

Moving on

“green alliance...”

Greener travel for the UK



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Acknowledgements

We are grateful to our advisory group which offered guidance and input to both the modelling phase and the scenario building phase of the research. Advisory group members: Roger Geffen, Anthony Rae, Brad Taylor, Anzir Boodoo, Chris Todd, David Milner, Hirra Khan Ageogun, James Beard, Jenny Bates, Leo Murray, Lisa Hopkinson, Matt Finch, Rachel White, Rachel Lee, Robin Lovelace, Silviya Barrett and Stephen Joseph.

With thanks to Dr Crispin Cooper who created the traffic reduction model we use in this report. A lecturer at the School of Computer Science and Informatics at Cardiff University, he is a specialist in transport and broader socioeconomic models, including wellbeing.

Public First, a public policy research agency, conducted the polling and focus groups on reducing traffic demand referred to in this report. The polling tables can be found at bit.ly/3MQW9nQ

This work was supported by the Foundation for Integrated Transport and Cycling UK.

Green Alliance

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The Green Alliance Trust
Registered charity no 1045395
Company limited by guarantee
(England and Wales) no. 3037633

Published by Green Alliance
April 2023

ISBN 978-1-915754-04-2

Designed by Howdy

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Summary

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Encouraging modal shift will have benefits beyond reducing greenhouse gas emissions.”

Transport is the highest emitting sector in the UK, despite the rise in electric vehicles (EVs). Our 2021 report *Not going the extra mile* found that, without more rapid EV uptake, a reduction of 20-27 per cent of UK car miles driven would be needed by 2030 to stay on track for net zero.

To reduce the number of miles driven by car, we must travel differently, using more public transport, walking and cycling. This move away from cars to other types of transport is known as ‘modal shift’. To achieve this, it is important to understand the intersections of the UK’s transport system, how the public responds to changes in policy and what the costs to the government or the public might be.

Encouraging modal shift will have benefits beyond reducing greenhouse gas emissions. It will improve the nation’s health, with the potential to save the NHS £2.5 billion per year in the UK. It will enhance mobility for the 46 per cent of low income households without access to cars. It will cut congestion, which costs around £8 billion per year. And it will reduce air pollution, which contributes to 36,000 early deaths a year.¹

Another factor relevant to decisions about transport system change is that the rise in EVs will also vastly reduce fuel duty and road tax, leaving the Treasury with a predicted annual revenue gap of up to £28 billion.²

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A variety of measures used together is far more likely to entice people to choose low carbon alternatives to the car. ”

Ensuring people buy in to a future with more public transport, walking and cycling is critical to achieving modal shift. Last year, we conducted research into public attitudes to reducing car use, in collaboration with Public First, to identify the barriers to alternative ways of travelling. This gave us insight into how the public perceives driving versus other modes of transport and has influenced the recommendations in this report.

What was clear from this research is there is not one simple answer. Instead, a variety of measures used together is far more likely to entice people to choose low carbon alternatives to the car.

Politically, it will involve challenging decisions both nationally and locally. For instance, road pricing, or road user charging, and related local projects can be contentious as people feel connected to their cars. Meanwhile, cuts to local transport services are causing rifts between local authorities and the Department for Transport (DfT).^{3,4} Some local authorities have pursued measures to cut air pollution but face increasing opposition on non-environmental grounds. Commuters are also experiencing ongoing problems with rail travel across the country.

To understand how to encourage modal shift, we worked with the University of Cardiff to build a model allowing us to experiment with combinations of measures to reduce car miles driven, such as improving public transport or changing speed limits. Its outputs show the impact a mix of policies could have, the cost to the government and users, and the revenue the government might expect to gain. Using this, we developed a set of scenarios, each designed to cut total UK car mileage by 25 per cent.

In exploring these policy combinations, our intention was not to recommend one specific set of policies. Instead, we showcase alternative transport futures decision makers could opt for to meet climate targets and the considerations to be taken into account when designing modal shift policies. We envisage this as a starting point for the complicated decisions necessary to enable change in the transport system.

For a future in which public transport, walking and cycling become first choices for the public, there are a series of actions the government must take. These include:

a new UK wide target to reduce car miles driven across the UK, by at least 20 per cent by 2030

a new independent commission, reporting to the Treasury and DfT, to determine an appropriate and equitable road pricing scheme to replace lost fuel duty revenue

using revenue from new driving charges to invest in public transport and active travel

improving local authority access to spatial data to assist in the implementation of measures under the new Local Transport Plan process to achieve quantifiable carbon reductions

using a model like ours to design a future transport system that reduces car mileage by 2030

Introduction

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More must be done to bring traffic levels down to reduce emissions, even while the electric vehicle transition continues.”

After the Covid-19 pandemic, car use recovered faster than public transport and average vehicle occupancy simultaneously decreased.^{5,6} The Climate Change Committee has repeatedly highlighted that more must be done to bring traffic levels down to reduce emissions, even while the electric vehicle transition continues.⁷

The government has committed to climate action on transport through policies such as the planned zero emissions vehicle (ZEV) mandate which will set a required level of EV production for manufacturers. But our analysis shows the current pace of change will not be enough to reach net zero by 2050. What is more, on the current trajectory, car miles driven in the UK are predicted to rise by 17 per cent to roughly 300 billion miles a year by 2050.⁸

As well as enabling the UK transport sector to meet its net zero target, limiting traffic growth can improve people's health, reduce congestion and enhance wellbeing. It will also save money. A recent Stagecoach report highlighted that switching from car to bus travel can save the average household over £1,000 a year, and further savings would be achieved by increasing walking and bike use.⁹

The government's 2021 transport decarbonisation plan has targets for increasing average vehicle occupancy and the number of journeys travelled by public transport, walking and cycling. But, to meet them, the government must ensure that reducing car use is baked into the wider transport system by helping people to choose other options more easily.

We believe that our model, which explores combinations of transport measures, is a powerful decision making tool to help determine how we will all travel in the future. For example, many of the measures we fed into our model

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Some regions are committing to ambitious targets to change their local transport systems.”

would need to be implemented at the local level. Upcoming changes to the Local Transport Plan process mean local authorities will have to quantify how, and by what extent, they plan to reduce emissions. Our model could, therefore, be useful for local transport planning.

The transport decarbonisation plan has pledged to make public transport and active travel “the natural first choice for journeys”.¹⁰ But, there has been very little in the way of policy or a strategy to achieve this. In addition, recent cuts to active travel spending contradict the government’s claims that cycling and walking should be primary travel choices.¹¹ At a regional level, the story is different, with some areas committing to ambitious targets to change their local transport systems.

Regional targets to cut car mileage by 2030

Transport for London
27% reduction



Scotland
20% reduction



Transport for the North
Up to 14% reduction



Wales
10% reduction



Public attitudes to driving less

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Those on the lowest incomes often do not own a car but live in areas with little or no public transport.”

In 2022, Green Alliance commissioned Public First to conduct public polling and focus groups to understand public attitudes to driving less. Overall, this highlighted people’s attachment to car travel and their dissatisfaction with local public transport services.

Public attitudes are a major factor in transport policy. We used the findings from this research to shape the design of our balanced modal shift scenario (see page 16), considering the likely public reception to individual policies.

Access to different transport modes is not equitable. Those on the lowest incomes often do not own a car but live in areas with little or no public transport. In accessing different options for managing road use, it is important to consider which policy choices could improve accessibility.

What our research found



People drive because of convenience, cost and habit. They see their cars as accessible and reliable.



In Manchester, reducing bus fares has increased bus use by 10%.¹²

↑ 10%



More public transport and active travel infrastructure is needed before more people will be comfortable to leave their cars at home.



Transport poverty has a distinct urban-rural divide, due to the lack of good public transport in the countryside.¹³



One third of those polled thought higher fuel prices would change the way they commute in the long term.



Almost a quarter of UK households do not own a vehicle.¹⁴ Those in transport poverty and without a private vehicle are more likely to rely on buses.¹⁵



New residential developments are often built without good public transport links, increasing the dependence on cars.¹⁶



69% of people would be more supportive of road pricing if public transport was cheaper and better connected.¹⁷

Our modal shift model

To understand the complexities of the UK's transport system, and how to improve it, we worked with the University of Cardiff on a modal shift model.

This enabled us to see how much different combinations of policy options that encourage less driving would cost and raise for the government, and how many car miles could be reduced.

It is based on 2019 data and academic literature to determine the elasticity of transport demand, ie the degree to which any measure would change behaviour. This gave a good indication of the relative effectiveness of measures and the trade-offs to be considered. Modelling was carried out to produce the outcomes deemed most important for policy makers. These were:

The number of car miles reduced per year

The increased number of miles travelled by public transport and active travel

The balance of costs and revenue from the suite of policies

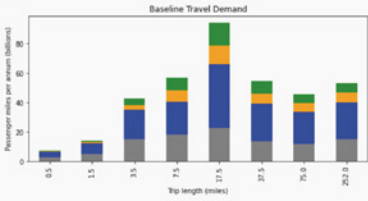
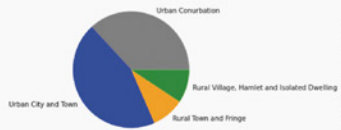
Our model was shaped by an advisory group of policy experts (see acknowledgements) who assisted with the identification and prioritisation of included policy levers and reviewed its development.

The link to the model and its methodology can be found at bit.ly/3A35YaQ

Show code

Assume urban/rural mix representative of England and Wales

Population by rural category



Policy Levers:

Car cost per mile: PERCENT increase from baseline of £0.19

Car average speed local (mph) local a-road urban local a-road rural trunk road

Car congestion charge £ applying to all settlements equal to or larger than Urban Conurbation

Parking charges Urban: Commute £ Shop/Education £ Business £ Leisure £

Parking charges Rural: Commute £ Shop/Education £ Business £ Leisure £

Rail fare discount % Rail frequency increase %

Bus fare discount % Bus frequency increase % Bus speed increase (priority measures) %

Bus fare cap £ applying to no trips (don't apply fare cap) after any % discount above

Integrated bus/rail transport

Top down assumptions:

Divide per-passenger-mile costs by occupancy on: bus rail

Workplaces offering telework % Minimum average car occupancy Unaccounted diversion from driver to passenger

Car club uptake % applying to all settlements equal to or larger than Urban Conurbation

E-bike lifestyle uptake urban % E-bike lifestyle uptake rural % Other cycle increase %

Results:

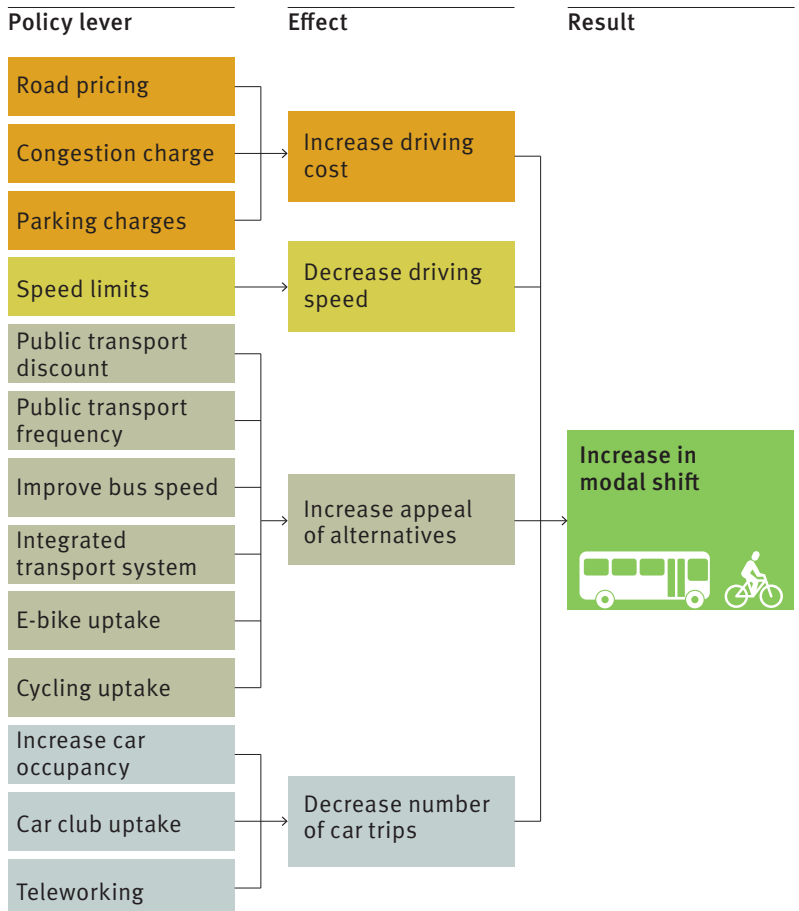
Mode	Miles per annum	Expenditure per mile	Expenditure	Revenue per mile	Revenue	Balance
Car driver	188,776,759,543 (no change)	£0.00	£0	£0.00	£0	£0
Car passenger	101,402,939,518 (no change)	£0.00	£0	£0.00	£0	£0
Rail	41,597,963,973 (no change)	£0.00	£0	£0.00	£0	£0
Bus	21,489,540,933 (no change)	£0.00	£0	£0.00	£0	£0

Policy options

“Policies were devised and prioritised, based on their likely public acceptance.”

Using the findings of our public attitudes research and input from our advisory group to inform the model, a series of different measures and the policies needed to implement them were developed.

Policies were devised and prioritised, based on their likely public acceptance, ability to reduce emissions, ease of implementation and ease of accurate modelling.



Our scenarios

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We used the model to develop three sets of scenarios with contrasting policy approaches.”







To demonstrate the variety of options available, we used the model to develop three sets of scenarios with contrasting policy approaches:

Carrot and stick: improved alternatives versus driver penalties

Urban and rural: policies that impact urban regions versus those that target rural regions

Local and national: local versus national level policy

Each scenario was intended to achieve a 25 per cent reduction in car miles driven by 2030.

Scenario	Aim	Net outcome	How?
Carrot 	Incentives for sustainable transport: this would improve the availability of public transport and active travel, as recommended by our focus groups.	-£7.3 bn	<ul style="list-style-type: none"> – Reduce public transport fares – Increase public transport frequency – Increase active travel uptake – Integrate travel – Increase car occupancy
Stick 	Discourage car use: this is the least publicly acceptable scenario, which would replace lost revenue from falling fuel duty and road tax payments due to EV increases.	+£38.5 bn	<ul style="list-style-type: none"> – Road pricing – Higher congestion and parking charges
Urban 	Focus on urban areas: policies that discourage driving would be used in urban areas where alternatives to car travel are more readily available and lower income households are less likely to own a car.	+£19 bn	<ul style="list-style-type: none"> – Speed reduction in urban areas – Urban focused parking and congestion charges – Higher public transport frequency
Rural 	Focus on rural areas: public transport would be made more accessible, following our focus group feedback that those in rural areas need better alternatives to cars.	-£3.1 bn	<ul style="list-style-type: none"> – Public transport fare discount and greater frequency* – Rural car speed reduction – Bus speed increase – Car clubs and e-bikes <p>* The model's levers apply nationally and cannot be focused on rural areas alone.</p>
Local 	Locally pioneered changes: this focuses on policy levers where ambitious local leadership can shape attitudes, including by providing more e-bikes and car clubs.	+£15.8 bn	<ul style="list-style-type: none"> – Congestion and parking charges in urban areas – Local road speed reduction – Bus fare discounts
National 	National co-ordination: this focuses on policies that would benefit from national co-ordination, such as road pricing and trunk road speed reduction.	+£5.5 bn	<ul style="list-style-type: none"> – Road pricing – Public transport fare discounts and greater frequency – Speed reduction on trunk roads

Impact		
<p>This would increase active travel and public transport use. It reduces inequity by improving access to these forms of transport for everyone, as well as offering health benefits.</p>	<p>However, this suite of measures would require significant upfront cost. Within the context of real terms cuts to active travel and public transport budgets, this is unlikely in the short term.</p>	<p>It would also not recover lost revenue to the government from the transition to EVs.</p> <p>It is unlikely to reduce car ownership levels since the perceived cost of driving would remain the same.</p>
<p>This would shift drivers onto other transport modes by doubling the baseline cost of driving. It would solve the Treasury's revenue gap due to falling fuel duty.</p>	<p>But it would be unpalatable to the public, based on our research. The overall number of journeys in this scenario would decrease, as the cost of driving increases, without improving public transport or active travel access.</p>	<p>This will force people, especially those on low incomes, to ration travel to the most important journeys.</p> <p>It is likely to be inequitable, as those on higher incomes will still pay to drive.</p>
<p>This would significantly cut air and noise pollution, which is worse in urban areas, and have public health benefits, saving the NHS money and improving wellbeing.</p>	<p>As disincentives, the measures could be less publicly acceptable in some urban areas where the cost of driving is already higher through schemes such as congestion charges, as this scenario increases the baseline cost of driving by 10%.</p>	<p>Overall, it would largely be seen as equitable due to better access to sustainable alternatives in urban areas.</p>
<p>This scenario is likely to have relatively high public acceptability, as alternatives to car travel would be prioritised for those in areas with reduced access to public transport. However, the 10% increase in the cost of driving would be unpopular.</p>	<p>While this scenario is costly for the government, it would reduce inequity by increasing access to services and employment in rural areas.</p>	
<p>This could be publicly acceptable, if more controversial measures (such as congestion charges) could be tailored with local knowledge and implemented through Local Transport Plans.</p>	<p>For these policies to be applied at a local level, further power and funding would have to be given to local authorities.</p>	<p>The Climate Change Committee suggests local authorities are directly responsible for up to 5% of local emissions, but could reduce up to a third of all emissions through effective place shaping and leadership.¹⁸</p>
<p>This would increase standardisation and reduce confusion around long distance travel, caused by varied local approaches.</p>	<p>However, a national standardised approach would be seen as inequitable to those in rural areas.</p>	<p>This scenario is also likely to be unpopular with the public, as road pricing would increase the baseline cost of driving by 50% in this scenario.¹⁹</p>

A balanced approach to modal shift

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We have developed a balanced approach without heavy penalties for those who need to drive.”

The scenarios we describe are extremes and are unlikely to happen as we have set out for a variety of reasons, including public acceptability, cost and difficulties around implementation.

We have, therefore, developed a scenario which takes a balanced approach, helping to address the Treasury’s fiscal black hole from fuel duty loss, without heavy penalties for those who need to drive.

This also ensures alternative transport modes are available in both rural and urban regions, at reasonable cost, to encourage people to switch away from cars.

A balanced policy mix to cut car miles by 25 per cent

Measure	Level
 Cost of driving	Increase the baseline cost of driving by 5% ²⁰
 Road speed	Decrease road speeds by an average of 1.5mph across the UK
 Congestion charge	A congestion charge in cities of £1.50 per day
 Parking charges	Standardise charges nationally, with higher rates in urban areas
 Public transport fare reduction	15% bus fare discount and 5% rail fare discount
 Public transport frequency increase	Bus services increase by 40% and rail by 30%
 Teleworking	30% of workplaces offer teleworking
 Car occupancy	Increase to pre-pandemic levels of 1.55 people per car
 Car clubs and e-bike uptake	10% uptake of e-bikes and 5% uptake of car clubs in urban areas
 Cycling increase	Increase cycling by 20%
Total government revenue	£11.8 billion

Challenges around shifting transport habits

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Any increase in driving costs must not penalise the lowest income groups.”

Developing a solution balanced between local and national implementation, rural and urban measures, and between incentives and penalties, presents a variety of challenges to policy makers.

Cost to drivers

Significantly increasing the cost of driving will deter some people from making some journeys, but this is most likely to affect those on the lowest incomes. Any increase in driving costs must not penalise the lowest income groups while the wealthier people should still pay to pollute. This applies, in particular, to road pricing, which is likely to be the biggest proportion of driving costs in the future.

Recommendations from the Transport Select Committee's 2022 report into road pricing were not acted upon by the government. However, the inevitable gap in government income, due to lost fuel duty caused by the EV transition, is still going to be a problem.²¹ If and when a road pricing scheme is introduced across the UK, DfT and the Treasury must ensure it does not unfairly penalise those on low incomes.

Our modal shift model offers revenue to the government from certain measures, but this is in addition to 2019 levels of fuel duty. In reality, a road pricing scheme is likely to be phased in as more people transition to electric vehicles that do not pay fuel duty, so the cost to drivers can be stabilised during the transition period.

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Additional revenue should be invested in infrastructure for public transport and active travel.”

Cost to the government

Revamping bus and rail services across the UK will be costly for DfT, and poses an especially difficult challenge at a time when departmental cuts are being made.²² Recent decisions to cut active travel budgets are indicative of the financial difficulties that investors in low carbon transport face.²³

Some charges for driving create a revenue stream for government, as well as encouraging people to choose alternative modes where available, on top of road pricing directly replacing lost fuel duty. This additional revenue should be hypothecated and invested in infrastructure for public transport and active travel.

Local authority responsibility

Many measures to achieve modal shift will need to be delivered at the local authority level, such as improving bus services and walking and cycling infrastructure. As part of the upcoming changes to the Local Transport Plan process, local authorities will have to quantify their carbon emission reductions and create new plans for achieving them.

However, they do not currently benefit from effective data sharing, and what is available is of variable quality.²⁴ Particularly lacking is data up to modern geospatial standards, which includes information on the capacity of public transport networks and optimal routes for infrastructure.

If the government delivered on the Transport Data Strategy ambition of improving the discoverability, quality and accessibility of transport data, down to a local level, it would empower local authorities to make more informed, evidence based improvements to transport networks, enhancing access to sustainable transport.

Recommendations

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Introducing a target to cut car miles will signal to the public that change is coming.”

Our scenarios reflect the trade-offs required for effective modal shift to improve the UK's transport system for everyone while also reducing its climate impact.

Adopting a balanced approach that implements a series of rural, urban, local and national measures, is not only likely to be the most politically palatable route, but also the most well accepted by the public.

To achieve it, we recommend:

A new UK wide target to cut car miles driven by at least 20 per cent by 2030

Following devolved nations by introducing a target to cut car miles will signal to the public, local authorities and the transport sector that change is coming, and it will require DfT to create a long term strategy to achieve it.

A new independent commission, reporting to the Treasury and DfT

This will decide an appropriate and equitable road pricing scheme to replace lost fuel duty revenue. Road pricing will play an important role in the future transport tax system and could be used as a tool for encouraging people to choose public transport. Any scheme must be equitable and the government must take the lead in determining an appropriate approach.

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We believe a modal shift model could assist local and national decision makers.”

Using revenue from new driving charges to invest in public transport and active travel

Any extra income from new policy measures to increase the cost of driving, beyond that raised to replace lost fuel duty, should be seen as a revenue stream to invest in infrastructure to encourage modal shift, such as more cycling routes and bus services. This is likely to increase the public acceptability and perceptions of fairness around additional charges.

Improving local authority access to spatial data to aid the implementation of measures under the new Local Transport Plan process

This is to aid quantifiable carbon reductions, enabling local decision makers to make more informed improvements to sustainable transport, with information on the capacity of services and route optimisation.

Using a modal shift model like ours to design a future transport system that achieves a reduction in car mileage by 2030

We believe a modal shift model could assist local and national decision makers to determine a balanced approach and encourage its use across DfT, regional transport bodies and local authorities.

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