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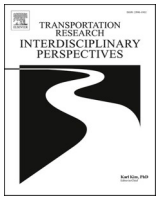

Experiences of car free living: Findings of a trial across four cities in England

Briony Latter [a,b,c], Lilli Waples [g], Stuart Capstick [a,b,c], Wouter Poortinga [a,b,c,d,*], Colin J. Davis [e], Claire Hoolohan [f,g]

[a] Centre for Climate Change and Social Transformations, Cardiff University, Cardiff, United Kingdom
[b] Tyndall Centre for Climate Change Research, Cardiff University, Cardiff, United Kingdom
[c] School of Psychology, Cardiff University, Cardiff, United Kingdom
[d] Welsh School of Architecture, Cardiff University, Cardiff, United Kingdom
[e] School of Psychological Science, University of Bristol, Bristol, United Kingdom
[f] Tyndall Centre for Climate Change Research, University of Manchester, Manchester, United Kingdom
[g] Engineering for Sustainability, University of Manchester, Manchester, United Kingdom

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ABSTRACT

Major changes to how people travel are needed to address climate change, given that transport substantially contributes to global greenhouse gas emissions. Modal shift to low-carbon travel options is a key strategy for reducing emissions in the sector, with private car use particularly challenging given its central position in transport planning and wider culture and society. Trials can help to build an understanding of the practicalities of reducing car use and how people would respond to such a change, as well as contributing to advocacy efforts for lower-carbon transport options. This study focuses on a car free living trial that took place across four cities in England in 2022 (Birmingham, Bristol, Leeds, London). Seventeen in-depth interviews were conducted with ten regular car users from different circumstances who stopped using their car for three weeks, to explore their experiences of living car free. While driving had been habitual for most participants, going car free disrupted their routines and participants' positive experiences raised their capacity to become less reliant on their cars. Family and social networks were important as influences on participants themselves and for changing the attitudes and practices of people close to them. At the same time, a lack of travel infrastructure and services impeded car free travel, with negative experiences reaffirming some people's perceived convenience of car use.

1. Introduction

Transport is a key focus for climate action given its contribution to greenhouse gas emissions. Globally, demand for transport is growing rapidly and needs a large reduction in emissions if it is to meet international climate change commitments (Jaramillo et al., 2022). Transport currently accounts for 26 % of greenhouse gas emissions in the United Kingdom (UK), the largest emitting sector (Department for Transport, 2023a). To meet their carbon reduction commitments, countries such as the UK will need to make rapid and substantial reductions to transport emissions (Department for Transport, 2023a; Sims et al., 2014).

Within the transport sector, cars and taxis account for 52 % of emissions from domestic transport, and private cars make up the majority of licensed vehicles in the UK (Department for Transport, 2023a; Department for Transport and Driver & Vehicle Licensing Agency, 2023). There are distinctions between car ownership and car use, for example, different trials to reduce them and the potential for more mobility practices to change when reducing car ownership (Hess, 2022). However, the ownership/use distinction is complex and often not explored in research (Soza-Parra and Cats, 2024). A key strategy for achieving reductions in transport emissions is to bring about a modal shift from private cars to car-sharing, public transport and 'active travel' (defined as travelling using "sustained physical exertion" such as walking, cycling, skateboarding or manual wheelchair use; Cook et al., 2022, p.151). Additionally, there are clear co-benefits associated with low-carbon forms of travel including better public health and energy security, increased community wellbeing and reduced inequality

* Corresponding author at: Welsh School of Architecture, Cardiff University, Cardiff, United Kingdom.
E-mail address: PoortingaW@cardiff.ac.uk (W. Poortinga).

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(Jennings et al., 2020).

However, there are practical, cultural and psychological obstacles to achieving a modal shift to low-carbon travel. Contemporary society ascribes a high value to mobility, and private cars offer the promise of flexibility to travel where and when they want, whether commuting to work, shopping or travelling for leisure. People use cars for multiple reasons, including cost, habit, convenience, time, safety and cargo (Allen et al., 2023; Burns and Cracknell, 2019). Transport infrastructure and policymaking is often centred around cars, affecting public spaces and people's ability to travel in different ways (Mattioli et al., 2020; Urry, 2006). People's use of cars often becomes habitual (Kurz et al., 2015), and their likelihood of attempting active travel modes may be limited by low levels of self-efficacy (Fishman et al., 2012).

A better understanding of these obstacles—and how they might be overcome—can be achieved by engaging in trials that substantially reduce people's car use. Such trials can cover a wide range of initiatives, such as car sharing, travel planning, workplace parking charges, mobility services (for example, free public transport passes) and gamification, all of which have been shown to reduce car ownership or use in Europe (Kuss and Nicholas, 2022). An app used in Italy awarded users points for traveling more sustainably including by bike and public transport, a concept that could be used in other places where multiple modes of transport are available (ITL, 2018). Examining initiatives like these can offer real-world insights into how changes to mobility affect people's behaviour and perceptions in practice.

The present research considers a novel approach to achieving modal shift based on an initiative developed by the UK charity Possible, which involved recruiting and supporting regular car users from different circumstances who were willing to live without their cars for a period. A series of in-depth interviews were carried out with people who had taken part in this car free trial across four cities in England, with the aim to understand (1) the extent to which the trial impacted participants' travel both during and after the trial and (2) what role this type of trial could play in enabling modal shift away from cars. The aim was to gain in-depth insights from participants about their experiences that could help to inform ways to move towards car free living. Our research contributes to the wider literature on low-carbon mobility trials, particularly those which are short-term, and offers practical insights into people's experiences of car free living.

2. Literature review

A key obstacle to reducing reliance on cars is the extent to which cars are embedded in culture and society. Economies and societies have been shaped around cars for more than 100 years leading to society being "locked in" to using them (Urry, 2008). Car use is now seen as the norm for travel, a phenomenon labelled 'motonormativity' by Walker and colleagues (Walker et al., 2023). The embedded cultural nature of cars is such that, even if car advertising and lobbying were to cease, people's attitudes and behaviours towards car use would likely persist (Mattioli et al. 2020). Car ownership and driving is prioritised in public policy, as shown by the statement of the UK's Secretary of State for Transport that "there's nothing wrong with driving […] it's been one of the most powerful forces for personal freedom and economic growth in the last century […] the car was, is, and will remain a force for good" (Department for Transport, 2023b).

Infrastructure and location are also important factors that impede modal shifting. Where infrastructure is designed for cars, this in turn reinforces car culture and car dependence. For example, roads prioritise and therefore promote cars over other forms of transport (Mattioli et al., 2020, p.12). It is however not only transport infrastructure that determines how people travel. Research has shown that people's living location impacts their behaviour, with the accessibility of destinations determining how far they travel (Ewing and Cervero, 2010). For example, people drive more the further away they live from a city centre (Cao et al., 2010; Döring et al., 2014). Cities are seen as particularly important places to embed low-carbon travel given their large populations (Barr, 2018). People living in urban areas in England also use active travel, buses and trains more often than those living elsewhere (Department for Transport, 2022) and supporting infrastructure in London has been shown to increase active travel (Aldred et al., 2024).

Other factors that affect people's mobility patterns are social norms (Sattlegger and Rau, 2016), social relations (Rau and Sattlegger, 2018), and family history (Döring et al., 2014). Rau and Sattlegger (2018, p.45) describe social relations as "a major connector between the constitutive social and material elements of (mobility) practices", which could include household or family members. Certain types of journeys, such as commuting, shopping and traveling with children, are bound up with particular ways of travelling. Given that urban planning has enabled and promoted living at distance from work, commuting using low-carbon modes of travel can be constrained to short distances between specific locations, with the location and opening times of schools, leisure activities and supermarkets also impacting how people interact with these facilities when commuting (Cass and Faulconbridge, 2016). The growth of out-of-town food shopping means that cars are often relied upon, while making it more challenging for those using active travel or public transport (Watson, 2012). Additionally, cars are often seen as essential for parenting, with cars being considered safe transport and offering flexibility in urgent situations (McLaren, 2018). Cars are seen as comfortable, safe and convenient and as a 'cocoon' offering features beyond the practicalities of simply driving (Waitt and Harada, 2012; Wells and Xenias, 2015).

There are a variety of reasons why people may not own or use a car. A study in California in the United States (US) found that more than two-thirds of households were car-free due to economic or physical factors (termed 'car less') rather than being car-free by choice (Brown, 2017). However, Kent (2022a) describes car less trips for families as a way of reducing car use by using other modes of transport rather than referring to their circumstances. The factors that influence being car-free by choice were also explored in a study of parents in Sydney, Australia, who were able to do so as they had the resources to support this choice, such as services, time and an appropriate built environment (Kent, 2024). Additionally, car-lessness can change throughout people's lives. In Germany, Rau and Matern (2024) found that both sudden events and slower developments can prompt this, but also that certain life phases such as having caring responsibilities can make not owning a car more challenging. Changes in not owning a car were also found in the US, where being car less is temporary for most families and can also fluctuate rather than only being a change that occurs once (Klein and Smart, 2017).

A further obstacle to modal shifts is presented by the barriers encountered by certain groups who may engage with travel and transport in different ways and face specific barriers to doing so. While public transport is often advocated for as a low-carbon mode of travel, it can be less accessible for people with a disability (Prosser et al., 2022). Most people of colour in the UK support public transport investment and use public transport or active travel rather than cars (Ogunbode et al., 2023), though exploratory research with black men who cycle in London found that they face barriers as a result of structural inequalities and discrimination (Osei and Aldred, 2023). There are also gendered impacts, with research showing that women aged 16–34 feel unsafe using public transport alone at night (Office for National Statistics, 2022), and have concerns about safety, convenience and appearance that act as barriers to cycling and walking (Motherwell et al., 2018). Additionally, Motherwell et al. (2018) found that women are more likely to have multiple stops in their travel journeys (called 'trip-chaining') due to childcare, work and household responsibilities. Transport poverty, "an individual's inability to fully participate in social life due to limited means of transport" (Verhorst et al., 2023, p.1), is a major issue in disadvantaged areas of the UK that have less public transport (Salutin, 2023). Transport costs are the single largest expense for rural households (Salutin, 2023). Given the impacts that travel can have on

different groups of people, it is essential that these are considered when moving towards low-carbon travel.

Although all the above factors determine people's travel choices, at some point travel behaviour becomes a matter of habit and established routine (e.g., Gärling et al., 2001; Kurz et al., 2015). Even when infrastructure for active travel has improved, many people may not use it because they do not give much thought to their mode of transport (Dütschke et al., 2022). However, a window of opportunity for breaking habits is offered by initiatives such as car-free days and parking restrictions, or unexpected occurrences such as losing access to a car (Rau and Manton, 2016; Verplanken et al., 2018). Travel disruptions, whether planned (such as roadworks) or not (such as extreme weather impacts or infrastructure damage), also offer opportunities for promoting alternative sustainable travel, but policymakers' and practitioners' current understanding of this is limited (McGuicken et al., 2025). These moments of change can instigate the use of different travel modes, which have the potential to enable experiential learning and shifts in practice. In the language of social learning theory, succeeding in a new behaviour such as cycling to work is a form of 'enactive mastery experience' that helps increase someone's self-efficacy (that is, a sense of one's own ability to carry out a particular task; Bandura, 1977, 1982). Developing self-efficacy may be particularly important for facilitating shifts to active transport, given that there are many people who are motivated to switch to modes such as cycling, but who lack confidence in their own capability to do so (e.g., Fishman et al., 2012).

Practice theory—an understanding of the elements which make up different practices (actions), how these are 'bundled' together and how and why people participate in them—offers a useful and increasingly common way of looking at sustainable travel (Kent, 2022b). It allows for explorations of how both individuals and the structure in which they operate shape travel, but also a focus on detail and everyday realities of people's lives (ibid). One example of how practice theory has been used within travel is through exploring how car sharing and cargo bike sharing relate to other (non-travel) practices, finding that how practices are arranged, interlink and how long they take can influence these different forms of travel (Mock (2023).

Gaps in the literature have previously been identified around an understanding of transport and lifestyles, trial-based research to disrupt travel habits, the involvement of people with disabilities in active travel trials, people's experiences of giving up their cars, and factors that impact changing from car use to public transport (Dütschke et al., 2022; Lagrell et al., 2018; NatCen Social Research, 2020; Roaf et al., 2024; Sims et al., 2014). Some of these concerns are being addressed, with changes to mobility being tested in real world scenarios using trials such as low-traffic neighbourhoods (LTNs) in the UK, which are areas of connected streets where motor traffic is restricted (Aldred et al., 2024). Research shows that more local people support than oppose LTNs, and that they are associated with a decrease in car ownership and use and an increase in active travel (Aldred et al., 2024; Walker, 2024).

There are also international examples of car free initiatives. In Stockholm, Sweden, three families spent a year without a car, instead using light electric vehicles (scooter, bicycle, four-wheeled motorcycle and cargo bike), enabling them to create new habits which otherwise would have been challenging (Hasselqvist and Hesselgren, 2019). Although on a shorter time scale, a trial in Switzerland where people could swap their car for an e-bike for two weeks weakened their habitual car use even a year after taking part (Moser et al., 2018). A car free trial in Finland found that factors that influence participants' routines are both structural and individual, and that this type of experiment may be helpful as a learning tool around positively engaging people with public transport (Laakso, 2017). In England, some light electric vehicles including e-bikes are used but there may be differences in what types are used and how widespread they are compared to the international examples. Nevertheless, Europe in general is highly dependent on cars (Mattioli, 2021) and the examples of car free initiatives, two of which took part in cities, are from central and northern Europe, and therefore these offer relevant insights for exploring car free living in England.

Trials that result in reduced car use—even if only temporarily—can generate new insights into what is needed to enable this and how people would respond to this change. In this project, we worked with Possible (https://www.wearepossible.org), a charity focused on engaging the UK public in climate action, on a trial in which regular car users across four cities in England agreed to try travelling without a car for three weeks.

3. The car free living trial

'Going Car Free' was a challenge organised by the climate action charity Possible as part of their Car Free Cities campaign, which aims to provide local communities with practical grassroots solutions to reduce motorised traffic. The Going Car Free trial took place in January and February 2022 and involved three weeks in which residents from four English cities (Birmingham, Bristol, Leeds and London) volunteered to abstain from using their cars and agreed to try new ways of getting around. All the locations are major cities and are spread across England: Birmingham is located in the West Midlands, Bristol in the south west, Leeds in West Yorkshire in northern England, and London is the capital city of the UK.

Ten participants across the four cities took part in the trial, with a mix of ethnicities and genders, and three people with disabilities (see Table 1). All participants were car drivers, most owned or had access to at least one car, and most had caring and family responsibilities. They were recruited through social and print media and were paid £150 for their involvement. Participants received support from Possible to adapt to life without a car, including cycle training and personal advice on alternative modes of transport for specific purposes.

4. Material and methods

4.1. Data collection

In-depth semi-structured interviews were conducted online at two time points with participants of the car free living trial. The first set of interviews was conducted within two weeks of the trial ending and the second set approximately 12 weeks later to understand participants' reflections and any changes that had happened since the end of the trial. The interviews lasted approximately 30–45 min and were recorded and transcribed. Participants provided informed consent and data collection was approved by the School of Psychology Research Ethics Committee at Cardiff University (EC.21.12.14.6496A).

The interviews asked participants to reflect on their experiences of being involved in the trial and the travel choices they made. The first set of interviews enquired about participants' motivations to participate in the trial, their experiences (both positive and negative) of going car free, and their intentions to reduce their car use in the future. The semi-structured format of the interviews allowed emergent topics to be explored further in the second set of interviews, for example which journeys were difficult or easy, other people's perceptions of them taking part, and what further changes would support them going car free. Participants were asked to reflect on their experiences of the trial' for example, whether anything could have been offered to better support them, how they feel about travel in general and car use in particular after the end of the trial. Finally, they were asked to share advice for others wanting to live car free. The full interview protocols can be found in the Supplementary Material.

4.2. Participants

Participants were contacted by email to invite them to an online interview and were offered £20 per interview. A total of 17 interviews were conducted with ten participants in the trial. Ten participants took part in the first set of interviews and seven in the second set of interviews. Pseudonyms are used to refer to the different participants.

Table 1
Profile of research participants.

City	Age	Gender	Ethnic identity	Disabled	Children	Weekly working hours
Bristol	39	Female	White British	Yes	Yes (school age)	24
London	55	Female	Black Caribbean	Yes	Yes (grown up)	54
Birmingham	40	Male	White British	No	Yes (school age)	48
Birmingham	42	Female	White British	No	Yes (school age)	37.5
Leeds	31	Female	White British	No	Yes (pre-school)	0 (on maternity leave)
Leeds	43	Female	White Other	No	Yes (school age)	27.5
London	35	Female	Middle Eastern	Yes	Yes (school age)	22.5
London	28	Female	Black Other	No	Yes (school age)	27
Bristol	25	Female	White British	No	No	45
Bristol	35	Male	Mixed – white and Black Caribbean	No	Yes (school age)	72

4.3. Analytical approach

Interview transcripts were analysed using thematic analysis (Fugard and Potts, 2019), to understand key themes occurring from the data. The interview transcripts were read in full before commencing analysis to ensure familiarity with the data. After this familiarisation process, complete coding was conducted on each of the transcripts, using QSR NVivo analysis software (QSR International Pty Ltd, 2021) to identify aspects of the data relevant to the research question. We then began to identify initial patterns across the dataset, organising codes into clusters to form initial themes, which were reviewed by the authors. Themes were then defined and named according to their central organising concepts. Themes were developed inductively, followed by deductive coding for the second round of interviews in which codes relating to different scales (such as individual change and wider social structures) and roles (such as parents and gender roles) were applied which relate to the multiple scales and roles that people have in taking climate action (Verfuerth et al., 2024). Findings and themes are synthesised from two independent analyses of interviews at time points 1 and 2. Two researchers led on the analysis, with the data worked through multiple times during this process to create a final series of themes and subthemes in consultation with other researchers.

5. Results

Four key themes emerged from the analysis: (5.1) Driving as a habit and disruption of routine, (5.2) Laying foundations for future modal shift, (5.3) Social norms and interactions, and (5.4) Inhibiting modal shift. These are discussed in turn below.

5.1. Driving as a habit and disruption of routine

The first theme relates to how participants found that driving is largely habitual, and how going car free disrupted their routines and supported them to engage in alternatives. Having purchased a vehicle and it then being available to use, several participants found that their car/van had become a convenient mode of transport even for journeys that could (sometimes more) easily be made by other modes. For example, Olivia explained that although she had not originally planned to use her vehicle for regular journeys, she often did so out of convenience:

> *"We got a van with the purpose of just using it for holidays and trips […] But that didn't happen; we had access to a vehicle, so we used it."*
> – Olivia, Leeds

Some participants stated that prior to the trial they would drive even if walking or using sustainable transport would be easier, for example, driving to destinations that are within walking distance and then struggling to find a parking space. This demonstrates the extent to which driving becomes a habitual behaviour: knowing that they have a car available when they need to travel, these participants stated that they would rarely (if ever) consider whether they could use sustainable transport instead, even where it may be the better option:

> *"There's shops a 10-minute walk away from me and normally, especially over winter, I just got in the habit of using my car. And this has made me realise 'why was I even driving there?'"*
> – Isabella, Bristol

Participants perceived driving as being more comfortable, convenient and safe than public transport. For example, rather than having to spend time planning a journey using public transport (checking train/bus times, traveling to the station/bus stop, changing train/bus along the route, etc.), participants felt that using the car is often more straightforward:

> "*Driving is convenient, you can work with your own time. With public transport, you have to work to their time*" (Adenike, London).

Going Car Free prompted participants to reflect upon the ways in which it disrupted their routines and gave them space to question their perceptions around travel and why they made particular choices: "*It's kind of reset the baseline […] not just a default 'let's hop in the car*" (Jennifer, Leeds). While one participant stated that the trial had not directly changed any of their habits, they felt it reinforced what they wanted to do anyway and pushed them to be more inclined to take public transport and plan ahead to be able to do this. There were also some differences in how participants approached the trial. One person wanted to ensure they could still contribute to a food bank each week, while another saw the trial as a way to change regular activities such as rushing around to socialise with multiple people and instead "*slow down my life*" (Olivia, Leeds). A central but nonetheless surprising reason that people gave for taking part was the opportunity to experiment with their own lifestyles and/or because of a desire to challenge themselves. Participants often suggested that they were motivated by an intention to overcome what they anticipated could be a difficult undertaking, recognising as they did so that this could lead to a valuable learning experience and to change their habits.

> *"When this opportunity came up […] I thought, right, yes, do it because it's cold, you hate the cold, you hate the rain, you hate all of that. So if you can do it in January, February, when it's really horrible, you will be fine."*
> – Kelly, London

Importantly for the people taking part, the trial also came with support and incentives from the charity that set up the project. This meant that participants were actively assisted and encouraged to make a success of the trial, and were not left isolated in trying to do so: "*I wouldn't have known where to start with making the change without the help*" (Kelly, London). Despite the importance of structured support in the trial itself, participants reflected on the means by which people in general might be able to go car free; none of the comments here implied that it would not be possible to do this outside the structure and support of an organised trial. For example, participants suggested ways in which people could change their mindset around car use, such as questioning and unpicking why they are using their car in the first place. At other

times participants offered general encouragement to people who are thinking of going car free, suggesting that they should just "*go for it because it's less hassle than you think*" (Adenike, London).

5.2. Laying foundations for future modal shift

The second theme relates to how participants' positive experiences in the trial increased their self-efficacy and agency in going car free. Almost all participants kept up with some of the changes they made during the trial (such as cycling and using public transport more), with some making further changes (such as buying or planning to buy an electric bike). Two participants reported that they sold their car, with a third in the process of selling their car as a direct result of the trial; while we must be cautious in generalising from a relatively small qualitative study, that three of ten participants arrived at this position is still a striking finding. The experience had given them an opportunity to experience a life without a car or reducing the number of cars in their household.

> *"Doing the trial was good first-hand experience to go, 'You know what? We can do this.' And it's not a massive hardship […] it's actually motivated me to sell the car."*
> – Mark, Birmingham

Several other participants expressed that their experience of giving up their car for the trial had increased their confidence in car free travel, allowing them to explore alternative modes of travel to the point where they will now consider other options before choosing to drive somewhere: "*It's definitely proved to me that it's doable, and it's easy, and it's straightforward*" (Olivia, Leeds). For another participant, they had become more mindful about considering which mode of transport is most appropriate to use for certain activities, rather than relying upon the car as the default, stating that the trial "*shook everything up a little bit*" (Claire, Bristol).

Most participants spoke about the ways in which the trial changed how they think about different modes of travel, including questioning the dominant status of cars. One participant mentioned that the trial had given them a first-hand experience that was valuable in raising their awareness and changed their understanding of different road users' perspectives. Two people spoke about reflecting on their own (self-described) sense of entitlement beforehand as car drivers and contrasting this with an alternative, less pressured lifestyle. Another participant referred to cars being marketed as an attractive form of transport and having been *"sold the dream"* of car ownership; this they contrasted with a more recent outlook arising during the trial, wherein they were still able to live their life well and be happy without being reliant on the car.

> *"The car's always there and it's really nice, it's comfy, it's got heated seats […] I was just sold the dream and I kind of bought it […] but, really, I didn't need it, I don't need it. I mean, I'm happy. I'm still going to work. I'm still getting on with my life."*
> – Kelly, London

However, people's experiences of different modes of travel varied. It is notable that most of these reported mastery experiences, where the actions people take increase their confidence, related to walking, cycling or using electric scooters. For example, Claire (Bristol) spoke about feeling more confident using e-bikes and scooters (*"I hadn't really tried them before […] they've become a lot more part of my travel options"*) and Adenike (London) had never commuted by bike yet found the experience "*much better than I thought*". Participants' experiences of public transport, such as buses and trains, were more varied – perhaps because these often depend on external factors such as delays and cancellations. For example, Beth and Claire's negative experiences were enough to prevent them from wanting to use public transport in the future.

> *"We found buses were really irregular […] sometimes it's just not even worth catching the buses. And then we also decided to try and do a day trip on trains [but] we had a massive issue with the fact that they cancelled all the trains."*
> – Beth, Birmingham

Participants' positive experiences in the trial also related to slowing down and spending time differently which enhanced their intentions to decrease their reliance on driving. These included: physical and mental health benefits from getting more exercise, spending more quality time with their children by cycling together, and spending more time in nature and away from polluted air.

5.3. Social norms and interactions

The third theme covers how participants experienced the influence of social norms and expectations upon them, both before and during the trial, as well as the ways in which their participation in the trial affected the perspectives and practices of those in their wider social networks.

Social norms around travel were spoken about by all participants. In some cases, this related to recognition of descriptive social norms—what people can see represented as being 'normal' and commonplace in everyday life—such as noticing that certain types of travel are becoming more popular. For example, when reflecting on her experiences since taking part in the trial, Claire (Bristol) noted that *"a scooter or a e-bike is becoming a little bit more of a default*" and said she was slightly more inclined to use a bus, scooter or e-bike. In other cases, people spoke about their own travel behaviours being influenced by injunctive social norms – that is, the expectations or perceptions of other people in terms of what one 'should' or should not do:

> *"I probably wouldn't use them [Voi e-scooters/e-bikes] for work just because I've got uniform on when I'm traveling to work and it's not the best way to be seen."*
> – Sam, Bristol

Several participants reflected upon the ways in which a range of social expectations and assumptions affected their own experiences. These incorporated pressures and barriers to travelling in certain ways, both in terms of car use and the ability to pursue car free travel. In many cases, participants reflected on these matters in relation to specific impacts on particular demographics or groups of people – from race and gender to disabilities and parenthood.

> *"Driving was big for me, because my mum […] coming to this country in the 1960 s, she didn't feel empowered to do that. And it was very much 'men drive, women don't really drive'. And so when I was about 15, 16, she said to me 'if there's one thing that you do, drive, because that's your independence'."*
> – Kelly, London
>
> *"My mum was considering putting me on her car insurance when I had a baby because she was like 'you're going to need a car to get from A to B' […] Another friend who is a mum […] was like 'is that not stressful for you, having to time what you're doing [around public transport]?'"*
> – Olivia, Leeds
>
> *"The drivers assume I'm able bodied, so they just drive accordingly. They take the bus off as soon as they think I'm on […] A lot of the time it is the fear and anxiety and the worry of the unknown about it and then that very quickly becomes a habit of well I don't take the bus, I'd take my car."*
> – Claire, Bristol

Regarding the practicalities of taking up cycling, one participant reflected on a series of competing influences in terms of her being part of the black community, her family's reaction to her doing something seen as atypical of that community, and the stereotypical image of the Lycra-clad cyclist with which she did not identify. This excerpt is revealing for its beginning with the participant, her family and community not considering cycling to be an expected practice, but with this giving way to a sense of pride in challenging this prevailing norm and questioning who can 'fit in' as a cyclist.

"In my community […] the black community, it is very rare to see this. So having said that, my family were quite surprised, but they were also very proud of me […] we just don't see it as something for us to be doing […] I felt like 'oh, if I'm not wearing these tight pants and cycling shoes I'm not going to fit in' but it's really untrue, it's not like that at all."
– Adenike, London

Participants spoke too about the ways their involvement in the trial had a ripple effect on their family and friends. This was an unexpected finding to emerge from the trial. While the car free challenge was organised to enable individuals and households to change their travel practices, a wider network of people became involved in the trial either because they had to be part of the travel changes themselves, or because they were involved with those taking part so that the trial influenced their lives as well. The positive outcomes experienced by participants (such as impeding car use, encouraging experimentation, raising confidence in alternatives or enjoying new experiences) were also felt more widely by participants' grandchildren and children, as well as one participant's partner and another's father.

"My dad started to cycle to work after the trial ended […] I told him that it is doable and he gave it a try […] I felt a bit proud."
– Adenike, London
"My eldest daughter […] she's experimenting a little bit with different bus routes actually, as a result of this trial […] my kids' routines have changed more than mine."
– Jennifer, Leeds

Despite these compelling examples, participants did not feel that their involvement had a collateral effect on the behaviour of others simply through discussing the fact that they were part of the trial. While some people that participants spoke to were interested and intrigued, others thought it was an unreasonable or unusual thing to take part in.

5.4. Inhibiting modal shift

The fourth and final theme relates to how the lack of public and active travel infrastructure and services impeded car free living and how people's negative experiences of going car free can reaffirm the perceived convenience of car use. While positive experiences during the trial enhanced participants' intentions to drive less, some participants reported negative experiences which undermined their confidence in their ability to manage without their cars.

Using public transport with babies and young children was considered a challenge by some of the parents in the sample. Issues were also identified regarding the accessibility of public transport for individuals with disabilities. For example, Claire found it too difficult to manage bringing her young daughter on the bus due to her own disability and the physical demands of helping her daughter onto the bus:

"The bus was really difficult, because the driver just took off from the bus stop before we'd sat down. I twisted my ankle trying to stop my daughter falling over. So that's it for me and buses, with my five-year-old. It's just too physically demanding."
– Claire, Bristol

Participants discussed how there were limits to how they could travel due to the available travel infrastructure and services or the location of different transport options. For example, while Mark works approximately four miles away from his nearest train station and can even walk to work, this was not the case for Sam, who had a 40-minute drive to work and no public transport to get there.

"It's impossible to use any sort of public transport to get to the location I was getting into which was on a trading estate outside of Exeter."
– Sam, Bristol
"There's [a] really good cycle lane all the way into the city centre […] I've got a train station less than 15 min away. So I think all these circumstantial things make it easier."
– Mark, Birmingham

The need to make multiple sequential journeys often made travel more complex as it required taking other locations and connections into account. Transport being centralised in cities was also mentioned as an issue in that people struggled to travel between different areas (for example, north to east) without going into the city centre first and then back out again. However, people also spoke about the difference that good infrastructure and services made to their ability to travel in different ways.

6. Discussion

The findings of this study suggest that participants felt the car free living trial was a useful exercise to understand their habitual car use and that it acted as a catalyst to explore alternative ways of travelling. Prior research has shown that car use is often habitual and routine (Gutiérrez et al., 2020; Hasselqvist and Hesselgren, 2019; Moser et al., 2018). Our findings align with this, with participants acknowledging that using their car was a habit, even when other modes of travel were available. The ways in which participants viewed driving as comfortable, convenient and safe also reflect existing literature (Waitt and Harada, 2012). Participants valued being part of a supported trial to disrupt their habits, reflecting research by Hasselqvist and Hesselgren (2019) whose study in Sweden had similar findings in that without the support the trial provided, selling their car and instead using a light electric vehicle would have been a challenge. The cost of public transport is certainly an issue in the UK, given that between 2010 and 2021 bus and rail prices have increased by 80 % and 43 % respectively (Climate Change Committee, 2023). By contrast, the cost of car travel rose by just 27 % (ibid). However, (Possible, 2022) found that most participants saved money by going car free in the trial, apart from two participants who spent more money due to using more expensive transport such as taxis. Participants saved between £2 and £53 per week on their travel expenses and there were also differences between cities, with London participants spending the least on weekly alternative car travel (£3.86), such as car clubs or taxis, and Bristol participants spending the most (£20.91; ibid).

Prior research has found that people are open to using other forms of transport and that trials can be a useful way of enabling this (Burns and Cracknell, 2019; Hasselqvist and Hesselgren, 2019; Moser et al., 2018). Our findings show that participants changed their travel behaviour during and after the trial as well as reflecting on their current car use and the benefits of changing this. The findings clearly demonstrate that there were some lasting changes from the trial, both in terms of participants' perspectives and their day-to-day practices. This may be due to several factors, including the trial providing participants with practical experience of going car free, actively disrupting their routines, and having positive experiences of alternative travel modes. Yet not all changes lasted for all participants. Participants were instructed to carry on with their normal day-to-day activities during the trial. Many were able to do so, particularly where they felt activities were essential. This suggests that people saw certain activities and commitments in their lives as focal points for changing or adapting their travel either in a way that had to work around existing commitments (such as a weekly contribution to a food bank) or where they actively wanted to change their regular activities such as meeting one friend rather than three, allowing them to feel less stressed.

Our findings illustrate the significance of personal experiences on people's ability to change (Bandura, 1977, 1982; Fishman et al., 2012): both positive ("mastery") and negative experiences had a powerful effect on participants' confidence in using sustainable transport and their intentions to go car free and whether it is perceived as an easy or difficult thing to do. In some cases, negative experiences appeared to have a greater effect, perhaps because driving was most participants' preferred mode of travel, therefore negative experiences may serve to reinforce their perceptions that switching to a more sustainable mode of travel

would be challenging. However, overall, there were a number of lasting changes after the trial finished (and its accompanying support), with almost all participants continuing at least some of the changes they made, as well as taking additional actions such as selling their car. Their increased confidence and ability to question their travel choices demonstrates their increased efficacy as a result of taking part in the trial.

Nevertheless, the trial itself was not able to overcome systemic issues relating to travel infrastructure and services, which impeded participants' ability to go car free. For example, the difficulty of making multiple journeys in succession without a car, referred to as 'trip-chaining' (Motherwell et al. 2018) or 'bundles of practices' (Rau and Sattlegger, 2018), highlights how going car free may be challenging. However, time-based charges allow multiple journeys on public transport within a certain time period and are being used in different locations. For example, 'hopper' fares allow unlimited journeys for a set price within an hour on buses in Greater Manchester (Transport for Greater Manchester, n.d.) and Transport for London buses and trams in London (Greater London Authority, n.d.). The location in which participants lived and worked in relation to the city centre also impacted how feasible it was for them to travel in different ways. Issues that participants faced with the reliability, regularity or convenience of public transport is also reflected in wider public experiences (Office for National Statistics, 2023). Some participants had positive experiences cycling and this is a key form of active travel in moving away from car use but there have been issues with vandalism of bike hire schemes in several locations across the UK which have reportedly caused them to close – another barrier to low-carbon travel (BBC, 2022; Cardiff Council, 2023; Owen and Davis, 2023).

The systematic literature review of active travel trials by Roaf et al. (2024) recommends that both behavioural and infrastructure changes need to be addressed in policies and planning. Our results support this as while participants' behaviour and mindset around car use did change, some still faced challenges relating to travel infrastructure and services. The trial focused on reducing car use by challenging participants to go about their ordinary routines as though they did not own a car. While we did not explore differences between use and ownership in our findings, the trial did have subsequent impacts on both. While it is possible that participants' car ownership may fluctuate over time, as seen in Klein and Smart's (2017) research in the US over 12 years, the scope of the trial in this paper does not cover such an extended period. It is therefore difficult to know whether the trial's disruption of some participants' car ownership goes beyond what would have occurred without it taking place, yet the results offer insights into the experiences that made these changes possible.

Climate action involves different scales and roles (Hampton and Whitmarsh, 2023), therefore it is useful to consider the extent to which the trial was able to create change across these. The trial focused on an individual scale and was able to create individual change. In some cases, participants' involvement had a wider behavioural impact on their family, or others close to them but there did not appear to be as much of an impact on others (such as friends or colleagues) simply through discussing the fact that they were part of the trial. This could be taken to suggest that the type of strong interpersonal influence outlined in the findings was contingent upon being intimately connected to participants in terms of their everyday practices or as a close family member. This reflects literature about how social relations with family can influence people's behaviours and perceptions in a different domain (energy use), though the influence of social relations with friends, communities and others with shared identities in energy research was not seen here within travel (Hargreaves and Middlemiss, 2020).

The trial also demonstrated the ways in which participants related to or experienced different modes of travel. There were several different 'patterns of meaning' that participants, or their family and friends, ascribed to certain travel choices (Sattlegger and Rau, 2016). For example, mobility as a social value (such as how their car use was seen as a social norm), mobility as intrinsically social (such as quality time with their children when cycling) and mobility as a joyful activity. Some of the reflections from participants resonate with Sattlegger and Rau's (2016) argument that mobility can be linked to experiences that hold personal meaning, such as those from childhood, as well as how different practices are used as collective identities for different groups of people, including families. Kent (2024) found that while parents' past influenced their choice to live car free, there were differences in what influenced their decisions and when. Similarly, in our research, there did not appear to be a common life stage or event which prompted people to take part in the car free trial, with participants speaking more broadly about the opportunity to experiment and challenge themselves. However, this was one area we explored in the interviews and there may have been further insights that were beyond the scope of our research.

Additionally, some participants spoke about how parenthood, gender, race and disability impacted their perceptions and experiences of different modes of travel, as well as wider social expectations (including from friends or family) in relation to these. This demonstrates the importance of understanding how different groups of people experience various modes of travel and the impact this can have on whether they feel able to travel in a more sustainable way. These insights are particularly valuable as a systematic literature review of active travel trials found a lack of demographic information, a lack of information about how this impacted their travel experiences or expectations, and underrepresentation of participants with disabilities (Roaf et al., 2024).

While this study provides valuable insights into car-free living, several limitations should be acknowledged. Participants were self-selected and may have already been more predisposed to exploring car-free lifestyles than the general public. Furthermore, participants were provided with a financial incentive to compensate them for the time and effort required to take part in the trial, as well as to offset potential additional costs of going car-free, which may have influenced the composition of the sample. In-depth car-reduction trials, in which people are asked to live without their cars for an extended period while continuing all their usual activities, will always have limitations. It is challenging to account for all external factors that may influence people's ability to live car-free. For example, this study mainly focused on city dwellers, yet participants from rural or suburban areas may face different barriers than those in urban settings. Additionally, contextual circumstances, such as the weather, may affect how successful people are in living car-free. The trial was conducted in January and February, when cold and wet weather might have negatively influenced participants' perceptions of walking and cycling. However, it is notable that, even under these conditions, the trial was successful. This suggests that car-free living can be viable year-round, although future research could explore how seasonal factors impact travel behaviour and perceptions of active travel. Furthermore, the trial lasted three weeks, which may not have been sufficient to assess long-term behavioural shifts (many behavioural studies suggest that habit formation takes longer than three weeks e.g., Lally et al., 2010) – although we did find evidence for longer-term impacts, as discussed above.

The intention of the trial was to examine whether people with different backgrounds and circumstances could manage without their car for an extended period, qualitatively exploring the challenges they encountered in doing so. In doing so, it was successful in addressing some limitations of previous active travel trials (Roaf et al., 2024). Some previous literature has focused on specific groups and the challenges they face (e.g., Prosser et al., 2022; Osei and Aldred, 2023). However, there is a need for longer-term trials with a larger and (even) more diverse sample than was recruited for the current trial. One particularly relevant direction for future research would be to incorporate groups whose travel behaviour has a relatively large impact on emissions, such as wealthy white males (Taylor, 2024) and people living in rural areas (Frost and Singer Hobbs, 2024), who face different infrastructure challenges compared to the individuals studied here and in other trials that have focused on urban and suburban regions (NatCen Social Research, 2020; Philips et al., 2024).

7. Conclusions

This research provides evidence that it is possible to reduce reliance on cars. The findings indicate that a car free challenge can shift people towards low-carbon travel routines, through recruiting regular drivers to give car free living a try rather than through persuasion or marketing. This offers useful evidence in this area as the Climate Change Committee (2023, p.114) states that "there has been little progress on [modal shift] to date". The findings show that the trial was generally successful in enabling participants to experiment in alternative modes of travel, with lasting impacts on habits and attitudes toward car free living. However, trial-based research and incentives at a larger scale may be required to explore whether it is possible to establish wider behaviour change. There is evidence that trials can work at a larger scale, for example in Switzerland, where almost 2,000 people swapped their car for an e-bike for two weeks (Moser et al., 2018). The Possible car free living trial indicated that it is possible for people to go car free without the need for a supported trial, with participants themselves highlighting the importance of looking at monthly car costs and using that for other forms of travel, being willing to just give it a go, and trying to unpick their own assumptions about their car use.

Despite cars being deeply entrenched in modern society (Urry, 2006), the Going Car Free trial enabled participants to reflect on and revise their attitudes and beliefs concerning their travel behaviour. Even if people do not go completely car free in future, challenging norms around car use has the potential for reducing the use of private cars and enabling modal shift towards public and active travel. Trials such as this may also provide evidence for organisations like Possible to draw on for campaigning and advocacy use.

CRediT authorship contribution statement

Briony Latter: Writing – review & editing, Writing – original draft, Formal analysis. **Lilli Waples:** Investigation, Formal analysis. **Stuart Capstick:** Writing – review & editing, Project administration, Methodology, Investigation, Conceptualization. **Wouter Poortinga:** Writing – review & editing, Writing – original draft, Project administration. **Colin J. Davis:** Writing – review & editing, Project administration, Methodology, Conceptualization. **Claire Hoolohan:** Writing – review & editing, Writing – original draft, Project administration, Investigation, Conceptualization, Methodology.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.trip.2025.101484.

Data availability

Data will be made available on request.

References

Aldred, R., Goodman, A., Woodcock, J., 2024. Impacts of active travel interventions on travel behaviour and health: results from a five-year longitudinal travel survey in outer London. J. Transp. Health 35, 101771. https://doi.org/10.1016/j.jth.2024.101771.

Allen, R., Bennett, H., Cooper, C., Haggar, P., 2023. Moving on: greener travel for the UK. Green Alliance, United Kingdom.

Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. Psychol. Rev. 84 (2), 191.

Bandura, A., 1982. Self-efficacy mechanism in human agency. Am. Psychol. 37 (2), 122–147. https://doi.org/10.1037/0003-066X.37.2.122.

Barr, S., 2018. Personal mobility and climate change. WIREs Clim. Change 9, e542.

BBC, 2022. Peterborough e-bike scheme returns after vandalism. BBC.

Brown, A.E., 2017. Car-less or car-free? Socioeconomic and mobility differences among zero-car households. Transp. Policy 60, 152–159. https://doi.org/10.1016/j.tranpol.2017.09.016.

Burns, T., Cracknell, V., 2019. Reducing Car Use: What Do People Who Live and Drive in Cities and Towns Think? Sustrans, United Kingdom.

Cao, X.(Jason), Xu, Z., Fan, Y., 2010. Exploring the connections among residential location, self-selection, and driving: propensity score matching with multiple treatments. Transp. Res. A Policy Pract. 44, 797–805. https://doi.org/10.1016/j.tra.2010.07.010.

Cardiff Council, 2023. On-street bike rental scheme will end in Cardiff & Vale of Glamorgan in January, 2024 [WWW Document]. URL https://www.cardiffnewsroom.co.uk/releases/c25/32757.html.

Cass, N., Faulconbridge, J., 2016. Commuting practices: new insights into modal shift from theories of social practice. Transp. Policy 45, 1–14. https://doi.org/10.1016/j.tranpol.2015.08.002.

Climate Change Committee, 2023. Progress in Reducing Emissions: 2023 Report to Parliament. Climate Change Committee, United Kingdom.

Cook, S., Stevenson, L., Aldred, R., Kendall, M., Cohen, T., 2022. More than walking and cycling: what is 'active travel'? Transp. Policy 126, 151–161. https://doi.org/10.1016/j.tranpol.2022.07.015.

Department for Transport, 2023a. Transport and environment statistics: 2023 [WWW Document]. gov.uk. URL https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023/transport-and-environment-statistics-2023 (accessed 1.25.24).

Department for Transport, 2023b. Policy paper: The plan for drivers [WWW Document]. gov.uk. URL https://www.gov.uk/government/publications/plan-for-drivers/the-plan-for-drivers (accessed 1.27.24).

Department for Transport, 2022. National Travel Survey 2021: Travel by region and rural and urban classification of residence [WWW Document]. gov.uk. URL https://www.gov.uk/government/statistics/national-travel-survey-2021/national-travel-survey-2021-travel-by-region-and-rural-and-urban-classification-of-residence#background-information (accessed 1.30.24).

Department for Transport, Driver & Vehicle Licensing Agency, 2023. Vehicle licensing statistics: 2022 [WWW Document]. gov.uk. URL https://www.gov.uk/government/statistics/vehicle-licensing-statistics-2022/vehicle-licensing-statistics-2022#licensed-vehicles-overview (accessed 1.27.24).

Döring, L., Albrecht, J., Scheiner, J., Holz-Rau, C., 2014. Mobility biographies in three generations – socialization effects on commute mode choice. Transp. Res. Procedia 1, 165–176. https://doi.org/10.1016/j.trpro.2014.07.017.

Dütschke, E., Engel, L., Theis, A., Hanss, D., 2022. Car driving, air travel or more sustainable transport? Socio-psychological factors in everyday mobility and long-distance leisure travel. Travel Behav. Soc. 28, 115–127. https://doi.org/10.1016/j.tbs.2022.03.002.

Ewing, R., Cervero, R., 2010. Travel and the built environment: a meta-analysis. J. Am. Plann. Assoc. 76, 265–294. https://doi.org/10.1080/01944361003766766.

Fishman, E., Washington, S., Haworth, N., 2012. Barriers and facilitators to public bicycle scheme use: a qualitative approach. Transport. Res. F: Traffic Psychol. Behav. 15, 686–698. https://doi.org/10.1016/j.trf.2012.08.002.

Frost, S., Singer Hobbs, M. 2024. Moving together: A people-focussed pathway to fairer and greener transport. IPPR, United Kingdom.

Fugard, A., Potts, H., W., 2019. Thematic Analysis, in: Atkinson, P., Delamont, S., Cernat, A., Sakshaug, J.W., Williams, R.A. (Eds.), SAGE Research Methods Foundations. SAGE Publications Ltd, London. https://doi.org/10.4135/9781526421036858333.

Gärling, T., Fujii, S., Boe, O., 2001. Empirical tests of a model of determinants of script-based driving choice. Transport. Res. F: Traffic Psychol. Behav. 4, 89–102. https://doi.org/10.1016/S1369-8478(01)00016-X.

Greater London Authority, n.d. The Mayor's one hour "Hopper" fare [WWW Document]. Greater London Authority. URL https://www.london.gov.uk/programmes-strategies/transport/mayors-one-hour-hopper-fare (accessed 2.11.25).

Gutiérrez, M., Hurtubia, R., Ortúzar, J.D.D., 2020. The role of habit and the built environment in the willingness to commute by bicycle. Travel Behav. Soc. 20, 62–73. https://doi.org/10.1016/j.tbs.2020.02.007.

Hampton, S., Whitmarsh, L., 2023. Choices for climate action: a review of the multiple roles individuals play. One Earth 6, 1157–1172. https://doi.org/10.1016/j.oneear.2023.08.006.

Hargreaves, T., Middlemiss, L., 2020. The importance of social relations in shaping energy demand. Nat. Energy 5, 195–201. https://doi.org/10.1038/s41560-020-0553-5.

Hasselqvist, H., Hesselgren, M., 2019. Bridging citizen and stakeholder perspectives of sustainable mobility through practice-oriented design. Sustain.: Sci. Pract. Policy 15, 1–14. https://doi.org/10.1080/15487733.2018.1533781.

Hess, A.-K., 2022. The relationship between car shedding and subjective well-being. Transp. Res. Interdiscip. Perspect. 15, 100663. https://doi.org/10.1016/j.trip.2022.100663.
Itl, 2018. EU good practices on sustainable mobility planning and SUMP. Institute for Transport and Logistics Foundation (ITL).
Jaramillo, P., Kahn Ribeiro, S., Newman, P., Dhar, S., Diemuodeke, O.E., Kajino, T., Lee, D.S., Nugroho, S.B., Ou, X., Hammer Strømman, A., Whitehead, J., 2022. Transport, in: Shukla, P.R., Skea, J., Slade, R., Al Khourdajie, A., van Diemen, R., McCollum, D., Pathak, M., Some, S., Vyas, P., Fradera, R., Belkacemi, M., Hasija, A., Lisboa, G., Luz, S., Malley, J. (Eds.), Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA.
Jennings, N., Fecht, D., De Matteis, S., 2020. Mapping the co-benefits of climate change action to issues of public concern in the UK: a narrative review. Lancet Planet. Health 4, e424–e433. https://doi.org/10.1016/S2542-5196(20)30167-4.
Kent, J.L., 2024. The car-free journey to, and through, parenthood. Transportation. https://doi.org/10.1007/s11116-024-10466-9.
Kent, J., 2022a. Sustainable family transport: a research agenda. Urban Policy Res. 40, 290–303. https://doi.org/10.1080/08111146.2022.2108393.
Kent, J.L., 2022b. The use of practice theory in transport research. Transp. Rev. 42, 222–244. https://doi.org/10.1080/01441647.2021.1961918.
Klein, N.J., Smart, M.J., 2017. Car today, gone tomorrow: the ephemeral car in low-income, immigrant and minority families. Transportation 44, 495–510. https://doi.org/10.1007/s11116-015-9664-4.
Kurz, T., Gardner, B., Verplanken, B., Abraham, C., 2015. Habitual behaviors or patterns of practice? Explaining and changing repetitive climate-relevant actions. WIREs Clim. Change 6, 113–128. https://doi.org/10.1002/wcc.327.
Kuss, P., Nicholas, K.A., 2022. A dozen effective interventions to reduce car use in European cities: lessons learned from a meta-analysis and transition management. Case Stud. Transp. Policy 10, 1494–1513. https://doi.org/10.1016/j.cstp.2022.02.001.
Laakso, S., 2017. Giving up cars – The impact of a mobility experiment on carbon emissions and everyday routines. J. Clean. Prod. 169, 135–142. https://doi.org/10.1016/j.jclepro.2017.03.035.
Lagrell, E., Thulin, E., Vilhelmson, B., 2018. Accessibility strategies beyond the private car: a study of voluntarily carless families with young children in Gothenburg. J. Transp. Geogr. 72, 218–227. https://doi.org/10.1016/j.jtrangeo.2018.09.002.
Lally, P., Van Jaarsveld, C.H.M., Potts, H.W.W., Wardle, J., 2010. How are habits formed: modelling habit formation in the real world. Euro J Social Psych 40, 998–1009. https://doi.org/10.1002/ejsp.674.
Mattioli, G., 2021. Transport poverty and car dependence: A European perspective, in: Advances in Transport Policy and Planning. Elsevier, pp. 101–133. https://doi.org/10.1016/bs.atpp.2021.06.004.
Mattioli, G., Roberts, C., Steinberger, J.K., Brown, A., 2020. The political economy of car dependence: a systems of provision approach. Energy Res. Soc. Sci. 66, 101486. https://doi.org/10.1016/j.erss.2020.101486.
McGuicken, T., Whitmarsh, L., Hampton, S., 2025. Transport disruptions as opportunities for behaviour change: a qualitative evaluation of UK policy and practice. Case Stud. Transp. Policy 19, 101386. https://doi.org/10.1016/j.cstp.2025.101386.
McLaren, A.T., 2018. Parent–child mobility practices: revealing 'cracks' in the automobility system. Mobilities 13, 844–860. https://doi.org/10.1080/17450101.2018.1500103.
Mock, M., 2023. Making and breaking links: the transformative potential of shared mobility from a practice theories perspective. Mobilities 18, 374–390. https://doi.org/10.1080/17450101.2022.2142066.
Moser, C., Blumer, Y., Hille, S.L., 2018. E-bike trials' potential to promote sustained changes in car owners mobility habits. Environ. Res. Lett. 13, 044025. https://doi.org/10.1088/1748-9326/aaad73.
Motherwell, S., Collins, R.M., Smalley, S., Kirton, M., 2018. "Are we nearly there yet?" Exploring gender and active travel. Sustrans, United Kingdom.
NatCen Social Research, 2020. Impact of interventions encouraging a switch from cars to more sustainable modes of transport: a rapid evidence assessment (REA). Department for Transport.
Office for National Statistics, 2023. Climate change insights, business and transport, UK: February 2023 [WWW Document]. Office for National Statistics. URL https://www.ons.gov.uk/economy/environmentalaccounts/articles/climatechangeinsightsuk/february2023#data-sources-and-quality (accessed 1.29.24).
Office for National Statistics, 2022. Perceptions of personal safety and experiences of harassment, Great Britain: 16 February to 13 March 2022 [WWW Document]. Office for National Statistics. URL https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/perceptionsofpersonalsafetyandexperiencesofharassmentgreatbritain/16februaryto13march2022 (accessed 1.30.24).
Ogunbode, C., Anim, N., Kidwell, J., Sawas, A., Solanki, S., 2023. Spotlight - How people of colour experience and engage with climate change in Britain. Topline findings from a national survey conducted in March 2022. University of Birmingham and University of Nottingham.
Osei, A., Aldred, R., 2023. "You always think about what other people be thinking": black men and barriers to cycling in London. J. Transp. Geogr. 108, 103576. https://doi.org/10.1016/j.jtrangeo.2023.103576.
Owen, B., Davis, M. 2023. Co Cars and Co Bikes collapses into administration. BBC.
Philips, I., Brown, L., Cass, N., 2024. E-bike use and ownership in the Lake District National-Park UK. J. Transp. Geogr. 115, 103813. https://doi.org/10.1016/j.jtrangeo.2024.103813.
Prosser, A.M.B., Thorman, D., Mitev, K., Whitmarsh, L., Sawas, A., 2022. Developing an evidence-based toolkit for car reduction. URL https://climateoutreach.org/reports/car-reduction/ (accessed 1.30.24).
QSR International Pty Ltd, 2021. Nvivo.
Rau, H., Manton, R., 2016. Life events and mobility milestones: advances in mobility biography theory and research. J. Transp. Geogr. 52, 51–60. https://doi.org/10.1016/j.jtrangeo.2016.02.010.
Rau, H., Matern, A., 2024. Mobility practices in a changing climate: understanding shifts in car ownership and use across the life course. Mobilities 19, 869–888. https://doi.org/10.1080/17450101.2024.2389846.
Rau, H., Sattlegger, L., 2018. Shared journeys, linked lives: a relational-biographical approach to mobility practices. Mobilities 13, 45–63. https://doi.org/10.1080/17450101.2017.1300453.
Roaf, E., Lawlor, E.R., Larrington-Spencer, H., 2024. What interventions increase active travel?, in: Advances in Transport Policy and Planning. Elsevier, p. S2543000923000380. https://doi.org/10.1016/bs.atpp.2023.11.004.
Salutin, G., 2023. Getting the Measure of Transport Poverty: Understanding and Responding to the UK's Hidden Crisis. Social Market Foundation, United Kingdom.
Sattlegger, L., Rau, H., 2016. Carlessness in a car-centric world: a reconstructive approach to qualitative mobility biographies research. J. Transp. Geogr. 53, 22–31. https://doi.org/10.1016/j.jtrangeo.2016.04.003.
Sims, R., Schaeffer, R., Creutzig, F., Cruz-Núñez, X., D'Agosto, M., Dimitriu, D., Figueroa Meza, M.J., Fulton, L., Kobayashi, S., Lah, O., McKinnon, A., Newman, P., Ouyang, M., Schauer, J.J., Tiwari, G., 2014. Transport, in: Edenhofer, O., Pichs-Madruga, R., Sokona, Y., Farahani, E., Kadner, S., Seyboth, K., Adler, A., Baum, I., Brunner, S., Eickemeier, P., Kriemann, B., Savolainen, J., Schlömer, S., von Stechow, C., Zwickel, T., Minx, J.C. (Eds.), Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
Soza-Parra, J., Cats, O., 2024. The role of personal motives in determining car ownership and use: a literature review. Transp. Rev. 44, 591–611. https://doi.org/10.1080/01441647.2023.2278445.
Taylor, M. 2024. Wealthy white men are UK's biggest transport polluters, study finds. The Guardian.
Transport for Greater Manchester, n.d. Say yellow to the Bee Network [WWW Document]. Transport for Greater Manchester. URL https://tfgm.com/the-bee-network (accessed 2.11.25).
Urry, J., 2006. Inhabiting the car. Sociol. Rev. 54, 17–31. https://doi.org/10.1111/j.1467-954X.2006.00635.x.
Urry, J., 2008. Governance, flows, and the end of the car system? Glob. Environ. Chang. 18, 343–349. https://doi.org/10.1016/j.gloenvcha.2008.04.007.
Verfuerth, C., Demski, C., Whitmarsh, L., Braunholtz-Speight, T., Cherry, C., David, J., Graham, H., Jordan, A., Latter, B., Lorenzoni, I., McLachlan, D., Minas, A., Maguire, D., Mander, S., Poortinga, W., Powell, D., Thorman, D., Tregaskis, O., Walsh, C., Watson, K., Westlake, S., Wilson, M., Wood, R., Zanin, B., 2024. Catalysts of Change: People at the Heart of Climate Transformations. Key messages from five years of social science research on climate change. Centre for. Climate Change and Social Transformations. London.
Verhorst, T., Fu, X., Van Lierop, D., 2023. Definitions matter: investigating indicators for transport poverty using different measurement tools. Eur. Transp. Res. Rev. 15, 21. https://doi.org/10.1186/s12544-023-00596-z.
Verplanken, B., Roy, D., Whitmarsh, L., 2018. Cracks in the wall: habit discontinuities as vehicles for behaviour change. In: Verplanken, B. (Ed.), The Psychology of Habit. Springer International Publishing, Cham, pp. 189–205. https://doi.org/10.1007/978-3-319-97529-0_11.
Waitt, G., Harada, T., 2012. Driving, cities and changing climates. Urban Stud. 49, 3307–3325. https://doi.org/10.1177/0042098012443858.
Walker, P., 2024. Rishi Sunak's Report Finds Low-Traffic Neighbourhoods Work and Are Popular. The Guardian.
Walker, I., Tapp, A., Davis, A., 2023. Motonormativity: how social norms hide a major public health hazard. Int. J. Environ. Health 1, 21–33. https://doi.org/10.1504/ijenvh.2023.135446.
Watson, M., 2012. How theories of practice can inform transition to a decarbonised transport system. J. Transp. Geogr. 24, 488–496. https://doi.org/10.1016/j.jtrangeo.2012.04.002.
Wells, P., Xenias, D., 2015. From 'freedom of the open road' to 'cocooning': understanding resistance to change in personal private automobility. Environ. Innov. Soc. Trans. 16, 106–119. https://doi.org/10.1016/j.eist.2015.02.001.
Possible, 2022. Going Car Free case studies [WWW Document]. Possible. URL https://www.wearepossible.org/gcf-case-studies/ (accessed 1.25.24).