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Reframing Safety: An analysis of perceptions of cycle safety clothing

Rachel Aldred and James Woodcock

Abstract

This article contributes to debates around cycle safety clothing, specifically helmets and high-visibility clothing. In England such items are widely promoted in safety campaigns and in broader cycling publicity, particularly for children. However, the impact of this approach on cycling safety and cycling uptake is unclear and contested. This article uses a combined analysis of three sets of qualitative interview data to explore talk about cycle helmets and high-visibility clothing. A thematic analysis involved coding all references to such safety clothing, and within that coding meanings, experiences, interactions, and links to other safety equipment.

Reported use of safety clothing was strongly associated with perceived threat from motor vehicles, but accompanied by scepticism about effectiveness. Many interviewees felt and/or exerted social pressure to wear a helmet, and, to a lesser extent, high-visibility clothing. Analysis identified a widespread dislike of safety clothing, sometimes linked to talk about cycling less because of the perceived need to wear such clothing. We found evidence of resistance to social pressure, expressed by complaining about inconvenience, discomfort (helmets), and personal appearance.

More interdisciplinary research is needed to explore the complex relationships between cycling safety, the promotion of safety clothing, and cycling uptake. However, our findings suggest that policy-makers and practitioners should carefully consider how promoting safety clothing might impact cycling uptake and experiences. Policy goals of increasing cycling and making it more 'normal' and subjectively safer might imply reducing or even avoiding the use of such accessories in everyday utility cycling contexts, and relying on alternative strategies to improve cycling safety.

Keywords: cycling; safety clothing; helmets; England; perceptions

Research Highlights

- This paper explores perceptions of helmets and high-visibility clothing through three English interview datasets.
- Use of safety clothing is described as primarily motivated by perceived motor traffic danger.
- There is substantial pressure on cyclists to wear safety clothing, although many are reluctant and even resistant.
- Where cycling feels safer, use of safety clothing drops.
- Policy-makers should consider carefully the role of safety clothing within a transition to a safer, high-cycling culture.

Introduction

Studies consistently find that population level health benefits of more cycling considerably outweigh harms (Rabl & Nazelle 2012, Roja-Rueda 2011, Woodcock et al 2013) although net benefits are less clear if cyclists are young and risks high (Woodcock 2014). Much evidence indicates fear of injury is a major barrier to cycling (e.g. Pooley et al 2013) and that injury rates are higher where cycling levels are low (Jacobsen 2003, Elvik 2010).

Personal protective equipment (PPE) refers to clothing and equipment intended to protect the body against injury or infection. PPE, including in the UK helmets and high-visibility clothing, is promoted as a response to cycle injury risk. In academic literature use of PPE is frequently taken as a successful outcome. A Cochrane Review[1] summary states that 'the authors wanted to find out which sort of helmet programmes work best [at increasing child helmet use]' (Owen et al 2011). Wood et al (2009) conclude a discussion of attitudes to high-visibility clothing by commenting that 'it is imperative that researchers examine the barriers to the use of visibility aids, *in order to encourage cyclists to make greater use of such aids*' (our emphasis).

Use of PPE is a mitigation strategy and is less prominent or even absent where cycling risk is low (Pucher and Buehler 2008). Correspondingly, at population level helmet wearing is *inversely associated* with cycling safety; worn by fewer than 1% of adult cyclists and 3-5% of children in the safest country, The Netherlands (Pucher and Buehler 2008: 509). This does not mean helmets increase the risk of injury: there is broad scientific consensus that wearing a helmet may reduce the risk or severity of a head injury in certain collisions (Hagel and Pless 2006). Rather it signals a potential difference between individual level PPE-focused strategies, and population level approaches (for example, infrastructure that separates cyclists from heavy motor vehicles, reduced speed limits). Wearing a helmet may well confer some protection against head injury on the individual concerned. However, there is a lack of evidence that population increases in helmet use have led to reductions in population injury rates. Alternative population-level strategies are likely to provide much greater reductions in individual risk (Goldacre and Spiegelhalter 2013).

For high-visibility clothing, evidence of safety benefit has not been established at either the individual or population level. Although such clothing appears to increase visibility in artificial test situations (Kwan and Mapstone 2004), a systematic review did not identify 'real world' evidence that the use of 'conspicuity aids' is associated with reduced injury risk (Kwan and Mapstone 2009). Subsequent work has not provided clear evidence of benefit (Miller 2012, Tin Tin et al 2014, Walker et al 2014).

Given ongoing debates over PPE and its effectiveness, it is important to understand more about what cyclists and potential cyclists think about use of PPE, the role it plays in their lives, and if it impacts their cycling behaviour. If PPE deters people from cycling then this

[1] 'Cochrane Reviews are systematic reviews of primary research in human health care and health policy.' – see http://community.cochrane.org/cochrane-reviews

could negatively affect population health through two pathways; lost physical activity benefits alongside increased injury risk as per the 'safety in numbers' thesis (Elvik 2010, Jacobsen 2003). Evidence on the impact of pro- PPE campaigns and legislation on cycling uptake is limited and contested (Carroll et al 2014, Fishman et al 2012). We seek to use people's perceptions and experiences of PPE to re-frame debates around cycle safety, foregrounding how it feels to use PPE (or not). This evidence can assist in understanding the why and how of the longitudinal evidence on uptake.

Methods

Approach

We take a sociological perspective on safety clothing, drawing on social science literature on cycling identities, policies and practices. By focusing on the cultural and symbolic dimensions of cycling, these approaches have critiqued rationalist approaches to cycling, as embodied in mainstream modelling and appraisal methods (Aldred 2014). For example, rather than seeing cycling as an individual rational choice, social scientists have highlighted the key role of social expectation, influence and observation in shaping travel behaviour (Simons et al 2014, Sherwin et al 2014).

Pooley et al (2013) argue that cycling is marginalised in part because, unlike driving, it is associated with a strong 'mobility identity', with perceived characteristics including risk tolerance. It is plausible that this identity is particularly unattractive to groups currently under-represented in cycling (Steinbach et al 2011). Aldred (2013) found the identity of 'cyclist' stigmatised within the UK context; in Australia Daley and Rissel (2011) found similar negative stereotypes of cyclists as 'rule breakers' and 'risk takers'. In the more pro-cycling context of Antwerp, Belgium, Simons et al (2014) found more positive 'meanings of cycling' among the young adults they studied, including its association with autonomy (not having to find car parking, or wait for a bus), with issues around traffic safety less prominent.

A sociological perspective on cycling sees meanings, social context and social influence as vital (and always contested). The construction of 'risk', as Douglas (1992) argues, is political, involving beliefs about blame, responsibility, and appropriate action. Social scientists have analysed the association of cycling with risk, Horton (2007) arguing that this forms part of cycling's broader marginalisation within a car-dominated society. But there is a lack of literature specifically focusing on the experienced meanings of 'safety gear'. This might include the use (or non-use) of safety gear to perform and/or repair transport identities (c.f. Gregson 2007), for example, in response to perceived negative attributes associated with a particular mode.

If with Pooley et al (2013) we understand cycling in the UK to invoke specific – and problematic – identity constructions, notably in relation to risk and danger, then the 'safety stuff' of cycling should be of great interest both to social scientists and to policy-makers. It can tell us more about how cycling risk is subjectively experienced in a specific context, and allows us to study the impact of PPE on the perceived risk associated with cycling.

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Secondary qualitative data analysis

The paper is based on re-analysis of interviews from three qualitative datasets each with least a partial focus on cycling. More information can be found in the Appendix about each.

Study Name	Sample	Interviews re-analysed here	Study lead	Study URL
Commuting and Health in Cambridge	>1000 cohort study participants; interviewees selected from survey and from intercept surveys	113	Dr. David Ogilvie	http://www.cedar.iph.cam.ac.uk/research/directory/cahic/
Cycling City and Towns	144 interviews with cyclists and non-cyclists	36	Dr. Kiron Chatterjee	https://www.gov.uk/government/publications/evaluation-of-the-cycling-city-and-towns-programme
Cycling Cultures	160 interviews with cyclists and cycling stakeholders	160	Dr. Rachel Aldred	http://cyclingcultures.org.uk/

We obtained these datasets for analysis as part of the ESRC Changing Commutes project, which modelled uptake of cycle commuting. Interviews[2] come from three studies: Cycling Cultures (all interviews), Commuting and Health in Cambridge (selected interviews), and Cycling City and Towns (selected interviews). The Cycling Cultures dataset included two types of interview: narrative and stakeholder; the former interviewed in their capacity as cyclists, the latter because of involvement in local policy, practice or advocacy. The Cycling City and Towns dataset includes interviews with people in places that experienced cycling investment under that programme. Within Commuting and Health in Cambridge there were two types of interviews; those involved in a cohort study, and people intercepted using the new Cambridge Guided Busway.

There is increasing interest in the re-analysis of qualitative data (Seale 2011) but usually this only involves one dataset. Combined re-analysis of more than one dataset remains unusual.

[2] For two of the projects, not all interviews were used: these had been selected based on interviewee location/demographics for our modelling study (for example, we only selected Cycling Cities and Towns interviews with employed respondents, as our model was focused around commuting).

Inevitably our study raises questions about whether one can analyse qualitative material separated from its original research context and about our ability to compare across the studies. Seale (2011) argues that primary research also involves such interpretive challenges; for example, in many larger qualitative studies analysis will be relatively separate from data collection and an analyst may not have conducted any interviews. It could be argued that similar issues of interpretation and analysis arise for much quantitative analysis but are less commonly discussed.

In our case we are relatively well placed to deal with such issues. One study was conducted by the lead author, while the senior author works with people leading the second, and the project manager of the third is on our advisory board. Using a combination of studies has enabled us to include data from a wider variety of contexts and interviewees. Because of different study approaches, populations, and aims, we have been cautious about attempting comparisons between groups of individuals on the basis of demographics or cycling status. However, where emerging themes are similar, we have taken this as indicating that findings are not only due to the specific research relationships constructed within one study.

The datasets and participants

Cyclists are strongly represented within these datasets. The largest number of participants are from Cambridge, the English city with the highest levels of cycling (32.1% commuting mode share 2011). In Cambridge, cycling is relatively normalised (Aldred and Jungnickel 2014; Guell et al 2012) and hence ‘cyclists’ less likely to represent a demographically concentrated niche of ‘committed cyclists’ (Pooley et al 2013) than people in lower-cycling areas. For example, while cycling is typically highly gendered in England, high-cycling cities see more gender equity in cycling, with men and women almost equally likely to cycle to work in Cambridge (author reference removed, ONS 2014).

Three other urban areas each providing 30 or more interviews are Bristol, Hackney, and Hull. Bristol and Hackney were characterised by Aldred and Jungnickel (2014) as 'emerging cycling cultures', with recent increases in cycling to work rising to levels well above the English average standards (in 2011, 8.1% in Bristol and 15.4% in Hackney) but well behind Cambridge. Hull has a tradition of cycling (although in decline) with cycling to work levels in 2011 similar to Bristol's. The other 24 interviews were conducted in areas with cycling to work levels closer to the national norm (3.1% in 2011).

Of the data analysed:

- 164 interviews were conducted in Cambridge, as part of all three projects (most from Commuting and Health in Cambridge)
- 47 interviews were conducted in Bristol as part of the Cycling Cultures project.
- 35 interviews were conducted in Hackney (Cycling Cultures)
- 30 interviews were conducted in Hull (Cycling Cultures)

- 24 interviews were conducted in other English towns and cities (9 in Chester, 6 in Colchester, 2 in Leighton-Linslade, 3 in Shrewsbury, 1 in Southend, 1 in Southport, and 2 in Woking - all Cycling City and Towns)

Combining datasets makes providing summary statistics complex. For example, different age categories were used in the studies (e.g. 30-39 vs. 25-34). Summarising gender is more straightforward, and the overall dataset is reasonably gender balanced. The Cycling Cultures narrative interviews had an approximately equal gender balance (58 men, 61 women); the Cycling City and Towns interviews had a exactly 50:50 (18 men, 18 women); Commuting and Health in Cambridge interviewees were around 60% female (45 men, 68 women).

Assessing cycling status is intrinsically problematic. People move into and out of cycling, many more cycle occasionally than frequently, and self-identification may not correlate well with frequency. There has been little attempt to establish a commonly agreed definition and the value of a definition would depend on the purpose, e.g. physical activity levels versus constructions of identity.

Unsurprisingly then, the studies varied in how they measured cycling status. All Cycling Cultures narrative interviewees (and most stakeholders) defined themselves as cyclists, varying from people who cycled every day to people who reported not having cycled recently (but who identified as cyclists). Around 1/3 (11) of the Cycling Towns and City interviewees were not current regular cyclists. Among Commuting and Health in Cambridge interviewees, 34/93 for whom data was available fell into low- or no-cycling categories (20 had missing data). Categories differed for intercept and cohort respondents. In providing the estimate above, for the former we used never having cycled on the Busway Cycleway (the route on which they were interviewed which is one of Cambridge's highest-quality routes) while for the latter, it was 'never or rarely cycle to work'. While most respondents are occasional or regular cyclists, therefore, it is hard to estimate a percentage.

Data analysis

Datasets were imported into NVivo as a combined project. This was analysed using thematic coding. Initially, all references to cycle helmets were automatically coded. This was supplemented by automatically coding references to 'hats', then removing all non-helmet references. Around two-thirds of the transcripts contained some reference to cycle helmets; partly dependent on whether the interviewer actively elicited such information.

The set of helmet references were manually checked, and in some cases, extracts expanded to include additional relevant material. Initial themes focused on meanings associated with helmets (positive and negative), factors mentioned as leading to people wearing helmets, interactions and observations of others wearing (or not) helmets, and links between helmets and other safety aids. These were shaped by our broader project goal in Changing Commutes of understanding attitudes to safety stuff and issues around perceived safety and danger. Coding was iterative, developing nested sub-codes that further explored emerging areas of interest (including influencing relationships, resistance, and co-accumulation).

Because of our interest in exploring attitudes to PPE, we then coded all references to high-visibility, fluorescent, bright or reflective clothing (including references to cyclists *not* wearing such clothing, for example, dressing in dark clothing). Coding here was more complex. We used terms including colours (e.g. "yellow"), so there was extensive manual checking. While 205 sources mentioned helmets, only 122 mentioned high-visibility clothing. We used a similar approach to coding for this new set of extracts; although coding density is generally lower.

Results

Below we discuss perceptions and experiences related to the use of safety accessories, including clothing, followed by material related to (a) observing other peoples' behaviour and use of accessories and (b) social interactions about safety accessories. The latter themes enable us to explore the social context informing decisions about the use (or not) of safety accessories.

Perceptions of safety and the use of safety equipment

People spoke of wearing safety equipment because of not feeling safe, primarily in relation to injury by motor vehicles. By contrast, people tended to feel that cycling away from motor vehicles was inherently safe. People spoke of feeling safer and hence *not* wearing safety equipment in such contexts (e.g. parks, cycle tracks, quiet streets).

Perceptions of Safety: Helmets

'[My wife] just won't wear the helmet and that's really because she, she goes on this cycle path along a main road that's.. shared with the, shared with the pedestrians.' (Hull)

'in Cambridge you could easily cycle without a helmet, without lights you know it seemed to be fine and erm... in Bristol.. [I: Do you know why?] A lot bigger roads in Bristol and I am cycling on main roads in Bristol and in Cambridge I was literally cycling on side streets and tiny roads yeah and through pedestrian areas and things like that.' (Bristol)

' I think it's safe to the point where I stopped wearing my helmet which actually isn't a positive thing but because I cycle across the fields; I don't really see the point' (Cambridge)

'[When] I am going along the canal in the morning I take my helmet off which is probably stupid because if I hit a hole or came off I would hit my head as badly but I don't know it just feels...' (Hackney)

Similar statements to these last two were made by other interviewees. Part-time helmet wearers described *not* wearing them on park routes, towpaths and so on, where (particularly if surfacing and/or lighting were poor, often the case) one might still fall off and hit one's head. Yet such routes, with little or no motor traffic, were described as *feeling* safe, even if on reflection risks remain.

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Perceived Lack of Safety: High-visibility clothing

Discourse around high-visibility clothing was slightly different, involving a wider range of factors (specifically weather, season, time of day). However, just as there were part- and full-time helmet wearers, the same was true for high-visibility clothing.

'I wouldn't get on a bike without a high visibility jacket of some description.' (Cambridge)

'I do have a bright high visibility vest that I wear in sort of poorer weather.' (Cambridge)

People spoke of wearing more high-visibility clothing where roads were busy, combining the different risk factors in deciding when to wear it:

'I used to have one of the Altura jackets, a kind of night vision, but the dark grey one [....] that was probably fine when I was in Norwich and the roads weren't as busy but now, you even need high vis during the day cycling through these streets because people just don't notice you.' (Bristol)

'I do have a reflective vest that I probably would wear if I was on a busy road, definitely.' (Cambridge)

Conversely, as with helmets, people spoke about *not* wearing high-visibility clothing where they felt safer:

'On and off over the years I have worn it [...] before the [off-road] cycle routes were on Hedon Road, it was terrible [...] I don't bother now.' (Hull)

For high-visibility clothing, while the risk posed by motor vehicles was still a key factor, decisions were also described as being shaped by factors – such as the weather – seen as amplifying such risks.

The impact of incidents

Experiences of injury or collision were described as encouraging safety gear use. This included personal experiences, hearing about incidents, or seeing their aftermath:

'I have seen too many end results of mangled bicycles near bendy buses.' (Hackney)

'[I: You wear a helmet.] Yes and especially, because we're right beside [department] and one of my work colleagues, the guy who lives up there, he was cycling up that hill where you are tonight and he was coming down the hill, coming down and he was turning a corner into where his wife works, which is where you live and whatever happened, he misjudged the junction and he came off his bike and just twisted his arm.' (Colchester)

People related stories where it appeared either to them or to us that wearing a helmet is unlikely to have changed the outcome (typically, injuries were catastrophic or no impact to the head occurred). For high-visibility clothing, fewer comments related to incidents, but some similar themes were present. For example:

'[In] my whole life I have had a couple of cars pull out on me, I've come off that way and, (pause) and I know it is a risk but it's, I mean in absolute risk terms it's not overwhelmingly

high and it can feel a bit scary sometimes and that's why, well that's why I put all the fluorescent clothing and the lights on.' (Cambridge).

Scepticism about safety

The evidence above suggests that in the English context, feeling unsafe in relation to motor traffic, linked or not to experience of incidents, encourages people to wear safety clothing. Feeling safer tended to lead interviewees to wear less or no safety clothing. However, while safety clothing was described as mitigating higher-risk situations, people also expressed scepticism. They would talk of hoping to be safer, yet being unsure this was true.

Some people said that helmets are little use in a collision with a heavy goods vehicle, while others made reference to arguments about 'risk compensation' publicised by Walker (2007). Arguably this has found its way into broader cycling discourse, and certainly into the concepts used by people within all three interview samples. Sometimes interviewees (as does Walker) argued drivers take less care around helmeted cyclists, while elsewhere it was argued that helmeted cyclists themselves are less careful:

'I also feel that sometimes cyclists who wear helmets assume that they are invincible and that's more dangerous.' (Cambridge)

Similarly, some people were ambivalent about whether high-visibility clothing would work:

'[Sometimes] I do wonder, even when I'm wearing my yellow jacket and I've got my reflectors on, whether [drivers] actually see me.' (Bristol)

Conclusion: Perceptions about Safety

Fear of motor traffic is identified in the literature as a key barrier to cycling (e.g. Pooley et al 2013). This general fear, rather than specific head injury concerns, was a key factor in decisions about whether to wear helmets. Similarly, fear of motor traffic injury was important in decisions about wearing high-visibility clothing, although people were more likely also to cite additional factors (e.g. weather, light levels).

However, the data suggests that these fears were not generally dispelled by the use of safety clothing. Many participants queried the safety benefits of helmets and high-visibility clothing, while saying that they felt they ought to wear either or both, particularly in situations where perceived traffic danger is high. Part of this perceived need to use ‘safety gear’ might thus relate to it acting as an indicator to others that one is a responsible cyclist, by protecting oneself appropriately from motor traffic. The goal might not only be to protect against motor traffic risk, but to protect against blame. If being seen as risk-tolerant (even risk-seeking) might ‘spoil’ a cyclist’s identity (see Aldred 2013) then wearing PPE can be seen as a strategy to defend against such identity threats. In the sections below on social influence and social observation this question is discussed further.

Using safety equipment: other perceptions and experiences

For decisions about wearing both helmets and high-visibility clothing, safety was not the only salient issue. This section focuses on material about hassle and the pressure to accumulate ever more 'stuff', along with a converse concept: freedom.

Stuff related hassle

One issue arose with respect to both helmets and high-visibility clothing was 'hassle' associated with needing to remember items, or acquire additional items. Stuff-related 'hassle' is not only related to safety gear; the data also cover items such as locks and carriers, which in the Netherlands are often built into the bicycle but the UK usually are not. For high-visibility clothing, hassle was sometimes mitigated by multi-purpose items such as yellow waterproof jackets. However, many objected to the 'hassle factor' and some interviews implied it was a discouragement to cycle.

'[You're safe] if you've got all the right safety gear on your bikes and everything, reflectors, bells, lights, reflective jackets, helmets, even knee pads and shin pads and whatever, if I have to. *It's not very often I find myself on my bike anyway*.' (Southend, our emphasis)

'I just never fancied wearing [a helmet] and they're inconvenient to carry around, it's another thing to sort of hold onto and carry into the shop.' (Cambridge)

'[The] faff of getting [the bike through the house] and her helmet on with a stroppy teenager, it's easier to go in the car.' (Hackney)

'I honestly think if I had to wear a cycle helmet, I wouldn't be cycling as much as I do, because it makes it so inconvenient and messes your hair up.' (Cambridge)

People argued that cycling needed to be easy:

'It has to be something I can hop on the bike, I have my bike in the hallway you know, like I, it's, it has to be really very so, you know, last night popping out to the shops like my mum with the car, "Oh, I'll take the bike", you know.' (Hackney)

Two interviewees (the second a local authority stakeholder) compared cycling with car use, implying that the normalisation of *car use* has required the reduction of its 'hassle factor'.

'You got to deal with batteries and lights. And you got the security, you've got to have the locks all organised. And then you've got to have all your wet weather gear organised and helmets and things. […] It's not just going in and turning the key.' (Cambridge)

'[Our] feeling is that having a lot of helmet and a lot of specialist equipment which, maybe bike shops make a big margin on, is not the best way to encourage people to cycle. A bit like if you were told that you had to wear a crash helmet and driving gloves every time you got into a car.' (Bristol)

These final two quotes suggest more research could be carried out on this topic, going beyond the safety focus here and exploring 'hassle' related to different aspects of travel by different modes.

Co-accumulation?

Some people who did begin acquiring safety-related items referred to the co-accumulation of multiple safety items. This suggests the potential operation of a dynamic whereby the expected level of safety gear continues to increase. If one function of safety gear is, as suggested above, a visual demonstration that a cyclist is not a risk-taker, then it might not be surprising that once an item (e.g. helmets) becomes widespread, other items take its place as signalling one's distance from the 'typical' dangerous cyclist (c.f. Aldred 2013).

'I used to wear one of these fluorescent bands but I now have one of those jackets [...] and then I have cycle clips which go around these trousers and they are fluorescent yellow as well so they are good. In spring time I have yellow fluorescent woollen gloves [...] it takes ten minutes to get togged up especially if it's raining, if it's raining it's the waterproof kit, the waterproof jacket and the waterproof trousers and the gaiters that go on [...] and by the time you do all of that it's quite a mission really.' (Bristol)

'I have a bright green [fleece], a bright yellow one and a bright pink one so they're visible. A lot of high vis gear, so my raincoat is the orange one, the Karrimor orange, which is supposed to be the most visible colour. And then I've got a load of the snap bands […] I use those as reflectors on the bike and also great round your wrists for indicating left and right. Helmet always, unless I forget it, but generally speaking… And high vis jacket always, a waistcoat type.' (Hackney)

A minority talked of trade-offs, for example, saying high-visibility clothing meant they did not need to wear a helmet, or that their cycling skill protects them. However there were substantially more references to co-accumulation than to trade-offs. While 'co-accumulation' remains a hypothesis here – one could equally interpret this data as showing a substantial minority of participants using very high levels of safety stuff – we think it would warrant further investigation.

Freedom

If 'hassle' was problematic, 'freedom' seemed important and associated with not wearing a helmet, with 'the wind in your hair' a key image. Research has found freedom a key perceived benefit of cycling (Leonard et al 2012, Lentig 2014). Importantly this meaning is common to both bikes and *cars*, from which policy seeks to shift trips (Urry 2004).

'[Wearing a helmet is] more or less instinctive like a seat belt but the other day for some reason just set off without it. Erm. And it was absolutely lovely just to sort of roll along (laughs) with my hair blowing in the wind!' (Cambridge)

'No high vis, no helmet, no nothing, no. I know it's crazy but I just don't want to do it, I want to… I'd cycle naked if they let me, 'cause just the sense of freedom.' (Hackney)

'[Cycling] encompasses hard work and it encompasses the freedom of, of being out on the tops and, and the danger of... going down hills at very high speed without a helmet or any protection (laughs)' (Hull)

Conclusion: non-safety meanings of safety equipment

We found some tentative support for the thesis that pressure to accumulate 'stuff' (and the concomitant association with a loss of freedom) might itself be a barrier to cycling. There was some indication that processes of co-accumulation might be operating; waistcoats, fleeces, bicycle accessories, cycle clips, helmet lights and other items were seen as increasingly necessary – and burdensome – by some interviewees; many commenting that they wanted cycling to be easy and not require substantial preparation. Fishman et al's (2012) argument that accessibility and spontaneity are important for the success of cycle hire may thus also apply to cycling more generally.

Social influence and social observation

Finally, we discuss the impact of social influence and social observation, crucial in shaping decisions about safety gear and to some extent deconstructing the distinction between promotion and compulsion. Children were frequently told not to cycle without a helmet, while adults experienced ridicule and moral pressure. As discussed above, many cyclists were not entirely convinced of the effectiveness of safety gear. Hence social pressure played an important role in shaping decisions about whether to use helmets and high-visibility clothing.

Helmet pressure: colleagues, friends, family

Colleagues, friends and family members were all mentioned as encouraging helmet wearing (or the interviewee encouraged such others). Sometimes, this involved giving someone a helmet, but more usually, it meant persuasion:

'I had a friend at work who cycled and he just said, you know, "Get a helmet" so I did.' (Bristol)

'[My] husband gave me one for Christmas.' (Cambridge)

'[One] of the chaps at work, young chaps at work said my daughters would be horrified if they saw you on a bike without a helmet, you are very silly.' (Colchester)

Helmet pressure: parents and children

Parent-child peer pressure was by far the most commonly mentioned, well ahead of acquaintances, observed people, partners, friends and colleagues. While extending to some extent into adulthood, most references related to younger children. There was a dual dynamic, especially in Cambridge where adult helmet-wearing is relatively less usual.. Firstly, a parent felt pressure to insist their children should wear helmets, even though many children resist this. Secondly, where the parent did not always wear a helmet, s/he feared this would reduce the legitimacy of the first argument.

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'I do put a helmet on my daughter when I put her on the bike, purely also because I kind of feel people make you feel really guilty, you get these really criticising looks.' (Hackney)

'I've got a cycle helmet, I never used to but, you know, with a son now on a bike who you insist he wears a cycle helmet what, you know, he's very much "well why are you not wearing one?" So I think I got one this Christmas.' (Cambridge)

'Since having [my daughter] I've become more aware that I should wear my helmet more and I've been wearing it this week, since I've started work again.' (Cambridge)

Helmets and injury collisions

We discussed above how injury collisions (or incidents) impact use of safety gear by directly lowering perceptions of safety. Experiencing an incident was also associated with pressure from peers and/or medical staff:

'I fell off and got told off at the hospital.' (Cambridge)

'I cycled straight into a pot hole, the bike stopped, I kept on going and so I broke my finger […] then I thought it might be a, a helmet would be a good idea or my colleagues thought I should get a helmet so.' (Cambridge)

In one case this acted in the opposite direction:

'[The] two guys in the ambulance said they never wore a helmet in their cycling, and I thought, "Well, there's two ambulance men and they don't wear helmets," so I was, "Well why would I wear one?".' (Cambridge)

Resisting pressure: helmets

Many spoke of resistance to helmet pressure:

'I sort of occasionally have a go at [friends] and try and play a guilt trip about them dying on me, but it doesn't seem to work.' (Hackney)

'And of course everyone said, "Oh, you should wear a helmet!" I was like, "I don't really see how a helmet's gonna help me," because I sort of fell on my back.' (Cambridge)

Resistance was often associated with satirising the accumulation of ever more 'cycling stuff'. This was linked to views of safety clothing as uncool. While people felt embarrassed about admitting to this as a motivating factor, concern about being seen as unfashionable or unattractive seemed fairly common and potentially off-putting:

'It's not so much I don't like cycling as the fact that I don't like wearing a helmet and if I don't like wearing a helmet I won't bike so that's, it's a complete vanity issue basically.' (Cambridge)

'Invested in a helmet which people think I look funny in again, because I've got, I've got quite a big head, so with a helmet on top of that it's like, it's ridiculous.' (Hull)

'[Colleagues] would just laugh at me because I've got all my gear on and my helmet.' (Shrewsbury)

By contrast, where safety gear is widely worn, an acceptance of cycling among peers could help mitigate off-putting impacts of 'geeking up':

'I walk through the office [in] my little cycling leggings and my helmet on and all my high vis gear and stuff. I don't feel too stupid because everybody's turning in, whereas, yeah, I think if I worked at a company where everybody was very, you know, smart looking and all sort of, you know.' (Bristol)

Social influence - High-visibility clothing

For high-visibility clothing, the predominance of parent-child influence was again clear. In many cases, but not all, this related to under-sixteens.

People spoke of resistance and trying to limit their own use of high-visibility clothing. This was often discussed in relation to arguments about when it was or was not appropriate to wear such clothing:

'I've always worn one of these er… fluorescent belt and halter type things [...] High visibility sort of waistcoats and things weren't sort of available then, which they are now. Erm… I certainly could have one of those, but I don't. [...] Well, it's just another thing (laughs). Er… and actually, I think during the day it looks a little bit ridiculous. I've got, one of my friends always wears bright, bright yellow at any time of the day. I sometimes think it's so overdoing it.' (Cambridge)

'[There's] definitely a bit of pressure from some people, you know, to wear safety equipment as it were and, you know, that you're, you know, a bad, a bad cyclist if you're not doing that, and I find that a bit irritating.' (Bristol)

Social observation and helmet wearing

Influence was not only described as direct peer pressure. Participants reflected on being influenced by what they saw others do; including individuals (whether known or not), or more general perceptions of what people locally wear.

'I got a helmet from the start, actually. It was never really, although I, you know, all the time I've been cycling recreationally, I've never really thought about a helmet but it was just, I think it's that conditioning. I'd seen people cycling with helmets.' (Bristol)

'[Less] than half the people I think wear helmets, so... I don't feel like I'm the only one. I think if everyone was wearing one I'd think, "Oh, I'll wear it,".' (Cambridge)

People said that this led to or reinforced different rates of helmet wearing in different contexts:

'[I wear a helmet] Pretty much most of the time in London. Less so when I come up here. Perhaps because most people don't seem to up here.' (Cambridge)

Danger Gear

While not the focus here, cyclists experience stigma not associated with other transport modes (DfT 2010), associated with an individualisation of risk. In parallel with 'safety gear' a range of items become defined as 'danger gear', associated with culpability. For example:

'[Cyclists] are shocking, their road sense is zero and they're clearly not drivers, because I'm sure they wouldn't do what they do if they were actually driving a car, and I mean the big one of course is driving, cycling in the dark, in dark clothes on a dark tarmac surface on a dark bike on a dark night, and then they're surprised when they get knocked off.' (Cambridge)

'[You] see idiotic cyclists riding round in the middle of the night, no lights, black clothes, weaving in and out, hopping up and down. You're just like, "You're just, you are asking to be knocked off, really".' (Bristol)

'I see a lot of people wearing black clothes at night and sometimes if I'm driving I'll be like, I almost ran you over there, and they're not wearing a helmet either.' (Chester)

Such comments, made from the point of view of a driver, express the view that cyclists are to blame for injuries if they avoid 'safety gear' or wear 'danger gear'.

Conclusion: social influence and social observation

Themes around social influence (predominantly pressure to wear safety clothing) were found across interview and city contexts. Cycling and 'being a cyclist' are constructed through social influence and social observation, and mentions of both were prominent. Primarily drawing on safety concerns, people nag, ridicule, mandate and guilt trip children, parents, friends, colleagues, and acquaintances. This is not always effective. People resist pressure (and in some cases exert anti-safety clothing pressure on others) by drawing on beliefs that carrying 'stuff' is a hassle, cycling gear looks unattractive, it is uncomfortable and it makes cycling less free.

What people see around them shapes their response to peer pressure. Levels of safety gear usage have become high in some contexts, such as among commuters to Central London: Goodman et al (2014) found two-thirds of own-bicycle cyclists wore a helmet, and one in three high-visibility clothing, even during daylight hours in April. By contrast, Cambridge interviewees often reported that people in Cambridge were relatively unlikely to wear safety clothing. This is in the English context: such items are still far more common than in high-cycling contexts such as the Netherlands (Pucher and Buehler 2008). However in Cambridge, the lower level of helmet wearing in the broader population encourages some people to resist helmet pressure from peers.

Peer pressure seems to affect adults more if children, who experience higher levels of helmet pressure, are involved. A key site of reported peer pressure in all locations referred to parental influence upon children, which exerts pressure on both child and parent.

Although in many areas of life parents maintain different rules for adults and children, the existence of pressure on adults to wear helmets makes such a separation harder here. This was particularly noticeable in Cambridge where parents of young children often reflected upon the increased pressure they felt to wear helmets.

Discussion

Country comparisons show that where cycling is less safe, people make greater use of safety clothing. In our research a link is drawn at individual level: people say that where there is a high perceived risk of being injured by motor vehicles, they are more likely to wear safety clothing. Such a relationship would mean that surveys seeking to separate the extent to which people are put off cycling by (a) lack of safety and (b) the need to wear a helmet (see Carroll et al 2014) may underestimate the impact of safety clothing on uptake.

More research is needed, but we note causation might work the other way round: being encouraged to wear safety clothing could make people feel cycling is less safe. Given that absolute risks are very hard to estimate widespread use of safety equipment could be seen as providing an environmental cue as to the level of danger. This concern seems to have influenced promotional campaigns in London and Bristol, two prominent cities where cycling has increased following investment (Goodman et al 2013). While in both contexts many cyclists *do* currently wear safety clothing, those who design marketing campaigns have decided to make relatively limited use of safety clothing and even imply that it is not needed. For example, at the time of writing Transport for London's (TfL's) bicycle sharing scheme uses the slogan "Required: Bank Card. Not Required: Anything Else".

Our findings imply a need to broaden the disciplinary borders of debates about cycle safety. Within some policy and academic literature, cyclist visibility is seen as an objective fact based on factors including clothing, distance and weather conditions ('physical conspicuity'). Yet psychological research has demonstrated the phenomenon of 'attention conspicuity'. If an observer does not expect to see something, it is invisible. This perhaps implies that if road safety material stresses cyclists are 'invisible', they might *become* more unexpected.

The impact of this is likely to depend on broader social attitudes towards cyclists. Where cyclists are viewed positively, stressing 'invisibility' might encourage drivers to look more carefully and thus *increase* attention conspicuity. However, research suggests that in the UK cyclists remains stigmatised and stereotyped (Aldred 2013, DfT 2010, Horton 2007). Our data depicts a context where cyclists are expected to have high (potentially rising) levels of 'stuff' with some hostility against those perceived as 'failing'. In such contexts, encouraging the view that cyclists are 'invisible' may be much more problematic, and associated with blaming those 'invisible' cyclists who use 'danger gear' such as dark clothing and music players (Jungnickel and Aldred 2014). As Guell et al (2013) notes, alternative strategies aimed at individuals (such as helping them to find safer routes) can learn from what people are already doing to enhance their cycling experience and may be less denormalising than encouraging or compelling people to use safety clothing.

Research needs to take more account of the social and psychological dimensions of 'safety' and 'visibility'. Kwan and Mapstone's (2009) Cochrane review did not identify any research showing impacts of conspicuity aids on cyclist or pedestrian injuries. They did however include studies measuring individual perception of fluorescent and non-fluorescent coloured *targets*. The relevance of such evidence to real world injury prevention is in our view questionable. We need to be more critical about visibility and risk, given evidence from this and other research (e.g. Wood et al 2009) that people find safety clothing off-putting. Research could usefully explore whether motorists' ability to see cyclists differs in low-cycling countries such as the UK from countries such as the Netherlands, where cycling environments are safer and cyclists less stigmatised.

Our data shows people associate the wearing of safety clothing with situations in which they are exposed to danger from motor vehicles. However, we found scepticism about the reality of these safety benefits, combined with other negative perceptions towards PPE. This could act as a barrier to uptake, due to the 'hassle' factor and potentially negative images of cycling where high levels of safety stuff are present. For example, PPE is seen as reducing the freedom otherwise associated with cycling, potentially making it less attractive when compared with driving (also associated with freedom). Hence attempting to normalise helmet use may risk further de-normalising cycling. Finally, the data suggests that those subjectively safer environments that encourage uptake of cycling are also likely to lead to less wearing of safety gear. Therefore, the paper has implications for policy and whether the promotion of safety clothing might be difficult to align with a desired trajectory from low-cycling to safer, higher-cycling environments.

Debates about cycle helmets remain contested and this is likely to continue. This paper has not discussed the medical evidence about cycle helmets. However, from a social science perspective, we have shown reason for caution about mandating or even promoting cycle helmet use. In contexts where cyclists face avoidably high injury risks, marginalisation, and stigma, helmet promotion may conflict with goals of making cycling safer, more widespread, and more diverse. Instead, it may reinforce the tendency to seek individual solutions to the social problem of road danger, thereby further marginalising cycling and keeping uptake low (see Aldred 2013a).

Bibliography

Adams, J. and Hillman, M. (2001) The risk compensation theory and bicycle helmets, Injury Prevention 7, pp.89-91

Aldred, R. (2012) Governing transport from welfare state to hollow state: The case of cycling in the UK, Transport Policy 23, 95-102

Aldred, R. (2013) Incompetent or Too Competent? Negotiating Everyday Cycling Identities in a Motor Dominated Society, Mobilities 8(2), pp. 252-271

Aldred, R. (2013a) Who are Londoners on Bikes and what do they want? Negotiating identity and issue definition in a 'pop-up' cycle campaign, Journal of Transport Geography, Volume 30, June 2013, Pages 194–201

Aldred, R. (2014) A Matter of Utility? Rationalising Cycling, Cycling Rationalities, Mobilities DOI: 10.1080/17450101.2014.935149

Aldred, R. and Jungnickel, K. (2014) Why culture matters for transport policy: the case of cycling in the UK. Journal of Transport Geography 34, pp. 78–87

Carroll, J., Kinnear, N., Helman, S., Hynd, D. and Cuerden, R. (2014) Jersey Scrutiny review: Compulsory wearing of cycle helmets. Wokingham: Transport Research Laboratory.

Daley, M. and Rissel, C. (2011) Perspectives and images of cycling as a barrier or facilitator of cycling, Transport Policy 18(1), pp. 211–216

DfT (2010) Cycling, safety and sharing the road. London: DfT.

Douglas, M. (1992) Risk and Blame: Essays in Cultural Theory. London: Routledge.

Fishman, E., Washington, S. and Haworth, N. (2012) Barriers and facilitators to public bicycle scheme use: a qualitative approach. Transportation Research Part F: Traffic Psychology and Behaviour, 15: 686–698

Goldacre, B. and Spiegelhalter, D. (2013) Bicycle helmets and the law. BMJ 346:f381, doi: http://dx.doi.org/10.1136/bmj.f3817 (Published 12 June 2013)

Goodman, A., Panter, J., Sharp, S.J. and Ogilvie, D. (2013) Effectiveness and equity impacts of town-wide cycling initiatives in England: A longitudinal, controlled natural experimental study, Social Science & Medicine 97, pp.228-237

Gregson, N., Metcalfe, A. and Crewe, L. (2007) Identity, mobility, and the throwaway society, Environment and Planning D: Society and Space 2007, 25: 682-700

Guell, C., Panter, J., Jones, N.R. and Ogilvie, D. (2012) Towards a differentiated understanding of active travel behaviour: Using social theory to explore everyday commuting, Social Science & Medicine 75, pp. 233-239

Guell, C., Panter, J. and Ogilvie, D. (2013) Walking and cycling to work despite reporting an unsupportive environment: insights from a mixed-method exploration of counterintuitive findings, BMC Public Health 2013, 13:497, http://www.biomedcentral.com/1471-2458/13/497

Hagel, B.E. and Pless, B.I (2006) A critical examination of arguments against bicycle helmet use and legislation, Accident Analysis & Prevention 38(2), pp. 277–278

Horton, D. (2007) Fear of Cycling, in Horton, D., Rosen, P. and Cox, P. Cycling and Society, Aldershot: Ashgate, pp.133-152

Jacobsen, P.L. (2003) Safety in numbers: more walkers and bicyclists, safer walking and bicycling, Injury Prevention 9:205-209 doi:10.1136/ip.9.3.205

Jungnickel, K. and Aldred, R. (2014) Cycling's Sensory Strategies: How Cyclists Mediate their Exposure to the Urban Environment, Mobilities

Kwan, I. and Mapstone, J. (2004) Visibility aids for pedestrians and cyclists: a systematic review of randomised controlled trials, Accident Analysis and Prevention 36, pp. 305–312

Kwan, I. and Mapstone, J. (2009) Interventions for increasing pedestrian and cyclist visibility for the prevention of death and injuries, Cochrane Review.

Lentig, H. (2014) Comparison of intrinsic motivations for cycling: Thesis research. University of Chester/NHL Hogeschool. Leeuwarden.

Leonard, S., Spotswood, F. and Tapp, A. (2012) Overcoming the self-image incongruency of non-cyclists, Journal of Social Marketing, 2(1), pp.23 – 36

Miller, P. (2014) The Use Of Conspicuity Aids By Cyclists And The Risk Of Crashes Involving Other Road Users: A Population Based Case-Control Study. PhD Thesis: University of Nottingham.

Office for National Statistics (2014) 2011 Census Analysis - Cycling to Work. London: ONS.

Owen R, Kendrick D, Mulvaney C, Coleman T and Royal S. (2011) Non-legislative interventions for the promotion of cycle helmet wearing by children. Cochrane Database of Systematic Reviews, Issue 11. Art. No.: CD003985. DOI: 10.1002/14651858.CD003985.pub3

Pooley, C. et al (2013) Policies for promoting walking and cycling in England: A view from the street, Transport Policy, 27, 66–72

Pucher, J. and Buehler, R. (2008) 'Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany', Transport Reviews, 28:4, 495-528

Rabl, A and Nazelle, A (2012) Benefits of shift from car to active transport, Transport Policy

Volume 19, Issue 1, January 2012, Pages 121–131

Rojas-Rueda, D., Nazelle, A., Tainio, M. and Nieuwenhuijsen, M.J. (2011) The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study, BMJ 343: d4521.

Seale, C. (2011) Secondary Analysis of Qualitative Data. In Silverman, D. Qualitative Data Analysis: Third Edition, London: Sage.

Sherwin, H., Chatterjee, K. and Jain, J. (2014) An exploration of the importance of social influence in the decision to start bicycling in England, Transportation Research Part A: Policy and Practice 68: 32–45

Steinbach, R., Green, J., Datta, J. and Edwards, P. (2011) Cycling and the city: A case study of how gendered, ethnic and class identities can shape healthy transport choices, Social Science & Medicine 72, pp. 1123-1130

Teschke, K. (2012) Bicycling injuries, helmets, & helmet legislation, Prepared as expert testimony for a Provincial Traffic Court case: Regina vs. Van Der Eerde, available at http://cyclingincities.spph.ubc.ca/files/2011/10/HelmetsReport2012.pdf

Tin Tin, S., Woodward, A. and Ameratunga, S. (2014) The role of conspicuity in preventing bicycle crashes involving a motor vehicle, European Journal of Public Health Advance Access published July 31, 2014

Urry, J. (2004) The 'System' of Automobility, Theory, Culture and Society 21, pp.25-39

Walker, I. (2007). Drivers overtaking bicyclists: Objective data on the effects of riding position, helmet use, vehicle type and apparent gender. Accident Analysis and Prevention, 39, 417-425.

Walker, I., Garrard, I. and Jowitt, F. (2014) The influence of a bicycle commuter's appearance on drivers' overtaking proximities: An on-road test of bicyclist stereotypes, high-visibility clothing and safety aids in the United Kingdom, Accident Analysis & Prevention, 64, pp. 69-77

Wood, J.M., Lacherez, P.F., Marzalek, R.P and King, M.J. (2009) Drivers' and cyclists' experiences of sharing the road: Incidents, attitudes and perceptions of visibility, Accident Analysis & Prevention 41(4) pp. 772-776

Woodcock J, Givoni M, Morgan A. Woodcock J, Givoni M, Morgan AS. Health Impact Modelling of Active Travel Visions for England and Wales Using an Integrated Transport and Health Impact Modelling Tool (ITHIM). PLoS One. 2013;8(1):e51462. 10.1371/journal.pone.0051462

Woodcock J, Tainio M, Cheshire J, O'Brien O, Goodman A. Health effects of the London bicycle sharing system: health impact modelling study. BMJ 2014;348:g425 doi: 10.1136/bmj.g425

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Appendix: the three datasets

Commuting and Health in Cambridge

This is a study led by the MRC Centre for Diet and Activity Research (CEDAR) and funded by the National Institute for Health Research Public Health Research Programme: http://www.phr.nihr.ac.uk/funded_projects/09_3001_06.asp.

The Principal Investigator is Dr. David Ogilvie. Details of this study are available at http://www.cedar.iph.cam.ac.uk/research/directory/cahic/

The study is multi-method involving the collection of diverse forms of both qualitative and quantitative data. This paper includes data from (a) intercept interviews with busway users and (b) participants in different waves of a longitudinal qualitative interview survey with Cambridge residents, sampled from the larger quantitative study (> 1000 participants) who had been recruited via employers. To be eligible for the study participants had to be over 16 years of age and travel to work in Cambridge from within a radius of approximately 30 km. Participants in the qualitative survey were purposively sampled with interviews designed to explore diverse practices and experiences of men and women, people in different age groups, people with and without access to a car, and people living in different areas.

Further Reading

Adams, E. J., Goodman, A., Sahlqvist, S., Bull, F. C., & Ogilvie, D. (2013). Correlates of walking and cycling for transport and recreation: factor structure, reliability and behavioural associations of the perceptions of the environment in the neighbourhood scale (PENS). *The International Journal of Behavioral Nutrition and Physical Activity*, *10*, 87. doi:10.1186/1479-5868-10-87

Carse, A., Goodman, A., Mackett, R. L., Panter, J., & Ogilvie, D. (2013). The factors influencing car use in a cycle-friendly city: The case of Cambridge. *Journal of Transport Geography*, *28*, 67–74. doi:10.1016/j.jtrangeo.2012.10.013

Dalton, A., Jones, A., Panter, J., & Ogilvie, D. (2014). Are GIS-modelled routes a useful proxy for the actual routes followed by commuters? *Journal of Transport & Health*. Retrieved from http://www.sciencedirect.com/science/article/pii/S2214140514000851

Dalton, A. M., Jones, A. P., Panter, J. R., & Ogilvie, D. (2013). Neighbourhood, Route and Workplace-Related Environmental Characteristics Predict Adults' Mode of Travel to Work. *PLoS ONE*, *8*. doi:10.1371/journal.pone.0067575

Goodman, A., Guell, C., Panter, J., Jones, N. R., & Ogilvie, D. (2012). Healthy travel and the socio-economic structure of car commuting in Cambridge, UK: A mixed-methods analysis. *Social Science and Medicine*, *74*, 1929–1938. doi:10.1016/j.socscimed.2012.01.042

Guell, C., & Ogilvie, D. (2013). Picturing commuting: photovoice and seeking wellbeing in everyday travel. *Qualitative Research*. doi:10.1177/1468794112468472

Guell, C., Panter, J., Jones, N. R., & Ogilvie, D. (2012). Towards a differentiated understanding of active travel behaviour: Using social theory to explore everyday commuting. *Social Science and Medicine*, *75*, 233–239. doi:10.1016/j.socscimed.2012.01.038

Guell, C., Panter, J., & Ogilvie, D. (2013). Walking and cycling to work despite reporting an unsupportive environment: insights from a mixed-method exploration of counterintuitive findings. *BMC Public Health*, *13*, 497. doi:10.1186/1471-2458-13-497

Heinen, E., Panter, J., Dalton, A., Jones, A., & Ogilvie, D. (2014). Sociospatial patterning of the use of new transport infrastructure: Walking, cycling and bus travel on the Cambridgeshire guided busway. *Journal of Transport & Health*. doi:10.1016/j.jth.2014.10.006

Humphreys, D. K., Goodman, A., & Ogilvie, D. (2013). Associations between active commuting and physical and mental wellbeing. *Preventive Medicine*, *57*, 135–139. doi:10.1016/j.ypmed.2013.04.008

Jones, C. H. D., Cohn, S., & Ogilvie, D. (2013). Making Sense of a New Transport System: An Ethnographic Study of the Cambridgeshire Guided Busway. *PLoS ONE*, *8*. doi:10.1371/journal.pone.0069254

Jones, C. H., & Ogilvie, D. (2012). Motivations for active commuting: a qualitative investigation of the period of home or work relocation. *Int J Behav Nutr Phys Act*. doi:10.1186/1479-5868-9-109

Kesten, J. M., Cohn, S., & Ogilvie, D. (2014). The contribution of media analysis to the evaluation of environmental interventions: the commuting and health in Cambridge study. *BMC Public Health*, *14*, 482. doi:10.1186/1471-2458-14-482

Ogilvie, D., Bull, F., Cooper, a, Rutter, H., Adams, E., Brand, C., … Song, Y. (2012). Evaluating the travel, physical activity and carbon impacts of a “natural experiment” in the provision of new walking and cycling infrastructure: methods for the core module of the iConnect study. *BMJ Open*. doi:10.1136/bmjopen-2011-000694

Panter, J., Costa, S., & Dalton, A. (2014). Development of methods to objectively identify time spent using active and motorised modes of travel to work: how do self-reported measures compare? *International Journal of …*. Retrieved from http://www.biomedcentral.com/content/pdf/s12966-014-0116-x.pdf

Panter, J., Dalton, A., Griffin, S., & Ogilvie, D. (2013). OP48 Determinants of Active Commuting: Longitudinal Results from the Commuting and Health in Cambridge Study. *Journal of Epidemiology and …*. Retrieved from http://jech.bmj.com/content/67/Suppl_1/A24.1.short

Panter, J., Desousa, C., & Ogilvie, D. (2013). Incorporating walking or cycling into car journeys to and from work: The role of individual, workplace and environmental characteristics. *Preventive Medicine*, *56*, 211–217. doi:10.1016/j.ypmed.2013.01.014

Panter, J., Griffin, S., Dalton, A. M., & Ogilvie, D. (2013). Patterns and predictors of changes in active commuting over 12 months. *Preventive Medicine*, *57*, 776–784. doi:10.1016/j.ypmed.2013.07.020

Panter, J., Griffin, S., Jones, a, Mackett, R., & Ogilvie, D. (2011). Correlates of time spent walking and cycling to and from work: baseline results from the commuting and health in Cambridge study. *Int J Behav Nutr Phys …*. doi:10.1186/1479-5868-8-124

Panter, J., Griffin, S., & Ogilvie, D. (2012). Correlates of reported and recorded time spent in physical activity in working adults: Results from the commuting and health in Cambridge study. *PLoS One*, *7*.

Panter, J., Griffin, S., & Ogilvie, D. (2014). Active commuting and perceptions of the route environment: A longitudinal analysis. *Preventive Medicine*. doi:10.1016/j.ypmed.2014.06.033

Panter, J. R., Jones, A. P., Van Sluijs, E. M. F., Griffin, S. J., & Wareham, N. J. (2011). Environmental and psychological correlates of older adult's active commuting. *Medicine and Science in Sports and Exercise*, *43*, 1235–1243. doi:10.1249/MSS.0b013e3182078532

Tully, M. a., Panter, J., & Ogilvie, D. (2014). Individual characteristics associated with mismatches between self-reported and accelerometer-measured physical activity. *PLoS ONE*, *9*. doi:10.1371/journal.pone.0099636

Yang, L., Griffin, S., Chapman, C., & Ogilvie, D. (2012). The feasibility of rapid baseline objective physical activity measurement in a natural experimental study of a commuting population. *BMC Public Health*. doi:10.1186/1471-2458-12-841

Yang, L., Panter, J., Griffin, S. J., & Ogilvie, D. (2012). Associations between active commuting and physical activity in working adults: Cross-sectional results from the Commuting and Health in Cambridge study. *Preventive Medicine*, *55*, 453–457. doi:10.1016/j.ypmed.2012.08.019

Yang, X., Telama, R., Hirvensalo, M., Tammelin, T., Viikari, J. S. a, & Raitakari, O. T. (2014). Active commuting from youth to adulthood and as a predictor of physical activity in early midlife: The Young Finns Study. *Preventive Medicine*, *59*, 5–11. doi:10.1016/j.ypmed.2013.10.019

Cycling City and Towns: Qualitative Data

Between October 2008 and March 2011, the UK Department for Transport and Department of Health invested over £43m (plus local match funding) to create the Cycling City and Towns (CCTs). The Cycling City was Greater Bristol and the 11 Cycling Towns were Blackpool, Cambridge, Chester, Colchester, Leighton-Linslade, Shrewsbury, Stoke, Southend, Southport, Woking and York. The CCT programme funded initiatives including improvements to cycle routes, cycling training and marketing and promotion.

In the qualitative component of the evaluation, face-to-face interviews collected biographical information on travel behaviour and life-change events during the investment period for 144 research participants and probed the reasons for changes in bicycle use. In each CCT (Cycling City or Town) the target was to recruit five regular cyclists, five occasional

cyclists and two non-cyclists. The sample source for the research was adult respondents from the CCT baseline survey who said they would be willing to take part in further research. Recruitment telephone calls were made to selected survey respondents enabling the final selection of 12 participants in each CCT.

Details of this study and the broader evaluation conducted are available at https://www.gov.uk/government/publications/evaluation-of-the-cycling-city-and-towns-programme

Dr. Kiron Chatterjee led the project.

Further Reading

Chatterjee, K., Sherwin, H., & Jain, J. (2013). Triggers for changes in cycling: The role of life events and modifications to the external environment. *Journal of Transport Geography*, *30*, 183–193. doi:10.1016/j.jtrangeo.2013.02.007

Chatterjee, K., Sherwin, H., Jain, J., Christensen, J., & Marsh, S. (2012). Conceptual Model to Explain Turning Points in Travel Behavior. *Transportation Research Record: Journal of the Transportation Research Board*, *2322*, 82–90. doi:10.3141/2322-09

Sherwin, H., Chatterjee, K. and Jain, J. (2014) An exploration of the importance of social influence in the decision to start bicycling in England. *Transportation Research Part A:Policy and Practice*, 68. pp. 32-45. ISSN 0965-8564

Cycling Cultures

Details of this study are available at http://cyclingcultures.org.uk/ . The study was a multi-method sociological research project that focused on four relatively high-cycling cities in the UK in order to find out why cycling thrives in particular areas. The four fieldsites were Hull, Hackney, Bristol and Cambridge. The Cycling Cultures study was funded by the Economic and Social Research Council under its First Grants Programme. It was based at the University of East London and the Principal Investigator was Dr. Rachel Aldred.

In-depth interviews conducted with people within two groups: firstly people who cycled as part of their everyday lives, mostly involving regular 'utility' trips, and secondly 'stakeholders' identified as important within local cycling cultures. Most of the former were contacted via postcards either given to cyclists at junctions or left on bicycles at popular cycle parking locations. The latter included cycling officers, transport planners or road safety officers, advocates and managers of small businesses. 160 interviews were carried out, three-quarters with 'everyday cyclists' and one-quarter with 'stakeholders'.

Further Reading

Aldred, R. (2010). "On the outside": constructing cycling citizenship. *Social & Cultural Geography*. doi:10.1080/14649360903414593

Aldred, R. (2012a). Cycling cultures: summary of key findings and recommendations. Retrieved from http://westminsterresearch.wmin.ac.uk/11194/

Aldred, R. (2012b). Incompetent or too competent? Negotiating everyday cycling identities in a motor dominated society. *Mobilities*. doi:10.1080/17450101.2012.696342

Aldred, R. (2012c). The role of advocacy and activism in shaping cycling policy and politics. *Parkin, J.(2012), Cycling & Sustainability. Emerald: Bingley.*

Aldred, R. (2013). Who are Londoners on Bikes and what do they want? Negotiating identity and issue definition in a "pop-up" cycle campaign. *Journal of Transport Geography*, *30*. doi:10.1016/j.jtrangeo.2013.01.005

Aldred, R. (2014). A Matter of Utility? Rationalising Cycling, Cycling Rationalities. *Mobilities* published online before assignment to a print issue. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/17450101.2014.935149

Aldred, R., & Jungnickel, K. (2012). Constructing mobile places between "leisure" and "transport": a case study of two group cycle rides. *Sociology* vol. 46 no. 3 523-539 doi:10.1177/0038038511428752

Aldred, R., & Jungnickel, K. (2013). Matter in or out of place? Bicycle parking strategies and their effects on people, practices and places. *Social & Cultural Geography*, *14*, 604–624. doi:http://dx.doi.org/10.1080/14649365.2013.790993

Aldred, R., & Jungnickel, K. (2014). Why culture matters for transport policy: the case of cycling in the UK. *Journal of Transport Geography*, *34*, 78–87. doi:10.1016/j.jtrangeo.2013.11.004

Golbuff, L., & Aldred, R. (2012). Cycling Policy in the UK. *Cyclingcultures.org.uk*. Retrieved from https://www.ciltuk.org.uk/Portals/0/Documents/The Hub/policy/Cycling_policy_in_the_UK_a_historical_and_thematic_overvie.pdf

Jungnickel, K., & Aldred, R. (2014). Cycling's Sensory Strategies: How Cyclists Mediate their Exposure to the Urban Environment. *Mobilities*, *9*, 238–255. doi:10.1080/17450101.2013.796772