

ENCOURAGING BICYCLE USE IN RESIDENTIAL NEIGHBOURHOODS: INSIGHTS FROM EDINBURGH

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Abstract

The author completed a PhD in 2005 that examined individual travel behaviour in Edinburgh, to assess the propensity to walk and cycle. Analysis from a two-stage data collection methodology has been presented at previous 'Cycling and Society' symposia. A segmentation analysis was undertaken to identify those most likely to cycle using first-stage Scottish Household Survey data for Edinburgh (Symposium 1, Lancaster, 2004). Attitudinal and travel behaviour findings from the second-stage survey of 997 households in West Edinburgh were subsequently presented (Symposium 3, Chester, 2006).

This paper presents new analysis from the stage-two survey with a focus on the different responses from four distinct neighbourhoods along the West Edinburgh transport corridor. The residential neighbourhoods are, in order from the city centre to the urban fringe: Dalry, Slateford, Wester Hailes, Currie. These neighbourhoods vary by socio-demographic characteristics of the residents and housing type; bike ownership and usage is examined across these neighbourhoods. An anomaly is presented: there is lower bike ownership amongst those living in neighbourhoods towards the centre of Edinburgh, typically in flats, yet these areas are more suited to cycling (due to people being closer to where they want to travel).

Design solutions for bicycle storage in residential neighbourhoods are then examined. For flat dwellers, there have been initiatives in Edinburgh to develop cycle parking facilities. Other solutions are presented in response to the reasons for not cycling put forward by non-cyclists in the West Edinburgh survey. The applicability of such solutions to encourage cycling in other towns and cities is also considered. Finally, the findings are placed in the context of contemporary travel trends and cycling policy measures.

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1. Introduction

Edinburgh, the research case study, is the capital of Scotland and location of the Scottish Parliament, set up in 1999. Edinburgh's population has particular characteristics: a higher proportion of young adults and households on higher incomes and a lower proportion of families than the United Kingdom average (City of Edinburgh Council, 1998). As a compact, high-density city, Edinburgh is particularly suited to cycling. However, in terms of the sustainable transport modes (walking, cycling and public transport), it is walking and public transport that are relatively high in Edinburgh in comparison with other United Kingdom cities, using 2001 Census data (City of Edinburgh Council, 2003). In terms of bicycle use, the percentage of residents cycling to work and study, at 3% in Edinburgh, is marginally higher than the Scottish cities of Glasgow, Dundee and Aberdeen. However, cycling to work in United Kingdom cities is generally low (less than 5%), except for the four English cities of Cambridge (26%), Oxford (15%), York (12%) and Norwich (9%).

The author completed a PhD in 2005 Entitled "A study of individual travel behaviour in Edinburgh, to assess the propensity to use non-motorised modes" (Ryley 2005). The study was concerned with the propensity of individuals to act in particular ways, defined as their 'inclination and tendency to favour certain options'. To assess the propensity of individuals to use non-motorised modes (walking and cycling), two research objectives were formulated:

1. To identify segments of the population with the greatest propensity to use non-motorised modes.
2. To model individual travel behaviour and thus the propensity to use non-motorised modes.

The study was quantitative in nature, hence my contribution to the quantitative analysis Chapter in the recent 'Cycling & Society' book (Parkin et al, 2007).

Analysis from a two-stage data collection methodology has been presented at previous 'Cycling and Society' symposia. A segmentation analysis was undertaken to identify those most likely to cycle using first-stage Scottish Household Survey data for 2,910 households in Edinburgh (Symposium 1, Lancaster, 2004: 'Identifying the population segments most likely to cycle'); written up as Ryley (2006a). Attitudinal and travel behaviour findings from the second-stage survey of 997 households in West Edinburgh were subsequently presented (Symposium 3, Chester, 2006: 'Findings from the West Edinburgh Non Motorised Travel Survey'). Discrete choice analysis of two stated preference experiments within the West Edinburgh survey, for the propensity to cycle (Ryley, 2006a) and the propensity to walk (Ryley, 2008), has also been published.

The large West Edinburgh survey data set was split into four residential neighbourhoods along a transport corridor (Dalry, Slateford, Wester Hailes, Currie). There is scope for new analysis of households across the four Edinburgh neighbourhoods, with broader applicability for cyclist provision in other towns and cities.

A journey typically has an origin and a destination. Arguably much of the focus in planning and promoting cycling has been on the route taken and trip destination. Examples of route planning includes the development of town/city networks and the Sustrans National Cycle Network. Various trip destinations, such as the workplace and schools have also been the focus of much cyclist planning and promotion. The focus of this paper, however, is at a residential household level, the target of the West Edinburgh survey and the main base from which people travel.

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The housing distribution in Edinburgh is pronounced, with higher-density flats located towards the city centre and lower-density housing towards the periphery. Living near to the centre of a town or city is more sustainable since people need to travel less to access the services they need. More individuals can cycle (and walk) because more services are available to them within cycling distance.

Using Scottish Household Survey data, some statistical relationships have been developed for Edinburgh (Riley, 2006a). More bikes are owned in areas further away from the centre. Although residents in flats, nearer to the centre of Edinburgh, may have fewer bicycles available than those in other house types, they are more likely to use them, certainly for the journey to work (car ownership is often not possible amongst flat-dwellers due to the lack of available parking space). Households with children are most likely amongst the population sampled to own but not use bicycles

The focus of the research is on people and their approach to cycling. An individual tends to change their level of cycling at different life stages (Davies et al, 1997). For children, cycling can be a popular pastime, giving them their first chance of independent mobility. However, as they reach adulthood, peer and media pressure make car usage more attractive than cycling. Individuals may return to cycling later in life, perhaps for health reasons or if they have children of their own. Lawson and Morris (1999) segment their sample according to utility and leisure cyclists, showing that leisure cyclists are over-represented in higher social groups, whilst utility cyclists are more evenly distributed across the various social groups.

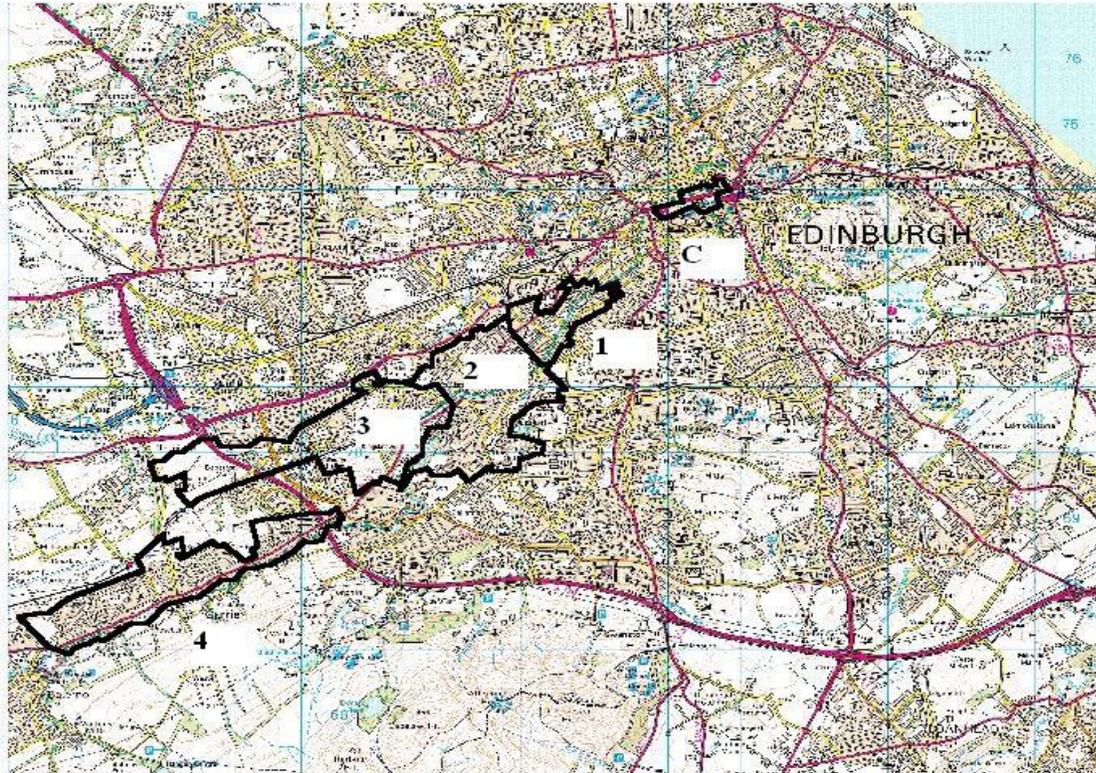
2. West Edinburgh survey data set

The West Edinburgh survey, of 997 households, was conducted in July 2003 along a transport corridor in the West of the city (a pilot survey of 58 households was undertaken in May 2003). The large sample size enabled the data to be segmented by many variables, including by neighbourhood.

The survey area consists of four postcode sectors along the transport corridor into Edinburgh. The postcode sectors, hereby termed as neighbourhoods are, in order from the city centre to the urban fringe: Dalry, Slateford, Wester Hailes, Currie. A map of the four postcode sectors is shown in Figure 1. One of the four neighbourhoods, West Hailes, was a Social Inclusion Partnership area, one of four spatial areas in Edinburgh identified for policy measures to tackle social exclusion. A contrast also exists between Currie and the other neighbourhoods: Currie could be considered an "urban fringe" area, the only neighbourhood of the four areas outside the city bypass.

The design of the West Edinburgh survey along a key transport corridor ensured a realistic behavioural setting within the wider policy context. Transport corridors are high-capacity arterial routes into the centre of urban areas, offering a self-contained unit of study. Furthermore, the study of a transport corridor enables the comparison of households living at different distances from the centre of Edinburgh at regular distances (the four neighbourhoods are approximately 0-2km, 2-4km, 4-6km and 6-8km from the city centre). The centre of a city tends to be the most frequent trip destination. For journeys to the city centre, public transport is more competitive, along radial rather than orbital routes. Cycling may be more competitive on an orbital corridor but journey information is easier to analyse in a radial corridor study.

Figure 1. A map of the four neighbourhoods in the West Edinburgh survey



Key:

1. Dalry

2. Slateford

3. Wester Hailes

4. Currie

C. Centre of Edinburgh

The Ordnance Survey part of the map was originally downloaded from DIGIMAP (an EDINA (University of Edinburgh Data Library) service delivering Ordnance Survey map data to United Kingdom Higher Education institutions). The postcode sectors were overlaid using the GIS package Arcview.

Road both have Greenways as bus priority measures, making them particularly suited to bus journeys. Cycling infrastructure within and across the neighbourhoods was reviewed. Although cycling is enabled within the Greenways (bus priority lanes running through the transport main corridor routes, the Gorgie Road and the Slateford Road), and there is an East-West cycle route along a canal near the corridor, it could be considered that all neighbourhoods are comparable with Edinburgh as a whole in terms of cycle infrastructure provision.

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A 'call and post' method of survey data collection was employed. Delivery of self-completion questionnaires was undertaken on weekday evenings Monday to Thursday, between 6:30pm and 9:00pm, when household members were more likely to be at home. Survey staff "called" on a household with a questionnaire, asking them to complete the questionnaire, and "post" it back at their own convenience using an enclosed pre-paid return envelope. The intention was to sample every household within an area, including those not at home when the survey staff called. Calling on a household, therefore, involved either handing over a questionnaire on the doorstep if the individual agreed to take part in the survey, or posting the questionnaire (and pre-paid envelope) through the letter-box if the householder was not at home.

The sampling strategy for the West Edinburgh survey was to deliver questionnaires to three streets or sub-areas within the four chosen neighbourhoods. In each neighbourhood, three households were randomly selected from the Electoral Register. There were 250 households sampled in close proximity to these households as a sub-area. The strategy concerned a combination of clustered and stratified random sampling to cut down on field costs. The strategy tallies with those recommended in the survey literature.

Questionnaire variables include socio-economic characteristics of the sample, background transport information such as car ownership, details of the journey to work or study, agreement with various transport statements, and car driver responses to policy measures.

The analysis within this paper focuses on the cycling questions, including:

- How many bicycles are owned, or available for use, by one or more members of your household? *Split by 'adult's bicycles' and 'children's bicycles'*
- If you have any bicycles in your household, where are they parked or stored? (open-ended question)
- How often do you cycle for any kind of journey? *Split by 'Most days', 'Once or twice a week', 'About once a fortnight', 'About once a month', 'Several times a year', 'About once or year or less' and 'Never'*
- On how many out of the last 7 days did you make a trip of more than a quarter of a mile (400 metres) by bicycle? *Split by 'Going somewhere (such as work, to see friends)' and 'For the pleasure of cycling or to keep fit'*

3. The West Edinburgh sample

Of the 3,000 questionnaires delivered, 997 were returned. This represents an overall response rate of 33%. There is an almost equal split of respondents by gender, with 489 male and 498 female; there is also an even distribution amongst the sample by age band. There are 654 respondents in work or study, further split into 470 in full-time employment, 99 in part-time employment, 64 self-employed and 21 in education (only 2% of the sample). The very low student numbers reflects the fact that the four neighbourhoods are not typical student residential areas. Approximately a quarter (271 respondents) are in retirement within the West Edinburgh survey sample.

House type, a surrogate for housing density, is closely linked to neighbourhood area and sub-area. The high-density flats are nearer to the centre of Edinburgh, whereas the detached houses are further out. This can be shown in the contrast between typical tenement flat housing in Dalry in Figure 2 and detached housing in Currie in Figure 3.

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Figure 2. An example of a tenement flat in the Dalry neighbourhood



Figure 3. An example of detached housing in the Currie neighbourhood



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The distribution of the 990 questionnaires according to neighbourhood area (seven did not have a sub-area identifier on the questionnaire) is as follows: 221 from Dalry (22%), 311 from Slateford (31%), 169 from Wester Hailes (17%) and 289 in Currie (29%). There is a very different response rate between areas and streets. Response rates are greater in sub-areas containing higher income households and lower density housing. Lower response rates in higher density housing may be due to difficulties in accessing the stair entrance, and that in flats households are more likely to be out at the time of call.

The socio-economic characteristics of the four neighbourhoods, as shown in Table 1, can be illustrated using the ten population segments generated using Scottish Household Survey data (for further information see Ryley, 2006a). These are the high concentration of retired individuals in Slateford and Currie, and the high proportion of 'mid earners' in Dalry. Indeed, Dalry has the most uneven distribution of the ten population segments; most individuals (72%) within the sample from Dalry are either 'mid earners' or 'high earners without children'. The spatial distribution of households with children is particularly pronounced, with a higher proportion of children present in households the greater the distance from the centre of Edinburgh. 'High earners with children' and 'part-timers with children' increase from 6% and 2% respectively in Dalry up to 16% and 11% in Currie.

Table 1. The ten population segments (generated using Scottish Household Survey data) within the West Edinburgh survey, for the overall sample and split by neighbourhood

Population segment	West Edinburgh survey				
	All four areas	Dalry	Slateford	Wester Hailes	Currie
1 – Student	21 (3%)	11 (6%)	4 (2%)	3 (2%)	3 (1%)
2 - In-between jobs	8 (1%)	2 (1%)	2 (1%)	1 (1%)	3 (1%)
3 - Mid earner	103 (12%)	60 (31%)	22 (8%)	15 (12%)	5 (2%)
4 - High earner without children	225 (27%)	79 (41%)	67 (25%)	24 (20%)	55 (22%)
5 - Part timer without children	47 (6%)	4 (2%)	20 (7%)	7 (6%)	16 (7%)
6 – Child minder	17 (2%)	6 (3%)	5 (2%)	2 (2%)	4 (2%)
7 – High earner with children	103 (12%)	12 (6%)	34 (13%)	17 (14%)	40 (16%)
8 - Part timer with children	52 (6%)	3 (2%)	13 (5%)	10 (8%)	26 (11%)
9 - Retired in a couple	140 (17%)	4 (2%)	56 (21%)	21 (17%)	58 (24%)
10 - Retired living on own	115 (14%)	11 (6%)	46 (17%)	23 (19%)	35 (14%)
Total in population segments (100%)	831	192	269	123	245
Sample total (% sample assigned to a population segment)	990 (84%)	221 (87%)	311 (86%)	168 (73%)	290 (84%)

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Respondents in the West Edinburgh survey were asked the mode and frequency of their travel to or through the city centre, along the transport corridor sampled. The main mode of travel (used by 57% of the sample) to or through the city centre of the sample is bus, a mode particularly suited to transport corridors. Travel by bus is the most popular mode to or through the city centre across all four neighbourhoods. The other modal shares of interest, for the whole sample, are 29% car driver, 2% bicycle and 7% walk. As expected, walking is popular for those near the centre, and the motor car for those near the city boundary. Frequency of travel is similar across modes, but respondents tended to travel more frequently to or through the city centre the closer they lived to the urban core.

4. Bike ownership across the four neighbourhoods

Table 2 shows bike ownership, split by number of adult bikes and children's bikes, across the four neighbourhoods.

Table 2. Bike ownership by neighbourhood

Bicycles owned	West Edinburgh survey				
	All four areas	Dalry	Slateford	Wester Hailes	Currie
Number of adult bikes					
0	453 (52%)	121 (58%)	151 (55%)	74 (52%)	107 (44%)
1	198 (23%)	51 (25%)	57 (21%)	33 (23%)	57 (22%)
2	178 (21%)	27 (13%)	59 (22%)	31 (22%)	61 (25%)
3+	39 (4%)	9 (4%)	6 (2%)	4 (3%)	20 (8%)
Number responding to the question (100%)	868	208	273	142	245
Number of children's bikes					
0	459 (72%)	129 (90%)	163 (77%)	67 (67%)	100 (56%)
1	90 (14%)	10 (7%)	26 (12%)	18 (18%)	36 (20%)
2	58 (9%)	3 (2%)	18 (8%)	13 (13%)	24 (13%)
3+	29 (5%)	2 (1%)	5 (2%)	2 (2%)	20 (11%)
Number responding to the question (100%)	636	144	212	100	180
Total sample	990	221	311	168	290

Note: Percentages may not equal 100% due to rounding.

There is a clear distinction between the urban fringe neighbourhood of Currie, with 56% of households having a bicycle available (many possessing more than one bike), and the other three neighbourhoods. Many of the households within Currie also have children's bikes available, although the levels need to be treated with caution since this question had a low response rate (presumably those without children's bikes available did not answer the question).

The anomaly shown from the Scottish Household Survey data has, therefore, been confirmed using West Edinburgh survey data: there is lower bike ownership amongst those living in neighbourhoods towards the centre of Edinburgh, typically in flats, yet these areas are more suited to cycling (due to people being closer to where they want to travel).

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Bicycle storage was a problem in the inner neighbourhoods, as shown by the responses from Dalry residents to the open-ended question where bicycles are parked or stored. Responses included the “bedroom”, “chained to railings in common stair”, “in a cupboard under the stairs”, “in garage – not kept at own property”, and “in the hall (which is a source of trouble)”. Conversely, in the outlying Currie neighbourhood, most households with bicycles stored them either in their garage or shed.

5. Bicycle usage across the four neighbourhoods

Table 3 shows bicycle usage across the four neighbourhoods, split by the amount for cycling on a scale from “most days” through to “never”. Amongst respondents there is a low response rate to this question (673 out of 990, 68%). It is presumed that those not responding to this question do not cycle, and so consideration is only given to differences between neighbourhoods.

Table 3. Amount of travel by bicycle split by neighbourhood

Level of cycling	West Edinburgh survey				
	All four areas	Dalry	Slateford	Wester Hailes	Currie
Most days	47 (7%)	15 (9%)	19 (9%)	6 (6%)	7 (4%)
Once or twice a week	40 (6%)	13 (8%)	11 (5%)	4 (4%)	12 (6%)
About once a fortnight	44 (7%)	14 (8%)	11 (5%)	6 (6%)	13 (7%)
About once a month	41 (6%)	7 (4%)	10 (5%)	9 (9%)	15 (8%)
Several times a year	58 (9%)	16 (10%)	15 (7%)	9 (9%)	18 (10%)
About once a year or less	38 (6%)	10 (6%)	16 (8%)	3 (3%)	9 (5%)
Never	405 (60%)	92 (55%)	131 (62%)	67 (64%)	115 (61%)
Number responding to the question (100%)	673	167	213	104	189
Total sample	990	221	311	168	290

Note: Across the sample many did not respond to this question, and percentages may not equal 100% due to rounding.

One of the key differences is that the neighbourhoods nearer to the centre of Edinburgh have more individuals cycling “most days”, although it is noticeable that many individuals in Currie cycle, albeit less frequently. These results can be linked to the proportion of respondents that had undertaken a trip of more than a quarter of a mile (400 metres) by bicycle over the last 7 days (prior to receiving the questionnaire):

- ‘Going somewhere (such as work, to see friends)’ :- 15% Dalry, 12% Slateford, 11% Wester Hailes, 10% Currie
- ‘For the pleasure of cycling or to keep fit’:- 15% Dalry, 14% Slateford, 16% Wester Hailes, 16% Currie

This shows that the type of cycling trip going somewhere, say to work or study, is more pronounced in Dalry (this type of trip is more dependent on the location or ‘place’ since people are nearer to the centre of Edinburgh), whereas a general cycling trip with no fixed destinations is at similar levels across neighbourhoods (more dependent on ‘people’ since individuals in any neighbourhood can take a general cycling trip).

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6. The journey to work or study of the West Edinburgh sample

There are 654 respondents who work or study within the West Edinburgh survey sample. Approximately half of the respondents drive and approximately a quarter travel by bus for the journey to work or study. Many of the sample work in Edinburgh city centre (18%); the majority work within the City of Edinburgh Council area but outside either the area where they live or the centre (60%). Of the remainder, 8% work in the four neighbourhoods in which they live and 15% work outside the City of Edinburgh Council area.

There are 31 individuals cycling to work or study in the sample; primary reasons for cycling to work or study relate to the speed of the journey (20 cyclists) and to individual fitness or health (15 cyclists). Those cycling to work (30 provide socio-economic information) tend to be male (19 cyclists), live towards the centre of Edinburgh (12 Dalry, 10 Slateford), are aged between 25 and 44 (28 cyclists) and have a Professional job status (18 cyclists). The mean cycling journey time to work or study is 19.4 minutes, shorter than for those walking (78 respondents, mean = 22.3 minutes) or driving (303 respondents, mean = 24.2 minutes). The cyclists' workplace or study locations are typically in the centre of Edinburgh (13 cyclists), or within Edinburgh but outside the four postcode sector areas (12 cyclists).

Journey to work or study data the four postcode sectors can be compared against 2001 Census data (<http://www.scrol.gov.uk/scrol/common/home.jsp> - Table KS15 Travel to work and place of study, accessed 1-9-08). The 2001 Census percentage figures to travel to work or study by bicycle are: EH11 1 "Dalry" 4.9%, EH14 1 "Slateford" 2.9%, EH14 2 "Wester Hailes" 1.4%, and EH14 5, EH14 4 "Currie" 1.6%. This compares with the Edinburgh (Council area) figure of 3.3% and Scotland figure of 1.4%. Levels of cycling to work or study are therefore greater for areas nearer to the centre of Edinburgh (with the exception of Wester Hailes, assumed for social inclusion reasons).

Within the questionnaire, an open-ended question asked respondents to provide reasons why they do not cycle to work or study; 474 respondents answered this question. A coding framework was applied to reasons why individuals did not travel by bicycle to work or study, and the results are shown in Table 4.

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Table 4. Codes for reasons individuals did not travel by bicycle to work or study in the West Edinburgh survey

Code	Results	Percentage
Too far	115	24.3%
Bike ownership	99	20.9%
Safety	92	19.4%
Traffic (too much)	68	14.3%
Not confident / able to ride bike	66	13.9%
Weather	57	12.0%
Facilities at work	53	11.2%
Another mode	40	8.4%
Carry equipment	36	7.6%
Clothing for work	34	7.2%
Facilities on route	29	6.1%
Unwilling	28	5.9%
Children	22	4.6%
Convenience	17	3.6%
Hilliness	14	3.0%
Facilities at home	12	2.5%
Other	75	15.8%

As shown in Table 4, there are a variety of reasons individuals do not cycle to work or study. The two most popular reasons are practical, that the journey is too far (24%) and that an individual does not have a bicycle available (21%). Safety is acknowledged as an important factor, stated by just under a fifth of the sample (19%). It may not be the principal reason (the literature highlights “safety fears from traffic” as the principal reason) in Table 4 because “traffic (too much)” covers similar issues.

However, the practical reasons of journey too far and not having a bicycle available both relate to considerations within this paper. In terms of the journeys too far, the development of sustainable towns and cities would encourage individuals to live closer to their trip destinations (within cycleable distance). For bike ownership, there could be schemes to assist individuals to purchase a bicycle (e.g. through an employer scheme) or to develop a bicycle hire system, such as Paris bike rental scheme.

7. Design solutions for bicycle storage in high-density residential neighbourhoods

The West Edinburgh survey results have shown that bicycle storage is problem in high-density accommodation. The City of Edinburgh Council also acknowledge this as a problem in their Local Transport Strategy 2007-2012 (City of Edinburgh Council, 2007). Although for some years the Council has required cycle parking in new developments, standards of provision, especially in residential developments, are considered to be often unsatisfactory. The Council is currently supporting a pilot scheme aimed at tackling some of these difficulties. Such a scheme could be to provide for bicycle storage on-street at a location agreeable to local residents. Cycle parking facilities could be developed using footway and/or car parking space. Incidentally, a rationale behind car-free housing is that space taken up from car parking should be given to other uses, such as bike storage (as with the first UK car-free housing development, in the Slateford neighbourhood of Edinburgh).

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Many of the tenement flat blocks in Edinburgh have shared green areas (garden). These are typically not well maintained and provide low amenity to residents. There have been calls, from groups such as the 'Edinburgh Community Backgreens Initiative', to develop these shared green areas (see <http://www.communitybackgreens.org.uk/>, accessed 1-9-08). Alongside secure bike parking sheds would be facilities such as children play areas, BBQ / relaxation areas, and gardening plots.

Promoting cycling at a neighbourhood level naturally links into the Home Zone concept, whereby travel by non-motorised modes is promoted at the expense of motorised vehicles (e.g. through restricting and slowing down traffic). Home Zones are currently being promoted across the UK and originally stem from the Dutch 'woonerf' concept. Of note, several Liveable Neighbourhood projects are currently being undertaken by Sustrans (<http://www.sustrans.org.uk/default.asp?sID=1090834683408>, accessed 1-9-08), whereby cycle storage facilities are being created as part of the neighbourhood solution.

8. Discussion and conclusions

This paper has identified links between bicycle ownership / use and neighbourhood location, between the urban core and urban fringe of Edinburgh. From the examination of design solutions for bicycle storage in high-density urban core residential neighbourhoods, bicycle storage schemes could be developed using common space available (e.g. car parking spaces, unused footway space). At the other extreme, in lower density housing on the urban fringe, perhaps further off-road cycle lanes could be developed, encouraging households with bicycles available to use them more frequently. An attitudinal question within the West Edinburgh survey showed that off-road cycle lanes were particularly favoured by residents of lower density areas. Since households with children are more likely to undertake leisure than utility cycling (in Ryley, 2006a), perhaps leisure cycling routes accessible to housing areas where children predominate could be promoted to encourage more of these household to cycle.

The plan is to develop and statistically test the relationships presented in this paper further, examining neighbourhood travel across a variety of transport modes. Given the geographical approach of this study, it is interesting to consider the role of people and place; for example is it the person or the place that encourages cycling. An individual may cycle whatever neighbourhood they live in (e.g. cycling for a leisure trip); others may only be encouraged by the facilities within and around the neighbourhood they reside (e.g. cycling to work because the neighbourhood is nearer to the town/city centre).

Findings are applicable beyond Edinburgh and the wider debate of developing sustainable towns and cities that will encourage cycling (such as the recent debate on the development of 'eco-towns'). At the next spatial level down, the question is how neighbourhoods can be designed and linked together (e.g. with distance thresholds at which people are less likely to cycle) in a way that will encourage more people to cycle. In terms of new residential developments, well-designed, secure bicycle storage facilities should be implemented as a matter of course.

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There are many reasons for encouraging people to cycle: environment credentials, health benefits to users, obesity improvements, and social inclusion benefits. Despite these benefits, a large increase in the number of people cycling in the UK has yet to be realised. It could be argued that rising petrol prices (and other costs), coupled with the current credit crunch, could force people to reduce car use. Therefore, removing some of the practical barriers (e.g. making bikes more affordable, providing bike parking space) may pull individuals towards cycling.

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