



# **A quantitative study of the attitudes of individuals to cycling**

**Prepared for Charging and Local Transport Division,  
Department of the Environment, Transport and the Regions**

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First Published 2001  
ISSN 0968-4107  
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## Executive Summary

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This report describes a research project on the attitudes of individuals to cycling, undertaken by TRL Limited on behalf of the UK Government's Department of the Environment, Transport and the Regions (DETR). The research objective was to carry out a quantitative study of individuals' attitudes to cycling, to provide a sound statistical basis to the understanding of attitudes, behaviour and motivation. This should help the understanding and evaluation of the factors that influence the decision to take up cycling.

This project has investigated attitudes to cycling in a sample of the UK population. Detailed quantitative interviews were carried out with 650 people aged 16 or over, and a smaller number of key questions on cycling were included in an omnibus survey with a nationally representative sample of 3000 adults. The research has built quantitatively on the qualitative models of attitude and behaviour proposed in earlier TRL cycling research, particularly on the contemplation of change theory and social diffusion theory.

Behaviour change is a staged process, and assistance in creating staged behaviour change is most effective if based on an understanding of the readiness of individuals to change, consideration of the balance of forces for and against change and a full understanding of a person's approach to innovation.

The merits of such a conceptual framework are that it allows promotional campaigning effort, nationally and locally, to be more effectively targeted on specific population groups and associated relevant messages.

The research has helped to identify potential users and has implications for those charged with practical measures to encourage cycling. It seems that non-cyclists do not fit easily into a single category. The study identifies differences between cyclists and non-cyclists and it is evident that the decision to cycle is influenced by many practical and psychological factors. The appropriate promotional measure may also depend on the type of cycling and cyclist (e.g. utility or leisure) that it is intended to encourage.

It seems that, at least in the short term, those groups of people who do not currently cycle at all are unlikely to take up cycling. These groups (the majority), however, should not be ignored in terms of cycle promotion, but encouraged to shift their opinion from the 'pre-contemplation' and 'contemplation' stages of change to the 'ready to cycle' stage. Promotional campaigns that raise the profile and status of cycling can therefore be of long-term benefit.

Persuading those who are already beginning to cycle a little to cycle more may be the easiest way to increase cyclist numbers in the short term. This means targeting people who may be experimenting on a borrowed bicycle or be occasional users with their own bicycle.

It is important not to forget the existing cyclists. Past behaviour is a good indicator of future behaviour: those

people who have been cycling regularly are more likely to cycle in the future than those who have not. There is a large group of cyclists who cycle about three times per week and they could considerably increase their amount of cycling. Encouraging this increase should bring an addition to total miles cycled but not to the total number of cyclists. Such encouragement should help to limit the number of existing 'committed cyclists' and 'regular cyclists', who might otherwise revert to being non-cyclists.

The analysis suggests that for promotional purposes the population should be categorised as (in order of cycling frequency):

Cycles most weeks	'committed cyclists' 'regular cyclists'
Cycles about once per month	'occasional cyclists' 'toe-dippers'
Cycles very rarely or not at all	'the unthinking' 'the self-conscious' 'the unconvinced' 'no-needers' 'youngish lads'

The report makes the following principal recommendations:

- To increase trips, in the short term, target the 'regular' and 'occasional cyclists'.
- To increase numbers, in the short term, target the 'toe-dippers' and perhaps 'the unthinking'.
- In the present circumstances of fairly low cycle use, national campaigns are probably a good method of increasing cyclist numbers.
- In general, the content of a local campaign should depend on what it is trying to achieve. Some local campaigns may set out to increase the number of people cycling for particular purposes. In areas with a relatively high cycling population, however, campaigns will be more effective if they aim to increase cycle trips rather than cyclist numbers.
- To achieve the national target of quadrupling the number of cycling trips by 2012, it will be necessary to direct campaigns at the 'unconvinced', the 'no-needers' and the 'self-conscious', three groups that are predominantly female, and also at 'the unthinking'.
- Cycling promotion in girls' secondary schools should be already starting to ensure that by 2012 there are very few non-cycling 'self-conscious' women waiting to graduate into 'no-needers'.
- There is a need now to initiate a change process among the groups who do not cycle or cycle very infrequently.
- At both local and national level, progress should be monitored by regular surveys.



# 1 Introduction

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## 1.1 Research objective

This report describes a research project on the attitudes of individuals to cycling, undertaken by TRL Limited on behalf of the UK government's Department of the Environment, Transport and the Regions (DETR). The DETR is aiming to improve the quality of life by reducing dependence on the car and encouraging a shift towards more sustainable transport such as cycling. The research reported here is part of a programme to promote cycling. The research objective was to take forward a quantitative study of individuals' attitudes to cycling, to provide a sound statistical basis to the understanding of attitudes, behaviour and motivation.

## 1.2 Previous research

The decision to use a bicycle for any particular trip will be greatly influenced by the specific conditions of that trip, such as its length and purpose. The decision to consider cycling as a possible option will be influenced by the traveller's prevailing attitude towards cycling. Qualitative research by TRL (Davies et al., 1997) identified attitudes to cycling and proposed a conceptual framework to describe and structure these attitudes and links to behaviour. In particular, that study explored ways of drawing on existing knowledge of approaches to motivational and behavioural change developed in other spheres such as health promotion, psychology, and social and behavioural science. The purpose of the framework was to provide a better understanding of the psychological factors involved in the decision to cycle. This should assist with the development of initiatives to promote cycling, particularly initiatives that would substitute cycling for car use on short journeys.

The purpose of the current study is to quantify the models that comprise the conceptual framework previously developed. This will help to design and target the promotional measures proposed in the National Cycling Strategy (Department of Transport, 1996) and the Transport White Paper (DETR, 1998).

In parallel with this study, TRL has also investigated institutional and organisational attitudes to cycling (Davies et al., 2000), which are known to influence the attitudes of individuals. A separate DETR study, by the University of London Centre for Transport Studies, is examining the potential for short car trips to be transferred to sustainable modes.

## 2 Conceptual framework

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### 2.1 Situational baseline

The conceptual framework first involves establishing a situational baseline, i.e. to determine the current situation regarding bicycle use and the influencing factors. The main factors relevant to this process are:

- Does the person have a physical disability that prevents them from cycling?

- Does the person know how to ride a bicycle?
- Does the person own a bicycle?
- Does anyone else in the house own a bicycle?
- Does the person use a bicycle?
- How frequently and for what purposes?

Once established, the situational baseline is valuable for tracking future changes, particularly responses to promotional initiatives.

Some data on bicycle ownership and use can be obtained from the National Travel Survey (NTS). It was necessary, however, to collect additional ownership and use data in order to link them to the data obtained on attitudes. In addition, not all definitions are the same. For example, it was important within the context of the research into individual choice, to ask about personal bicycle ownership, whereas the NTS only collects data on household bicycle ownership.

### 2.2 Contemplation of change

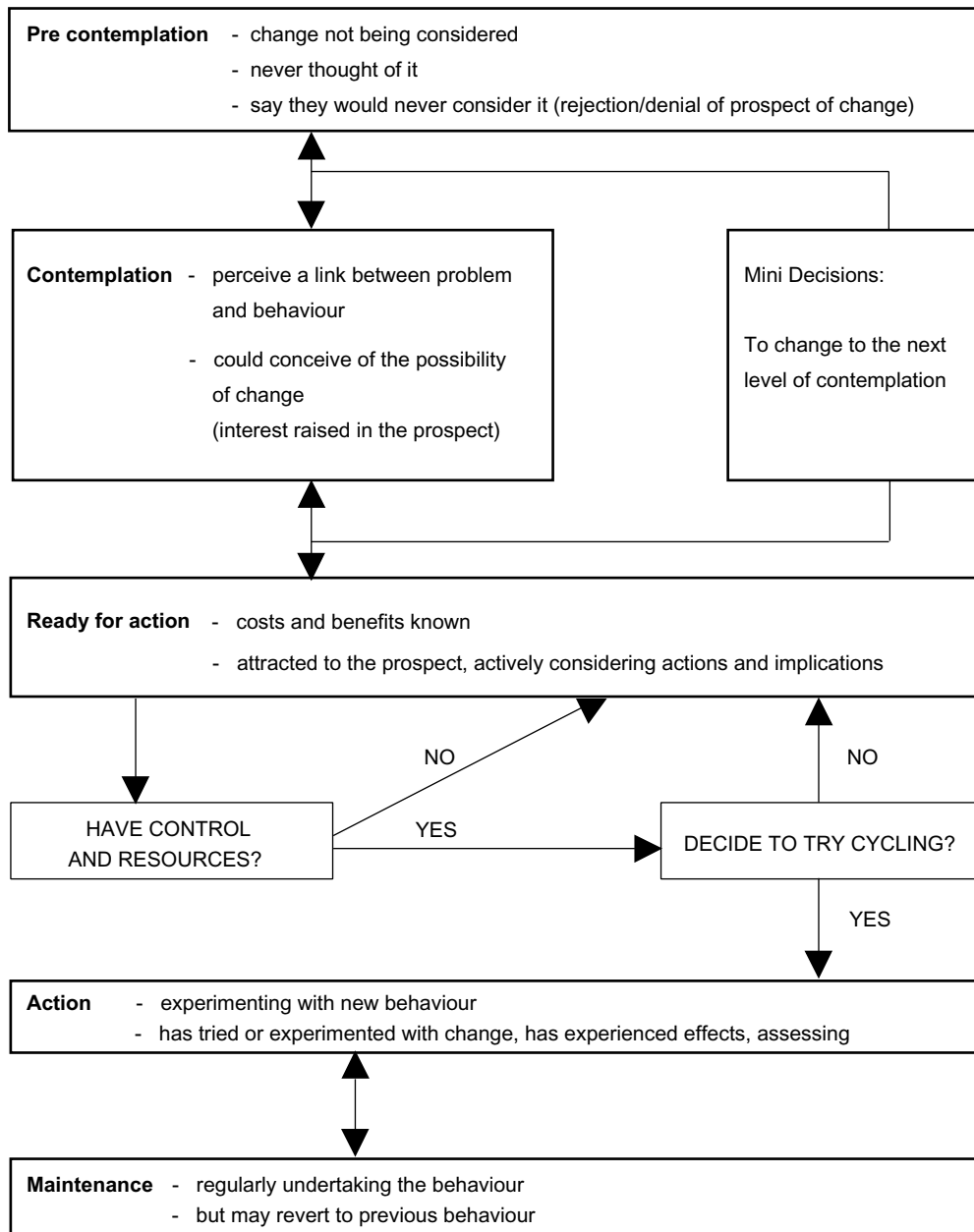
The second part of the framework is derived from the premise that radical lifestyle and behaviour change come via a series of transitional stages from contemplation to action. Success is maximised by using initiatives aimed at guiding people a stage at a time along the route to behaviour change, rather than presenting the end state as achievable in one go. A review by consultants MEL (in Davies et al., 1997) concluded that the most relevant psychosocial model is the 'contemplation of change' theory by DiClemente and Prochaska (1982), illustrated in Figure 1. This asserts that, in making fundamental change in lifestyle and behaviour, an individual passes through five stages, namely:

- pre-contemplation;
- contemplation;
- ready for action;
- action;
- maintenance.

### 2.3 Motivational analysis

Effective management of change recognises that decisions to change or not to change are based on balancing the 'pros and cons' of the status quo and the new behaviour. It seeks both to promote the benefits and mitigate the disbenefits of change. This approach derives from the 'kinetics of change' theory, which asserts that a balance of forces for and against change exists within the individual in relation to any issue. Change occurs when the forces or motivators for change exceed the forces resisting change. The balance of forces is influenced by a number of sources - the individuals themselves, close significant others, peer groups, cultural norms and the external physical environment.

This model of change includes reference to, but is not explicitly based upon, the Theory of Planned Behaviour (Ajzen and Madden, 1986), illustrated in Figure 2. This is an extended version of the Theory of Reasoned Action (Fishbein and Ajzen, 1975). In addition to attitudes, the model includes: personal decisions (intentions), subjective norms and perceived behavioural control.



**Figure 1** The contemplation of change model

A study of attitudes to cycling, using this theory, by Forward et al. (1997), suggested that ‘habit’ (a simple automatic reaction to a situation) is another significant factor in determining the propensity to cycle. It could be argued, however, that, within this context, habit is an important factor in perceived behavioural control (Figure 2).

## 2.4 Innovation

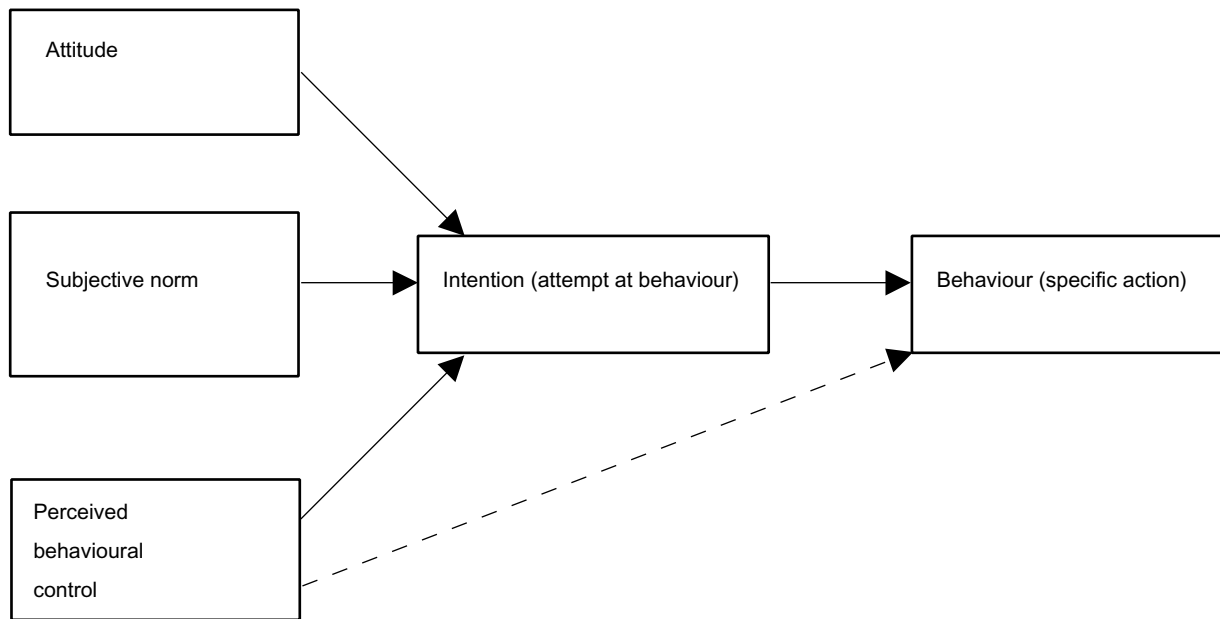
The fourth part of the conceptual framework draws on an established aspect of social marketing known as ‘diffusion theory’ or the ‘innovation model’, as developed by Rogers and Shoemaker (1971) and Rogers (1983). This identifies and classifies segments of the market that are predisposed to taking up innovations (in this case a travel behaviour change) on a scale from favouring ‘novelty’ to ‘norm’. New consumer products are often promoted with this social model in mind, given that the characteristics of the main buying market differ at different stages in a product’s life cycle.

The approach asserts that people may be classified into categories in relation to their predisposition towards innovative change. The categories are as follows:

- Innovators – venturesome, experimental, maverick, may comprise an avant-garde minority.
- Early adopters – the ‘Jones’s’, like to be in the established forefront of new ideas – trend setters.
- Early majority – will follow a trend once someone else has set it – need peer leaders Jones’s to show the way.
- Late majority – will come on board once it is clear most people are going along with it.
- Laggards – resist change, suspicious, may never change at all, and may become a resistant sub-culture.

This social marketing approach is seen to overlay the other models set out above.





**Figure 2** Theory of planned behaviour—overall framework

### 3 Survey methodology

TRL’s survey methodology consisted of two main parts:

- 1 detailed questionnaires administered to a total of 650 individuals aged 16 or over;
- 2 a small number of key questions addressed to 3000 individuals aged 16 or over as part of a national ‘omnibus’ survey.

#### 3.1 Detailed questionnaires

The detailed questionnaire element was undertaken largely to support the development of questions for use in the omnibus survey(s). It is expected that the omnibus questions will be repeated from time to time to track the progress of the national cycle strategy. The omnibus questions therefore need to be easily understood, but also to measure, unambiguously, significant elements in the public’s attitude to cycling and their propensity to use a bicycle. To allow the development of the questions and to test the robustness of the public’s answers, the detailed questionnaire element was split into three phases:

##### *Phase 1: Pilot study – Autumn 1998*

A mixture of face-to-face and telephone interviewing yielded 159 completed interviews, mainly in the Reading area. Quota sampling was used to obtain approximately equal numbers of males and females, and respondents who had and had not ridden a bicycle in the last twelve months. Some changes were made to the questionnaire and three mini-pilot surveys (maximum 25 interviews each) were conducted in Loughborough, Mansfield Woodhouse and Northallerton, Yorkshire.

##### *Phase 2: Pilot study – Spring 1999*

Further modifications were made to the questionnaire used in Phase 1 to remove inconsistencies and discrepancies. It

was then administered to a total of just over 200 adults, in Woodley (near Reading), Darlington and Nottingham. One of the aims of Phase 2 was the selection of a small number of key questions for inclusion in the first omnibus survey. (See below.)

##### *Phase 3: Autumn 1999*

Some further refinements were made to the questionnaire for the third and most extensive attitude survey, carried out in September 1999. Responses were sought from three areas, each with a different level of cycle use. The former counties of Cleveland and Humberside, for example, have similar socio-economic, weather and even geographical features and are less than 60 miles apart. Hull City has 15% of trips to work by bike, however, and Cleveland only has between 2 and 3%. The Wokingham district, with 4% of trips to work by bike, is close to the national average for England. The three areas selected for the third phase were therefore:

- i Woodley, between Reading and Wokingham.
- ii Hull (Humberside).
- iii Middlesbrough (Cleveland).

A total of 300 individuals were interviewed in Phase 3 – 100 in each area. Respondents were selected to obtain equal numbers of males and females. As in all the surveys, only those considered to be over 15 years of age were approached.

#### 3.2 Omnibus surveys

Seven key questions were developed from the detailed questionnaires used in Phases 1 and 2 for inclusion in an established commercial ‘omnibus’ survey. This survey covers a large representative group from the UK population, sampled in a standard format at regular intervals. Questions are included on behalf of a number of independent clients (from political parties to food retailers)

hence the term ‘omnibus’. Comprehensive socio-economic data is collected at the same time, which also allows cross-referencing to other relevant databases (such as the National Census and National Travel Survey).

Cycling questions in an omnibus survey were used:

- 1 to obtain a nationally representative sample;
- 2 to increase the sample size for the key questions; and
- 3 to cross-tabulate the key questions against a wide range of standard socio-economic and marketing variables.

An advantage of the omnibus approach is that there are economies of scale in the sharing of demographic and socio-economic data between users.

The omnibus survey used was the Ipsos-RSL Ltd ‘Capibus’ survey, a weekly survey of randomly sampled individuals. A total of seven questions, developed in phases 1 and 2, were included in the first omnibus survey of 1000 individuals in the week beginning 2<sup>nd</sup> July 1999. It was originally intended that the third detailed survey i.e. Phase 3, described above, would enable the selection of just two questions for use in any subsequent omnibus surveys. The decision was made, however, to retain all seven questions in a second omnibus survey, this time of 2000 individuals, conducted between 31<sup>st</sup> March and 6<sup>th</sup> April 2000, inclusive.

## 4 Results

The key results from Phase 3 and the omnibus surveys, together with results from the earlier pilot surveys, where appropriate, are presented below.

As stated above, the Phase 3 sample was selected, from three areas, to include approximately equal numbers of males and females. By comparison, the omnibus survey population was also fairly evenly split between males (49%) and females (51%). The incidence of cycling, by age, amongst the omnibus sample was as follows:

**Table 1 Incidence of cycling – Omnibus surveys**

Amount cycled during the summer months	Age (%)						All ages n=3118
	15-24	25-34	35-44	45-54	55-64	65+	
Not at all in summer months	48	63	62	69	78	93	69
Only once or twice all summer	14	10	12	12	5	2	9
About once a month	7	5	4	3	3	0	4
About once a fortnight	4	3	3	2	1	0	2
About once a week	5	6	6	5	2	1	4
Two or three times a week	7	5	6	5	4	2	5
Four to five times a week	4	2	1	1	3	0	2
Almost every day	11	6	6	3	4	2	5
Total	100	100	100	100	100	100	100

As expected, the table shows that the older the age group, the higher the proportion of non-cyclists. However, the median level of cycling by cyclists over 55 was more than once a week: for the younger cyclists the median level was less than once a week. Evidently older cyclists make more cycle trips than younger cyclists do.

In the sections that follow, results are presented for the population as a whole, be it the Phase 3 population or the omnibus survey population, and then analysed to show the differences between ‘cyclists’ and ‘non-cyclists’. The definitions which apply are:

### Phase 3

‘Cyclist’ – had cycled in the last 12 months.

‘Non-cyclist’ – had not cycled in the last 12 months.

### Omnibus

‘Cyclist’ – cycled at least once during the summer months.

‘Non-cyclist’ – no cycling at all during the summer months.

This slight difference of definition should be borne in mind when comparing results from the two surveys.

### 4.1 Situational status (baseline)

There are certain characteristics, such as availability of a bicycle, which override all other factors affecting the choice to cycle or not. This section summarises these situational factors. An individual may be placed in one of the cells of a baseline matrix according to fitness, cycle ownership, car availability, beliefs about the substitutability of short car trips and cycling ability.

The situational status of ‘cyclists’ (have ridden a bicycle in the last 12 months) and non-cyclists is shown in Table 2.

**Table 2 Situational status – Phase 3**

	Cyclists (n=168)	Non-cyclists (n=132)
Physical disability that prevents riding	1%	3%
Have at least one bike in working order	93%	24%
Have a car available to use	77%	79%
Some of my car trips could easily be replaced by a bike ride	56%	44%
Would have problems controlling a bike, especially in traffic	10%	36%

Half of the sample population interviewed in Phase 3 said that some of the trips they currently made by car could easily be replaced by a bike ride. However, two per cent overall currently had a temporary physical disability which prevented riding, and about one fifth of respondents said they would have problems controlling a bike, especially in traffic.

Ownership of a bike is (predictably) a strong factor associated with use. Ninety-three per cent of cyclists but only 24% of non-cyclists had at least one bike in working order. Conversely, of those respondents who had a bicycle in working order, only 16% said that they had not cycled during the previous year.

Some people lose, or never reach, the stage of cycling ability where they would feel comfortable on a bike. Thirty-six per cent of non-cyclists and 10% of cyclists said they would have problems controlling a bike, especially in traffic. There were significant sex differences in the response to this question. Among cyclists, 9% of males

and 11% of females agreed that they would have difficulties controlling a bike, especially in traffic: among the non-cyclists the proportions were 13% men but 51% women. Fear of traffic may be a major discouragement for non-cycling women.

#### 4.2 Characteristics of cyclists and non-cyclists

Table 3 shows the characteristics of the Phase 3 survey population for cyclists and non-cyclists:

**Table 3 Characteristics of cyclists and non-cyclists – Phase 3**

	Cyclists (n = 168)	Non-cyclists (n = 132)
Male	58%	40%
Mean age	35 years	43 years
Smoker	27%	30%
Median distance to usual place of work	5 km	5 km
Have driving license	75%	74%
Have a car available to use	77%	79%
Married/living as married	57%	67%
Employed/studying (full- or part-time)	76%	65%

The above table indicates that cyclists have a lower mean age than non-cyclists and are more likely to be male, unmarried, and employed or studying (full- or part-time). A similar comparison of cyclists and non-cyclists as defined by the omnibus survey confirmed these findings and highlighted other differences between the two groups (Table 4).

**Table 4 Characteristics of cyclists and non-cyclists – Omnibus**

	Population (n = 3118) (%)	Cyclists (n = 960) (%)	Non-cyclists (n = 2158) (%)
Male	49	59	44
Aged under 35	34	48	28
Social grades A to C	71	78	69
Income over £17.5k per annum	40	54	34
Buying/own home	67	70	66
Own a personal computer	38	53	32
Have a car	70	77	67
Married	61	59	62
Employed (full or part-time)	54	67	48
Daily readership of broadsheet	27	33	24

Cyclists are more likely than non-cyclists to live in a household with an annual income above £17,500, to own a PC and read a broadsheet newspaper. Further analysis also shows that they are more likely to have Internet access and own a mobile phone. Cyclists are less likely than non-cyclists to have cable or satellite TV.

Phases 2 and 3 of the detailed survey work investigated the association between an individual's cycling history and his or her current cycling status. It was found that, during childhood, 80% of current cyclists compared with 58% of current non-cyclists had used a bike for fun *and* as a means of transport. Non-cyclists were more likely to have used it only as a plaything. Twelve per cent of non-cyclists had never owned a bicycle at school age, compared with one per cent of cyclists. There is clearly a strong link between childhood cycling and

adult cycling which may be significant when considering how to encourage cycling (e.g. the 58% of non-cyclists who had used a bicycle for transport as a child may be more amenable to taking up cycling again).

Some analysis has been attempted to explore the differences between cyclists who mostly cycle for leisure and cyclists who cycle to get to work or college. Respondents to the Phase 3 questionnaire who indicated that during the previous month they had cycled on at least one occasion either to work/college or for leisure reasons were divided into two groups as follows:

- Respondents who had cycled on more leisure journeys than journeys to work and college have been labelled leisure cyclists;
- Respondents who had cycled to work or college more frequently or as frequently as for leisure have been labelled utility cyclists.

The differences between utility cyclists and leisure cyclists are shown in Table 5. ('Cyclists' who had not cycled at all in the previous month for work/college or leisure could not be classified as utility or leisure cyclists and are excluded from this table.)

Median distances to work were the same for both groups

**Table 5 Characteristics of utility and leisure cyclists – Phase 3**

	All cyclists (n = 134)	Utility cyclist (n = 51)	Leisure cyclist (n = 83)
Male	62%	60%	63%
Mean Age	35 years	30 years	38 years
Smoker	27%	24%	28%
Mean distance to usual place of work	8.87 km	4.82 km	12.26 km
Have driving license	76%	61%	85%
Have a car available to use	76%	69%	80%
Married/living as married	55%	43%	62%
Non-manual occupation*	53%	41%	59%
Manual occupation*	43%	57%	36%

\*If respondent not employed, occupation could be past or intended occupation, or that of chief wage earner in household; if retired, occupation before retirement.

at 4.8 km. However, the distribution of distances to work for leisure cyclists was more skewed towards long distances than the distribution for utility cyclists. The furthest 5% of leisure cyclists lived more than 47 km from their work: the equivalent figure for utility cyclists was 11 km.

Fewer utility cyclists had driving licenses and/or a car available to use. More of them were in manual occupations.

The questionnaires used in phases 1 and 2 of the study asked respondents to assess whether they had cycled more, the same, or less this year than last, and whether they expected to cycle more, the same, or less next year than this. There was some evidence to suggest that expectation of future cycling may be greater than reality. Only six per cent had cycled more this year than last for work/college whereas 10% expected to cycle more next year for this journey category. Similarly, 12% had *actually* cycled more for leisure this year but 23% *expected* to do more leisure cycling next year. It is speculated, therefore, that a cohort

study (in which the same sample is surveyed repeatedly), or travel diaries, would confirm that, in general, people fail to cycle as much as they expect.

The Phase 3 questionnaire also asked respondents to compare this year's cycling with last year's. Nine per cent had cycled more and eight per cent less for work/college, while 18% had cycled more and 17% less for leisure purposes. Instead of asking for next year's intentions, the Phase 3 survey only sought to establish the likelihood of cycling during the next three to four weeks, and the factors which might make cycling more or less likely. Differences between cyclists (have cycled in the last year) and non-cyclists are shown in Table 6.

**Table 6 Likelihood of cycling – Phase 3**

<i>Likely or very likely to cycle during the next few weeks</i>	<i>Cyclist n = 168 (%)</i>	<i>Non-cyclist n = 132 (%)</i>
To work	40	4
For leisure	63	4
To shops/on personal business	53	4
If in a hurry	39	5
If have lots to carry	16	0
If feeling lazy	26	1
If weather is fine	83	14
If route is flat	79	12
If travelling with a child	9	0

It is clear that the vast majority of non-cyclists are unlikely to use a bicycle in the near future even if conditions are favourable. Some factors, such as travelling with a child or having a lot to carry, will make even the cyclists less likely to cycle. Being in a hurry can probably work both ways as some journeys may be quicker by bike and others undoubtedly quicker by car or possibly quicker on foot.

#### 4.3 Control barriers

One of the key elements in the decision making model is that somebody thinks cycling is an option for them and that it is therefore a decision within their control. This will not be the case if they:

- a live too far from the destination;
- b have a disability;
- c cannot control a bicycle.

These have been dealt with in sections 4.1 and 4.2 above. A more general question was asked about there being too many obstacles to cycling. Despite seeming rather vague, it proved comprehensible to respondents and showed a significant difference between cyclists and non-cyclists (Table 7). Regarding fitness, there were 35% of non-cyclists who claimed to be not fit enough to cycle regularly. Similarly, a question posed in phases 1 and 2 found that laziness was a barrier to cycling for up to 39% of non-cyclists and, interestingly, for as many as 26% of cyclists. (Our definition of cyclist does not imply a regular cyclist – they may have used a cycle only once in the period.)

**Table 7 Barriers to Cycling – Phases 1, 2, 3**

<i>Agree or very much agree that ....</i>	<i>Phase</i>	<i>Cyclists (%)</i>	<i>Non-cyclists (%)</i>
I am not fit enough to cycle regularly	3	9	35
I am too lazy to cycle	1/2	26	39
There are too many obstacles preventing me from cycling	3	24	65

From the omnibus survey, 61% of cyclists but only 20% of non-cyclists agreed or strongly agreed with the statement 'For me personally, cycling is a convenient form of transport'.

#### 4.4 Car dependency

Davies et al. (1997) found that attitudes to cycling were intertwined with attitudes to the car and that 'car culture' was a major factor in the decision to cycle. The relationship that people have with their cars can sometimes verge on dependency and can be quite intimate. It is hard to encapsulate this in a short questionnaire that also needs to cover other areas. Two questions were asked, however, about whether many of the journeys made by car took less than five minutes and whether respondents thought that some of their car trips could easily be replaced by a bike ride:

**Table 8 Car dependency – Phase 3**

<i>Agree or very much agree that.....</i>	<i>Cyclists (%)</i>	<i>Non-cyclists (%)</i>
Apart from work trips, most of journeys made by car take less than five minutes	27	20
Some car trips could be replaced by a bike ride	56	44

Although the respondents seemed largely car dependent there was widespread agreement that cyclists should be given more priority in towns and cities even if this makes things more difficult for car drivers (this was borne out in the omnibus surveys – 69% agreed). The vast majority of respondents agreed that cycling is an economical form of transport and contributes to a better environment.

#### 4.5 Contemplation of change

The survey attempted a direct approach to the measurement of contemplation of change. Respondents were asked which of a set of descriptions most closely matched their current status with regard to cycling. To a large extent this approach was successful in revealing certain self-reported differences that illustrate a pattern of behaviour.

The wording of the contemplation of change question was varied between Phases 2 and 3. This change yielded interesting differences in the responses obtained.

The general question asked in Phases 1 and 2 was:

Regarding cycling would you say you ....

1. Never really think about cycling (precontemplation)
2. Sometimes think about cycling but never seem to get round to it (contemplation)
3. Use your bike on rare occasions (ready for action)
4. Cycle fairly often (action)
5. Cycle as often as you possibly can (maintenance)

The 'favourable journey' question asked in Phase 3 and the Omnibus Survey was:

*For a short journey when the weather was fine and you had nothing to carry, would you ....*

1. not even consider using a bicycle (precontemplation)
2. realise that you could use a bicycle but wouldn't actually do it (contemplation)
3. think seriously about the pros and cons of cycling but rarely do it (ready for action)
4. try cycling on some occasions (action)
5. cycle quite often
6. almost always cycle (maintenance)

Table 9 shows the response to the two different wordings; the first placed emphasis on the idea of cycling per-se; the second sought the respondents' attitudes to using a bike when conditions (distance, weather, and baggage) were favourable. Setting a favourable context for the question was intended to limit the factors that make cycling impractical and to concentrate responses on a situation where cycling might seem a reasonable option.

It can be seen that many respondents are at the stage of not really giving cycling serious thought. This is particularly true for non-cyclists where the majority said that they 'never really think about cycling' (pre-contemplation), or 'Sometimes think about cycling but never seem to get round to it' (contemplation). Although more than half of the omnibus survey population said they would not even consider using a bicycle even when conditions were right, there were a sizeable number of 'floaters' who, although they might not wish to become frequent cyclists, might be willing to cycle occasionally.

The response by 3% of the non-cyclists in the Phase 3 and omnibus surveys – that they would cycle quite often or

would almost always cycle – seems odd. It may be that they do believe that they would always cycle on short journeys in fine weather with nothing to carry, but that these journey conditions rarely coincide. Equally it may be that the context setting has brought some unusual or past situation (holiday or childhood) into their mind and they are describing their behaviour in this unidentified situation. Non-cyclists were defined as those individuals who had not cycled in the last year, for Phase 3, or who did not cycle during the summer months, for the omnibus survey. It may be that the 'last year' or 'the summer months of 1999' were atypical.

In Phase 3, respondents were asked how likely or unlikely they were to move to another stage (on the contemplation of change model) within the coming year; they were also asked which stage they would move to. The current stage and forecast stage for all respondents is presented in Table 10 from which it can be seen that 11% were likely to change. About seven per cent of respondents judged that they were likely to move up the change scale and four per cent judged that they would move down.

**Table 10 Movements between current stage and forecast stage for all respondents – Phase 3**

Stage	To				
	Pre-Con.	Contemp.	R. for A.	Action	Mainten.
<i>From</i>					
Pre-contemplation	27%	–	<1%	1%	<1%
Contemplation	–	7%	<1%	2%	–
Ready for action	–	–	5%	1%	<1%
Action	–	–	2%	14%	3%
Maintenance	–	–	–	2%	36%

There was no appreciable distinction between leisure cyclists and utility cyclists in terms of the 11% of respondents who stated that they were likely to change stages.

#### 4.6 Motivation

Previous research by TRL (e.g. Gardner, 1998, Gardner and Ryley, 1997) has shown the importance of barriers to cycling, particularly the fear of traffic. The results from the Phase 3 survey showed that 32% of cyclists and 61% of non-cyclists agreed or very much agreed that the traffic

**Table 9 Responses to two forms of a direct question related to contemplation of change – Phases 1, 2, 3 and omnibus**

Status	Non-cyclists stage of contemplation			Cyclists stage of contemplation			Population
	General	Favourable journey		General	Favourable journey		Favourable journey
	Phases 1&2 (%)	Phase 3 n=132 (%)	Omnibus n=2158 (%)	Phases 1&2 (%)	Phase 3 n=168 (%)	Omnibus n=960 (%)	Omnibus n=3118 (%)
Pre-contemplation	49	71	72	3	5	9	53
Contemplation	43	14	14	10	5	9	12
Ready for action	8	5	5	22	7	8	6
Action	0	7	6	41	25	30	14
Maintenance	0	3	3	25	57	44	15

would frighten them. Comparable figures from the omnibus survey were 38% and 59% respectively. There was little distinction between leisure and utility cyclists in this respect.

There were differences between males and females. The females, whether cyclist or non-cyclist, were more than twice as likely as males to agree that:

the traffic would frighten me;

I would have problems controlling the bicycle, especially in traffic;

I would worry about danger from strangers if cycling in the evening.

There was little difference in the responses of cyclists and non-cyclists to the suggestion that ‘the area where I live is not safe for cycling’ (28% at least agree – Phase 2).

All three phases of the study found a difference between the two groups in the proportion who agreed or strongly agreed that they ‘sometimes enjoy the feeling of risk such as high speeds’. This difference was greatest (and statistically significant) in Phase 1 of the study (58% of cyclists and 35% of non-cyclists).

Enjoyment and keeping fit seem to be factors in motivation. Ninety-six per cent of cyclists but only 71% of non-cyclists agreed or agreed strongly that cycling is enjoyable. Eighty-seven per cent of all respondents (95% of cyclists and 82% of non-cyclists) also at least agreed that cycling helps you to become fit.

Thirty-nine per cent of cyclists and 57% of non-cyclists felt that the media promotes a positive image of cycling.

#### 4.7 Social innovation

It was not considered realistic to ask people directly to describe their level of social innovation (for example by asking if they considered themselves to be laggards) but some questions provided an indication of their status. There was a difference in the answers given by cyclists and non-cyclists:

**Table 11 Level of social innovation – Phases 1 and 3 and omnibus**

<i>Agree or very much agree that.....</i>	<i>Cyclists (%)</i>	<i>Non-cyclists (%)</i>
I hate to stand out from the crowd (Phase 3)	24	45
People who cycle to work are considered to be slightly odd (Phase 1)	23	3
My friends would laugh at me if I were to cycle (Phase 3)	4	38
My friends would laugh at me if I were to cycle (omnibus)	6	26

Females tended to be more sensitive to these social pressures than males. In particular, the Phase 3 data showed a statistically significant difference in responses to the statement ‘my friends would laugh ...’

**Table 12 Phase 3 – my friends would laugh at me if I were to cycle**

	<i>Male</i>		<i>Female</i>	
	<i>cyclist (%)</i>	<i>non-cyclist (%)</i>	<i>cyclist (%)</i>	<i>non-cyclist (%)</i>
Agree	2	22	7	40
Neither/don’t know	6	15	3	7
Disagree	92	63	90	53
Number in sample	94	48	70	75

## 5 Market segmentation

### 5.1 Dividing the population

Understanding the composition of the target audience is an essential part of any promotional campaign. One of the aims of this research, therefore, is to categorise the type of people who are potentially most easily influenced towards cycling.

The original intention was to use the Phase 3 data to test behavioural models that explained cycling intentions and use. The elements to consider seemed to be attitudes towards cycling, beliefs about others’ attitudes (norms), and beliefs about one’s ability to use a bicycle (controls). Factors aggregating the attitudes, norms and controls data were constructed and models of cycle use, intent and contemplation of change were tested. The data indicate that the factors are indeed correlated with cycle use, intention to cycle and the contemplation of change variable. Unfortunately the best-fit models involved the linear combination of the factors and do not increase understanding beyond the level outlined in the previous chapter.

It is possible that the questions used were not sufficiently subtle to disentangle and reveal the underlying behavioural model. However, it is more likely that there are several quite different models to be considered for different sub-populations. The Phase 3 sample is not sufficiently large to allow the necessary levels of disaggregation and the development of multiple models.

A pragmatic solution might be simply to accept the disaggregation provided by the contemplation of change scale. Doing this raises two questions:

Does the scale range from one distinct group to another?

Is the variation along the scale fairly even?

The Phase 3 data can be used to test both of these questions. The Phase 3 questionnaire asked respondents about their frequency of cycling for work/college and for leisure, and also about their intentions to cycle for work/college, leisure and other purposes in the coming months. Thus it is possible to derive from these data a frequency of cycle use (over the past year) and also the intended frequency of use over the coming month. These two variables can in turn be combined to provide a three-level variable summarising cycle use and intention:

1 Cycles for work/college or leisure on three or more days per week and intends to cycle in the next month.

- 2 Other than in 1. above, has cycled in past month, or intends to cycle next month, or both (labelled 'in between').
- 3 Has not cycled in the past month and does not intend cycling in the next month.

This is the sort of thing that the contemplation of change scale is intended to measure but on a six-point scale. Figure 3 shows how the median value of the three-level use and intention variable varies across the six levels of the contemplation of change scale. The median value of the use and intention scale rises fairly smoothly across the graph. The group who said on the contemplation of change scale that they would not consider cycling had a median score of 1.2 on the three-level use and intention scale. This score means that almost all of them said that they had not cycled in the past month and did not intend cycling in the next month. At the other extreme, the group who said that they would almost always cycle had a median level of 2.7 on the use and intention scale. Nearly all of them had cycled on three or more days in the past week and intended to cycle in the next month.

The regular increase in the median value across the graph shows that there are roughly equal variations in cycling and intention to cycle across all six of the contemplation of change levels. The scale does provide a good measure of the cycling practice and intentions of samples of perhaps as few as fourteen people. The scale can be used with confidence in the development and evaluation of programmes to promote cycling.

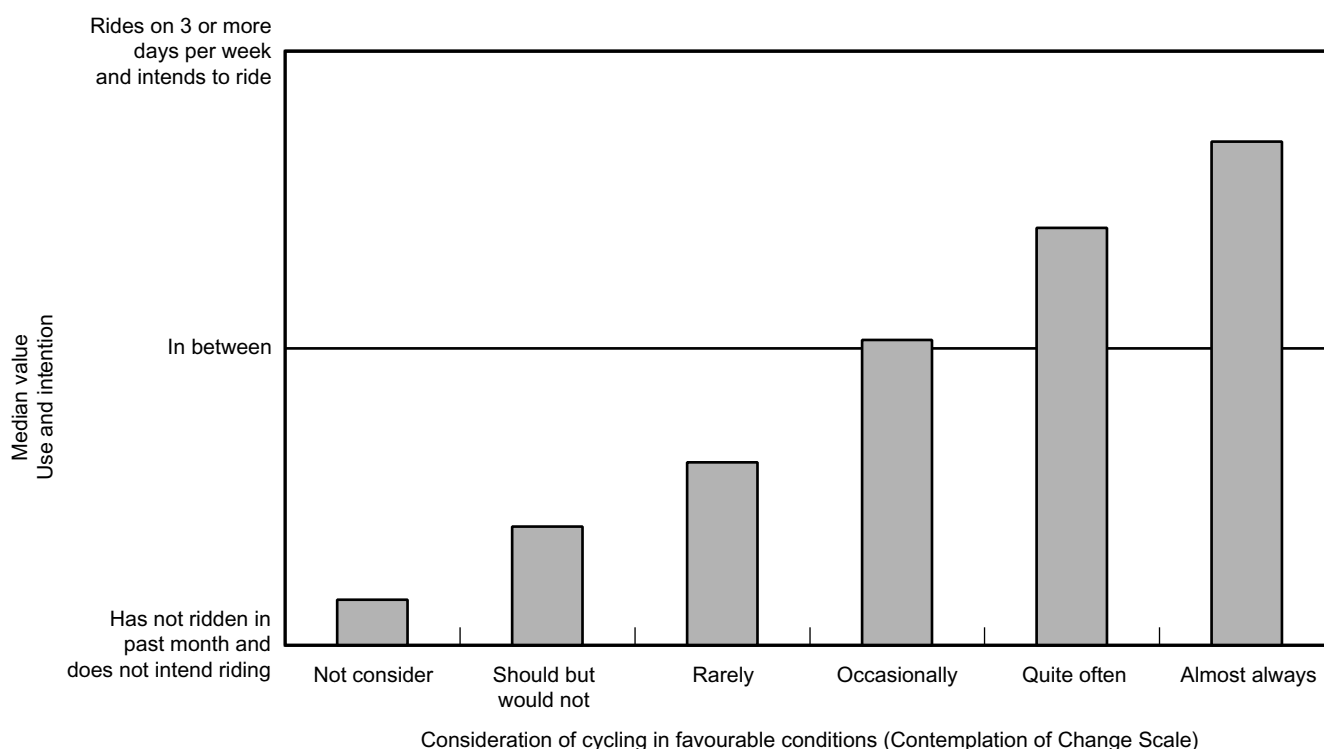
The contemplation of change variable could be used by itself to segment the market of cyclists and potential cyclists. However, this implies a single change model. The attempts to develop a behavioural model point to the existence of multiple population types and the need for more than one

model. A cluster analysis has been attempted to explore the existence of a multiplicity of populations. The analysis has examined the variation in a set of the Phase 3 questions, which seemed best to explain variations in the contemplation of change variable. Stratification of the groups by contemplation of change has been forced by using a weighted contemplation of change variable within the cluster analysis. The other variables were:

*Question number*

- 11d Cycling a short journey in fine weather with little to carry would be a convenient form of transport.
- 11j Cycling a short journey in fine weather with little to carry would be too much hassle.
- 11f Cycling a short journey in fine weather with little to carry would be a fast way to travel.
- 11e Cycling a short journey in fine weather with little to carry would give me a sense of freedom.
- 12a My friends would laugh at me if I were to cycle.
- 11k I would feel self-conscious.
- 14g I hate to stand out from the crowd.
- 3 Ownership of a bike that works.
- 14c There are too many obstacles preventing me from cycling.
- 4e There is no necessity for me to use a bike.

The respondents were distributed unevenly across the contemplation of change scale. Only 8% of respondents fell in the category that realised they could cycle but would not and 7% in the category that think about cycling but rarely do it. To obtain a more equal distribution of numbers, the four categories at the low cycle use end of the scale have been combined into two categories, (would



**Figure 3** Use and intention by contemplation of change

not consider use or realised that could but would not), and (think about it but rarely do or try sometimes). Table 13 shows the characteristics of ten clusters and how they relate to the four levels of contemplation of change.

Cluster analysis is a pragmatic process, it does not involve any minimisation of errors or model testing. The process depends upon the algorithm chosen (in this case mean square distance to furthest neighbour), the order of the data, and the judgement of the analyst. The choice of ten clusters is a matter of judgement. It provides enough clusters to allow a minimum of two divisions at each of the four levels of the compressed contemplation of change variable but has not produced a large number of very small clusters. In the event the analysis has divided the lowest of the contemplation of change levels into five groups, the intermediate levels into two groups each, and has not

divided the highest level. This indicates that there is much less variation in responses to the test questions the higher one moves up the contemplation of change scale. Given that cluster 3 is probably a minor data aberration, it seems that the populations that almost always cycle and that cycle quite often are much more homogenous in their attitudes, norms and control beliefs than the other two populations on the compressed contemplation of change scale.

The table shows estimates of the median number of days cycled per week and the proportion of the national population in each cluster. The estimate of days cycled was derived from the subjects' answers to the questions about the frequency of cycling to work or college and the frequency of leisure cycling. The omnibus survey asked a nationally representative sample for their responses to the contemplation of change question. The national population

**Table 13 Contemplation of change clusters**

<i>Contemplation of change</i>	<i>Cluster n = sample size in Phase 3</i>	<i>Characteristics</i>	<i>Days cycled per week for work or leisure - median</i>	<i>Estimated proportion of national population (adults)</i>
Almost always cycle	1 n=44	All own a bike that works. All responses tend to be positive towards cycling	4.1	7%
Cycle quite often	2 n=48	All but one have a bike that works. All responses tend to be positive towards cycling. (2:1 male)	2.6	8%
	3 n=2	Neither has a bike that works. Tend to agree that cycling is convenient. Tend to disagree that they would be self-conscious cycling or that there is no necessity for me to cycle. They do not agree that cycling is fast or confers a sense of freedom. They agree that their friends would laugh if they cycled and that they hate to stand out in a crowd.	0.06	<0.5%
Rarely cycle or cycle some-times	4 n=43	Four in five have a bike that works. Tend to be positive towards cycling on all responses except cycling is fast and I hate to stand out in a crowd where there is a balance between numbers agreeing and disagreeing.	0.36	15%
	5 n=15	Two thirds have a bike that works. They tend to disagree that their friends would laugh if they cycled, that they would feel self-conscious and that they hate to stand out in a crowd. They agree that cycling would be a hassle and they disagree that it would be fast.	0.30	5%
Would not consider using a bike or realised that could but would not	6 n=35	Only one in six has a bike that works. Disagree that cycling is convenient or fast. Tend to disagree that cycling confers freedom. Tend to agree there are too many obstacles preventing them cycling and that they have no necessity to use a bike. BUT they tend to disagree that they would feel self-conscious when cycling. (2:1 female)	0.01	27%
	7 n=23	About half have a bike that works. Tend to be positive towards cycling on all responses but are noncommittal on standing out from the crowd, obstacles to cycling and necessity to cycle.	0.05	18%
	8 n=15	None have a bike that works. They agree that cycling is convenient and confers freedom. They consider it is too much hassle, their friends would laugh at them, there are too many obstacles preventing them and there is no need to cycle. (3:1 female, 2:1 over 44)	0.00	12%
	9 n=8	Three-quarters have a bike that works. They disagree that cycling is fast, they would feel self-conscious cycling, they hate to stand out from the crowd, and there are too many obstacles preventing them from cycling. However, they do not agree that there is no necessity for them to cycle. (7:1 female, half < 26)	0.03	6%
	10 n=4	None have a bike that works. They tend to agree that there is no necessity to cycle and they do not agree that cycling confers freedom. However they agree that cycling is convenient and they disagree that it would be a hassle, that their friends would laugh at them or that there are too many obstacles preventing them from cycling. (3:1 male, half < 26, none > 44)	0.00	3%



estimates in Table 13 were obtained by scaling the Phase 3 contemplation of change data to generate proportions that match the omnibus proportions.

The following sections describe the clusters in more detail and discuss ways to promote increased cycling by them.

## 5.2 Sub-population profiles

### *Cluster 1 – ‘committed cyclists’*

7% of the national population. This group cycle on about four days per week and the opportunities to increase their cycling may be limited.

- Pro-cycling They are generally and strongly pro-cycling
- Anti-cycling About a quarter doubt that cycling provides a chance to mix with friends, about a sixth hate to stand out in a crowd.

The main need is to maintain and perhaps increase their cycle use. Half of this group did not cycle to work/college in the previous month and 14% did not cycle for leisure. Almost half agreed that some of their car journeys could be replaced by bike journeys. Promotion campaigns should advocate the benefits of cycling, present attractive role models, ensure adequate provision of high quality cycling facilities, and encourage law enforcement to protect cyclist safety. Increasing average levels of cycling by this group of frequent cyclists will require some promotion of utility cycling, particularly cycling to work. This may require some promotion at the workplace.

### *Cluster 2 – ‘regular cyclists’*

8% of the national population. This group is largely male. They cycle less frequently than Cluster 1 but otherwise share their views.

- Pro-cycling They are generally and strongly pro-cycling
- Anti-cycling About a quarter doubt that cycling provides a chance to mix with friends and a quarter hate to stand out in a crowd

The main need is to maintain and increase their cycle use at least to the level of Cluster 1 members. Over half of this group did not cycle to work/college in the previous month, only 31% cycled to work or college on three or more days per week, and 21% had not cycled for leisure in the previous month. Over half agreed that some of their car journeys could be replaced by bike journeys. Promotion campaigns should advocate the benefits of cycling, present attractive role models, emphasise that cycling is a normal (mass) activity, ensure adequate provision of high quality cycling facilities, encourage law enforcement to protect cyclist safety. As with the ‘committed cyclists’, increasing average levels of cycling will mean increasing the number of utility trips, particularly the trip to work. But there is also some scope for increasing leisure cycling.

### *Cluster 3 – ‘anomalies’*

This is a very small cluster, two respondents. They claim that they have cycled quite often but do not own a bike that works and have not cycled for work or leisure much more than once in seventeen weeks. The cluster seems to be very anomalous and is not worth considering as a separate

group in the development of a national or local promotional strategy.

### *Cluster 4 – ‘occasional cyclists’*

15% of the national population. Most of them own bicycles but the median level of cycling is only once in about three weeks.

- Pro-cycling They are generally pro-cycling
- Anti-cycling They are divided on whether cycling is fast and on hating to stand out in a crowd.

Less than a quarter of this cluster had cycled to work or college in the previous month but just over half had done some leisure cycling. They all had bicycles as children and four fifths had used them for transport as well as play. Two thirds of this group agree that some of their car trips could be replaced by bike trips so it should be possible to greatly increase their cycle use. They need reassurance on the benefits of cycling, particularly that cycling provides fast city transport from door to door. Promotion using attractive role models, supported by adequate provision of high quality cycling facilities, enforcement of laws to protect cyclist safety, should all help encourage this group to increase cycle use.

### *Cluster 5 – ‘toe-dippers’*

5% of the national population. Most of them own a bicycle but the median level of cycling is less than once in three weeks.

- Pro-cycling They do not think that their friends would laugh if they cycled, that they would feel self-conscious and they are not worried about standing out in a crowd.
- Anti-cycling They do not think that cycling is fast and they do think it would be a hassle.

Only 12% (two respondents) had cycled to work in the previous month but more than half had cycled for leisure. They all had bicycles as children and four fifths had used them for transport as well as play. It should be possible to greatly increase cycle use by this group. They need to be convinced that cycling is not a hassle and that it does provide fast city transport. Cycling promotion for this group should focus on these two elements.

### *Cluster 6 – ‘the unconvinced’*

27% of the national population. Two-thirds female, very few of them own a bicycle that works and the median level of cycling is about once every two years.

- Pro-cycling They do not think that they would feel self-conscious when cycling.
- Anti-cycling They do not think that cycling is fast, they disagree that it confers freedom, and they do think there are too many obstacles preventing them from cycling.

Nobody in this group had cycled to work in the previous month and less than 10% had undertaken any leisure cycling. Nearly all of them had bicycles as children but less than 30% had used these for transport as well as play. Three-quarters disagreed that some of their car trips could

be replaced by cycle trips. It will not be possible to increase cycling among this group until cycle ownership is increased. Promotion of ownership probably falls to the cycle supply industry. Government and local authority promotions may help if they show cycling by female role models to whom non-cycling women can relate. Once they own a bicycle they can be encouraged to use it by publicity promoting the convenience and speed of cycling. Only half of this group agrees that cycling, under favourable conditions, would help them to become fit. Thus promoting the health benefits of cycling may not motivate this group as strongly as some of the other groups.

*Cluster 7 – ‘the unthinking’*

18% of the national population. About half own a bicycle that works but the median level of use is just over twice per year.

- Pro-cycling Fairly positive on most questions.
- Anti-cycling Non-committal on standing out from the crowd, obstacles to cycling and the necessity to cycle.

Less than 10% (two respondents) had cycled to work in the previous month but 20% had undertaken some leisure cycling. Most of this group had owned bikes as children and 70% had used these for transport as well as play. About two thirds agreed that some of their car trips could be replaced by cycle trips. Promoting cycle ownership is important for this group, which seems quite pro-cycling. Emphasising the normality of cycling (appropriate role models), its convenience and perhaps the environmental and health benefits (to help them recognise cycling as a necessity) could increase cycle use amongst this group. It may be easier to concentrate on increasing leisure cycling and hope that this leads to an increase in other forms of cycling rather than promoting cycling to work directly.

*Cluster 8 – ‘no-needers’*

12% of the national population. This group is three-quarters female and two-thirds of the group are over 44 years old. None of the group owns a bicycle that works and they do not cycle at all.

- Pro-cycling Cycling is convenient and confers freedom.
- Anti-cycling Cycling is too much hassle, their friends would laugh at them if they cycled, there are too many obstacles to cycling, and there is no necessity.

This is a large population group that is likely to prove difficult: less than half of them agreed that some of their car trips could be replaced by cycle trips. They need to be sold or loaned a bike before they can start cycling which requires some sale or hire promotion, and then they must be persuaded to use their bicycle. Although two thirds of them used a bicycle for transport when they were children they probably now need some re-training in safe riding. They may require considerable support in the form of cycle routes that are safe from strangers but segregated from traffic. The health benefits of cycling might attract them since all but one agreed that cycling, under favourable conditions, would help them to become fit.

However two thirds of them also disagreed with the statement ‘I like to take part in sport or fitness activities...’

*Cluster 9 – ‘the self-conscious’*

6% of the national population. This group is almost wholly female and half of them are under 26 years old. Three-quarters of them have a bike that works. The median cycling rate is about once every 30 weeks.

- Pro-cycling Do not agree that there is no necessity for them to cycle.
- Anti-cycling Disagree that cycling is fast. They would feel self-conscious cycling, there are too many obstacles preventing them from cycling. They hate to stand out in a crowd.

All of these cycled as children but for two thirds of them their bicycle was used only as a toy. Their responses suggest that they do not see cycle transport as at all appropriate to their particular social stage. If they were persuaded to take up cycling they would probably need retraining.

*Cluster 10 – ‘youngish lads’*

About 3% of the national population. This group is predominantly male. Half are less than 26 years old: the others are between 26 and 44 years old. None of them has a bike that works and they have not cycled in the previous year.

- Pro-cycling They agree that cycling is convenient. They disagree that it would be a hassle or that there are too many obstacles preventing them. They do not think that their friends would laugh at them if they cycled.
- Anti-cycling They see no necessity to cycle and they do not think that cycling confers a sense of freedom.

They all had bikes as children and three-quarters used them for transport as well as play. Only one in four disagrees that some of their car trips could be replaced by bike trips. Their views on cycling are quite tolerant but they just don’t intend to do it. Presumably they will only take it up if it becomes trendy for people at their social stage.

**5.3. Promoting movement – diffusion theory**

The clusters have formed groups of people with similar attitudes, norms and control beliefs. The discussion above shows the major differences in these variables. The theory of planned behaviour (Figure 2 in section 2.3) implies that certain combinations of attitudes, norms and control beliefs will lead to intentions to cycle and then interact further with the control beliefs to lead an individual to cycle. However, the theory is perhaps more a way of describing some actions than a definite mechanism.

The theory seems to break down entirely for some of the groups described in this chapter. In particular, the ‘youngish lads’ seem to have all the attitudes and control beliefs necessary to proceed to active cycling yet lack any intention to cycle. Also, there are no enormous attitude differences between the ‘committed cyclists’, ‘regular cyclists’ and ‘the unthinking’ apart from their answers to

the contemplation of change question and of course large differences in the amount of cycling that they do.

A number of the people, who cycle infrequently if at all, have concerns about their ability to cycle safely in traffic. The cycling research literature contains examples of safe facilities and routes that have been provided to overcome these fears. Often they have been demonstrated to reduce casualties among an existing cyclist population. There are few reports of such facilities generating new cycling trips and where there have been such reports the use of the facility is largely for leisure. While changing attitudes, norms and control beliefs may be important in promoting increased cycling, these are not the only factors that should be addressed.

The diffusion theory model described in Section 2.4 provides a marketing model of how population groups adopt change in the face of a new product. Within the preceding analysis of the contemplation of change groups it is fairly easy to identify the 'youngish lads' and the 'no-needers' as laggard groups, who will be very resistant to taking up cycling. The late and early majorities, who may eventually come on board, must include 'the unthinking' and perhaps the 'toe-dippers' and 'occasional cyclists'. The major problem with this sort of analysis, at the present time, is to relate the 'committed' and 'regular cyclists' to the innovator and early adopter groups in the minds of the early majority, late majority and laggard groups. It is the existence of the innovator group that motivates the early adopters and so finally brings the majority into the activity.

The references in the preceding section to the need for suitable role models was driven by the diffusion theory concept. The position of cycling within the market is somewhat analogous to the position of the Austin Mini in the early years of production. There are quite a few users but the rest of the market will not become interested without the regular and publicised support of at least a few fashion leaders. This in turn may require the promotion of at least some conspicuous consumption. In the case of the Mini this took the form of driving special luxury models and also the sports version (Mini Cooper). The analogue to these in cycling is the high-cost special bicycle made from exotic alloys and with ultra-lightweight accessories.

## 6 Conclusions

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The application of psychology theory and frameworks has proven valuable in the understanding of why people cycle, and more importantly, why they do not cycle. In considering how to change behaviour, it is important to understand the attitudes and beliefs held by different population groups, so that initiatives to encourage cycling can be targeted to achieve maximum benefit.

### 6.1 Staged changes

Behaviour change is a staged process, and assistance in creating staged behaviour change is most effective if based on an understanding of the readiness of individuals to change, consideration of the balance of forces for and against change and a full understanding of a person's approach to innovation.

Such a conceptual framework allows promotional campaigning effort, nationally and locally, to be more effectively targeted on specific population groups and associated relevant messages.

The research has helped to identify population groups and has implications for those charged with practical measures to encourage cycling. It seems that non-cyclists do not fit easily into any single category: Although we have identified differences between cyclists and non-cyclists, it is evident that the decision to cycle is influenced by many practical and psychological factors. The appropriate promotional measures will also depend on the type of cycling (e.g. utility or leisure) and the particular population group that one wants to encourage.

The research has demonstrated that levels of cycling and propensity to cycle can be assessed using a single contemplation-of-change scale. The six-level contemplation-of-change question, developed in this research, provides a quantitative means to summarise attitudes to cycling and cycling behaviour. Asking the question reveals not just the differences between cyclists and non-cyclists but can reveal information about how attitudes are changing for or against cycling within the population.

The question can be applied within the context of an omnibus survey. Such surveys, at regular intervals, could assess the progress of the national programme to promote cycling. The question could also be used in local surveys to assess the impact of local campaigns.

### 6.2 Target groups

#### *Both sexes*

The cluster descriptions show attitude similarities between the 'committed cyclists', 'regular cyclists', 'occasional cyclists', 'toe-dippers' and 'the unthinking'. This set of clusters approximates to a single population type distributed across the contemplation of change scale. The population includes a good balance of men and women and all ages. They are generally positive in their attitude to cycling. There are signs of an early majority tendency among 'the unthinking', 'occasional cyclists' and 'regular cyclists' in that they seem to dislike standing out from the crowd. 'Toe-dippers' and 'occasional cyclists' need to be convinced that cycling is fast.

If the members of each of these clusters can be persuaded to increase their cycling to the frequency of the next group up then national cycling rates will double. National cycling would be increased by more than 60% if just the 'occasional cyclists' were persuaded to increase their weekly cycling from an average of 0.36 days to 2.6 days. The 'occasional cyclists' comprise 15% of the national population and most of them own a bicycle that works.

#### *Women's groups*

The cluster analysis has identified three groups who cycle very infrequently if at all and who are predominantly female, the 'unconvinced', the 'no-needers' and the 'self-conscious'.

Very few of the ‘unconvinced’ and none of the ‘no-needers’ own a bicycle. This seriously limits their opportunities to cycle. It is not surprising that both groups agree that there are too many obstacles stopping them from cycling. The ‘unconvinced’ do not think that they would feel self-conscious when cycling but the ‘no-needers’ think that their friends would laugh at them if they cycled. Getting either group to take up cycling must involve some promotion of bicycle purchase. It is worth trying because together they amount to 39% of the national population.

The ‘self-conscious’, 6% of the national population, have nearly all got bikes that work and so do not face the same situational problems faced by the other two female groups. They seem to see the necessity for cycling but resist because they would feel self-conscious cycling, they hate to stand out from the crowd and there are too many obstacles. They all cycled as children but for most of them this was just in play and they have little experience of using a cycle for transport. Presumably, if they are not encouraged to use their bicycles, they will get rid of them and by that means graduate to the ‘no-needers’ group. Diverting them towards a cyclists group will require a programme to develop their self-esteem when cycling. Tackling them at secondary school level might best do this.

#### *‘Youngish lads’*

This is a very small group, about 3% of the national population. They seem very relaxed about cycling but just do not intend doing it. None of them owns a bicycle, which means that it would be difficult to get them to try. They may well be archetypal laggards.

### **6.3 Utility and leisure cycling**

The research has found variations in the frequency of leisure and utility cycling across the contemplation of change scale. Among the groups who cycle very infrequently the trips they do make are likely to be leisure trips and are very unlikely to be journeys to work. As the frequency of cycle trips increases so the proportion of cycle trips to work increases but even among the ‘committed cyclists’ half had not cycled to work in the month before the survey. This suggests that people who do not cycle very frequently are more likely to increase their cycling if they are encouraged towards more leisure cycling than towards utility cycling. The promotion of recreational routes and rural facilities that include cycle hire can be very useful for drawing people back to cycling and encouraging cycling for exercise.

Promoting cycling to work by offering improved facilities and developing work place travel plans is most likely to be successful if the exercise focuses on the existing cyclists and members of the workforce who are already fairly frequent leisure cyclists. Such schemes should be adopted to gain a short-term increase (perhaps doubling) in cycle journeys to work. However, even in the context of the workplace, increasing cycling among the non-cycling or very low frequency cyclists will almost certainly require some non-utility motivation such as setting up easy recreational tours, leisure runs for exercise and similar non-utility cycling. Such activities can contribute to workplace team building as well as improving workforce health.

## **7 Recommendations – promotional strategies**

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In general the promotional strategy adopted will depend on whether the goal is to increase cyclist trips or increase cyclists numbers.

- To increase trips, in the short term, target the ‘regular’ and ‘occasional cyclists’.
- To increase numbers, in the short term, target the ‘toe-dippers’ and perhaps ‘the unthinking’.
- In the present circumstances of fairly low cycle use, national campaigns should probably aim to increase cyclist numbers.
  - New and infrequent cyclists are more likely to be attracted to leisure cycling than to utility cycling but campaigns should acknowledge the benefits of utility cycling.
- In general, the content of a local campaign should depend on what it is trying to achieve. Some local campaigns may set out to increase the number of people cycling for particular purposes. In areas with a relatively high cycling population, however, campaigns will be more effective if they aim to increase cycle trips rather than cyclist numbers.
  - In these areas leisure cycling may be approaching saturation but cyclists have scope for increasing cycle use for utility trips. Some reinforcement of the pleasure and other benefits of leisure cycling will support existing levels of cycling.
- To achieve the national target of quadrupling the number of cycling trips by 2012, it will be necessary to direct campaigns at the ‘unconvinced’, the ‘no-needers’ and the ‘self-conscious’, three groups that are predominantly female, and also at ‘the unthinking’.
  - The current low level of cycle ownership among these groups must be addressed as part of any promotional campaigns.
- Cycling promotion in girls’ secondary schools should be already starting to ensure that by 2012 there are very few non-cycling ‘self-conscious’ women waiting to graduate into ‘no-needers’.
  - Ownership is not the problem. This group needs to be convinced that cycling is a feminine activity and promotes self-esteem.
- There is a need now to initiate a change process among the groups who do not cycle or cycle very infrequently.
  - This seems to require some promotion of cycling as a fashionable activity undertaken by fashion leaders.
- At both local and national level, progress should be monitored by regular surveys.
  - The contemplation of change question, developed in this research, provides an effective instrument for the quantitative assessment of change and should be used.

Promoting leisure cycling is likely to be effective if it includes:

- provision of safe facilities;
  - in attractive scenery;
  - with some means for getting safely to and from population centres.
- publicising facilities;
- ensuring the existence of refreshment stops and first aid posts (for people and bicycles);
- provision of cycles for hire (and cheap adjacent car-parking or cheap public transport).

Promoting utility cycling is likely to be effective if it includes:

- provision of safe direct facilities;
  - between residential areas, employment and shopping;
  - ensuring that cycle parking is secure and convenient for destinations.
- publicising facilities to populations within 5 km of destinations;
- addressing leisure cyclists and occasional utility cyclists;
- areas that are not excessively hilly.

For promoting new leisure or utility cycling, initiatives that might be considered include general publicity campaigns (where the target audience profile given here would be very relevant) and providing more cycling facilities. It may be particularly important for additional cycling facilities to be well publicised, as this will help to raise the profile of cycling.

It is vital that promotional and practical measures support existing cyclists. These measures might include general publicity campaigns and the installation of cycling facilities. Again, giving publicity to new measures should be encouraged, to improve the profile of cycling.

Workplace campaigns and green travel plans have an important role in promoting increased cycle use on the journey to work and reassuring an organisation's staff that cyclists are valued and respected employees

A higher proportion of existing 'utility' cyclists is in manual occupations, rather than non-manual occupations. The reverse is true, however, for leisure cyclists. A variety of media will therefore be needed to reach them, including both traditional media, such as tabloid newspapers, and new media such as the Internet.

Further advice on the above is provided by Collins in 'The potential role of marketing communications in promoting cycling.' (See Appendix D in Davies et al, 1998).

## 8 Acknowledgements

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The work described in this report forms part of the research programme undertaken under Department of the Environment, Transport and the Regions' Letter of Agreement UG170, 'Attitudes to Cycling'. Project Officers

Phil Philippou and Wayne Duerden have provided guidance and encouragement to the project. The original production of the conceptual framework owes much to a team led by Rob Pocock of MEL consultants. Ms Sam Clemens of Ipsos-RSL and Ms Sonja Forward of the Swedish Traffic Institute have given advice on the design of the questionnaires. Mrs Joan Franklin, TRL, and her team of interviewers administered the questionnaires. Statistical analysis is by Gavin Buckle, TRL.

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## Abstract

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This project has investigated attitudes to cycling in a sample of the UK population. Detailed quantitative interviews were carried out with 650 people aged 16 or over, and a smaller number of key questions on cycling were included in an omnibus survey with a nationally representative sample of 3000 adults. The research has built quantitatively on the qualitative models of attitude and behaviour proposed in earlier TRL cycling research, particularly on the contemplation of change theory and social diffusion theory. The research has explored the differences in attitudes, circumstances and behaviour of cyclists and non-cyclists. The results will be of value to those involved with promoting cycling at national and local level.

## Related publications

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