
driver cyclist	203 (55.6)	80 (21.9)	82 (22.5)	365	
cyclist	120 (66.7)	35 (19.4)	25 (13.9)	180	
driver	41 (40.6)	30 (29.7)	30 (29.7)	101	
neither	192 (58.0)	56 (16.9)	.83 (25.1)	331	

CHI-SQUARE = 23.82 (p<0.001)

d) frequency of use, CTC sample only

CATEGORY LABEL	AGREE N %	UNSURE N %	DISAGREE N %	TOTAL
driver cyclist	195 (57.2)	74 (21.7)	72 (21.1)	341
cyclist	108 (67.9)	29 (18.2)	22 (13.8)	159
driver	28 (42.4)	21 (31.8)	17 (25.8)	66
neither	122 (70.9)	30 (17.4)	20 (11.6)	172
CHI-SQUARE = 23.4'	7 (p<0.001)			

e) age group

CATEGORY LABEL	AGREE N %	UNSURE	DISAGREE N %	TOTAL
29 years and under	125 (45.3)	68 (24,6)	83 (30, 1)	276
30 - 59 years	281 (56.8)	99 (20.0)	115 (23.3)	495
over 60 years	155 (72.1)	36 (16.7)	24 (11.2)	215
CHI-SQUARE = 38.51	(p<0.0001)			

# 6.6.8 There should be a more difficult driving test Table 6.41

Very few differences in attitude between respondent groups were apparent here, when analysed by both ability to drive/ownership of cycle and frequency of use. However, only 36 percent of non-CTC cyclists agreed with the statement compared with 53 percent of non-CTC drivers and cyclist/drivers. Referring back to the reasons why people do not drive, it is clear that many of those who do not have a licence, especially the younger respondents, intend taking the driving test in the future. They may view a more difficult test as being contrary to their own immediate interests.

This conclusion is supported by a  $\chi_2$  result significant at 0.01 percent being obtained when crosstabulating the responses of all respondents by age group. One third of those under 30 disagreed with the statement, compared with 24 percent aged 30 to 59 and only 14 percent of respondents over 60 years of age.

TABLE 6.41 'There should be a more difficult driving test' Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use and d) age group

a) ability to driv CATEGORY LABEL	ve/ownei A(	ship of REE	cycle UI	ISURE	DIS	SAGREE	TOTAL
	N	%	N	%	N	%	
driver cyclist	358	(59.4)	96	(15.9)	149	(24.7)	603
cyclist	114	(52.5)	57	(26.3)	46	(21.2)	217
driver	56	(52.8)	17	(16.0)	33	(31.1)	106
neither	28	(63.6)	7	(15.9)	9	(20.5)	44

CHI-SQUARE = 15.02 (p<0.02)

<ul><li>b) ability to drive CATEGORY LABEL</li></ul>	e/owner AG	ship of REE	cycle, UI	non-CTC : NSURE	sample o DIS	only SAGREE	TOTAL
	N	%	N	%	N	%	
driver cyclist	36	(52.9)	9	(13.2)	23	(33.8)	68
cyclist	14	(35.9)	12	(30.8)	13	(33.3)	39
driver	52	(53.6)	1.4	(14.4)	31	(32.0)	97
neither	21	(61.8)	4	(11.8)	9	(26.5)	34

CHI-SQUARE = 9.06 NS

c) frequency of use CATEGORY LABEL	AGREE		UNSURE		DISAGREE		TOTAL
	N	%	N	%	N	%	
driver cyclist	213	(59.0)	56	(15.5)	92	(25.5)	361
cyclist	96	(52.5)	51	(27.9)	36	(19.7)	183
driver	54	(55.1)	18	(18.4)	26	(26.5)	98
neither	193	(59.0)	51	(15.6)	83	(25.4)	327

CHI-SQUARE = 15.41 (p<0.02)

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
29 years and under	134 (48.7)	48 (17.5)	93 (33.8)	275
30 - 59 years	296 (59.4)	84 (16.9)	118 (23.7)	498
over 60 years	129 (62.9)	48 (23.4)	28 (13.7)	197
CHI-SQUARE = 28.4 (	p<0.0001)	105		

## 6.6.9 All cyclists should be trained Table 6.42

Cyclists were consistently less enthusiastic than all other respondents about training for cyclists regardless of whether responses were analysed by ability to drive/ownership of cycle or frequency of use, CTC or non-With 'cyclists only' at one pole and 'drivers only' CTC. and 'neither' at the other, those using both forms of transport lay between the two extremes, although veering towards a high level of agreement with the statement and closer to the 'drivers only' in attitude. CTC being 'driver/cyclists' crosstabulated with frequency of use were more likely to agree with cyclist training than the 'neither' category.

Thus, in keeping with the levels of self-interest expressed earlier in the attitude statements by various groups of respondents, cyclists were less willing to see a measure introduced which would effect them directly and possibly, in their opinion, adversly.

### TABLE 6.42 'All cyclists should be trained'.

Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) frequency of use, non-CTC sample only

a) ability to drive/ownership of cycle

CATEGORY LABEL	AGI	REE	UI	UNSURE		DISAGREE	
	N	%	N	%	N	%	
driver cyclist	480	(78.4)	68	(11.1)	64	(10.5)	612
cyclist	145	(66.8)	37	(17.1)	. 35	(16.1)	217
driver	97	(89.0)	4	(3.7)	8	(7.3)	109
neither	42	(91.3)	2	(4.3)	2	(4.3)	46
CHI-SQUARE = 28.68	3 (n<0.0)	001)					

b) ability to drive/ownership of cycle, non-CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	59 (85.5)	7 (10.1)	3 (4.3)	69
cyclist	28 (70.0)	3 (7.5)	9 (22.5)	40
driver	92 (92.0	3 (3.0)	5 (5.0)	100
neither	33 (94.3)	1 (2.9)	1 (2.9)	35

CHI-SQUARE = 21.21 (p<0.002)

<u>TABLE 6.42 contd.</u> 'All cyclists should be trained'. Responses crosstabulated by a) ability to drive/ownership of cycle b) ability to drive/ownership of cycle, non-CTC sample only c) frequency of use, entire sample d) frequency of use, CTC sample only and e) frequency of use, non-CTC sample only

c) frequency of use, entire sample

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL	
	N %	N %	N %		
driver cyclist	291 (79.3)	41 (11.2)	35 (9.5)	367	
cyclist	116 (64.1)	32 (17.7)	33 (18.2)	181	
driver	84 (82.4)	11 (10.8)	7 (6.9)	102	
neither	272 (81.7)	27 (8.1)	. 34 (10.2)	333	
CHI-SQUARE = 25.96	6 (p<0.0002)				

d) frequency of use, CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	271 (78.8)	38 (11.0)	35 (10.2)	344
cyclist	103 (64.8)	31 (19.5)	25 (15.7)	159
driver	54 (81.8)	8 (12.1)	4 (6.1)	66
neither	123 (72.4)	20 (11.8)	27 (15.9)	170
CHI-SQUARE = 16 4	1 (p(0,01)			

e) frequency of use, non-CTC sample only

CATEGORY LABEL	AGREE	UNSURE	DISAGREE	TOTAL
	N %	N %	N %	
driver cyclist	20 (87.0)	3 (13.0)	0 (0.0)	23
cyclist	13 (59.1)	1 (4.5)	8 (36.4)	22
driver	30 (83.3	3 (8.3)	3 (8.3)	36
neither	149 (91.4)	7 (4.3)	7 (4.3)	163
CHI-SQUARE = 34.5	(p<0.0001)			

#### 6.7 CONCLUSIONS

From the above results a number of conclusions may be drawn, to be discussed in depth in the following chapter in the context of this research. Meanwhile, a number of brief comments serve to conclude this chapter.

## 6.7.1 DIFFERENCES IN ATTITUDE

Strong differences in attitudes between cyclists, cyclist/drivers, drivers and those who use neither form of transport do exist. Using responses of the non-CTC sample to the attitude statements, it may be seen that in the majority of cases, the sympathies of the cyclist/driver group lie somewhere between the cycling and driving groups, suggesting that the responses were tempered by respondents' experiences. In other words, those who both drove and cycled were more sympathetic to the cyclists' situation than those who only drove, or converseley, were more atune to the drivers' viewpoint than were those who only cycled.

### 6.7.2 CTC MEMBERSHIP

Respondents who belonged to a cycling organisation, in this case the CTC, often indicated different opinions compared with non-CTC respondents. The composition of the CTC sample differed from that of the electoral register primarily because of the male predominance, reflected by different patterns of use and choice of transport. Responses to the attitude statements and encourage/safety section by CTC members were often notably different compared with non-CTC cyclists and cyclist/drivers. On issues concerning cyclists' rights and law certain enforcement, they were particularly adament as a group; other statements produced a measure of controversy. For example, significant differences in attitudes amongst CTC members analysed by the frequency with which they used a bicycle or car could be detected in responses to statements concerning cyclist training, traffic restrait through the use of engineering measures, banning private cars from city centres and the compulsory use of cycle paths.

6.7.3 FREQUENCY OF USING A CAR OR BICYCLE Depending upon whether respondents were classified according to ability to drive/ownership of cycle or frequency of use affected subsequent results. Certainly, if one is a regular cyclist or driver it would seem very plausible that one should have stronger feelings towards particular statements than those who use a vehicle only infrequently. It may also be the case that the 'infrequent' cyclist or driver is lacking in confidence. Thus many more drivers saw the cyclist as a hazard, and non-CTC drivers and cyclists alike felt that cycle paths should be used if available.

By using frequency of use, a large number of respondents, both CTC and non-CTC, became 'neither'; their support for such measures as traffic restraint and reduced vehicle speed was apparent in their responses to the attitude statements and the encourage/safety section. If neither regular users of a motor vehicle or a bicycle, it is likely that those in this group were primarily pedestrians, and thus likely to agree with any actions which may improve their own vulnerable position in the traffic network.

## 6.7.4 AGE

The age of an individual influenced their response, particulaly in relation to the series of questions asking why people did or did not cycle or drive. For the young, the speed of transport was an important factor, whilst danger, bad driving behaviour of others or a dislike of driving conditions did not seem to affect them. Older respondents were more aware of these problems whilst reflecting their other responsibilities, for example, family commitments.

6.7.5 'OTHER' REASONS FOR USING A BICYCLE OR CAR The 'other' category in this section of questions produced an interesting insight into the acceptability of driving over and above cycling. A large number of respondents in answer to the 'not drive' section wrote that they were learning, awaiting a test, or were too young (a result of the CTC membership). They appeared to take it for granted that they would learn to drive, or indicated their intentions of doing so. This was also identifiable from responses to the 'more difficult driving test' attitude statement.

When respondents reached their thirties they began to offer more 'militant' or environmentally based reasons for why they did not drive. In contrast, reasons for not cycling were of a different nature, and it would seen that cycling 'does not appeal' to a sizeable proportion of the younger respondents. One may conclude that cycling is generally not viewed as a valid alternative to motorised transport; people who did not cycle did not intimate that they intended to buy or use a bicycle in the future.

Similarly, the importance of an enhanced public image for the bicycle was not viewed as a primary means of encouraging cycle use by those who did not cycle, although those who already cycled were far more enthusiastic. If cycling were to become a truly acceptable method of transport in this country and enjoy the position it does in the Netherlands for example, it would no doubt influence the individuals' perception of the bicycle and cycling as a form of tranport, so that even those currently rejecting the bicycle might be tempted by its use.

## 6.7.6 SUPPORT FOR TRAFFIC RESTRAINT

A measure of support existed within the sample, and not just amongst those who cycled, for various measures which would restrict traffic, reduce vehicle speeds or remove cars altogether from city centres. Bearing in mind the infrequency with which many respondents used a particular form of transport, a large number of the sample would qualify as pedestrians and users of public transport for whom such measures are usually beneficial. It is heartening for those actively engaged in promoting traffic calming to see the level of support which does exist. Yet on the whole, drivers still require much convincing. Many of those in this sample perceived cyclists to be a major hazard, and one which did not belong on busy urban streets.

#### 7.1 INTRODUCTION

As an introduction to the the discussion that follows, this chapter begins with a brief summary of the research topic, the results from the first study undertaken and the aims of the postal survey. The discussion focuses on results obtained from the main survey, identifying differences between user groups and attitudes towards specific issues, and their implications for policies and measures aimed at improving cyclists' safety and encouraging greater cycle use. A number of recommendations arising from the study will be made, for organisations involved in working and campaigning for improved roasd safety.

The research topic was entitled 'Road User Attitudes And The Safety Of Cyclists', and the individual elements encompassed within this title examined in the Literature Review. Road users relevent to the study were identified, the road traffic accident statistics for cyclists examined and the importance of attitudes to road safety was discussed. Central to the research was the issue of safety. What is it? Are accident statistics a valid measure of safety? What of subjective safety? Does the safety of one group of road users equate with the safety of another?

It was concluded that cycling safety should not be measured in terms of numbers of cyclists involved in accidents, but through a broader perspective. For cyclists, their own safety is subjective. This may be summarised as a feeling of safety encapsulated within an ability to travel by bicycle without undue threat or fear caused by excessive or speeding traffic, inconsiderate or dangerous drivers.

How can such feelings of safety be achieved? In conversation with cyclists, reference to certain aspects of the road environment were salient; reduced traffic speeds, increased use of engineering measures to restrain traffic

in residential areas or to remove it totally from city centres, an improvement in the level of law enforcement so that more drivers would be penalised for commiting road traffic law offences, provision of additional and better cycle paths and use of facilities previously designated for pedestrians only.

All the above relate to other types of traffic movement in addition to the bicycle, thus reiterating the belief that use of a bicycle and cycle safety cannot be researched in a context which fails to address other road users' needs and perceptions. The measures identified above involve either the segregation of vulnerable users from mainstream traffic by the elimination of motorised vehicles from given areas and provision of cyclist facilities, or the use of engineering techniques to control traffic so that given manoeuvers or patterns of behaviour become virtually impossible for drivers, leading to greater equality in traffic integration.

At this juncture, a study evaluating various engineering measures to improve subjective safety might have been forthcoming. Instead, however, this research turned to attitudes. Although cyclists consulted before the onset of the study generally perceived such measures to be greatly beneficial to their safety, what was the attitude of vehicle drivers with whom cyclists were so often in conflict? They could be expected to hold strong opinions towards measures which would affect them directly, and possibly lead to a curtailment of their travelling freedom.

Additionally, how were cyclists viewed - condescendingly according to Finch and Morgan's 1985 study and not considered as 'serious' transport users. It follows that a low regard for cyclists, combined with antagonism towards the measures detailed above could have implications for policy makers and road engineers alike, and lead to poor levels of compliance with actions undertaken primarily for cyclists.

It was noted that psychologists dispute the meaning of 'attitudes' and the possible effects which they may have on behaviour. Arguments suggesting that 'attitude' is a unidimensional concept are particularly compelling. Attitudes are determined by more than one objective feature and are not the only determinant of behaviour. If it is accepted that attitudes influence behaviour, although not in isolation, then to look at attitudes of both cyclists and drivers should offer some insights into the relationship between these two types of road user.

## 7.2 SUMMARY OF THE CAMDEN STUDY

The Camden Study was planned as an exploratory study to determine whether there might be any differences in attitudes of specific types of road user. To assess how road safety was perceived, a number of group discussions were held with employees of the London Borough of Camden. From these, a questionnaire was developed and administered to participants in the discussions.

Answers to the attitude statements suggested that differences were apparent between respondents when they were classified according to their form of transport: 'drivers only', 'cyclists only' or 'driver/cyclists'. This was especially so in relation to statements which questioned the status of cyclists' and bicycle use in the traffic network, and engineering measures which restrict vehicle use. 'Drivers only' often viewed cyclists as a hazard, without training and mainly responsible for their own accidents. 'Cyclists only' and 'cyclist/drivers' were keen to see more environmental measures including the banning of cars from city centres.

The repertory grid provided insights into the perceptions of respondents which attitude statements alone could not display. All the 'drivers only' perceived 'driving a car' very positivly. It was the element they most frequently chose to illustrate the principal component 'positive

aspects of the traffic network', generally including all or a combination of the following constructs: 'relaxing', 'necessary', 'socially acceptable', 'enjoyable', 'responsible', 'important to me' and 'acceptable to me'. In contrast, more 'driver/cyclists' and 'cyclists only' compared with 'drivers only' perceived cycling very positively, using it to illustrate 'positive aspects of the traffic network'.

'Cycle lanes' were viewed very positivly by a majority of respondents. Consensus was also evident in responses to 'people failing to indicate' which was negatively perceived, as was 'drinking alcohol before driving'. A greater degree of antagonism was expressed towards the latter element by proportionately more 'drivers only' than by any other respondents. This is thought to be largely the effect of age, given that the average age of the 'drivers only' group was more than eight years greater than that of the other groups.

There were ambivalent responses to a number of items, indicating mixed attitudes towards the items 'children playing in the streets', 'heavy traffic', 'driving fast', 'the presence of the traffic police' and 'parked cars'. 'Driving fast' was significantly identified as being hazardous and socially unacceptable to proportionately more 'drivers only' than to 'driver/cyclists'. This is interesting since cyclists face special danger from speeding vehicles and a significant relationship in the responses of 'driver/cyclists' towards this item may have been expected. If this group answered as drivers rather than as cyclists, it may be that driving fast was of limited interest to them, neither considered as a threat nor an enjoyable activity, in other words, unimportant. Again, age may have had a substantial influence upon these results.

Similarly, more 'drivers only' compared with other respondents perceived 'the presence of the traffic police' to be a positive aspect of the traffic network, despite

five in this group also viewing the traffic police as a challenge. The traffic police were also regarded in a very ambiguous manner by respondents as a group when the element was analysed using FOCUS to produce clusters of items which were perceivied in a similar manner. It was linked to a variety of other elements in a number of combinations.

'People failing to indicate' was always negatively correlated to the component 'positive aspects of the traffic network'. In a cluster analysis it was commonly linked with a number of elements comprising those items which might prove hazardous, worrying or unenjoyable: 'drinking alcohol before driving', 'driving fast', 'heavy traffic' and 'children playing in the streets'. Everyone fails to indicate sometimes (both drivers and cyclists), especially if no other motorised traffic is about, a practice which is extremely disturbing for pedestrians and cyclists alike. It is interesting that a behaviour which is so widespread should cause such annoyance.

The results and discussion derived from the questionnaire suggested that there were measurable differences between groups of respondents. An important question was whether these differences resulted from the respondents' age, or sex, where they lived, or the transport they used. The Camden Study was too small to enable any meaningful comparisons to be made between age groups or any other independent variables. Respondents were drawn from just four departments of the Local Authority which influenced their ages, transport use, sex and interest in the subject under investigation. This study was intended to illuminate areas where a divergence of attitude could be manifested, and led to the wider postal survey.

### 7.3 SUMMARY OF THE POSTAL SURVEY

A questionnaire requesting factual information, and answers to multiple choice questions and nine attitude statements was sent to 2000 individuals; 1000 were members of the CTC, and 1000 members of the general public. 1020 completed questionnaires were returned. The aims of the study were to:

a) test for levels of significance where differences in attitudes seemed to exist,

b) determine whether the differences were due to mode of travel, age, sex of respondent or a combination of variables,

c) identify similarities in attitudes.

A note concerning the sample. Because the response rate from CTC members was much higher than that of the general public (74.7 percent as opposed to 25.3 percent), a large CTC bias arose. In turn, this affected the balance of responses since CTC members are predominately male and more likely to use their bicycle for recreation and leisure than for other reasons. It is also probable that this exerted some influence on why they chose to drive or cycle. No attempt was made to balance the sample statistically but where feasible, particularly in their responses to the attitude statements, the two samples were analysed separately.

Another factor worthy of mention before a summary of the results is undertaken, is the level of self-interest evident in response rates produced when the data are analysed by mode of transport or by age group. For example, drivers were especially positive about measures immediate interest, which were in their and less enthusiastic about those which might affect their levels of access and lead to a decrease in their perceived current freedoms on the road.

The main reasons people chose to cycle were 'enjoyment', 'health reasons', 'independence', 'convenience' and 'cheapness'. The fact that cycling is cheap was negatively related to the age of respondents; the older the respondent the less likely they were to choose this option. Respondents under 20 years were more likely than any other age group to mention the advantage of speed of travel.

The principal reason for not cycling or cycling infrequently, after having 'no cycle', was 'danger'. One quarter of the non-CTC sample also claimed that it 'does not appeal'. Distance and the adverse effects of hills and weather were also mentioned by approximately one-quarter of non-CTC respondents. Nearly one half of the respondents from the East Midlands who did not cycle or who cycled infrequently identified 'hills and weather' as a reason. Since it is neither one of the wetter nor hillier parts of the country, is this being used as an excuse rather than a logical reason?

'Danger' and 'driver behaviour' did not appear to be related, although it may be presumed that one of the reasons for the 'danger' was indeed the behaviour of drivers. If not, what else was contributing to the general feeling of danger? Lack of segregation of traffic, traffic density, the speed of other vehicles, road layouts, the respondents' inexperience or unfamiliarity with a bicycle (not true of CTC members surely?). Or was 'danger' being used as a general excuse for not cycling? This could benefit from further research.

There was no one reason that people drove. Over half the non-CTC sample chose 'independence', closely followed by 'convenience' and 'work needs'. For CTC drivers, the principal reason was the 'carrying capacity of the vehicle'. The under-20s and over-70s were more likely to mention 'enjoyment', again the under-20s but over-60s who stressed 'independence'. 'Speed of travel' was inversely related to age, with over 54 percent of under-20s

mentioning this compared with 8 percent of respondents over 70 years.

The principal reason given for not driving or driving infrequently (apart from not having a car), was 'expense'. Non-CTC members were also likely to choose 'bad driving by others' and 'dislike driving', whereas CTC members were more likely to 'prefer another form of transport'. Responses to this did not correspond with the response rate to the option 'good public transport', suggesting that other transport modes may be preferred: the bicycle or indeed, walking. Age had an effect upon responses to 'dislike driving' and 'bad driving of others'. Proportionately more respondents over 30 years than under that age chose these two items.

To summarise, respondents in this sample primarily cycled for reasons of enjoyment, health, independence, convenience and because it is cheap. They drove for reasons of independence, convenience, work needs, and because a car has a large carrying capacity. Respondents did not cycle because of danger, and did not drive because of the expense. There would appear to be a fundamental difference in the reasons respectively chosen by people for not cycling and for not driving; one based on the individual's perception of danger, the other on finance. 7.3.1 EFFECTS OF TRANSPORT MODE AND CTC MEMBERSHIP Dividing respondents into the categories of 'driver only', 'cyclist only' or 'driver/cyclist' based on the criterion of ability to drive and ownership of a bicycle, produced significant  $\chi^2$  results to a number of attitude statements and items questioning the encouragement or safety of cycling. The following discussion examines these three transport modes; the importance of the 'neither' category will be considered in the next section.

Respondents who only drove were significantly less willing than other road users to accept that 'slower vehicle speeds', 'a better public image for cycling', 'better law enforcement', 'cyclist use of pavements' and an 'increased cost of motoring' would encourage cycle use. Although differences in opinion between the groups were not significant for the items 'traffic restraint' and 'better road surfaces', the 'drivers only' group were again less willing than other respondents to endorse these suggestions. Respondents who both drove and cycled tended towards or very close to 'cyclists only' in their response.

CTC members were significantly less in favour than non-CTC respondents of cycle paths as a primary means of encouraging cycle use. They were more in favour of 'slower speeds', a 'better public image for cycling' and 'improved law enforcement'. The same items indicated a divergence of opinion between the CTC and non-CTC sample when safety was addressed, excepting 'a better public image' which was not perceived to be a safety issue'.

The attitude statements illustrated the strength of feeling CTC members displayed towards the subject under investigation. Three-quarters of the sample belonged to the CTC. Their attitude was not likely to be typical of drivers and cyclists in general, given their professed interest in bicycles and cycling.

As shown in Table 6.9 above, when CTC respondents were analysed by their ability to drive/ownership of a cycle, 73 percent were classified as 'driver/cyclists', 24 percent as 'cyclists only'. Therefore, respondents in the 'driver only' and 'neither' groups were predominantly non-CTC respondents. When the attitude statements were crosstabulated by ability to drive/ownership of a cycle for the complete sample, it was primarily differences between CTC and non-CTC respondents which were identified, resulting in large significant  $\chi^2$  results. Thus, it is preferable to examine the sample as two distinct groups -CTC and non-CTC.

First, members of the CTC. They can only be examined using frequency of use as the criterion for deciding their mode of transport and significant differences in opinion were identifiable to four attitude statements. Significantly more respondents who only cycled compared with those who only drove disagreed with the following statements:

Where a cycle path is available, cyclists should have to use it,

All cyclists should be trained

whereas significantly more 'drivers only' than 'cyclists only' disagreed with the statements:

Frivate cars should be banned from city centres

More engineering measures should be used to slow down and restrict traffic

suggesting that even the attitudes of CTC members are associated with the type of transport they use most frequently. The 'driver/cyclist' group consistently displayed an attitude between that of the two extremes.

Results from the non-CTC sample alone provide a different picture. Analysed by both ability to drive/ownership of a

cycle and frequency of use, responses to the nine attitude statements are detailed below.

There were no significant differences by mode of transport to statements refering to a stricter driving test, (to which approximately one-third of respondents disagreed), and better law enforcement (to which the majority agreed), an issue discussed recently by Quimby and Drake (1989). Significant  $\chi^{z}$  results were obtained however, for the remaining statements.

Significantly more 'cyclists only' than respondents who drove disagreed with the statements:

Where a cycle path is available, cyclists should have to use it,

All cyclists should be trained

Cyclists are one of the biggest hazards on the roads

Adult cyclists cause most of the accidents they are in

Cyclists do not belong on city streets

Like CTC members, the attitudes of the 'driver/cyclist' group to these statements lay between that of respondents who only drove or only cycled.

Significantly more non-CTC 'drivers only' than 'cyclists' only' disagreed with the statements:

Private cars should be banned from city centres

More engineering measures should be used to slow down and restrict traffic In response to these two statements, 'driver/cyclists' were more willing than 'cyclists only' to see the banning of cars from city centres, but less willing than 'drivers only' to see more engineering measures used to slow down and restrict traffic. This is interesting given that the banning cars item is a more extreme move compared with the general use of traffic restraint. It may be that general environmental controls operated over a wide area have a greater influence than more specific, localised measures upon the journeys of drivers and cyclists alike. They reduce freedom of movement, speed and curtail certain types of behaviour. 'Banning cars', although more extreme, may have less impact on driving and cycling behaviour, being limited in the area of implementation.

Almost one quarter of 'driver/cyclists' and 'cyclists' only' were 'unsure' in their response to the statement regarding engineering measures. This suggests that the techniques of traffic restraint and their implications for the general road user are not fully appreciated.

The 'unsure' answer was also used to a great extent in response to other statements, most notably:

adult cyclists cause most of the accidents they are in

Over 40 percent of 'driver only' and 'neither' respondents answered 'unsure' to this statement. This indicates that they were often unaware of the causes of cycle accidents and unwilling to apportion 'blame' to either cyclists, or by implication, motorists. An educational campaign aimed at the general public in an attempt to increase awareness of the problems and difficulties cyclists face daily on the roads would possibly be of some benefit.

Likewise, 30 percent of the non-CTC 'cyclist only' sample answered 'unsure' to the difficult driving test statement. As this portion of the sample did not have a driving licence they might be excused for their ambiguity regarding

this statement. They would have been unwilling to endorse a policy which might work against their immediate interest.

To summarise therefore, responses indicate that drivers tend towards one attitude, cyclists towards another, whilst those who both drive and cycle are between the two extremes. This suggests that the type of transport used is associated with the attitudes of an individual, and that to be both a cyclist and driver is associated with a less extreme attitude than that displayed by those who only drive or who only use a bicycle.

## 7.3.2 THE NEITHER CATEGORY

One of the most interesting and inadvertant findings to arise from the research was the number of people in the sample who neither drove nor cycled or, if they owned a bicycle or had a driving licence, cycled or drove only When based on frequency of use, the infrequently. 'neither' category was composed of many respondents who drove or cycled less than once a week, many of these being CTC members. Division of the respondents into transport mode using this criterion often led to a diminishing in the strength of  $\chi^2$  results illustrated by less extreme responses. When analysed by ability to drive/ownership of a cycle, the depth of feeling expressed by the 'neither' group towards specified measures or the actions of others was very strong. They often returned the most unified response to a given issue.

This was especially true of their responses to several of the attitude statements. They were the group agreeing most strongly with 'cyclists do not belong on city streets', 'cyclists should have to use a cycle path where one is available', 'private cars should be banned from city centres', 'adult cyclists cause most of the accidents they are in', 'road traffic law should be enforced more rigorously', 'more engineering measures should be used to slow down and restrict traffic', 'there should be a more

difficult driving test' and 'all cyclists should be trained'.

Analysis of the non-CTC sample by frequency of use produced significant  $\chi^2$  results to four of the statements; those refering to cyclists being a hazard, not belonging on city streets, that the use of cycle paths should be compulsory and that all cyclists should be trained. The 'neither' group was that most likely to agree with each of these statements which specifically concerned cyclists and their behaviour.

CTC members gave different responses however. The 'neither' group was that most likely to agree with the increased use of engineering measures and the banning of cars from city centres. Probably infrequent cyclists as well as pedestrians, they were less willing to endorse measures which were specifically against the interests of cyclists.

Respondents using neither a private car nor a bicycle are likely to be pedestrians for much of their time and probably also public transport users. As pedestrians, therefore, and very vulnerable in the road system, they are likely to desire the removal of any perceived hazards from their immediate locality. Hence; banning cars from city centres, confining cyclists to designated cycle paths, slowing down traffic and having stricter traffic law enforcement are all attractive ideas. Any measures which may be deemed to improve other users' behaviour were also enthusiastically greeted. The size of response to the training of cyclists illustrates this, and to a lesser extent, their support for a more difficult driving test. Additionally, this group were strongly in favour of slower vehicle speeds and improved law enforcement as a means of encouraging cycling.

The relationship between pedestrians and cyclists could be illuminated by further examination. Many of those measures which could encourage cycling and improve the subjective

safety of cyclists are also of direct benefit to pedestrians. It would appear from the results that this is recognized by many in the 'neither' category. Despite this however, many pedestrians in this sample were antagonistic towards cyclists. They obviously felt threatened by cyclists and would like to see them segregated from pedestrian areas, insofar as they returned the lowest proportion of 'encourage' responses to the suggestion that if cyclists could use pavements and other pedestrian facilities, cycling would be encouraged. Additionally, with reference to analysis by frequency of use, many respondents classified as 'neither' would be occasional drivers; possibly lacking in self-confidence they would dislike any feature which could be perceived as hazardous, such as bicycles.

Given this strength of feeling, two approaches appear useful. One is for cyclists' organisations to harness pedestrian support for traffic restraint and similar measures, so that a united front can be proffered towards local authorities and central government, in order to obtain their implementation. Unfortunately, pedestrians do not speak as one voice. Despite a possible membership of many millions of people in Britain, the Pedestrians' Association, whose objectives are:

To promote the safety of the walking public, to promote their rights and to make the roads safer for all users (1984)

is little known outside of immediate transport circles. It is indeed possible that few people actually regard themselves as pedestrians; the word 'pedestrian' does not excite the imagination in that it not only means 'going on foot, walking', but 'dull, prosaic'. It is probably more feasible for cyclists to campaign directly with residents organisations etc., on the local level, to put pressure on local government to change road layouts and to improve facilities.

Before such co-operation becomes widespread however, education of cyclists and pedestrians alike is necessary, since the results suggest a degree of mistrust on the part of pedestrians towards cyclists, as Thompson (1986), Harland (1986) and the Jeffries Report (1985) all substantiate. Cyclists need to be more aware of the needs and fears of pedestrians, particularly the most vulnerable; the elderly, those with physical disabilities and the very young. Pedestrians are worried by the quietness of cyclists, their unpredictability, failure to indicate and speed of travel. Cyclists also dislike the unpredictibility of pedestrians. The awareness of both road users towards one another requires groups of improvement plus understanding of the difficulties each face. Then greater co-operation could ensue.

## 7.3.3 AGE GROUP

The age of an individual had a considerable effect upon their responses to certain items. The youngest and oldest age groups in the sample often produced extremes in attitude. Thus, respondents under 20 years of age were more likely than other age groups to choose 'speed' as an option when answering the questions 'Why do you cycle/why you drive'? With regard to driving they were more do likely than other groups to cite 'enjoyment ' and 'independence'. They were less likely to mention 'danger' and 'driver behaviour' as reasons for not cycling, and had the lowest proportion of responses to 'dislike driving', 'bad driving of others', 'expense' and 'prefer other transport'. They were more likely than any other age group to use 'hills and weather' and 'cycling does not appeal' as reasons for not cycling.

Respondents over 70 years of age were more likely than other groups to mention 'independence' and 'convenience' as reasons for cycling, and produced the second highest proportion of responses (after the under-20s) for 'enjoyment' and 'independence' as reasons for driving. The

over-60s were less likely than all other age groups to mention 'speed' as a reason for cycling or driving. It was the mid-age range which was most likely to cite 'danger' as a reason for not cycling; while citing 'prefer other transport', 'expense', 'dislike driving' and 'bad behaviour by others' as reasons for not driving.

Respondents under 30 years of age were less willing that older respondents to endorse slower speed limits or improved law enforcement as the principal means for encouraging cycling, although these differences were not apparent in relation to cyclists' safety. This contrasts with respondents over 60 years of age who returned the highest proportion of responses in favour of slower speed limits and improved law enforcement as means of encouraging cycling. Their response rate to 'slower speeds' as a primary means of improving cyclists' safety was also proportionately greater than that of all other age groups. Yet these older respondents produced the lowest number in favour of cycle paths.

Significant  $\chi^2$  results were obtained for a number of the attitude statements when responses were crosstabulated by age group. The following all produced a significant positive relationship with age ( $\chi^2$  significant at 0.01%). In other words, the older the respondent the more likely they were to agree with the statements: 'private cars should be banned from city centres', 'police should enforce road traffic law far more rigorously', 'more engineering measures should be used to slow down and restrict traffic' and 'there should be a more difficult driving test'.

It was noted earlier during the Camden Study how it was believed that age was having a pronounced influence upon the attitudes of respondents. Because of the small and unrepresentative sample however, it was not feasible for the degree of this association to be tested. The main survey has illustrated where significant differences occur within this sample. It would appear that younger respondents were more interested in the speed which cycling and driving afforded them, and less perturbed than older respondents by danger or the bad driving behaviour of others. They were significantly less willing to see the implementation of suggested measures which would affect their freedom of movement through physical restrictions on their ease of mobility, or an increased police presence with regard to traffic law enforcement.

Given the younger respondents' interest in 'speed' and 'independence' as reasons for cycling and driving, the above measures would all curtail the accepted freedoms of the individual, and thus prove less acceptable. A large number of cyclists may perceive an improvement in their feelings of subjective safety by the implementation of these policies, but danger was not an important issue to the younger age group. This was regardless of whether they were drivers or cyclists, a phenomena which has been documented elsewhere (Quenault 1968, Quenault and Parker 1973). These groups were more interested in freedom of mobility.

It is probable that self-interest largely governed the attitude of younger respondents towards a stricter driving test since they were the least likely to have obtained a driving licence. It was intimated that many of those who did not have a licence were already taking driving lessons or planning to take them. Likewise a report by Gallup (1987) questioning children on road safety and their parents' driving found that a large majority of those questioned intended learning to drive. A stricter driving test would be against their immediate self-interest ie., the ease with which they could obtain a licence. That better drivers could be produced as a result of the introduction of a tougher test was not their concern.

Conversely, the oldest respondents felt equally strongly about the measures detailed above, but in an opposing direction. They were more likely to favour traffic restraint, slower vehicle speeds, a stricter driving test Noting comments made and law enforcement. earlier concerning the 'neither' category of road users, it appears that the 'neither' and over 60 age group gave very similar responses. From Table 6.12, it can be seen that proportionately more respondents in the over-60 age group compared with younger respondents were classified as users of neither the bicycle nor a motor vehicle. This was regardless of whether analysis was conducted by frequency of use or ability to drive/ownership of a bicycle. As stated earlier, predominately pedestrians, they would have the most to gain from the aforementioned measures.

#### 7.4 SPECIFIC ISSUES

#### 7.4.1 CYCLE PATHS

The importance of cycle paths as a means of encouraging cycle use cannot be overstated. Of the options available in the series of questions referring to ways of encouraging cycle use and making cycling safer, they were perceived to be the single most important item; whether crosstabulated with mode of transport, CTC membership or age group. The degree of support registered some variation; respondents who only drove were more enthusiastic than other road users about their overall effect.

Responses to the attitude statement, 'Where a cycle path is available cyclists should have to use it', returned significant  $\chi^2$  results when crosstabulated by mode of transport with the entire sample or non-CTC sample alone, on ability to drive/ownership of a cycle and based 'Drivers only' and the 'neither' frequency of use. category were significantly more likely to agree with the statement than the two groups containing cyclists. In the non-CTC sample, 'cyclists only' displayed the highest levels of disagreement with the statement. Analysing the CTC sample by frequency of use also returned significant Respondents who only drove were significantly results. more likely than the other groups to agree with the 'Driver/cyclists', 'cyclists only' and the statement. 'neither' group all responded in a similar manner, evenly divided betweeen agreeing and disagreeing.

This response is not suprising. Cycle paths are an obvious way of removing bicycles from mainstream traffic. For drivers, they are a very popular method of taking cyclists away from main roads; either by directing them onto specially created routes which travel through quieter back streets, for example, the Redways of Milton Keynes, or by ensuring that cyclists are using paths built alongside or incorporated within existing roads.

Drivers felt strongly that where cycle paths were available their use should be compulsory. There are a number of possible reasons for this attitude. If cyclists were effectively banned from certain roads because of cycle paths in the vicinity, drivers would know that they had one less 'hazard' to contend with, thus making the driving task easier. There was a strong feeling in the discussion groups that if cyclists wanted more facilities they should pay for them, possibly through some form of road tax. Where facilities were already provided, like those in the area where the discussion groups were held, respondents who did not cycle could not comprehend why cyclists should This has led to a degree of choose not to use them. antagonism between the two vehicle groups as articles by Francis, Ward and in Bicycle Action (all published 1989) specified.

Although recognised as a primary means of encouraging cycling and improving cyclists' safety, compulsory use of cycle paths was less popular with respondents who only cycled, those who both drove and cycled responded midway between the two extremes. Unlike drivers, cyclists have experience of using cycle paths. Balsinger's paper (1988) at the 1987 Velo City Conference addressed this very issue, as did McClintock's article (1987) on cycle scheme provision. Some paths are well designed and offer direct routes to and from well travelled centres. Others are less They may be badly designed, particularly at useful. junctions or roundabouts where cyclists can be placed in a disadvantageous position. They may be badly maintained, suffering from uneven surfaces and irregular cleaning, whilst women are particularly perturbed by poor lighting. The route may travel through unpleasant areas which increase the subjective feeling of danger, since cyclists are far more vulnerable than drivers to personal attack and Using cycle paths often leads to a slower harrassment. overall journey time. Despite the danger from fast and heavily trafficked main roads, these may still provide the most rapid journey, a factor of great importance especially to the commuting cyclist. Improving journey time is often

used in arguments concerning vehicle traffic and changes to the road layout. The same criteria are not always employed when planning for cyclists.

This attitude towards cycle paths has a corollary in responses to cyclists' being a hazard and not belonging on Almost one half of the non-CTC sample of city streets. drivers analysed by ability to drive agreed with the first statement, whereas it was the 'neither' category which was most likely to agree with the second. There are two sides to the perception of cyclists as a hazard. One is to suggest that if motorists are at least aware of their presence and regard them as a hazard, they are likely to act more carefully in their vicinity. But to regard something as a hazard may also imply a wish for the removal of that object. The strength of drivers' feelings towards cycle paths was documented above, and how it could lead to It is suggested that an increased risk of this antagonism. exists should cyclists also be regarded as a hazard, especially when in conjunction with the belief that they do not belong on city streets. In the congested and polluted atmosphere of today's traffic, conflict is thus a real possibility.

#### 7.4.2 TRAINING AND IMAGE

Overall, a large measure of support for compulsory cycle Significant differences training was articulated. in response levels were apparent dependent upon mode of transport, with cyclists at one extreme and the 'neither' group closely followed by 'drivers only' at the other. At compulsory training is impossible as it present, necessitates some form of registration or licencing for cyclists, which does not exist in this country. Training widespread throughout schools for children is in conjunction with RoSPA, although the benefits gained by children taking a cycling test are questionable (see for example Bennett 1979, Wells 1979, Preston 1980 and Kuiken 1984). Should a training programme be developed that is applicable to adults, such as Forester's 'Effective

Cycling', or even the schemes organised by local cycling campaigns whereby an experienced cyclist accompanies a novice cyclist on their usual route, results from this survey suggest that the population would be keen to see its implementation - driver and cyclist alike.

Combined with a general education programme, training might also assist in dispelling the uncertainty which exists regarding accidents in which cyclists are involved. Again, if believed to be responsible for the majority of cycling accidents, this provides the raison d'etre for seeing them as a hazard and ideally removed from city streets. Cyclists themselves would be in a stronger position if they could argue for their rights, recognised as responsible and legitimate transport users.

Training would strengthen their position. But so too would the general knowledge that the majority of adult cyclists (in this sample at least) could also drive and had therefore, undertaken the lessons and test necessary to This includes absorption of at obtain a driving licence. least some details of the Highway Code. It is probable that when a driver encounters a cyclist they merely see them as that, and attribute to them a total lack of understanding concerning traffic procedure and the Highway If drivers were made more aware of this fact, Code. perhaps they would be more inclined to treat cyclists as legitimate road users with an understanding of traffic situations.

A measure of this attitude could be identified in responses to the statement regarding cyclists' accidents, when a large percentage of 'unsure' answers' were recorded. Although only a small minority agreed, drivers appeared largely ignorant of the immediate causes of cycle accidents, which were documented earlier in the Literature Review. Cyclists also recorded high levels of uncertainty. If cyclists are regarded as untrained and barely tolerated, it is not suprising that uncertainty exists as to whether or not they are responsible for the majority of accidents

in which they are involved. A lack of self confidence could explain the cyclists' uncertainty.

One reason for the antipathy towards cyclists could be the poor public image which cycling enjoys. As one respondent wrote in capital letters across the questionnaire, 'I do not wish to see cycling encouraged'. It is still not accepted as a serious form of transport, but as a fringe activity, undertaken primarily by students and young people becasue it is cheap. In a society which has increasingly idolized materialism and status, the bicycle is not a powerful symbol.

CTC members were more enthusiastic than non-CTC members about an improved public image encouraging cycle use. As cyclists, they accepted that the current image could be improved, and that this could lead to more people being encouraged to use a bicycle. Those they would wish to woo onto cycles, the current 'driver only' group, were less sure; the action is necessary before they realize that it has affected them as individuals. It would be of interest to determine the sort of image that is required.

Lately, the trend has been towards style - having the 'right' bicycle, the 'right' clothing and accessories to go with it. This might attract some younger people to cycle who would previously never have dreamt of purchasing a bicycle. Alternatively, it may marginalize cycling even further as it becomes increasingly viewed as the prerogative of the young, and diminishes that great asset, inexpense. It is ordinary people who currently undertake short trips by car who need to be persuaded that the bicycle can prove a very cheap, efficient and enjoyable alternative.

Why do people not cycle? In many instances, cycling has probably never occurred to them. Unlike driving, it is not regarded as proper transport. It may not appeal to them. Thus, tinkering with cycle design, giving them more 'street credibility' may attract some younger users. Basic facts
concerning the cost of operating a bicycle, the average distances an individual may expect to cover, journey time and the vagaries of the British weather could all do much to illustrate both the financial and time savings gained through cycling. Also, the very limited number of occasions when cycling through rain, snow or gale force winds are necessary. As recorded in Pro-Bike (FoE 1987), over 75 percent of journeys are of less than five miles and easily attainable on a bicycle by most people, whilst on average it only rains between the hours of 8am and 9am twelve days in the year.

Additionally, change the view of cyclists from cranks, poverty stricken students and health freaks into that of positive thinking men and women who recognise an ideal form of transport - cheap, easily maintained, efficient and nonpolluting, in other words, environment friendly, and one may start to attract the very people who were relatively unimpressed by the argument that an improved public image would enhance cycling's fortunes. It is worth noting that over one quarter of drivers in the non-CTC sample rank ordered 'the increased cost of motoring' either first, second or third as a means of encouraging cycle use. Likewise, 'expense' was the option chosen most frequently explain why a respondent did not drive. A sharp to increase in motoring costs could indeed lead to a decrease in inessential driving and an increase in bicycle use, although the governmental action necessary to precipitate such change does not appear likely in the immediate future.

## 7.4.3 TRAFFIC RESTRAINT

Now that 'green issues' have been discovered with a vengence by the media, (and to a very limited extent, the present Government), it is an opportune time to press for more cycle use, improved facilities, restrictions on motorised vehicle use, perhaps even incentives for increased cycle use. Barely a day passes without some discussion on television, radio, or in print, concerning the abysmal congestion on the roads, the appalling cost of

accidents, and the catastrophic effects that pollution is having on the earth, a large proportion of which is contributed by vehicle emissions. Cycling would appear the ideal alternative.

Yet despite current enthusiasm over all things green, there is no sign that people are using their cars less, or are prepared to do so. Thus, what are the attitudes of road users towards measures which restrict their ease of mobility or lead to greater law enforcement?

There were no significant differences in the attitudes of different vehicle user groups towards 'better road surfaces' and 'traffic restraint' as a means of encouraging cycle use or making cycling safer. However, when asked whether 'more engineering measures should be used to slow down and restict traffic', significant  $\chi^2$  results at the 0.02 percent and 0.1 percent levels were obtained by crosstabulating the non-CTC sample with their ability to drive/ownership of a cycle, and the CTC sample with the frequency with which they drove or cycled. Proportionately more respondents in the 'neither' categories were very keen to agree with this statement, whilst proportionately more 'driver only' (and 'driver/cyclists' in the non-CTC sample) disagreed.

Similarly, fewer respondents who only drove were prepared to endorse the banning of cars from city centres, Thus, despite their acceptance that traffic restraint could encourage greater cycle use albeit to a limited extent, they were not enthusiastic about its implementation.

Significant  $\chi^{\Rightarrow}$  results were obtained in response to the 'slower vehicle speeds' and 'better law enforcement' items in the encourage section of the questionnaire. Again, proportionately fewer 'drivers only' than other road users were prepared to concede that these two measures would encourage cycling. As non-cyclists, they would not appreciate the special dangers faced by vulnerable users in the presence of fast moving vehicle traffic, nor the

frustration cyclists feel when constantly placed in danger by careless driving and (petty) breaches of traffic law.

However, when questioned in the attitude statements whether 'the police should enforce road traffic law far more rigorously', no significant disagreements were apparent in the CTC and non-CTC samples when analysed individually. When examined as one group by ability to drive/ownership of a cycle, the difference which emerged was the result of CTC membership. A large  $\chi^{\cong}$  result was obtained when crosstabulated with age group though; the older the respondent the more likely they were to agree with the statement.

It would appear that a large number of drivers are willing to endorse the compulsory use of cycle paths but are less keen on measures which slow down and restrict motor vehicle traffic. One removes a perceived 'hazard' from their immediate vicinity whilst the other restricts their personal freedom of mobility. This acceptance of restrictions on other road users mobility, as long as it does not infringe their own freedoms, is also recognised in the DTp's study 'Road Safety: The Next Steps (1987).

# 7.4.4 ATTITUDES AND SAFETY

What of the association between the attitudes expressed in the discussion above and the safety of cyclists? The negative way in which some drivers not only view cyclists but the measures designed to improve cylist safety are of concern to anyone involved in the road safety field. They present a frightening disregard for the problems faced by vulnerable users and ways in which these may be alleviated.

Any measures implemented in an attempt to improve the safety of cyclists are liable to face tough opposition from other road users who do not recognise the benefits gained through traffic control or do not wish their own freedom of mobility to be curtailed. The greatest opportunity for success therefore, is either through close co-operation with user groups in an attempt to change attitudes towards an acceptance of cyclists and traffic restraint, or to build in measures which are virtually impossible to disobey.

The attitudes displayed by the young also present a disturbing picture. It is known that young drivers and cyclists, especially males, are over-involved in accidents. They were the age group most likely to disagree with training for cyclists, stricter training for drivers and increased law enforcement. Likewise, they were the least concerned by danger or driver behaviour. It seems likely that their attitudes towards speed and risk-taking are reinforced to some extent by a subjective norm which appears to condone excessive speed and which rarely penalises the dangerous behaviours viewed daily on the roads.

Lastly, in recent years, there have been newspaper accounts of how drivers' tempers have exploded on highways in the United States leading to actual physical harm being caused to another driver, sometimes even death. Now, there is evidence that this type of behaviour is spreading to Britain, as the Bicycle Action report (1989) cited earlier testifies. By no means is it being suggested that the majority of drivers are about to start physically abusing cyclists; but with ever increasing traffic on the roads, resulting in longer journey times and greater levels of frustration, violence is always a possibility. The vulnerable and unpopular cyclist becomes an easy target in a car based society.

### 7.5 RECOMMENDATIONS

A number of recommendations will be made arising from this research. When the study was first undertaken, a concept much in vogue at the time was to view cycling in relation to the four Es of Education, Engineering, Enforcement and Encouragement. Although other abbreviations have been implemented in recent years; for example, F for Finance, I for Initiative, the four Es remain a useful method for categorising issues in association with cycling. They will be utilized here as a framework for the suggested recommendations which address the safety of cyclists and road user attitudes.

## 7.5.1 EDUCATION

- A priority is to educate the public regarding the rights of cyclists as legitimate and serious road users. Groups but targeted include all vehicle drivers, to be particularly those aged under 30 years of age and novice For too long, motorists have been led to believe drivers. that 'the streets are made only for cars' (Sandels 1979), and this attitude has to change. All road users must appreciate that cyclists have a right to be on the roads. pedestrians who displayed intolerant includes This attitudes towards cyclists in this survey.

Education can play a role here, but it must start early in childhood. Children should not be brought up to believe that the private car is the most desirable way of travel and the status surrounding car ownership needs to be dissipated. The standard mode of transport for children is the bicycle. Somewhere, a fundamental shift in perception towards it occurs, so that the bicycle suffers a loss in attraction (note the comments of respondents in the Discussion Groups - Chapter 3 above). There is a need to reach beyond the image of the car as the dominant transport mode. There now exists a greater opportunity than before for this to occur as children become increasingly aware of

environmental issues. With education, the bicycle could become a more favourable long-term proposition.

- A programme which aims to educate the general public into the specific dangers faced by cyclists is required, and to increase motorists' awareness of cyclists, possibly through publicity campaigns, (see Martin 1988 and his plans for a driver awareness campaign, likewise FoE 1986). Numbers of accidents occurring and behaviours which affect the subjective safety of cyclists should be expressed in order to increase awareness of the problems. Immediate causes of cycle accidents should be explained, and typical cycle accidents highlighted. It must be emphasised that it is not just the cyclist who is at fault through inappropriate behaviour, but inattentive or careless drivers failing to notice or to give way to a cyclist.

- Although it may not have a pronounced effect upon driving ability, a stricter driving test should be introduced, to instil in the novice driver the notion that their licence is not a right but a priviledge, and one that can be removed. Responses from the sample suggest there would be much support for such a measure.

- Introduce the practice of taking at least one driving lesson on a bicycle, perhaps another as a pedestrian. Driving lessons and the resulting test should not be content to teach control of the car and crammed knowledge of the Highway Code. Although most people are pedestrians at least some of the time, an appreciation of the peculiar difficulties faced by vulnerable users can only be achieved when the awareness of the individual has been raised to recognise problems and inequaliities, and not merely to accept their presence as inevitable.

- Ensure that as many children as possible undergo some form of cycling lessons and test, such as the relaunched Cycleway scheme (RoSPA). Even though cycling ability may not be improved to any great extent, the formal training; knowledge of highway laws and regulations, plus an

understanding of the problems faced by cyclists should provide a coherent framework on which to build more responsible road users.

- Despite the majority of adult cyclists (in this sample at least) also having a driving licence, thus some knowledge of the Highway Code, driving conditions etc., an educational programme directed specifically at young adults could be developed. Problems exist in the implementation and organisation of such a programme, but if these drawbacks can be surmounted it would prove an valuable exercise. It could be developed as the natural successor to the Cycleway Scheme, and as a precursor to driving lessons and the subsequent driving test.

- Attempt to heal the divisions which currently exist between cyclists and pedestrians through education. It is important that cyclists know and understand how fearful pedestrians are of shared use, from where those fears have arisen, and the specific problems pedestrians face; especially the elderly, handicapped and very young.

# 7.5.2 ENFORCMENT

- Direct more resources towards policing the roads. This would be a largely popular move, except amongst younger road users whose attitudes were fairly negative towards law enforcement. Concentrate particularly on speed, and careless (petty) offences which can be so threatening: failure to indicate, crossing traffic lights on red, general bad driving practices.

- It is not necessarily the imposition of stricter fines that is required, indeed, it is doubtful how useful these would be. Instead, a fuller use of retraining, retesting, compulsory study for the advanced drivers test although, as with other educational measures, the direct benefits would be difficult to quantify (Hoinville et al 1972, Brown 1987). For younger or novice drivers, a restriction on the

maximum speed at which they are permitted to drive would be highly beneficial.

- With more emphasis placed on policing the roads, a shift in the perception of the driving public towards the seriousness of traffic offences could occur, so that actions which are currently widely practiced and accepted become less acceptable. Note, for example, changing attitudes towards drink/driving and (in another sphere), the desirability and effects of smoking.

## 7.5.3 ENGINEERING

- A valuable reassessment of measures currently implemented for cyclists has recently been undertaken (Harrison et al 1989). The following quote from 'Next Steps' (1987) should also be applied to cyclists:

Pedestrians should be recognised as co-equal road users and taken into account at the earliest stages of road building and improvement and traffic management schemes.

Cycle provision should not be seen as something which is amalgamated with major road schemes to pacify a few activists - it requires careful and considerate planning throughout all stages of development.

- There exists a consensus between all road users about the desirability of cycle paths, but not their compulsory use. Cyclists have experienced some of the less satisfactory examples and do not wish to be legally confined to them. To encourage maximum cyclist use of cycle paths, which is of benefit to drivers and cyclists alike, particular care is necessary in their design, route, construction and maintenance. This involves liaison with local cyclists to ensure that what is being implemented is what cyclists' require, not what engineers and planners believe is required.

## 7.5.4 ENCOURAGEMENT

- Central and local government must implement positive policies to encourage cycling; including provision of more and better cycle paths, stricter law enforcement and greater use of traffic restraint.

- With the increasing environmental costs of unbridled motor traffic, the true cost of motoring needs to be recognised and placed firmly on the shoulders of vehicle users. An increase in the cost of motoring could result in cycling becoming a more attractive proposition for many prospective users.

- It is necessary to sell cycling to the public as the great alternative: very cheap, highly efficient, convenient, healthy, relatively fast in urban areas and ideal for short trips. It should be emphasised that the weather is not as appalling as most people in Britain believe, and that on a bicycle with a good gearing system even hills are relatively minor in much of the country.

# 7.5.5 CENTRAL AND LOCAL GOVERNMENT

- Central government has a vital role to play in providing the resources and political will necessary to enable such changes to come about. To fully develop any of the educational programmes suggested above, or to improve traffic law enforcment, or to provide increased provision for cyclists, requires positive encouragement and financing from central government.

- It is local authorities who are responsible for the majority of cycling provision. It is essential that cycling be regarded as an equal and legitimate form of transport, planned for and considered at all levels.

- Liaison with local residents and user groups is vital when any type of traffic restraint programme is envisaged. Such programmes will have a far greater chance of success if the support of local residents, cyclists' groups and others can be enlisted before implementation by consultation throughout the planning procedure.

- Where possibilities for traffic restraint exist and are desirable, cycling groups should attempt to build rapport with local residents and similar organisations to enlist their support. By entering into a dialogue with other road users, not only may misunderstandings and apprehensions be lessened, but shared difficulties and possible areas for co-operation be determined.

## 8 CONCLUSION

The Literature Review concluded with the suggestion that drivers probably possessed different attitudes towards the rights and position of cyclists in the traffic network compared with cyclists themselves, and that it was the identification of these attitudes and their relation to the safety of cyclists which constituted the aim of the research.

Safety, however, is not something that can be easily measured. It is the subjective safety which is principally of importance to cyclists (and no doubt to other road users). Items which improve the subjective safety of cyclists include cycle paths and traffic restraint - those increasing their feeling of danger include speeding traffic and the lack of police enforcing road traffic law. It was suggested that the attitudes of the public towards such measures would have an association with their levels of compliance when a given measure was introduced, and the subsequent safety of cyclists.

Before assessing the attitudes of the sample towards various issues, the reasons why people chose to cycle or drive were required. It emerged that the reasons people state for not driving or not cycling were fundamentally different - the former becasue of expense, the latter through fear of danger. Learning to drive was recognised as a logical exercise undertaken on reaching the prerequiste age, cycling, or continuing to cycle was not.

Respondents who drove but who did not cycle were statistically more likely than respondents who cycled, to view cyclists as a hazard that should not be on city streets, that were responsible for accidents in which they were involved, that all cyclists should be trained and their use of cycle paths should be compulsory. They were less likely to agree with the banning of private cars from city

centres, or the increased use of engineering measaures to lower vehicle speeds and to restrict traffic.

Respondents who neither drove nor cycled were particularly supportive of any measures which might restrict traffic on the one hand, and confine cyclists to cycle paths on the other. They were intolerant of drivers and cyclists alike. Compared with older respondents, those under thirty years of age consistently displayed a more negative attitude towards traffic restraint, city centre car bans, law enforcement and a more difficult driving test.

An intrinsic feature of the research findings therefore, was the level of self-interest displayed by respondents. Thus, drivers desired cyclists to be removed from the roads onto cycle paths but did not wish restrictions of their own freedom of mobility; cyclists were opposed to compulsory cycle path use but desired more use of traffic restraint and restrictions on traffic use; respondents who both drove and cycled were consistently between the two extremes in attitude, and those who used neither form of transport were enthusiastic about any measures which would remove both motor vehicles and cycles from their vicinity, or ensure that users were trained.

Cyclists were less enthusiastic about cycle training; respondents under thiry years of age less keen to see a stricter driving test, increased traffic law enforcment or increased traffic restraint. As a group, they were less concerned than older respondents about danger and poor driver behaviour.

## 8.1 FURTHER RESEARCH

It has been determined that marked differences in attitude exist towards cycling and various specified measures. These are dependent not only upon an individuals' mode of transport but also their age and whether they belong to a cycling organisation. Given the necessary resources, a number of possible avenues have been identified which could provide a valuable addition to knowledge in this subject area.

# 8.1.1 ATTITUDES AND BEHAVIOUR

To study specifically how the attitudes of road users translate into behaviour, or how observed behaviour can be identified through expressed attitudes. Because the link between the two is notoriously difficult to assess, research which attempts to discern a cause and effect link is fraught with problems. If a road user is aware that they are being observed, their behaviour is likely to change accordingly - hence the immediate speed reduction and more careful practices displayed by drivers when a police car is in the vicinity. Such research usually involves sophisticated technology to enable the researcher to observe road user behaviour without prior knowledge. Azjen and Fishbein's model of reasoned action can thus be utilized to relate behaviour to individual attitudes and the subjective norm (Vogel 1984).

Using a video camera to recorde behaviour of cyclists in traffic, followed by a questionnaire administered to the observed road user, Brookhuis et al (1988) have analysed cyclists' traffic behaviour in order to develop an educational programme for young cyclists. A similar project aimed not only at cyclists, but drivers also, could illuminate the relationship between how people behave in the traffic network (particularly unsafe behaviours), and the attitude of the individual towards driving, cycling, law enforcement, traffic calming etc.

## 8.1.2 DANGER

Danger is often cited as one of the principal reasons for not cycling. In this study however, there appeared to be only a tenuous connection between 'danger' and 'bad driver behaviour'. There was recognition that many engineering or enforcement measures such as reduction in vehicle speeds and provision of cycle paths could encourage more people to cycle, but there remains a suggestion that 'danger' is used more as an excuse than a concrete understanding of the This research was general in outlook though, situation. it asked which measures would encourage more people to cycle, not the individual being questionned. Taking a smaller sample and some in-depth technique, possibly the repertory grid which provided such a wealth of information on individuals' perceptions, it would be of great interest to determine the detailed reasons for transport use, and ways in which choice of transport mode can be changed, specific to the individual.

## 8.1.3 PEDESTRIANS

Attitudes displayed by pedestrians were particularly strong. A neglected sector of the public despite being the largest single grouping of road users, more research is necessary to determine their needs and requirements, and ways in which the balance of power in the road network can be shifted towards the vulnerable user. Their intolerance of all vehicles whether pedal or motor driven was obvious.

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## APPENDIX 1

#### ROOT DEFINITIONS

To investigate ways of improving safety for cyclists, looking particularly at the behaviour and attitudes of all road users and how these may be influenced through education, enforcement, engineering and encouragement.

Encouragement: to evaluate the effectiveness of publicity campaigns and promotions as a means of improving road user awareness and in highlighting new engineering methods, traffic law enforcement and safety education for the cyclist and noncyclist alike.



Education: to look at the usefulness of education as a means of reducing road accidents with emphasis on training for child cyclists and pedestrians, and driver training for young adults in an effort to improve road user attitudes and responsibility towards others.



influence of parents, schools, others ...

Engineering: to assess the efffectiveness of a policy of positive discrimination for the cyclist in cycle planning, and the use of engineering schemes as a means of improving road conditions for cyclists.



Enforcement: to study the emphasis placed on road safety by the police and other law agenices, how useful enforcement and the threat of penalties can be as a tool to reduce road accidents by influencing behaviour.



#### APPENDIX 2

## Discussion Group - Meals on Wheels Women - Group of 12

Why do you drive, and why don't you use public transport?

- Privacy, convenience - that's if buses go where you want to go - it's got to be cheaper now hasn't it, even though petrol's gone up - no, I've got a bus pass, I can travel for nothing, and a train pass - why? - my husband's a bus driver

What about other people, same sort of reasons, convenience etc.?

- yeh, for time really, we're all on tight schedules aren't we, if you waited for London Transport you'd never get anywhere. And public isn't any cheaper nowadays, it costs alot to go by bus. can't remember the last time I went on a bus - quite expensive -50p for one stop - is it *(general chatter)* - depends where you go, the more popular the destination the dearer it costs - you haven't also got direct routes to everywhere you want to go, you got to change a few times.

Why do other people use it?

- 'cos they haven't got a car - I think mostly for shunting children too and fro from school, getting their shopping, and if it's raining and there happens to be one coming up the road - women got alot more things to do than men - too true - yeh, they go a work, come home, sit down: I have to take the kids to school, come back, go a work, go home, get the shopping, pick the kids up, go home... - Oh dear... (general laughter)- don't forget when they go a football (more general comments) - I had to walk half a mile one way, back down that half a mile, a mile the other way because there wasn't a bus. So I learnt to drive.

Why do you think other people don't use a car?

- 'cos they haven't got one - lessons are pretty expensive, and the test, I don't know - they're pretty expensive anyway - alot moneywise - alot haven't got the nerve to drive either. There's only me and my husband that drive on the entire two sides of the family. No one else got the nerve to do it.

Why's that?

- because of the London traffic - because of all these meals on wheels drivers... (laughter) - yeh, look out, here comes an orange van

Have you ever thought of using a motorbike or cycle?

- No, no (general murmurings except one)

Why do you choose to cycle?

- It is just alot quicker than London Transport and I haven't got a car.

Is that the only reason?

- well, because I enjoy it, keep fit, pass all the queues of traffic.

What is it you enjoy about driving?

- well, not alot on the roads, listening to your own music and personal - not alot really now, just basic convenience - not so much driving in London though

Do you think there is a big difference between driving in London and outside?

- Oh yes, definately (general agreement)

In what way?

- well, you've got your one ways, you've got so much congested traffic, it can take you sometimes quite a while to get from A to B. It's still more convenient than if you're standing at a bus stop for half an hour or so. I mean, that's assuming you've got a bus stop near you - yeh, and the bus goes where you want to

What about other things to do with driving. Do you enjoy the actual sensation of driving?

- Oh yeh, I enjoy driving - I do (general agreement)

Do you prefer it in London than outside, or does it not bother you?

- no, doesn't worry me - doesn't bother me

What about others?

- I prefer to drive in London - oh yeh, 'cos once you're out of London I think you tend to relax

Do you think it's dangerous if you relax?

- well yeh, you're so keyed up in London to watch the traffic than if you're in the country you tend to be alot more ... - I also think that if you are a London person and you've learnt to drive in this kind of traffic that we've got in London, basically speaking I think that people who live in big cities, espescially like London, they're helluva lot better drivers than ... (drowned out by general agreement) -country driver you've had it, bad as a milk float they are - weekend drivers- so all in all, with us lot here, driving every day, we're better than anybody else - course we are - see, if you drive for a living, you're more experienced - 'cept taxi drivers - oh 'scuse me, leave them out of it - bus drivers - they are the world's worst drivers on the roads - what, taxi drivers you mean? - taxi drivers and bus drivers - don't matter where you are out, no manners - they're swine - just follow that steering wheel - and they don't give a monkey's about you moving out of the way, they're just, I don't know - 'cos they're bigger that anything else on the road they just pull out - that thing they've got, ex bus drivers, no hand signals, that's it.

What is it you dislike about driving, apart from bus drivers?

- don't think there's anything I dislike about driving - traffic don't bug me much - don't worry me - the only thing that worries me is motorbikes and cycles - yeh, you've got to be very wary on the road - 'cos motorbikes pull out on the wrong side and duck in again - well at least you can hear them. It's the bicycles yeh, and the school holidays, that really does.

Why, because there are more kids about?

- yeh, they're on the road with their bikes - well in our job where you're delivering to flats and back, you've got to be really careful - and like if there's alot of traffic amd that, and cyclists go in between, like between the parked cars and the traffic, if they scratch your motor, there's nothing you can do about it, they're not insured. Mean like cyclists don't have to be insured. They can do anything to you. They can damage your car or they can go through red lights - and they do. They jump off at red lights (confused chatter and agreement)

How about you as a cyclist. Are you going to defend yourself?

- when I do drive, I'm very aware of cyclists, I try to keep right out of their way - and I don't like children on the back of cycles - no, no (general agreement) - especially when you see little babies gone asleep with their heads back like this. There's no support for them at all. Dangerous thing there ever was. - you see alot of silly cyclists. They go along with their headsets on - yeh, and you're not allowed to do that in a car so you shouldn't be allowed to do that on a cycle (indistinct)

Do you think that is one of the problems about driving, the other people on the road?

- yeh, yeh - you can be the most carefulest one on the road but you can still end up dead. You've just got to say that everyone else out there is a complete down and out and utter idiot, and you don't know what they're going to do next, because if you don't think that way...the car, without a doubt.

Has anyone else got a view on the problems of driving?

- I think the worst thing for cyclists is people opening their car doors - yeh (laughter - someone had recently done so) - yeh, well she brought it on herself 'cos we was all stationary and she was coming on the inside and the same rules should apply to cyclists as it does to a driver. They shouldn't overtake on the inside. - it's six of one and half a dozen of the other really and people stepping out from between cars - I mean, I got run over by a cyclist! (much hilarity) Not a motorbike, a cyclist. I went, blacked out for a couple of seconds but he was still stoke out. I don't know whether that man ever come too but his bike with it's two buckled wheels was taken away. I don't know what happened yet but he done a wheelie over the handlebars. No, but let's be fair. There was a traffic jam, quite a way back from traffic lights, crossing anyway. So this side's clear, that is solid. Driver in the car, right "thank you", so I've run in case they want to move, very considerate you know. That man, must half have some legs, boof, our two heads clashed. Well, I thought, he can stop, you know, got to put his foot down, I can stop but in a split second, we crashed heads. Truthful now, that man was spark out and everyone made a fuss of him. I was older than him, even cyclists, let's be fair... (more laughter) - I think they should have to take a test the same as we do and they should be taxed to use the roads - oh, she's hard - no, they should supply them with more bicycle lanes anyway - they are getting some - and children shouldn't be allowed to go on the big roads.

#### Do you think there should be an age limit?

- oh yes, you've got 8 year olds, 9 year olds sometimes on busy roads and I mean, they're dare devils; in and out, in and out - I was coming down Finchley Road the other day and he was about 9 and he had a 10 year old on the handlebars. How he didn't go under I don't know.

Do you think there should be an age limit on all kinds of roads or ..?

- there's an age limit to learn to drive, there should be one to stop, 'cos you can't half see some very, very old people and they can't even turn their heads, and they're going deaf (jumbled comments on how there is or is not a test) - there's not such a thing as you get to 80 and full stop, you cannot drive- yeh, what about that woman who lost a wheel and drove something like 5 miles.. Do you remember that one. In the paper, everyone kept moving over and letting her pass and she was driving on 3 wheels! - no.. - it was, it was in the paper - really in theory, there should be an age limit. Doesn't matter how fit they are, say 80 right. I'm stretching it but no way, you can't have that licence because their hearing's gone, their sight's going and everything's going. - some of them, not all of them. Some get to 80 and they're still as fit as you are now .... - no. I shouldn't be behind a wheel - in fact, I'd want to drive more when I'm older - that's what I'm saying. they go out, out of sheer loneliness and what have you. But they are a menace on the roads, no two ways about it - you know like they've got bicycle lanes, perhaps they should have pensioner lanes - I think when people do reach a certain age they test them again, don't they? -70 or 75 (jumbled discussion as to whether it is just the GP or an actual test the elderly have to satisfy)

If you have a higher limit, what do you think the younger limit should be for people to be on the roads?

- yeh, I think the present limit's all right - yeh, what is it, 177- it's the motorbikes that don't need a test and drive on their own straight away. You can buy a bike and walk out of the shops and drive away. - yes, you have to pass a test now within a year - but there's still that year. They can buy a bike, walk out of the shops, start it up and drive away without their ever having done it before.

Do you think there should be some type of facility then, whereby you get people to take lessons before they are allowed to buy a motorbike?

- yeh, but you'd never do it because of all the private buying.

What about cycles then. Do you think there should be some type of test?

- yeh (general agreement), there is the cycling proficiency test.... - they take things round schools in all different areas - but when you've passed a test you can drive how you want to.

Who drives as they did when they passed their test?

-None of us, no... (general agreement)

You were saying before about cyclists being on cycleways and paths. Do you think that would be a good idea in general, if you could seperate different types of road user. You have pedestrians on the pavement, cars on the road, where do cyclists belong?

- very awkward - yes, they should have their own paths - in all the other European countries they have their own. Like in America, they have cycle lanes but they are on with the pedestrians. And when we were over there, you know, every five seconds, you were grabbing the kids out of their path. You know, it's either the pedestrians or the car drivers. There isn't a place for them really, not in London traffic. - there's bus lanes already, there's not enough room to put cyclist lanes.

They are meant to be joint use, bus and cycle lanes.

- what about banning traffic from the centre of London? - I wish they would eventually,

That is another alternative. What do people think about that?

- (general murmurings..) but that would mean some of us would have to leave at 6 in the morning to get our kids to school, so I'm afraid that's definately out! - well, they have in Central London haven't they, down the West End, they're trying to do it in Camden Town aren't they. Ban all the traffic. - the main road itself, they're trying to make that for pedestrians only traffic's bad now, it'd be even worse in that area if they blocked that off for all the cars - they could stop private traffic within certain times of the day. - yeh, just have a shopping time (general chatter) - try and do it like they've done in Regent Street - just walking, put trees in the middle of the road. No cars, no buses, they stop either end and you get up and walk up and down. Whether it'll ever come off. It's a bit like putting Sainsburys in that thing, that never came off did it. even up the West End when you're a pedestrian, you've still got to watch the taxis and buses and things. You can't just cross.. - well something's got to happen - and private cars, and they banned them - yeh, I've seen some private cars up there in the West End. My husband got stopped in a bus in Oxford Street for speeding, he did, he got booked for speeding. Yeh, that's true. - must have been the same copper who done my husband down Whitehall 12 o'clock one dinner time for speeding. Virtually at a standstill, 45mph he was.... - remember when my Peter got done for speeding on a moped. Don't go no faster than 30, he got done for speeding - so they are the menace on the road, the police (general agreement and laughter) - and the traffic wardens - when

the lights go they put traffic wardens in, that's an absolute menace

What do you think about traffic wardens ...?

- Shit! - they should come out after 10 at night and go home before 6 in the morning - I think we pay enough tax to park where we want to park - I think the trouble with the traffic wardens is they go to the shopping areas, and nick everyone when they've got to go to the shops, but when it comes to the dangerous bends, each side, and if you've got cars parked near islands, yellow line, they bloody ignore that. They don't get a ticket. - but you see they'd have to do more walking to find them and they're told to do 'X' amount of tickets, and the quicker they do it, then their day's finished. When they're book's empty... - she believes in widespread clamping - I do

What do the rest of you think about 'widespread clamping'?

- Not alot! - no, 'cos they'll do it in the shopping areas again and not where they should be done, on bends and things - but with all things like that, it never affects those in say, Hampstead or St. John's Wood, where all the money is. They don't have any problems parking. It's all places where we live locally, that's where they all are. - that's right, we have to pay to park but if you go to Hampstead it's still free - yeh, if you go where there are certain councillors or officials at the town hall then there's no such thing as a parking, you know, no lines nor nothing. We've either got to buy a ticket or park it on a meter and get up in the morning and even if there is a meter you've still got to get on it 'cos there are more residents with parking than there are permits. - it's got no parking outside schools and all this stuff - you've got to, and would these days 'cos you've got to pick your kids up either by car or walking - problem is people who get permits and don't live in the area - that's what does it - tell you what else it is. It's people who have disabled stickers when they're not disabled, they're pratts they are! - you're being recorded. - well, they are aren't they. A bloke the other day, he had a big Rover, he come up the pavement, went into a guy's bicycle who was walking past, then got out and walked away. There's nothing wrong with him, but he's got a disabled sticker so he left it there. The man with the bike chasing him up the road calling him all the silly sods under the sun, and he just got out and walked away. You know, it's not his sticker, they just pass them on through the family like heirlooms.

Do you think you need restricted parking?

- I think in say, a narrow street, they should be parked on only one side of the kerb, not two sides -yeh, 'cos that would help, I mean alot of that is just common sense but people haven't got got any much - well, to tell you something on this job, we have to park illegally to do that, we can't do it without.

Do you get tickets or do they turn a blind eye?

- they do roughly know, they've got to be a new person, one who's only just started and doesn't really know, but there is certain areas, like your built-up areas where I am down in Holborn. Now, if I don't jump up on that kerb, and we all know it's illegal, I can't deliver 'cos on one side of the road is all parked cars, and there's only enough left in that one way street for the traffic to come through, can't do it. So we have literally to break the law virtually more times than not in delivering one dinner. - we're an essential service, we're allowed aren't we? - no, we're not. We're still not allowed to break the law. - should be allowed (general chatter)

What happens if you do get a ticket? Is it your own responsibility?

- well, I don't know. I mean, we have had, when you've been doing a dinner they've had a big argument over it, I think that's why we don't get alot of tickets. It has, on the odd occassion, been took out of petty cash. You can't prove that's where your delivery was, right, and that parking outside of Sainsburys in Camden Town, you know, that's it. But going through a no entry we can go round and round a block doing dinners - sometimes the police are alright down there, another time they'll stop you

Do you find it a problem in places like Somers Town, where they have an environmental area?

- that's the one we're on at the moment, yeh - I think there should be exceptions - you've got your eyes everywhere looking all over the place - if you don't break the law you'll be there 'til 4 o'clock and they'll get cold dinners. I think when you put them up there's exceptions and they should make like meals on wheels. They have to do it for ambulances ... - we should have keys to the barrier gates as well - yeh, we had a problem with that yesterday - the barriers where you can't get into the flats, but as it happened the caretaker came along, didn't he - we got locked in Wellington, yeh, we did. That one was locked 'cos the gippos, and someone came in and locked the front one as well and we was stuck in there. It's only that I happened to have my barrier gate key and it fit, that we got out. - you would have still been in there - it should be treated as an emergency service because ... - I thought it was - no, it's essential isn't it - 'cos when it come to breaking the law and coming through no entrys and - there should be some unsaid link between them - who was it got done for that? - \*\*\* - on the one side we're doing it now - and I'll never know how I didn't get done - well, it's like me the other day .. All the roads I needed to go down was being dug up and they wouldn't let us down, now them dinners had to go down there so we went down one, then it was a one way, so we reversed up it so if we got caught we was facing the right way. And we just start driving forwards. It was the only way we could do it. We had to do it for a long way just to get the dinners up 'cos the road was being tarred.

What do you think about people being done for speeding offences?

- I agree with that, oh yes. I mean, let's be fair. We don't have that problem here, but you can't break the law can you. We talking about work aren't we?

Yes, well, talk about any time. I take it you all drive out of work.

- obviously some poeple do do the speed at times, and no matter how innocently you think you're doing it you just can't say. But basically speaking, just to speed for the love of it, the sheer thrill of it, is wrong.

Do you agree with the limits at the moment, 30, 40,70?

- yeh (general agreement) - it's generally 30 in London isn't it? - yes - but nobody does 30, you've got to admit that, everyone does 40 - there's no way I can do over 30 from my house to here, no way - it's not often that, we're talking about work time, day time, right, you might get the odd street that's quiet, but you're so in the routine of doing that through that area, - you have to stop and start all the time though so by the time you got up there - you do keep up with traffic though, and if the traffic's going a speed most people do generally go that speed it would be just as dangerous going slow as it can fast - yes, and in some roads they go quite fast, like sometimes in the day Camden Road can be quite fast - they had a speed trap up there the other day - yeh, so they should - you could be in the middle and get done for it, I mean, you're just following the traffic and you happen to get done for it, yet everybody else is doing it anyway.

Do you find there is pressure to keep up with it then?

- yes (general agreement) when people come right up behind you, flashing- up, beebing-up - yes, that's right, definately - yeh, especially when they see it's a woman driver - yeh, you must find that, 'cos \*\*\*\*\* lives at Watford on the motorway

Right, so you've quite a long drive in

- yeh, yeh I do find they're raving lunatics, and they come right up behind you. I mean, I came out one sunday morning and the road was literally empty and all of a sudden, a black bloke, he came right up behind. Now, all he had to do was pull over, mind you, I wouldn't pull over out of principle. I thought no, you sit there - use to, I use to - yeh, I did, but I thought there was no need, he was just being awkward. There's a kind of personality change with people in a car, they .... - yeh, yeh (general agreement) - it's like Blackwall Tunnel. Now that is a 30 mile limit - that's right - but they come up, smash you up, my God - but they're not supposed to change lanes in there - they're not, it says 'stay in lane' - yeh, I go through there alot as well - yeh, I had to wake everybody, I said, "look what's going on. What's the speed limit in here?". I knew I was looking at 30 but I thought I was mental, mind you, I was doing 40 that's why, I couldn't lay the law down too much, but I had to, I had to, because that was the flow, but as I say, how did he think he was getting over, both ways was packed, I couldn't get out of his way. - that's what annoys you. But I mean, I came out the other morning and it was quite busy, and there was 8 cars. Well, they have been so close, 8 of them, had all smashed their cars up. The whole lot of them. - you get alot of men out there, tend to think they have to be 3 inches away from the car in front, otherwise they're not good drivers. And the more speed they do, that makes them look as though they're something, and you're an idiot. But unless they've got say, 3 inches between that car and them, then they don't... - yeh, and you speed up to try and loose them, and they speed up to stay with you, and then you're worried about stopping because they're too close - when you're approaching the lights, and you know really, in theory you're to be able to slow down in case it goes but they're... - well, I've been stopped at the lights because they've been amber, and the car behind me has overtaken me and gone round - yes, yes, many a time - we saw that the other day, didn't we - yeh, that happened. Bloke pulled out on the red light and went striaght across.

Do you find it very scary when you have kids in the back?

- yeh, yeh it is - and you have to use your mirror to see how close they are before you even attempt to stop. And as for having kids in the back, that's absolutely terrifying - it is yes, it is - it really has got to be terrifying - especially when you've got a Mini or something. I use to have a Mini. I use to hate taking the kids out in the Mini. Hate it. ' Cos they've got no boot. Hit them and... - I've seen a few stickers on the backs of motors with kids in and I think it's a bloody good idea. Everybody who's got kids in should - well, I use to have stickers but I tended to find that cars behind me use to drive close to read 'em. Yeh, they did. You do it yourself. If you're at lights and you're reading it, and they do. They drive close to see what the stickers are on there.

Maybe they've got bad eyesight as well. What about as a cyclist. What are the things that worry you as a cyclist?

- I think the worst thing is not the cars so much but people in parked cars and pedestrians, who just wander out. Not cars so much. I just try to keep right out of their way. - problem is the parked cars, 'cos you've got to pull out 'cos of the parked cars - and as well, the road surface. Because it's often been dug up along the edge, and it's really rough. And you can't pull out to get around it. They just slap a bit of tarmac down there - I like the clever drivers when you're a pedestrian. With a pile of dinners in your hand, waiting. And they will come through the biggest puddle (general laughter) and they have a good laugh at you. You've made their day, haven't you. We have had alot of rain recently.

You speak from experience then?

- oh yes, head to toe, dinners as well was all sopping, had more gravy than when we started. - I think drivers are very impatient. Like you stop in a narrow road to deliver meals, and you're only going to be one minute in the house, dropping in the meal and coming out, and 'stead of waiting they're sitting there beebing, ain't they, they're really impatient - and you've got no choice. You've got parked cars either side, you've got to stop in the way. But I got pulled by the police over that. He come up, he says "you can't stop here", I says "but I'm delivering here". He sais, "that's your problem madam, away you go and don't do it anymore". Behind John Barnes. And also I don't think that in our jobs, stopping, and we do stop, anywhere between 20 and 50 times between those couple of hours, that we should have our seatbelts on. It's more dangerous, we're getting caught up because we're in and out so much. - didn't think we had to wear them while we was delivering - we have - other van drivers don't have to wear them though
I would have thought you had a dispensation for it because you are in and out so much

- no, I phoned up the police about it when it came in force taxi drivers don't have to wear them though - no, bus drivers don't have to have them. Can't see why they don't have to have them and we do. Not when we're in and out on deliveries, no, I don't think we ought to. We're in and out, more times than a taxi driver aren't we

What about when you are driving privately, out of work?

- oh no, don't mind that. Same if we only had one or two deliveries but when you talk about we're delivering out there to sometimes 70 odd people, the amount of times - you're in and out, you can't do it - I never put my belt on, only when driving to and from the kitchens, when I've finished - well, if we're stopped, then we just sling it over our shoulder - I think only one person's, oh, me and \*\*\* got pulled up. It was okay, eventually, he just said "pull up, put your belt on", "yes sir!", but let's be fair, we do pass a lot of policemen and we don't get alot of hassle off of them - no usually, some of them, they're all right. I mean, I was up near John Barnes and a copper come up. He says "you're going to have to", I said "I've just got this dinner", and he said, "all right love, go and get it delivered". - it was all this beebing up that he had to come up and we was stuck in it, but he was very nice - I mean, they wouldn't say anything if it was their mother you was delivering to, they wouldn't say a word - or if I give them a free dinner -I don't know, they might even complain more then (general laughter)

What do people think about drink/driving laws?

- I think they should stay where they are - I think the minute they're pulled up for drink/driving they should have their licence taken off them, not wait 'til they go to court and find out if they're guilty. Yeh, if you drink/drive, you deserve to lose it - you're not drunk when you go out and you know you're going to have a drink and you've got that car - leave that car at home. I don't think that what they get is enough when they do get to court. You can kill someone on the roads for 200 quid. -I know we've got a couple of quiet ones... (giggling, comments, everyone looking at two women to my right) ... who like a drink, but no, let's be fair, there's an awful lot of people killed out on those roads by drunken drivers - you are slower when you drink aren't you - you're trying to be more cautious, ain't you. That's what gives you away really - no, but you know when you are going to brake you're going to be a bit slower than someone who ain't had a drink, they go 'bumph' like that, and you're a bit 'whooh'

Your reactions are slower. What do you two think? - let's hear from the drinkers then, the hardened drinkers I'm not talking about work now, just generally - now, in all honesty, although you do do it on the odd occassion, do you agree that, you know, with the laws? - yes, yes I do - that is all we're saying

And do you think the penalties are strict enough

- no, no I don't, especially if someone's lost their life

What do you think?

- I think they should be strict - and they should be the same. It depends where you go to court to what you get - yeh, and I bet even judges drink, don't they, and drive - they're the worse! when we use to go out we use to take the bloke next door's cab 'cos the police never pulled a cab so he could drink all night they do, I know a cabbie that lost his licence - well then you've done it, so you can't come ... - no, I'm not going to drive -... but if you feel that strongly, then you shouldn't get in a car with someone who's had a drink anyway - no, I wouldn't, if I thought the driver was drunk - no, I'd walk home rather than get in a car with my husband, if you get pulled, it's you. I am not involved. - no, I wouldn't get in a car with him - no, I don't. On friday night in the rain I walked to the pub and I walked back. 'Cos I wouldn't get in the car, 'cos I knew he was having a good drink. If I take the car out, I don't drink - if my old man wants to take the car, I go with him there, and then I'd probably take a taxi - that's the worse, they say "take it, and we'll get a cab home", and then they come out and there's no cabs so they take the car - I wouldn't take the car - no, if I go out for a drink, I don't take the car, or I go out and don't drink

- (I'm afraid we've got to ask you to wind it up (11am))

Can I just ask quickly about one more thing, and that's driving tests and driving lessons. What do people think about the driving test? Is it good enough?

- I think it's alot harder today... - I don't mean on the driving aspects, they teach you to drive, but that's all they teach you. They don't teach you anything else. I mean, the first time I went into the garage, and put air in the tyre, I got it up to about 461b pressure before someone told me - but you should read your manual, no, I don't mean deeper. That's up to yourselves to get hold of your manual, get hold of your book, or study your actual car

With actual driving. Do you think it prepares you for getting out there that first day after you've passed your test?

- no, no way, you can't have experience in those couple of hours - you feel so vulnerable - you got to get that experience yourself - you're out on your own then - we need another one and I think what's really wrong is that you can take a driving test and go on to a motorway with no experience at all (general agreement)

What do you think about having extra lessons for things like motorway driving, driving in the dark, what to do if you go into a skid, that kind of thing? - snow yeh,... - and there should be another sticker to replace your L one

- like the Irish

- yeh, cos once you've got no L plates, I mean they're bad enough when they've got L plates, no one really worries about who gives way or has any patience with it, but once you've not got any -I'm a new driver - that's right, you should have something, go gently, you should have a little bit of leeway here, I've only just passed my test - 'cos they don't know you've just passed your test and they just drive like they normally do

Meeting then wound up as time for deliveries. All agreed to take part in the next stage of the research.

## QUESTIONNAIRE

This is part of a research project looking at the opinions of people towards traffic and behaviour on the roads.

Thank you for offering your time to fill in this questionnaire. It should take no more than a few minutes to complete. Please read the instructions to each section carefully before completing the questions. All answers will be treated in strict confidence, and will be used purely for the purpose of this research.

SECTION A

			years						
e tick the appropriate box or write in where required.	geyears	o you drive a motor vehicle? YES NO NO	f YES, how many years have you held a driving licence?	low often do you drive? 5 TIMES OR MORE PER WEEK	LESS THAN ONCE A WEEK	Do you ride a bicycle? YES NO NO	if YES, how many years have you been cycling? years	iow often do you cycle? 5 TIMES OR MORE PER WEEK	1 TO 4 TIMES PER WEEK
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6a. During the past 5 years have you been involved in one or more road accidents in which you or another person were injured?

NO

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- 6b. If YES, how many times?
- 6c. What form of tranport were you using at the time?
- 6d. Can you briefly describe what happened?
- 7a. Have you been charged with any traffic offences during the past 5 years, excluding parking offences?

C	
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	YES

If NO, please go to SECTION B

7b. If YES, please state the offences.

### SECTION B

Each of the following statements is to be scored on the scale:

# agree strongly to disagree strongly

Don't think about any of the answers in great detail, just tick the box which you feel is closest to your opinion of the statement. The first item has been completed as an example.

agree strongly

- \* agree
- \* not sure
- \* \* disagree
- \* \* \* disagree strongly

- 1. Some motorists drive too close to the car in front
- 2. The traffic police have too much power
- 3. You should always keep to the speed limit, regardless of how fast the other traffic is going
- 4. Half the time, motorists just don't see cyclists
- 5. It's easy to feel really cut off from the rest of the world when driving

- 6. Random breath testing should be allowed
- 7. There is no need to indicate unless other motor vehicles are around
- 8. Cyclists should be trained before they are allowed on the roads
  - 9. Cyclists do not belong on city streets
- 10. If cyclists want more facilities, they ought to pay road tax
  - 11. Cyclists are second class citizens
- 12. People should have some of their driving lessons on a bicycle, to see what it's like for the cyclist

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agree strongly

- \* agree
- \* disagree \* not sure •
- \* disagree strongly \* \*



12 16



13. Speed limits are too low

- 16. There should be more cycle lanes on main roads
- 17. Cyclists are one of the biggest hazards on the road
- 18. The driving test is not strict enough
- 19. It is wrong of manufacturers to produce cars which can go so fast
- 20. Cyclists should ride close to the kerb so as not to get in the way of motor vehicles
- The car is one of the most dangerous weapons about 21.
- 22. Drivers do not consider other road users enough
- Where a cycle path is available, cyclists should have to use it 23.
  - 24. Cyclists should be insured
- There should be more environmental measures to slow down and restrict traffic 25.
  - 26. I would not cut infront of something bigger than my vehicle
- 27. Cyclists belong on the pavement with pedestrians
- The driving test should include written questions with multiple 28.
  - 29. It's okay to have a drink or two before driving or cycling choice answers
- 30. It is up to the cyclist to ensure they can be clearly seen
  - 31. Adult cyclists cause most of the accidents they are in
    - 32. I think I am a good driver/cyclist

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## SECTION C

Each of the phraes marked A to J is to be scored on nine separate scales, for example:

enjoyable to unenjoyable relaxing to stressful

Like Section B, all you have to do is place a tick in the box you feel is the closest to your opinion for each phrase on the scale. But because the scales are all different, there are nine small grids to complete instead of one long list of guestions.

relaxing

- \* fairly relaxing
  - \* not sure

\*

- \* fairly stressful \* \*
  - \* stressful \* \* \*

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G. The presence of cycle lanes on main roads are

E. The presence of the traffic police is

F. Car advertising is

D. Riding a bicycle is

A. Driving a car is Heavy traffic is C. Driving fast is

m.

X. Cars parked along the side of the road are To see children playing on the streets is

To drive after drinking alcohol is

Ι.

5

H. People failing to indicate are

necessary

- \* fairly necessary
  - \* not sure
- \* \* fairly unnecessary
- \* \* \* unnecessary

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- A. Driving a car isB. Heavy traffic is
  - C. Driving fast is
- Riding a bicycle is
- E. The presence of the traffic police is
- F. Car advertising is
- 3. The presence of cycle lanes on main roads are
- H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- Cars parked along the side of the road are

always a hazard

- \* usually a hazard
  - \* \* uncertain
- \* \* \* sometimes a hazard
- \* \* \* \* not a hazard



- A. Driving a car is
  - B. Heavy traffic is
- C. Driving fast is
- D. Riding a bicycle is
- E. The presence of the traffic police is
  - F. Car advertising is
- G. The presence of cycle lanes on main roads are
- H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- X. Cars parked along the side of the road are

a challenge to me

quite a challenge to me \*

\* uncertain

+

\* quite unchallenging to me \*

\* \* \* \* not a challenge to me

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A. Driving a car is

B. Heavy traffic is C. Driving fast is D. Riding a bicycle is

E. The presence of the traffic police is

F. Car advertising is

G. The presence of cycle lanes on main roads are

H. People failing to indicate are

I. To drive after drinking alcohol is

J. To see children playing on the streets is

X. Cars parked along the side of the road are

socially acceptable

- \* fairly socially acceptable
- \* uncertain

4

- \* \* fairly unacceptable socially
- \* \* \* \* socially unacceptable



G. The presence of cycle lanes on main roads are

E. The presence of the traffic police is

F. Car advertising is

D. Riding a bicycle is

A. Driving a car isB. Heavy traffic is

C. Driving fast is

- H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- X. Cars parked along the side of the road are

enjoyable

- \* fairly enjoyable
  - \* not sure
- \* \* \* fairly unenjoyable
- \* \* \* unenjoyable

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- A. Driving a car isB. Heavy traffic is
  - C. Driving fast is
- D. Riding a bicycle is
- E. The presence of the traffic police is
- F. Car advertising is
- G. The presence of cycle lanes on main roads are
  - H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- X. Cars parked along the side of the road are

very responsible

- \* fairly responsible
- \* \* not sure
- \* \* fairly irresponsible
- \* \* \* very irresponsible

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- B. Heavy traffic is
  - C. Driving fast is
- D. Riding a bicycle is
- E. The presence of the traffic police is
  - F. Car advertising is
- G. The presence of cycle lanes on main roads are
  - H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- X. Cars parked along the side of the road are

important to me

\* fairly important to me

\* not sure

\* \* fairly unimportant to me

\* \* \* not important to me

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A. Driving a car is

3. Heavy traffic is

Driving fast is
 Riding a bicycle is

3. The presence of the traffic police is

2. Car advertising is

3. The presence of cycle lanes on main roads are

People failing to indicate are

I. To drive after drinking alcohol is

J. To see children playing on the streets is

Cars parked along the side of the road are

acceptable to me

- \* fairly acceptable to me
  - \* not sure
- \* \* fairly unacceptable to me

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\* \* \* \* \* unacceptable to me

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- A. Driving a car is
- B. Heavy traffic isC. Driving fast is
- D. Riding a bicycle is
- D. Algung a proyette is E. The presence of the traffic police is
  - F. Car advertising is
- G. The presence of cycle lanes on main roads are
- H. People failing to indicate are
- I. To drive after drinking alcohol is
- J. To see children playing on the streets is
- K. Cars parked along the side of the road are

Please use the space below for any comments you wish to make about the research, or any other aspects concerning driving, cycling, being a pedestrian, or the road network in general.

Carol Winston, The Office, Herbrand Street

MANY THANKS FOR YOUR HELP

On completion, please return this questionnaire in the envelope provided to:

Liz Speed I.H.D. Office Aston University

#### APPENDIX 4

CONSTRUCT CORRELATION MATRICES FOR THE THIRTY-ONE PARTICIPANTS IN THE CAMDEN STUDY

List of constructs:

CONSTRUCT	POLE	CONTRAST
NUMBER		
1	relaxing	/stressful
2	necessary	/unnecessary
3	always a hazard	/not a hazard
4	a challenge	/not a challenge
5	socially acceptable	/socially unacceptable
6	enjoyable	/unenjoyable
7	responsible	/irresponsible
8	important to me	/not important to me
9	acceptable to me	/unacceptable to me

#### SIGNIFICANCE LEVELS

In a nine construct matrix:

p < 0.05 requires a correlation coefficient of 0.549 or above p < 0.01 requires a correlation coefficient of 0.716 or above

In an eight construct matrix

 $p{<}0.05$  requires a correlation coefficient of 0.582 or above  $p{<}0.01$  requires a correlation coefficient of 0.750 or above

#### DRIVERS ONLY

male aged	25			CONSTR	UCT NUM	BER			
J		1	2	3	4	5	6	7	8
construct	2	507							
construct	3	-493	-135						
construct	4	061	109	184					
construct	5	218	365	-311	086				
construct	6	518	225	-699*	-270	703*			
construct	7	432	076	-635*	-415	438	805**		
construct	8	-510	031	498	-449	244	013	069	
construct	9	403	257	-791**	-332	463	886**	747**	-095
male aged	29			CONSTR	UCT NUM	IBER			
		1	2	3	4	5	6	7	8
construct	2	358							
construct	3	-609*	000						
construct	4	-225	170	592*					
construct	5	391	955**	039	288				
construct	6	923**	462	-561*	-075	554*			
construct	7	019	492	157	-021	601*	225		
construct	8	-087	-589*	074	113	-411	-062	-323	
construct	9	356	413	167	598*	440	326	-301	-008

\*\* p<0.01

\* p<0.05

male aged	24			CONSTRU	UCT NUMB	ER			
0		1	2	3	4	5	6	7	8
construct	2	186							
construct	3	314	-256						
construct	4	-091	-258	627*					
construct	5	053	915##	-244	-105				
construct	6	180	115	-363	-771##	170			
construct	7	-007	710##	-130	-607#	706##	601#		
construct	e	-407	111	-600#	-350	106	381	375	
construct	0	-007	710**	-430	-627#	726##	621# 1	00**	375
construct	9	-007	146**	-450	-021*	120**	061* 1	. 00**	515
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construct	0	-401	-597*	000					
construct	4	100	-028	-299	DEE				
construct	0	173	183	-383	305				
construct	0	718**	512	-309	188	*800	050++		
construct	7	561*	591*	-413	191	803**	752**		
construct	8	752**	520	-130	019	208	596*	459	
construct	9	680*	620*	-469	194	579*	842**	825**	475
female age	ed 32	3		CONSTRU	JCT_NUMB	ER			
		1	2	3	5	6	7	8	
construct	2	669*							
construct	3	-161	-253						
construct	5	602*	900**	-227					
construct	6	655*	817**	-338	547	Collector (and			
construct	7	418	741*	039	860**	418			
construct	8	-172	225	617*	203	046	460		
construct	9	743*	760**	-156	684*	631*	456	021	
	-								
male aged	33			CONSTRU	JCT NUMB	ER			
		1	2	3	5	6	7	8	
construct	2	-029							
construct	3	371	-771**						
construct	5	239	676*	-532					
construct	6	462	488	-433	750**				
construct	7	-000	796**	-845**	749*	731*			
construct	8	-064	322	-254	210	331	161		
construct	9	338	698*	-552	806**	700*	830**	071	
male aged	30			CONSTRU	JCT NUMB	ER			
-		1	2	3	4	5	6	7	8
construct	2	726**							
construct	3	-787**	-963**						
construct	4	-833**	-580*	574*					
construct	5	516	803**	-870**	-273				
construct	6	877**	638*	-691	-853**	561*			
construct	7	351	762**	-738**	-084	828**	355		
construct	8	386	048	-052	-557*	-056	480 .	-175	
construct	9	818**	898**	-861**	-822**	604*	776**	485	240
		** p<0.	01		* p<0.0	5			

CONSTRUCT NUMBER 1 2 3 4 5 6 7 8 female aged 36 construct 2 796\*\* construct 3 -690\* -742\*\* construct 4 -641\* -873\*\* 896\*\* construct 5 796\*\* 885\*\* -742\*\* -797\*\* 

 construct 0
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 construct 7
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 -652\*
 -644\*
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 construct 8
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 construct 9
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 -760\*\*
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 965\*\*
 722\*\*
 885\*\*
 161

CONSTRUCT NUMBER 1 2 3 4 5 6 female aged 53 7 8 construct 2 657\* construct 3 -299 -623\* construct 4408327-020construct 5703\*628\*-381 053 construct 6 894\*\* 578\* -395 084 836\*\* 

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CONSTRUCT NUMBER1234567 female aged 47 8 construct 2 716\*\* construct 3 -526 -430 construct 4 -326 -147 758\*\* construct 5 804\*\* 522 -527 -217 construct 6 826\*\* 588\* -123 -048 502 

 construct 7
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 construct 9
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 976\*\*
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 835\*\*
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CONSTRUCT NUMBER1234567 female aged 26 8 737\*\* construct 2 construct 3 -678\* -579\* construct 4 -134 -458 049 construct 5 782\*\* 877\*\* -641\* -202 construct 6 825\*\* 801\*\* -628\* -446 770\*\* construct 7 777\*\* 876\*\* -704\* -295 978\*\* 744\*\* 
 construct 8
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 947\*\* 774\*\* 952\*\* 866\*\* CONSTRUCT NUMBER1234567 female aged 50 8 635\* construct 2 construct 3 -554\* -932\*\* 

 construct 3
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 -932\*\*

 construct 4
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 construct 6
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 -384
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 construct 7
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 construct 8
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construct 9 592\* 937\*\* -858\*\* -474 915\*\* 723\*\* 927\*\* -314 \*\* p<0.01 \* p<0.05

female age	ed	27		CONSTR	UCT NUM	BEK			
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construct	2	490							
construct	3	-300	-758**						
construct	4	-508	-870**	658*					
construct	5	439	962**	-741**	-806**				
construct	6	833**	487	-263	-416	559*			
construct	7	453	970**	-661*	-836**	931**	473		
construct	8	-011	-075	-129	164	-181	-273	-024	
construct	9	514	931**	-800**	-787**	968**	594*	881**	-139
female age	ed	49		CONSTRU	UCT NUM	BER			
		1	2	3	4	5	6	7	8
construct	2	489							
construct	3	-730**	-755**						
construct	4	-624*	-812**	735**					
construct	5	706*	860**	-925**	-828**				
construct	6	892**	552*	-786**	-641*	725**			
construct	7	673*	812**	-929**	-694*	912**	641*		
construct	8	-253	342	046	000	000	-096	000	
construct	9	606*	876**	-853**	-746**	935**	656*	817**	296

#### DRIVER/CYCLIST

male aged	18			CONSTRU	UCT NUM	BER			
-		1	2	3	4	5	6	7	8
construct	2	293							
construct	3	-704*	-666*						
construct	4	352	-266	-115					
construct	5	801**	557*	-621*	335				
construct	6	939**	356	-639*	270	774**			
construct	7	818**	293	-759**	472	574**	713*		
construct	8	-204	-027	493	-445	009	-131	-654*	
construct	9	762**	707*	-769*	324	817**	756**	792**	-371
female age	ed 2	26		CONSTRU	UCT NUM	BER			
J		1	2	3	4	5	6	7	8
construct	2	676*							
construct	3	-282	-211						
construct	4	341	000	-326					
construct	5	652*	912**	-429	-007				
construct	6	859**	608*	-186	343	662*			
construct	7	686*	679*	-600*	601*	732**	656*		
construct	8	539	420	-719**	583*	458	514	735**	
construct	9	803**	852**	-472	482	807**	678*	911**	675
female age	ed 3	1		CONSTRU	UCT NUM	BER			
0		1	2	3	4	5	6	7	8
construct	2	287							
construct	3	-750**	-719**						
construct	4	-633*	-446	464					
construct	5	360	746**	-622*	-565*				

construct	6	463	777**	-799**	-476	759**			
construct	7	311	912**	-786**	-191	718**	735**		
construct	8	-240	120	005	518	-364	-111	264	
construct	9	319	930**	-786**	-246	774*	819**	985**	164

\*\* p<0.01 \* p<0.05

female ag	ed 3	3		CONSTRU	JCT NUMB	ER			
U		1	2	3	4	5	6	7	8
construct	2	812**							
construct	3	-772**	-752**						
construct	4	-723**	-588*	849**					
construct	5	801**1	. 000**	-657*	-557*				
construct	6	938**	859**	-717**	-735**	830**			
construct	7	905**	968**	-826**	-719**	949**	926**		
construct	8	527	739**	-229	-263	731**	599*	624*	
construct	9	807**	987**	-744**	-689*	969**	870**	951**	717*
male aged	29			CONSTRU	JCT NUMB	ER		-	-
	~	1	2	3	4	5	6	7	8
construct	2	433	007+						
construct	3	-596*	-087*	500					
construct	4	-502	-231	500	150				
construct	5	418	968**	-644*	-150	0504			
construct	0	533	554*	-333	258	658*			
construct	7	565*	805**	-580*	-043	895**	858**		
construct	8	013	-406	479	101	-330	081	000	
construct	9	564*	592*	-488	040	700*	865**	771** ·	-269
male aged	26			CONCTDI	ICT NIIMD	FD			
mare aged	20	1	0	CONDING	A NOMB.	En E	6	7	0
construct	2	166	4	5	4	9	0	1	0
construct	3	-534	-850**						
construct	1	-271	018	-006					
construct	5	161	777**	-883##	-028				
construct	6	547	716**	-662#	-102	700**			
construct	7	170	820**	-000*	-402	001##	613*		
construct	2	410	675*	-967**	-132	700*	040*	616*	
construct	0	165	875##	-030**	-138	019*	706##	917**	651#
construct	9	400	0/3**	-909**	-100	910**	790**	041**	0.01*
male aged	30			CONSTRU	ICT NUMB	ER			
U		1	2	3	5	6	7	8	
construct	2	-152							
construct	3	245	-634*						
construct	5	-232	-243	041					
construct	6	132	240	-617*	-358				
construct	7	-495	707*	-683*	105	359			
construct	8	263	252	331	-654*	013	095		
construct	9	-031	755**	-546	-065	453	800**	300	
male aged	28			CONSTRU	ICT NUMB	ER			
		1	2	3	4	5	6	7	8
construct	2	908**							
construct	3	-825**	-899**						
construct	4	221	364	-323					
construct	5	843**	873**	-839**	255				
construct	6	892**	708*	-731**	114	725**			
construct	7	708*	850**	-751**	209	767**	488		
construct	8	885**	911**	-868**	236	987**	745**	817**	
construct	9	392	547	-500	782**	485	230	301	496

\*\* p<0.01

p< 0.05

male aged	25			CONSTRU	UCT NUM	BER			
Ŭ		1	2	3	4	5	6	7	8
construct	2	535							
construct	3	-539	-911**						
construct	4	-206	-237	373					
construct	5	716**	866**	-789**	-123				
construct	6	697*	538	-411	-040	733**			
construct	7	572*	777**	-714*	-341	807**	808**		
construct	8	174	190	-088	252	429	514	494	
construct	9	789**	798**	-667*	-154	943**	822**	867**	461
female ag	ed 29	9		CONSTRU	UCT NUM	BER			
U		1	2	3	4	5	6	7	8
construct	2	067							
construct	3	-316	-743**						
construct	4	-218	-550*	460					
construct	5	-130	-766**	771**	370				
construct	6	408	477	-591	-306	-414			
construct	7	118	819**	-837**	-517	-581*	752**		
construct	8	-365	263	-116	343	-432	-154	-023	
construct	9	357	713*	-942**	-421	-638*	670*	885**	-016
male aged	26			CONSTRU	UCT NUM	BER			
		1	2	3	5	6	7	8	
construct	2	482							
construct	3	-650*	-791**						
construct	5	566*	834**	-706*					
construct	6	584*	629*	-620*	752**				
construct	7	502	895**	-690*	941**	804**			
construct	8	030	476	-168	424	370	553		
construct	9	530	863**	-707*	924**	897**	982**	506	
female age	ed 24	1		CONSTRU	UCT NUM	BER			
		1	2	3	4	5	6	7	8
construct	2	674*							
construct	3	-434	-553*						
construct	4	-863**	-767**	621*					
construct	5	613*	323	-579*	-709*				
construct	6	836**	652*	-575*	-962**	677*			
construct	7	511	217	-482	-643*	833**	613*		
construct	8	-007	094	075	249	-449	-296	-247	
And the second second product the second second									
construct	9	694*	736**	-482	-696*	589*	662*	440	069

\*\* p<0.01

\* p<0.05

CYCLIST ONLY

female ag	ed 20	5		CONSTR	UCT NUM	BER			
		1	2	3	4	5	6	7	8
construct	2	280							
construct	3	-702*	-385						
construct	4	-573*	242	144					
construct	5	346	796**	-694*	369				
construct	6	760**	331	-692*	-190	525			
construct	7	375	734**	-641*	118	753**	514		
construct	8	537	525	-488	-140	442	791**	606*	
construct	9	633*	795**	-669*	000	751**	751**	803**	727*
female age	ed 25	5		CONSTRU	JCT NUM	BER			
		1	2	3	4	5	6	7	8
construct	2	-069				-			
construct	3	-345	236						
construct	4	-323	-751**	089					
construct	5	350	380	-503	-211				
construct	6	211	-575#	-072	327	071			
construct	7	335	300	-106	-130	083##	167		
construct	g	-130	243	-326	-288	900**	-166	061	
construct	0	-109 501#	-177	-520	-200	015**	-400	016**	001
construct	9	301*	-1//	-090*	000	**CIO	300	010**	-021
molo anad	06			CONCED	TOT MILMI	מסר			
mare aged	20	1	0	CURSIK	A NOME	SER F	6	7	0
	~	1	4	3	4	5	0	7	8
construct	2	920**							
construct	3	-913**	-924**	000					
construct	4	-222	-312	368	0.00				
construct	0	948**	980**	-917**	-202	010**			
construct	0	921**	800**	-708**	-305	819**	C00+		
construct	7	744**	840**	**050	-202	821**	639*	005	
construct	0	-009	097	050	225	135	-184	-235	054
construct	9	940**	981**	-918**	-278	987**	838**	844**	051
£				CONCEDI	IOT MUNT				
iemale age	ea 24		~	CUNSTRU	ICI NUME	SER	~	-	~
	~	100	2	3	4	5	6	7	8
construct	2	188							
construct	3	028	-710*						
construct	4	301	349	-325					
construct	5	204	982**	-756**	295				
construct	6	513	529	-568*	638*	564*			
construct	7	419	816**	-725**	290	882**	764**		
construct	8	576*	352	-218	699*	367	559*	527	
construct	9	295	847**	-807**	287	900**	774**	953**	385
female age	ed 21			CONSTRU	JCT NUME	BER			
		1	2	3	4	5	6	7	8
construct	2	531							
construct	3	-787**	-864**						
construct	4	-491	-667*	662*					
construct	5	723**	813**	-939**	-440				
construct	6	937**	606*	-773**	-497	759**			
construct	7	617*	909**	-832**	-478	831**	749**		
construct	8	-097	-192	454	246	-440	-197 .	-288	
construct	9	595*	955**	-816**	-549*	797**	615*	892**	-072

\*\* p<0.01 \* p<0.05

#### APPENDIX 5 POSTAL SURVEY QUESTIONNAIRE

	MOTORISTS' AND CYCLISTS' ATTITUDES 198	z	
Plea your	se answer each question by ticking the boxes that show Answers, or by writing your answer on the lines provided	ι.	OFFICE USE ONLY
1.	Please circle your age group.		7
	Under 20 20-29 30-39 40-49 50-59 60-69 70+		
2.	Please indicate whether you are, male [ ] OR female	ε	1
з.	In which county do you live?		9-10
4.	Do you own or ever ride a bicycle? yes	C	1
	If YES, please go to Question 5. no If NO, please go to Question 8.	ſ	
5.	How often do you cycle? 5 times or more a week	C	12
	1 to 4 times a week	E	,
	If 'LESS FREQUENTLY' or less frequently	c	1
	to Question 8 not at all	C	1
6.	Please tick UP TO 3 ITEMS on the following list which most accurately explain WHY YOU CYCLE.	st	
	inexpensive form of transport	c	139 ]
	enjoyment	c	14
	health reasons	r	15
	door to door convenience	r	
	speed of travel		
	poor public transport	L	1
	independence	Ľ	]
	ease of parking	C	1
	other(please state)	C	1
7.	For what purpose do you use your bicycle? If more than on the following, please rank order from 1 to 4, 1 being the frequent use to which your bicycle is put, the following	ne of e mos item	t s.
	journey to work	τ	1 es.
	work or business use	C	17
	shapping, school rup etc.	r	10
	leisure, sporting or gootal activities	r	19
	rereare, sporting of social activities	E	

Please go to Question 9

8.	Please tick UP TO 3 ITEMS from the following li accurately explain WHY YOU DO NOT CYCLE, or WHY	st which mo YOU CYCLE	st	
	LESS FREQUENTLY.			20-21
	danger from other	traffic [	1	22-23
	polluted at	mosphere (	1	24-25
	have long distances t	o travel [	3	
	hilliness of local area or bad	weather [	3	
	lack of carrying	capacity [	1	
	cycling does not appe	al to me [	3	
	am physically unable	to cycle [	1	
	aggressive behaviour of m	otorists (	3	
	do not have a	bicycle [	3	
	other(please state)	t	J	

9. Which of the following items do you think WOULD ENCOURAGE MORE PEOPLE TO CYCLE? Please answer EACH ITEM by ticking the appropriate box.

	cc	en- oura	ge	have eff	no ect	d. co	ls- urag	e 26
a.	more cycle paths	C	3	C	J	I	1	
ь.	increase in cost of travel by car or public transport	ſ	J	τ	J	τ	3	27
с.	better road surfaces	ε	1	c	J	τ	J	20
d.	compulsory helmet wearing for cyclists	ſ	1	C	J	Ľ	J	30
e.	slower vehicle speeds	ε	J	t	J	t	3	
ſ.	if cyclists could use pavements and other pedestrian facilities	[	J	ε	J	t	J	91 92
g.	if cycling had a better public image	t	J	t	J	C	3	39
h.	better traffic law enforcement	t	J	C	3	C	J	34
1.	restricting traffic in residential areas.	τ	3	τ	J	C	3	

10. Can you please rank order from 1 to 3, 1 being the most important, the 3 suggestions from Question 9 above which you feel would do most to ENCOURAGE CYCLING.

RANK	OPTION (letter only)	35
1	[ ]	
2	t ع	37
3	[ ]	

11. Can you please rank order from 1 to 3, 1 being the most important, the 3 suggestions from Question 9 above which you feel would do most to MAKE CYCLING SAFER.

	RANK	OPTION	(letter	only)	-
	1	[ ]			
	2	[ ]			
	3	[ ]			40
12.	Do you have a full driving	licence?	yes	د J	41
	If YES, please go to Questi If NO, please go to Questic	ton 13 on 16	no	ť 1	
					42
13.	How often do you drive?	5 times or more	a week	ť 1	
		1 to 4 times	a week	[ ]	
	If 'LESS FREQUENTLY' or 'NOT AT ALL', please so	less fre	quently	۲ J	
	to Question 16	not	at all	ť 3	
14.	Please tick UP TO 3 ITEMS o accurately explain WHY YOU	n the following list DRIVE.	which n	nost	4.7
		en	joyment	ر J	
	carry	ing capacity of the	vehicle	t ٦	45
		Wor	k needs	C 3	
		door to door conv	enience	C 3	
		poor public tr	ansport	C 3	
		indep	endence	C 3	
		family obli	gations	د c	
		speed of	travel	د c	
	other(please state)			د c	
15.	For what purpose do you dri please rank order from 1 to for driving, the following	ve? If more than on 4, 1 being your mos items.	e of the t freque	foll nt re	owing, ason
	0.	tourpey	to work	r 1	46
		upply on hundre	ou nor k		47
		WORK OF DUSIN	ess use		40
		shopping, school r	un etc.	[ ]	

leisure, sporting or social activities [ ]

Please go to Question 17

	Accurately explain WHY YOU DO NOT DRIVE, LESS FREQUENTLY.	or	11 W	st HY	wh. YO	U D	RI	VE			5	0-61
	prefer an alternative for	m o	f	tra	ns	por	tΙ		J		-	
		to	0	exp	en	sive	e		J		-	
	good pul	611	c ·	tra	nsj	por	t I		J		-	
	problem	s w	it	h p	arl	king	<b>F</b> 1		1			
	dislike driv	Ing	C	ond	it	ion	5		1			
	have only limited access	= +	-	a 17	oh	le le			1			
	have only finited access	5 6		avi	en.		-		1			
	bad driving behav.	Lou	r	of (	ot	her	5		1			
	am physically un	nab	le	to	d	rive	e l		3			
	have been disqualified	1 1	ro	m di	ri	ving	g I		3			
	do not i	hav	e	a v	eh:	icle	e I		J			
	other (please state)						. 1		J			
17.	Please tick the boxes which you feel are opinions of the following statements.	cl	os ee	est st: ag:	to roi ree	ngl;	y y	r sur				
		*		*		*		d *	is	di agr	ee sag	ree
		* * *		* * *		* * *		d * *	is	di st	ee sag ron	ree gly
	all cyclists should be trained	* * * *	1	* * * *	1	* * * *	3	d * * *	is; j	di st *	ee sag ron J	ree gly 57
	all cyclists should be trained	* * * C	1	* * * C	נ נ	* * * *	נ נ	d * * * [	is: J	agr di st f	ee sag ron ]	ree gly 57 50
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic	* * * * *	1	* * * C C	נ נ	* * * t	נ נ	d * * [ [	is; j	agr di st f	ee sag ron J J	ree gly 57 50 59
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously	* * * C C	1 1 1	* * * C C C	נ נ נ	* * * * * *	ן נ נ	d * * 1 1	is; ] ]	agr di st f [	ee sag ron ] ] ]	ree gly 57 59 59
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the	* * * C C C	נ נ נ	* * * C C C	נ נ נ	* * * * * * * *	1	d * * t	j ] ]	agr di st t t	ee sag ron ] ] ]	ree gly 57 59 59 60
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the accidents they are in	* * * 1 1 1	נ נ נ	* * * C C C C	נ נ נ	* * * * * * *	נ נ נ	d * * t t	is; ] ] ]	agr di st f f	ee sag ron ] ] ] ]	ree gly 57 59 59 60 61
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the accidents they are in the driving test should be more difficult.	* * C C C	1 1 1	* * * C C C C	1 1 1	**** [ [ [ [	1 1 1 1	d * * * t t	is; ] ] ] ]	agr di st t [ [ [ [	ee saggron ] ] ] ] ]	ree gly 57 59 59 60 60
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the accidents they are in the driving test should be more difficult. cyclists are one of the biggest hazards on the road	* * C C C C C	נ נ נ נ	* * * t t t t	1 1 1 1 1		נ נ נ נ נ	d * * t t t t	1 1 1 1 1 1 1 1 1 1 1	agr di st f f f f	ee sag ron ] ] ] ] ] ] ] ] ] ]	ree gly 57 59 60 60 61 62
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the accidents they are in the driving test should be more difficult. cyclists are one of the biggest hazards on the road more engineering measures should be used to slow down and restrict traffic	* * * * * * *	1 1 1 1 1 1 1 1	* * * * * * * * *	1 1 1 1 1 1 1 1		1 1 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1 1 1 1 1	agr di st t t t t	ee sagron ] ] ] ] ] ] ] ]	ree gly 59 60 61 62 63
	all cyclists should be trained cyclists do not belong on city streets the police should enforce road traffic law far more rigorously adult cyclists cause most of the accidents they are in the driving test should be more difficult. cyclists are one of the biggest hazards on the road more engineering measures should be used to slow down and restrict traffic where a cycle path is available, cyclists should have to use it	* * * C C C C C C C C C C	1 1 1 1 1 1 1 1 1 1	* * * * * * * * * * * * * * * * * *	נ נ נ נ נ נ		נ נ נ נ נ		1 1 1 1 1 1 1 1 1 1 1 1 1 1	agr di st f f f f f f f	ee sagron ] ] ] ] ] ] ] ] ] ] ] ] ] ]	ree gly 57 59 60 61 62 62 63 64

MANY THANKS FOR YOUR HELP IN COMPLETING THIS QUESTIONNAIRE

#### APPENDIX 6

#### ADDITIONAL RESULTS FROM THE POSTAL SURVEY

The majority of results from the postal survey are detailed above in Tables 5.1 to 5.4 and Tables 6.1 to 6.42.

NOTE: A respondents' mode of transport is based on two different sets of criteria:

1) by ability to drive and ownership of a cycle,

2) by frequency of use i.e., to be classified as a driver they must drive at least once a week, as a cyclist they must cycle at least once a week and to be a driver/cyclist both drive and cycle at least once a week. Otherwise they are classified as belonging to the 'neither' group.

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TABLE A6.1 Frequency counts for responses to 'Why do you cycle'? and 'Why do you not cycle/cycle less frequently'? (Questions 6 and 8)

WHY DO YOU CYCLE'?

REASON	COUNT	% OF RESPONSES	% OF CASES
inexpensive form of transport	302	15.1	42.6
enjoyment	622	31.1	87.7
health reasons	389	19.5	54.9
door to door convenience	166	8.3	23.4
speed of travel	69	3.5	9.7
poor public transport	38	1.9	5.4
independence	303	15.2	42.7
ease of parking	75	3.8	10.6
other	35	1.8	4.9
total responses	1999	100.0	281.9

WHY DO YOU NOT CYCLE OR CYCLE LESS FREQUENTLY'? (than once a week)

REASON	COUNT	% OF RESPONSES	% OF CASES
danger from other traffic	125	19.0	43.7
polluted atmosphere	20	3.0	7.0
have long distances to travel	66	10.0	23.1
hilliness of local area/bad weathe	er 69	10.5	24.1
lack of carrying capacity	47	7.2	16.4
cycling does not appeal to me	56	8.5	19.6
am physically unable/too old	44	6.7	15.4
aggressive behaviour of motorists	51	7.8	17.8
do not have a cycle	145	22.1	50.7
other	33	5.0	11.5
total responses	657	100.0	229 7

TABLE A6.2 Frequency counts for responses to 'Why do you drive'? and 'Why do you not drive/drive less frequently'? (Questions 14 and 16)

'WHY DO YOU DRIVE'?

REASON	COUNT	% OF RESPONSES	% OF CASES
enjoyment	126	7.8	22.0
carrying capacity of the vehicle	280	17.2	49.0
work needs	232	14.5	41.1
door to door convenience	230	14.2	40.2
poor public transport	111	6.8	19.4
independence	250	15.4	43.7
family obligations	161	9.9	28.1
speed of travel	204	12.6	35.7
other	28	1.7	4.9
total responses	1625	100.0	284.1

'WHY DO YOU NOT DRIVE OR DRIVE LESS FREQUENTLY'? (than once a week)

REASON	COUNT	% OF RESPONSES	% OF CASES
prefer alternative transport	159	16.4	37.9
too expensive	184	18.9	43.9
good public transport	43	4.4	10.3
problems with parking	37	3.8	8.8
dislike driving conditions	95	9.8	22.7
limited access to a vehicle	31	3.2	7.4
bad driving behaviour of others	75	7.7	17.9
physically unable/too old	22	2.3	5.3
disqualified	1	0.1	0.2
do not have a vehicle	261	26.9	62.3
too young	26	2.7	6.2
other	38	3.9	9.1
total responses	972	100.0	232.0

284

TABLE A6.3 Response rates for factors likely to encourage cycling crosstabulated by mode of transport based on frequency of use (Question 9)

	DRIVER			
	CYCLIST	CYCLIST	DRIVER	NEITHER
More cycle paths				
encourage	312	156	98	294
have no effect	50	21	6	40
discourage	2	2	0	4
CHI-SQUARE = 6.7 (n	ot significa	nt )		
Increased cost of tr	avel			
encourage	178	94	31	152
have no effect	175	72	63	148
discourage	1	3	3	7
CHI-SQUARE = 20.22 (	p<0.003)			
Better road surfaces				
encourage	257	134	61	214
have no effect	102	44	37	105
discourage	1	0	1	0
CHI-SQUARE = 11.0 (p	<0.01)			
Compulsory helmet we	aring by cyc	lists		
encourage	3	7	6	29
have no effect	75	42	29	63
discourage	278	123	63	218
CHI-SQUARE = 31.63 (	p<0.0001)			
Slower vehicle speed	S			
encourage	213	109	41	196
have no effect	143	64	58	119
discourage	1	1	0	1
CHI-SQUARE = 16.0 (p	<0.01>			
Cyclists' use of pav	ements			
encourage	161	92	50	133
have no effect	159	64	30	114
discourage	31	18	17	60
CHI-SQUARE = 24.58 (	p<0.005)			
Better public image	for cycling			
encourage	271	130	56	226
have no effect	83	43	40	85
CHI-SQUARE = 13.2 (p	<0.005)			
Better traffic law e	nforcement			
encourage	265	125	62	215
have no effect	94	49	36	96
discourage	2	1	1	3
CHI-SQUARE = 5.31 (n	ot significa	ant)		
Traffic restraint				
encourage	257	126	64	236
have no effect	99	49	34	80
discourage	3	2	0	3
CHI-SQUARE = 4.36 (r	not significa	ant)		

TABLE A6.4 Measures to encourage cycling: first choice crosstabulated with CTC membership and mode of transport based on frequency of use (Question 10)

		CTC M	EMBERSHIP	
	YES	NO	YES	NO
	DRIVER/CY	CLIST	CYCLIST	ONLY
mana avala natha	157	11	60	10
more cycle pachs	AF F	17 9	27 2	17 6
row %	45.5	41.0	10	41.0
increased cost of travel	21	4	10	4
row %	6.1	17.4	6.2	9.5
improved road surfaces	24	5	13	3
row %	7.0	21.7	8.1	14.3
compulsory helmet use	0	0	0	1
row %	0	0	0	4.8
slower vehicle speeds	43	0	22	3
row %	12.5	0	13.7	14.3
cyclists' use of pavement	s 7	0	8	1
row %	2.0	0	5.0	4.8
better public image	47	0	22	1
row %	13.6	0	13.7	4.8
better law enforcement	28	2	17	0
row %	8.1	8.7	10.6	0
traffic restraint	18	1	9	0
row %	5.2	4.3	5.6	0
N=	345	23	161	21
CHI-SQUARE =	16.57	(p<0.02)	13.87	(p<0.1)

CTC MEMBERSHIP YES NO YES NO DRIVER ONLY NEITHER 57 110 more cycle paths 34 29 34.1 69.2 row % 50.7 82.9 1 7 3 6 increased cost of travel 2.9 4.2 3.8 4.5 row % 2 18 12 improved road surfaces 12 7.5 row % 17.9 5.7 10.8 0 0 0 0 compulsory helmet use 0 0 0 0 row % 24 slower vehicle speeds 4 0 6 3.8 6.0 0 14.4 2 row % 0 2 3 cyclists' use of pavements 3 4.5 0 1.2 1.9 row % 7 3 0 27 better public image 0 16.2 4.5 4.4 row % 5 0 19 5 better law enforcement 0 11.4 3.1 row % 7.5 13 3 10 traffic restraint 3 4.5 8.6 7.8 6.3 row % 167 159 67 N= 35

CHI-SQUARE =

14.97 (p<0.05)

49.25 (p<0.0001)

TABLE A6.5 Measures to make cycling safer: first choice crosstabulated with frequency of use and CTC membership (Question 11)

		CTC	MEMBERSHIP	
	YES	NO	YES	NO
I	DRIVER/CY	CLIST	CYCLIST	ONLY
more cycle paths	149	13	60	8
row %	43.7	56.5	37.5	36.4
increased cost of travel	1	0	1	0
row %	0.3	0	0.6	0
improved road surfaces	47	3	18	4
row %	13.8	13.0	11.3	18.2
compulsory helmet use	11	1	12	2
row %	3.2	4.3	7.5	9.1
slower vehicle speeds	68	3	36	3
row %	19.9	13.0	22.5	13.6
cyclists' use of pavements	s 5	0	5	1
row %	1.5	0	3.1	4.5
better public image	2	0	1	0
row %	0.6	0	0.6	0
better law enforcement	41	2	24	2
row %	12.0	8.7	15.0	9.1
traffic restraint	17	1	3	2
row %	5.0	4.3	1.9	9.1
N=	341	23	160	22
		(17.01)		(110)

CHI-SQUARE =

2.17 (NS)

6.08 (NS)

		CTC MEM	BERSHIP	
	YES	NO	YES	NO
	DRIVER	ONLY	NEITH	IER
more cycle paths	32	23	59	101
row %	48.5	69.7	35.8	64.7
increased cost of travel	0	0	0	2
row %	0	0	0	1.3
improved road surfaces	12	1	16	14
row %	18.2	3.0	9.7	9.0
compulsory helmet use	2	3	8	11
row %	3.0	9.1	4.8	7.1
slower vehicle speeds	8	2	52	16
row %	12.1	6.1	31.5	10.3
cyclists' use of pavements	1	0	1	0
row %	1.5	0	0.6	0
better public image	1	0	0	0
row %	1.5	0	0	0
better law enforcement	9	1	21	9
row %	13.6	3.0	12.7	5.8
traffic restraint	1	3	8	3
row %	1.5	9.1	4.8	1.9
N=	66	33	165	156
CHI-SOUARE =	14.6	(D(0.05)	40.54	(p<0.0001

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TABLE A6.6 Frequency counts for responses to the series of attitude statements (Question 17).

'All cyclists should be trained'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	454	45.7	45.7
agree	316	31.8	77.5
not sure	114	11.5	89.0
disagree	94	9.5	98.5
disagree strongly	15	1.5	100.0
valid cases	993		

'Cyclists do not belong on city streets'

VALUE LABEL	FREQUENCY	PERCENT	PERCENT
agree strongly	36	3.7	3.7
agree	31	3.2	6.9
not sure	44	4.5	11.4
disagree	321	33.0	44.4
disagree strongly	542	55.6	100.0
valid cases	974		

'The police should enforce road traffic law far more rigorously'

	EREQUENCY	PERCENT	CUMULATIVE
VALUE LADEL	LUDGODUCI	I DRODA I	1 21.02.1
agree strongly	398	40.3	40.3
agree	384	38.9	79.1
not sure	127	12.9	92.0
disagree	67	6.8	98.8
disagree strongly	12	1.2	100.0
valid cases	988		
TABLE A6.6 contd. Frequency counts for responses to the series of attitude statements

'Adult cyclists cause most of the accidents they are in'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	11	1.1	1.1
agree	14	1.4	2.6
not sure	222	22.7	25.3
disagree	349	35.7	61.0
disagree strongly	381	39.0	100.0
valid cases	977		

'The driving test should be more difficult'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	298	30.4	30.2
agree	261	26.7	57.1
not sure	180	118.4	75.5
disagree	205	20.9	96.4
disagree strongly	35	3.6	100.0
valid cases	979		

'Cyclists are one of the biggest hazards on the road'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	57	5.8	5.8
agree	51	5.2	10.9
not sure	73	7.4	18.3
disagree	326	33.0	51.4
disagree strongly	480	48.6	100.0
valid cases	987		

TABLE A6.6 contd. Frequency counts for responses to the series of attitude statements

'More engineering measures should be used to slow down and restrict traffic'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	281	28.5	28.5
agree	281	28.5	56.9
not sure	203	20.6	77.5
disagree	169	17.1	94.6
disagree strongly	53	5.4	100.0
valid cases	987		

'Where a cycle path is available, cyclists should have to use it'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE
agree strongly	312	30.9	30.9
agree	262	25.9	56.8
not sure	80	7.9	64.8
disagree	228	22.6	87.3
disagree strongly	128	12.7	100.0
valid cases	1010		

'Private cars should be banned from city centres'

VALUE LABEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
agree strongly	241	24.2	24.2
agree	202	20.3	44.5
not sure	155	15.6	60.0
disagree	318	31.9	92.0
disagree strongly	80	8.0	100.0
valid cases	996		