Developing an evidence-based toolkit for car reduction

Developed by CAST and Climate Outreach in collaboration with the Scottish Government

Funded by the University of Bath's Policy Support Fund

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Executive Summary

Scotland has always been at the cutting edge of climate policy: it was the first nation to declare a climate emergency in 2019 and the first to make a financial commitment to addressing the irreversible loss and damage faced by communities on the frontlines of the climate crisis. The Scottish Government has now developed tangible plans for key areas of decarbonisation - transport being a critical one. It has set a world-leading commitment, and route-map, to reduce car kilometres by 20% by 2030.

Over the next five years Scottish Government are investing significantly to support this transition, including in infrastructure and service provision, to support a shift away from car use. The government also recognises that behaviour change is one element of achieving the 20% reduction target. But rather than seeing behaviour change as an add-on, the government are focussed on identifying the low carbon behavioural shifts that it can support through comprehensive policies, including in regulation and infrastructure. These policies and investments can enable people to adopt these behaviours including:

  i) reducing the need to travel

  ii) living well locally

  iii) switching modes, and

  iv) combining or sharing car trips.

Achieving this behaviour change requires consideration of geographic, socio-economic and infrastructural opportunities and barriers, and engaging people early on in intervention design, to ensure their values and needs are incorporated and that measures are workable and fair.

The Scottish Government has made a [Just Transition Commitment](#) – which recognises that there is a need to couple "efforts towards emissions reductions and adaptation with tackling existing inequalities", in order to "deliver an economy and society which is centred on people's wellbeing". This is prudent in the case of transport and mobility; since reducing car use may be more challenging for some people - particularly in the short-term, for example those who use cars as a mobility aid; those in rural and island communities; and some businesses for whom car use may be more necessary. There is also a recognition of the inequity of a status quo that facilitates car use at the expense of other modes, when those on lower incomes as well as younger and older people, women, disabled people and certain minority ethnic groups are less likely to have access to a car.

The [Scottish Government's Climate Change Public Engagement Strategy, and Mission Zero for Transport](#) see public engagement as critical for the success of climate policy and transport decarbonisation.

Building on this commitment to public engagement and policy co-production, the current project is a collaboration between the Scottish Government, the Centre for Climate and Social Transformations (CAST) and Climate Outreach (CO). It seeks to understand and support the development of evidence-based messages to build awareness of and engage with some key audiences around visions of transitions to lower-carbon transport lifestyles in Scotland.

The project objectives were to:

1. Review the evidence on Scottish public opinion of climate and car-reduction policies, and the factors shaping travel choices (especially car use reduction) in Scotland;

2. Based on this evidence, co-develop, with the Scottish Government, hypothetical 'pen portraits' of six categories of stakeholder describing how they have successfully adapted their lives to use cars less and the wider benefits (e.g. health, finances) they have experienced as a result;

3. Test the validity of the pen portraits through interviews and focus group discussions with individuals representing the portrait types;

4. Experimentally test the refined messaging to ensure it resonates with population segments;

5. Commission a design agency to produce illustrations and professional copy of the final pen portraits for use by Scottish Government in information campaigns.

The project iteratively developed and tested 'Pen Portraits' of six audience groups. These are detailed descriptions of hypothetical but evidence-based characters who have chosen to reduce their car use, and describe their transport context and needs, changes to them, and the positive impacts of those changes. They capture the diversity of drivers and barriers to behaviour change, and reflect the four types of behaviour change needed to reach Scottish Government's 20%

target: i) reducing the need to travel; ii) living well locally; iii) switching modes, and, iv) combining or sharing car trips. Crucially, they emphasise that behaviour change is *possible* and *beneficial* - both of which are key elements of persuasive communication.

Through literature reviews, focus group discussions, and experimental surveys with the six segments of the Scottish public, the process aimed to capture the potentially distinct needs and visions of these different audiences with regards to transport behaviour change.

The six Pen Portraits are:

Mary and Jonathan, an older couple living in a rural area

Alex, a young adult living in an urban area

Nia and John, middle-income parents

Kim, a single parent on lower income

Yasmin, a small business owner

Mike, an office worker and wheelchair user

The finalised Pen Portraits are evidence-based tools to support the communication, design and effective implementation of car use reduction policies that translate into meaningful place-based change in Scotland. These tools and the analysis within this report are intended to facilitate internal conversations on Scotland's 2030 commitment to reduce car kms by 20% and inform wider external communication and marketing strategies - to motivate and support communities, individuals, businesses, policymakers, and parliamentarians.

Our analysis shows that although the use of cars is one of the biggest drivers of Scotland's emissions, the majority of the Scottish public seem to have positive attitudes towards car

reduction and in particular switching to active travel as an alternative. The end of the COVID-19 pandemic and its restrictions represent an important window of opportunity which could be used to facilitate reductions in car use. Emphasis should be made on the concept of living well locally, the transition to a healthier form of mobility (e.g. walking, wheeling and cycling), and combining/ sharing car trips. However, the switch to a low-carbon transport mode could be more difficult for some groups across Scotland. For instance, those living in rural areas, older people, women, disabled people , and low-income individuals and families. Thus, more attention needs to be paid to these diverse groups when designing interventions and public campaigns as these would need to be accessible to, and inclusive of, Scotland's broad population. In addition, working together with businesses could also help to tackle the barriers to reducing car use.

The following recommendations have emerged from the research process and can support Scottish stakeholders to reach the car reduction target:

→ Build urban populations' awareness about government interventions and their options for lifestyle change

→ Focus on multi-modal journeys and living well locally when messaging to rural populations

→ Build awareness amongst low-income workers about the new travel options opening up for them and incentivise businesses to support them

→ Ensure messaging to and about disabled people avoids stigma and emphasises independence

→ Support older people to try reducing car use through a combination of new technologies and local community-based communications channels

→ Invest in gender responsive messaging that speaks to women's travel experiences appropriately

1   Introduction

1.1 Background

Since the Scottish Government (SG) declared a climate emergency in 2019, it has focussed on developing tangible plans for key areas of decarbonisation as part of its Climate Change Plan. The plan aims to achieve Net Zero in Scotland by 2045; and hit interim milestones of 75% by 2030 and 90% by 2040.

Transport is Scotland's largest sectoral emitter, accounting for 26% of total greenhouse gas emissions. Within transport, the mode of travel that produces the most CO_2 is car use. In 2020, cars accounted for 38% of Scotland's transport emissions (Scottish Government, 2022). This comes as no surprise since cars make up over three-quarters of total traffic volume in the country. Reducing car use is fundamental for the overall reduction of Scotland's carbon emissions. In response to the climate crisis and this local context, Scotland's Climate Plan 2020 set out a world-leading commitment, and route-map, to reduce car kilometres by 20% by 2030.

Scottish government are investing significantly to support this transition, including record investment in active travel, with a commitment that by 2024-25 at least £320 million, or 10 per cent of the total transport budget, will be allocated to active travel; over £1billion in support to public transport operators during the pandemic and £25 awarded to develop and deliver bus priority measures going forward and nationwide free bus travel for Scotland's young people aged under 22, potentially benefitting around 930,000 young people. This is in addition to investment in non-transport areas such as the roll-out of superfast broadband; 20-minute neighbourhoods; and Mobility as a Service (MaaS) pilots; to support people to travel less; choose more local destinations and combine or share journeys, in addition to switching to alternative modes. These changes have wider benefits. According to C40 Cities, for example,

> **"Doubling public transport usage as part of a green recovery would, by 2030, create tens of millions of jobs in cities around the world (4.6 million new jobs in the nearly 100 C40 cities alone), cut urban transport emissions by more than half, and reduce air pollution from transport by up to 45%"**

With these investment and infrastructural measures underway, the government also recognises the need to engage the Scottish public effectively on this transition. Mission Zero for Transport and the Car Use Reduction Route Map are rooted in a place-based approach - which puts partnerships and people at the heart of the low carbon transition - ensuring *"People and places benefit fairly from the shift to sustainable, zero emission mobility"*. Similarly, the SG's climate change public engagement strategy, Net Zero Nation, emphasises the need for the government to work with the public to develop and implement climate solutions. The current project is grounded in this strong commitment to public engagement and co-production of policy.

1.2 Scotland's Car Reduction Route Map

Public opinion speaks to a broad support for car use reduction, so long as it is aligned with improvements in Scotland's public transport system and economic incentives to ensure no one is left behind (Scotland's Citizen Assembly, 2021; Department for Transport, 2020). This provides a window of opportunity to catalyse a national shift in travel behaviours. Recognizing the need for a holistic policy landscape that interlinks the individual, social and material structural, social and individual contexts for enacting change. As such the Scottish Government (SG) and the Convention of Scottish Local Authorities (COSLA) published a strategic document that sets out the planned interventions to, *"support people to live healthier, fairer and more sustainable lives by choosing alternative ways of accessing goods, services, amenities and social connections."*

Transport Scotland's Car-Use Reduction Route Map is grounded in a behavioural change approach, using the Capability, Opportunity, and Motivation (COM-B) model. In this sense, the SG is taking a system-level change approach to create the right material and social conditions to ensure people have the capability, opportunity, and motivation to transition to more sustainable behaviours. A just transition includes changes in the way individuals access goods, services, amenities, and social connections as well as a coordinated approach that includes businesses, public and third sector organisations that will need to support their customers, clients, and workforce to make those changes.

The route map explicitly recognises the need for joint ambition and action at both a national and local level, and is *"underpinned by our commitment to a just transition to zero greenhouse gas emissions as well as to the community wealth building principles of creating benefits and opportunities equally for people across Scotland."* (p10). It is ambitious and inspirational, but carefully ensures it is rooted in the realities and barriers faced by different people. It recognizes that eliminating all car travel is not currently feasible for journeys undertaken by certain groups, for example disabled people or those in rural areas where lower carbon travel options may not be available or practical.

The route map outlines a set of interventions that combine transport and non-transport policies that will support people to adopt sustainable travel behaviours in the ways they are most able to do so. This is set in the backdrop of an ambitious infrastructural and public services investment scheme, which increases the availability and quality of transport services and other options, such as online and local access, for people to make the transition in their daily lives.

The programme is structured around four, evidence-based, branches of travel behaviour change:

i) reducing the need to travel

ii) living well locally

iii) switching modes, and

iv) combining or sharing car trips.

An illustrated figure of these branches is below.

Reducing the need to travel	Living well locally	Switching modes	Combining or sharing car trips
Using online options may be particularly important in rural or island communities, where distances may be greater to local services, as well as for purchasing goods that are more difficult to transport by active travel or public transport. Reducing travel can also save time and money.	Particularly important in urban and suburban areas as well as towns and villages. Accessing goods, services, amenities and social connections locally benefits local economies and helps revitalise communities.	Switching to walking, wheeling, cycling or public transport may be more feasible if a local destination has already been chosen. Active modes and public transport provide opportunities for physical activity which benefits physical health and mental wellbeing.	Particularly important in some geographical areas, for people with specific disabilities and for certain trip-purposes, where an alternative mode is not feasible. Sharing with others* can provide opportunities for social connection which can boost wellbeing.

*COVID-19 permitting

Figure 1: Four Branches of Behaviour Change in Transport Scotland's Car Reduction Route Map

The SG held a public consultation on this plan (in 2021-22). The feedback underscored the need for an evidence-based understanding of different people across society and the opportunities and barriers they face in adapting their travel behaviours. The Charter Institute, in their evidence, argued that:

> **"Most people choose the best mode for the trip they are making not because of some transport policy ideology but because it works for them and their lifestyle. Bending these lifestyle choices will be the key to unlocking successful delivery".**

Indeed, the SG's aim is to create the conditions for lifestyle change through persuasive and targeted interventions. To ensure these are designed effectively, it is important to consider geographic, socio-economic and infrastructural opportunities and barriers, through engaging the public early on in the design of interventions. Work by CAST and Climate Outreach has shown that a net zero transformation requires substantive public involvement in policy design and delivery, and that this begins with having a deep understanding of people's lived experiences and factors that can drive or inhibit behaviour change (e.g. Climate Outreach, 2021; 2019; Climate Outreach and CAST, 2020). These factors include motivational aspects, such as awareness of the health benefits of active travel, or climate change concern, but critically also the opportunities and capability to act, such as affordable and accessible public transport or walkable urban environments (e.g. Capstick et al., 2020).

1.3 Project aims

This project therefore aimed to inform the SG's 'national conversation' and policy design for car use reduction through a programme of public engagement. This involved the University of Bath (CAST) and Climate Outreach partnering with the SG to explore factors that shape car use reduction in Scotland and to develop evidence-based messaging to support the delivery of car use reduction, along with wider social benefits. The objectives were to:

1. Review the evidence on Scottish public opinion of climate and car-reduction policies, and the factors shaping travel choices in Scotland;

2. Based on this evidence, co-develop, with the SG, hypothetical 'pen portraits' of six categories of stakeholder describing how they have successfully adapted their lives to use cars less and the wider benefits (e.g. health, finances) they have experienced as a result;

3. Test the validity of the pen portraits through interviews and focus group discussions with individuals representing the portrait types;

4. Experimentally test the refined messaging to ensure it resonates with population segments.

5. Commission a design agency to produce illustrations and professional copy of the final pen portraits for use by SG in information campaigns.

In the next section (section 2), we outline findings from our literature review on public engagement with car use reduction (with further details on factors shaping car use in Appendix 1), before outlining the empirical methodology for developing the pen portraits (section 3).

2   Engaging the public with travel choice change

2.1 Opportunities for and barriers to reducing car use

Most journeys in Scotland are by car, with the most common car trip purposes being commuting (28%); shopping (23%); and leisure (19%) (Scottish Government, 2022). Two in five commuting journeys, however, are under 5km (Scotland's Census, 2022) indicating a significant potential for modal shift away from car use.

Car use is driven by a range of factors, including geography, demographics, and social norms (Whittle et al., 2018). We reviewed the literature on factors shaping car use in Scotland (see Appendix 1), and found that car use varies by location (e.g. rurality), age, gender, income, and disability (see also: Scottish Government, 2022). For example, those living in rural areas are much more likely to drive than those living in urban areas: 72% living in remote rural areas drive at least three times per week, compared to 46% in large urban areas, because the latter have more access to public and active travel alternatives. There are also specific challenges for women and those with disabilities in using alternatives to cars. Higher income also tends to predict more car ownership and use (e.g. Scotland's Census, 2022).

On the other hand, opportunities for reducing car use include investing in improved active travel and public transport infrastructure, using economic (dis)incentives to encourage car use reduction, increased use of virtual alternatives to travel (e.g., working from home) particularly since COVID-19 (see Transport Scotland, 2022), informing the public about the various benefits of active/public transport, and reshaping social norms around car use (e.g. Kuss & Nicholas, 2022). However, these opportunities are not equally available across society. For example, working from home has become a more feasible option for those in certain (e.g. office based) types of employment, but less so for front-line workers. Similarly, disabled people may find active travel infrastruture does little to reduce their reliance on cars for mobility.

Drawing on this evidence of the various drivers of and barriers to car use reduction, and how these are experienced differently across segments of the Scottish public (differentiated by demographic and geographic factors), our Pen Portraits sought to illustrate these alternative pathways for and challenges to moving away from car use.

2.2 Public engagement with low-carbon travel habit change in Scotland

Effective policy implementation on climate change requires different forms of individual action. Therefore, people must feel a sense of purpose and agency to take action in their lives. At the same time they must feel that governments are not avoiding systemic issues by focussing only on individuals (CAST, 2021). This takes careful consideration of how best to engage people and help them see themselves in the climate change story. It also prioritises understanding their values, and the opportunities and challenges they see with the proposed change and transition. The Scottish Government (SG) has actively invested in public engagement in its climate work. It produced a comprehensive, evidence-based, public engagement strategy to involve people and communities in the national effort required to reach Scotland's climate change goals.

In 2020-21 Climate Outreach and More in Common conducted a nationally representative study on public engagement on climate change in Britain. Called 'Britain Talks Climate', or 'BTC', this included a sample of 1057 people in Scotland. The results tell us that the Scottish public are worried about climate change (77%), ranking it as their third biggest concern after Brexit and Healthcare/the NHS. Fifty-four percent agreed that an urgent, radical change is needed to address climate change; and the majority agree it is caused by human activities (71%). But in large part, respondents didn't translate their concern into their everyday lives. While 10% spoke often with their families about climate change and 27% somewhat often; 62% said they didn't really talk about it. While 74% agreed that everyone had to work together to act on climate and environment; and 64% shared that they felt proud whenever they took some form of action - when it came to questions around knowing what to do and whether individual actions could make a difference - confidence waned. For example, 50% of Scottish respondents agreed, 'we are too set in our ways and too used to convenience to stop climate change'; and 57% agreed that 'People in power do nothing to protect the environment because they want to keep the system as it is'.

BTC also used a new method to segment and understand the British population. This goes beyond uni-dimensional accounts of public opinion (e.g. left versus right, leave versus remain, north versus south) to uncover seven more nuanced and complex audience segments. These are based on an understanding of people's deep-seated beliefs about what is right and wrong, important and unimportant, and how these beliefs reflect their vision of what a good society looks like, directing and justifying their attitudes and behaviours towards climate change. The seven segments include: two ideological groups, two disengaged groups- one left-leaning and one right-leaning; one group defined by attitudes towards crime & immigration; and two engaged but less ideological groups. Follow up research in 2021 and 2022 demonstrated that the segmentation remained the same and concern about climate and support for climate policies actually increased over time - even in the context of a major global crisis (Covid-19) (Climate Outreach and CAST, 2021; Climate Outreach 2021; 2022). There was also strong support for a 'green recovery' from Covid-19.

The segmentation in Scotland is slightly different to Britain overall. There are a greater proportion of segments that feel frustrated with the status quo - whether they lean to the left or right socially and economically. The Scottish population leans more towards anxiety about the future - feeling the world is becoming a more dangerous place. But interestingly, when it comes to climate - three of the four biggest

segments (Progressive Activists, Loyal Nationals and Civic Pragmatists) - are very concerned about climate change and, either already do, or want to take action. However, each segment sees the locus of action differently - Progressive Activists focussing on climate change as a more global issue; whereas Loyal Nationals see it as a hyper local issue; and Civic Pragmatics lean towards national and local framings too. In non-car related travel policies, 48% of the Scottish BTC respondents supported a tax on people who fly the most. They were split on airport expansion, with 34% for it, to boost jobs and the economy, and 37% against it from the perspective of emissions. Taken together, this means that framing of messages to engage the Scottish public does need to be carefully balanced to ensure it positively reaches the widest range of people.

But what do we know, so far, about how the Scottish public engage with climate-related transport policies and activities focussed on reducing car kilometres? We reviewed the available evidence and found the following key insights:

→ **The public overwhelmingly support a structural shift to reduced dependency on cars**

National surveys have shown that, at least 79% of the Scottish public strongly support a reduced dependency on car use, as long as public transport availability is improved (RISK-RESIL, 2019; Ipsos Mori, 2021). In the Scottish BTC sample, 59% supported policies to introduce clean air zones in cities, so the most polluting vehicles are charged more; 65% thought this would encourage people to take other forms of transport more, like walking and cycling. In the same study, 59% agreed that cities should reduce the number of cars on the road to protect people's health (only 11% disagreeing).

Additionally, in focus group discussions with aspiring and existing car drivers in rural and urban Scotland, people expressed support for the policy ambition to reduce car km by 20%, and positive feelings about the target being met (Institute for Transport Studies, 2021). In CAST research across the UK, China, Brazil and Sweden - there was strong understanding that shifting to active and public transport could have a measurable impact on reducing global admissions ([CAST, 2021](#) and [CAST and Ipsos Mori, 2021](#)). In fact, this emerged as respondents' perceived 'most effective' ways to address climate change. This means there is scope to engage the public - not just in Scotland but in many nations - quite proactively on this topic. However almost a third of Scottish residents are worried about what it means to reduce their use of petrol and diesel cars (BTC, 2020); so it is important to engage groups in ways that feel relevant to their daily lives and allay their anxieties.

→ **The perceived feasibility depended on their location and its transport options**

People in Glasgow were more positive about reducing car use than people in Aberdeen, for example, where the latter felt the structural barriers to change were much higher. Rural residents were really worried about affordability and the ability to meet basic needs such as grocery shopping (BTC, 2020). Wider evidence similarly highlights the importance of physical and infrastructural factors in shaping travel choices ([Whittle et al., 2018](#)).

→ **There are some journeys people struggle to imagine without access to a car**

In focus group discussions about the SG route map, people expressed a barrier to travelling by other means for specific journeys. These included: grocery shopping trips; long distance visits to friends and family; leisure trips with children; and trips that require equipment such as paddleboards and bikes.

→ **Most Scots fear that transforming their travel habits will be difficult and expensive**

In research by Cenex, in 2021, the broader theme of decarbonisation was characterised by respondents as 'difficult and 'expensive' - and this impacts their agency and empowerment to decarbonise their lifestyles (see also Savanta ComRes research on uptake of electric vehicles, 2021). Also, 45% of respondents in the Scottish BTC sample felt reducing car use would add costs to their daily life.

→ **There is a need to carefully consider messaging that can engage the widest range of people across the country**

According to CAST and Climate Outreach:

"Appreciating and respecting people's values, including their attachment to their families and communities, is increasingly recognised as central to addressing 'bigger-than-self' problems like climate change. Behavioural changes need to be about more than just money if they are to add to a shift in low carbon lifestyles. People's values (guiding principles in their lives), and their sense of identity (how they define themselves) are crucial to how they engage with climate change.

The reasons and motivations behind changes in behaviour really matter. When an action is perceived to be driven by a sense of conviction ('I want to do this'), rather than the result of coercion ('I'm being told I should do this'), 'spillover' to other behaviours is more likely to occur. The point is not that people don't care about how low-carbon choices will impact on their wallet (they do), but that this is not enough to sustain a low-carbon lifestyle." (See here).

2.3 Principles for engaging the public on transport decarbonisation

Scotland's evidence-based Public Engagement Strategy focuses on connecting people with what is happening in the transition to net zero. It aims to "promote meaningful engagement with people's values, identities, and concerns to facilitate a society-wide response to the climate emergency". Page 7 of the strategy sets out the Framework for Engagement, which has three strategic objectives:

Understand – **Communicating Climate Change:**

> People are aware of the action that all of Scotland is taking to tackle climate change and understand how it relates to their lives.

Participate – **Enabling Participation in Policy Design:**

> People actively participate in shaping just, fair and inclusive policies that promote mitigation of and adaptation to climate change.

Act – **Encouraging Action:**

> Taking action on climate change is normalised and encouraged in households, communities and places across Scotland

The strategy is underpinned by evidence and consultations undertaken with researchers, civil society organisations, and other relevant experts. Two relevant pieces of work that informed the strategy included evidence-based principles for public engagement on climate action in Scotland. The first, from ClimateXChange (2018), concluded with the following principles:

Bringing it home – Reducing the psychological distance to our potential low-carbon future by focusing on everyday lives and activities, speaking to the reader from the present of 2030, focusing in on local areas; grounding the vision in the Scottish context, and making the vision relevant to different types of people from different backgrounds.

Communicating the win-wins – Highlighting the co-benefits of reducing carbon emissions, particularly where these benefits resonate with shared values such as fairness/equity, health and wellbeing, community and resourcefulness.

Balancing the new with the familiar – Creating excitement around the changes to come while also conveying comfort in the continuity of aspects of everyday lives that remain largely unchanged.

Normalising change – Communicating the performance of key low-carbon behaviours as being the norm for those living in the low-carbon society of 2030, as well as highlighting the existing norms that can be built on to achieve our goal of a low-carbon society.

Presenting a shared journey – Building recognition that becoming a low carbon society will require actions on the part of individuals and institutions across society by highlighting the roles that different sectors of society will play in the transition, where appropriate.

Highlighting success stories – Presenting examples of where positive transitions are successfully being made in the here and now, helping to ground the vision in the reality of the present and to reduce feelings of helplessness in the face of a global challenge like climate change.

The second, from Climate Outreach and Cardiff University (2019), came to similar conclusions:

Values and identity are crucial for lifestyle change - Campaigns should aim to build consistency between behaviours, by focusing on the motivations and values that underpin them. Thinking carefully about the values an audience holds, and finding ways to craft messages about behaviour change that don't focus (at least not exclusively) on economic rationales, is critical.

Promote positive social norms around low-carbon lifestyles & the power of peer-to-peer engagement - 'Talking climate', allowing the links between different low-carbon behaviours to be made 'conscious', and positively influencing the perception of social norms in the process, is a crucial element in mainstreaming low-carbon lifestyles in any cultural context.

Tell an authentically positive story about low-carbon lifestyles - Behaviour change campaigns should build people's confidence and 'self-efficacy', and highlight the genuine 'co-benefits' to health, wellbeing and community cohesion that come from low-carbon choices.

Learn from the past - moving from 'nudge' to 'think' as the strategy for mainstreaming low-carbon lifestyles - Reflecting the lessons from the rapid reduction of rates of smoking in the UK, the focus of campaigns to promote low-carbon lifestyles must shift from 'nudge' to 'think' as a strategy for public engagement, including peer-to-peer as well as top-down communication approaches.

Focusing on the behaviours and audiences that really matter - Focus on the audiences and behaviours where intervention can make the most difference. By developing values-based, peer-led campaigns that build on positive social norms and maximise the chance of 'spillover', low-carbon lifestyles can move from the margins to the mainstream.

These principles call on the Scottish Government to help people see themselves in the climate action story; express empathy with the challenges to changing travel choices; build awareness about the options out there; and help them imagine and visualise the co-benefits. This needs to be an authentically positive story for people to buy it. One way to do this is through Pen Portraits, which provide insights on narrative frames and messages that can work for different groups of people who may be affected or engaged with the policy differently, according to their personal circumstances.

Therefore, this project focussed on using all the evidence available to develop inspirational, but realistic, Pen Portraits of six different 'groups' who face different challenges, opportunities and motivations for shifting their travel patterns. These were then tested directly with members of the public through focus group discussions and a survey before being amended accordingly. These Pen Portraits provide a useful set of materials that the Scottish Government and other stakeholders can use to inform activity to reach and engage different members of the Scottish public in car use reduction. The Pen Portrait methodology is generalisable for use with other types of behaviour change, policy goals, or publics.

3 Methodology

3.1 Methods

We performed a literature review of evidence from Scotland on transport, car dependence, car-use reduction, transport policy support, and public engagement on climate-related lifestyle change (see section 2 and Appendix 1). This review allowed us to shine a light on experiences of the Scottish transport context and where possible, the perceptions and lived experiences of Scottish people from different geographic and demographic groups. Our review identified a total of 114 sources specific to the Scottish transport context. In collaboration with the Scottish Government, we then supplemented this review with additional searches into specific identity groups that were less widely researched and the Scottish Government were keen to address in the pen portraits, including disabled people and those on low incomes. These groups face additional challenges to reducing car kilometres travelled, as detailed in the review.

These resources were then used to develop six, evidence based, pen portraits, ensuring that the content and narratives were consistent with existing research. In particular, Ryhaug and Toftaker (2016) stated that outdated economic models of rational choice that are so often applied to mobility will not help us to envisage and achieve the aims of reducing car use. On the other hand, developing a deep understanding of complex and diverse transport needs will be key. For this reason, we started with existing literature, and then tested with relevant groups, through both a survey and focus group discussions.

The literature review was coded into behaviours and lifestyles, leading to a database of relevant actions to help to formulate evidence-based narratives to draw upon in the writing of the pen portraits. In the design of the pen portraits we took into account the four branches of behaviour change identified in SG's framework for reducing car-use: i) reducing the need to travel, ii) living well locally, iii) switching modes, and iv) combining or sharing car trips. We identified six potential pen portraits to explore further:

→ A couple living in rural and/or Island areas (between 45-59 years old) who combine journeys to the city with friends

→ A young adult/student living in an urban area switching from driving to cycling

→ A middle income family that (because of flexible/home working) now walks their children to school and has joined a car club

→ A suburban business owner, who is a community leader reducing the impact of their business and improving the local environment (e.g. repurposing parking spaces to allow bike parking; delivering all local packages by bike)

→ A family / person on low-income who has overcome forced car dependency and changed the way they travel to work (e.g. utilising company buses or bike schemes)

→ A disabled person who works an office job, remotely and who has and been supported by, improvements to inclusive, sustainable, transport.

The pen portraits were then refined and validated through a two-stage process comprising: (a) focus groups and (b) online surveys. Following each stage, improvements to the Pen Portraits were made, based on feedback from respondents, to ensure they reflect real-people's experiences.

Focus groups and interviews: Seven online focus groups consisting of two to four participants, and six solo interviews - each participant was screened to ensure they represented some of the characteristics and demographic features of the pen portraits. All participants were compensated for their time. Participants used the chat function to expand on any of their points or share relevant links with the group. A focus group protocol (Appendix 2) was used to guide discussion and ensure topic convergence and consistency. Focus groups lasted up to 90 minutes and included conversations around travel behaviours and a session to discuss two pen portraits relevant to their lived experience. Interviews were 30 minutes and followed the same protocol, but with no prompts around group discussion points. The discussions were designed to start off broad, and discuss their behaviours, habits, and practices around travel, and then geared towards discussion of the literature via the Pen Portraits. This allowed for amendments to emerge from both natural discussion of their lives, as well as in response to existing literature and the prepared materials. Participants were matched to the pen portrait by their socio-demographic characteristics and were invited to discuss between one or two of the Pen Portraits, depending on available time after initial discussions.

Surveys: Six surveys comprising up to 200 respondents each were recruited through the online participant panel, Prolific. Each sample was devised to match the pen portrait protagonist's demographic and geographic characteristics (e.g., age, gender, rurality). For the small business owner sample, we used social media to supplement recruitment due to limited sample availability in Prolific.

Findings from the focus groups (Appendix 3) and surveys (Appendix 4) are appended.

3.2 Limitations

This report highlights some of the significant challenges faced by those living with chronic health conditions and disabilities, with specific regard to transport and mobility options. There are a vast range of variable chronic conditions and disabilities, all of which cannot be accounted for in a brief pen portrait. We are aware that one pen portrait can never comprehensively and wholly represent this diverse population group. Crucially, the issue of car reduction must be framed differently here, and the focus of shifting to more sustainable modes of transport must carefully account for the different challenges faced by those with health and systemic barriers that limit their day-to-day activity (Possible, 2022). It must be recognised that transport challenges are very different for disabled people, especially those with mobility impairments, and more focus should be on those who are more capable to make changes, however we also recognise that more sustainable transport options should not be exclusionary and availability and access should be facilitated across a diverse range of people, including those with disabilities.

4   The final pen portraits

4.1 Mary and Jonathan, an older couple living in a rural area

John & Mary love how their new approach to travel has enabled them to embrace the beauty of local nature.

This pen portrait was developed to reflect the challenges and opportunities faced by people living in rural and Island areas with perceived limited public transport options and high reliance on cars to get by in life. The portrait focuses on the ways people like Mary and Jonathan can adapt and benefit from reducing their car use - in terms of health and social connection. The final portrait is below.

→   **Background information about the person / household**

Mary and her husband Jonathan have lived on the Inner Hebrides all their lives, and a lot has changed over that time. Now in their late 50s and early 60s, one thing they noticed is how much more reliant upon cars they were to get around, than they were when they were younger. They love living in rural Scotland and think rural life should be protected as it's such a key part of Scotland's tradition and identity. There is a sense of community in their village, and a slower pace of life, which is really nice when compared with the hustle and bustle of the cities. They still have local services, like the milkman, who comes house-to-house and delivers glass bottles that they return, which they feel is emblematic of their local, caring, community.

→ **Previous travel behaviour**

Living in such a rural environment has made it very difficult to manage without a car. For Jonathan, a retired engineer, cars have been a hobby, as well as a bit of a status symbol, allowing him to prove his success at work. Jonathan takes pride in his car, and it reminds him that his hard work has paid off. For Mary, driving has felt necessary, but a bit stressful. The roads are really thin and windy in their area, so she always has to be super focussed to make sure she's got sight of any pedestrians or cars coming around corners. She finds it a bit exhausting. Even Jonathan finds it a bit tiring to do long drives in rural areas. But they'd never really considered another way of getting around.

→ **New travel behaviour with reduced car use**

Since more opportunities for socialising, hobbies and convenience have moved online due to the impacts of Covid; Jonathan and Mary invested in a rapid broadband connection so they could make the most of the internet. Being online more, they found out about lots of local food delivery options, so decided to get a delivery once a week, reducing their need to drive to the supermarket. They also chatted to a couple of their neighbours who they were friendly with, and they offered to give Jonathan and Mary lifts whenever they were heading out to the local town or doing a food shop. When they travel to the mainland they've started organising shared trips with friends, and travelling on the City-Link buses allows them to get to the city for the weekend without the stress of dealing with traffic or having to find affordable places to park. The online system is really simple which made it easy and quick for them to book these trips online in advance. They've also tried catching local buses to town, when it's possible. They don't come really often, but it makes for a nice day out the house! Mary, who is over 60, gets to travel free with her National Entitlement Card and she loves poking fun at Jonathan, who still has to pay.

→ **Benefits they've experienced as a result of change**

After the series of national covid lockdowns in Scotland people have been exploring walking more. Mary and Jonathan remembered how much they enjoyed it, how they felt it improved their wellbeing and connection to local places and how they used to do it a lot when they were younger. So they decided to make walking a bigger part of their routine again, and they've rediscovered a sense of pride in getting back into Scottish nature, which is on their doorstep but they haven't taken advantage of until now. They feel fitter and walking more often helps them meet their exercise goals, whilst enjoying their local footpaths, which are listed on a booklet provided by their local council and mapped out on a phone app they discovered. Another real change has been that they are seeing more of their neighbours, friends and family now. They've felt lots of support from people and this has meant they've been spending more time with them in the local area. It takes a bit of planning to take public transport, but not driving means they've got more time when travelling to relax, to read books and to view Scotland's scenery. When they decided to reduce their car use, they were a bit worried that it could end up being an inconvenience, but in fact they've gotten more into planning and because so much information is online, they've become planners quite easily! So far they are enjoying it.

How did this Pen Portrait evolve?

We learned in the survey that respondents largely found the portrait realistic - scoring a median of 3.7 on a Likert scale of 1 (completely unrealistic) to 5 (completely realistic). Overall the areas they felt were especially relatable and realistic (in order of prominent) included: a shift to walking more, and feeling the benefits of it; shifting to online grocery shopping and a a different lifestyle since the Covid Pandemic; and that driving in rural Scotland is stressful and public transport, if available, can be both beneficial and enjoyable.
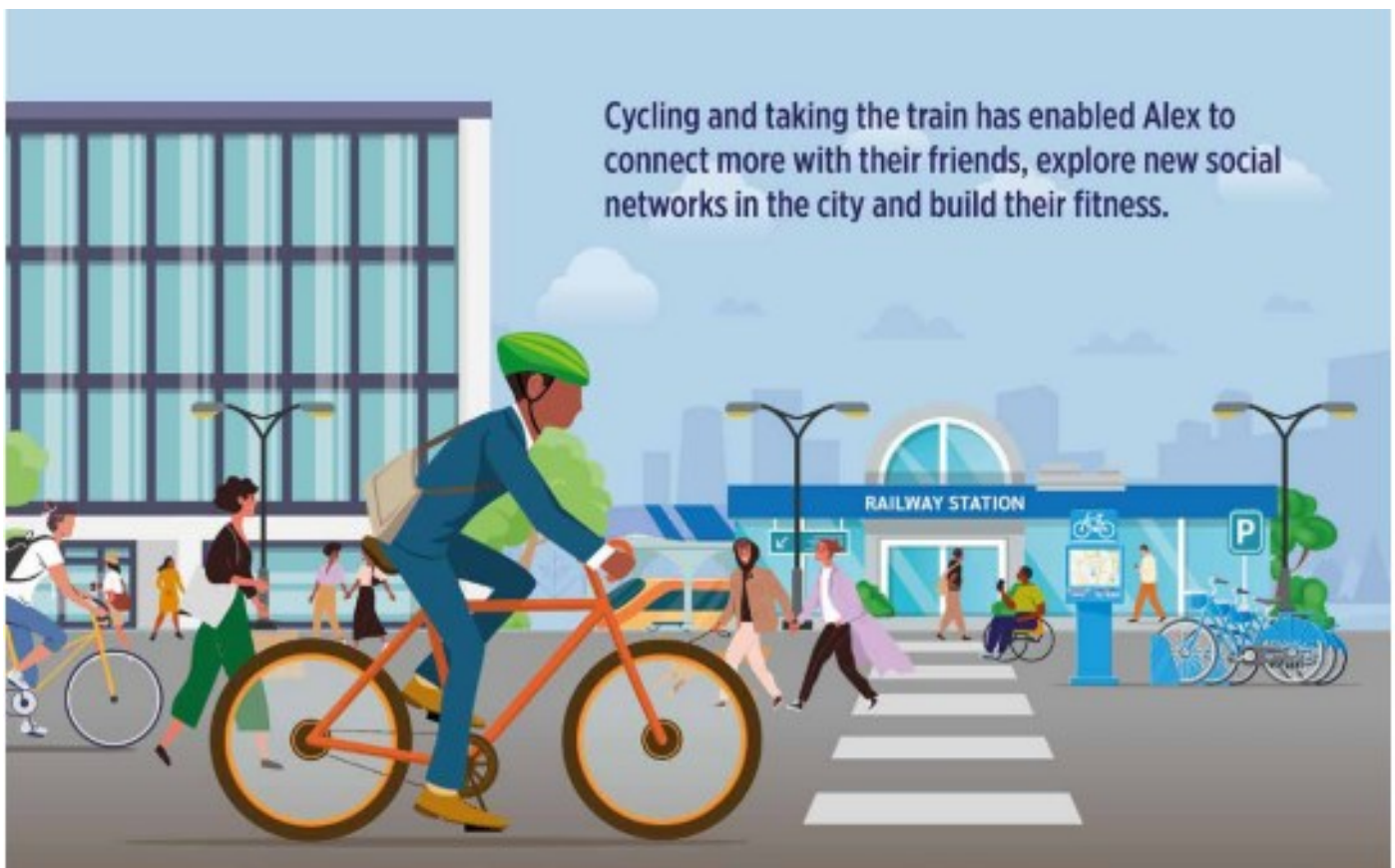
Participants in the survey found the idea of car-sharing with neighbours to be unrealistic in rural areas. They also felt that it was unrealistic to suggest that public transport could be sufficiently available and convenient for rural residents and islanders. However, there were a good number of respondents who had noticed an improvement in recent years.

We learned in the focus groups that participants agreed the portrait felt very realistic. Interestingly, the aspiration to car share with neighbours was realistic when discussed in the focus groups, and a number of participants gave examples of actually doing it. This suggested that there should be more messaging about this, to create the possibility for it in people's minds and create foundations for a normative shift. In the initial draft there was not much reference to the 'stresses' of driving, but in the focus groups participants emphasised the challenges of driving in rural areas and felt that should be amplified, along with the related benefits of shifting to public transport where possible. Therefore we ensured to build that aspect more into the portrait.

Across both surveys and focus groups, the aspects of:

→   digital and social connection

→   the health benefits from walking and getting out in nature, were seen as realistic and aspirational for focus group participants and important to amplify in the final pen portrait.

4.2 Alex, a young adult living in an urban area

Cycling and taking the train has enabled Alex to connect more with their friends, explore new social networks in the city and build their fitness.

This pen portrait was developed to reflect a younger person who had moved from a rural area to a city for university and who had stayed there for a graduate professional role. The rationale for doing such a pen portrait was to reach people who may be open to taking climate actions but who feel constrained financially since they are at the start of their career and/or getting used to urban life.

→ **Background information about the person / household**

Alex moved to a large city for university, and has just started a graduate role in the city they studied in. They lived in a village in rural Scotland with their parents up until starting their degree. Alex was really keen to move to a more urban and diverse area and they were excited to explore all that the city has to offer.

→ **Previous travel behaviour (incl reasons)**

Since they'd always used their parents' old car when living at home in a rural village, they brought the car to university with them. They thought this would be the most economical option as they'd always heard that trains to and from Scotland's cities were pretty expensive for people living in villages. This also means that they are able to return home more often. Since Alex has lived in the city, though, the car has proved more troublesome than they thought. It took a bit of time to get the parking permit sorted, but even after that parking became more and more difficult to find.

Sometimes it was hard for Alex to find parking on their street and sometimes they had to park a walk away, which was especially a cause of concern when it was late at night. The parking permit costs felt high, with more of a financial strain on their disposable income than they'd realised.

→ **New travel behaviour with reduced car use**

With the introduction of a new Low-Emissions-Zone in the centre, where Alex lives, combined with the stress of finding a good parking spot, they'd started thinking about what life might be like without their own car. They still had friends and family with cars, and considered how they might be able to do things like car share. They've been feeling a little bit bad about having their own car, given the environmental impact, but it had been hard until that point to figure out other options that they could actually afford and manage. However, since the car was pretty old, they started having problems with it which led to more and more costs to fix it. This became really time consuming as well, so they started trying other travel options. The cost of public transport felt a bit steep at first, working out to be about £60 a month. But on balance this worked out quite alot cheaper than running a car in need of insurance and regular repairs - especially with current petrol prices. They were also able to get a young person's railcard, which means they can more easily afford getting the train home. Once they did a bit of research online, they realised just how many places in Scotland it's possible to explore without a car - for example getting into nature, the sea or visiting the Highlands. Their favourite train ride is up to Glenfinnan, which is about 4 hours direct, passing some incredible scenery on the way. They also learned about a cool perk in their new job - a cycle to work scheme. It's been great - they've got a great new commuter bike - that they can pay for monthly and save money on tax.

→ **Benefits they've experienced as a result of the change**

Getting rid of the car has been a game changer for Alex. Parking in the city was so stressful and expensive, and the train journeys home through rural Scotland have been a lot more enjoyable for them than focussing on driving during long journeys on the motorway. To make it as affordable as possible, they do try to plan ahead for trips, and they've managed to get return tickets to see the highlands for as low as £35. They've done some really fun trips around Scotland with their friends, and spending more time with them has been great for Alex's wellbeing. Cycling has also improved their health and wellbeing, not only is Alex much fitter than they were, but joining a local cycle group on Facebook means that they've made lots of new friends and developed a new hobby too! It has taken a bit of getting used to, to build up their confidence on the bike, but they've really enjoyed not having any There's no anxiety around parking as they can bring it inside both at home and to the locked storage unit at work. They also realised that, without any real burden on their finances, they've found a way to reduce their environmental impact and see more Scottish countryside at the same time - it's nice to get out of the city and familiarise themselves with the nature they experienced so much back at home.

How did this Pen Portrait evolve?

The large majority of both the survey (3.96 median score) and focus group respondents found this pen portrait to be realistic and would not change anything about it. The most realistic elements included: shifting from habitual car use to bike use, due to increasing inconvenience paired with a desire to reduce carbon footprint; the perception that cars are needed to reach rural and leisure areas (like the coast or highlands) and the openness to using public transport with more information and affordability; and the convenience of public transport in some cities.

However some useful recommendations were made, which were incorporated into the final version. These included:

→ Emphasising the importance of affordability of making the switch to public transport; as well as emphasising that the transition to bike use may not be so natural and easy for all young people. The pen portrait was therefore adapted to ensure more reflection on, and information related to, these areas.

→ In particular examples of specific costs, which could help the reader to think through the costs in their own lives and also to challenge some (mis)assumptions that may exist around how much it actually costs to travel by public transport across the country.

4.3   Nia and John, middle-income parents

Having a flexible work environment has made Nia and John realise they didn't need their second car and sold it. They now enjoy new ways of getting around, especially being able to connect more with their kids and the community.

This pen portrait was developed to capture the experience and opportunities for middle class families across the country, especially in towns, who could benefit from 20 minute neighbourhoods and active travel. In particular, there is an opportunity to build on the impacts of the covid-lockdowns, where many have subsequently adapted their lifestyles to work from home more, and commute and drive less.

→   **Background information about the person / household**

Nia and John are in their mid-30s and have two children who are at primary school. Nia works as a software developer, and John works at a marketing firm. They live in a large town, in a desirable area with parks, lots of local shops, and a busy network of involved people; there's always a craft fair or arts trail of some kind going on. Their house is within walking distance of the school their children attend, and luckily for their children the park is on the way home!

→   **Previous travel behaviour**

Before the pandemic, Nia and John didn't have much time to spare in the morning before work, so they drove the children to school. They didn't think there were other options as they were worried that their children might not be safe walking to school alone. Whenever they dropped the kids off at school, the traffic noise and the smell of cars and pollution by the school also put them off considering walking and they didn't want to go to work feeling stressed out. Because of this, Nia and

John would take it in turns to drive their children to school. They each had a car, which they would then drive on to their own workplace near the centre of town. They also used their car for doing their weekly food shop at the large supermarket on the outskirts of town. This was mostly out of habit, but having spent more time walking through their lovely neighbourhood on the school run, they've also started popping into some local shops on route. They've taken to buying some of the things they need at home, especially where they feel as affordable as they are in larger supermarkets. A couple of new, local, shops have opened in their area since the pandemic, which is making local shopping a bit more accessible and saves them time.

→ **New travel behaviour with reduced car use**

Since the Covid-19 pandemic, both Nia and John's workplaces introduced flexible working policies. So now, they both often work from home with occasional meetings in town, which they really enjoy. They noticed that quite a few local families had started walking their kids to and from school. Their own children had also been asking them to walk more because of a series of talks on environment and climate change at school. Although it took a while to create an efficient routine with the kids – once they managed that, they started to really enjoy walking them. It gave them some quality time with their kids in the morning and a bit of fresh air before work. Usually either Nia or John would do the walk, but when they occasionally did it together they really enjoyed having that time together outdoors. They thought they'd go back to the car after covid, but they actually built a habit and realised they need to use the cars quite a bit less. They realised that they only really needed one car, so they decided to sell one and see how that went. They have managed to continue using the other car a lot less than before Covid-19, keeping it for trips out to visit family or friends on weekends, or when they need to drive somewhere later at night. Hannah and John continue to walk, and sometimes cycle with their children to and from school.

→ **Benefits they've experienced as a result of the change**

They realised that air pollution around the school was bad because so many people drove, and after a local campaign from schools and the community, a number of other parents have also made the change. They've found it interesting and inspiring to see how the kids from the school have really encouraged and motivated adults to try something new, which is better for the environment! Whilst at home during the week, many of the groceries they need at home are reachable within 20 minutes' walk, and the family has enjoyed shopping much more locally. They only go out to the bigger chains when there is something they can't get easily or affordably in their neighbourhood. Overall, they have saved money. Nia used the money from the sale of her car to put towards a new bike, and she put the rest of the money in their family savings. She also made sure to get comprehensive bike insurance, and for less than 5gbp a month she doesn't have to worry all the time about her bike being stolen. While it did take a little while to build their confidence on the bikes, over time they realised they were actually quite good at it and the new 20mph speed limit on local streets made things feel much safer. They started to become much fitter the more they did it, even at tackling hills! Ever since then, more people seem to be out cycling and the main high street has since been pedestrianised, so it's become a pleasure to get around by bike or on foot. Seeing more local

residents in this way has helped Nia and John to feel more connected to their community. Small changes like this have had big impacts on the family's wellbeing and fitness and, while at the same time they feel able to do their bit for the environment.

How did this Pen Portrait evolve?

Overall across the survey and focus groups, the participants found this to be a realistic portrait. In the survey, participants found it relatable (scoring 3.77 out of 5, with 5 being very relatable); realistic (scoring 3.74) and relevant to their own life scenarios (3.73). When asked if the portrait would encourage them to reduce car use, they scored the highest across all groups (3.13, when 1 was not at all and 5 was completely) by a stretch (the next was young people scoring 2.89). Almost half of respondents (94 out of 216 in this group) felt this portrait was likely to encourage other areas of low carbon lifestyle change too.

Focus group respondents liked that the portrait built off changes triggered by the covid lockdowns as they found those to be realistic and relatable. In particular, they liked references to changes like working from home, walking children to school, shopping locally more and cycling. They agreed that children do encourage their parents to be more sustainable. And they felt it appropriate to speak to the co-benefits of lifestyle change for health, wellbeing and connection.

Where the focus group participants provided some challenge was on how big the lifestyle transformation was in our initial draft of the pen portrait. They cautioned us to not be overly idealistic and to be conscious of the fact that some people had slipped back to old habits. They also reminded us that local shops are not always within walking distance and that time is a big challenge for working parents. They also felt the first draft was overly idealistic about the family's cycling abilities.

Therefore, in the final portrait we focussed on building in some of this feedback, i.e.:

→ We initially drafted a scenario where they had shifted all their grocery shopping to local shops, but we modified it to account for the fact that this may not always be possible

→ We emphasised how Nia and John made gradual changes to family life, and then being encouraged e.g. starting to walk the children to school and trying out cycling.

4.4 Yasmin, a small business owner

Yasmin's green credentials have attracted new customers. She's also reduced her costs, so she's got more to reinvest in the business and community.

This pen portrait was developed to show how a small business owner, in a town in the Highlands, might take steps to reduce their use of cars and what the co-benefits of those changes could be. We also decided to build a portrait of someone who is active in their community and hence may be a trusted messenger to inspire others to try similar changes.

→   **Background information about the person / household**

Yasmin owns a popular restaurant and deli supermarket in the centre of a town in the Scottish Highlands. She is recognised across the community because she organises a number of fun community events, throughout the year, like cooking classes and street food pop ups.

→   **Previous travel behaviour**

Running the business keeps Yasmin very busy, and she found it difficult to spare the time for walking or getting public transport around the town. As well as this, she often needs a car to be able to get to the restaurant when there are early morning deliveries, or last-minute emergencies she has to attend to. During the pandemic she started offering a home delivery service to deliver produce and food to customers; so her business started depending on cars and motorbikes much more than it used to. She was concerned about her businesses' environmental impact, but she didn't feel she had the time or options to compromise on the quick and high-quality customer service she was known for. More customers wanted to pick up their meals, and she used the parking space outside of the shop to accommodate these customers.

→ **New travel behaviour with reduced car use**

After being approached by another business owner, an electric cargo cycle delivery service, Yasmin realised that some of her competitors in the area were starting to use more environmentally friendly methods for home delivery. With the public's concern for the environment increasing, and the increasing expense of using cars for home delivery and rising fuel costs, she decided to change her business model. For local deliveries, now she employs drivers who ride both, conventional and electric delivery bikes, which reduces her costs and environmental impact but also increases the speed of deliveries in urban areas. She has installed a charging point at the back of the shop, so e-bike drivers can recharge easily. She wasn't initially sure how this change would go, overall it's really helped the efficiency of the deliveries, especially during spring, summer and autumn, when the weather is amenable to deliveries by bike. After chatting to some of the delivery drivers, she felt inspired to look into electric bikes as an option for her to get around in her personal life. She was pleasantly surprised to learn that there is a Scottish Government interest-free loan scheme for buying electric bikes, through the Energy Saving Trust, so decided to apply and has recently been approved! She also added some outdoor seating, encouraging al-fresco dining which has become much more popular since Covid-19, and boosting business when the weather is good.

→ **Benefits they've experienced as a result of change**

Yasmin is relieved that she no longer has to compromise on offering good customer service and reducing her environmental impact. She's noticed that she's attracted new customers to the business with a growing trend for environmentalism amongst people - and has started promoting her business on its green credentials. Reducing costs, and the increase in business she's seen as a result of her changes means that she can spend more money investing in her business and her local area. Having an outdoor seating area and changing her delivery practices means she doesn't have to worry as much about losing customers to her competitors, especially when the weather is nice outside.

How did this Pen Portrait evolve?

This portrait was also rated as realistic, but slightly less than the others being scored at 3.6 on a scale of 1 (completely unrealistic) to 5 (completely realistic). When probed, the participants mentioned the balance of sustainability and affordability as a concern.

But overall the participants found the portrait to be relatable (3.37), especially the elements of Yasmin, as a business owner: i) Trying to be more environmentally friendly and sustainable; ii) the challenge to run a business without a vehicle; iii) the transition to Electric Cargo Cycles; and iv) innovating in challenging times - transforming to delivery. Overall respondents in the survey and focus groups found the portrait inspiring and enjoyed the story of Yasmin herself.

The biggest concerns about relatability were related to the feasibility of acquiring electric cargo cycles. However a small number of respondents (12) were aware of grants being available for electric cargo cycles, and those respondents were generally positive about the possibility of reducing car use affordably. Some respondents were also worried about how drivers would cope in electric cargo cycles in cold and rainy

weather conditions. In the initial portrait we had Yasmin remove all the parking spaces and transform them into outdoor seating areas, but participants found this to be too far of a transformation since some people would still need to use a car (especially in the winter months in the Highlands).

Based on the feedback, we adapted the pen portrait to:

→   Change some of the parking spaces into outdoor seating areas

→   Build in reference to The Energy Savings Trust's interest-free loan scheme for electric vehicles - which is available across Scotland

→   Refer to the challenges faced by business owners in balancing good quality service, affordability and sustainability

→   Build in more references to the co-benefits to Yasmin's business of making these changes, especially since consumers are becoming more interested in environmental sustainability.

4.5   Kim, a single parent on low income

Kim has enjoyed how car sharing has saved them money and created space for them to connect with friends.

This portrait was developed to reflect the challenges faced by low income people and households in reducing their use of cars. It is important to understand and empathise with these challenges in order to suggest and get feedback on potential solutions. We chose to focus on a low income household of a single mother with young children, since women like Kim face a significant unpaid care burden too, and so expectations of lifestyle change need to be mindful of that.

→   **Background information about the person / household**

Kim is a mother of twins in a low-income family who live in a suburb of a small town. Her children are twins- they are both fourteen years old. After the twins got settled down in secondary school and became more independent, Kim decided to take on some extra work to support the family's increasing living costs. She now works two jobs, one at a factory on an industrial estate, and one as a night receptionist in a hotel outside of town. She doesn't get much spare time nowadays, but enjoys shopping in the local area, seeing her friends, and catching up on TV on her days off.

→   **Previous travel behaviour**

Kim used to travel by car, even though she and her family found it very difficult to afford the running costs, not to mention the rising cost of fuel. Because of where she lives, and the distance to her two workplaces on the opposite sides of town, public transport wasn't usually a viable option; she was never able to get to the factory on time for the 7am shift. And she didn't feel safe getting buses in

the early or late hours, to and from work. She doesn't enjoy driving much, but having the car for work meant that Kimberly could manage her responsibilities as efficiently as possible and could also use it for shopping and visiting friends, as well as dropping and picking up family members from their different activities after school. She had heard a bit about people being more environmentally friendly, but she was sceptical that there were other transport solutions that were safe, affordable and efficient enough for her and so stuck with what she knew worked best for her and the family.

→ **New travel behaviour with reduced car use**

Because the factory employs so many people in and around the town, the company is being encouraged by the local council to provide a bus service, which will hopefully start soon. Kim finds that driving everywhere is expensive and tiring, so in the meantime she wanted to find a way to change her other commute, to the hotel, to be cheaper and a little more environmentally friendly and cheaper. After chatting with her friend, Jessie, about her plans, she realised she'd recently got a job working night shifts in the area. Jessie is a carer and works in a hospice that's less than a 10 minute drive from the hotel. Jessie was also struggling a bit with living costs, and didn't feel safe at all taking buses to and from work on a night shift. They both realised they had similar needs and might be able to try out car sharing. They now give each other lifts to/from work when their shifts align. Car sharing means she can spend more time with her friend, get some time off from driving, and socialise before and after the, sometimes lonely, night shift. It's a really nice way to start and end a work shift! With her busy schedule, she really enjoyed the social side of lift-sharing and she's also recently been made aware of a car sharing scheme recommended by the council, so she's going to explore that as an option, as she may not need her own car with different options like this emerging. Transport in the area is improving, and the new transport hub in the centre of town makes it easier to get connecting bus services.

→ **Benefits they've experienced as a result of change**

Kim's commuting journey became more convenient, more interesting, and much cheaper by car share. She's also gotten to know Jessie much better– it is much nicer to start and/or end the day chatting with her friend, not to mention being able to save money by sharing fuel costs. She was really pleased by her employer's openness to explore supportive travel options which could help her and other employees to save time on their commutes. This means a lot to Kim, because she can then make more time for herself and her family after work. She's also been pleasantly surprised by the options and schemes for travel that are becoming available across Scotland.

How did this Pen Portrait evolve?

Respondents were overall very positive about this pen portrait and several focus group discussants described it as "very moving" and "emotional", which hinted at how realistic it felt too. In the survey, respondents rated the portrait as 3.95 in terms of how realistic it was and 3.86 on relatability.

Some of the most realistic elements were Kim working hard to make ends meet; the cost of fuel; feeling unsafe on public transport especially in the night and early morning hours; the possibility of car sharing;

the rising cost of living; and for some the lack of accessible public transport in their area. In the focus groups, discussants mentioned that car sharing is something they had done themselves or that they knew people who did it, and that doing it with a friend felt like a benefit too. Some even shared that they'd consider if they could do that with a friend in their own lives. There were a number of other people in the survey who were sceptical about car sharing, but this appeared to be because they didn't know this was an option and had never heard of anyone doing it. Therefore we decided it was important to keep it in the pen portrait as an example which has been positively endorsed by a number of people.

We also initially write that Kim's employer had developed a travel scheme for their employees. However, participants found that to be unrealistic, so we adapted it to state that her employer was open to developing options in the future.

Overall, there were very few suggested changes to this pen portrait from survey and FGD respondents.

4.6 Mike, a remote office worker who uses a wheelchair

Advocating for government 'greening' initiatives to be accessible and inclusive of people with disabilities, has enabled Mike to be more independent and participate in local social events.

This portrait was developed to reflect the lived experience of a person living with a mobility impairment in a suburb of a town in Scotland. We are aware that living with a disability can be a highly individual and multi-faceted experience and therefore, like the others, this portrait is not designed to reflect the experiences of all people across the country living with mobility impairments. Rather it is a window into the life of one person, which we tested with other disabled people for how realistic and relatable it is.

→   **Background information about the person / household**

Mike lives on the outskirts of town, with his girlfriend Niamh. He works as an IT specialist for a large sales company based in the town centre. Mike lives with a physical impairment which seriously affects his mobility and so he is assisted by a wheelchair all the time. This can make it quite challenging, and tiring, to navigate being mobile, as not all public spaces are designed to be inclusive of people like Mike. He works from home most days but goes into the office once a week for in-person meetings and sales pitches. He feels that face-to-face time is really important for the sales environment, and to get the most out of his job. In his spare time, he loves to watch football matches at his local club and visit local pubs.

→ **Previous travel behaviour (incl reasons)**

Mike is able to live independently due to his access to a car. When he joined the organisation, he worked with them to build their awareness about how important working from home options are for disabled people. They learned a lot from him and agreed for him to work from home most of the time, but spend a few regular days in the office because he really enjoyed and valued seeing the team, and some clients, in person. On his days in the office, he'd usually drive in and use the accessible parking spots his office had available. Every now and then, someone will be wrongly parked there, which is frustrating because it delays him getting to his desk. But he has found his employers to deal with it swiftly when it happens, ensuring he feels his rights to accessible spaces are being taken seriously. Thankfully the building is disability inclusive, with ramps and automatic doors. Driving into work was, really, his only option – even that took a lot of careful planning and would leave him pretty exhausted. Outside of work, when visiting the football stadium he drives, but usually has to set off quite early because there are limited spaces for drivers with disabilities. Sometimes he has to park up on a verge on a busy match day, which is either a huge struggle, or is impossible for him to manage. Mike had noticed more and more debates and news stories about 'greening cities' but he always felt they didn't seem to take into account people like him – how can low emission zones or cycling paths help someone like him to be involved? He didn't feel part of the initiatives being created.

→ **New travel behaviour with less car (incl reasons for change)**

Mike has been aware of climate change but it's not been a big focus - he had other things to worry about, especially in terms of managing his health and wellbeing. Since the pandemic, more people have been working from home and going into the office occasionally like Mike. Mike's team now have certain days where they agree to all be in the office, which is regular and timetabled. It's a good way to make sure people get face-to-face contact and keep up to date on issues that aren't really focussed on in online meetings - and a few people have suggested heading to a pub near the office for some food and drink.

→ **Benefits they've experienced as a result of change**

Mike has often found it difficult to engage with the environmental movement, so knowing he's already reducing his emissions by not travelling every day, but still maintaining his independence, feels really empowering. Mike had heard a bit, through the local radio, about different actions the local government were taking on greening the city and he learned there was a fairly new city level 'climate emergency working group', and has signed up to their mailing list. He is a passionate advocate of improving public spaces to ensure they are accessible and inclusive, so has been involved in some public consultations in recent years. For example, on public transport for wheelchair users; improving access and spaces onboard buses and trains but also making sure that work to reduce emissions didn't forget to be disability inclusive. This also empowered him to write to the football

stadium about the number of disability parking spots available, and the challenges for wheelchair users when there aren't inclusive features, like dropped kerbs or wide pavement spaces. Although it took quite a while to respond, they did come back and agree to increase the disability parking spots by 3, with more dropped kerbs and wheelchair friendly infrastructure. Once this has been completed, by the end of the year, this will help to reduce the anxieties Mike's often had about being able to actually park up and access the football stadium without issues.

How did the Pen Portrait evolve?

Overall, in the survey this was rated as the most realistic portrait, scoring an average 4.22 out of 5 (completely realistic); it was also scored as 3.83 on relatability. However, it is important to note that our focus group participants emphasised the uniqueness of lived experience. They also brought forward a lot of experiences of feeling excluded and disenfranchised by inaccessible public spaces; and from that perspective they appreciated being considered in this project and the chance to feed back on the portrait.

The most relatable elements of this portrait were: i) concern about government 'green' planning being exclusionary of their needs; needing to self-advocate for inclusive spaces; ii) working from home; iii) difficulty accessing parking spaces; iv) anxiety about being able to find accessible ways to going out; and v) difficulty navigating public transport. Many disabled people found the self-advocacy piece a necessary part of their daily life.

Our first drafts of the pen portrait were framed as a little idealistic and respondents called on us to better reflect the realities of navigating life without a car for people living with mobility impairments. They felt it important to share their feelings of anxiety and exclusion in public spaces and so this was better incorporated. They also wanted emphasis on how physically exhausting it is to navigate public spaces. They asked us to build more into the portrait about the importance of inclusive public spaces, especially dropped kerbs, smooth pavement surfaces, and the need for more accessible parking spaces. These adaptations were made throughout the portrait.

5   Recommendations

The following recommendations emerged from the research process and can provide useful guidance on to the Scottish Government and other stakeholders on how to communicate about and engage different Scottish populations with the Car Use Reduction Plan.

Build urban populations' awareness about government interventions and their options for lifestyle change

→   Campaigns focusing on Scotland's Low Emissions Zones might support an increase in public transport use as urban people want to do their bit to reduce air pollution.

→   Increasing awareness about 20-minute neighbourhoods might help sway urban dwellers, especially young people and middle-income families, to more active modes of transport, because of the improved convenience and their knowledge that they are contributing towards emissions reduction.

→   The Active Travel Workshop Report (Transport Research Institute 2019) also stressed the school run and education as a vital site for behaviour change, highlighting the need for children themselves to have a say in transport networks around schools. Within 20-minute neighbourhoods messaging it will be important to include how schools are considered in the plan to encourage more active sustainable transport.

Focus on multi-modal journeys and living well locally when messaging to rural populations

→   A report from the Connectivity Commission (2019) states that limited availability and infrequency of public transport means that a focus on multi-modal journeys should be facilitated in order to reduce driving.

→   Mapping this to the four pathways of car reduction, we suggest that interventions targeted towards people in rural locations should emphasise 'combining or sharing trips'.

→   'Living well locally' is also an attractive proposition to this group - emphasise small changes that people can make which feel affordable and possible, but also bring co-benefits around health, wellbeing, connection, and cost-saving.

→   Campaigns representing should rely on in-person and physical forms of communication representation, while sharing information about the interventions for enhancing broadband reception in their areas.

Build awareness amongst messaging low-income workers about the new travel options opening up for them and incentivise businesses to support them

→   Low-income workers should not be expected to 'figure out' the travel changes available to them since they already experience economic and social marginalisation; many also face a significant unpaid care burden. They should be made aware of opportunities and schemes available to them through targeted campaigns and messaging that demonstrate empathy for their position and the co-benefits of making some adaptations to their travel modes.

→   The government should incentivise Scottish businesses to support low-income workers to reduce their car kilometres while safely and conveniently travelling to work. The UK government has indicated that it will take steps to incentivize businesses to use car-sharing schemes like 'Liftshare' and 'Mobilityways' so it will be important to see this rolled out in Scotland and with a focus on supporting the most marginalised groups, including low-income workers.

Ensure messaging to and about disabled people avoids stigma and emphasises independence

→   Disabled people often face challenges to their independence, and are assumed to be unable to take care of themselves. Due to this societal stigma, there is a need to bring about a sense of independence within our Pen Portraits for this demographic, and be careful when detailing the 'combining or sharing car trips' behaviour change angle for this group, as it may play into societal stereotypes.

→   The 'reducing the need to travel' message may also play into a societal stereotype of disabled people as immobile and confined to their homes. While work from home policies do advantage disabled people, messages should incorporate visions of increased access to services and better planning for increased accessibility.

→   Many of the issues that disabled people face in using public transport are structural, and so we recommend that interventions targeting individual behaviour change to disabled people do not include public transport due to these widespread issues. However, communicating how investments are made to access the accessibility (e.g. but not limited to increased lift availability, wide pavements, accessible buses, etc) would help this population's perception of inclusive transport.

Support older people to try reducing car use through a combination of new technologies and traditional community communications

→   In response to the pandemic, many older people have built on their skills of using broadband internet to access services such as grocery shopping. Therefore, there is potential to engage older people in reducing car kilometres through a combination of virtual and in-person messaging.

→   Practical and emotional support should be offered, through targeted messaging online and through

community actors (GPs, faith groups , community groups, etc), to reduce car kilometres where appropriate. Importantly this should ensure that older people do not experience these messages as requests to lose their independent mobility.

→ Awareness can be raised around retirement age, since this is a big life event which could inspire new transitions, help break old habits and lead to changing travel behaviours.

Invest in gender responsive messaging that speaks to women's travel experiences appropriately

→ Safety and security – when it comes to transport and mobility – is gendered. Gender inequalities expose women and girls to higher risks of physical and emotional insecurities when travelling. This can be amplified by 'intersectionality' – where the discrimination women face intersects with other forms of oppression (e.g. racism, classism and homophobia), meaning certain groups of women may be particularly at risk and insecure on different forms of public transport. Women and minority groups are also less likely to have access to private vehicles, and therefore public transport options are very important for their mobilities (See WEN and WBG, 2021)

→ When presenting messaging around women's travel on public transport, taxis, walking, wheeling or cycling - ensure due care and attention to gender dynamics and experiences and ensure the messages are realistic with those considered (e.g. some groups of women will not relate to messaging about taking public transport, walking or cycling alone at night, due to safety fears). Additionally, accompany messages directed to women with the planning considerations and investment envisioned to make transport safer (increased lighting, reduce overcrowding, increased frequency and reliability, etc.)

Encourage businesses to facilitate employee behaviour change

→ Businesses have a large role to play in car use reduction, both in their own transport needs and in their employees. Scotland's Active Travel Framework (2021) argues that business has a key role to play in fostering a culture of walking, wheeling and cycling to work in Scotland. Indeed, some changes are *only* possible for individuals if their employers support them through a variety of measures which engage their employees effectively. We recommend businesses engage with their employees on this issue, by:

- actively and annually assessing the possibility for workers to work from home

- developing material and cultural incentives for staff to commute by active or public transport

- develop employee awareness and engagement schemes

- reviewing the possibility of investing in a bus scheme for workers

Acknowledgements

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CAST is funded by the Economic and Social Research Council

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