

# Disabled People’s Experiences of Clean Air Zones

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## 1. Background

Road User Charging (RUC) refers to a fee or charge imposed on drivers for using a defined road network. This fee is based on factors such as the time of day and the type of vehicle driven. RUC

aims to reduce unnecessary trips and promote alternative methods of transport such as public transport or active travel. There are different forms of RUC which include Low Emission Zones, Congestion Charges, and Clean Air Zones. Some of these have introduced exemptions for disabled people, through these vary from scheme to scheme.

A Clean Air Zone (CAZ) is an area designated by local authorities which charges drivers a fine for driving within them if their vehicle does not comply with specific emissions standards. This initiative aims to reduce harmful emissions from vehicles and encourage the adoption of cleaner alternatives. CAZs currently exist in eight cities in England, with zones recently introduced in Birmingham and Bristol.

Research has not yet investigated the impact of this initiative on disabled and older people, who already face numerous barriers to travel. Given that CAZs aim to reduce pollution and improve air quality, it could be argued that they benefit those with respiratory conditions, such as asthma. Despite this, CAZs encourage the use of public transport which is often inaccessible to disabled people, as well as the adoption of cleaner vehicles which disabled people may not be able to afford.

The current research therefore aims to assess how disabled people are being impacted by CAZs through one-on-one interviews. The interviews focus on those with respiratory conditions, as well as those from the wider disabled community who live in the newly implemented Birmingham and Bristol CAZs.

## **2. Methodology**

Ten disabled people were interviewed in total. Six individuals were interviewed about the effect of CAZs on their respiratory condition, and five individuals were interviewed about the newly introduced CAZs in Birmingham and Bristol (referred to in the remainder of this report as “city interviews”). It should be noted that one individual had a respiratory condition and lived in Birmingham, and therefore took part in both interviews. For the full list of questions asked during the interviews, please see Appendix A.

Participants for the city interviews were recruited through Transport for All's network of members. Recruitment emails were sent to Transport for All members based in Birmingham and Bristol, which contained a link to a Google Form survey where they could express their interest in taking part. The survey asked about their availability as well as any access requirements. For the full list of questions asked in the Google Form survey, please see Appendix B. Participants for the respiratory interviews were recruited through the networks of Transport for All staff members. An email was sent out to Transport for All colleagues with a description of the project as well as a link to the Google Form survey, which was then shared with interested individuals.

The interviews were conducted via telephone or Zoom by a Transport for All staff member and took 15 to 30 minutes. Participants were asked for their consent for the interview to be recorded. They were provided with a £25 incentive for taking part in an interview and were able to choose between receiving their incentive as an e-voucher or a bank transfer.

## 2.1. Participants

The interview participants were a diverse group of individuals with a range of impairments and sociodemographic characteristics.

Of the five individuals who participated in the city interviews, three (60%) were female and two (40%) were male. Two (40%) participants were aged 26 to 45 and three (60%) were aged 46 to 65. Four (80%) participants were White, and one (20%) was Black, African, Caribbean, or Black British. Two (40%) participants did not use any mobility aids, while three (60%) used a wheelchair and one (20%) used a walking stick or frame. Three (60%) participants had a mobility impairment, one (20%) had a long-term health condition or chronic illness, one (20%) was neurodivergent, and one (20%) had a mental health condition.

Of the six individuals who participated in the respiratory interviews, five (83%) were female and one (17%) was male. Three (50%) participants were aged 26 to 45 and three (50%) were aged 46 to 65. Five (83%) participants were White, and one (17%) was Black, African, Caribbean, or Black British. Three (50%) participants did not use any mobility aids, while one (17%) used a

wheelchair, one (17%) used a car, and one (17%) used a guide dog. Five (83%) participants had a long-term health condition or chronic illness, one (17%) had a mobility impairment, one (17%) had a mental health condition, one (17%) had a learning disability, and one (17%) was blind or partially sighted.

Participants were assigned pseudonyms to protect their identities and maintain confidentiality. These pseudonyms are listed below along with participants' demographic characteristics.

### 2.1.1. City Interviews

- **Brian:** based in Bristol; male; aged 46 to 65; White; mobility impairment; uses a wheelchair.
- **Douglas:** based in Bristol; male; aged 46 to 65; White; neurodivergent; mental health condition; does not use a mobility aid.
- **Hayley:** based in Birmingham; female; aged 26 to 45; White; mobility impairment; uses a wheelchair and a walking stick or frame.
- **Kelsey:** based in Birmingham; female; aged 26 to 45; White; mobility impairment; uses a wheelchair.
- **Myra:** based in Birmingham; female; aged 46 to 65; Black, African, Caribbean, or Black British; long-term health condition or chronic illness; does not use a mobility aid.

### 2.1.2. Respiratory Interviews

- **Adele:** female; aged 26 to 45; White; mobility impairment; uses a wheelchair.
- **Clive:** male; aged 46 to 65; White; long-term health condition or chronic illness and learning disability; does not use a mobility aid.
- **Gillian:** female; aged 46 to 65; White; long-term health condition or chronic illness; does not use a mobility aid.
- **Myra:** female; aged 46 to 65; Black, African, Caribbean, or Black British; long-term health condition or chronic illness; does not use a mobility aid.
- **Naomi:** female; aged 26 to 45; White; blind or partially sighted and long-term health condition or chronic illness; uses a Guide Dog.
- **Serena:** female; aged 26 to 45; White; long-term health condition or chronic illness and mental health condition; uses a car as a mobility aid.

## 2.2. Analysis

The interviews were analysed using thematic analysis. The city and respiratory interviews were analysed separately.

The interview recordings were firstly transcribed using Microsoft Word. A researcher read through the transcripts to familiarize themselves with the data and assigned initial codes to sections of text. These codes were grouped into an initial set of themes, which were then reviewed and revised. For the full list of themes and codes, please see Appendix C.

## 3. Findings

### 3.1. City Interviews

Seven themes were generated from the analyses of the city interviews.

The most prevalent theme was a **Lack of Consultation**, which was mentioned 21 times. This theme refers to disabled people not being considered in or consulted about decisions regarding the implementation of CAZs.

Within this theme, the most common code was the needs of disabled people not being considered in decisions. This was reported 11 times.

"I think the construct is there more of a, you know, they set up the system and then they consider the people who fit... you have to fit into it. It's not geared, you know, for, you know, they see the disability first before they see the person, you know, and I think that's always the big issue, isn't it? It's an environmental, you know, it's a disabling environment, isn't it? Because they don't consider the individuals who may be using those systems first." - Myra

"I think we're an afterthought. We're an inconvenience, we're something that... our organizations generally come in at a latter stage when all the policy thinking has been done." - Douglas

"Is enough consideration being given to disabled people? Quite probably not." - Brian

Participants also reported that disabled people were not asked to share their views, which was mentioned 6 times.

"I think there was a consultation process, but I wasn't involved in that because, you know, I wasn't asked." - Myra

"Certainly I would say I received no direct approaches." - Brian

The final code within this theme was disabled people not being listened to, which was mentioned 4 times.

"We were fighting, for want of a better expression, a rearguard action which we didn't really get listened to, I don't feel in the Council, because they'd already made their decisions and they were going, you know, like a juggernaut just going straight forward."  
- Douglas

"I didn't feel any particular desire to contribute to that as an individual, the City Council doesn't really give the impression it listens that much to consultations." - Brian

The second most prevalent theme in the city interviews was the **Challenges of CAZs**, which were mentioned 12 times. This theme refers to the negative impacts of CAZs on disabled people.

Within this theme, the most common code was CAZs affecting the ability of disabled people to receive support, which was reported 6 times.

"I rely on PAs [Personal Assistants] to come to my home [...]. Both of them have large live-in vehicles because they're in the housing crisis and can't afford a place to live, but they can't really bring their vehicles here. They have to go right around the top of the city and then come back in and it just costs far too much money because I've... at the bottom of my road, I've got the Clean Air Zone starting, and if they're photographed in that, it's a [...] fine or something, and they can't afford that." - Douglas

"One of my friends that does like PA support for me when I don't have anyone, she lives the other side of town and her car didn't comply. So before she could, like, go through

town and get to me that way, and now she, like, has to go on the motorway and go all the way around the edge, which adds... it makes the journey about an hour and obviously adds to her fuel price. So that's been a barrier to getting support. And I used to meet her in town and stuff and she'd help me go rock climbing, and that's a lot harder now because she can't get into town, and when I go rock climbing, it's like quite a walk away from the station, so it's just not as easy now." - Hayley

Another code within this theme was it being harder to be a part of the community, which was mentioned twice.

"Then there's also, you know, if people wanted to visit, if people want to pick me up to go somewhere like a camp or some kind of conference or some kind of event or something, I have to say to them basically, you know, I have to go out of my house, I have to negotiate the very steep slope outside my home, walk down that, take lots of steps and stops and stuff like that, try and take my equipment with me, go down there and meet them down the end of the road, that kind of thing. So it's restricting my... what I can do in the world." - Douglas

Participants also reported an increase in cars parked on the outskirts of cities, which was mentioned twice.

"I guess another impact that I felt is where I go rock climbing, it's just on the boundary of the Clean Air Zone, and I've noticed that since that came in, it's a lot harder to park on those roads because people are parking there and then walking into town. So yeah, because I have a van that has a chair lift at the back, you're quite limited to on-road parking and I've noticed in the last few months it's been really difficult to park near the centre, near rock climbing." - Hayley

Personal safety concerns as a result of CAZs were reported once.

"If you take your car out in an evening and you're a female on your own, in Birmingham where the car parks are at the moment, it's like, you know, you have to park your car far away and then walk into where you want to get, and if you finish at 10/11 o'clock at

night I would feel quite anxious walking back to that car park. So I wouldn't take my car into the city centre, you know, if you come out of the venue, I just want to know that my car park is not more than one or two minutes away, not 15/20 minutes away, if you're on your own, you know, so now I'm going to the city centre less really, yeah." - Myra

The final code within this theme was an increase in journey time, which was mentioned once.

"It used to be about 40 minutes, and now it's about an hour." - Hayley

The next most prevalent theme was **Issues with Public Transport**, which were mentioned 10 times. This theme refers to the problems that disabled people experience with public transport.

Within this theme, the most common code was public transport being inaccessible for disabled people, which was mentioned 5 times.

"I think I guess I can only speak from my personal experience being a wheelchair user that I really struggle to use public transport and to make that work for me and that's just been sort of, yeah, my personal experience over, you know, sort of more recent years." - Kelsey

"Public transport in the Birmingham City centre, it's absolutely, absolutely dismal for lot of disabled people...it's just not set up to support a lot of people, so I don't think they are considered very well at all." - Myra

"The accessibility of transport hasn't been improved so I don't really know how they think that we'll manage, and like also because like buses and trains only have one space, like what are we gonna do if you're a wheelchair user, you know, like, the buses by me, they run like every 20 minutes, so, I mean it's already challenge because there's a care home on the same road that I live on, so it can be quite hard to get a space on the bus as it is." - Hayley

Participants also reported poor transport infrastructure, which was mentioned twice.



"I can't, basically, travel with camping gear from... into several locations easily enough because we don't have a functioning rail system properly, which is again is another regulatory thing." - Douglas

The reliance of disabled people on cars due to inaccessible transport was reported once.

"I think for me it feels at the moment until my confidence increases a little bit more possibly that I would consider using more public transport again. I'm definitely, it's the... it's the car, yeah, it's the car for me." - Kelsey

Participants reported a lack of public transport in rural areas. This was mentioned once.

"In my experience, to get to the countryside, which I need in my own emotional well-being and health, I have to use people's cars. There aren't enough rural buses." - Douglas

The final code within this theme was the need to improve public transport, which was reported once.

"You're gonna have to invest in public transport to get it to the point where it is affordable, although thankfully for many disabled people, the concessionary bus pass eases that burden. But certainly punctual, reliable, getting that right and sufficiently frequent with a good selection of routes. When you've got that right, then it's much easier to convert... to persuade people to not use their private motor car." - Brian

The next theme was **Barriers to Buying a Compliant Vehicle**, which were mentioned 10 times. This theme refers to the barriers that disabled people face to buying a vehicle that is compliant with the emissions standards defined by CAZs.

Within this theme, the most common code was disabled people not being able to afford a compliant vehicle, which was reported 4 times.

"I think it could be the cost. I mean, you know, we've had COVID, we've had, you know, the interest rates, we've had the food economic situation, food prices, people just can't, you know, I think trouble at the moment is it's, you know, it's off limits for a lot of

people because it's expensive and they have to think about food and shelter, you know, and stuff like that first and then, you know, travelling is, you know, at the end of everything, you know. So I think for a lot of people it's around financing it." - Myra

"I think it's important that we encourage people, but we need to give them solutions that are the size of what they can actually grasp, because the rich disabled people will just go and buy whatever new car. You know what I mean? They'll go and get their, I don't know Tesla or Peugeot, whatever, you know. But most disabled people are not wealthy or have disposable income." - Douglas

Another code within this theme was disabled people already having a vehicle that has been adapted for them, which was mentioned 3 times.

"But just, like it took so long to get that car and get it adapted and get it right, I think in total it was over two years. And I had a grant for that and loads of assessments and they're not a nice process. I wouldn't really want to volunteer to go through all that again until I really have to. And it feels a bit of a waste of like resources to replace a car that meets my needs." - Hayley

Participants also reported that vehicles that meet the needs of disabled people may not be compliant. This was mentioned twice.

"I've identified vehicles that would appear to meet my needs, and there's not an automatic version available on the scheme. I think there are a variety of reasons why people get pushed into the direction, particularly of having to go down the diesel route, which is really... really struggles with compliance with low emission zones." - Brian

The final code within this theme was disabled people forming attachments with their vehicles, which was reported once.

"Some people will like form attachments with their vehicles and, you know, like I'm autistic and I have particular preferences for things and things that gross me out and I can't, you know, I can't touch them or something. And so, you know, that's quite a small section of the community, but, you know, that's a factor." - Douglas

The theme **Issues with Concessions** was also mentioned by participants 10 times. This refers to problems experienced by disabled people with exemptions for driving in CAZs.

Within this theme, the most common code was difficulties with applying for concessions, which were reported 4 times.

"I mean, the first time I went to the post office, they gave me the wrong form. So then when I filled that out and went back and explained this is what I'm hoping we'll do, then they explained oh no sorry, there's another form that you need to fill in and we need to have the evidence of the PIP [Personal Independence Payment] and we need proof of ID and other bits and pieces. So there was a bit of confusion, yeah, at the start." - Kelsey

"I just thought, well there's no point in applying for this, it's only for a few months, and it's just more admin for us, you know, we love admin, don't we? Disabled people, we're all about admin [...]. So yeah, I just thought, well, you know, like I have enough problems with things like getting parking permits out of the county." - Douglas

Participants also reported a lack of support for those who do not receive the higher rate of Personal Independence Payment (PIP). This was mentioned 3 times.

"If the exemption is purely based on the PIP status as well that there's going to be a lot of individuals that aren't meeting those requisite thresholds that genuinely still could do with more support." - Kelsey

"Some disabled people have, you know, the benefits of having the mobility allowance, which they do use, you know, part of that payment to get a car, but for the ones that doesn't fall into the high level of the mobility allowance, I think more needs to be done."  
- Myra

The final code within this theme was eligibility for concessions applying to vehicles and not individuals, which was reported 3 times.

"The problem I'm going to have when I do sort out a car that I can drive is that then it will be assigned to that car and then there's a difficulty if for whatever reason, if my

health takes a dip or if I have a bad flare up or whatever it might be, that I am not in position to be driving, then you can't extend it to other, yeah." - Kelsey

The next most prevalent theme was **Uncertainty Around CAZs**, which was mentioned 9 times. This theme refers to the ambiguity experienced by disabled people regarding CAZs.

Within this theme, the most common code was a lack of information before the implementation of CAZs, which was mentioned 5 times.

"There was something when I went back in again to kind of look about how well it's advertised the exemption, and I noticed for example on the Transport for West Midlands website, it wasn't clear looking at what they've got sort of written, you know, written down and advertised about the Clean Air Zone that there was any kind of exemption for disabled people at all. So I thought that, again, was a bit of a mess." - Kelsey

"Advocates of Clean Air Zones have really missed the opportunity to talk in terms of damage to health, and I think that that might also help some disabled people who are affected cause those with breathing difficulties can be particularly vulnerable to some of the air quality issues that they are intended to address." - Brian

Participants also mentioned the effectiveness of CAZs being unclear. This was reported 4 times.

"I feel like it's an initiative that you don't hear much about, kind of what benefits has this driven? Excuse the pun... driving, driven. But yeah, so what benefits are we seeing for the air in Birmingham? I don't know, I don't know whether that is improving things for people, I'm not sure." - Kelsey

"I mean, there's the same amount of cars as far as I can see on the streets, the same amount of cars, parking in the road outside. I don't really understand what the great improvements in terms of vehicles on the streets is anyway." - Douglas

The least prevalent theme within the city interviews was **Mitigations for Impacts on Disabled People**, which was mentioned 3 times. This theme refers to ways to reduce the negative impacts of CAZs on disabled people.

Within this theme, the most common code was the provision of cars for disabled people, which was reported twice.

"I think coming forward with actual provision that meets people's needs, measuring the need coming forward, but also like saying to the public, you say you need a car, you need it for these reasons, but here's your conveyor of behaviour, here we're going to say to you, right now you're in this position, we need you to start getting interested and curious about these kind of behaviours, but at the same time we're gonna meet you with provision, you know, we're gonna meet you with there being a disabled adapted car in every neighbourhood, and then we're gonna provide those disabled adapted cars... you know, like if you've got, I don't know, 40 people in the ward, then we provide 10 cars. If you've got 400 people in the ward, you provide 40 cars, do you know what I mean?" - Douglas

Participants also mentioned the need to allocate more resourcing to disabled people. This was mentioned once.

"I know our Council is like saying that we've got this... we've got all these companies that are going to fund all these things in our in our, in our locality, and they're gonna put this money into the City Leap project or something. Well, it'd be nice if actually the disabled people saw some of that money rather than it all being these ideas which are circulating, but nothing is really falling down to us, you know." - Douglas

### 3.2. Respiratory Interviews

Seven themes were generated from the analyses of the respiratory interviews.

The most prevalent theme was the **Impacts of Air Pollution**, which were mentioned 19 times. This theme refers to the effects of air pollution on disabled people.

Within this theme, the most common code was changing behaviour due to air pollution. This was reported 9 times.

"Just this week I've been, I've not gone out of the house since Sunday because it's been high pollution and I got a text from my pharmacy on Monday, I think to say that my prescriptions are ready to collect, but because they don't do home delivery unless you look disabled, there's a whole different thing we can dig into another day, so I have to go and get them. So I have actually not gone to get the prescriptions that I need. So I haven't had my inhaler for a couple of days because I haven't wanted to go out in the high pollution that we have this week. So we've cancelled plans and made changes and yeah." - Serena

"You do avoid areas at specific times as well in the day because you know where the pollution is more so, you know, rush hour and stuff like... I mean, I have to go to work so I can't avoid it, but I just have to take my asthma inhaler, and stuff like that, yeah. But you know, you try and keep it to a minimum, you know." - Myra

"Yeah, I mean, if there's heavy, if there's lots of cars on the road and, I mean, especially in like during rush hour or something like that, or when like prime school pick up time is a massive problem because people don't turn off their engines, and I live near lots of schools and like it will make me cough a lot more, so I try to avoid those times." - Clive

Participants also reported health impacts of air pollution, which were mentioned 8 times.

"I think we have got, unfortunately, to a point in this country now where you know deaths are being directly attributed to air pollution. I think we had the first case a couple of years ago, a little girl in London, so sad." - Gillian

"The doctors are now saying that in a few years time we will see people with COPD, which has formerly been a condition that's completely down to smoking or quite a rare genetic deficiency. But in the coming years we will see COPD patients and that will be directly attributable to pollution." - Gillian

"I mean, I have like an irritated throat and a chest thing, and when there was noticeably less cars on the road during the pandemic, that was much better and it's definitely got worse since the pandemic is over." - Clive

The final code within this theme was moving house due to air pollution, which was mentioned twice.

"So we used to live just off Brixton Road, just by the office, and Brixton Road... I don't know if it still is, but certainly I think at the time we moved in, which was like 2018, it was the most polluted road in the UK. And we lived there because my husband needed to... wanted to be able to walk to work. So we actually decided to live there for like health reasons, because he preferred to walk to work than get the tube or the bus, but it did mean that we were on this very polluted road, so in... last year we moved out to South East London, so we're now in like zone 3. We're really near a big Green Park, Greenwich Park, significantly less air pollution. Obviously still London, so we didn't move to like the Highlands or anything, we had to move within the constraints of where we needed to be for work, but did factor in, we looked at the online tools to look at air quality when we were choosing where to move to and we factored that in as part of our decision of where to move." - Serena

"I have when I lived in Coventry. I moved so I wasn't anywhere near the ring road because it was making me ill. And I mean in those days, though I was much more adaptable to moving because I had less stuff and I was a student basically, so I could just move, whereas I don't really have that opportunity anymore." - Clive

The next most prevalent theme was **Issues with Public Transport**, which were mentioned 17 times. This theme refers to the problems that disabled people experience with public transport.

Within this theme, the most common code was the need to improve public transport, which was mentioned 4 times.

"I really hope that public transport, that public transport initiatives improve on the back of this because if people can't get places, that's an issue." - Gillian

"So they need to make public transport better and cleaner in terms of accessing it and, you know, because you go on the bus and sometimes it's very dirty and you don't want to be on things like that, do you? So, you know, and make the train... I mean, look at the trains with all the strikes, it's just a nightmare, it's a nightmare at the moment for everybody, isn't it?" - Myra

"I would also say that encouraging public transport would be a really good thing to do, because then it would hopefully lessen people's individual car use, so like making transport more accessible, for example would be really great at allowing disabled people to become less reliant on cars. I think people generally... if you improve reliability and frequency and overall service of public transport people would be more likely to use it." - Adele

Participants also reported a lack of public transport in rural areas, which was mentioned 3 times.

"Literally at one point there were no buses from Burwell to Cambridge. We're a population now of about 7000 people and we're 12 miles from Cambridge. Get a bus running, it's not that difficult, surely." - Gillian

"I think living in the countryside has its own challenges and I'm not sure I'm really up for that, and I like having things accessible. I mean, public transport is important to me and when, you know, there's only two buses a day or something, that's not really a suitable alternative for me, especially cause I don't drive, so yeah." - Clive

The reliance of disabled people on cars due to inaccessible transport was reported 3 times.

"A lot of disabled people rely on their car use and others rely on being driven places." - Naomi

"Disabled people are particularly reliant on cars, like I know where I live it's not all that easy for me to use public transport, so I do have to use my Motability vehicle driven by a carer pretty much anywhere I need to go." - Adele



Another code within this theme was poor transport infrastructure, which was mentioned 3 times.

"I generally don't think the UK at the moment has the infrastructure for too many Clean Air Zones to be honest. We don't have the public transport links. They're not... since COVID, you know, especially where I live, transport is so unreliable. The rail networks are striking every 5 minutes over whatever they're striking about this time. You've got the ministers who can't make up their mind about anything, let alone the environment. We just don't have that infrastructure in place at the moment to have these zones that people who we didn't vote for have decided we need." - Naomi

"I just, we live in a society where there's one or two cars to every household, and that's too many, and we know it's already too many, but there's also not... we haven't got the infrastructure in place to really deal without it at the moment." - Clive

Participants reported that public transport is expensive. This was mentioned twice.

"I'm going into London this evening and I find that it's cheaper for me to pay for diesel to drive in and park than it is to get a train in which is not at all helping the environment, it's not helping air pollution, so it's... that's definitely a policy that should be looked at." - Adele

"And our public transport's too expensive, so I understand why people will own a car." - Clive

Safety concerns on public transport were mentioned once.

"People don't feel safe as well sometimes in public transport. So I think it all needs to be revisited. You know, certain times of the evening, people may not feel comfortable." - Myra

The final code within this theme was public transport being inaccessible for disabled people, which was mentioned once.

"There's buses and stuff like that, but they're not always accessible, you know, in terms of where people live." - Myra

The theme **Attitudes Towards Initiatives to Discourage Car Use** was mentioned by participants 11 times. This theme refers to disabled people's thoughts about initiatives such as CAZs which aim to reduce car use.

Within this theme, the most common code was positive feelings towards initiatives, which were reported 8 times.

"I think I feel very positively about initiatives to try to reduce the climate crisis and initiatives that try to improve air quality generally, and I think that reducing car use is one of the ways that we can do that, and that local authorities can make a difference." - Serena

"I understand the purpose of them. I mean, completely in favour of action on climate change and think that it's incredibly important that the government takes it really seriously." - Adele

"I champion anything that takes more roads off our... more cars off our roads, that was the wrong way round... more roads off our cars, but yes." - Clive

Participants also acknowledged the difficulties involved in implementing these initiatives, which were reported 3 times.

"I think in an ideal world it's good, but we don't live in an ideal world. We live in a world full of diversity, and it's going to cause a lot of problems." - Naomi

"I think there's a lot of like layers of complexity in it, and I think that... I totally agree with the premise and the aim of it, but sometimes the actual being in the moment of it can feel quite difficult." - Serena

The next most prevalent theme was the **Challenges of CAZs**, which were mentioned 7 times. This theme refers to the negative impacts of CAZs on disabled people.

Within this theme, the most common code was CAZs affecting the ability of disabled people to receive support, which was reported 3 times.

"My sister has come out to see me a few times when I've not been feeling very well. And I think this is very much my sister being my sister, but not realised that we're in the ULEZ because it's kind of complicated and you don't necessarily know when you've seen the signs and stuff, and so she ended up being, I think she had to pay like £500 because she stayed overnight. And I found that quite difficult because, like she was coming to help out and to like, see us and stuff, and then she ended up getting fined for that. And so I was sort of thinking, well, if she had known, like, would I have offered to pay the ULEZ charge? And this is the kind of the stigma and the guilt that's tied up sometimes in being someone who receives care, when you then have this extra charge." - Serena

"I think the thing that worries me about them is not just disabled people who, you know, have issues using public transport and therefore rely on cars, but I've also been thinking more about the various exemptions to Clean Air Zones and how that would impact people who are supporting me, for example. So I rely on carers 24 hours a day, and I've been thinking about how it could impact people wanting to work with me if I was living in a Clean Air Zone, and what about the people that I need to come to my house for other things like cleaning and, you know, other jobs that I can't do myself because of my disabilities." - Adele

Participants also reported increased travel costs as a result of the implementation of CAZs. This was mentioned twice.

"If my partner's car wasn't like compliant, thankfully it is, that's another £30 we'd have to find. It just makes it a lot of money to travel." - Naomi

"A lot of people are avoiding the city centre and, you know, if they haven't got the new cars then they have to pay £8 in £8 out, that's £16 on top of maybe going in the city centre for a treat with the family. That's a lot of money." - Myra

Negative impacts on businesses were reported once.

"I think Clean Air Zones can actually cripple businesses as well because you can't have deliveries at certain times when you need them. You're not going to be able to... if you're a say [...] or something and you want to deliver, you can't without that car for example, and it can just lead to a mess within the city. I know people who live in London and they literally can't get their food delivered because of Clean Air Zones, and that's grocery as well as just Uber Eats or something." - Naomi

The final code within this theme was stigma for those with non-visible impairments, which was mentioned once.

"Particularly when you have like a non-visible impairment and you're using your car, it's... you're kind of... you're potentially already getting challenged because you're using a blue badge and you don't look disabled, and then you're potentially being stigmatised or like stereotyped again, if you're using your car in the Clean Air Zone, or like an emission reduction zone without looking like you need to." - Serena

Another theme was **Responsibility for Reducing Air Pollution**, which was mentioned 6 times. This theme refers to the emphasis of CAZs on individual behaviour and the importance of also targeting organizations that significantly contribute to pollution.

Within this theme, the most common code was policies focusing on organizations that cause pollution. This was mentioned 4 times.

"There's like a gazillion different ways that we create pollution in this country and in this world, and it feels like sometimes the steps that are taken to try and reduce that and to improve air quality are very specific, whereas you have like, you know, fossil fuel companies and things like that just cracking on and knocking it out." - Serena

"I mean, if you look at... yeah, if you go past certain places of industry like a type of factory or a plant or something, you see like the giant like smoke chimney type things, you just think about what those places are putting out into the air and you... I do wonder what regulation there is on those for what they're emitting and where they're allowed to do it." - Adele

Participants also mentioned CAZs putting the onus on individuals to change their behaviour, which was reported twice.

"It feels like sometimes they're kind of putting the onus on the individual citizens to make big changes, and the corporations kind of getting away with stuff, which is quite frustrating." - Serena

"I think there could be much tighter regulation of those, and I'm not seeing that happen as much as regulation on like civilian behaviour in terms of like driving and charging for driving in places or not allowing people to drive in certain places." - Adele

The theme **Financial Barriers to Buying a Compliant Vehicle** was mentioned by participants 4 times. This theme refers to the financial barriers that disabled people face to buying a vehicle that is compliant with the emissions standards defined by CAZs.

The most common code within this theme was the need to provide financial help for disabled people to swap to compliant cars, which was reported 3 times.

"I just think change needs to happen a bit quicker and maybe that is gonna rely on giving people massive subsidies, bigger subsidies to swap cars." - Gillian

"And maybe look at helping people to get cleaner cars, you know, the average family or the average person. I mean, I've got a car, but I'm exempt, my car is exempt, but you know, as the years go on, I'm not going to be because my car is getting older and older, but I won't be able to buy one of these new electric cars, I won't be able to afford it, you know, so there you are." - Myra

Participants also reported disabled people not being able to afford a compliant vehicle, which was mentioned once.

"Obviously has issues for everybody because I don't think, you know, people can afford to go out and buy new cars straight away, you know, and the economic situation and that includes me at the moment, so yeah." - Myra

The final theme identified in the respiratory interviews was **Uncertainty Around CAZs**, which was mentioned 4 times. This theme refers to the ambiguity experienced by disabled people regarding CAZs.

Within this theme, the most common code was the effectiveness of CAZs being unclear. This was reported 3 times.

"But it's unclear to me what impact Clean Air Zones have on these things and like yeah, I don't know, I'd be interested in like... more... yeah... sorry it's very hot. What I've seen about, like, particularly like coverage of ULEZ and stuff, it's said like oh there's, now there's fewer diesel cars on the road, but I don't massively understand what that means in terms of the air quality and what that might mean for people with respiratory disease in terms of, is it safer or is it... like, is it 0.1% safer, or is it 10% safer and like I don't understand the scale of what they've been doing and the impact it has." - Serena

"I mean I hope that those sort of programmes will help, but I... unless there's more... the more research that's done on it, the more that we'll know whether it's... it helps or not, so that's the important bit I guess." - Clive

Participants also reported there being a lack of information before the implementation of CAZs, which was mentioned once.

"I wish they publicised them more. I mean obviously cause I think that's the problem is that not really knowing where they're going to be necessarily and also like they may publicise them in their own circles, but I'm like I have no idea, no knowledge of, and it's one of those weird things. And I'm like the congestion charge thing is obvious because there's signs up with like the little C on it all over Manchester and I mean, I'm quite good at paying attention to what's around me, so I have as a result gone and read the website about that, but like, at least you know that's obvious, but a Clean Air Zone, I don't know how they decide on where that's going to be and also how they then publicise it, because I've not really seen anything, so I wish that was more obvious." - Clive

## 4. Discussion

Analyses of the city and respiratory interviews revealed widespread issues with public transport, including safety concerns, cost, and poor infrastructure. Some argued that the implementation of CAZs will only be successful if public transport is sufficiently improved to encourage disabled people to adopt this mode of transport instead of being reliant on cars. Potential improvements suggested by participants included increasing the frequency and reliability of services, as well as reducing costs.

Challenges associated with CAZs were also mentioned by participants in both the city and respiratory interviews. These included CAZs affecting the ability of disabled people to receive support and negative impacts on businesses which rely on delivery drivers. While CAZs are designed to reduce harmful emissions contributing to air pollution, there may be unintended consequences for individuals and businesses alike, because of increased costs and increased journey times.

Uncertainty around CAZs was another common theme found in both the city and respiratory interviews. Participants reported being unaware that a CAZ was being implemented in their area as they did not receive sufficient information about it beforehand. The absence of information on the effectiveness of CAZs also meant that participants were not sure how the initiative impacts on air quality.

Barriers to buying a compliant vehicle were discussed in both the city and respiratory interviews. Despite this, the barriers discussed in the respiratory interviews were solely financial in nature, while participants also mentioned other barriers to buying a compliant vehicle in the city interviews. These included disabled people already having a vehicle that has been adapted for them, as well as disabled people forming attachments with their vehicle. Participants in the respiratory interviews suggested that financial help should be provided to disabled people to help them swap to a car that is compliant with the emissions standards defined by CAZs, as they may be less accessible to those with limited financial resources.

Other themes emerged from the data that were specific only to the city interviews. For instance, participants reported a lack of consultation before the implementation of CAZs, as disabled people were not asked to share their views on the initiative and felt their needs were

not considered in decisions. The introduction of such schemes without meaningful consultation with disabled people can lead to unintended barriers, which could be avoided if decisions were made collaboratively.

Issues with concessions were also reported in the city interviews, including a lack of support for individuals not receiving the higher rate of PIP but who still face mobility issues. Participants also mentioned that CAZ concessions apply to vehicles and not individuals themselves, which overlooks the fact that those with fluctuating conditions may sometimes be able to drive their own vehicle but may also depend on being driven in multiple other vehicles which are not covered by the concessions. Difficulties with applying for concessions were reported, with participants reporting issues such as not being notified about the progress of their application.

The final theme from the city interviews involved mitigations for the impacts of CAZs on disabled people. Participants mentioned that councils should allocate more resources and funding to disabled people and ensure that disabled people are met with provision to ensure that they are not disproportionately impacted by such schemes.

Some themes emerged from the data that were specific only to the respiratory interviews, such as attitudes towards initiatives to discourage car use. Participants frequently reported feeling positive about such schemes and mentioned impacts such as reducing pollution and improving air quality. Despite this, some also considered the difficulties involved in implementing these initiatives and acknowledged that discouraging car use may not be a simple process.

The impacts of air pollution were also reported in the respiratory interviews, including effects on health. Some mentioned the impact of air pollution on their own impairment and reported how the lack of cars during the COVID pandemic improved the symptoms of their respiratory condition. Impacts on the health of others were also reported, such as the first death in the UK attributed directly to air pollution. Participants widely mentioned changing their behaviour to avoid highly polluted areas, such as not going out at certain times of the day. Some also reported moving house to avoid pollution.

The final theme that emerged from the respiratory interviews was responsibility for reducing air pollution. Participants argued that CAZs only address individual actions which is not enough



to combat air pollution. It was suggested that policies must also target organizations which significantly contribute to pollution to reduce industrial emissions.

## **5. Policy Recommendations**

Based on the findings of this research, we have developed policy recommendations that aim to mitigate the negative impacts of CAZs on disabled people:

- Provision of further subsidies to allow more disabled people to buy compliant vehicles. Promote existing schemes widely and in an accessible way.
- Provision of comprehensive information about CAZs before their implementation in multiple accessible formats that can be easily found. This should include details about the purpose of the initiative, specific regulations, and exemptions for disabled people. This should also clearly state the boundaries of the CAZ to avoid confusion.
- Research on the effectiveness of CAZs in reducing pollution and improving air quality, as well as dissemination of the findings to residents of CAZs.
- Meaningful consultation and engagement with disabled people before the implementation of CAZs. For example, engaging with local disability groups, as well as collecting demographic information on those who have engaged to ensure that disabled people are appropriately represented in responses. Local authorities should work with disability organizations where appropriate. Ensure consultations are available in a range of accessible formats, such as British Sign Language, audio, easy read, etc.
- Investment in improvements to public transport to increase accessibility for disabled people and reduce reliance on cars. For example, increase the frequency and reliability of services in rural areas, and increase the number of priority seats and spaces on all public transport modes, including buses and trains.
- Regular reviews of concession schemes to ensure disabled people are not being disproportionately impacted and that the schemes are fit for purpose. This should be done by collecting feedback from disabled people.

## **6. Appendix**

## **Appendix A: The full list of questions asked during the city and respiratory interviews.**

### **City Interview Questions**

1. How do you feel about people being encouraged to drive less or not travel by cars? Do you feel disabled people have been considered in this?
2. What reasons may disabled people have for needing to continue to use a non-compliant vehicle? (Prompt if needed: What are the barriers that disabled people face to upgrading their non-compliant vehicle to a compliant vehicle?)
3. Are you eligible for any concessions to the clean air zones?
  - a. Do you use them? If so, are they easy to get?
4. How have you been impacted by the Road User Charging in your area? This could be positive or negative.
5. Were you aware that a Clean Air Zone was coming into effect in your area prior to it starting?
  - a. Were you given the chance to share your views? If so, what did you say?
  - b. If you weren't aware, would you have shared your views? What would you have shared?
6. If you could change one thing about the way Clear Air Zones operate, what would it be and why?

### **Respiratory Interview Questions**

1. How do you feel about initiatives to discourage car usage?
2. How do you feel about Clean Air Zones? Why do you feel this way?
  - a. Do you live in one?
3. Have you moved or considered moving due to air pollution in your area?
4. Have you changed your behaviour because of air pollution? This could be going outside less or avoiding areas of high pollution.
5. Do you feel that Clean Air Zones in general are a good way to relieve the impacts of air pollution on the symptoms of respiratory conditions?

6. Do you think other policies to reduce air pollution should be brought in? If so, what?

**Appendix B: The full list of questions asked in the Google Form survey.**

Full Name

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Email Address

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Telephone Number

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Where are you based?

- Birmingham
- Bristol
- Other (please specify): \_\_\_\_\_

Do you have a respiratory condition?

- Yes
- No

Please select the type of interview you would like to take part in.

- Zoom
- Telephone

Do you have any access requirements for an interview that would take place over the phone? If so, please specify.

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Do you have any access requirements for an interview that would take place over Zoom? If so, please specify.

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Please indicate your availability for taking part in an interview.

- Weekday morning
- Weekday afternoon
- Weekday evening
- Weekend morning
- Weekend afternoon
- Weekend evening

### **Appendix C: The full list of themes and codes generated from the interviews.**

#### **City Interview Themes**

<b>Theme</b>	<b>Code</b>	<b>Code Description</b>
<b>Issues with public transport</b>	Inaccessible	Public transport is not accessible for disabled people
	Reliant_Cars	Disabled people rely on cars due to inaccessible public transport
	Lack_Rural	Lack of public transport in rural areas
	Poor_Infra	Poor transport infrastructure
	Improvements	Public transport needs to be improved
<b>Lack of consultation</b>	Not_Consid	Needs of disabled people not considered in decisions
	No_Share	Disabled people not asked to share views
	No_Listen	Disabled people are not listened to
<b>Barriers to buying a compliant vehicle</b>	Not_Afford	Disabled people may not be able to afford a compliant vehicle

	Adapted_Veh	Disabled people may already have a vehicle that has been adapted for them
	Not_Compliant	Vehicles that meet the needs of disabled people may not be compliant
	Form_Attach	Disabled people may form attachments with their vehicles
<b>Uncertainty around Clean Air Zones</b>	Lack_Info	Lack of information before implementation
	Effect_Unc	Effectiveness of Clean Air Zones is unclear
<b>Issues with concessions</b>	Lack_PIP	Lack of support for those who do not receive higher rate of PIP
	Elig_Veh	Eligibility for concessions apply to vehicles and not individuals
	Diff_Apply	Difficulties with applying for concessions
<b>Challenges of Clean Air Zones</b>	Rec_Support	Affect ability to receive support
	Inc_Journey	Increased journey times
	Pers_Safety	Personal safety concerns
	Inc_Park	Increase in cars parked on outskirts of cities
	Hard_Comm	Harder to be a part of the community
<b>Mitigations for impacts on disabled people</b>	Res_Disab	Allocate more resourcing to disabled people
	Prov_Cars	Provision of cars for disabled people

## Respiratory Interview Themes

Theme	Code	Code Description
<b>Attitudes towards initiatives to discourage car use</b>	Pos_Feel	Positive feelings towards initiatives
	Diff_Imp	Consideration of the difficulties involved in implementing initiatives
<b>Issues with public transport</b>	Reliant_Cars	Disabled people rely on cars due to inaccessible public transport
	Poor_Infra	Poor transport infrastructure
	Inaccessible	Public transport is not accessible for disabled people
	Lack_Rural	Lack of public transport in rural areas
	Safe_Conc	Safety concerns on public transport
	Expensive	Public transport is expensive
	Improvements	Public transport needs to be improved
<b>Financial barriers to buying a compliant vehicle</b>	Not_Afford	Disabled people may not be able to afford a compliant vehicle
	Finance_Help	Need to provide financial help for disabled people to swap to compliant cars
<b>Uncertainty around Clean Air Zones</b>	Lack_Info	Lack of information before implementation
	Effect_Unc	Effectiveness of Clean Air Zones is unclear
<b>Impacts of air pollution</b>	Health_Imp	Health impacts of air pollution
	Move_House	Moving house due to air pollution
	Change_Beh	Changing behaviour due to air pollution

<b>Challenges of Clean Air Zones</b>	Rec_Support	Affect ability to receive support
	Neg_Busi	Negative impacts on businesses
	Stig_Inv	Stigma for those with non-visible impairments
	Inc_Cost	Increased travel costs
<b>Responsibility for Reducing Air Pollution</b>	Onus_Ind	Clean Air Zones put onus on individuals to change their behaviour
	Focus_Org	Policies should focus on organizations that cause pollution