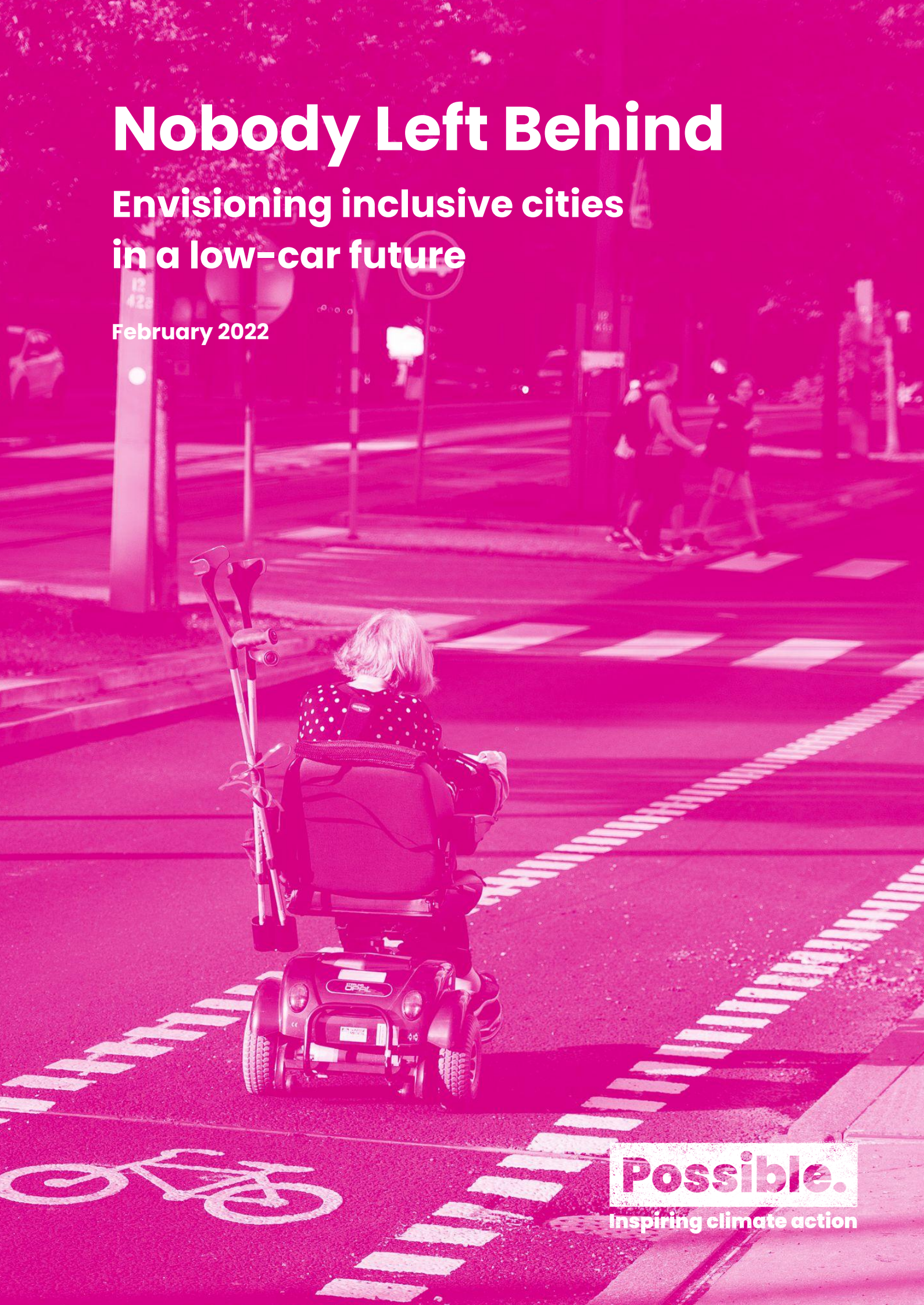


Nobody Left Behind

Envisioning inclusive cities
in a low-car future

February 2022



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blog.westminster.ac.uk/ata/



The mission of KR Foundation is to address the root causes of climate change and environmental degradation.

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Executive summary



Research rationale

There is currently an urgent need to reduce CO₂ emissions. In the UK, 27% of greenhouse gas emissions originate from transport, a percentage that has been rising as other sector emissions reduce. The UK government acknowledges that merely shifting from fossil-fuel vehicles to electric vehicles (EVs) is unlikely to decarbonise the transport system sufficiently, expressing a need to shift journeys in cities away from private cars and towards more sustainable modes . However, a fair transition to cities without mass private car ownership has to consider the differential mobility and accessibility needs across different groups. Switching to more sustainable modes comes with different challenges which must be carefully accounted for.

This is particularly important where a situation of ‘transport disability’ already exists, where the limited accessibility of different available transport options further disables certain groups in society, including people with a variety of impairments¹, the elderly and children. Around 20% of the UK population have some kind of impairment that limits their day-to-day activities, with access to suitable transportation being a key barrier to participation in everyday life. In 2019, people who said they had a mobility difficulty made, on average, a third fewer trips than those without. The barriers disabled people face tend to fall into broad categories: inaccessibility of the built environment, inaccessibility and poor connectivity of public transport and barriers for those disabled people who currently rely on a car.

¹ This study applies the Social Model of Disability, in which an impairment (such as blindness or a mobility impairment) leads to a disability (not being able to go somewhere) due to barriers being present.

In balancing the social and environmental justice objectives of reducing climate impacts of transport, it is important to acknowledge these vulnerabilities and make sure that changes to current transport provision do not exacerbate transport disability, but rather improve accessibility and liveability for people who have so far paid the consequences of a car-centric society.

A policy gap exists here as current government guidelines for decarbonising transport do not mention disabled people's travel or disability, and the government's Inclusive Transport Strategy does not mention climate change. After decades of pro-car planning, policy is slowly shifting away from private cars, but a clear focus on the intersection between transport, climate policy and disability is still missing in both policy and research.

In response to this, our research aimed to further investigate the impacts of low-carbon transitions on disabled people, and develop shared realistic visions and pathways for low-car futures that account for the needs and desires of disabled people.

The research is based on seven in-depth interviews with representatives of four national and two local Disabled People's Organisations (DPOs), a follow up interview with a Chartered Access Consultant and an email interview with ten members of a national DPO representing Deaf women². The interview findings were used to prepare four focus groups involving a total of 17 disabled people and a family member of a disabled child from different cities in the UK with a variety of ages and impairments.

Research findings

Analysing the limitations of the present is a necessary step to develop visions for the future. To begin with, our research findings present a reflection on the challenges of 'travelling in a car-centric city' for disabled people. All the participants highlighted several key infrastructural and attitudinal barriers to their ability to access places:

² The DPOs that took part are not responsible for the views reported in this document and may not agree on our final recommendations.

poor walking and wheeling environments, poor public transport provision, lack of awareness of disabled people's needs and habits (including lack of incentives, regulation and provision for adapted cycles, mobility scooters and electric wheelchairs) and poor engagement in transport decision-making. In such car-centric environments which generate many forms of transport disability in regards to independent travel, many participants felt using a car was the only option for accessing places safely and reliably. For this reason the research moved from the term 'car-free' cities initially used in the interviews, to talking about 'low-car' cities, to acknowledge participants' desire to retain a minimum level of car access.

Such perception of the role of the car shifted, however, when the discussion moved to reimagining a low-car city. For participants, a move away from car-centred planning and rethinking of street design would bring a plethora of benefits for people with most impairments, and especially for those who are unable to drive. If on the one hand, the car is an enabler for some disabled people, it is also a hindrance for many others who will instead be enabled by a low-car city.

A low-car city that does not disable people is a city where car movements are carefully replaced with other ways of travelling, especially walking and wheeling. Improved walking and public transport can provide personalised, more affordable and safe options, able to accommodate more disabled people's needs.

For our participants, a low-car city is also a city where car access should be maintained for some disabled people, especially those with complex disabilities who rely heavily on cars or for whom a car is a key space of refuge, and could be excluded from society if deprived of this option.

At the same time, participants recognise that others and especially non-disabled people are making many car trips that could easily be made by other modes and, by doing so, are creating the conditions for further disabling others. For many focus group participants,

there is a clear distinction between 'needs and wants' in being (un)able to renounce a car. Our participants believe that the burden of reducing car use should fall more heavily on non-disabled people for whom alternatives are more easily available. Such effort should be supported by policies enabling anyone who can, to walk, cycle or use public transport on a daily basis, so as to leave car use to those who have no other practical alternative.

All participants agreed also on the crucial role that a strong engagement process will play in building an inclusive low-car city. The feeling of being 'left out' or added only at the end of the planning process was widely shared across participants. In contrast to what they experienced so far, engagement should be based on co-production and embedded at each stage of the planning process.

At the same time, education or, perhaps better, a substantial cultural shift, grounded in a culture of dialogue, is considered a vital ingredient of the recipe for the infrastructural changes highlighted above. This should especially recognise that, even by reducing the number of cars on roads, some frictions will remain and will need to be discussed openly and inclusively.

The disparity of funding allocated to cars versus improving walking, cycling and public transport is a sign of the differential priorities between what disabled people would like and the mainstream understanding of transport needs. Awareness of the disabling impacts of our transport system is necessary for building support for measures that restrict car use amongst the people who have no other alternative, and inviting those that are able to use other modes to do so for a common good cause.

These findings translate into a set of specific policy recommendations outlined at the end of this report.

Introduction & literature review



Disability & travel

Disability

Around 15% of the global population have some kind of impairment³ that limits their day-to-day activities⁴, and according to the UK Government's National Disability Strategy, the figure in the UK is around 20%⁵. Disabled people face a number of barriers to participation in everyday life, and transport is no exception. The National Disability Strategy recognised a number of issues around the accessibility of the transport system to disabled people, by car, on pavements ('walking')⁶ and by public transport, all of which we discuss in this report.

Our work is framed by the Social Model of Disability, in which "what is disabling for individuals who have impaired bodies has to do with physical and/or social arrangements and institutional norms that are themselves alterable"⁷. This conception is in contrast to the 'Medical Model', in which the impairments themselves (such as blindness, paraplegia or neurodiversity) are seen as disabling in and of themselves. In the Social Model, changing those arrangements and institutional norms (known as 'disabling barriers') will allow disabled people to more fully take part in society.

³ [Definitions of disability differ and are often contested](#), meaning that the results of a disability survey can be problematic if different definitions of disability are adopted in different contexts. In this research, we adopt the Social Model of Disability. In the Social Model an 'impairment' is a difference or lack in function which becomes a disability when there are barriers to a person with an impairment being able to carry out activities (cf. Goering, S. 2015. [Rethinking disability: the social model of disability and chronic disease](#), Current Reviews in Musculoskeletal Medicine, 8(2), pp. 134-138

⁴ World Health Organisation, quoted in: Ermagun, A. et al., 2016. [A joint model for trip purpose and escorting patterns of the disabled](#), Travel Behaviour and Society, 3, pp.51-58

⁵ HM Government, 2020. [National Disability Strategy](#), CP512

⁶ In this report, 'walking' is taken to mean both walking, wheeling and the use of any mobility aid for a pedestrian (non-cycle or non-motorised) journey

⁷ p. 135 in: Goering, S. 2015. [Rethinking disability: the social model of disability and chronic disease](#), Current Reviews in Musculoskeletal Medicine, 8(2), pp. 134-138

Disabled people's travel

The National Travel Survey 2019⁸ showed that people who said they had a mobility difficulty made an average of 629 trips a year, over a third fewer than those without (1,008 a year on average). There is some discrepancy between different datasets, as 'disabled people' may self-define as having a limiting impairment (most closely fitting the Social Model) or be categorised as qualifying for disability benefits (Personal Independent Payment or Disability Living Allowance).

The National Centre for Social Research⁹ conducted a deep dive into the 2018 National Travel Survey to understand disabled people's travel patterns. In general, disabled people are around twice as likely to not hold a full driving licence (38% not holding a licence against 20% of non-disabled people), and almost a third less likely to have access to a car as a main driver (46% of disabled people and 64% of non-disabled). Visual impairment is one of several reasons why disabled people might not be able to use a car. However, research shows that other impairments also result in limited access to the private car¹⁰. Even with access to a car, disabled people are disproportionately more likely to make passenger trips than non-disabled people (a third of total car trips vs a fifth for non-disabled)¹¹.

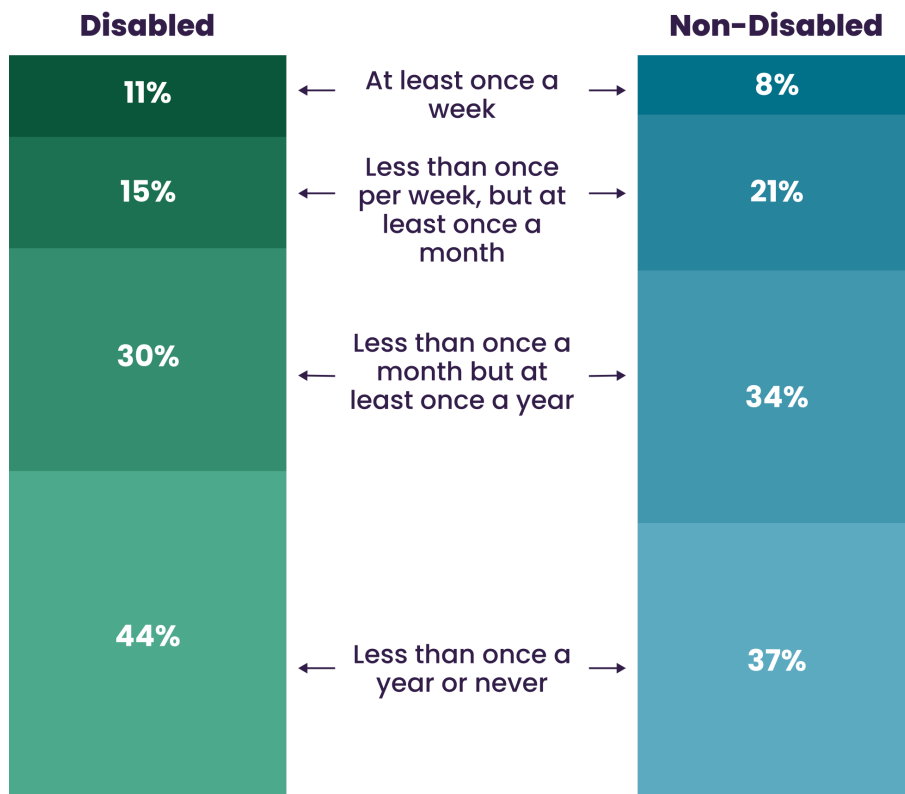
In general, disabled people also make fewer trips by public transport, though amongst those in paid employment, disabled people have broadly the same travel patterns as non-disabled people. The figures revealed a wide variation in travel patterns amongst people with different types and severities of impairment.

⁸ Office for National Statistics, 2020. [National Travel Survey 2019](#). National Statistics

⁹ Crowley, J. et al., 2021. [Motability: disability and transport needs](#). National Centre for Social Research

¹⁰ See for example: Falkmer, M., et al., 2015. [Viewpoints of adults with and without Autism Spectrum Disorders on public transport](#). *Transportation Research Part A: Policy and Practice*. 80, pp.163–183

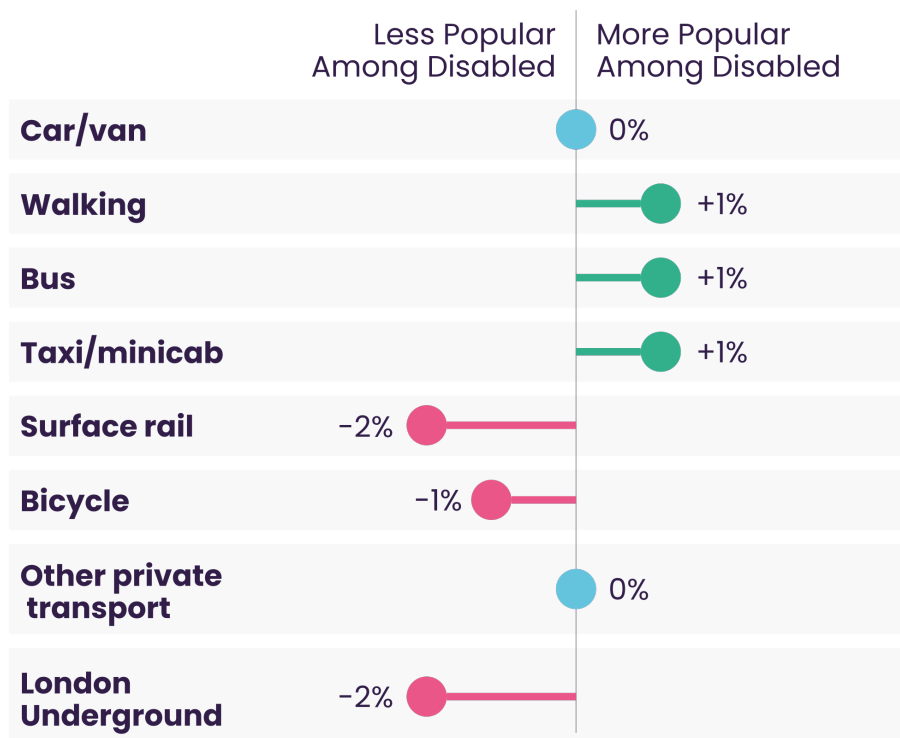
¹¹ Department for Transport, 2021. [Transport: Disability & Accessibility Statistics, England 2019/20](#)



Data: NTS 2018

Fig 1: Proportion of people who use taxis

More disabled people reported having driving licences than never taking buses (62% vs 50%) indicating a potential crossover with public transport potentially becoming a suitable option for more disabled people if accessibility was increased. This is mirrored in taxi use (see Figure 1), with the proportion of disabled people using taxis more than once a week around 1.5 times that of non-disabled people (11% versus 8%) but also a higher proportion using taxis less than once a year (44% against 37% for non-disabled people), suggesting that those who use taxis use them more frequently than the non-disabled population.



Data: NTS 2018

Fig 2: Transport choice differences among disabled and non-disabled people.

However, in general, looking at the proportion of trips made by all modes, both disabled and non-disabled people made around 62% of their trips by car (as driver or passenger), and 25% on foot (including wheels and mobility aids). Disabled people made 6% of their trips by bus, compared to 5% by non-disabled people and 2% by taxi as opposed to 1% for non-disabled people. Disabled people also made fewer of their trips by train (1% as opposed to 3%) and cycle (1% against 2%), however. Some of these results are shown in Figure 2.

Travel concessions for disabled people

The key accommodations for disabled people in the UK are the “blue badge” which allows access to parking spaces reserved to holders closer to main destinations, and free bus travel via the English National Concessionary Travel Scheme (ENCTS) and its equivalents in Scotland, Wales and Northern Ireland¹². These accommodations are available to people with a

¹²In London the ENCTS pass is called the Freedom Pass. The free tube travel is a discretionary addition for residents that transport authorities are allowed to add (e.g. free train and tram travel in the West Midlands and half price train travel in West Yorkshire).

range¹³ of impairments and allow 2.44 million people to have access to priority parking spaces with their blue badges and around 932,000 people to have free bus travel after 09:30 and all day on weekends¹⁴. While this appears to suggest that disabled people, in aggregate, depend more on cars than on public transport, many more disabled people are likely to hold free bus passes issued to them on age grounds, which would be recorded as 'older' rather than 'disabled' passes; 8.2 million such passes were issued in England in 2020/21. The proportion of trips made by car for both disabled and non-disabled people is also the same¹⁵. These both indicate the situation is not as simple as those figures would suggest.

A further accommodation for many disabled people is provision of a car through the Motability scheme, which allows people who claim a mobility component of a disability benefit to lease a suitably adapted car or mobility scooter¹⁶. This provides access to a car (or mobility scooter, but not other adapted vehicles such as cycles) for many people, particularly those who are unable to work, or who are unable to afford one otherwise. This highly successful scheme, however, still portrays car use as the default solution to the disabling transport system currently in place¹⁷.

Transport disability and key accessibility barriers

Several studies have showed the strong relation between poor transport provision or accessibility and social exclusion^{18,19,20}, stressing how poorly designed transport systems (including their poor links to land use patterns, and exclusionary decision making processes)

¹³ [Department for Transport, 2021. Concessionary Travel Statistics England 2020/21.](#)

¹⁴ [Office for National Statistics, 2021: Transport: Disability and Accessibility Statistics, England 2019/20](#)

¹⁵ [Crowley, J. et al., 2021. Motability: disability and transport needs. National Centre for Social Research](#)

¹⁶ [Motability, 2021. How the Motability scheme works.](#)

¹⁷ [Motability in 2020 funded 16,000 scooters and electric wheelchairs, but around 635,000 cars: Motability Operations Group plc, 2020. Delivering when it matters most: Annual Report and Accounts 2020](#)

¹⁸ [Preston, J. and Rajé, F., 2007. Accessibility, mobility and transport-related social exclusion. Journal of Transport Geography, 15\(3\), pp. 151-160](#)

¹⁹ [Kamruzzaman, M., et al., 2016. Measures of Transport-Related Social Exclusion: A Critical Review of the Literature, Sustainability, 8\(7\). DOI 10.3390/su8070696](#)

²⁰ [Lucas, K. 2012. Transport and social exclusion: Where are we now? Transport Policy, 20, pp.105-113](#)

can enhance physical, social and economic exclusion. Others have also stressed the health implications of transport inequality²¹.

Such effects are exacerbated for people with existing impairments. Following the Social Model, some authors talk about transport disability²² as a situation where lack of accessibility of transport options further disables certain groups in society, including people with a variety of impairments, as well as the elderly or children²³. Studies on disabled people's travel have shown the detrimental effect of lack of accessibility, including the likelihood of being escorted on a trip²⁴, as well as factors relating to not travelling at all²⁵.

Studies on disabled people's travel have also looked at the different barriers to travel which they face²⁶. These barriers tend to fall into broad categories: inaccessibility of the built environment, inaccessibility and poor connectivity of public transport, and barriers for the disabled people who rely on a car. Overcoming all of these is seen to require inclusive design processes²⁷.

Failings around the built environment have been identified in a number of reports and studies, most prominently around design issues of shared space between vehicles and pedestrians, with new schemes being 'paused' from the Inclusive Transport Strategy of 2018²⁸. Concern over other recent changes to streetscapes, with cycleways, bus stop designs and electric car chargers has led some organisations, in

²¹ Mackett, R. L., 2014. [The health implications of inequalities in travel](#), *Journal of Transport and Health*, 1, pp. 202-209

²² Pyer, M. and Tucker, F. 2014. ['With us, we, like, physically can't': Transport, Mobility and the Leisure Experiences of Teenage Wheelchair Users](#), *Mobilities*, 12(1), pp.36-52

²³ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments](#). *Local Environment*, 13(6), pp.485-496

²⁴ Ermagun, A. et al., 2016. [A joint model for trip purpose and escorting patterns of the disabled](#), *Travel Behaviour and Society*, 3, pp.51-58

²⁵ Corran, P. et al., 2018. [Age, disability and everyday mobility in London: An analysis of the correlates of 'non-travel' in travel diary data](#), *Journal of Transport and Health*, 8, pp.129-136

²⁶ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments](#). *Local Environment*, 13(6), pp.485-496

²⁷ Evans, G., 2015. [Accessibility and user needs: pedestrian mobility and urban design in the UK](#), *Municipal Engineer*, 168(ME1), pp.32-44

²⁸ Criticisms of "shared spaces", without physical demarcations of space between people and vehicles, have highlighted how difficult it is for blind people to navigate within them. Department for Transport, 2018. [The Inclusive Transport Strategy: Achieving Equal Access for disabled People](#)

particular the Royal National Institute of Blind People (RNIB), to create guidelines for streetscape design to maintain and enhance accessibility for blind people²⁹. The charity Transport for All also recently launched an Equal Pavements Pledge asking for higher quality as well as clutter-free pavements, more dropped kerbs, and improved tactile paving³⁰. Many of these issues have been referred to in different studies³¹, such as a lack of dropped kerbs at crossings and street furniture causing obstructions, particularly for blind people.

Issues with access to transport services for non-car users have included: inaccessibility to vehicles and stops and stations; as well as the problems of trying to book accessible taxis, for which availability has actually been in slight decline³². This has resulted in high levels of anxiety amongst young people lacking travel independence compared to their non-disabled peers and instead relying on being driven around by their parents³³. Analysis of the 2018 National Travel Survey found almost three times the proportion of disabled people (24%, as opposed to 9% of non-disabled people) reporting difficulties with travel, and lower levels of satisfaction with bus and train services were reported overall by disabled people³⁴.

Disabled people and the car

For those disabled people who drive, the car is seen as a key 'enabler' in their lives³⁵, allowing them to reach places and carry out activities which are otherwise very difficult or impossible. As well as the more usual advantages of speed, comfort and availability over public transport or even taxis, users of the Motability scheme pointed to the increased social value of having a car over using a wheelchair or mobility scooter,

²⁹ RNIB, 2021. [Seeing streets differently: How changes to our streets and vehicles are affecting the lives of blind and partially sighted people](#)

³⁰ <https://www.transportforall.org.uk/campaign/equal-pavements-pledge/>

³¹ As mentioned in: HM Government, 2020. [National Disability Strategy](#), CP512

³² HM Government, 2020. [National Disability Strategy](#), CP512

³³ Pyer, M. and Tucker, F. 2014. 'With us, we like, physically can't': [Transport, Mobility and the Leisure Experiences of Teenage Wheelchair Users](#), *Mobilities*, 12(1), pp.36-52

³⁴ Crowley, J. et al., 2021. [Motability: disability and transport needs](#). National Centre for Social Research

³⁵ Disability Unit, 2021. [Exploring the everyday lives of disabled people](#)

feelings of emancipation and being less disabled, and also the car as a refuge from the outside world³⁶.

Little policy and research has considered the potential for disabled people's car journeys to be substituted, largely from the perspective of maintaining access, but also because of poor consideration of alternatives. In the UK, disabled people are required to be assessed as incapable of walking 200 metres (even with the use of aids) in order to get any kind of mobility support³⁷. In addition, the use of 'non-traditional' mobility aids, such as bicycles (both two-wheeled and adapted) and scooters, was not recognised until 2020's 'Gear Change' strategy³⁸. The assumption has been that disabled people are unable to substitute car trips with other modes³⁹.

Conflicts of needs

As we have discussed, there are a wide range of challenges faced and adaptations made by disabled people, depending on their impairments. While some with limited mobility rely on getting as close to their destinations as possible by car, others, such as the visually impaired, are threatened by the close proximity of motor vehicles, especially silent ones such as electric cars. This is not the only conflict between the access needs of different impairment groups; RNIB⁴⁰ recommend 60mm upstands around footways to aid navigation with canes, whereas this can be challenging for electric wheelchairs and mobility scooters, which can struggle with more than a couple of centimetres of height difference. Audio information on public transport can greatly aid visually impaired passengers yet contribute to feelings of overwhelm for some neurodivergent people.

³⁶ Power, A. 2016. [Disability, \(auto\)mobility and austerity: shrinking horizons and spaces of refuge](#). *Disability & Society*, 31(2), pp.280-284

³⁷ Department for Work & Pensions, 2021. [PIP Assessment Guide: Part Two - The Assessment Criteria: A DWP guidance document for providers carrying out assessments for Personal Independence Payment](#)

³⁸ Department for Transport, 2020. [Gear Change: A bold vision for cycling and walking](#)

³⁹ see: Power, A. 2016. [Disability, \(auto\)mobility and austerity: shrinking horizons and spaces of refuge](#). *Disability & Society*. 31(2), pp.280-284

⁴⁰ RNIB, 2021. [Seeing streets differently: How changes to our streets and vehicles are affecting the lives of blind and partially sighted people](#)

To overcome this, the concept of “Inclusive Design”⁴¹, also known as “Universal Design”⁴² brings together these disparate requirements and, by consultation with disabled people, arrives at compromises between these conflicts to ensure no impairment group is unduly disadvantaged.

The question of car use reduction

Travel in the climate emergency

There is currently an urgent need to reduce CO₂ emissions, and 27% of the UK’s greenhouse gas emissions are from transport, a percentage that is rising as other sector emissions reduce. In this context, the UK government states that:

“We cannot simply believe that zero emission cars and lorries will meet all our climate goals or solve all our problems. They will not, particularly in reaching the medium-term Sixth Carbon Budget targets. [...] As well as decarbonising private and commercial road vehicles, therefore, we must increase the share of trips taken by public transport, cycling and walking”⁴³.

This implies a need to cut the number of car journeys, despite the projected decarbonisation of existing road transport. For those disabled people who currently rely on car travel, there is a question of how that might be achieved without unfairly impacting them. Although issues around transport and mobility feature within both the discussions on environment and disability separately, “connections are rarely made between the two critiques and they seem to conflict. The environmental movement criticises energy-intensive, fossil-fuel-powered transport [...] but the needs of disabled people are often marginalised”⁴⁴.

⁴¹ Cross River Partnership, 2021. [Mobility Justice & Transport Inclusivity](#)

⁴² UITP & Handicap International, 2019. [Safe and Accessible Public Transport for All: Making SDG 11.2 a Reality](#)

⁴³ Department for Transport, 2021. [Decarbonising Transport: A Better, Greener Britain](#)

⁴⁴ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments. Local Environment](#), 13(6), pp.485–496

In practice, how disabled people's travel can be addressed in the context of reducing overall car use is a research gap. As we have mentioned, there is wide variation in disabled people's travel, and for some groups of disabled people, there are likely advantages to a situation in which potential conflict with motor vehicles is reduced.

The Car Free City and car reduction

The concept of the car free city as a reaction to the negative impact of mass private car ownership in cities has been discussed since the 1960s. In the UK, the "Traffic in Towns" report⁴⁵ outlined some of these issues, though the solutions advocated were not to remove traffic everywhere, but instead to separate pedestrians from cars or reroute through trips onto main roads, creating so called 'environmental areas' prioritising non-motor traffic. At the same time, plans for a futuristic new city in southern England began with the initial idea that it would be car free, with all cars arriving into the city parked at the edge⁴⁶. Eventually, the idea of building a large new car free city faded, but interest in restraining the negative impacts of the car spread, with the Netherlands redesigning streets to reduce car traffic and promote cycling from the 1970s.

In a variety of places around the world, the idea was taking hold that areas of high pedestrian activity should be traffic free. This was mentioned heavily in "Traffic in Towns", but before this, the first pedestrianised shopping streets were opened in Stevenage New Town in 1950, followed by the other New Towns⁴⁷, and, later, a large number of other towns and city centres around the UK and beyond; with the results of longer visit times and higher retail spend.

Towards low-car and car-free neighbourhoods

Following from the idea of restricting car use in major centres, the idea came about to reduce the amount of

⁴⁵ Buchanan, C. 1963. [Traffic in Towns](#), HMSO

⁴⁶ Boodoo, A. 2010. [Milton Keynes: The carfree city that nearly was](#), Towards Carfree Cities IX Conference, World Carfree Network

⁴⁷ Parris, H., and Parris, J. 1981. [Bracknell: The making of our New Town](#), Bracknell Development Corporation

through traffic on residential streets, in order to mitigate the immediate impacts of cars where people live. This is not, strictly speaking, a policy for reducing the number of cars in cities, but it does reduce roadspace and road connectivity by a small amount.

In 1970s California, the 'Environmental Area' or 'Neighbourhood Unit' concept was trialled, in which certain roads were fitted with blocks or filters to stop car traffic while allowing pedestrian and cyclist access. This led some residents to campaign for their removal and for streets to be reopened to through traffic⁴⁸. Nevertheless, the approach was deemed successful and reproduced worldwide, with over 25,000 streets in the UK having such filters by 2019⁴⁹. We now know these in the UK as 'Low Traffic Neighbourhoods' (henceforth LTNs) and increasingly, evidence shows their ability to effectively reduce car use within the first few years after implementation⁵⁰. In tandem, new residential areas were usually being built with streets excluding through motor traffic, and, particularly in the New Towns, with traffic free streets separated from car parking, known as 'Radburn' layouts after their use in an experimental development in the 1920s⁵¹.

In 2020, emergency legislation was brought in to initiate the rapid implementation of experimental LTNs, which again proved controversial and had both negative and positive impacts on disabled people with a variety of impairments⁵².

Detractors of LTNs and the idea of restraining car use in cities have pointed to impacts on disabled drivers and carers of disabled people as reasons for their unsuitability, but the reality is not only more nuanced,

⁴⁸ Appleyard, D. 1981. *Liveable Streets*, University of California Press

⁴⁹ Walker, P., 2021. [Critics of UK low-traffic schemes told that 25,000 filters already existed](#), *The Guardian*, 6 November 2021

⁵⁰ See for example: Goodman, A., et al., 2020. [The Impact of Low Traffic Neighbourhoods and Other Active Travel Interventions on Vehicle Ownership: Findings from the Outer London Mini-Holland Programme](#). Findings., p.18200; Aldred, R. and Goodman, A. 2021. [The Impact of Low Traffic Neighbourhoods on Active Travel, Car Use, and Perceptions of Local Environment during the COVID-19 Pandemic](#). Findings, p.21390.

⁵¹ The Radburn Association, 2006. [Radburn: A Town for the Motor Age in Fair Lawn, N.J., U.S.A](#)

⁵² Transport for All, 2021. [Pave the Way: The impact of Low Traffic Neighbourhoods \(LTNs\) on disabled people, and the future of accessible Active Travel](#)

but also not well studied. As previously mentioned, the idea of reducing through traffic is not new (and in fact the original 1970s implementations were also originally short term experiments), and a citizen-science study lead by Possible in 2020 found that people tend to have a more positive attitude towards them over time⁵³.

Transport for All⁵⁴ interviewed a number of disabled people impacted by these emergency measures, and their concerns were particularly around information on changes, the lack of tactile paving, dropped kerbs being blocked off, or simply, disabled people, or their carers, finding it more difficult to get around their local area. However, there was a wide variation and indeed some polarisation in how different disabled people perceived the changes, reflecting the wide variety of impairments people have and the impacts of restrictions to car access on how they travel.

The research concluded that the main issue was failing to consult with disabled people in the affected areas in order to identify how traffic could be calmed without negatively impacting on their journeys, in some cases making it difficult for them to make even local trips. Overall, 46% of disabled people surveyed had said the LTN had made their journeys more difficult; though 14% reported that their journeys had become more pleasant as a result of the same interventions, 77% said their journey times had been extended. Transport for All recommended that the design and communication of LTN schemes, particularly in terms of engaging with disabled residents early on in the design process, was the main failing of the Covid response schemes, rather than LTNs in themselves necessarily being detrimental to disabled people.

The policy context

After decades of pro-car planning, a shift away from private cars is highlighted in policy, with the government facilitating measures to promote modal shift for local

⁵³ Possible, 2021. [Safe streets and strong support for filters](#), Possible

⁵⁴ Transport for All, 2021. [Pave the Way: The impact of Low Traffic Neighbourhoods \(LTNs\) on disabled people, and the future of accessible Active Travel](#)

journeys, with the aim of reducing traffic and air pollution in residential areas. The “Gear Change” strategy on walking and cycling proposes that half of all journeys in urban areas by 2030 should be made by walking, wheeling or cycling, including increasing use of these modes by disabled people⁵⁵ (currently around 84% of disabled people never cycle⁵⁶). If achieved, it will certainly contribute to delivering decarbonisation and public health benefits in urban areas.

This proposed shift to active travel for both disabled and non-disabled people is to be achieved by a number of means, including the provision of free or low-cost cycle training (including for suitably adapted cycles), and a financial support programme for the purchase or hire of e-bikes, specifically recognising their usefulness to some disabled people⁵⁷. In terms of infrastructure, authorities are told that only protected cycle lanes will be funded, and new cycle lanes should be made suitable for a range of adapted cycles, including wheelchair-based handcycles, as conditions of receiving government funding. The Inclusive Transport Strategy of 2018⁵⁸ also mentions that cycles are sometimes used as mobility aids and should be considered as such, a change to previous thinking of cycling as something disabled people ‘cannot’ engage in⁵⁹.

Whilst a role for disabled people’s cycling is finally recognised as part of ‘Gear Change’, the disconnect we highlighted between the environmental discussion and inclusivity in transport still holds. As restrictions on car use are envisaged in a number of ways in both national and local policy (with, for example Leeds City Council aiming for a 30% reduction in car travel by 2030⁶⁰), it is necessary to consider whether, and to what extent, disabled people’s car travel can also be reduced while

⁵⁵ Department for Transport, 2020. [Gear Change: A bold vision for cycling and walking](#)

⁵⁶ Cross River Partnership, 2021. [Mobility Justice & Transport Inclusivity](#)

⁵⁷ Department for Transport, 2020. [Gear Change: A bold vision for cycling and walking](#)

⁵⁸ Department for Transport, 2018. [The Inclusive Transport Strategy: Achieving Equal Access for disabled People](#)

⁵⁹ The work by Wheels for Wellbeing shows the key importance of cycling as mobility aid: <https://wheelsforwellbeing.org.uk/campaigning/my-cycle-my-mobility-aid/>.

⁶⁰ Leeds City Council, 2020. [Connecting Leeds Transport Strategy](#)

maintaining their ability to, at the very least, access everything they currently can.

The Inclusive Transport Strategy of 2018 states a vision:

“For disabled people to have the same access to transport as everyone else. They will travel confidently, easily and without extra cost. By 2030 we envisage equal access for disabled people using the transport system, with assistance if physical infrastructure remains a barrier”⁶¹.

While this strategy mentioned the potential of demand-responsive transit, autonomous vehicles, and Mobility as a Service - all things which have potential to improve disabled people’s journeys in different ways (subject to implementation) - it made no mention of climate change or any potential for reducing car travel by disabled people.

In a situation where the Inclusive Transport Strategy makes no mention of climate change, and the Transport Decarbonisation Plan makes no mention of disability or disabled people, it may be questioned how inclusive the transition from car use for disabled people might be, and whether the government is seeing the issue of disabled people’s car travel as too ‘difficult’ an issue to deal with in terms of its potential to appear ableist.

This lack of consideration of the “whole journey environment” for disabled people’s travel and the disconnect between transport and urban policy is something Evans pointed out in looking at accessibility and user needs: “transport policy and planning have been too isolated from urban policy and planning [...] which frustrates integrated land-use planning and access”⁶².

⁶¹ Department for Transport, 2018. [The Inclusive Transport Strategy: Achieving Equal Access for Disabled People](#)

⁶² Evans, G., 2015. [Accessibility and user needs: pedestrian mobility and urban design in the UK](#), Municipal Engineer, 168(ME1), pp.32-44

Our research



Reducing the number of private cars in our streets is a fundamental and non-negotiable step to meeting climate targets, and one which can also yield a range of wider health and wellbeing benefits for everyone. However, a fair transition to cities without mass private car ownership has to consider the differential mobility and accessibility needs across different groups. Switching to more sustainable modes comes with different challenges which have to be carefully accounted for. In balancing between social and environmental justice objectives, we have to acknowledge that not everyone will be able to fully access opportunities without the support of motorised options. But many configurations and options are possible to make this happen. In response to a lack of policy and research work on the intersection between transport, climate policy and disability, our research aimed to develop shared realistic visions and related pathways for low-car futures that accounted for the needs and desires of disabled people.

Specifically the research had three main objectives.

1. To explore co-producing realistic visions for low-car city futures that take into account the needs and desires of disabled people.
2. To begin identifying the challenges and advantages of a transition to such low-car city futures from the perspective of disabled people.
3. To begin identifying the steps to be taken to implement such a transition, including a framework for prioritising individuals, groups, and types of trip that will most likely continue to need motorised vehicles.

Whilst looking for realistic visions for the future, inevitably, part of the discussion focused on current challenges to disabled people's mobility and ways these

could be addressed by reducing car use (as discussed in the 'Travelling in a car-centric city' section). Some participants who had experience of recent streetspace interventions introduced during the Covid pandemic referred to and commented on those. However, our main focus was not on these recent changes but rather on the potential for a broad scale rethinking of car use and car ownership in UK cities.

Report structure

The remaining sections of this report are structured as follows. The next section explains our methodology. Following this, we present our findings.

'Travelling in a car-centric city' focuses on existing barriers to disabled people's mobility, including infrastructural and attitudinal barriers. We also present how participants feel they have been impacted by recent streetspace changes and transport policies. We conclude the section with participants' reflections on car use and dependency and its links with the aforementioned barriers.

'Envisioning a low-car city' presents the vision that participants shared with us, including their reflections on the challenges that implementing such a vision might bring, the need to leave space for more than one vision, and to adopt appropriate engagement processes at all stages of planning.

We conclude with a summary of the main findings and a series of recommendations for different stakeholders.

Methodology

To respond to our research questions we conducted seven in-depth interviews with representatives of four national and two local Disabled People’s Organisations (DPOs)⁶³, and a follow-up interview with a Chartered Access Consultant. We also ran an email interview with ten members of a national DPO representing Deaf women⁶⁴. The DPOs that took part are not responsible for the views reported in this document and may not agree on our final recommendations.

Impairments



Location Distribution



Age Distribution



* Other includes any complex impairment, e.g. mobility and hearing impairment

Fig 3: Location, impairments and demographics of participants⁶⁵

⁶³ A Disabled People’s Organisation or DPO is an organisation run by and for disabled people, and which incorporates the Social Model

⁶⁴ Whilst ‘deaf’ refers to hearing impaired people, ‘Deaf’ (culturally Deaf) refers to people who use signing as their main language and cultural exchange. The term d/Deaf is used to refer to both groups

⁶⁵ We used the definition of town, city and rural area available here: <https://commonslibrary.parliament.uk/research-briefings/cbp-8322/>

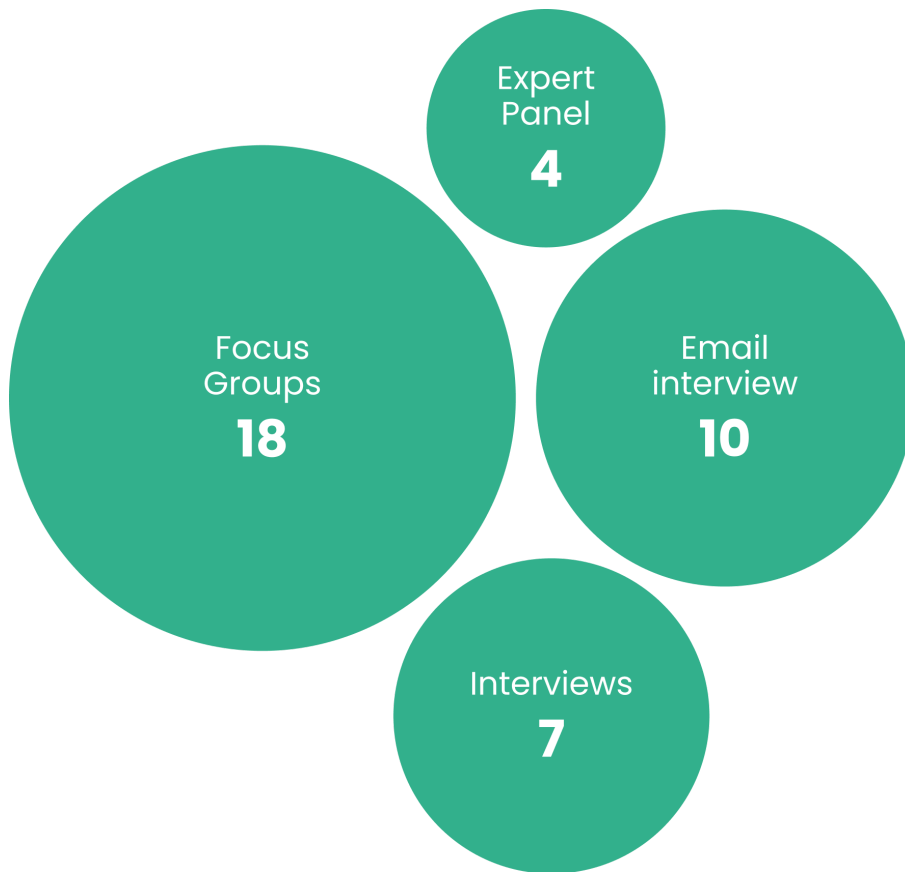


Fig 4: How we engaged with research participants

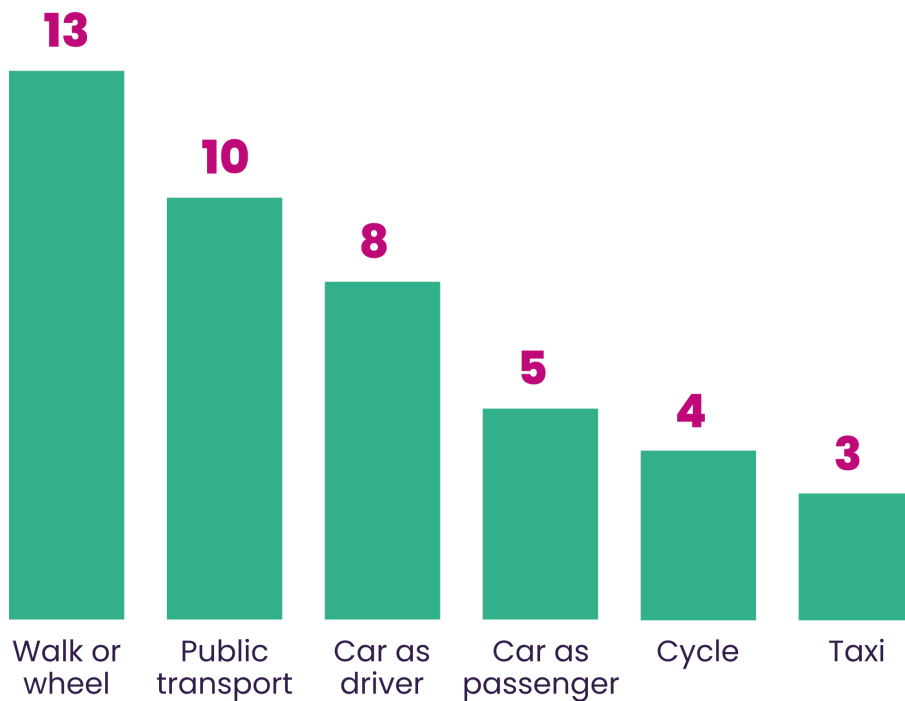


Fig 5: Participants' preferred modes of transport

The interview findings were used to prepare four focus groups. For example, following discussion with the DPOs we decided to switch from the original idea of 'car-free' to the term 'low-car', to acknowledge participants' attitudes towards retaining a minimum level of car access. The focus groups involved a total of 17 disabled people and one relative of a disabled child from different cities in the UK with a variety of impairments as well as different ages. Focus group participants were recruited with the help of the DPOs we contacted as well as via social media channels.

Prior to receiving their invitation, participants filled in a short questionnaire providing information on their travel habits, impairments, age and pronouns. This allowed us, when assigning people to the different groups, to maximise diversity and generate as far as possible a constructive debate between people representing the experience of different impairments and travel habits. It should be stressed that this is not a statistically representative sample of disabled people. Although our focus group enabled debate between people with different impairments, ours was a selected sample due to both self-selection and the large amount of interest we received in participating. We have not been able to represent all impairment groups and we are aware that our findings exclude the experience of those disabled people who do not use or have access to the internet.

With the help of transcription and data analysis software, we transcribed and thematically analysed the pseudonymised interview and focus group recordings. We complemented this with a review of other reports and relevant literature. We then discussed our preliminary results with a panel of representatives from the Department for Transport's Disabled Persons Transport Advisory Committee (DPTAC). We transcribed and analysed the final debate recording and used it to support the original data. Where necessary and not impacting on the overall meaning, we slightly edited the quotes reported in the report to facilitate reading, for

example, deleting repeated words or interjections such as “you know”, “I mean”, etc. For example, we quoted the original “I think, you know, I think that the current situation...” as “I think that the current situation...” All names used in the quotes are pseudonyms we assigned to participants to protect anonymity.

Co-production and reflexivity have been at the core of our research approach, with repeated meetings and discussion between the research team informing the data collection and analysis. The limited time we had made it impossible to set up an advisory panel, which was a strategy we had initially envisioned. However, the discussion with the DPOs and the DPTAC has helped us in deepening our critical analysis of the data and reflection on the limitations of our approach.

Travelling in a car-centric city



The ability to access services and satisfy daily needs is still a key issue for disabled people. As a result of poor transport systems, many approach the outside world with worry and fear and are often precluded from independently leaving their homes or reaching important destinations⁶⁶. All the participants highlighted the difficulties they face every day with accessing places. From sight impaired to neurodiverse people, current city streets, public transport systems and even taxis are unwelcoming and exclusionary. Following the literature, we consider this a situation of transport disability, reproduced by a number of interrelated barriers we explore in this section: infrastructural, attitudinal, lack of recognition for alternative modes of transport, spatial conflicts with other modes and the emergence of EVs⁶⁷.

These barriers generate a situation of transport disability in which a car becomes the most feasible option to access places for disabled people.

Infrastructural barriers to travelling as a disabled person in a car centric city

Walking and wheeling in a car-centric city

As recently reported by the RNIB, “walking journeys are of fundamental importance in ensuring blind and partially sighted people can live their lives with as much independence as possible”⁶⁸. As referred to earlier, concerns with accessibility of the pedestrian environment, including the lack of appropriate and frequent road crossings⁶⁹, have been reported in a

⁶⁶ See for example: RNIB, 2021; Pyer, M. & Tucker, F., 2014.

⁶⁷ The high cost of transport, from costly accessible taxis or public transport fare, is also a key factor in stopping disabled people from travelling. Unfortunately our research has not been able covered extensively this topic, the intersectional aspects of disability, gender and income are also to be taken seriously into account.

⁶⁸ The RNIB has recently published a report on the topic which we recommend as key reference. RNIB, 2021. [Seeing Streets Differently report](#).

⁶⁹ The RNIB has been clear on their recommendation for Pelican or Puffin Crossing as the most accessible format currently available. See more in their recent report: RNIB,

number of previous studies. Our findings resonate strongly with this statement, extending its validity across the spectrum of impairments.

Our participants highlight the importance of walking⁷⁰ to their lives and the disabling effect of multiple issues related to walking environments. For example, Chris, who is a full-time wheelchair user, gave examples of how she has to adapt her journeys and get help because of poor footway or pavement⁷¹ conditions:

“Pavements need to be so much better if wheelchairs are going to be able to get about! So, last week, I was seeing a new consultant at a new hospital. And even though it's about a half hour walk from our house I wasn't confident because I didn't know the road area or the pavement area. So my husband actually drove me. We don't have a WAV⁷² vehicle, [...] [other times] my husband, he is going to do the walk for me beforehand to check what the pavements are and let me know” (Chris, focus group participant).

From her repeated experience wheeling around her area, Chris expects pavements to be of such a low quality that she would not attempt a new journey independently and will rely on someone else to “check what the pavements are”.

In response to this type of issue, Emma, a national DPO representative stresses how the focus on pavement quality has become increasingly important in their work:

“It's really important that everything is accessible, but all journeys start and end with the street, and if the street isn't accessible, you won't be able to get to the bus-stop or to the train station. And so it doesn't matter how accessible the train or the bus is. Actually, lots of disabled people really rely on the street to be able to make walking journeys for

2021. [Seeing Streets Differently report](#)

⁷⁰ We use 'walking' to refer to both walking and wheeling

⁷¹ While the term 'footway' is most commonly used in policy and engineering documents, the majority of our participants use the term 'pavement', therefore we used the latter.

⁷² Wheelchair Accessible Vehicle

health and fitness, getting to a city, and the start and end of most journeys. So because of that, we have tended to focus much more on the accessibility of the street” (Emma, DPO rep).

For Emma and her DPO, poor walking environments are a key concern, because, as we saw with Chris, they can preclude independent journeys from being made. Moreover, as they are necessarily the beginning and end of each journey, they can also preclude disabled people’s access to public transport creating a situation of transport disability. In such a situation, disabled people have only the options of either abandoning the journey or having to rely on a private car or taxi to go door-to-door.

Many participants comment on the quality of pavements in UK cities as being extremely poor to the point of endangering disabled people, as Tim comments: “there are so many miles of pavements which are just potentially dangerous for wheelchair users, disabled people to go over and end up in A&E” (Tim, focus group participant).

Low quality is both because of poor maintenance (leading to, for example, recurring potholes, plant growth obstructing passage and visibility, etc.) and because pavements are increasingly used for purposes other than wheeling or walking, including advertising, parking large vehicles and vans⁷³, and installing facilities. For example, Marion, representative of a national DPO found with a recent survey that “most people are experiencing difficulties with street obstacles, street furniture, wheelie bins, cars on pavements” (Marion, DPO Rep), difficulties already reported by the DPTAC in 2002 and documented by Living Streets⁷⁴.

Jennie, a focus group participant, similarly notices that “the pavements are hopeless. They’re sort of broken by

⁷³ Vehicle parking on footways (“pavement parking”) is banned in London and there are discussions about restricting it in the UK as a whole.

⁷⁴ DPTAC, 2002. [Attitudes of disabled people to public transport](#); Similar findings are highlighted a decade later in this report by the Northern Ireland Department for Regional Development in [Attitudes of Disabled and Older People to Public Transport, November 2014 – January 2015](#). On issues linked to pavement clutter see also Living Streets’ video: Living Streets Edinburgh, 2020. [Cut the Pavement Clutter!](#)

enormous lorries and vans passing on them", mirroring the findings of the 2019 Transport Select Committee enquiry into pavement parking⁷⁵. Not only are parked motor vehicles themselves an obstacle and hazard to pedestrians, but evidence shows that they cause substantial damage to pavement surfaces which is expensive to fix.

Moreover, poor walking environments are linked to issues of safety, especially when considering the intersection of disability, gender and age. For elderly walkers or women, as Finley, the Access Consultant we interviewed said, "Security is another main issue [...] If you've got a mobility impairment, if you're older, you're a target for getting attacked. So for you bright lighting is so important and having to make sure that you are not alone on the road is very important" (Finley, Access Consultant). Another interviewee, Lucy, shares her experience as a partially sighted woman walking at night on pavements where unmaintained tree branches grow under lights, creating moving shadows:

"As a visually impaired woman at night, I don't feel safe. There are these moving bits on the floor and I'm trying to listen if I'm going to get attacked, because I have been attacked in public spaces on more than one occasion as a white cane user, and it just sort of adds to your whole stress about going out. [...] And people forget about the cross sectionality of being like a disabled woman [...] the fact that those two could go together. So some things are disabling because of your disability, and some things are disabling because of your gender" (Lucy, DPO rep).

Although street trees are widely seen as a positive improvement to public realm⁷⁶, including helping with noise and air pollution^{77 78}, they can generate issues

⁷⁵ Transport Committee. 2019. [Pavement parking. Thirteenth Report of Session 2017–19](#). House of Commons.

⁷⁶ Asgarzadeh, Koga, T., Yoshizawa, N., Munakata, J. and Hirate, K., 2010. [Investigating Green Urbanism: Building Oppressiveness](#). *Journal of Asian Architecture and Building Engineering*, 9(2), pp.555–562

⁷⁷ Mayor of London, 2019. [Using green infrastructure to protect people from pollution](#). Greater London Authority

⁷⁸ Air Quality Expert Group, 2018. [Impacts of Vegetation on Urban Air Pollution](#). DEFRA

when they are introduced with poor design (i.e. on the same line as street lights) or where, as Lucy clarifies, “councils haven’t got money for maintaining those trees” (Lucy, DPO Rep). Safety in being able to walk or, as we will show, use public transport, especially at night, is a key concern for disabled people, and especially when disability intersects with being a woman, elderly, or from a minority.

Changes to walking environments during the Covid pandemic

The infrastructural barriers to walking reported by participants extend also to more recent situations. Participants comment how new permits given to businesses to use pavement spaces (especially during the Covid pandemic), the installation of new EV charging stations on pavements, and pavement parking, have reduced space even further – space which is already too limited for the safe mobility of wheelchair users, guide dogs or cane users, as well as parents with prams, and the elderly.

Mary, who uses a wheelchair and travels by public transport, reports her vivid experience of the difficulty that pavement obstruction causes to her journeys:

“I am quite concerned that since Covid, the standard and quality of pavements has declined, and they’re full of many more objects than they used to be. Very recently, I have fallen off a kerb and had to be rescued by a member of the general public because the particular pavement I was on was so populated with street furniture that there wasn’t room for me. The amount of potholes and things that are just wrong with pavements and roads now and the lack of drop kerbs due to changes in the environment that I can no longer access” (Mary, Focus Group participant).

In Mary’s perception, the growing priority given to other uses of the pavement means that there is now even less room for her as a legitimate user of public space than pre-Covid. She also reports a clear worsening of a

situation of poor pavement quality – something that, again, as other participants reported, was already challenging before the pandemic.

The worsening of walking environments during the pandemic is a concerning finding which resonates with what Marion told us on the same topic:

“Over the pandemic there’s kind of been anarchy on the streets in terms of pop-up restaurants, cordoning off disabled parking bays, town centres that have made certain streets barred from car access, you know, in certain streets. Temporary cycle lanes, you know, all sorts of things cropped up without proper consultation. And some of those things are just making it much harder for disabled people to move around (Marion, DPO Rep).

Both for Mary and Marion, some of the recent emergency measures linked to Covid have worsened the quality of walking journeys and made it harder for disabled people to move around. In particular, Mary and others are concerned with measures such as pop-up restaurants or Streateries⁷⁹, which can impede their safe use of pavements.

Marion links this reflection on poor walking environments to a more general one on how emergency measures, such as new cycle lanes or street closures, were not appropriately discussed with disabled people. In line with what was reported by Transport for All⁸⁰, but extending the finding to interventions other than LTNs, our participants’ views were mixed with respect to street closures or new cycling provision, with many expressing concerns with regard to their limited involvement in engagement processes.

Specifically, some found street closures were hindering their accessibility, especially as a result of bad communication. For example Jamie felt LTNs “appeared overnight”:

⁷⁹ “Streateries provide new space on the road to place outside tables and chairs, protected by barriers.” See more at: <https://streateries.commonplace.is/>

⁸⁰ Transport for All. 2020. [Pave the Way Report](#), p.7

“I feel like nobody told anybody about them or really explained them. So we were just driving around. And then suddenly there's a massive planter in the middle of the road that you can't get past. And then there's sort of no thought or planning about that. And I ought to say actually one of the [...] hugely negative things about the low traffic neighbourhoods is that people end up driving around actually more because there are no maps to tell you where the right entrance is for a particular road you want to get onto. So I ended up driving around for 35 minutes, trying to find an entrance onto a road I needed to get to” (Jamie, focus group participant).

Whilst Jamie and others find LTNs were badly communicated and problematic, indirectly also suggesting that urban navigation tools should be updated more quickly to account for streetspace changes, others found them beneficial. Jackie, who normally uses a wheelchair adapted car, commented:

“One of the benefits that I found during the the lockdown section of the pandemic, they did actually close a lot of the peripheral roads in [my] area, and one of the benefits I found was that I was able to ride my bike out along roads that normally I wouldn't dare go on because of the traffic. And I thoroughly enjoyed that. So, from a recreational point of view and from the point of view of people who would find a high level of traffic in suburban roads intimidating, I think that was a huge benefit” (Jackie, focus group participant).

Jackie's experience is of an improved wheeling and cycling environment as a result of a street closure. We will return to disabled people cycling later in the report. Jim, who is blind and is in Jackie's focus group, has a similar positive experience and responds to Jackie's experience highlighting the positive social changes linked to the street closures and the improved air quality:

“It wasn't just recreation to it, it was sociable, it was then people were now walking [...] and you bumped into people and you stopped and you chatted in a way that just obviously doesn't happen to people who were in cars, doesn't take that many people on bikes, either. And it was mostly foot based [...] it was more sociable, it was much cleaner. Breathing generally was more comfortable. And I felt suddenly that time [when the street closures were in place] really had some very positive aspects to it. And so many people said, Can we hold on to this? Can we keep this afterwards? And sadly it just was here and is gone” (Jim, focus group participant).

Between negative and positive reactions, street closures have, for Jim and others, been only a temporary improvement that has yet to address the challenging transport environment for disabled people.

Using public transport in a car-centric city

A second barrier to disabled people's mobility is poor quality public transport, a limitation already highlighted in the early 2000s⁸¹ and, as we mentioned, still evident in the lower rates of satisfaction disabled people report in the National Travel Survey⁸². Although research has shown the great potential that public transport can have in enabling wheelchair users to access opportunities⁸³, its poor quality could make it particularly inaccessible across different impairment groups.

For a large proportion of our participants, especially ones who are mobility impaired, public transport is the last resort when needing to leave their homes. Buses and trains are considered highly inaccessible, mainly because of lack of level access and adequate space for wheelchairs, and other users' attitudes towards disabled

⁸¹ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments](#). *Local Environment*. 13(6), pp.485–496

⁸² Crowley, J. et al., 2021. [Motability: disability and transport needs](#). National Centre for Social Research

⁸³ see, for example, Pyer, M. and Tucker, F. 2017. [‘With us, we, like, physically can’t’: Transport, Mobility and the Leisure Experiences of Teenage Wheelchair Users](#). *Mobilities*. 12(1), pp.36–52

travellers⁸⁴. Lora, who is a wheelchair user and drives a car, clearly describes these barriers:

“Trying to get on a bus at the moment, trying to even get a bus to stop for you in a wheelchair is just, you know., people just don't want you there because it's too much bother, because the pavement isn't the right level for the bus and there isn't space for you. And there's a mum with a buggy in the space where you're meant to be. So the bus doesn't stop and you can't get on and just goes on and on and on” (Lora, focus group participant).

Travelling by bus is a great challenge for wheelchair users like Lora, who often struggle to find adequate space on board or even to get a bus to stop for them. Issues emerge also for people with other impairments, for example the high level of noise on buses and tube trains is particularly challenging for neurodiverse participants⁸⁵, or a lack of clear information which becomes a challenge for both visually impaired and d/Deaf people.

As Nicky, an interviewee, stressed, being able to access information about a mode of transport's accessibility and timetable is:

“quite a key issue because people have mobility needs [...] around door-to-door. [...] Disabled people [...] will tend to be planning their life very carefully because it's tiring, it's difficult, they have other things to fit in. So there's a sort of reliability issue, sort of can they be certain at a certain time that this will happen?” (Nicky, DPO rep).

Reliability and, as we will see, safety and security, are therefore crucial prerequisites for being able to access a

⁸⁴ For a vivid account of the multiple issues linked to public transport access by wheelchair users see for example: Gaete-Reyes, M. 2015. [Citizenship and the embodied practice of wheelchair use](#). *Geoforum*. 64, pp.351–361 ; For an analysis of the detrimental impacts of poor public transport on young wheelchair users, see also: Pyer, M. and Tucker, F. 2014. [‘With us, we, like, physically can’t’: Transport, Mobility and the Leisure Experiences of Teenage Wheelchair Users](#), *Mobilities*, 12(1), pp.36–52

⁸⁵ Previous research with Australian participants confirms this point: Falkmer, M., et al., 2015. [Viewpoints of adults with and without Autism Spectrum Disorders on public transport](#). *Transportation Research Part A: Policy and Practice*. 80, pp.163–183

specific mode of transport, especially when disabled people “already are feeling prone to some vulnerability or anxiety” (Nicky, DPO rep).

However, the trains and buses in our participants’ stories don’t fulfil those requisites very often. Public transport is in many cases experienced as a hostile and difficult to navigate environment, and information about transport is very difficult to access and fatiguing, often as result of poor design. Symbolically, Chris, who has both hearing and mobility impairments and uses public transport regularly, highlights:

“the wheelchair space is usually backed on to where they show the stops. So unless there’s a mirror positioned exactly opposite, I can’t see where I’m going” (Chris, focus group participant).

When talking about train journeys, fear of being stranded constitutes a strong barrier to even attempting to make a journey by train, as Sarah, a focus group participant, wheelchair user and current car driver, comments:

“I find it very difficult to be able to use public transport. I’m quite frightened of using the trains and getting stuck on there because so many of my friends have been stuck on trains. I don’t feel able to go on my own in a train, for sure” (Sarah, focus group participant).

For Sarah, fear of being stranded constitutes a key barrier to giving public transport a try. This is a particular issue affecting those requiring step-free access or assistance, where the person may be unable to get off the train at their destination because of the lack of a ramp, lift or assisting member of staff. Such fear increases Sarah’s dependency on her car which she feels is the only safe option to access town centres.

For Mary, who doesn’t have access to a car and is often forced to use trains because of lack of alternatives, this fear translates into a very tangible source of acute anxiety:

“I don't really like using trains, but often I have no choice [...] I commonly have the experience of psycho-emotional disablism when I'm using them. If I had another means of transport, I would take that, because I've been left on that many, that using them causes me acute anxiety” (Mary, focus group participant).

Mary has experienced being left on a train several times and continues to use them only because of lack of alternatives. A participant to the final panel reflected on the power of these narratives and their popularity in public discourses. He commented:

“It doesn't help the fact that you can trawl the newspapers for a journey of failed public transport journeys by disabled people, and you'll find something most weeks. You never see coverage, a successful journey” (DPTAC rep).

As we saw in Sarah's testimony, accounts of difficult train journeys can reinforce the negative perception that disabled people have of public transport, and preclude some from even attempting to use a bus or a train. However, as we saw in Mary's quote, the fear of boarding a train is a very tangible barrier for many, especially when it is coupled with consistent experience of poor service and long travel journeys, compared to using a car. Such narratives and experiences generate a general sense of being left out from the design of services which has to be taken into account.

Recent and future changes to public transport services

Participants express concerns with regard to the lack of commitment towards improving public transport services in the near future, especially outside London, as emerges clearly in the interviews. Nicky says to us:

“I don't see the current government investing significantly in building accessible public transport. You see sort of incremental little things like; if you look at the current National Disability

Strategy, you've got, we'll do an audit of the accessibility of stations. An audit isn't the same thing as making them accessible. You see they're going to be putting, which is good, voice output information on buses like we have in London. That's good. And it's helpful, but it's an incremental thing. And actually, you know, what you need is the bus services, not the information" (Nicky, DPO rep).

For Nicky, incremental approaches, audits and small adjustments to current services are not going to deliver the radical improvement needed to make public transport a realistic option for many disabled people. Marion confirms this view and criticises the slow and inconsistent pace of investments in rail services, fearing that it will take until 2070 until all stations are made accessible⁸⁶:

"There is a station improvement programme and I think, you know, it'll take 'til 2070 to make all stations accessible at the rate that's going, the new bus strategy is putting aside more money for bus improvements. So, yeah, there are things happening, but they are sort of not enough. They're not not radical enough. They're not fast enough. You know, the very sort of plodding incremental, but the world's changing very, very quickly" (Marion, DPO rep).

With the slow pace of change in providing physical access, DPO representatives are very pessimistic about the ability of transport policy and planning to catch up adequately with the required fast speed of urban and climate changes.

Attitudinal barriers to travelling as a disabled person in a car-centric city

As outlined in Lora's quote above, disabled people face both infrastructural and attitudinal barriers to accessing transport. Attitudinal barriers are a result of a lack of

⁸⁶ [As previously commented also by Leonard Cheshire representatives](#) at the current rate of progress. In 2019 only 980 out of the 2,579 stations in Britain were step-free.

awareness of disabled people's needs and views and exacerbate the existing infrastructural barriers.

Lucy gives a clear example of such barriers. They highlight the limited time that pedestrians have to cross a road, a time that does not take account of the speed of a wheelchair having to go up and down the kerbside:

"If we want to make a system that works, then it needs to work for everybody and disability and inclusion need to be at the heart of it. So even things like the time to cross the road is based on 1.2 metres per second. It doesn't take account of disabled people. It doesn't take account of the fact that wheelchair users have to [...] start at the top of the ramp and then go down the ramp across the other" (Lucy, DPO rep).

By highlighting the lack of consideration towards disabled people's needs, the interviewee stresses the importance of putting a discussion on disability and inclusion at the heart of making transport more sustainable as a precondition for creating a more equitable system.

Such discussion is for now largely absent. We have already stressed the limited attention towards disabled people's mobilities in recent changes to street spaces; changes that, in some cases, have impeded walking and wheeling journeys by cluttering even more footways or restricting access to dropped kerbs.

When public transport services are designed solely for non-disabled people, they force disabled people to become dependent on others so they are able to get in and out, to know where the bus is going, etc. Made dependent on the help of others, disabled people are also exposed to disrespectful behaviour by people who should be providing assistance. Jessie, who has researched disabled people's transport experiences in her city, summarises common concerns:

"A lot of it comes back down to like staff not being understanding of disabled needs and like a lack of

ability... it's being really hard to report staff when when they are being ableist, things like, staff being really grumpy about getting the ramp down or like buses not stopping or that kind of thing" (Jessie, DPO rep).

In a public transport system where disabled people have been 'set up' to need help to use the service, they are also strongly affected by public transport staff's attitudes towards them. Especially for participants who are wheelchair users, such attitudes form an important barrier to travelling independently, a fact that resonates strongly with previous research⁸⁷.

Similarly, participants from an organisation of Deaf women from Minority Ethnic groups we interviewed by email reported having to deal with "*Taxi drivers with no deaf awareness at all*" who are "*talking with masks, shouting, etc*". generating often "*miscommunication that causes mistakes choosing the right route, even then, sometimes they charge you full price*". D/deaf women face difficulties when dealing with drivers not aware of their impairment. A similar experience is reported by wheelchair users in the focus groups.

In this context, the invisibility of the disabled community is not just in terms of lack of physical space on public roads, but also an invisibility in governance processes. As Rob comments in the focus group:

"We're used to being ignored when big decisions are made [...] our councillors are completely ignoring anything that the disabled community says. [...] I'm a professional access consultant. I work a lot in the built environment. I've worked with Network Rail. I've worked with Transport for London. [...] I'm an expert voice and yet in my own borough, my expert voice is completely ignored, even though I've offered my services for free because of the fact that I'm saying things that they don't want to hear" (Rob, focus group participant).

⁸⁷ Gaete-Reyes, M. 2015. [Citizenship and the embodied practice of wheelchair use](#). *Geoforum*. 64, pp.351–361

As Rob expressed clearly, disabled people feel left out of planning processes. The criticism made of the lack of inclusion of disabled people's voices in planning is shared amongst all participants and underlies many of the criticisms of past and recent changes to roadspaces and transport.

Invisible mobility alternatives and lack of recognition in the car-centric city

One of the results of lack of awareness towards disabled people's mobility needs and habits is also a lack of recognition of potential ways to support and facilitate their journeys, from improving pavements to setting up incentives and standards for other options, such as trikes, mobility scooters or electric wheelchairs.

Although few participants are regular cyclists, some report having used or using a trike or a cycle attachment to their wheelchair, or a tandem to be able to cycle as blind person. These few cycling experiences are considered very positively and in some cases liberating, as highlighted in the words of Jenny, a focus group participant responding to some of the points by Mary considered earlier:

"I'm talking on behalf of my son, who is autistic and has never been able to ride a bike because he could never balance. So he's never ridden, he's never had that freedom. We've never had family cycle rides. When the LTN came in, we went on eBay and we got him a trike with a big chopper front, a really cool second hand trike. And because of the LTNs, we could get out into the road because, as Mary was saying, the pavements are hopeless [...]. So being able to move around in the roads was incredible and he could go out on his trike and have the freedom to ride around his neighbourhood, he could get to the park, and it gave him freedom and it gave him enormous confidence. And it was a really incredible

experience for him” (Jenny, focus group participant).

Reduced car traffic on residential roads enabled Jenny’s son to move independently using a trike, an experience that had been denied to him because of road traffic and poor cycle or pavement provision. Later in the discussion, Jenny expressed disappointment towards the scrapping of the LTN scheme and the loss of this newly acquired freedom for her son. Jenny’s son’s experience of a momentary glimmer of freedom in an environment that is generally disabling is a key example of how the transport system has forced disabled people to adapt to a car-centric environment rather than designing inclusive solutions enabling people with different impairments to access places without additional barriers.



A group of people with different impairments riding adapted cycles on a segregated cycle lane. Photo credit: LCC/WFW; photos by Crispin Hughes (LCC)

Diana, another focus group participant who used to walk with crutches or use public transport, has also very limited chances to use her trike because of poor quality

of roads and the negative feedback received from drivers:

“I have a pedal assist tricycle that I don't use all that much because there are so many cars on the road. But again, it's really the quality of the roads that are more of a detriment to that than the cars themselves. Although, they do get very impatient with me because apparently I don't go quickly enough. But you know, the way that a lot of these types of bicycles that disabled people can use, for example, the tricycle, if the road is ever so slightly slanted in a certain direction, then you are liable to be thrown off it immediately when there's a tiny, tiny bump in the road” (Diana, focus group participant).

As both Jenny and Diana show, potentially more accessible modes of travelling for many impairments, such as trikes or mobility scooters, seem to remain invisible to street design, planning guidance and incentive schemes; and often also further excluded by the attitude of motorists, an invisibility that further signifies the marginality of disabled people's needs in the car-centric city. Sally, a DPO representative working on access to disabled cycling, commented on the attitudinal barriers around disabled people cycling, the failure to recognise it as a mobility aid and the subsequent lack of space for it:

“A lot of disabled people can cycle. Walking is often harder for many disabled people than cycling, because cycling doesn't have the same impact on your joints, if you've got balance issues, if you're on a cycle that's got more than two wheels that can resolve a lot of those problems. There's also alongside the attitudinal thing is the failure to recognise that a cycle can be a mobility aid. So at the moment, in law, a wheelchair or a mobility scooter are mobility aids. So if you are in a wheelchair and you want to go on pavement, that's fine no one really thinks about it, if you're in a wheelchair and you want to get on a bus, in

theory, you should be able to [...]. But if you used your trike as your mobility aid, there's no way you'd be able to get that on the bus unless you have an extremely kind bus driver who really understood the issues" (Sally, DPO rep).

Cycles and trikes can be used as effective mobility aids by many disabled people with balance issues or joint pain, but have not been recognised as such until 2020⁸⁸, meaning that there was no regulatory framework nor incentive to enable their use, and, most importantly, no suitable space for them in public space or on buses. Left with no option but to attempt using pavements, trike users can either renounce them, as Jenny's son or Diana did, or use pavements generating other spatial conflicts which we will explore in the next section.

The lack of recognition of other solutions as mobility aids is not limited to trikes, but extends to other solutions that disabled people have found to navigate the current street environment. Another representative talks about some research her DPO did on mobility scooters, which have become increasingly popular especially outside London:

"They're a popular form of transport; it is quite interesting how they have become [...] a consumer product instead of a medical aid [...] people don't think about them in the same way as the wheelchair. And the pricing is, you know, is lower, there's a [...] huge second hand market for them [...]. So, that's definitely something that people would be using for making the short journeys themselves and independently [...] A lot of disabled people have more than one scooter. They'll have different scooters for different types of where they're going" (Nicky, DPO rep).

According to Nicky's DPO's research, mobility scooters are becoming increasingly popular as a consumer product for disabled people. However, despite their popularity, such flexible means of personalised,

⁸⁸ Recognition of a cycle's potential role as a mobility aid was made in the "[Gear Change](#)" strategy (Department for Transport, 2020).

door-to-door, electric powered mobility are not able to easily find space in cities, as Finley told us:

“Mobility scooters are a very good intermediate intervention because [...] it's door-to-door [...], if you've a very strong mobility impairment or even a mild one, a mobility scooter will help you. But you cannot use it on the footway because they're too narrow. If you use it on the carriageway, it's too dangerous. So you're stuck. There's no parking for mobility scooters. There is no standard for parking for mobility scooters [...]. We don't even recognise that as a legitimate means of transport” (Finley, Access Consultant).

Mobility scooters, despite being a very good intermediate intervention for door-to-door journeys lack adequately designed and regulated space to move and be parked, a clear sign of their invisibility to transport planning. This lack of recognition applies also to other mobility devices, such as powered wheelchairs that “are very, very expensive items and [...] don't have the right to be provided with one by the NHS unless you have a very specific disability” (Nicky, DPO rep).

Trikes, scooters and powered wheelchairs are fragments of a different inclusive mobility system that remains unaffordable for most people. The lack of funding makes accessing wheeling journeys very difficult for those who cannot afford adapted cycles or other solutions. Alice, who is a full time wheelchair user who relies on public transport, comments on the issue during the focus group:

“At the moment, it's very difficult to get access to funding for powered mobility devices like there's loads of attachments and so wheelchairs enable people to get around more easily. But the NHS doesn't fund any of those. And so it's also very difficult to get funding through other sources” (Alice, focus group participant).

The lack of funding that Alice experienced for a wheelchair attachment that would make getting around

more easy is also key in Sandra's reliance on a private car, as she explains:

"At the moment I would resist getting a scooter or a wheelchair because I wouldn't get funding for it because I can walk very, very short distances and I can drive, etc. But if there was funding available for somebody like me to have a wheelchair, then maybe I would be able to enjoy pedestrianised spaces. At the moment, pedestrianised spaces fill me with terror because I can't walk the distances required so I can see that if there was some funding, then maybe that would make things a little easier" (Sandra, focus group participant).

Sandra, who, as we saw, finds public transport inaccessible, is not entitled to incentives for a mobility scooter and cannot "enjoy pedestrianised spaces". For her, a car becomes a fundamental tool to access services and feel independent⁸⁹.

Spatial conflicts in the car-centric city

Spatial conflicts are a recurring theme in interviews and focus groups. Participants are concerned with interactions with other modes and road users which they feel affects their accessibility and safety.

First of all, participants report issues in interactions between pedestrians, cyclists and scooters. We saw how trike users cannot find safe spaces to ride but are unwelcomed on pavements. Conflicting interactions extend to many other occasions including road crossings, around bus stops and when new cycle lanes are introduced.

Sally, a representative of a DPO working with disabled cyclists, commented how "the hardest thing [has been] to create a compromise between people with visual impairment, and people with mobility impairments" who cycle and those who don't, given the different requirements for segregated spaces and dropped

⁸⁹ It is worth noting here that the Motability scheme allows disabled people to have access only to either a scooter or a car, but not to both at the same time.

kerbs. When going into the details of the design issue, the representative stresses that “having better pavements would help resolve some of that because it would mean you wouldn’t necessarily need the door-to-door transport” (Sally, DPO rep) and disabled people would be able to wheel to accessible parking or public transport options whilst also maintaining safe space for cycling or walking.

Shared use areas remain a worry for many and especially visually impaired people, “because of not being able to detect the vehicles, but it’s also difficult for wayfinding” (Emma, DPO rep). Silent vehicles, including cycles or e-scooters “are pretty much impossible to detect” for visually impaired people. At the same time, visually impaired people might not be easy to detect for riders and drivers, as Emma explained to us:

“It’s not always obvious to someone who’s driving or riding one of these vehicles that they are approaching somebody with sight loss. Not everybody has a guide dog [or] a cane. So it’s not always obvious that the person will be able to see you and move out of your way” (Emma, DPO rep).

Inability in detecting each other increases the risk of collisions which in turn might deter visually impaired people from using shared spaces. For visually impaired people, shared areas lack key features “to work out where they’re going. If there’s no detectable kerb, or if the only kerb is a colour change or a material change or a white painted line, that effectively is useless to a lot of people with sight loss and removes the kind of wayfinding features that they rely on in the built environment” (Emma, DPO rep).

Despite their appearance as accessible spaces, shared spaces are very difficult to navigate for those, like visually impaired or neurodivergent people, who require clearly readable cues to move in public space. Previous research highlighted the challenges that disabled and elderly people in general find with shared spaces, especially with regard to use of kerbs and vehicular

access to the street, with some nuances⁹⁰. The importance of a detectable, legible crossing is also at the base of current criticisms of multi-coloured crossings which also emerged in the interviews⁹¹.

For participants, the solution to these spatial conflicts lies in clear demarcation between walking, cycling and cars, clear pedestrian crossings and better and wider walking environments. This is echoed in a report from the RNIB – that disabled people require easy to detect boundaries between spaces for walking and spaces for cycling. This also applies to non-segregated cycle lanes where a line of paint will not be enough to protect and enable visually impaired people, children and others to detect where it is safe or where it is not. As reported by the RNIB, “It is important that the needs of pedestrians and cyclists are both considered, so increased cycling infrastructure does not hinder pedestrians’ ability to get out and about safely”⁹².

Another example of spatial conflict covered in the interviews is around floating bus stops or bus bypasses, especially when pedestrians have to cross the cycle track without detectable kerbs or appropriate crossing facilities⁹³. Buses pose a disproportionately high risk of death or serious injury to cyclists, and bus stops are sites of increased risk of collision between these road users as buses pull in and out, so bus bypasses are often deployed as an effective countermeasure to address this risk⁹⁴. But by bringing a cycle lane closer to pedestrians, bus bypasses risk creating an intimidating environment for people with sight loss or balance issues and might prevent people from using them completely. Several proposals are being discussed to resolve the

⁹⁰ See for example: Hammond, V. and Musselwhite, C. 2013. [The Attitudes, Perceptions and Concerns of Pedestrians and Vulnerable Road Users to Shared Space: A Case Study from the UK](#). *Journal of Urban Design*. **18**(1), pp.78–97; Earl, R., Falkmer, T., Girdler, S., Morris, S.L. and Falkmer, M. 2018. [Viewpoints of pedestrians with and without cognitive impairment on shared zones and zebra crossings](#). *PLOS ONE*. 13(9), p.e0203765

⁹¹ To know more about issues linked to colourful crossings see for example this letter to Government ministers by the Access Association co-signed by several DPOs: <https://accessassociation.co.uk/2021/09/06/colourful-pedestrian-crossings-letter-to-ministers/>

⁹² RNIB, 2021. [Seeing streets differently: How changes to our streets and vehicles are affecting the lives of blind and partially sighted people](#), p.13

⁹³ As reported also by the RNIB, 2021.

⁹⁴ TFI, 2018. [Analysis of bus collisions and identification of countermeasures](#)

issue; the RNIB recommended changes to the set up, some of which are shown in the picture below⁹⁵.

Our interviewee, Sally, agreed on the need to introduce clear safety measures for pedestrians and clearly demarcate spaces for cycling vs space for walking or wheeling, by for example introducing “a ramp either side so that the cyclist has to go up a ramp and therefore slow down very slightly and has a zebra crossing across where the pedestrian, which would cross from the bus stop to the main pavement” (Sally, DPO rep). This compromise can also avoid leaving the cycle lane on the right side of the bus, “where a lot of cyclists, particularly those who are sort of more vulnerable, inverted commas, perhaps because they've got a disability and therefore go slower or because they can't get up if they tip over or whatever. If you're pushing them into somewhere where they can be very uncomfortable and are unlikely to want to go” (Sally, DPO rep). Despite the differential and contrasting needs amongst disabled communities, participants agree on the need to protect both cyclists and pedestrians and the importance of collaboration between the different groups.

⁹⁵ See for example Transport for All intervention here: <https://www.transportforall.org.uk/news/tfl-stop-building-floating-bus-stops-until-safety-concerns-are-dealt-with/>



A bus stop bypass in Hammersmith, West London, showing some of the elements recommended by the RNIB (contrasting tactile paving to show a crossing point, zebra markings, detectable upstands and kerb separation delineating the pavement, lane and bus stop island, and a ramp for slowing of the cycleway). Photo: Leo Murray

Besides the importance of design options and co-producing solutions by bringing together all users, it is key to also bring the discussion on this conflict into the broader context of a car-centric city. As commented by Emma, the conflict around the bus stop is the result of cyclists “facing danger from cars on the road. And so they need some space that is safe from those cars. But unfortunately, what tends to happen is that then those cycles are put into conflict with pedestrians. So you’re just shifting the danger from one group to another” (Emma, DPO rep). In the effort to facilitate active travel and public transport use, it is key to consider potential spatial conflicts arising between different modes and

the way these can be exacerbated if space is taken away from pedestrians rather than cars.

New car-based technological solutions in the car-centric city

Participants also expressed concerns when considering the emergence of new car-based technological solutions. Many are worried about the rising number of EVs not equipped with the appropriate Acoustic Vehicle Alert System (AVAS) technology and therefore not easily detectable by visually or hearing impaired people. The RNIB is currently campaigning for the technology to be mandatory on all EVs and not only new models, and at any speed, including very slow speeds likely to be used in urban areas⁹⁶.

EVs are also a source of concern because of their charging points. We already highlighted their huge negative impact on footways and walking environments. Charging cables and columns as obstructions seem to be ignored when planning for new charging solutions, as evident in the pictures below.

⁹⁶ RNIB, 2021. [Seeing streets differently: How changes to our streets and vehicles are affecting the lives of blind and partially sighted people](#)



A footway blocked by EV charging stations and other items.
Photo credit: Zak Bond for Living Streets.

Although many wish to purchase one at some point, participants are also concerned with the accessibility of the technology. Silvia, who drives and whose husband is also disabled, told us:

“If it comes to us having an electric vehicle, I'm not sure how we are actually going to be able to practically do that independently [...] Has anyone considered how accessible these charging points actually are? [...] Can you take the [cable] out? You know, and there will always be people that aren't able to do that. So I do worry about it becoming electric and electric only and that being a barrier to some disabled people being able to drive” (Silvia, focus group participant).

Silvia is concerned with being physically able to charge an EV when they become a norm. Her concerns are confirmed by Nicky, who has been “doing quite a lot of work over the last two years, looking at the accessibility of electric cars for disabled people and at the moment [...] EV cars are not accessible really for disabled people because the charging is so inaccessible” (Nicky, DPO rep).

The Research Institute for Disabled Consumers found great access barriers to EVs for a large proportion of the disabled community, with 73% of their survey respondents considering charging inaccessible⁹⁷. Besides issues linked to ‘range anxiety’, mobility or dexterity impaired people reported not being able to charge an EV, for example because of not being able to manoeuvre around the charging point, reach it or have enough strength or dexterity to plug or unplug heavy cables. Such challenges mean that “a lot of time now, we're talking about essentially [...] trying to retrofit certainly built infrastructure, but also vehicles. It would be better to have known in the first place that these needs exist and we're doing that [...]. But, you know, there's thousands and thousands of charging points

⁹⁷ Research Institute for Disabled Consumers, 2020. [Going Electric?: Research report into the accessibility of plug-in electric vehicles](#); see also Rosamond, C. 2021. [Don't leave disabled drivers behind in the switch to electric cars](#). AutoExpress, 7 October 2021

being put in every day across cities” (Nicky, DPO rep). The first fully accessible charging point was only installed in 2020⁹⁸.

Even where the technology might be adapted, EVs will most likely remain inaccessible for a long time as “they’re so expensive and disabled people are not particularly affluent as a community” (Lucy, DPO rep). This means that even in the context of EVs, disabled people’s needs remain invisible or added ‘at the end’, and they are having to pay the negative consequences of change, with less safe roads and more pavement clutter, being unable to access a new technology, and, potentially, being stuck with older fossil fuelled vehicles which may in future be restricted or charged for in certain areas.

There is a final aspect of introducing new cars which also generated concerns, as Nicky said to us:

“I guess it’s a little disappointing because you [...] basically see cars being replaced by different cars and also all the electric cars that seem to be arriving are quite large cars, large heavy cars, aren’t they? And in an ideal, would be [...] more accessible public transport” (Nicky, DPO rep).

As Alice highlights, larger vehicles, despite being potentially electric, use up more road space and affect the sense of safety of people who can’t drive.

“Personally, I have a lot of issues now with people driving around in huge Range-Rover-style cars. And I’m not talking about people who have adapted vehicles and so and understand that, but people driving around the city centre in huge Range-Rover-sized vehicles, which then mean I have no visibility. I can’t see past them or their cars going past them can’t see me. They’re just really dangerous. And I think, also it’s important to

⁹⁸ To find out more visit: Research Institute for Disabled Consumers, 2021. [Inaccessible Charging is Barrier to Electric for disabled and Older Drivers](#).

remember that. Like we do end up just being excluded” (Alice, focus group participant).

Alice feels threatened by the large “Range-Rover-sized vehicles” that are increasingly popular and really dangerous. Whilst disabled participants wish to concentrate on safe walking and wheeling environments and inclusive public transport, what they observe is a concerning reality of larger cars and their supporting infrastructure occupying even more space and creating even more safety issues and vulnerability in an already highly disabling environment.

Their wishes seem also to contrast with the trajectory for climate change mitigation proposed as part of the latest transport decarbonisation agenda⁹⁹. The focus on transition to cleaner vehicles central to the strategy doesn’t seem to address the issues so far mentioned. When asked about future government plans on car dependency, the experts we talked to confirmed that:

“The Department [for Transport] is looking to replace petrol- and diesel-driven cars by electric ones, so the actual problem doesn't seem to be going away... in the sense of, .. I mean, pollution and carbon, yes, [it will be solved]; but the physical presence of large bits of metal carrying often just one or sometimes two people around in constrained areas doesn't seem to be addressed [...]but it's about replacing it with something very much the same, but actually driven in a different way” (DPTAC rep).

The proposed transition, focussing mainly on replacing diesel and petrol cars with electric ones, is not going to reduce the actual problems and, as we learnt from participants, might actually exacerbate them.

As Marion comments, not even the inclusive mobility guidance has taken into account the structural changes and environmental changes happening:

⁹⁹ Department for Transport, 2021. [Decarbonising Transport: A Better, Greener Britain](#)

“The inclusive mobility guidance needs to be set within the context of this world we’re living in, where people are seeking to lead healthier lifestyles. We’re seeking to lower carbon emissions [...] I don’t think the inclusive mobility guidance has really needed to take into account the sort of bigger structural changes and environmental changes going on [...] It’s not just about kerb heights and, you know, safe crossings. It’s coming at a time when people are rethinking what the street environment is all about” (Marion, DPO representative).

With guidance and policy lagging behind in tackling both the climate emergency and disabled people’s mobility needs, for many car dependency remains the only option.

Enabled by car in a disabling car-centric city

In car-centric environments which generate many forms of transport disability in regards to independent travel, many participants felt using a car was the only option for accessing places safely and reliably:

“In our country, as it stands, currently, I would be disadvantaged and I’m disadvantaged by not having access to a car, as a disabled person and as a wheelchair user and someone for whom transport isn’t straightforwardly accessible” (Mary, focus group participant).

For Mary and many others, the private car becomes the key ‘enabler’ around which society and their activities are structured, making the car a prerequisite for living their day to day lives, especially where the alternatives present other disabling barriers.

Many participants are aware that this car dependency is the effect of car-centric planning which has shaped places that immobilise people with a variety of impairments, and has left very little space and funding

for disabled people's mobilities. As already highlighted by Mary in her quote about being stranded, the Social Model of disability can help explain this further:

"A lot of dependency for the disabled community on cars doesn't come from some sort of inherent need of, because you are disabled, you need to have a car, or rather, it only is in terms [of] that Social Model of disability where things around you create your disability or mean that you can't get to places. [...] If to get from A to B without using your car you are reliant on, you have to travel across pavements and get up and down steps [...]. When you have that really poor quality pavement or sort of pedestrian infrastructure, it's so much harder if you are in your wheelchair or if you're using a rollator [...]. If you have those things building up, then it creates a dependency on your car for the sort of everyday journeys because it's just easier, rather than having the stress and the physical energy to go across a pavement that's broken, that you might trip over" (Sally, DPO rep).

In a context where car use is central to city making, and where other forms of travelling are constantly penalised, being able to use a car becomes an 'induced need', a necessary step to cope with a highly disabling environment.

Sally continues, "when you're disabled, you have to deal with a lot of problems on a day-to-day basis, so trying to sacrifice another thing, just that you're not reliant on a car can sometimes just be one too many things" (Sally, DPO rep). With walking, wheeling and public transport being perceived as too unsafe or unfeasible, and other mobility solutions being marginalised or causing further spatial conflicts, cars provide a personalised and safe option for reaching destinations, as clearly expressed in our email interview:

"We think that there should be less cars on roads to reduce the impact on the environment. However, using our own cars is safer for us, as women and as Deaf people. Having a car gives us

the possibility of breaking some barriers and becoming more independent” (Group of Deaf women, email interview).

For the Deaf women from Ethnic Minorities we interviewed, a car is seen as an enabler to becoming more independent and overcoming some of the social barriers they face at the intersection of disability, race and gender. Similar considerations emerged in the focus group, with some participants commenting on low-car cities as a ‘frightening’ vision. Sandra said to us: “your vision is quite scary because I think I would be completely confined to home” (Sandra, focus group participant). Effectively, as Sally said, “there are a lot of disabled people who really worry” at the prospect of losing access to a car or the ability to drive close to their homes, “because having a car is something that can be quite stabilising in your circumstances” (Sally, DPO rep).

However, relying on a car-based independence doesn’t come without costs and further inequalities. Previous research has shown that UK households where at least one member has a mobility impairment are over represented amongst those described as ‘forced car owners’, e.g. “households who, despite limited economic resources, own and use cars as the only viable way of accessing essential services and opportunities”¹⁰⁰. When no other options are provided in public space, disabled people have to make huge investments in accessing a personalised and private mobility option.

As reported by Nicky, who has been researching meaning around independent mobility for disabled people, “a lot of disabled people don't have cars, can't afford cars” demonstrating that in some cases lack of access to a car is a result of transport poverty¹⁰¹ and not the result of preference towards other modes. However, Nicky reflects on the findings and on the concept of ‘needing a car’, showing that, “in London [...], where you have more options in terms of accessible public

¹⁰⁰ Mattioli, G., 2017. “Forced car ownership” in the UK and Germany: socio-spatial patterns and potential economic stress impacts. *Social Inclusion*, 5(4), pp.148.

¹⁰¹ For a definition of transport poverty, see: Lucas, K, et al., 2016. [Transport poverty and its adverse social consequences](#). In *Proceedings of the Institution of Civil Engineers-transport*, 169 (6), 353-365.

transport and accessible Ubers and things like that, wheelchair accessible Ubers, people don't feel necessarily the need to have a car" (Nicky, DPO rep). As research shows for society in general¹⁰², also for many disabled people, the car is perceived as a 'primary need' when other transport options to access services and location are not available or inaccessible. The need to access is therefore transferred to the 'need to travel by car'.

Participants agree that, for the majority of disabled people, a different and more caring walking and public transport environment, or even a door-to-door taxi service, could provide a personalised, more affordable and safe option for their needs. They also recognise that, in any case, there is a group of disabled people who rely heavily on cars and will be excluded from society if deprived of this option, as we will discuss in the next section.

¹⁰² Mattioli, G., 2017. "[Forced car ownership](#)" in the UK and Germany: socio-spatial patterns and potential economic stress impacts. *Social Inclusion*, 5(4), pp.148.

Envisioning a low-car city

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What does a low-car city look like from the perspective of disabled people? The criticisms to the status quo we explored so far contain a clear plan for what an inclusive low-car city should look like. The focus is creating safe and accessible walking environments and public transport, which in turn will mean, in Sarah's words, more access for disabled people:

"If we could get more people who are able to use public transport using public transport, then that could reduce the cars in town centres and city centres, which could leave it open for disabled people to access it by whatever means" (Sarah, focus group participant).

For Sarah, and for many other participants and DPO representatives, bringing all who can do so to use public transport, is a key precondition for achieving an inclusive low-car city. They propose a 'two-tempos' approach, where firstly good alternatives to the private car are provided and, then secondly, car use is reduced. While not mentioned by any participants, the space trade-offs already referred to may cause challenges in expanding public transport services before reducing road space for cars.

Inspiration for this vision where public transport is fully accessible often comes from travels participants have made abroad. For example, Chris reflects on improvements that accessible public transport could bring to her life. As a full time wheelchair user with sensory impairment, Chris describes with excitement her visit in Berlin where "all the buses have space for three wheelchairs [and] the entire underground system is completely accessible" with the majority of the newer trains being "flat access. You can literally roll on, roll off" plus there is an online system where "you can put in so where you start from, where you're trying to get to, it would show you the accessible routes" (Chris, focus

group participant). In response to the limitations that UK trains and buses currently have for wheelchair users, Chris brings the experience of a seamless system where you can 'roll in and out' without infrastructural or attitudinal barriers impeding the journey.

The second and fundamental precondition to an inclusive low-car city is high quality pavements:

"If you implement barriers to prevent cars from going to A to B, but then don't change the infrastructure to enable other ways of travelling, particularly pavements, [...] it's like cancelling a tube train without putting on a replacement bus service. It doesn't work in terms of individual disabilities or groups of people with certain disabilities" (Sally, DPO rep).

A low-car city that does not disable people is a city where car movements are carefully replaced with other ways of travelling, and especially walking. Nicky contributes to the discussion by reflecting not only on widespread accessibility as a prerequisite for reducing cars, but also as a beneficial consequence of reducing cars in urban areas, especially for those who are not using cars at the moment, i.e. the majority of disabled people and a high proportion of elderly people:

"There are people who basically can't drive at the moment. They don't have a car. They can't afford a car or they can't drive or they and those people, you know, it would be great because then they would have more accessible... They'll be able to get around in a way that gives some of the sort of personalised benefits maybe that somebody who did have a car has then got. And that's actually that's an awful lot of people. I mean, most disabled people haven't got cars. And they're at the moment, unable to get anywhere or, maybe not unable, it sounds that sounds too extreme, but they basically have difficulties. So they would all benefit, and a lot of older people who gradually, you know, might have driven, can't drive now they

want to drive now, find it too difficult. Yeah, they would benefit" (Nicky, DPO rep).

A low-car city has the potential to positively impact most disabled people who cannot afford or use a car, as well as older people or children who cannot use a car independently. It can reverse a trend of transport and urban planning which has prioritised the smooth and fast passage of motor vehicles over people movement, and that has so far created an urban environment which is difficult to navigate for most bodies and even more so for those with impairments¹⁰³.

Increased accessibility for different bodies can be achieved by widening pavements¹⁰⁴ and, as stressed by many, more accessible public toilets and places for resting and sheltering when in public spaces. A low-car city should be a place where other rhythms are considered, including resting or wandering slowly on pavements:

"We need to put spaces in where people who need to can rest without, you know, without being something that's unusual. So more seated spaces or without it being somewhere where you necessarily have to buy a coffee just to sit down. Spaces of refuge. The shops and businesses that we might frequent in those low-car cities also need to be accessible both to wheelchair users, like myself and others with a range of impairments" (Mary, focus group participant).

Mary uses a very powerful idea, and highlights how, in a low-car city, walking environments can acquire a property that, for many, has been associated mainly with a private car; they can become 'spaces of refuge'¹⁰⁵

¹⁰³ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments. Local Environment](#), 13(6), pp.485–496

¹⁰⁴ The current recommended minimum width is two metres for residential roads, with a requirement for wider pavements in busy areas. [Recent research shows that only 36% had pavements that were at least three metres wide](#), which is the recommended distance to allow social distancing during the Covid-19 pandemic. For an example of the effectiveness of pavement widening and other traffic calming measures in increasing pedestrian presence see: Baptista Neto, O. and Barbosa, H.M. 2016. [Impacts of traffic calming interventions on urban vitality](#). Proceedings of the Institution of Civil Engineers – Urban Design and Planning, 169(2), pp.78–90.

¹⁰⁵ See: Power, A. 2016. [Disability, \(auto\)mobility and austerity: shrinking horizons and spaces of refuge](#). *Disability & Society*, 31(2), pp.280–284.

for those that need to rest or shelter from busy environments. The importance of opening up cities to different rhythms is highlighted also by Finley, who stresses the importance of reducing car ownership to free up parking spaces for such purposes:

“At the moment you've got a lot of the street space, you've got two rows of car parking taking up a lot of the street, two lanes. So if you could reduce that, I think that would [allow you] to create resting places, meeting places to do a lot of things [...]. It would create security. People feel more secure because they know there are people sitting., so if they are making the journey, they feel more confident. So this is something I would advocate [...] as a way of capitalising on low-car” (Finley, Access consultant).





Two pictures of children playing in a 'parklet', a temporary pop-up social space, with greenery, set up in place of a car parking space. Credit: Paula Siqueira for Possible.

By reducing the number of cars owned and parked, more space will be available for other purposes including socialising, which will in turn make the street safer for those travelling alone or feeling vulnerable. More spaces of refuge will be available outside private cars, as quiet meeting and resting spaces in the public realm. Such spaces will be part of a response to the strong concerns about safety that many participants shared when walking or wheeling. Safety appeared as a key precondition for making such journeys. As highlighted for decades in the Urban Studies literature, the presence of other walkers or cyclists, or of people sitting and interacting in the public realm, can work as a 'passive surveillance' device, increasing the feeling of safety for many¹⁰⁶. This natural safety device has been

¹⁰⁶ Jacobs, J. 1993 [1961]. *The Death and Life of Great American Cities*. New York: Random House. See also:

progressively lost where socialising spaces in streets have been occupied by car parking or car lanes and can be reintroduced when more low-car space is available.

When imagining a similar vision, Rob, who uses a wheelchair and a car, brings his experience of Barcelona's streets as a place where sociality, walkability and accessibility has been put forward without impeding the use of cars for those who need them:

"I love Barcelona because it has got so many areas that have this kind of mindset where you still have cars, but they drive behind you while you walk at walking pace and there's no beeping and there's no shouting, that's their culture. So that is great because then you still have cars for those people that need them, and most of them in these streets will be going to where they live. [...] So they are driving slowly, they don't mind, and the rest of it is for people with bikes, [...], walking, you know, getting around and old people and young people and children all walk together. It's a really sociable, wonderful space. They have lots of green spaces where you can sit together with your family and your kids play. [...] You can sit down and have social interaction on any street" (Nick, focus group participant).

Rob portrays his experience of Barcelona as a wonderful space where walking and wheeling come first and where there is abundance of spaces for socialising. In light of recent debates in the literature, for example on the limitations of Barcelona's superblocks¹⁰⁷, Rob's experience of Barcelona might not necessarily be a comprehensive account of the whole city's transport system. However, it is a powerful image that resonates strongly in the imagination of other participants and

<https://www.bloomberg.com/news/articles/2013-07-22/a-new-way-of-understanding-eyes-on-the-street>

¹⁰⁷ Zografos, C., Klause, K.A., Connolly, J.J.T. and Anguelovski, I. 2020. [The everyday politics of urban transformational adaptation: Struggles for authority and the Barcelona superblock project](#). *Cities*. 99, p.102613

leads to an important discussion on attitudes and awareness that we will explore in the next section.

Also Jim, who was in a different focus group, believes that a low-car city will be wonderful for him:

“A low-car city where car use is greatly reduced, I think by and large it would be a very attractive proposition. I'd feel much more comfortable, much less at risk. The town I live in is a very small town, has less than 10,000 people. The pavement is about 70 centimetres wide. And the cars come on the street, although we have a 20 mile an hour speed limit, not very many people adhere to it. So my shoulders are being pressed by wing mirrors doing 30 plus miles an hour quite regularly. So the idea of there just not being so many of them and having more space, and really just seeing take away a lot of that space that's given over to the motor car and give more of it to pedestrians, just absolutely wonderful to me” (Jim, focus group participant).

Jim believes that reducing the number of cars will create safer journeys and more space for others. Moreover, a low-car city will also be a space that is less polluted, as Jim, who is asthmatic, continues by remembering the positive aspects of the LTN introduced in his area during the pandemic:

“I am asthmatic, I suddenly found my breathing was better last year than it generally is. And everything was cleaner and it was great. So it was more sociable, it was much cleaner. It was breathing generally more comfortable. And so I felt suddenly that time [...] really had some very positive aspects to it” (Jim, focus group participant).

Together with less pollution, participants expect also less noise pollution, which is particularly challenging for neurodiverse and sight impaired or hard of hearing

people. Ray, who walks and uses public transport, considers:

“I think in terms of like, having fewer cars and benefits [...] I've lived by some really loud places where there's constant traffic. And it's ongoing and I think having fewer cars on the roads having less noise, especially given a lot of people seem to for some unknown reason add noise enhancers onto their vehicles, which just makes it so much worse. And just to have less of that would be better” (Ray, focus group participants).

Low-car cities are therefore seen as an opportunity for healthier and more sociable living that directly reduces the damaging impacts of car use, from air and noise pollution to road safety, that participants like Jim and Ray experience every day in their journeys.

For our participants, a low-car city is also a city where car access should be maintained for those who ‘really need it’, as we will discuss in the next section. One important aspect of maintaining such access is making sure that accessible parking is available close to their destinations. Some participants propose to turn all parking that is retained to disabled parking, “so that there's parking for those people who need it” (Jessie, DPO rep). Some participants believe this will also be a key benefit of transitioning to a low-car city, with more space available for accessible parking and more space for disabled drivers to drive safely and without congestion: “it would potentially be a positive for disabled people that there would be more parking spaces available and traffic would be a lot better” (Tim, focus group participant).

Low-car versus car-free

As we discussed, most participants agree that, for the majority of disabled people, improved and more ‘caring’ walking and public transport, could provide a personalised, more affordable and safe option for their needs. However, they also stress how some disabled people rely heavily on cars and will be excluded from

society if deprived of this option. They therefore prefer to talk about 'low-car' rather than 'car-free' cities.

Participants give examples of groups that heavily rely on cars and analyse in detail the elements that constitute such 'need for a car'. These elements can be summarised, in the words of Finley, as a "sense of security, privacy, personal space"¹⁰⁸ (Finley, Access consultant). A car is particularly important to people with complex impairments, who need to carry different pieces of equipment or would need privacy for carrying out medical procedures, or others with complex caring duties, for example travelling with neurodivergent children needing a safe place, or a family member with dementia. Lucy reflects on the importance of having access to a car, by sharing with us her experience of having to care for a person with dementia and two children without having one:

"We still hear lots of people with disabled children where they're like, I've got to carry so much stuff for the child that it's difficult to get around. There is things like people with oxygen bottles,.. people have got really complex disabilities like that, they still are going to need the car. It's so much stuff you need to take [...] and you're not realistically going to carry those all on public transport. [...] I feel like I can remember trying to go out with my grandma when she had dementia and I've got the children. Now I had to do it because I've got no other choice, I'm registered blind. But trying to take care of smaller children and then a grandparent with dementia was [...] really hard. But if I had a choice, I wouldn't have done that because it was so difficult to go to get her to that one hospital appointment and back" (Lucy, DPO rep).

Lucy, as a disabled woman, has been doing very complex 'care journeys' without a car. However, she reflects that herself and others who have so much stuff to take, and do not have a suitable alternative to using a

¹⁰⁸ For a critical reflection on the need of the car for disabled people as a 'space for refuge' see: Power, A. 2016. [Disability, \(auto\)mobility and austerity: shrinking horizons and spaces of refuge](#). *Disability & Society*. 31(2), pp.280–284

car, should have access to one. Participants think that for those groups reliance on a car is qualitatively different from non-disabled people.

Amongst those who participants believe should retain access to a car, there is also a minority of disabled people for whom a car is a key space of refuge because, for example, of their neurodivergent impairment:

“It would just be an impossible existence for me if I wasn't allowed to have a car. I've got something called sensory processing disorder, which means that all of the things that make the neurotypical people or people that don't have this condition can sort of walk through the world blissfully unaware of the sort of things that cause me physical pain” (Jamie, focus group participant).

For both Lucy and Jamie, a life without a car will be extremely challenging and, according to all participants, they should be allowed to retain access to this space of refuge when they need it. A further argument could be made about the importance of being allowed to work from home for those who find the external environment as challenging as Jamie does. It is clear that not all the issues highlighted can be simply solved with new transport interventions; land use changes or changes in work conditions can help reduce the need to travel by car, for instance (and where people cannot travel by other ways, this could help reduce their car use if acceptable to them).

At the same time, participants recognise that others and especially non-disabled people are making many car trips that could easily be made by other modes and, by doing so, are creating the conditions for further disabling others¹⁰⁹. At the base of this distinction there is an acknowledgment of a different magnitude of burden linked to using other transport options:

“It's much easier for a fit, healthy person to walk and cycle and to use, you know, to stop using a

¹⁰⁹ Aldred, R. and Woodcock, J. 2008. [Transport: challenging disabling environments. *Local Environment*, 13\(6\), pp.485–496](#)

car than to get a disabled person with mobility impairments or hearing or visual impairment or someone with learning difficulties. For their carers or for their companions to be happy, for them to be walking on their own. For them to be happy to be walking or cycling on their own" (Finley, Access consultant).

For Finley and many focus group participants, there is a clear distinction between 'needs and wants' and being (un)able to renounce a car. As the interviewee highlights, there is an uneven effort to be made in reducing car use for disabled people with respect to non-disabled people. This distinction is at the base of the discussion on who should retain access to a car, as Jennie stresses: "There are lots of people in cars in the space that don't need to be there, and it's the difference between want and need" (Jennie, focus group participant).

We are aware this is a very controversial topic. Many non-disabled people face very similar issues and might find renouncing their car too challenging, especially when walking, cycling or using public transport is perceived as unsafe or unaffordable - and made more unsafe or unreliable the more car use there is. The literature on transport disadvantage and social exclusion we introduced has discussed these aspects in detail. An intersectional approach looking at this topic from the perspective of disability, gender, income and race should be adopted to further shed light on this issue.

The theme of needs vs wants comes back in other focus groups, for example in the words of Jane, who is a public transport user and doesn't have access to a car. Jane reflects, as others do, on the issue linked to rising car ownership and use in UK families:

"It would be greater for me to know that people who don't have special needs might be able to share cars per street, but that people who've got actual specific needs might use their own car or that car for them specifically put in the street as

well, because I think that's a great way to reduce cars. I mean, you've got families with two cars. Why? Why is that? You know, every house in the street has got two cars. It's just too many cars around!" (Jane, focus group participant).

During another focus group discussion, Jamie, who shares Jane's concern on widespread car ownership, stressed the importance to, however general, ensure the discussion incorporates the strong reliance on car use for business and other organisations which further complicates the situation. She proposes to shift the discussion from a focus on individual habits towards considering car dependency in more systemic terms, from multiple/excess car ownership to especially acknowledging the corporate responsibility in generating great climate change impacts:

"I'm really interested in why there is so much emphasis on individual car use, as in, of people. I think there's definitely an issue with, for example, one of my neighbours, they have three cars in the car park downstairs. One belongs to the husband. One belongs to the wife. And one is the husband's work vehicle. So there are issues around multiple ownership when maybe one car would deal, perhaps there is a reason why they need all three. Who knows? I don't know. But there's I wonder why we don't talk more about companies and organisations and, you know, massive multinational conglomerates and how many cars they're using or how many vehicles they're using and how big they are and and how much they contribute to emissions and so on and so forth is a really weird thing that happens, I think whenever we talk about climate change or the climate catastrophe, which is that there seems to be a lot of focus on individual people" (Jamie, focus group participants).

Like Jamie, many others feel the responsibility for climate change and high car use lies somewhere else, and changes in the behaviour of the disabled

communities and individuals will not make substantial change without more systemic changes happening.

However, especially within the focus group, participants recognise, in a constructive debate, disabled people's commitment to tackling the climate emergency and supporting a transition to low-car cities. Towards the end of the focus group, Alice summarises the general feeling about the future and what disabled people can do:

"Disabled people do care about the environment and the climate change emergency. We do care about this stuff. It's not that we don't want to make these adaptations, but just it's like everything else. We need reasonable adjustments to participate in other activities in society. [...] Yes, we need other people to make bigger efforts and will make the small changes that we can. But there's a limit to what we're able to do and still be able to participate in society. And it's not that we don't want to. It's just that at the moment, for whatever reason, there are things we just cannot compromise on. Otherwise we're just stuck at home not being able to work and participate in society" (Alice, focus group participant).

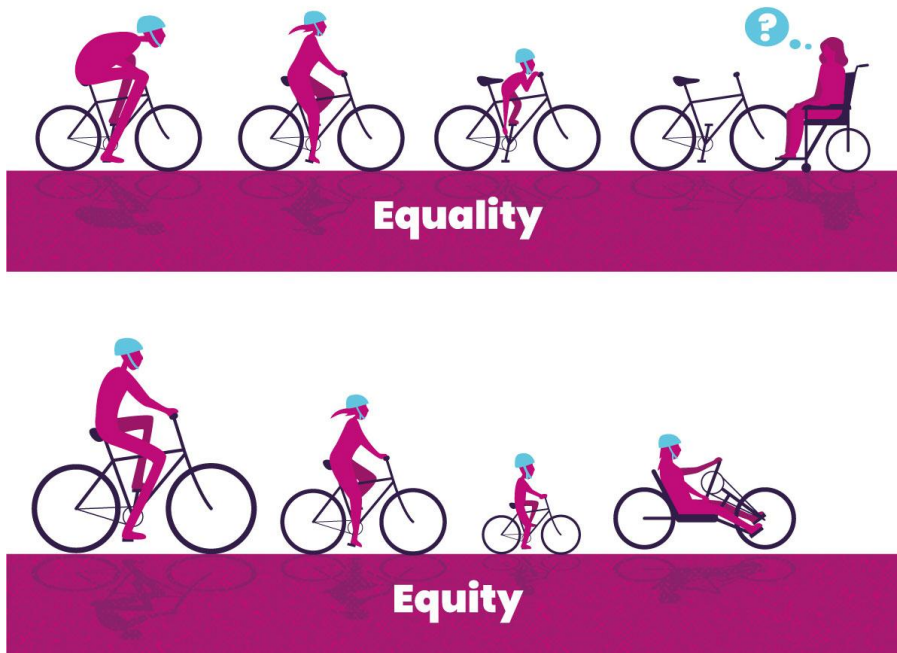


Fig 6: A visual representation of the difference between equality and equity. In the equality situation, four people with varying height or disability requirements are attempting to use the same bicycle. In the equity situation, the same four people use four bikes adapted to those requirements.

Also Alice advocates for an approach to climate action centred in equity and not just equality, referring to the difference between providing for everyone in equal terms (equality) vs tailoring provision to the different needs of each individual (equity), as highlighted in the figure above. For Alice this implies that the burden of making changes falls primarily on those who are more able to make those changes, and others, for example many disabled people, who are already in a situation of (transport) disadvantage, can support by making the small changes that they can. As Silvia concludes:

“It's about getting a balance and it's going to be about having options. And it's going to be about recognising that there will always be those people that do need to drive and to make it accessible to enable people to do that” (Silvia, focus group participant).

In this search for a compromise between needs and wants, between what disabled people can do and what non-disabled people should do to support the construction of a better city, emerges a strong recognition of the benefits that a carefully planned transition to low-car cities could have for those who currently have no suitable alternative to using a car. Reducing the overall number of private cars could allow more accessible parking options as well as improve driving conditions for disabled drivers and car passengers.

Moreover, as we discussed, a move away from car-centred planning and rethinking of street design (for example, creating infrastructure that separates cyclists from pedestrians) would bring a plethora of benefits for people with most impairments, and especially for those who are unable to drive. If on the one hand the car is an enabler for some disabled people, it is also a hindrance for many others who will instead be enabled by a low-car city.

Despite the agreement on these general guidelines, participants are clear on stating that there is no one option that fits all. All solutions should be designed inclusively and tailored to those that will use them. Participants, and especially those who currently rely on cars as their main mode of transport, are also very open to trying new solutions and engaging with different alternatives, when those are designed inclusively. However, this can only be achieved with changes in attitudes and planning practises.

This change in attitude and in decision-making processes is the fundamental and core aspect of the low-car city our participants imagined and the only one that will be able to deliver inclusive cities.

Building a low-car city through fair engagement

All participants agreed on the crucial role that a strong engagement process, and, as we will explore, awareness

and education, will play in building an inclusive low-car city. Engagement and awareness are, unsurprisingly, the most recurring themes in our data analysis. As we commented earlier, concerns regarding appropriate participation of disabled people emerge when discussing the introduction of EVs or the recent LTNs.

Marion, who has surveyed disabled people, shares her concerns with a lack of faith in disabled peoples' needs being taken into account:

“[We found] quite low levels of satisfaction in local authorities taking account of the needs of disabled people and a real lack of belief that anything would be done if you complained about it” (Marion, DPO rep).

The belief of being 'left out' or consulted only at the end of the planning processes is widely shared across participants, despite the fact that planning for disabled people's needs will make roads and footways better for everyone: “I think it's not going to work if people like us are an added on thought at the end. It's got to work. What works for us will work for everybody, but it's got to be there at the beginning” (Lora, focus group participant, full-time wheelchair user and driver).

For participants, a holistic approach to planning and engagement is a prerequisite for a fair and inclusive transition to low-car cities:

“I think everybody understands the need to reduce car use, and I think we can all see the benefits of it. But there needs to be some thought and some planning. First, [...] somebody like me can't just simply stop using the car or I won't be able to really go anywhere yet. It is the order that it's done in” (Lora, focus group participant).

Lora's point emerges after a long discussion on the topic, and brings together both those that currently drive, like Jamie or Sandra, and those who rely on public transport, such as Alice. Participants share a commitment to reducing car use, but are concerned

with being left out from planning the pathways to achieve this change. “The disability discussion and the environmental discussions are currently sitting in different silos. And we need to bring those together” (Marion, DPO rep).

The need to bring these discussions together, the order in which things are done, engaging first and then implementing change, is a strong point of agreement in all focus groups. Alice explains this point further with a powerful example from an older challenge for disabled people, the famous plastic straw debate¹¹⁰:

“It's like the plastic straw thing. People just made a decision unilaterally and didn't think about the fact there were some disabled people who did need plastic straws in order to be able to drink. It was just automatically assumed that everybody could do this thing, and it'd be great. And actually, that wasn't the case” (Alice, focus group participant).

For disabled people, unilateral decisions taken without assessing the impacts on different impairments, generate further exclusions and marginalisation, as happened with the decision to ban plastic straws. To minimise exclusion, disabled people's needs have to be central when any changes in planning or policies are designed. Jamie responds to Alice's point by discussing how “the plastic straw” attitude is also used in current street space changes:

“What happens at the moment is that plans are put into place and they're thought up, and then they call in somebody who's disabled to sort of rubber stamp them instead of involving them at the planning stage. And then, of course, when a disabled person says, Oh yes, but you can't possibly go ahead with this because there's no BSL¹¹¹, there's no writing, there's no, you know, all of the things you need. They say, Oh, well, it's done now,

¹¹⁰ see also: Kellgren-Fozard, J., 2018. [Banning Straws Hurts People // The Last Straw](#)

¹¹¹ British Sign Language (interpretation)

so we can't change it" (Jamie, focus group participant).

Participants feel that even when disabled people's views are consulted upon with regard to new planning ideas, they are only used to rubber stamp decisions and plans that had already been approved. Their concerns are silenced with a 'we can't change it'. In response, participants strongly advocate for more appropriate engagement at the planning stage with all disabled people and especially when street space changes are brought in place.

For the participants, this means also considering in detail place-based solutions which account for the different characteristics of different places and the different needs of local residents), in addition to the consideration of different impairments as Sandra mentions:

"Disabilities vary so much and you can't just ask one or two. You have to talk to everybody about their disabilities and not make assumptions. [...] It's got to be done from the beginning and it's got to be fully discussed with people of differing disabilities. [...] We have to recognise that it's a huge range with different difficulties, some of which [...], are hidden unless policymakers bring those sort of accessibility issues in at the beginning" (Sandra, focus group participant).

For many participants, given the varied and, at times, contrasting needs that disabled people have, appropriate engagement has to explore impacts for all 'differing disabilities'. How can this be achieved? The representatives of the DPOs have some very clear guidelines to share with us.

First of all, it is key to assume a "co-production process of kind of creating it all the way through really and having like people with different impairments getting to sort of test out trial versions because obviously, you know a person with one type of impairment can't really kind of necessarily advise on how well something works

for someone with another type of impairment” (Jessie, DPO rep).

For the interviewees, engagement should be based on co-production with all disabled people and embedded at each stage of the planning process. Co-production, rather than simple consultation, or, even worse, a referendum, means designing along with differently-impaired disabled people the different designs and policies. For the DPO representatives we engaged, co-production means engaging with disabled communities in a different way than done now:

“It's not so much a question of asking disabled communities, you tell us what we need to do, so much as you tell us your needs, you tell us what you need, we'll try and find a way through them. We'll try this. We'll tell you what we're trying, if it doesn't work or if there's a problem, this is how you tell us we can try and amend it. If we can't amend it, we'll try to explain why it doesn't work. We'll give you time frames and so most people know what's happening and feel that they are empowered so that if something really was going wrong, they could say this needs to change” (Sally, DPO rep).

Co-production, for the interviewee, is based on listening to what disabled people need, creating options that respond to those needs and testing them with the different communities. It means also being open to communicating failures and timeframes so, where solutions cannot be perfectly tailored to requirements, people can adapt to shortcomings and feel empowered to highlight what needs changing.

Secondly, in order for disabled people to take part in co-production processes, their participation has to be enabled by clearly communicating when events are happening, by reaching out to different groups and DPOs, and using accessible formats, e.g. “some leaflets stuck somewhere that like, isn't accessible” (Lucy, DPO rep). She continues, “the council has lists of people who they already know have disability support, or perhaps uses benefits or so on, proactively reaching out to them

and offering different formats to communicate what's going to happen and opportunities for feedback" (Lucy, DPO rep). Councils have to proactively reach out by using all existing means, including local DPOs or lists of residents.

Once events are communicated clearly, disabled people need to be enabled to attend. This means "pay them for their time, pay their transport costs, do it properly" (Lucy, DPO rep), i.e. offering options for engagement in accessible venues and sharing accessibility information in advance, and offering engagement options at different times of the day and evenings, to reach different communities, including those "who don't want to get out at night" or those working during the day. Offering after work options is also key in countering a narrative in which disabled people are depicted as not part of the 'productive bodies' constituting the workforce¹¹².

Thirdly, outcomes of co-production and engagement processes have to be binding for any further policy or planning action. As Rob stresses in the focus group, "no one should be able to get a licence to do anything unless they're accessible" (Rob, focus group participant). Lucy explains this further by highlighting the need for a regulated and binding process to implement the Equality Act appropriately, ending a long tradition of local government not listening to DPOs:

"[T]here needs to be someone in Central - in, like, the Department for Transport, you shouldn't be able to do a policy change that hasn't been through, like, the due diligence of looking at all the inclusion groups. Equalities Impact Assessments aren't truly necessarily the way all the time because that could be done badly if there's nobody overlooking them. But there needs to be engagement and there needs to be engagement with the right people and engagement that listens to those organisations because some of the

¹¹² Gaete-Reyes, M. 2015. [Citizenship and the embodied practice of wheelchair use](#). *Geoforum*. 64, pp.351-361

charities are getting fed up of talking to Local Government because they keep telling them the same thing over and over again and then not being listened to. So that sort of government level that needs to be clear like this is what we're going to do. We've been through the process of consulting, we consulted properly in an accessible way. This is what was said. This is what the changes were going to do. And then they need to Impact Assess all their changes to make sure that they're not disadvantaging anybody" (Lucy, DPO rep).

Lucy stresses the importance of engagement processes to inform any policy changes put forward by the DfT, including strictly informing the decisions taken by local governments that have to listen to the advice of DPOs , as well as the need for accountability at each stage of the planning process.

In-depth engagement is also needed to think through the details of how permits and access will work in a low-car city.

Regulating the low-car city

How can access to a car for those that need it be kept fair and transparent? Participants agree that a proper place-based engagement process should be used to finalise a solution, especially where existing travel concession systems already have some limitations.

Participants highlight the current challenges disabled people face in 'proving their status' and acknowledge the limitations of the Blue Badge system. On the basis of these reflections, they express concerns with the possibility of setting up a fair system in which those who do not have a suitable alternative to using a car maintain such access across all impairments. Alice stresses concerns regarding disabled people who rely on someone else's car to access services:

"My issue with restricting car use is that I suspect that I would be one of the people who would end

up in a worse position because I don't have my own car and I couldn't register as being a disabled person who needed access to that space or that space. The variety of people who I have informal care from wouldn't then be allowed into those spaces. [...] how do you then allow for that within that sort of restriction?" (Alice, focus group participant).

Alice is concerned with her situation worsening and not being able to receive care if widespread car restrictions would be introduced, as she is currently relying on her carers' cars. Similar concerns relate to people with invisible disabilities who "will be at a massive disadvantage [...] when we're talking about fewer cars and who does or doesn't need them and who is or isn't entitled to them" (Jamie, focus group participant). How would a low-car city recognise those people with invisible disabilities who might still have no alternative to a car?

Developing an articulate answer to this issue is key especially when, as Jamie acknowledges, many people are already invisible to support services or funding. Many disabled people "either cannot face the paperwork or don't know that they're entitled to it or have been rejected once and don't know that they can appeal", and could be potentially further excluded if their reliance on cars was limited in a low-car city.

Steve, who is neurodivergent and a committed walker, reiterates this point, and considers the introduction of limitations of car use to certain categories potentially "very problematic" and "comparable to the struggles that people have to go through, you know, to get benefits like PIP to get social care, to get adaptation to houses" (Steve, focus group participant). Considering the current challenges that citizens face to access benefits, he fears that requiring disabled people to prove their reliance on a car will generate even more issues and fuel "a culture of disbelief of people's claims about themselves, [...] a culture of trying to exclude as many people as possible [...] a lot of disabled people would

feel quite threatened by that” (Steve, focus group participant).

In response to such a challenging assessment and eligibility culture, Jamie proposes the creation of a centralised system where someone’s disability status is recognised for all national and local organisations, to facilitate avoiding repeated assessments and multiple applications.

If this practical solution could alleviate some of the worries within the disabled community, there are other elements which will require a more fundamental shift. The focus group discussions revealed how the fear of being further excluded is greatly enhanced by concerns that restrictions on car-use would generate further blame and abuse aimed at disabled people. Chris expresses this very clearly:

“There is always a very small group of people online who shout loudly about how this is inconveniencing them, and therefore it shouldn't happen because it is inconveniencing them. And that in turn, that in turn makes me feel quite scared to then go outside and possibly run into one of these people, [...] because then they might decide to blame me for the low traffic area. Yeah, even though I'm not like the councillor or anyone who's made that decision. [...] Society is not ready to be considerate. And that is what would happen if people are told they cannot or shouldn't use their cars because of some reason” (Chris, focus group participant).

Chris fears that she will be blamed and abused for ‘causing’ car restrictions if more low-car areas were introduced or being seen as unjustified outliers, especially given the low consideration that she feels disabled people receive in the current society.

Sarah shares her concerns and is frightened of the transition to widespread restrictions to car use for non-disabled:

“We’ve definitely rolled back hugely on disability equality over the last two years, and I would be very frightened if [restrictions were] put in place that I would be open to verbal abuse by people just sort of walking, rolling down the street and people, “Just why do you get to do that? Why do you get to do that?” And I don’t feel safe in that sort of environment where society isn’t on board with this” (Sarah, focus group participant).

With disabled people being exposed to hate crime merely for using Blue Badge bays, some participants fear further attacks if more restrictions were introduced to reduce car-use for non-disabled people, while disabled people were allowed to retain private vehicles.

Between great challenges in proving their status and the fear of this proof exposing them to even further abuse, most participants express mixed feelings towards restrictions or bans on car-use and car ownership. They may also potentially be concerned about reproducing a system in which, as suggested in the literature, “disabled people are depicted as lesser citizens and ‘as a population requiring particular forms of regulation, discipline and control by state programmes and policies’¹¹³.

In response to this, their proposals go in two directions. On the one hand, some participants suggest not banning car-use but instead encouraging those who can to use other modes on a daily basis and the few who have no practical alternative to continue to use their car:

“Rather than have a kind of a punitive situation of “only those people are allowed to use cars”, I would want to make it easier for as many people as possible not to use cars because if you do that for them, yeah, ultimately only the people who have to use cars will” (Steve, focus group participant).

¹¹³ Gaete-Reyes, M. 2015. [Citizenship and the embodied practice of wheelchair use](#). *Geoforum*. 64, p., 355.

For Steve and many others, a low-car city should be based, not on prohibiting access, but on enabling accessibility of other modes of transport so that those people with complex disabilities who have no practical alternative to their car can still use it without being stigmatised or incurring societal blame. Again, as highlighted earlier, this vision of a two-tempos approach unfortunately doesn't account for the limited space (and time) available to fully improve public transportation without simultaneously reducing car use - a sort of 'carrots before sticks' approach that might need to be informed by discussions on how effective 'carrots' could be created. This especially in light of decades of evidence on the very limited impacts that 'carrots-only' approaches can have on reducing car use. Several uses have shown the need to combine together measures that improve alternatives to the car (e.g. better public transport or cycling provision) with measures that make driving less appealing, for example by increasing the cost of driving and parking, or reducing road space¹¹⁴.

On the other hand, the discussion focuses on the need for change in societal attitudes towards disabled people; society must not blame disabled people for having allowances that the broader populace do not. As Emma stresses, when implementing a low-car city there is the need for "some really careful thinking to make sure that it didn't [negatively impact disabled people] and so anticipate a few things and make sure that mitigation were put in place" (Emma, DPO rep). Or, as Steve continues, it will require "a serious change in that whole sort of assessments and eligibility culture" (Steve, focus group participant).

¹¹⁴ See for example: Marshall, S. and Banister, D. 2000. [Travel reduction strategies: intentions and outcomes](#). *Transportation Research Part A: Policy and Practice*. 34(5), pp.321-338; Eriksson, L., et al., 2010. [Expected car use reduction in response to structural travel demand management measures](#). *Transportation Research Part F: Traffic Psychology and Behaviour*. 13(5), pp.329-342; Pucher, J., et al., 2010. [Infrastructure, programs, and policies to increase bicycling: An international review](#). *Preventive Medicine*. 50, pp.S106-S125.

Building a low-car city through awareness and cultural change

As has emerged in the previous sections, a prerequisite to building a comprehensive and inclusive engagement process and being able to appropriately regulate the low-car city is widespread awareness about disability amongst planners, policy makers and other road users. For participants such as Jennie, building a fair, low-car city requires a consistent cultural change inspired by greater empathy towards disabled people's experiences and needs:

“We need a massive culture change [...]. It's a huge mindset change and a culture change and making the roads available to the people who need to [...] drive, rather than the people who just want to or habitually used to it, and making the pavement wider and more accessible to the people who need to use the pavements. And all the attention has always gone to cars and making it easy for cars. And we need a sort of reverse pyramid where the pedestrians are at the top and private cars are at the bottom and they give way to the people who are on the streets, building streets for people and not for vehicles” (Jennie, focus group participant).

As in Rob's vivid picture of Barcelona's streets, paying attention to disabled people's needs, for Jennie, means reversing the road priority pyramid, currently centred on the private car, by giving way to the people who are on the streets. A concept that has been key also in the recent debates on transport justice, as visible in the transport 'reversed' pyramid produced in a series of participatory workshops by citizens and researchers in Chile¹¹⁵.

¹¹⁵ Sagaris, L., Berríos, E. and Tiznado-Aitken, I. 2020. [Using PAR to frame sustainable transport and social justice on policy agendas. A pilot experience in two contrasting Chilean cities.](#) *Journal of Transport Geography*. 83, p.102654.

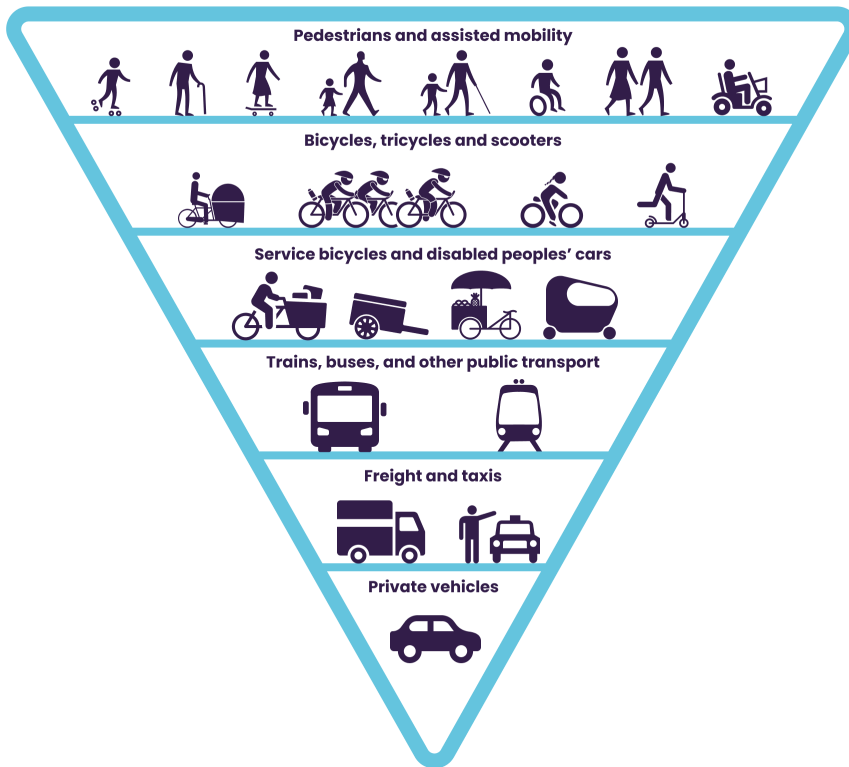


Fig 7: The reversed pyramid of transport priorities

Reversing the pyramid of priorities for planners means also rethinking how funding is allocated, as Sally mentions:

“At the moment there are people who say, oh, [...] we'll put funding in to remove potholes. I have never heard of a politician stand up and say we're going to put in funding to remove the cracks in the pavement. But the cracks in the pavement probably impede a lot more people than the potholes in the road” (Sally, DPO rep).

Political intention and support goes far beyond the repair of potholes, as she continues highlighting the ill-prioritised funding allocation, which clearly uses the private car as a starting point:

“The government said they're going to put 27 billion into road building. The actual number is 27.4, but they've rounded that down to the next billion. If you took the approach of rounding it down to the nearest billion for the amount that is going cycling, it would be zero, because it's less

than 0.5 billion. So you run to the nearest billion and it becomes zero. That's just ludicrous. You need to at least make them like, you know, sort of 10 billion to roads and 17 billion to walking and cycling and also public transport within that. It has to be that sort of policy change shift" (Sally, DPO rep).

For Sally, the disparity of funding allocated to roads versus improving walking, cycling and public transport, are a sign of the differing priorities between what disabled people would like and the mainstream understanding of transport needs. Reducing road-building investments would also free up resources to help compensate disabled people for any disbenefits, e.g. such that they could access more than one mobility vehicle, additional support as needed to travel by other modes, etc.

The awareness needed to 'reverse the pyramid' should be built through shared experiences and embodied learning, i.e. experiencing what disability means, an experience that, at the moment, seems lacking, as Jackie highlights:

"It goes back to what I was saying about people not appreciating the difficulties in getting from the parking space to the shop. And that being because most people who are doing that planning probably haven't had the experience of getting themselves physically in a wheelchair, whatever from parking space to a shop" (Jackie, focus group participant, wheelchair user and driver).

Jackie, who lives in a rural area, has to carefully plan her trips to make sure she can wheel the last section of the journey, something that doesn't often happen and that forces her to drive long distances. In response to the planners lack of understanding of her experience, she proposes:

"You either insisted everybody who's doing the planning does that, or better, you include people

who have a range of different disabilities at the planning stage so that they can say, well, that would be difficult for me” (Jackie, focus group participant).

Engagement and awareness live on a continuum, with awareness being the minimum effort that planners should be willing to take to include disabled people in their design, whilst for Jackie and many others engagement is the most appropriate solution.

Also Emma highlights the importance of embodied and experiential learning for planners and designers:

“I think the cycleway guidance says [...] planners or designers who are designing cycleways to test drive their designs and so on a bike. Great idea. Can we do the same thing for disabled people, get planners and designers and get in a wheelchair and try to use that design? Could they put on a blindfold and try to use that design? That would be really helpful and I think it would help their understanding and help them to create more inclusive design” (Emma, DPO rep).

What is lacking, in Emma’s view, is a systematic rethinking of the type of experience and skills designers and planners should have in order to create inclusive design. Some institutions have introduced the option for disability awareness training¹¹⁶ with the aim of creating a better understanding of disability in practitioners. However, others share concerns on the ability of simulation exercises to bring about positive attitudinal change¹¹⁷ and being instead distressing for participants¹¹⁸ and misleading about the reality of being disabled. In the words of Silverman, “Though this “blindness simulation” can trigger empathy toward blind people, it can also mislead people about blindness, because it

¹¹⁶ See for example:

<https://www.wdsa.org.uk/services/visual-impairment-awareness-training/>

¹¹⁷ French, S. 1992. *Simulation Exercises in Disability Awareness Training: A Critique*. *Disability, Handicap & Society*. 7(3), pp.257–266.

¹¹⁸ Nario-Redmond, M.R., et al., 2017. *Crip for a day: The unintended negative consequences of disability simulations*. *Rehabilitation Psychology*. 62(3), pp.324–333; Flower, A., et al., 2007. *Meta-Analysis of Disability Simulation Research*. *Remedial and Special Education*. 28(2), pp.72–79.

highlights the initial trauma of becoming blind rather than the realities of being blind"¹¹⁹. It does not include in the depiction of disability the knowledge and skills that disabled people build over their lifetime, but also the "many social and psychological difficulties disabled people may experience" (French 1992, p. 261); such training medicalises and individualises disability and leads to damaging stereotypes. French suggests that such simulations are replaced with "disability equality training, which is devised and run by disabled people themselves"¹²⁰.

It is not only planners or designers who have to embrace a different attitude towards disability. As Mary reminds us, to build a low car city:

"It would also take an attitudinal change in both how society regards transport and things like inclusion and also attitude to disabled people in themselves, because currently we're not really, or our existence as humans, isn't really readily acknowledged in most public spaces" (Mary, focus group participant).

For Mary, attitudes should change across society by acknowledging the existence of disabled people as legitimate users of public spaces. An acknowledgment that is crucial especially when some disabled people will continue to need, as we have seen, facilitated access to cars. Sally reflects on the limitations that current low-car schemes had and states:

"It will only work if people who don't have any form of disability are prepared to say that 'I do not need to use my car and therefore I won't'. A lot of the schemes we've seen recently with things like LTNs, there have been claims that it just creates more traffic and more traffic jams in other areas

¹¹⁹ Silverman, A.M. 2015. [The Perils of Playing Blind: Problems with Blindness Simulation and a Better Way to Teach about Blindness](#). *Journal of Blindness, Innovation and Research*, 5(2).

¹²⁰ French, S. 1992. [Simulation Exercises in Disability Awareness Training: A Critique](#). *Disability, Handicap & Society*. 7(3), pp.257–266. On training options see also; Burgstahler, S. and Doe, T. 2004. [Disability-related Simulations: If, When, and How to Use Them in Professional Development](#). *Review of Disability Studies: An International Journal*. 1(2).

because that step towards 'therefore I will not use my car' hasn't happened" (Sally, DPO rep).

Awareness and cultural changes work therefore in two ways. Firstly, they enable planners, designers and other road users to acknowledge the differential needs of disabled people and facilitate their fulfilment via inclusive design. This includes responding to the current invisibility of mobility alternatives such as trikes, scooters or electric wheelchairs as legitimate road users. It means also keeping disability in mind when designing crossings, pavements, public transport services or cycle lanes.

Secondly, awareness of disability is necessary for building support for measures that restrict car use to those who have no other alternative and invite those that are able to use other modes to do so for the common good. As mentioned, with schemes that seek to restrict car use and encourage alternatives, there is an expectation that better mobility for disabled people who need cars will result thanks to others using alternative modes of travel. But it is also vital that those alternative modes of travel, including public transport services and walking and cycling provision, are improved for those individuals that use them daily currently.

Education here emerges as a final keyword used by participants to express what needs to be done, especially in response to the sense of entitlement that motorists have on roads. Jim talks about a "huge educational process" to change the way a priority given to disabled people is seen in society. Rather than being seen as something "they're made to feel bad about", restrictions to car use should be treated as a societal compromise to deal with the climate crisis as best as we can. Therefore, despite the concerns and fears of blame, and of not being understood, if receiving a differential treatment upon restrictions being introduced things should still be changed soon.

In contrast to those that were proposing a two-tempo approach, Silvia thinks that actions to reduce car use for

some but not all should be taken now and should be used as a way to promote a cultural change in cities, especially with regard to the differential needs that some might have and the differential ways they would need to adapt to mitigate climate impacts:

“I don't think the solution to that is to not [create a Blue Badge system for disabled people to access low-car cities]. I think the solution to that is to do it and to use it as a tool to educate people why in some situations, [the restrictions] wouldn't work for certain people. So yeah, I just don't want that to be the reason why [...] the council [decides] ‘Well, we can't let disabled people in [the low-car area] because they might end up getting bullied. Right?’” (Silvia, DPO rep).

Summary



Envisioning low-car cities has been a challenging journey; the everyday difficulties that disabled people experience in UK cities cannot be ignored when talking about visions for the future. After decades of repeated experience of feeling invisible and silenced as legitimate citizens in transport planning, participants found it hard to hope for positive changes.

For example, when the discussion focused on the benefits of an equitable transition to low-car cities, many participants expressed a generalised fear that those improvements would not be put in place in time or that badly planned interventions will end up further disabling them. As we saw, concerns regarded the lack of awareness towards disabled people's needs, poor engagement as well as the paucity of reliable and accessible alternatives to using a car.

However, the interviews and focus group discussions have been very important in highlighting shared concerns and conflicting requirements and, on the basis of those, sketch the foundational elements of work to be done by planners, activists and citizens to create cities that better serve the needs of disabled people. These have informed the recommendations that conclude this report.

Such foundational elements show that the quality of walking, wheeling and cycling environments is key to enabling citizens with different impairments to access other means of transport. As such it is the first necessary step to reduce their transport disability, immobility or reliance on car journeys.

Similarly, fully accessible public transport which minimises the needs for assistance and values disabled people's independence, is key to creating better mobility systems.

Such infrastructural improvements will require substantial funding and planning and policy commitments. Moreover, these improvements would not fully serve their purpose unless they are integrated in a greater framework of cultural change, starting from a different approach to transport design, planning and funding allocation, away from facilitating the seamless movement of cars towards allowing the most disadvantaged to exercise their right to participate in society.

It is also crucial to recognise that many of the improvements and changes that participants have been advocating for are very likely to bring benefits for many other marginalised groups that have historically been excluded from transport planning, including children, mothers and the elderly.

In the proposal for putting equity rather than equality first, many of the discussions and analyses resonated with the idea of transport and mobility justice which has been key in inspiring an intersectional approach to transport disadvantage and exclusion^{121 122}. However, this approach has a long way to go before adequately engaging with disabled people's needs.

By discussing in detail the differential and often contrasting needs that people had, the focus groups discussions also saw an interesting opening. Some of the views, especially with regard to car use versus space for other modes, have shifted. Through dialogue, as Rob explains, the importance of stepping back and making adjustments to enable others to have a slightly easier path emerged:

“The thing about the disabled community is I think that when we get together, we I mean, not all of us, that's always going to be some that aren't. But I think we're quite good at saying, Well, I don't

¹²¹ See for example: <http://www.untokening.org/summary>

¹²² The concept of mobility justice is being also discussed widely in the academic literature. As a summary of the latest developments see for example: Verlinghieri, E. and Schwanen, T. 2020. *Transport and mobility justice: Evolving discussions*. *Journal of Transport Geography*. 87, p.102798; Enright, T. 2019. *Transit justice as spatial justice: learning from activists*. *Mobilities*. 14(5), pp.665–680.

necessarily have the same experience as you, but I understand what it's like. You know, like most wheelchair users don't like tactile paving because they make wheeling over them quite uncomfortable. But we also understand that for other people, they are essential for life saving reasons" (Rob, focus group participant).

By discussing and learning from each other's experience the focus groups have also been useful, as Jenny remarks, in reflecting on the importance of such processes for planning:

"We've had this fantastic conversation, all these eye-opening things that I had not thought about before. And I think people don't think about these things. The general public doesn't think about it. And if they were better educated, they might be more inclined to make space in the roads to use public transport and to understand these issues" (Jennie, focus group participant).

Education, or perhaps better, a substantial cultural shift grounded in an attitude of dialogue and co-production, seems to be a vital ingredient to the recipe of infrastructural changes highlighted above; especially when recognising that even by reducing the number of cars on roads, some frictions will still remain and will need to be discussed openly and inclusively. For example, issues linked to interactions between cycles and buses will potentially still create frictions, as well as street trees that can, as one participant said, reduce perceived safety but improve the environment or provide shelter that others would like.

The vision for a low-car city we discussed is not and cannot be a unique or crystallised one. It should instead be approached dynamically, as a work in progress which will have to be discussed openly and inclusively, especially when, in sight of fast approaching climate change, new challenges will continue to emerge and need to be addressed.

In this, the world of transport design and planning, as Rob suggested, should not only adjust its investment priorities to cater for disabled people's needs, but also acknowledge how they have been forced to find compromises all the time, and learn from their open attitude to dialogue and co-production.

Recommendations

There is an immediate need to substantially improve walking, wheeling and cycling environments. National and local governments should coordinate to immediately:

- Allocate substantial funding and personnel to refurbish all pavements and eliminate all pavement clutter. We propose in particular the creation of a Footway Fund to which authorities could bid or be allocated money to create better, more inclusive and attractive pavements. This should at least match the currently allocated Pothole Fund. For example, with the money allocated in 2021 (£500m)¹²³ to fix potholes, almost 840,000 new dropped kerbs could be installed across the UK¹²⁴.
- Enforce rules to protect pavements from parking (cars, e-scooters and bikes), including banning pavement parking nationally.
- Introduce widely available on-road accessible parking for bikes, trikes and scooters.
- Enforce the regulation on shared space areas as suggested by RNIB and prohibit unrestricted

¹²³

<https://www.gov.uk/government/news/funding-to-fix-equivalent-of-10-million-potholes-allocated-to-local-authorities>

¹²⁴ Using the average cost of dropping a kerb of £600 reported here:

<https://www.checkatrade.com/blog/cost-guides/dropped-kerb-cost/>. The price is likely to be much lower where the kerb is introduced for accessibility reasons:

https://www.birmingham.gov.uk/info/20109/parking/660/apply_for_a_dropped_kerb/4

vehicle access in such areas (while retaining Blue Badge access).

- Ban poorly-planned pavement charging for EVs which impedes the use of pavements.
- Install more frequent accessible crossings (with appropriate crossing times), complying with RNIB and the Access Association recommendations, and ban multi-coloured crossings.
- Improve bus bypasses following DPO and RNIB recommendations.
- Widely extend the protected cycle lane network and co-produce the designs with disability groups.
- Provide disabled parking close to pedestrianised areas.
- Provide frequent and accessible toilets and resting places in public streets, for example by supporting the installation of parklets.
- Only fund transport schemes that follow the principles of inclusive design.
- These recommendations should be taken into critical consideration when preparing the next version of Manual for Streets¹²⁵.

There is also an urgent need to upgrade public transport provision and ensure that all buses and trains are fully accessible. National Government and providers should join efforts to:

- Install step-free access for all public transport services.
- Have legally binding interim targets to achieve step-free access to all rail stations across the UK by 2040.

¹²⁵ Manual for Streets 3 is planned to incorporate guidance on how to meet the requirements of "Gear Change" (Department for Transport, 2020) and Local Transport Note 1/20 (Department for Transport, 2020)

- Improve wheelchair provision on buses ensuring there are two wheelchair spaces and more accessible buses.

National Governments and Motability should join to:

- Fully recognise trikes, adapted cycles and mobility scooters as state-financed mobility aids by taking measures to fully implement Gear Change.
- Allow trikes, adapted cycles and mobility scooters on buses and taxis
- Revisit Motability allowances so that they do not force commitment to a single mode (e.g. adapted car vs mobility scooter).
- Allow disabled concessionary bus passes to be used before 09:30 nationwide.

National and local government, transport planners and providers, as well as disability organisations, universities, schools and citizens should work together to:

- Allow disabled people to effectively participate in planning, for example by allocating funding to compensate for their time and access events.
- Integrate disability equality training as part of normal training for planners and designers, and in schools. Everyone should have basic training, including residents, colleagues and managers.
- In particular integrate disability equality training for public transport and taxi operators and ensure adequate and reliable taxi service for disabled people (including wheelchair accessible services).
- Train planners and officers on principles of inclusive and fair engagement and regulate engagement appropriately to make sure disabled people are fully included in decision-making.
- Only fund transport schemes, including subsidies to new technologies such as EVs and EV chargers, that follow the principles of inclusive design.