

UNDERSTANDING WALKING AND CYCLING: INTERIM FINDINGS FROM A MULTI-METHOD APPROACH TO INVESTIGATE HOUSEHOLD DECISION MAKING IN RELATION TO SHORT JOURNEYS IN URBAN AREAS.

Corresponding author: Dr. Tim Jones, Department of Planning, Oxford Brookes University, Gypsy Lane Campus, Oxford, OX3 0BP. United Kingdom. +44 (0)1865 483436 tjones@brookes.ac.uk

Co-authors:

Prof. Colin Pooley (Lancaster Environment Centre, Lancaster University, UK)

Dr. Alison Chisholm (Department of Planning, Oxford Brookes University, UK)

Dr. Dave Horton (Lancaster Environment Centre, Lancaster University, UK)

Dr. Griet Scheldeman (Lancaster Environment Centre, Lancaster University, UK)

ABSTRACT

It is widely recognised that an increase in walking and cycling for short journeys in urban areas could help to reduce traffic congestion, improve the quality of the urban environment, promote improved personal health, and contribute to a reduction in carbon emissions. This paper reports interim findings from an ongoing 3-year UK Research Council funded study (commenced October 2008) titled 'Understanding Walking and Cycling' (UWAC) which investigates travel behavior in relation to short journeys in urban areas in England.

The study adopts an innovative multi-method approach which includes; large-scale social surveys of households across four cities in England that vary in relation to demographic characteristics and level of supportive measures for walking and cycling; measurement of the built environment and analysis of the spatial network; and finally, in depth-qualitative

investigation of households using an ethnographic approach and a range of methods including observation, in-depth ('sit-down') interviews, 'go-along' interviews (or accompanied trips), mobility inventories, mapping exercises and reflexive accounts of everyday travel using diaries.

This paper focuses specifically on the rationale behind the methods used to uncover rich accounts of travel decision making and journey experience. Interim findings are presented which demonstrate how ethnographic approaches can provide more detailed and nuanced accounts of everyday travel. The results provide an empirical insight into the complexities of everyday travel, specifically in relation to the decision making strategies adopted in relation to short journey making and the actual lived experience of those journeys. The paper will conclude with reflection on the strength of adopting a multi-method approach to understanding travel behaviour. It will also consider how the results could help to assist policy makers in their efforts to encourage a shift towards walking and cycling for short journeys in urban areas.

Keywords: walking, cycling, household decision making, ethnography.

1. INTRODUCTION

An increase in walking and cycling for short journeys in urban areas could help to reduce traffic congestion, improve the quality of the urban environment, promote improved personal health, and contribute to a reduction in carbon emissions. Recognition of these benefits is demonstrated in a wide range of policy initiatives by national and local governments, by health authorities and a variety of non-governmental organisations, and a wide range of literature on the health impacts of walking and cycling, on travel choices, and on the impacts of environmental interventions to promote sustainable travel. Many of these impacts have been examined in a series of recent systematic reviews and bibliographies (Handy, 2005a; NICE 2006; DfT 2006 and Ogilvie et al, 2004, 2007). However, ways in which travel decisions are made remain poorly understood, especially in the context of complex and contingent household travel arrangements. Furthermore, there is only limited understanding of travel behaviour in relation to short journeys where walking and cycling could provide a viable travel option and more sustainable alternative to the private car.

A useful working model that emphasises the ways in which travel decisions are situated within a complex web of factors has been provided in an evidence briefing on the subject of walking and cycling by the National Institute for Clinical Excellence (NICE, 2006). However, most research on walking and cycling focuses on a narrow range of these issues such as journey purpose, time, distance and physical environment factors whilst neglecting the effects of personal and household situational variables or reducing them to a series of summary characteristic variables relating to age, gender and household size (for instance see Alfonzo, 2005; Lockett et al., 2005; Fillion et al., 2006; Handy et al., 2006; Salmon et al., 2007; Dawson et al., 2007; Alton et al., 2007; Kingham and Ussher, 2007). Moreover, most of these studies relate to North America and (to a lesser extent) Australasia and much of it

uses mainly a quantitative approach which is not well-suited to examining the micro-scale complexity of household decision making and associated travel strategies.

Several studies, however, have focused on the micro-scale aspects of individual and household travel behaviour. Mackett (2001, 2003), for instance, used qualitative techniques to explore why people use cars for short trips and demonstrates clearly the need for more research that focuses on everyday short journeys. Jarvis (2003) has also focused on household decision making in the context of residential location and travel to work whilst more recent papers have attempted to identify and categorise different mobility identities which influence the ways in which people construct their everyday travel (Anable, 2005; Horton et al., 2007; Gatersleben & Haddad, 2010; Hunecke et al., 2010).

This paper presents interim findings of an ongoing 3-year UK Research Council funded study (commenced October 2008) titled 'Understanding Walking and Cycling' (UWAC) which investigates travel behaviour in relation to short journeys in urban areas in England. The UWAC study brings together researchers with backgrounds in geography, sociology, anthropology, psychology, urban planning and transport studies, and above all, expertise in social scientific approaches to understanding human behaviour.

The remainder of this paper is organised as follows. First, the rationale behind the methods used to uncover rich accounts of travel decision making and journey experience are presented. Second, interim findings are presented which demonstrate how ethnographic approaches can provide more detailed and nuanced accounts of everyday travel. Finally, the paper concludes with a reflection on the nature of the findings collected in the UWAC study to date and potential implications for policy focused on encouraging walking and cycling for short urban journeys.

2. RESEARCH OBJECTIVES AND APPROACH

The principal objectives of the UWAC research are to develop a better understanding of the complex ways in which households and individuals make everyday travel decisions about short trips in urban areas particularly in relation to walking and cycling; and, to develop a 'toolkit' that helps planners and policy makers and others concerned with promoting more sustainable travel practices in urban areas to target policies and interventions more effectively. A series of research questions have been adopted to guide the research and to enable a much fuller understanding of why people do (and do not) walk and cycle for short journeys to be developed (see figure 1 below).

Figure 1: Questions to guide the research

1. What is regarded as a 'short trip', in what context and by whom?
2. How are walking and cycling incorporated into everyday routines of families, households and individuals, and how does this relate to journey purpose?
3. How are decisions about specific walking and cycling routes made and how do these relate to the physical, aesthetic and social characteristics of the local environment?
4. Do most individuals construct an identity of themselves and others as cyclists or walkers, and how do these 'cultures of cycling and walking' affect travel decisions?
5. How do walking and cycling as everyday means of transport interact with other modes (for instance many trips are multi-mode and most involve some travel as a pedestrian)?
6. How do specific interventions to promote cycling and walking (for instance Travel Smart, Connect2) affect everyday decision making about short-distance travel?
7. How is the particular complexity and contingency of travel decision making with respect to cycling and walking best conveyed to planners and policy makers so that it can be incorporated into the development of policies and interventions?

The study approach aims to bridge a (perceived) gap between qualitative and quantitative research on travel behaviour (see Burnett, 2007, for a discussion on this divide) by adopting intensive and innovative qualitative methods linked to established quantitative techniques. The approach also recognises calls for more emphasis to be placed on qualitative approaches to understanding travel behaviour. For example, Clifton and Handy (2001) have argued that, "...without more widespread use of qualitative techniques in travel behaviour research, we will make little meaningful progress towards improving our fundamental understanding of travel behaviour." The UWAC study also foregrounds what Walker (2006) refers to as *higher level constructs* to uncover the ways in which economic, social, cultural, environmental and perceptual factors (amongst others) interact to construct different personal identities of walking and cycling and the implications these have for interventions designed to promote more sustainable travel. Indeed, as Parkin et al. (2007; p71) note in relation to cycling (but which could equally be applied to walking), "...the choice mechanisms that ought to be considered in relation to cycling may be more involved, and result from more complex responses involving the broader range of data. These may include personal, social, cultural factors, such as life stage, not often considered in transport modelling...Given this choice complexity, there is growing interest in understanding transport choice for modes such as the bicycle in other ways".

The need to consider the household as a key unit of analysis in understanding household decision making has also been emphasised. For example, a study by Jarvis et al. (2001) focused specifically on the context of residential location and travel to work to reveal the local

contexts of contemporary urbanisation and the dilemmas and solutions that people routinely find in the reproduction of their everyday lives. Similarly, with the emphasis being on use of a more qualitative approach (Silverman, 2006; Marshall and Rossman, 2006; Gibbs, 2007) the UWAC study aims to examine more fully individual, family and household decision making in relation to walking and cycling for short journeys in urban areas and the context within which these decisions are made.

A mixed-method approach is being applied to households across four different cities in four different English regions: Lancaster and Morecambe (North West), Worcester (West Midlands), Leicester (East Midlands) and Leeds (Yorkshire and Humber). These urban areas were selected because of practical issues of access to apply intensive research methods over a protracted period along with the following rationale: first, that each has low to moderate existing levels of cycling and walking (based on limited existing data); second, each is relatively self contained and together they represents English cities of different size and scale; third, there is a mix of social groups and potentially different varieties of ethnic composition. In selecting the case study sites consideration was also given to the level of intervention in relation to encouraging walking and cycling which could vary from no perceivable interventions, physical interventions such as the Connect2¹ programme and high profile promotional measures such as the government backed Sustainable Travel Town (STT)² and the Cycling Demonstration Town (CDT)³ initiatives. Table 1 below provides a summary of the characteristics of these case study locations.

Table 1: Characteristics of selected case study locations

Case study location		Lancaster & Morecambe	Worcester	Leicester	Leeds
Population*		133,914	93,353	279,921	715,402
Index of Multiple deprivation **		135	185	23	114
Non-white British ethnic group (Eng ave = 13%)*		5%	6%	39%	11%
Walking and cycling interventions	Connect2	No	Yes	Yes	No
	Sustainable Travel Town	No	Yes	No	No
	Cycling Demonstration Town	Yes	No	No	No
*2001 census data ** English Indices of Deprivation 2007 rank of average rank, where 1 is most deprived and 354 least deprived					

¹ Connect2 is an ambitious UK-wide project to transform local travel in 79 communities and provide people with easier access to everyday activities by constructing new crossings and bridges to overcome major obstacles to walking and cycling.

² Three Sustainable Travel Towns (Darlington, Peterborough and Worcester) implemented intensive packages of 'Smarter Choice' measures targeted at increasing cycling, walking and bus use, and reducing car use.

³ The Cycling Demonstration Towns programme, from 2005 to 2008, saw six towns across England (including Lancaster & Morecambe) receive 'European levels of funding' to significantly increase their cycling levels.

The three distinctive methods that are being applied to the four case study areas are discussed below.

2.1 Survey of households across case study areas

A questionnaire survey of a random sample of 4000 addresses across each of the four study locations was administered in September 2009. The 2007 Index of Multiple Deprivation (IoMD) was used to stratify a sample at the level of Lower Super Output Area⁴ (LSOA) to enable a representative sample to be drawn and to identify addresses only in urban areas. The questionnaire focused on actual travel behaviour, travel preferences and perceived barriers and is theoretically underpinned using the Theory of Planned Behaviour (Ajzen, 1991) and Transtheoretical model (Prochaska and DiClemente, 1984). The main purpose of the questionnaire survey is to provide the context of travel behaviour and preferences from which a sample for in-depth research can be drawn. There is, however, the potential to generalise the survey findings across each location and for comparisons to be made *between* geographical locations. Furthermore, this data also presents the opportunity to include information gathered from analyses of the built environment and to investigate associations between spatio-physical, spatio-psychosocial and spatio-behavioural variables (discussed more fully in the next section).

In addition to this survey across the four case study areas, the opportunity was taken to sample an additional 1500 households located adjacent to the proposed Connect2 intervention in the Worcester case area with a view to repeating the survey some time after the intervention has been implemented (estimated summer 2010) in order to evaluate potential outcomes.

2.2 Spatial analysis of study locations

The UWAC study is sensitive to context both at the household level and within the built environment through which travel takes place. Associations between aspects of the built environment and people's willingness to walk and cycle have been hypothesised and tested by researchers from the fields of urban design, planning, transport and more recently public health. For example, a recent review of papers investigating built environment correlates of walking reveals a consistent set of conclusions on the significance of proximity, mixed land use and density as important correlates of walking (Saelens and Handy, 2008).

Data is being collected on attributes of the built environment within specific neighbourhoods in each case study location using a combination of secondary data sources, spatial network analysis (see figure 2) and systematic audit approaches to assess urban structure and 'walkability' and 'cyclability' within the neighbourhood and between the home and key destinations accessed over short distances. So-called ecological models acknowledge the

⁴ Each LOSA contains a minimum of 1000 people or 400 households.

influence on walking and cycling behaviour of a wider range of factors typically those that are individual, social, cultural, organisational, community, physical environment and policy related (Saelens et al., 2003). Lee and Moudon (2003) draw a distinction between three categories of measurement viz. spatio-physical (physical aspects of the environments), spatio-behavioural (types and intensity of human uses) and spatio-psychosocial (internal responses to being in a specific environment). It is anticipated that the spatio-physical data collected by the methods outlined above will be used to investigate associations with spatio-behavioural data (i.e. self-reported walking and cycling) collected from the questionnaire survey. Furthermore, it will be used to contextualise and highlight the many interpretations of, and responses to, the urban context within which local travel takes place.

Figure 2: Example of spatial network analysis of case study city



2.3 Application of intensive qualitative methods

The core methodology used to explore attitudes to and experiences of short trips in urban areas is a series of household ethnographies with a range of households in each city. Each of the households live in the same area of the city to control for variations in urban structure and transport provision and are being investigated intensively over a period of three months⁵ with up to five repeat visits. The ethnographies use five main investigative tools: in-depth interviews, observations, mapping exercises, mobility inventories and accompanied interviews or 'go-alongs' (see Kusenbach, 2003, and Carpiano, 2008, for useful discussions of this method). In addition some participants are volunteering to keep a travel diary/activity inventory to record their daily travel activities and experiences. The ordering of these interventions vary depending on household circumstances and some (especially interviews)

⁵ Each research area is being investigated sequentially, with qualitative research in Lancaster and Worcester having been conducted during September-November 2009 and February-April 2010 respectively and the same approach following at 3 monthly intervals in Leicester and then Leeds.

will be repeated during the research period. Together, these instruments will allow the construction of a very detailed picture of the complexity and contingency of everyday travel behaviour for around 20 households.

In addition, less intensive qualitative data are being collected from a larger sample of participants in each city. A total of 40 questionnaire participants (10 in each town) are selected for in-depth interviews about their everyday travel decisions, especially as they relate to walking and cycling. Each participant (together with as many household members as possible) is interviewed twice (with a period of at least six months between interviews). The first interview focuses on current travel activities and the second will examine any change over time. A further sample of 40 participants (10 in each location also selected from the questionnaires) were identified for a series of 'go-along' interviews. These are designed to provide an audio account of one specific trip (20 walking and 20 cycling) focusing on the experience of the journey. The study team is also experimenting with visual capture technology to record the journey experience. *Revue* is an unobtrusive wearable digital camera based on Microsoft SenseCam technology which automatically provides lapse photography of the mobile experience from the perspective of the traveller (see figure 3). As well as providing a visual record of the journey, images can also be used when conducting follow-up interviews to aid recall and elicit responses to events that were missed whilst in the process of conducting the go-along interview. Images can also be geo-referenced to particular qualitative accounts of the journey experience. In total, therefore, qualitative data is being collected from 100 families (25 in each town) with multiple interventions and a range of different techniques.

Figure 3: The Revue SenseCam and example of image of a go-along journey by cycle.



The following section presents emerging findings from the Lancaster and Worcester case study areas using data accumulated from the qualitative techniques adopted in those areas over the period November 2009 to April 2010 – the next stage will apply these techniques in Leicester (April-June 2010) and then in Leeds (July-September 2010).

3.0 PRELIMINARY RESULTS AND INTERPRETATION

The interim findings from the Lancaster and Worcester case study data provide empirical insight into the complexities of everyday travel, the decision making strategies adopted in relation to short journey making and the actual lived experience of those journeys. All the qualitative data have been fully transcribed and analysed using the text analysis programme Atlas ti. The variety and complexity of responses that have been received has meant that a fairly flat coding scheme divided into key categories has been utilised in first instance. This allows the retention of context when quotes are retrieved. All analysis is based on a close and repeated reading of the text to identify and interpret key themes. In total, the Lancaster and Worcester studies have produced some 400 hours of interview material (at the time of writing), only a small selection of which can be utilised in this paper.

Three key factors have emerged so far that highlight the complex planning decisions at the individual and household scale that may make walking and cycling more difficult to achieve than (for instance) travelling by car. First, mobility options are structured by housing location and employment where certain trade-offs reduce the potential for walking and cycling. Second, where time space constraints are less of a problem other issues such as lack of planning, not being able to readily access equipment and the domain where walking and cycling are (meant to be) performed can conspire to reduce the convenience of walking and cycling vis-à-vis using the car; Third, everyday travel is almost always contingent on the decisions and commitment of others (especially family members).

3.1 Mobility decisions are structured by housing location and employment where certain trade-offs reduce the potential for walking and cycling.

Moving home is a key event and can have a significant effect on resulting household travel behaviour (Stanbridge et al. 2004). The geographical relationship between home and employment can affect the mobility options available. The choice on where to locate can vary depending on the jobs and housing market, household composition, life-course, economic constraints and lifestyle preference. Certain trade-offs need to be made, and often, quite complex co-ordination is required to reduce time and cost allocated to travel for the journey to work. So whilst some people might be predisposed to walking and cycling for the daily commute, previous housing and employment decisions can result in situational circumstances that constrain opportunities for one or more household members to adopt these daily practices.

The complexities surrounding the trade-offs when selecting household location for working households is exemplified by Karen and husband Trevor, professionals in their thirties, who live with their 21-month-old daughter in a large detached house on a new housing estate on the edge of Worcester, some three miles from the city centre. Karen's recollection of the decision making process prior to moving from Cambridge (where they did not have access to

Understanding Walking and Cycling

JONES, Tim; POOLEY, Colin; CHISHOLM, Alison; HORTON, Dave; SCHELDEMAN, Griet.

cars and used to cycle around regularly as students) to Worcester 9 years ago highlights how house location can make commuting on foot or by cycle difficult or even impossible:

“Our reasons for living in this part of Worcester was access to the motorway. And there are nearby amenities...access to the doctor’s surgery, shops on foot. We don’t go into town very often [but drive when they do] we’re not big shoppers. Ideally, when we were moving house we did look at some of the houses more out in the country but you get a lot less for your money and not necessarily such good motorway access.... Trevor’s work is too far for him to get any other way to work [than by car] and mine, because I do need my car regularly for work it’s just not feasible to do anything else.”

(Karen, Worcester)

Clearly some people choose a home location which often makes commuting to work wholly on foot or by cycle impossible for one, if not both, household members because of other over-riding preferences (in the case above, access to the motorway). Even when the potential for walking and cycling has been considered an important factor when choosing home location, the changing nature of employment and household circumstances can have significant consequences in terms of the resulting organisation of travel. Jane and Steve, also professionals in their thirties and living together with their 18 month old son, purchased their home close to the city centre in Worcester in 2008 precisely so they could walk and cycle places and sell one of the two household cars. Steve tries to cycle to work as often as he can (even to site visits in Evesham some 15 miles away) but the nature and variable location of his work means that the logistics of the commute to work requires a certain amount of planning.

“Steve works in Hallow [6 miles away] now and I have been relocated in Birmingham. I go there in the car or car sharing [and he cycles to Hallow]...we are happy in Worcester and once we made the decision in 2001 we never considered going anywhere else. We have got our friends, the work of course and we are happy. [Steve currently]...has a lot of work on site and luckily it is in Evesham [15 miles away]. There is a bit of logistics. I would say when he has site workings he may be on site quite a lot and they have got Hull and Dover [both over 150 miles away], but luckily he is in Evesham (because I think his boss knows he’s just had a baby!) So there is a bit of juggling with the one car. When he needs it I’ll have to car share.”

(Jane, Worcester)

The general drift of the UK population towards suburbs and more rural areas, coupled with the geographical dispersal of families and social relations, can also reduce the potential for walking and cycling. Whilst conscious decisions may be made by some households to locate to areas to suit their desire for easier access to jobs and everyday services on foot and by bicycle, this may not necessarily improve access to friends and family who remain geographically spread or poorly accessible on foot and by cycle. This is exemplified when Oliver and Odele, a couple nearing retirement, talk about their decision to move to Worcester (from St. Alban's) some years ago to be 'nearer' to Odele's parents (who live in a town some 15 miles from Worcester).

"It is so much hassle driving into town. I'd much rather, if we can, walk or bike...it was a big factor moving here. I mean I did have a little sort of dream of a cottage [in the countryside] with roses around the door at one point. But when we sat down and wrote our 'pros and cons' out what we were looking for, we realised then that that was out of the question."

(Odele, Worcester)

"And even then the next village, Rushwick, if you were there, it would just pretty much make it impossible, not impossible if you were younger, but the reality is you would not be walking into town. I mean our friends that live there they always take the car. It is a nice village, it's picturesque and all the rest of it, but this is better."

(Oliver, Worcester)

3.2 Where time space constraints are less of a problem other physical and psychological barriers reduce the convenience and safety of walking and cycling vis-à-vis using the car.

Even where options are available to adopt a daily practice of walking and cycling there are notable constraints prior to even stepping out of the door. All travel requires equipment of some kind, and everyone who owns a car accepts that their vehicle needs to have somewhere secure to park and that it will also require regular maintenance. In contrast, walking and cycling are often thought of as more simple forms of travel which require little equipment or planning. In fact, this is not the case. Journeys on foot or by bike often need to be planned as carefully (if not more carefully) as those by car as outdoor shoes and coats need to be assembled, and/or bicycles, equipment and gear need to be retrieved from wherever they are stored. For many people this creates more complexity (and time delay) than simply jumping into a car parked on the drive, although others, perhaps more predisposed to walking and cycling, invariably develop systems and routines to deal with this. This point was emphasised in the cycling go-along undertaken with Frank a retired academic

in his 60s who lives some two miles south of Lancaster with his wife (their children having left home):

“Yes. One of the important things about bikes is having ready access to them I find. I’ve just been fixing up a bike for a friend and I said you have to make it somewhere where you can get at it quickly otherwise you won’t use it. It has to be somewhere where a couple of seconds and it’s ready rather than having to go in the shed and have to do it and have to do this and have to do that, so it’s there.”

(Frank, Lancaster, cycling go-along)

As part of the household ethnographies ‘mobility inventories’ were conducted where participants were asked to talk the interviewer through all the things in their household that facilitate mobility. The response of Tom, who is semi-retired and can’t drive or cycle due to visual impairment, demonstrates the way in which he has thought through the requirements of everyday movement for his family and has endeavoured to ensure that things that will be needed are to hand:

“Jenny goes to work in Morecambe and endeavours to go on her bike or on the train whenever possible. And that’s often down to weather or whether there are any jobs to do on the way back or places to go where public transport and the like is not possible either for the fact that there isn’t any or more likely to with time factors. We both try and walk, Jenny cycles whenever we possibly can, I obviously walk and use public transport, then this again would apply to both of us and the boys of course as well. This is if you are walking or using public transport we need to be equipped so I have set up waterproofs, coat, trousers, waterproof trousers, hats of various varieties depending on cold, sun, rain; shoes”.

(Tom, Lancaster, mobility Inventory)

The design and organisation of dwellings can also have a bearing on eventual decisions to walk or cycle from the home. Jane and Steve, the couple described earlier, when discussing their house purchase and desire for an edge of city centre location to enable them to get around predominantly on foot and by cycle, highlighted the difficulties they faced when trying to find housing with storage space for their assortment of (seven) bicycles and one child trailer in order to facilitate their desired ‘mobile lifestyle’.

“[when we moved back to Worcester after a period away travelling] ...what we really wanted at that time was a garage to store bikes as at the previous house we had 6 or 7 bikes and we were stacking them against the wall outside and Steve [husband] had some quite expensive gear so it wasn’t manageable. So we moved here in April 2008 and the house has a small garden (but we don’t care because the world is ours), we have a garage, it is in the city centre still so we don’t need two cars because

Steve works in Hallow [a village outside Worcester some 6 miles away] and I am at home at the moment”.

(Jane, Worcester)

This emphasises the typical problems faced by occupants of older housing (notably Edwardian or Victorian terraced) but also contemporary housing design located on reclaimed brown-field sites nearer to the city centre. Although often more accessible on foot or by cycle to a range of everyday facilities such as schools and shops, there are often restrictions on storage and ready access to bicycles that could cater for journeys just beyond walking distance in terms of time and convenience. Deidre and Keiran, who live one mile from Lancaster city centre, draw attention to this problem when discussing their six year old daughter’s one mile journey to primary school (which she likes to do by cycle but which is perceived as inconvenient by her parents who escort her by car instead):

“...there’s some steps there and then the bike’s in the shed at the top so we have to carry the bike down the steps and then her bike down the steps and then connect it all together. Well, it’s not [that long] but it does take time to [set up in the morning]. It seems like a long time...yeah, yeah and we either bring it through the house or we’ve got to take it past our neighbours, all the houses and sometimes their bins are in the way and I mean I think this is the reality and then it rains a lot as well so obviously... the days that it’s raining that’s out the question because we don’t want to take [her] to school in the rain. She’d be all sort of wet and cold [although] she likes going on the bike...”

(Keiran, Lancaster)

Although there is arguably the potential to overcome this problem – there is a shared courtyard at the front of their property where bicycles could potentially be stored – Deidre’s reflection highlights her ambiguity about the convenience of cycling from her home given current circumstances and what might be required to change this more generally:

“I was thinking about this though actually and I think for us, I mean it just does come down to that perception of convenience and um, I don’t know that there is a solution for us but I think it has implications for, for planning for housing and for sort of putting nice and convenient bike covers where you can just get up in the morning and pull your bike out and off you go.”

(Deidre, Lancaster)

Many participants who were less active walkers and cyclists cited a combination of the weather, steep hills, personal frailty and poor infrastructure as reasons why they did not walk and (especially) cycle more often. Harriet, in her late 60s, and retired, and who lives one mile from Lancaster centre gave a fairly typical range of responses:

“I used to cycle before, yeah I cycled a lot. I sort of feel I’m not sure, you know the roads are so bad and having to wear a helmet and I think ‘I’ll walk’ ... but I think the cycle tracks, you know, I’d be all right on them, but erm, sometimes if it’s wet and you’re carrying luggage, bicycles are not good for that sort of thing ... no I would not go through town on that little [narrow cycle lane allocated] yeah, I mean I wouldn’t now, I did in the past but I wouldn’t now because I feel a bit more fragile I suppose”.

(Harriet, Lancaster)

The cycling go-alongs were especially effective at generating both observational and interview data with regard to the cycling infrastructure. Some participants clearly disliked narrow cycle lanes marked off within the normal road area and felt much more comfortable cycling on cycle lanes that were physically separated from the traffic. Commentary from one researcher’s audio recording during a go-along cycle ride with Frank (quoted earlier in this section) demonstrates the skills required to negotiate the heavily-trafficked one-way system in Lancaster:

“Out on to the traffic island now ... staying on the right hand edge of the lane so that we get back on the outside of the vehicles as we go down now North of the Pointer roundabout. Overtaking buses, trucks, long lines of cars, traffic speeding up now ... Frank’s obviously very confident doing this we’re riding in amongst the traffic, the traffic’s now picked up to probably 20 miles per hour and we’re just riding with it coming down to the lights at Penny street. ... And now cutting back through to the inside. And on to the newly laid red tarmac as we get down to the lights going on the inside and up to the advanced stop line.”

(Dave accompanying Frank on a cycle go-along in Lancaster)

Interviewees appeared to be not especially well informed about the improvements undertaken as part of specific programmes to facilitate walking and cycling. Frank, an apparently skilled cyclist judging by the go-along experience quoted above, when discussing Lancaster’s Cycling Demonstration Town programme stated:

“No I’ve not really much idea what they’re doing. What drives me daft are these cycle lanes, which you get stuck on and don’t move.”

Similarly, in Worcester, Jane and Steve, though keen to adopt a lifestyle centred around reduced car use, had only recently become aware of any physical changes in infrastructure to support cycling despite the implementation of the Sustainable Travel Towns programme (branded 'Choose How You Move') between 2004 and 2009. Here Jane describes her desire for initiatives that support the mobility lifestyle that her family strives to adopt:

"What can I say..there is nothing consistent...and when I...I can't really explain it other than, have you been to Holland at all? Do you see what I mean by consistent? You can go everywhere by bicycle without feeling a hindrance or having to, to, deviate where you go, or go on the pavements or somewhere you shouldn't be. I mean that would be fabulous. Maybe not to the extent to what is happening in Holland, but if you could go from A-Z alongside with the car, and everybody would go, 'yea, that's where you should be, we accept you here'."

(Jane, Worcester)

Although pedestrians are normally segregated from traffic, infrastructure is just as important for walkers as it is for cyclists, and many of the walking go-alongs drew attention to the poor state of the pavements in Lancaster, especially where they were obstructed by parked vehicles and slippery with wet leaves or ice. The comments of Anne, a single mother in her 50s, living in a car-free household with her teenage son, one mile east of Lancaster centre, were fairly typical:

"You saw the cars parked on the pavement there and the van actually isn't here there are usually a couple of vans here as well but this is where it gets a bit dodgy ... I love it when I walk through here and see kids playing but these flags are treacherous; it depends what kind of footwear you've got on and some kinds of trainers are really slippy on there and if it's wet or when its icy its unbelievably; I wouldn't come down here on an icy day."

(Anne, Lancaster, walking go-along).

A key factor that is frequently cited as preventing people from walking or cycling for short trips in urban areas include the fact that those who don't walk or cycle regularly are fearful of traffic and associated risks or simply don't feel comfortable walking or (especially) cycling. Many participants were able to express both positive and negative feelings in the same interview about the experience of walking and cycling. Some participants, who are confident walkers, find cycling much more problematic given the nature of how, and where, cycling is typically performed. The household interview with Audrey and Anthony, both in their 60's and retired with children having left home, is a good example of these varied attitudes. Audrey likes walking and her normal journey to work (of just under one mile) is usually undertaken on foot. Walking not only provides exercise and a convenient way to cover a relatively short distance, but also allows her space to think and plan her day, or to switch off after work:

Understanding Walking and Cycling

JONES, Tim; POOLEY, Colin; CHISHOLM, Alison; HORTON, Dave; SCHELDEMAN, Griet.

“When I’m walking to and from work I like my mind to be completely on something else and so if I walk the same route to work and back every day then my mind can be doing something else. ... Yes I very often think through what I’m going to be doing, on the way to work I am usually thinking what I am going to do at work and prioritising things, so that when I arrive at work I am ready to start and then coming home is the opposite it is clearing my mind of all the things so that when I get home I can just switch off.”

(Audrey, Lancaster)

Audrey has a very positive image of walking even to the extent that she sometimes tries to persuade work colleagues not to travel by car. However, she is a much less confident about cycling and is easily intimidated by traffic. In this context she particularly values the improvements to infrastructure generated by the Lancaster Cycling Demonstration Town initiative, but clearly prefers to walk to work and for the most part restricts cycling to off-road activities for leisure purposes:

“I’m not a cyclist, I’m not a very confident cyclist so this Cycling Demonstration Town thing has been just fabulous for us and we got new bikes, didn’t we, about three years ago. We did have bikes when the kids were small and we’d take them on holidays with us often and cycle but I’m not great, I wouldn’t cycle in traffic, I would never cycle round Lancaster in traffic, I’m just not confident. But with all these cycle routes we like going cycling, don’t we. -...- I’m not that confident on a bike, I’m a bit wobbly aren’t I?”

(Audrey, Lancaster)

Audrey’s husband is a much more confident cyclist and sums up the difference between them in terms of the way in which they deal with traffic and assert their position on the road. Such differences may, in part, be gendered, but the strong suggestion is that cycling is a much more problematic activity than walking for many people given the apparent nature of how it has to be performed (i.e. mixing with general traffic) in order to try to maximise personal safety:

“As an observer I feel that the cyclists who are safest are the ones who make themselves big and ‘I’m here and I’m keeping up with the traffic and I know what I’m doing’ and you make yourself obvious and Andrea is not confident enough to do that so she’ll hide in the edge and so be more likely to get knocked off in my opinion. “

(Andrew, Lancaster)

Similar sentiments were expressed by a number of participants. For instance, Deborah who is in her 40’s and lives 1.5 miles from Lancaster city centre together with her husband and

two teenage daughters, is a keen walker and clearly identifies herself as such but she finds cycling much more difficult to organise and fit into her everyday routine:

“Well I’ve always enjoyed walking anyway but I think it’s basically just the fact that I feel much more refreshed when I get to work when I’ve walked and don’t feel as sluggish, you know, you just feel like it kind of wakes you up on the way. Also the fact that when you’ve got the kids, you know, you’ve got the chance to talk to them on the way to school and that type of thing it’s er, I mean you know, from here going to Lancaster, going to where I work in town I would have to go all the way round the one way system, it would probably take me just as long and then you’d get there feeling really stressed and harassed.”

“One of the reasons why we haven’t cycled as much as we used to is because we now have a dog so she’s not great in running at the side of a bike; we haven’t really done that much with her whereas when we didn’t have a dog obviously we didn’t have that issue and if you are going out you might as well take the dog with you so erm. But we will, you know, occasionally if we need to go round to the Spar down at the bottom or something we’ll get the bike out and go on the bike ... [I don’t cycle to work] I would have, because unless you go through the one way system I would have to get off and push it half the way because I would just cut straight across town so it’s not worth it and we do have cycling facilities; we do have bike racks, you know shelters and we do have a shower facility at work, so, and there is people, quite a few of my colleagues do cycle in from, but, it’s not to be, it wouldn’t be any quicker to [cycle] and then I’d have to shower and get changed...”.

(Deborah, Lancaster)

Jane, on the other hand, is comfortable performing journeys by cycle around Worcester even to the extent that she tows her 18 month old son in a cycle trailer when visiting friends in the suburbs. In the following statement Jane reflects on how her travel behaviour might be (negatively) perceived by some of her friends but is also able to compare and contrasts her positive experience travelling the city by cycle compared to by car:

“I met a whole new set of ‘baby friends’ I call them, going through the antenatal classes and all of that, and they are a bit more ‘classical thinking’, and I think that they think I am just mad. Oh yea, they don’t say it but [I think they think] it is like a lot of effort, and they see me struggling locking the bike, because there is never somewhere to [lock] the bike with the trailer. And I think some of them, not all of them, some of them think, ‘it is dangerous, why are you doing that, like moving in the traffic but then I tell them well, actually I came to yours but it’s a traffic-free route and they are like, ‘is it?’ not an [idea] what is going on, that there are a lot of

alternatives, because they always take the car so I think I know another Worcester to some of these friends because they only see the traffic jams whereas I go along the river and do lovely things.”

(Jane, Worcester)

Some of the most negative (and to some extent contradictory) attitudes towards walking and cycling were expressed by Jim. In his late 40's and unemployed, he lives alone around one mile from Lancaster city centre. On the one hand he saw himself as someone with strong environmental principles but he also felt that by being a non-car user he was being marginalised by society admitting that if he could afford to own a car he would do so:

“I am always tied ‘cause I’m a deep-ecologist and environmentalist and I do really worry about carbon release that is a fundamental thing to me that it is ridiculous to be using energy future supplied energy the way that we do it. I do have a deep objection to being forced into using a car when it is avoidable, when we don’t need to use that system. The whole thing with transport and not having a car, I do feel like a second class citizen, there’s definitely a sense that as a pedestrian and a cyclist you are definitely second class citizens ... maybe it’s a psychological thing, maybe it’s about priorities. I don’t have a car. Which is partly on grounds of not really wanting to pollute the environment but also probably quite largely because I don’t have the money to run one. If I was earning £100,000 a year I’d probably have a car.”

(Jim, Lancaster)

All these examples, quoted at some length, illustrate the complexity and ambiguity associated with attitudes towards walking and cycling. Whilst many people in principle acknowledge the freedom of walking and cycling they often associate these methods of travel with negative features. These are often expressed in terms of risk and both physical and psychological barriers that together present a significant challenge to moving around by these modes. So, whilst summary statistics often present a general positive view that many participants have towards walking and cycling (including those from our own questionnaire surveys outlined in section 2.1), when required to relate these attitudes to real-world experience reactions become much more nuanced. If transport policies are to reflect the everyday needs of people such complexities and ambiguities need to be fully understood.

3.3 Everyday travel is almost always contingent on the decisions and commitment of others (especially family members)

Planning and policy frameworks tend to assume that walking and cycling have much more limited planning (and infrastructural) implications than other forms of transport. However, in practice, both activities require complex planning decisions at the individual and household

scale that may make them more difficult to achieve than (for instance) travelling by car. Indeed, one of the main advantages of car travel is the ability to load children and bags into a vehicle and set off with minimal delay (Dowling, 2000). In contrast, walking and cycling can be much more complicated where families are involved. This is especially the case if the group travelling includes very young or elderly members or others without the ability to walk or cycle. If it is assumed that these constraints are difficult to change with respect to walking and cycling it reduces substantially the potential for increasing these modes for everyday journeys.

The nature of these constraints is illustrated by material gained from the interviews and ethnographies. The following quotes illustrate the ways in which children can encourage car use (Handy et al. 2005b) even amongst parents who desire to use their car less.

“Usually I go with the car because of convenience, less time, because sometimes J [age 3] is tired when I pick him up from nursery and I would have to carry him, and I have my books as well, and when there’s two of them... In the week [I use the car] for two days a week, at some point I might even try just walk with the kids, but it’s usually because with the two kids they have different energies, and R runs and J is a bit more like staying here and hanging round here and there, so that creates some kind of tension and also I’m on pressure to get on time to work, then it’s really much more convenient to just strap them on the seats and take them and leave them and that’s it. Apart from that I would just walk.”

(Don, Lancaster).

“If Tom (3 year old child) has only just woken up from his afternoon nap, he can’t walk straightaway, it takes a while for him to ‘come around’, you know? So then I’d drive. If he’s really tired, too, I sometimes drive. Perhaps I should expect him to walk, but it’s hard isn’t it? ... And then if we’re going to swimming class at the University, obviously we’re in the car for that.”

(Robert, Lancaster)

“Oh we have a daughter, she’s six and she goes to Dallas Road school so yeah she goes to Dallas Road so the only sort of journeys that we need to do are err taking Julia to school and we do drive (coughs) mainly, because it’s, well you’ve seen it’s a long way [actually less than a mile]. So it’s quite far ... yeah. Sometimes in summer, we’ll walk with her on the way home, on the way to schools it’s always a rush. But on the way home we’ll, we’ll maybe walk into the school and then, um, walk back. Keiran [husband] sometimes um has cycled with her.”

(Deirdre , Lancaster)

Similar sentiments were expressed by most participants with children emphasising the ways in which limitations imposed by family composition and responsibility make it difficult even for those inclined towards walking and cycling to use this way of travelling for trips which also have severe time constraints. For example, the complexity of walking to school with three small children was emphasised during the ethnographic go-along with full time working mum, Linda and her family (husband Paul and children aged 8, 5 and 18 months), who live 1.5 miles from Lancaster city centre. The extract (figure 4) emphasises the complexity of organising the transport of children and their belongings. This exchange underlines the degree of commitment which is necessary to facilitate walking as an everyday means of travel for such families.

Figure 4: Extract from Ethnographic go-along with Linda (Lancaster)

Linda: *The water bottle is just by your pop-up book, do you want me to carry? Tell me what you want me to carry, tell me what you want to carry....*
James: *Where's my book bag dad?*
Linda: *Oh I've got it underneath the pram do you want me to hold it? Or would you like to hold it?*
James: *I want to hold it. ...*
Linda: *Come on then (puts her in pushchair)*
James: *I can hold my water bottle actually.*
Linda: *No I'll put it in my bag James, it's going to get wet.*
Paul: *You are going to have to walk quickly today.*
Linda: *Come on let's put that in your; I'll remind you of it when we get there (Rebecca cries) James let me help you. Careful. I'll give it to you when we get there. Come on.*
Paul: *The dog stays here; he helps me work.*
Linda: *Right OK guys. James do your coat up please it's really wet.*
Paul: *See you later guys*
All: *See you*
Linda: *Do you want to take this umbrella? There's an umbrella James do you want that one?*

Many families, including those with the sorts of time constraints illustrated above, do walk or cycle for pleasure, and indeed, this is often an important opportunity to spend time together. However, walking or cycling with children is often construed as difficult and stressful for trips with closely-defined time schedules (such as the school run and the journey to work), whereas, when used for leisure activities walking and cycling become sociable and relaxed.

"My son when he came up in the summer brought their bikes and they had a child carrier they put their lad on and we cycled along the prom and stopped at all the playgrounds on the way and the ice cream places and went to Happy Mount Park and he played there and then we came back again. So it wasn't a very long cycle ride but it was a cycle ride."

(Alec, Heysham)

4. CONCLUSION

In this paper it has only been possible to represent a small amount of the data collected in Lancaster and Worcester. Attention has been focused on situational circumstances and the ways in which everyday household and family commitments affect the decision to walk or cycle. It has been argued that, whilst questionnaire surveys of the type most usually used to understand travel behaviour do provide valuable data, they inevitably simplify the views of participants. As demonstrated above, when a range of qualitative data – collected using a variety of different techniques – are analysed the relatively straightforward messages typically conveyed by survey data becomes much more complicated. Many participants gave contradictory and ambiguous responses which more quantitative instruments rarely capture. From the combination of survey, interview and ethnographic data it is argued that attempts to increase rates of walking and cycling in urban areas are unlikely to succeed unless the complexities and contingencies associated with everyday travel are addressed, and the in-built convenience of the car countered both by restrictions on car use and the facilitation of walking and cycling.

Preliminary findings suggest that, whilst the positive attributes of walking and cycling are acknowledged, these forms of transport often do not fit easily into everyday travel plans unless people are very committed and organised. Opportunities for walking and cycling seem to be structured by the nature and dynamics of household employment. For some or all persons in a household this means that there are few opportunities to undertake journeys on foot or by cycle during a typical week even amongst those who are predisposed to walking and/or cycling. For participants for whom walking and cycling is a common part of their everyday experience, in most cases a combination of convenience and personal preference seems to be more important than cost or time per se. Those participants for whom walking and/or cycling form part of their everyday experience would appear to have developed routines and practices that facilitate travel on foot and (particularly) by bicycle in the same way one might develop routines and practices around car ownership and use. This often includes the knowledge and purchase of specialist equipment (at least for cycling) and its organisation within the home for convenience. Also, in the process of walking and cycling, participants appear to have developed quite intimate knowledge of the local area and most convenient and satisfying walking and cycling environs, which may otherwise be missed when travelling around solely by car or public transport.

From the data collected so far it can be suggested that policy should focus on three key areas. First, improvement in infrastructure which for walking includes removal of barriers and parked vehicles on pavements, better maintenance of pavements so that they remain leaf and ice-free and do not present serious slip hazards, and the repair of uneven paving stones. For most potential cyclists the key requirement seems to be the reduction of road danger when cycling through a combination of slower motor traffic speed in city centres and the provision of dedicated cycle routes that are segregated from traffic where necessary (e.g. along faster and busier arterial routes). This seems to be particularly important amongst cycle users that are unable to keep up with the general flow of traffic. The provision of

marked cycle lanes within existing road space (by far the most commonly adopted solution in most British towns) were not favoured by many of our research participants.

Second, and much more problematically, it can be argued that policies to increase walking and cycling do not require transport solutions but, rather, need much more fundamental changes in society and urban structure that allow more flexibility in how and when people travel. There are many ways in which this could be addressed: the provision of more neighbourhood schools and other facilities to reduce travel distances; the development of more family-friendly welfare policies that enable one parent to spend more time with children and thus give space and time to walk or cycle rather than travel by car; flexible working hours that allow adults to fit work-related journeys around other activities; the routine provision of bicycle storage in all new properties and the retrofitting of older properties. Such changes could be achieved relatively simply (and to varying degrees do operate in many European countries) but their implementation does require recognition of the fact that solutions to perceived transport problems may not be achieved by transport-related policies alone.

Finally, and implicit in much of the above discussion, it is suggested that greater rates of walking and cycling will only be achieved when car use becomes significantly more costly and less convenient. Whilst getting in a car is the quickest and easiest option for most people, only those most dedicated to walking and cycling will do so regularly. Thus policies to promote walking and cycling are likely to have limited impact unless they are linked to a broader set of transport policies that actively restrict car use and elevate the convenience and status of walking and cycling within towns and cities.

ACKNOWLEDGEMENTS

Thanks to all the people in Lancaster and Worcester who willingly gave up their time and who welcomed our researchers into their private space to be interviewed in their homes or whilst being accompanied during their daily journeys during ethnographic research – all names used in this paper are pseudonyms to protect the identity of participants. A very early version of this paper was presented at the Royal Geographical Society annual conference in August 2009 and the Cycling and Society Symposium in September 2009 and we are grateful for feedback from participants at those sessions. Research for this project was funded by the EPSRC.

BIBLIOGRAPHY

- Ajzen, I. (1991) 'The theory of planned behaviour' *Organisational Behaviour and Human Decision Processes* 50, 179–211.
- Alfonzo, M (2005) 'To walk or not to walk? The hierarchy of walking needs' *Environment and Behaviour* 37, 808-36
- Alton, D., Adab, P. Roberts, L. et al (2007) 'Relationship between walking levels and perceptions of the local neighbourhood environment' *Archives of Disease in Childhood* 92, 29-33
- Anable, J. (2005) 'Complacent car addicts' or 'Aspiring environmentalists'? Identifying travel behaviour segments using attitude theory *Transport Policy* 12, 65-78
- Burnett, P. (2007) 'Qualitative Techniques for Urban Transportation' in Gouias, K.G. (ed) *Transport Science and Technology*. Oxford: Elsevier.
- Carpiano, R. (2009) 'Come take a walk with me: the 'Go-Along' interview as a novel method for studying the implications of place for health and well-being' *Health and Place* 15, 263-72
- Clifton, K.J. and Handy, S.L. (2001) 'Qualitative Methods in Transportation Research', presented at the International Conference on Survey Quality and Innovation, Kruger National Park, South Africa, August 2001.
- Dawson, J., Hillsdon, J., Boller, I. et al (2007) 'Perceived barriers to walking in the neighbourhood environment and change in physical activity levels over 12 months' *British Journal of Sports Medicine*, 41, 562-8
- DETR (2005) *Encouraging Walking: Advice to Local Authorities* (London: HMSO)
- DfT (Department for Transport) (2004) *Walking and Cycling: An Action Plan* (London: DfT)
- DfT (2005a) *Walking in Towns and Cities: Government Response to Select Committee Report* (London: DfT)
- DfT (2005b) *Encouraging Walking and Cycling: Success Stories* (London: DfT)
- DfT (2006) *Evidence Base Review on Mobility: Choice and Barriers for Different Social Groups* (London: DfT)
- DfT (2007a) *Walking and Cycling: An Action Plan. Progress Report 7* (London: DfT)
- DfT (2007) *The Benchmarking Walking Questionnaire (a report by Walk 21 on behalf of the Department for Transport)* (London: DfT)
- Dowling, R. (2000) 'Cultures of mothering and car use in a Sydney suburb' *Geoforum* 31, 341-53
- Filion, P., McSpurren, P. and Appleby, B. (2006) 'Wasted density? The impact of Toronto's residential-density-distribution policies on public transit use and walking' *Environment and Planning A* 38, 1367-92
- Gatersleben, B. & Haddad, H., (2010) Who is the typical bicyclist? *Transportation Research Part F: Traffic Psychology and Behaviour* 13 (1), 41-48.
- Gibbs, G. (2007) *Analysing Qualitative Data* (London: Sage)
- Handy, S. (2005a) *Critical Assessment of the Literature on the Relationships Among Transportation, Land Use and Physical Activity*. (Washington DC: Transportation Research Board and Institute of Medicine Committee on Physical Activity, Health, Transportation, and Land Use).

- Handy, S., Weston, L. & Mokhtarian, P., (2005b) Driving by choice or necessity? *Transportation Research Part A: Policy and Practice* 39(2-3), 183-203.
- Handy, S., Cao, X., Mokhtarian, P. (2006) 'Self-selection in the relationship between the built environment and walking: evidence from North California' *Journal of the American Planning Association* 72, 55-74
- Horton, D., Rosen, P. and Cox, P. (2007) *Cycling and Society* (Farnham: Ashgate)
- Hunecke, H., Haustein, S. Böhler, S., Grischkat, S. (2010) 'Attitude-based target groups to reduce the ecological impact of daily mobility behaviour' *Environment and Behaviour* 42, 3-43
- Jarvis, H., Pratt, A.C. & Cheng-Chong Wu, P. (2001) *The Secret Life of Cities: The Social Reproduction of Everyday Life*. Harlow: Pearson Education.
- Jarvis, H. (2003) 'Dispelling the myth that preference makes practice in residential location and transport behaviour' *Housing Studies* 18, 587-606
- Kingham, S. and Ussher, S. (2007) 'An assessment of the benefits of the walking school bus in Christchurch New Zealand, *Transportation Research Part A, Policy and Practice* 41, 502-10
- Kusenbach, M. (2003) 'Street phenomenology: the Go-Along as ethnographic research tool' *Ethnography* 4, 455-85
- Lockett, D., Willis, A. and Edwards, N. (2005) 'Through seniors' eyes: an exploratory qualitative study to identify environmental barriers to and facilitators of walking' *The Canadian Journal of Nursing Research* 37, 48-65
- Mackett, R. (2001) 'Policies to attract drivers out of their cars for short trips' *Transport Policy* 8, 295-306
- Mackett, R. (2003) 'Why do people use their cars for short trips?' *Transportation* 30. 329-49
- Marshall, C. and Rossman, G. (2006) *Designing qualitative research* (London: Sage)
- NICE (2006) *Transport Interventions Promoting Safe Cycling and Walking: Evidence Briefing* (London: National Institute for Health and Clinical Excellence)
- Moudon, A.V. & Lee, C., (2003) Walking and bicycling: an evaluation of environmental audit instruments. *American Journal of Health Promotion: AJHP*, 18(1), 21-37.
- Ogilvie, D. Egan, M., Hamilton, V and Pettigrew, M (2004) 'Promoting walking and cycling as an alternative to using cars: systematic review' *British Medical Journal* 329, 763-66
- Ogilvie, D., Foster, C. Rothnie, H. et al (2007) 'Interventions to promote walking: systematic review' *British Medical Journal* 334, 1204-7
- Parkin, J., Ryley, T. & Jones, T. (2007) 'Barriers to Cycling: An Exploration of Quantitative Analyses'. Horton, D., Rosen, P. and Cox, P. (2007) *Cycling and Society* (Farnham: Ashgate)
- Prochaska, J. O. & DiClemente, C.C. (1984) *The Transtheoretical Approach: Crossing Traditional Boundaries of Change*. Homewood, Ill: Dow Jones-Irwin.
- Ricketts, J., Evans, J. and Jones, P. (2008) 'Mobile methodologies: Theory, Technology and Practice' *Geography Compass* 2, 1266-85
- Saelens, B.E., Sallis, J.F., and Frank, L.D. (2003) Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of Behavioral Medicine* 25, 80-91.
- Saelens, B.E. and Handy, S.L. (2008) Built environment correlates of walking: a review. *Medicine and Science in Sports and Exercise*, Jul; 40 (7 Suppl), S550-S566.

Understanding Walking and Cycling

JONES, Tim; POOLEY, Colin; CHISHOLM, Alison; HORTON, Dave; SCHELDEMAN, Griet.

- Salmon, J., Salmon, L. Crawford D. et al. (2007) 'The science of health promotion – associations among individual, social and environmental barriers and children's walking or cycling to school' *American Journal of Health Promotion* 22, 107-13
- Silverman, D. (2006) *Interpreting qualitative data* (London: Sage)
- Sloman, L., Cavill, N., Cope, A., Muller, L. and Kennedy, A. (2009) *Analysis and Synthesis of Evidence on the Effects of Investment in Six Cycling Demonstration Towns*, Report for Department for Transport and Cycling England.
- Stanbridge, K., Lyons, G. AND Farthing, S. (2004) 'Travel behaviour change and residential relocation'. Paper presented at the 3rd International Conference on Traffic and Transport Psychology, Nottingham, 5-9 September.
- Walker, J.L. (2006) 'Opening up the black box: Enriching behavioral models of spatial and travel choices' *Journal of Transport Geography*, 14, 396-398.