Miles Ahead

Road pricing as a fairer form of motoring taxation

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SMF Social Market Foundation

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CONTENTS

FOREWORD

By Rt Hon Lord Young of Cookham CH

Road pricing is a good idea, but not a new one. In 1996, when I was Secretary of State for Transport, I published a White Paper that began to grapple with the need for a better way of distributing the costs of driving, by levying charges according to miles driven. It is just a little disappointing that so little progress has been made in the last 26 years.

Much of that, I am afraid to say, comes down to political caution and even timidity. Successive administrations have looked at the case for road pricing and found it perfectly reasonable and sensible – then done nothing because they believe the public will not accept the change.

This report is important because it challenges that assumption. It shows that, as so often, the public are more sensible and mature than political debate gives them credit for. When voters think about the challenges ahead for transport and tax, they accept that road pricing is a prudent and necessary step to take.

The public are open to innovation because they know that a great deal has changed over those 26 years, and will continue to change. The welcome shift towards electric vehicles raises a clear question about the future of fuel duty levied on petrol and diesel. The unpopularity of that duty has grown steadily too. As this report shows, a well-designed system of road-pricing would be fairer and more popular than the status quo.

Attitudes and habits relating to monitoring and enforcing a road charging have changed a great deal too. Once, advocates of road pricing were accused of plotting to track the movements of every motorists. Today, everyone with a mobile phone willingly accepts the sharing of their location data when they open their travel app and ask for driving directions. And anyone on the roads is covered by the police ANPR system, whose development has been accepted by the public with barely a ripple of dissent.

The road pricing debate can feel very familiar, but in truth, a great deal has changed. The public have moved on. The technology has moved on. The debate has moved on. It is time for politicians to catch up and accept that road pricing is a good idea whose time has come.

Lord Young is a former Secretary of State for Transport whose other ministerial roles have included Financial Secretary to the Treasury and Leader of the House of Commons

ABOUT THE AUTHOR

Scott Corfe joined the Social Market Foundation in 2017 and is our Research Director. As well as managing the SMF's research team, he authors research on a wide range of topics including consumer markets, taxation, low pay, housing and technology.

Before joining the SMF, he was Head of Macroeconomics and a Director at the economics consultancy Cebr, where he led much of the consultancy's thought leadership and public policy research.

Scott's expert insights are frequently sought after in publications including the Financial Times, the Guardian, the Times, and the Daily Telegraph. Scott has appeared on BBC News, Sky News, Radio 4, and a range of other broadcast media.

EXECUTIVE SUMMARY

This Social Market Foundation report explores the case for introducing a nationwide road pricing system in the UK. It examines the impending issues faced by policymakers amid the transition to electric vehicles (EVs)and the extent to which road pricing could resolve these issues. The report examines likely public support and opposition to road pricing, and models the distributional impact of a road pricing regime in the UK. We show that it is possible to introduce a road pricing regime that is more progressive than fuel duty, resulting in a financial gain for lower income households.

The research draws on quantitative and qualitative primary research commissioned as part of the study, and an economic modelling exercise drawing on household spending data in the Living Costs and Food Survey.

Key findings

Persisting with the current regime of motoring taxation and, in particular, fuel duty, is no longer tenable

- **As things stand, the transition to EVs will virtually eliminate government revenues from fuel duty and vehicle excise duty by 2050**. The represents a £30bn per annum decline in tax receipts, after adjusting for inflation.
- **This would be a massive tax cut for drivers, but Treasury is likely to consider this unsustainable**. To recoup these losses through income tax, for example, ministers would need to increase rates by up to 2p in the pound by the end of the next Parliament, and up to 6p by 2040.
- **Congestion will get worse if EVs are subject to limited taxation.** The Department for Transport has forecast that road traffic in England and Wales will grow by between 17% and 51% by 2050, compared with 2015, driven predominantly by a combination of population growth and a reduction in vehicle running costs. In addition to exemption from motoring taxation (as things stand), EVs have reduced repair and maintenance costs compared with internal combustion engine (ICE) vehicles, due to fewer moving parts.
- **Fuel duty is regressive.** Our analysis of the Living Costs and Food Survey suggests that fuel duty costs the average household £521 per year in the form of higher pump prices, rising to £644 if we just look at households that have vehicles. As a proportion of disposable income, these costs are greater for those on lower incomes – despite the fact that lower-income households drive fewer miles on average than higher income ones and are less likely to own a vehicle.
- **This problem is set to get worse. In the transition period, in which there is a mix of EVs and ICE vehicles on the road, motoring taxation is likely to become increasingly regressive without policy intervention**, with lower income households footing a greater proportion of the remaining fuel duty bill. This is due to lower-income households being less likely to drive EVs, at least in the earlier stages of this transition period. Higher-income households, who drive more miles on average, would end up undertaxed for the congestion that they are generating.

- **If the Government were to increase fuel duty rates to prevent a hole in the public finances, we estimate a significant cost to lower-income households – highlighting the dangers of continued reliance on fuel duty.** Under a hypothetical scenario in which richer households are much more likely to drive EVs in the short-to-medium term, if the government preserves motoring revenues through fuel duty hikes (and leaves EVs untaxed), the share of fuel duty costs borne by the poorest 40% of households would rise from 20% at present to 41%. Vehicle-owning households in the 1st income quintile (the poorest 20%) would end up facing fuel duty-related costs £423 per year more than at present, on average, while those in the 2nd income quintile would be paying £421 per year more. In contrast, the richest 20% of households would save over £500 in fuel duty on average given their high ownership of EVs under this scenario.
- **Instead of relying on fuel duty, the Government needs to act quickly in building the infrastructure for an alternative form of motoring taxation – and setting out a timetable for implementing it.** There is a clear risk associated with dithering on this issue: the longer EVs are exempt from any kind of motoring taxation, the harder it will become for politicians to introduce the necessary motoring tax measures.

Road pricing is the best solution, and voters would welcome it

- **Given the issues described above, there is a compelling case for introducing a new tax that charges motorists according to how much they drive – road pricing**. Government should avoid trying to offset fuel duty declines with higher taxes elsewhere, such as income tax, as this would leave motoring undertaxed and increase social costs associated with congestion and pollution. Vehicle excise duty is also not the solution, given that the tax does not vary by miles driven, and motorists would therefore be encouraged to drive more – making congestion worse.
- **We believe the public can be won over on road pricing. In the Opinium survey of 3,000 adults commissioned as part of this research, more survey respondents supported (38%) than opposed (26%) road pricing, as a broad concept, as a replacement form of taxation** – a finding that held true across income groups, regions and whether or not someone was themselves a motorist.
- **Over two-fifths (43%) of those opposed to road pricing expressed fears about paying more than they currently do as a primary source of concern**. A majority – 56% – felt that it was unfair for government to change how motorists are taxed, especially given the government encouraged people to buy diesel vehicles and is now discouraging their purchase. This latter concern suggests a significant lack of trust in how the government treats motorists.
- **About a quarter of those opposing road pricing as an alternative to fuel duty in the Opinium survey cited reservations about the government being able to monitor where and when they are driving as a primary concern**. This is not just a concern of road pricing sceptics; across the entire survey sample, including those the support road pricing as a broad concept, about half of respondents (48%) opposed the notion of having a tracking box in their car, or a mobile app that charges per mile driven. Just a quarter (23%) supported the concept.

The Government should pursue a simple national road pricing scheme, complemented with additional measures in areas where congestion and pollution are particularly problematic.

- **There is a strong case for a simple national road pricing regime with a fixed per mile charge for using the road network.** Such a scheme could be implemented relatively quickly and our survey evidence suggests this would gain the most public support. An annual charge based on miles recorded at the time of an MOT/annual check-in at a garage, or at the point of vehicle sale, could be used for road pricing. Road users could also have the option of submitting more regular mileage readings, including using a mobile phone app or telematic box if they wish.
- **There is a case for including a free mileage allowance within a national road pricing scheme, which would allow motorists to drive a given number of miles before road pricing kicks in.** This would increase support for road pricing and steer the burden of motoring taxation onto higher mileage drivers that generate the greatest externalities. Furthermore, this would shift the burden of motoring taxation away from lower-income drivers and onto higher-income ones, given that they drive more miles on average.
- **Our modelling shows that a road pricing regime with a uniform per mile charge and a free mileage allowance per vehicle would be slightly financially beneficial to lower income motorists, compared with the current fuel duty regime.** For example, a revenue-neutral regime with a free allowance of 2,500 miles would leave motorist households in the bottom two income quintiles about £20 per year better off than the current fuel duty regime, amounting to about £92 million in aggregate. This rises to about £40 per year with a free allowance of 5,000 miles - £188 million in aggregate.
- **A key downside of going down the route of a simplified road pricing scheme is that it would limit the ability to use motoring taxation to curb congestion in parts of the country where it is particularly problematic. But this could be resolved by complementing a flat-rate national road pricing scheme with localised road pricing initiatives** (e.g. modelled on the London Congestion Charge) in areas where motoring-related externalities are greatest, such as cities. This has the benefit of only introducing complexity where the need to do so is greatest.
- **To prevent lower-income households facing a disproportionate share of motoring taxes amid the transition to EVs, fuel duty should be abolished or reduced at the same time as road pricing is implemented.** If fuel duty is abolished, there should instead be a higher road user charge for ICE vehicles, with this surcharge set at a lower rate than the implied per-mile cost of fuel duty.
- **While the Opinium survey shows more support for a uniform per mile road price (51%) than a variable price (42%), there were relatively high levels of support for more expensive road user charges on more polluting vehicles.** About half (49%) preferred this kind of variable pricing. In contrast, just 25% cited more expensive charges on busier roads as a preferred option.

Recommendations

1. Government should work at pace to develop the infrastructure to support a simple national-level road pricing scheme, with a flat per mile rate and a free mileage allowance – and set out a timetable for implementing it. To reduce concerns about telematic devices in vehicles and enable swifter rollout, the infrastructure should include the ability to pay one's road pricing bill using a mileage reading registered at the time of vehicle MOT/annual check-in at a garage, point of sale/scrappage of car, and point of exiting the UK for foreign-registered vehicles.
2. To reduce the burden on lower-income motorists during the transition period from ICE vehicles to EVs, the Government should:
    - Abolish fuel duty rates for petrol and diesel once road pricing is in place. ICE vehicle drivers would instead pay a road usage surcharge, set at a rate that is lower (in terms of per mile cost) than fuel duty.

    OR

    - Have a flat-rate national road pricing scheme, but reduce fuel duty rates to reduce the tax burden on ICE vehicle drivers.
3. To improve transparency around motoring taxation and show clearly that road pricing is to be used to tackle congestion and other societal harms – rather than as a money-spinner for government – a Road Pricing Commission should be established. The Commission would provide annual recommendations for the setting of road pricing rates to meet social objectives such as reduced pollution and congestion.
4. The Department for Transport should identify areas where motoring-related externalities such as congestion are notably higher than the national average. Central government funding should be made available to allow local authorities in these areas to roll out road pricing schemes such as congestion charges.

CHAPTER ONE – INTRODUCTION

An overwhelming majority of UK households – close to 80%[1] – own some form of motorised transport. And for almost all this group, owning a car, van, or motorbike is not a luxury, but a necessity for work, shopping, and for meeting friends and family. According to an Opinium survey commissioned as part of this research, 92% of regular drivers believe that having an automotive vehicle is either very necessary/essential (52%) or somewhat necessary (40%) to go about their daily life.

Until public transport networks in the UK improve drastically, or we design less car-dependent urban environments – for example, with housing in closer proximity to amenities and places of work – that is not going to change.

This necessary form of transportation is an important source of tax revenue for HM Treasury; in the current fiscal year (2022/23), it is estimated that road fuel duty and vehicle excise duty ("road tax") combined will raise over £30bn in revenues for the Government[2]. For the average household, this amounts to a significant tax bill: we estimate that, for households that drive, fuel duty-related costs alone amount to about £650 per annum on average, in the form of higher pump prices.[3]

There are good reasons for levying additional taxes on private vehicle usage, beyond broader ones such as VAT. Critically, driving is something that generates *externalities* – costs to society that extend beyond those faced by the motorist themself. This includes degradation in air quality, reduced safety for pedestrians, noise pollution, contribution to climate change, damage to roads and congestion, which results in slower journey times for others.

While there is uncertainty over the size of these external costs, they are likely to be substantial. One cross-country European study in the early 2000s estimated that the external costs of all forms of transport amounted to about 8% of EU GDP (over €500bn (£426bn)). Cars, heavy duty vehicles, light duty vehicles, buses and motorcycles – i.e. road users – account for over 90% of this total, with rail accounting for just 2% and aviation 6%.[4] Another study found that the UK had the second highest external costs associated with car usage in the EU27 in 2008, after Germany – amounting to €59 billion.[5] The Tony Blair Institute for Global Change recently estimated that the societal costs of motoring in Britain in 2020 stood at close to £75bn, with congestion accounting for £59bn of these costs, and road accidents £7bn.[6]

Statistics from the Department for Business Energy and Industrial Strategy show that road transportation accounted for about a quarter (24%) of all territorial greenhouse gas emissions in the UK in 2019, with passenger cars accounting for 60% of this total.[7]

The transition to electric vehicles (EVs) over the coming years will reduce some of the externalities associated with private vehicle usage, such as contribution to climate change and air pollution, but not others. For example, electric car usage still has implications for public safety, still leads to damage to roads, and still contributes to congestion.

This needs to be accounted for with an appropriate form of motoring taxation. Yet, as things stand, pure electric vehicles (i.e. excluding hybrid vehicles) are not subject to vehicle excise duty (VED) nor fuel duty. Without a new form of motoring taxation, the transition from internal combustion engine (ICE) vehicles to EVs will not only lead to a significant loss of tax revenues for the Exchequer, but also create a situation in which there are excessive externalities associated with motoring, such as heavier congestion on the UK's roads.

It has for some time been argued that road pricing is the long-term future of motoring taxation, particularly in a world in which vehicles are no longer powered by petrol or diesel. Road pricing could take a number of forms, from toll roads to urban congestion charges to electronic road pricing using a telematic box placed in cars to tax motorists.

However, road pricing has often been thought of as politically impossible to implement. For example, the New Labour government abandoned plans to introduce road pricing in the 2000s after close to two million people signed a petition opposing the measure.[8]

In this Social Market Foundation report, we argue that, far from being an unpopular political non-starter, public opinion about road pricing has moved on, with a high share of the electorate recognising the need for a new form of motoring taxation in a world of electric vehicles. Further, done right, there is scope for policymakers to introduce a form of motoring taxation that is not just more effective in tackling congestion and pollution, but which would also be fairer than existing taxes such as fuel duty.

The structure of this report is as follows:

- **Chapter Two** explores the impending problem faced by HM Treasury unless a new form of motoring taxation is introduced. It also describes other issues with the current fuel duty regime.
- **Chapter Three** explores the case for road pricing as a solution to these issues.
- **Chapter Four** presents our modelling of the distributional impact of a road pricing regime.
- **Chapter Five** draws conclusions about where policymakers should go, in light of our findings.

CHAPTER TWO – THE PROBLEMS WITH MOTORING TAXATION

The shift toward electric vehicles required to tackle global warming and reach net zero brings with it significant fiscal challenges for the UK Government. Without policy intervention, the loss of fuel duty and VED revenues from the transition to EVs will create a hefty hole in the public finances. As such, rapid and radical change to motoring taxation is needed.

We also argue in this chapter that, beyond the outlook for public borrowing, there are other compelling reasons for reforming motoring taxation, including the regressive nature of the current regime and the blunt nature of fuel duty.

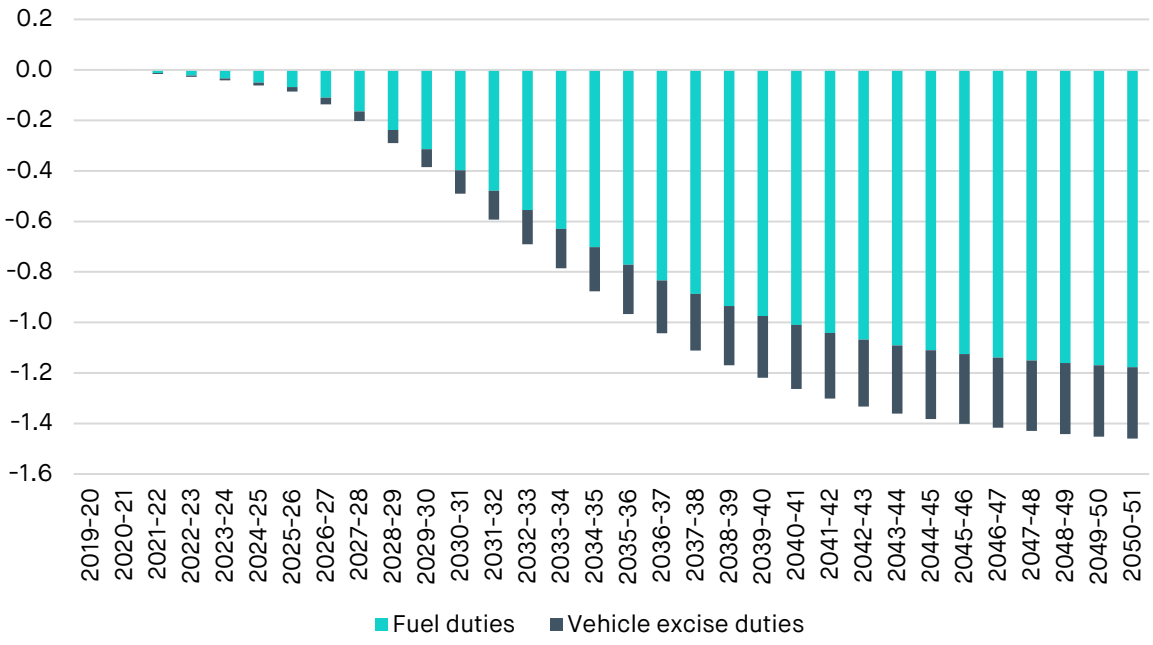
The impending fiscal blackhole

Given the Government's commitment to banning the sale of new petrol and diesel cars from 2030[9], HM Treasury faces a substantial fiscal blackhole without further action. At present, fully electric vehicles pay no fuel duty and are exempt from VED.

The Office for Budget Responsibility (OBR), in its 2021 *Fiscal Risks* report, noted that this will lead to receipts from these two sources of tax revenue falling to almost zero by the 2050/51 fiscal year, as the stock of ICE vehicles is almost completely replaced with EVs and alternatively-powered vehicles (e.g. hydrogen fuel cell cars).

The OBR estimates that declining motoring tax revenues will account for 94% of the lost tax revenues associated with the transition to net zero by 2050/51, with the remainder account for by smaller taxes such as air passenger duty, landfill tax and plastic packaging tax.[10]

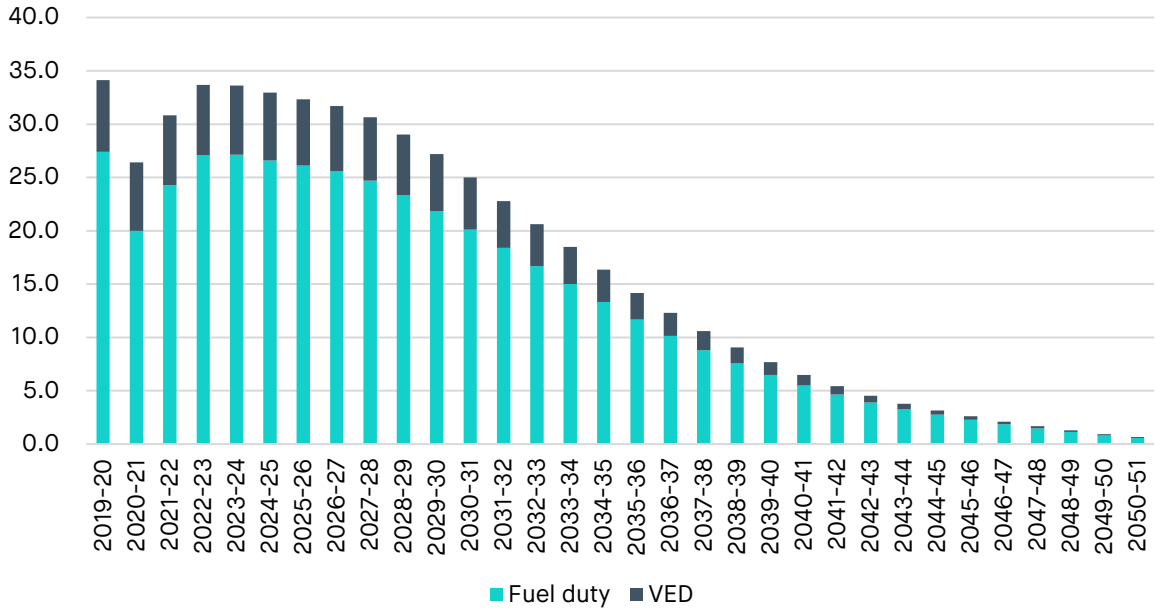
Figure 1 Loss of motoring tax revenues, % of GDP



Source: OBR Fiscal Risks report, July 2021

The value of this lost revenue is non-trivial, amounting to about 1.5% of GDP by 2050/51. In 2019 prices – i.e. adjusting for inflation – revenues from motoring taxes are forecast to fall by over £30bn between 2020/21 and 2050/51. To put this into context, income tax would have to increase significantly to offset such a loss in revenue – with increases of up to 2p in the pound by the end of the next Parliament and up to 6p by 2040.[11]

Figure 2: Motoring tax revenues, £bn, 2019 prices



Source: OBR Fiscal Risks report, July 2021

Other problems with the current regime of motoring taxation

The fiscal blackhole faced by the government is not the only reason for revamping motoring taxation. There are several other issues with the current duty regime that mean that reform should be pursued:

EVs are cheaper to drive, which could lead to more congestion

Without further action from policymakers, congestion on Britain's roads is set to get worse. The Department for Transport has forecast that road traffic in England and Wales will grow by between 17% and 51% by 2050 respectively, compared with 2015.[12]

As well as population growth over this time period, a key driver of increased traffic is expected to be a reduction in vehicle running costs, with trips by electric vehicle facing lower per mile costs than trips using an ICE vehicle – due to the absence of fuel costs (including fuel duty), lower/zero rates of VED and lower maintenance and repair costs due to fewer moving parts.[13]

Congestion is forecast to grow as a result of increases in traffic. The proportion of traffic in congested conditions in 2050 is forecast to range from 8% to 16% depending on the scenario, compared to 7% in 2015. The average speed during all periods is forecast to fall from 34mph in 2015, to as low as 31mph in 2050. The average delay per vehicle mile during all periods is forecast to increase by up to approximately 11 seconds per mile (69%) by 2050.[14]

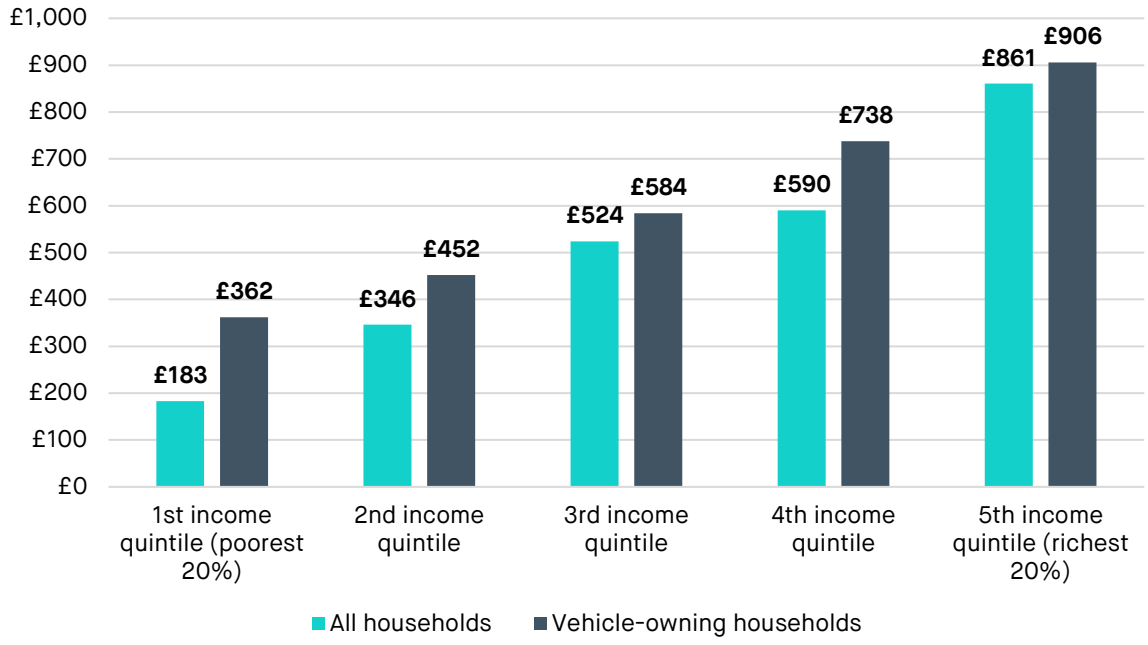
Congestion currently costs British society close to £60bn per annum, as noted in the introduction to this report. As things stand, this figure is set to grow significantly – highlighting the need for policy to step in with measures that improve alternative modes of transportation (such as trains, buses and cycling) and a motoring tax regime that is more effective at curtailing congestion.

Fuel duty and Vehicle Excise Duty are regressive – and set to become even more so

Motoring taxes represent a substantial cost to the typical UK household. Our analysis of the Living Costs and Food Survey suggests that fuel duty alone costs the average household £521 per year in the form of higher pump prices, rising to £644 if we just look at households that have vehicles. Vehicle Excise Duty adds a further £168 to cost of living for the average household, rising to £209 for vehicle-owning households.

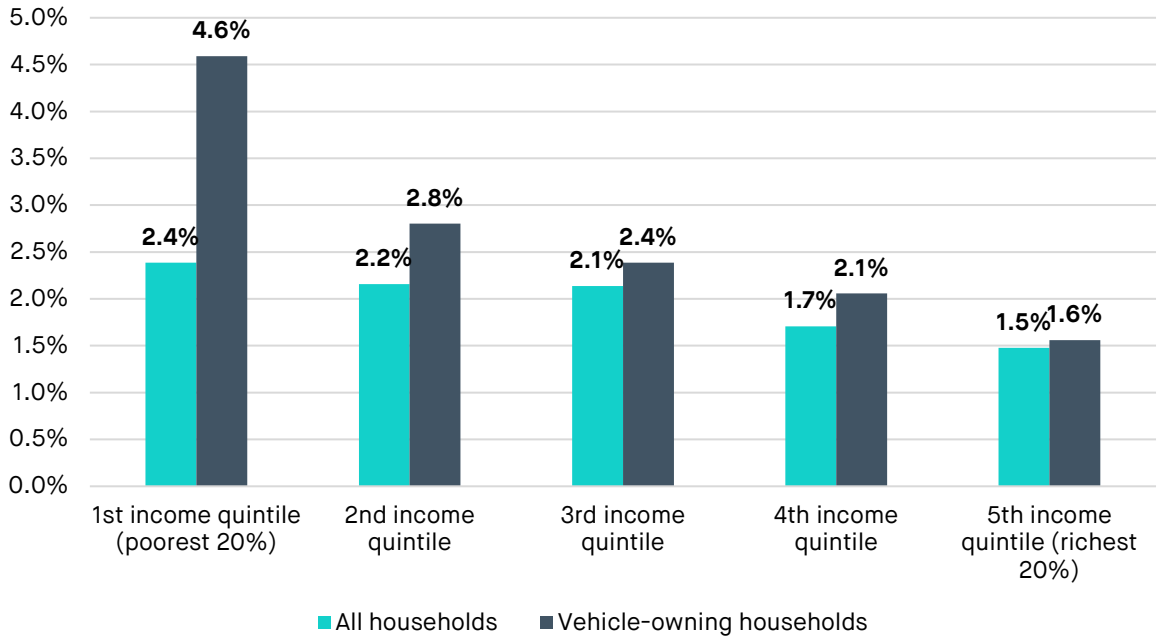
Further, as a proportion of disposable income, these costs are greater for those on lower incomes – despite the fact that lower income households drive fewer miles on average than higher income ones and are less likely to own a vehicle. In other words, fuel duty and VED are regressive forms of taxation.

Figure 3: Mean annual fuel duty and VED-related costs, by household disposable income quintile, all households and just vehicle-owning households in quintile, £



Source: SMF analysis of the 2019/20 Living Costs and Food Survey

Figure 4: Mean annual fuel duty and VED-related costs, by household disposable income quintile, all households and just vehicle-owning households in quintile, % of mean disposable income.



Source: SMF analysis of the 2019/20 Living Costs and Food Survey

In part this reflects the essential nature of motoring for most households in the UK, making fuel duty and VED "unavoidable taxes" that are difficult for individuals, include those on lower incomes, to mitigate against.

Not only are fuel duty and VED regressive now, they are likely to become even more so over the coming years. With the relatively high price point of EVs – for now at least[i] – focusing purchases within higher income groups, the proportion of fuel duty and VED paid by richer households is set to decrease, with the proportion paid by those in the lower income groups – more likely to be still driving ICE vehicles – increasing.

Another consideration here is the rise of remote working during the COVID-19 pandemic, something which is likely to have a permanent impact on working patterns and, in turn, commuting trends.

Evidence from ONS business and household surveys suggest that those on higher incomes, and in higher wage sectors of the economy, are more likely to see a permanent shift towards more remote working going forward.[15] One implication of this is that higher income households will be less likely to *need* to drive as regularly for work purposes, increasing their ability to reduce the burden of motoring taxation through choosing to work from home. In contrast, those on lower incomes are more likely to work in roles – such as in the hospitality and care sectors – where physical presence

[i] It has been suggested that price parity between new EVs and ICE vehicles could be achieved in the latter half of the current decade: https://www.transportenvironment.org/discover/evs-will-be-cheaper-than-petrol-cars-in-all-segments-by-2027-bnef-analysis-finds/

in a workplace is essential and it will be more difficult to reduce the burden of motoring taxation if a car is needed to get to the place of employment.

As such, changing work trends – as well as the shift to EVs – could lead to a situation in which the current fuel duty and VED regimes become even more regressive than they are at present.

But should we care about the extent to which fuel duty is "progressive" or "regressive" in terms of the financial burden it places on different income groups? The SMF has argued elsewhere that regressivity can be a poor argument against a tax. For example, we argued that this is a not a good argument against alcohol duty, because although alcohol taxes may be more of a burden for lower income households, it is also true that the societal harms of alcohol misuse, such as liver disease, are concentrated among lower income households. As such, there is a case for living with a regressive tax, given that it is most likely to improve public health outcomes by curbing excessive drinking. Rather than using alcohol duty as a tool to reduce financial inequality among households – by making duty more progressive – politicians should instead tackle inequality through other policy levers such as the benefits system.[16]

Is fuel duty different and should policymakers be content to live with this regressive form of motoring taxation? We argue that there are some important differences to alcohol duty that need to be taken into account, particularly as we move to a world in which there is a mix of EVs and ICE vehicles on the road.

Critically, if EVs remain exempt from motoring taxation while ICE vehicle drivers are impacted by fuel duty, this will lead to a situation in which lower income households pay a greater proportion of motoring taxes, despite contributing less to motoring-related externalities (assuming EV uptake is greater among higher income groups, at least in the short-to-medium term). This is because, although ICE vehicles contribute more to pollution and greenhouse gas emissions, congestion is a significant component of the externalities generated by motoring. EV drivers currently face no motoring taxes despite their contribution to congestion on the road, defying the equitable notion that those generating societal harms should bear the costs of such harms.

We also think that the politics of fuel duty mean that a focus on the regressivity of any new motoring tax regime is inevitable. It is likely to be a key element of any opposition to a new system such as road pricing and, therefore, to gain support, thought will need to be given to the impact on different types of household.

Fuel duty is too blunt a tax and is ineffective at curbing congestion

Another issue with fuel duty is the blunt nature of the tax, set at a uniform price for a specific type of fuel.[17] As such, there is no variation in motoring taxation by factors such as time of day or region, with the exception of localised schemes such as the London Congestion Charge. Even with respect to fuel type, there is limited variation – with petrol and diesel facing the same duty rates at present, and lower duty rates for niche fuels such as liquified petroleum gas (LPG).

This lack of tax variation is problematic given the likely significant variations in motoring externalities that exist across the country. For example, externalities associated with congestion will generally be far higher in cities than in rural areas, or in the daytime compared with night-time.

The relatively uniform nature of the current duty regime means that we are likely to be over-taxing some types of motoring (e.g. rural driving at night-time) while under-taxing others (e.g. driving in an urban area at rush hour). Creating a new motoring tax regime which allows more variation in tax rates would prevent drivers being excessively penalised for low externality motoring, while setting sufficiently high tax rates to curb congestion and pollution in areas where these are particularly problematic issues.

The duty-setting process has become detached from societal objectives

Lastly, we are concerned that motoring taxation and, in particular, fuel duty, has become detached from the societal goals that the tax should be aiming to achieve – namely, curbing the negative externalities associated with motoring.

The debate around fuel duty has become a crude one in which there is a binary debate between increasing or freezing fuel duty, rather than a more nuanced once that looks at the *structure* as well as the level of motoring taxation, and reviews the latest evidence on the scale of motoring-related externalities.

That needs to change if motoring taxation is to be used to improve societal outcomes: the setting of motoring tax rates, and the structure of any future motoring tax regime, should be a more evidence-based exercise with rates set to ensure that the societal costs of motoring (congestion, pollution etc.) do not exceed the societal benefits (e.g. from reduced journey times and economic growth). At present, we are very far from this ideal.

CHAPTER THREE – ROAD PRICING AS A SOLUTION

In our view, road pricing is the best solution to the challenges described in the previous chapter. Done right, there is scope for policymakers to introduce a new motoring tax regime that:

- Prevents a blackhole in the public finances emerging
- Is fairer than fuel duty and less of a burden on lower income households
- Is more effective at curbing congestion and other motoring-related externalities

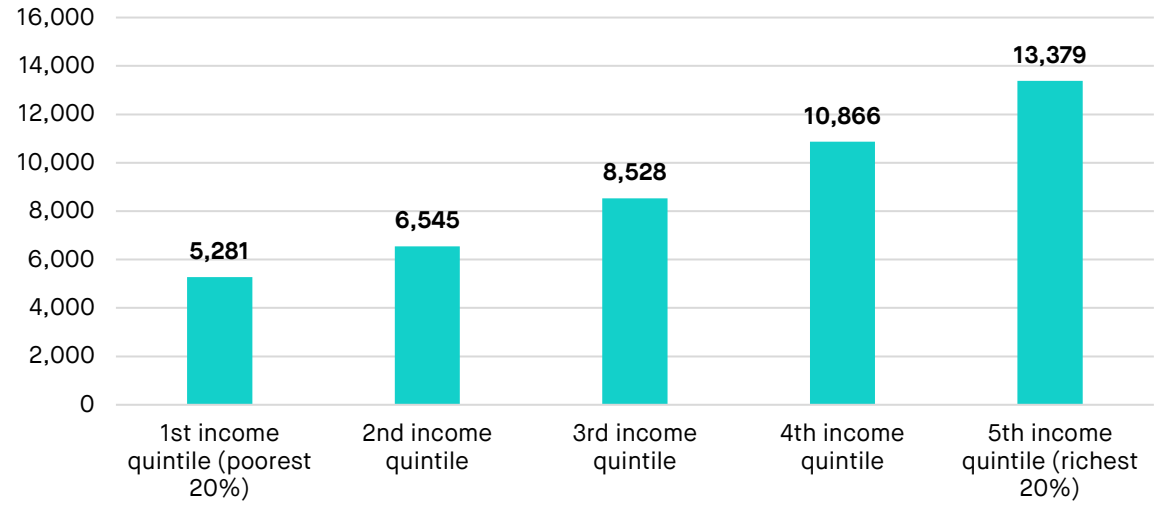
Why road pricing?

Given the significant externalities associated with motoring, as mentioned in the introduction to this report, we strongly caution against Government offsetting lost fuel duty and VED revenues with non-motoring tax rises such as higher rates of income tax, VAT or corporation tax. While it may be politically tempting to raise money elsewhere rather than introduce a new tax on motoring, doing so would create a situation where the costs faced by motorists are too low, not fully reflecting the impact of driving on wider society – for example in terms of congestion and reduced public safety.

One option that could be pursued by policymakers is reforming VED – eventually subjecting EVs to road tax and increasing rates of VED to offset declining fuel duty revenues.

While this would ensure that motorists face costs which better reflect the externalities associated with motoring – unlike say an income tax rise – there would still be a number of problems with this approach. In particular, as an annual charge on car ownership, rather than miles driven, a VED hike would place an excessive tax burden on low mileage drivers, who are more likely to be on lower incomes – as shown in the chart below. That regressivity could be mitigated if VED hikes were geared towards more expensive and newer vehicles, though the downside of this approach is that it could create perverse environmental incentives – for example, encouraging individuals to drive older, cheaper ICE vehicles.

Figure 5: Mean annual miles driven, by household disposable income quintile, vehicle-owning households



Source: SMF calculations based on the 2019/20 Living Costs and Food Survey. We estimated miles travelled based on data on household petrol and diesel expenditure. We assumed a typical mile-per-gallon figure of 36 for petrol vehicles and 43 for diesel vehicles.[18]

A VED hike would also create perverse incentives with respect to congestion, encouraging car-owning individuals to drive more (given that the amount of tax paid would not increase with miles driven). On the other hand, it could place downward pressure on congestion if VED is set at a level that discourages car ownership – though as we noted in the introduction to this report, car ownership is essential for many households and, without significant investment in public transport infrastructure, many would have little choice but to bear the cost of the tax.

Going forward, there are merits to retaining VED in some form. In particular, higher VED rates should continue to be used to discourage purchase of new, relatively polluting ICE vehicles. There is also a case for eventually subjecting EVs to road tax, for example to steer vehicle purchases towards the types of EVs that generated the least externalities – e.g. in terms of embedded carbon in their construction process, and terms of their impact on public safety (e.g. there may be a case for using VED to discourage purchase of larger vehicles that pose more of a threat to pedestrians and other road users.)

But, for the reasons given, VED should not be used in isolation to offset lost revenues from the decline in fuel duty receives. A new form of motoring taxation should be pursued – and road pricing is, in our view, the natural candidate.

Road pricing is a system of charging drivers for their use of the roads. It is a broad concept and can take a number of forms including toll roads, congestion charges for entering urban areas (such as the London Congestion Charge) or electronic road pricing using a "black box" placed in a car, such as in Singapore. We provide UK and international examples of road pricing regimes in Boxes 1 and 2 below.

Box 1: Current forms of road pricing in the UK

A number of local-level road pricing regimes are in operation in the UK. This includes:

The Durham City congestion charge: This was the first congestion charge in the UK, introduced in 2002. It was mainly introduced to reduce traffic flow using the road. The congestion charging zone is on the Durham City peninsula, near Durham Cathedral and Castle, Durham Market Place, Durham Chorister School, Durham University colleges and a variety of shops and businesses. There is a daily £2 charge for entering the zone between 10.00am and 4.00pm, Monday to Saturday. There is no charge on Sundays or bank holidays.

The London Congestion Charge, introduced in 2003. This is a daily fee charged on most cars and motor vehicles being driven within the Congestion Charge Zone (CCZ) in Central London between 7:00 am and 10:00 pm, seven days a week. The daily charge is currently set at £15.

The scheme had a significant impact on congestion and road usage patterns from the outset. There was a 37% increase in the number of passengers entering the congestion charging zone by bus during charging hours in the first year. By 2006, the congestion charging zone had reduced congestion in central London by 26% from its 2002 levels.

The Birmingham Clean Air Zone, introduced in 2021, which charges relatively polluting vehicles to travel into the city centre. It operates 24 hours a day, 365 days a year. A non-compliant vehicle driving in the Zone will pay once for the day, then may drive in the area without limit on that day. The current charge is £8 per day for cars, taxis. and light goods vehicles, and £50 per day for coaches, buses, and heavy goods vehicles.

Box 2: Road pricing regimes outside of the UK

A number of local-level road pricing regimes are in operation outside of the UK. This includes:

Electronic Road Pricing in Singapore: The world's first congestion pricing scheme was introduced in Singapore's core central business district in 1975, as the Singapore Area Licensing Scheme. It was extended in 1995 and became 100% free-flowing Electronic Road Pricing (ERP) in September 1998.

The ERP system uses radio communication equipment, sensors and cameras to subject motorists to variable road pricing. Every vehicle in Singapore is fitted with an in-vehicle unit (IU), which is detected by antennae on gantries as the vehicle approaches ERP zones. Tolls are deducted automatically from a smart card (known as CashCard) slotted into the IU. The ERP scheme has variable pricing designed to respond to congestion in real-time.

In Singapore, the ERP has decreased road traffic by 25,000 vehicles in peak hours and increased average road speeds by 20%. Bus travel and car-pooling have also increased.

Sweden's congestion taxes and bridge tolls: In Sweden both Swedish and foreign-registered vehicles pay congestion taxes in Stockholm and Gothenburg and bridge tolls in Motala and Sundsvall. The congestion taxes are intended to "improve traffic flow in Stockholm and the routes around Gothenburg, and for environmental reasons".

Germany's HGV toll: In January 2005, a new toll system was introduced on the 12,000km of German autobahn for all lorries with a maximum weight of 12 tonnes and above. The system was extended to include trucks from 7.5 tonnes in October 2015.

The toll system, called LKW-MAUT, is a governmental tax for trucks based on the distance driven in kilometres, number of axles and the emission category of the vehicle. The tax is levied for all trucks using German autobahns, whether they are full or empty, foreign or domestic.

LKW-MAUT was the world's first truck tolling scheme that used Global Navigation Satellite System (GNSS) technology to toll HGV drivers. On Board Units (OBUs) in vehicles work via GPS to determine how far lorries have travelled and to authorise the payment of the toll via a wireless link. Manual payment is available for those vehicles not equipped with an OBU.

Critically, under a road pricing regime tax rates can vary by factors such as vehicle type, time of day and location, allowing far more variation compared with a blunt tax instrument such as fuel duty. Unlike VED, road pricing would ensure that those driving more miles face higher tax bills, reflecting the greater societal costs associated with such motoring.

Public support for road pricing

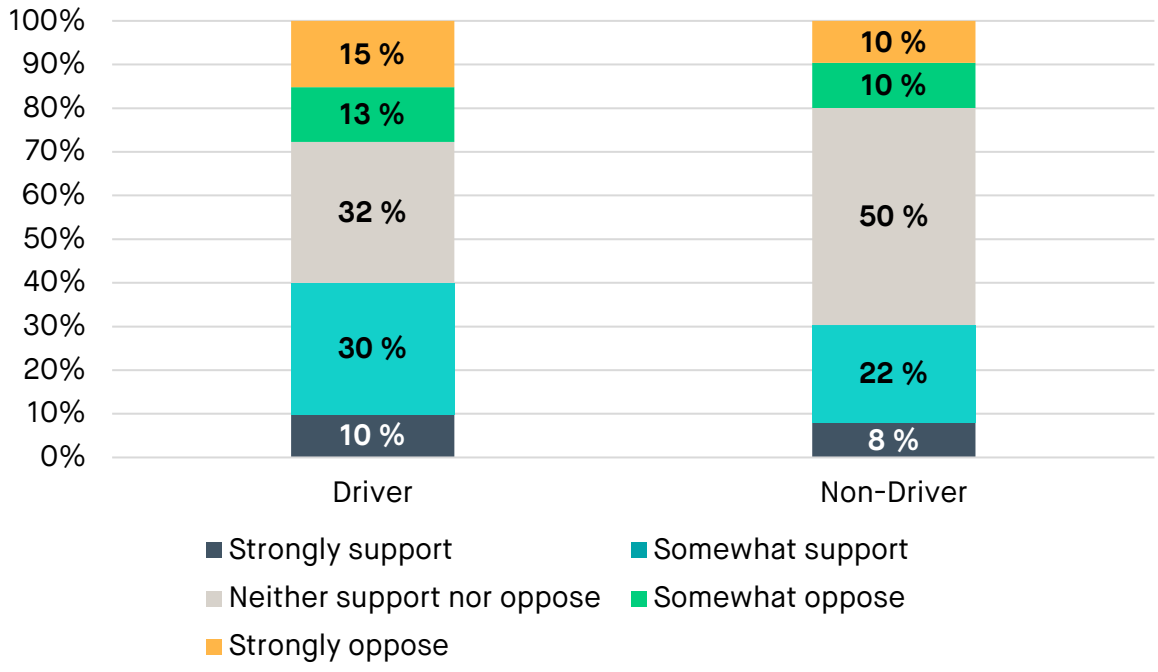
Despite these attractive features of road pricing, politicians have shied away from discussing it and, as noted earlier, there is a history of public opposition to the concept. Under the New Labour government, 1.8 million people signed an online petition opposing road pricing, amid fears about it amounting to a "stealth tax" and "Big Brother surveillance".[19] This has led to reticence among politicians to discuss road pricing subsequently.

But need they be so reticent? In our view, no: opinion has moved on, and political concern about road pricing does not reflect where the public currently stand on the issue.

As part of this research programme, the SMF commissioned an Opinium survey of 3,000 adults, in which we asked the public whether they support or oppose the UK government using road pricing as a replacement to existing road and fuel duties.

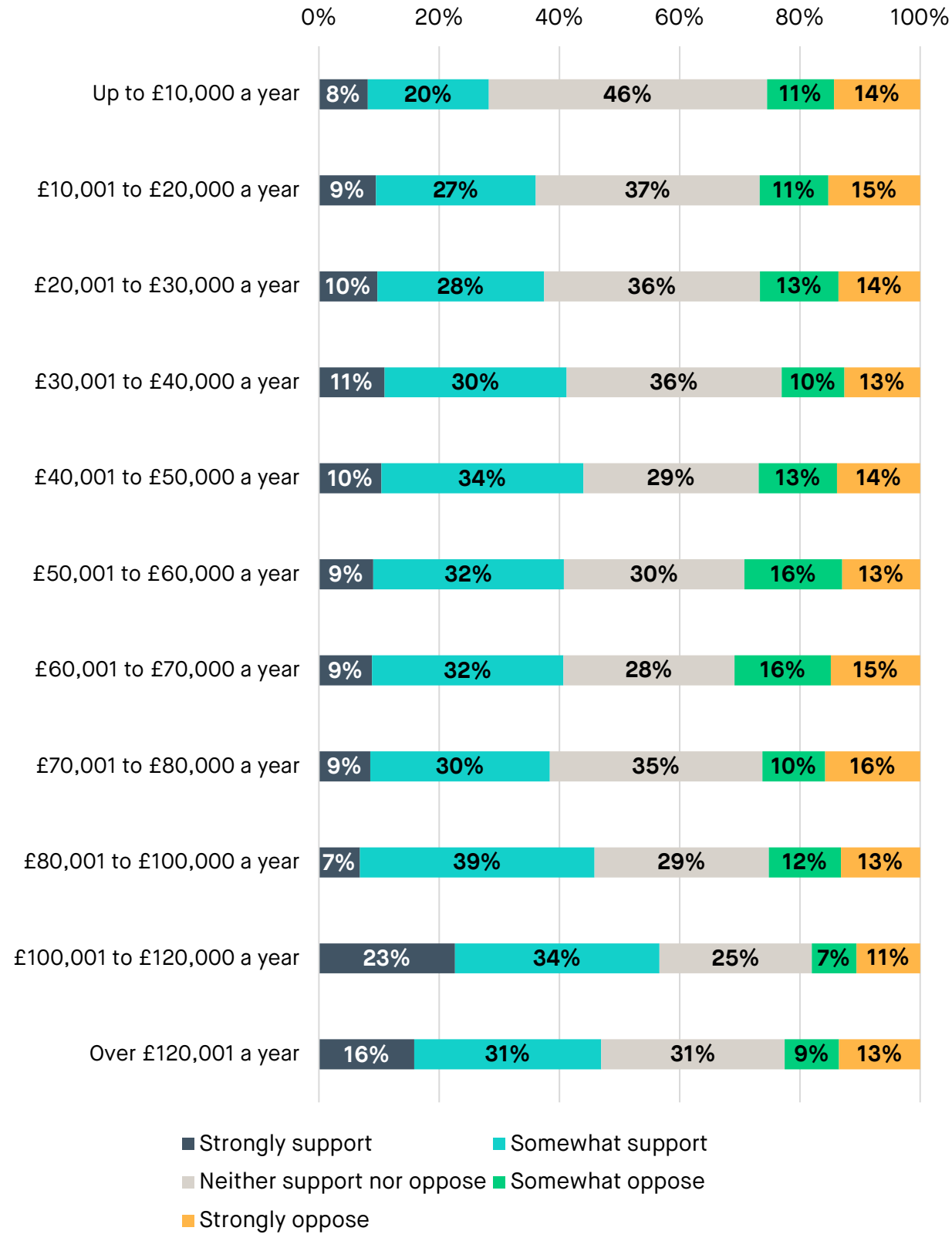
Notably, more survey respondents supported (38%) than opposed (26%) road pricing as a replacement form of taxation – a finding that held true across income groups, regions and whether or not someone was themselves a motorist. This is shown in the charts below.

Figure 6: Do you support or oppose the UK government using road pricing as a replacement to existing road and fuel duties? Survey findings by whether individual drives



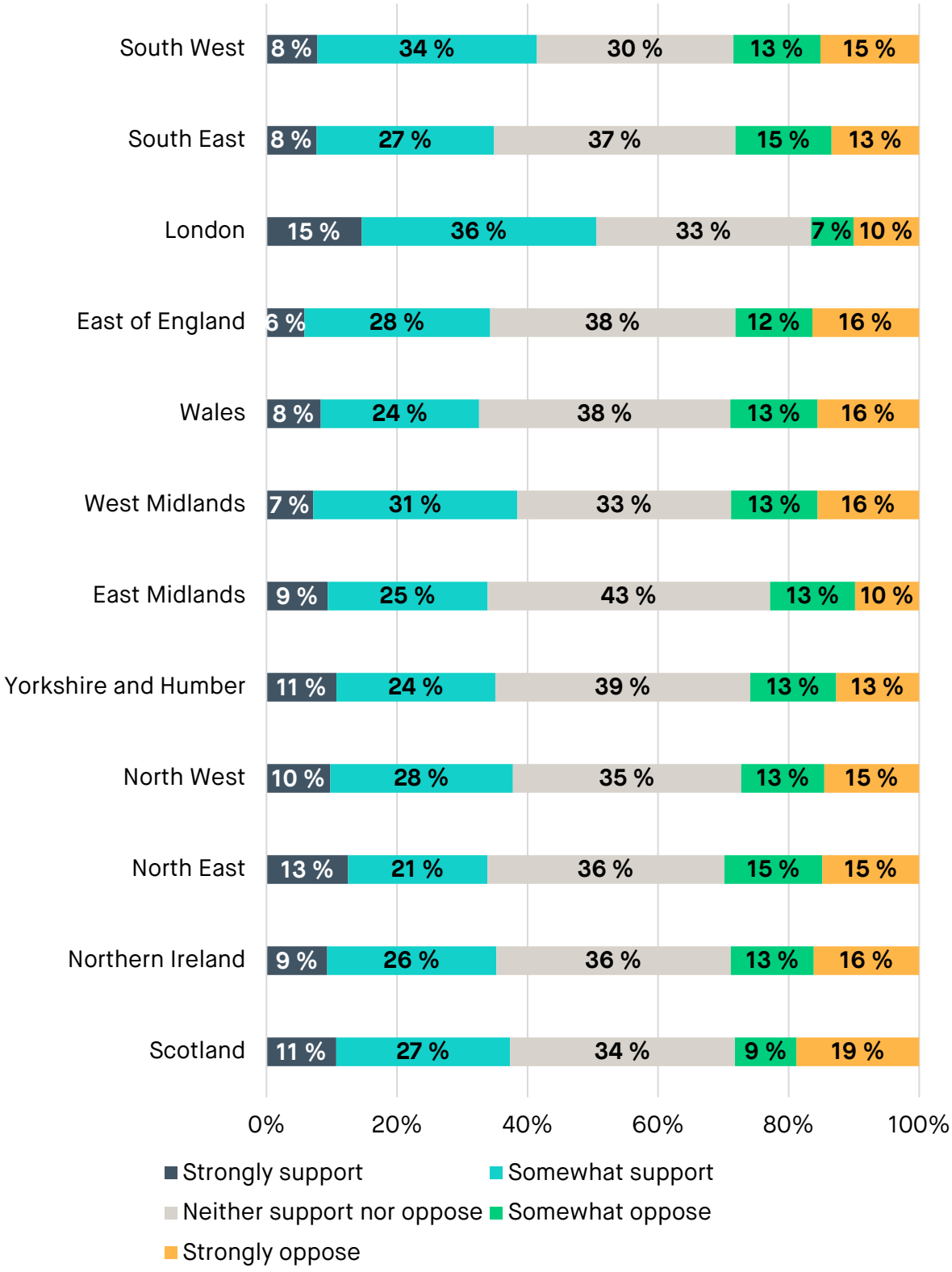
Source: Opinium survey

Figure 7: Do you support or oppose the UK government using road pricing as a replacement to existing road and fuel duties? Survey findings by household income



Source: Opinium survey

Figure 8: Do you support or oppose the UK government using road pricing as a replacement to existing road and fuel duties? Survey findings by region

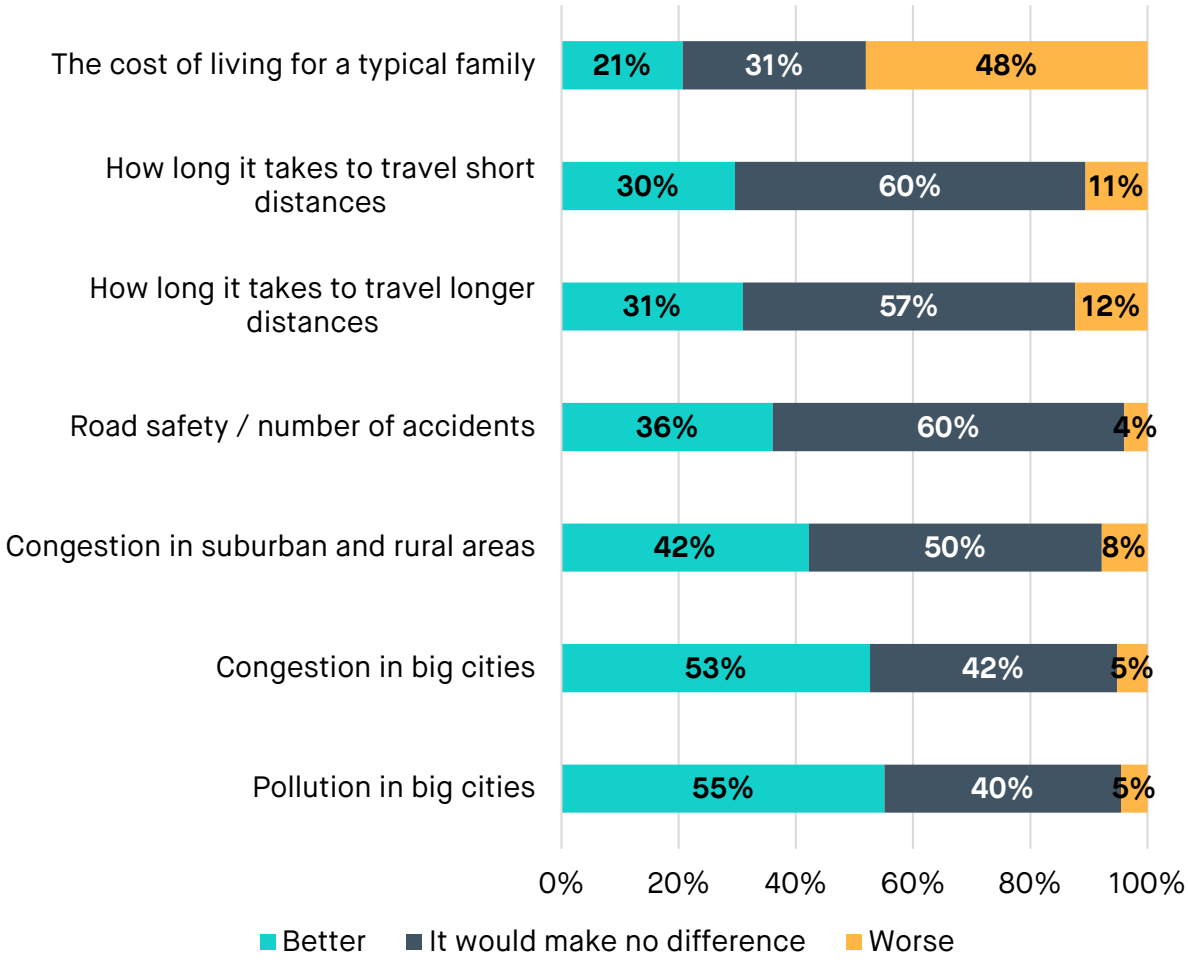


Source: Opinium survey

These findings chime with other recent research; for example, a study by the Green Alliance also found that more people thought that road pricing was a good idea than a bad idea.[20]

Beyond the public recognising the need to fill the fiscal blackhole created by lost fuel duty receipts, the position of the electorate may also reflect a significant proportion believing that road pricing would bring with it a range of societal benefits. In our survey, a majority of respondents agreed that road pricing would reduce congestion and pollution in big cities (53% and 55%) respectively, and more agreed than disagreed that road pricing would reduce journey times, improve road safety, and reduce congestion in suburban and rural areas.

Figure 9: Imagine a road pricing system was going ahead. Do you think it would make the following situations better or worse, or make no difference?



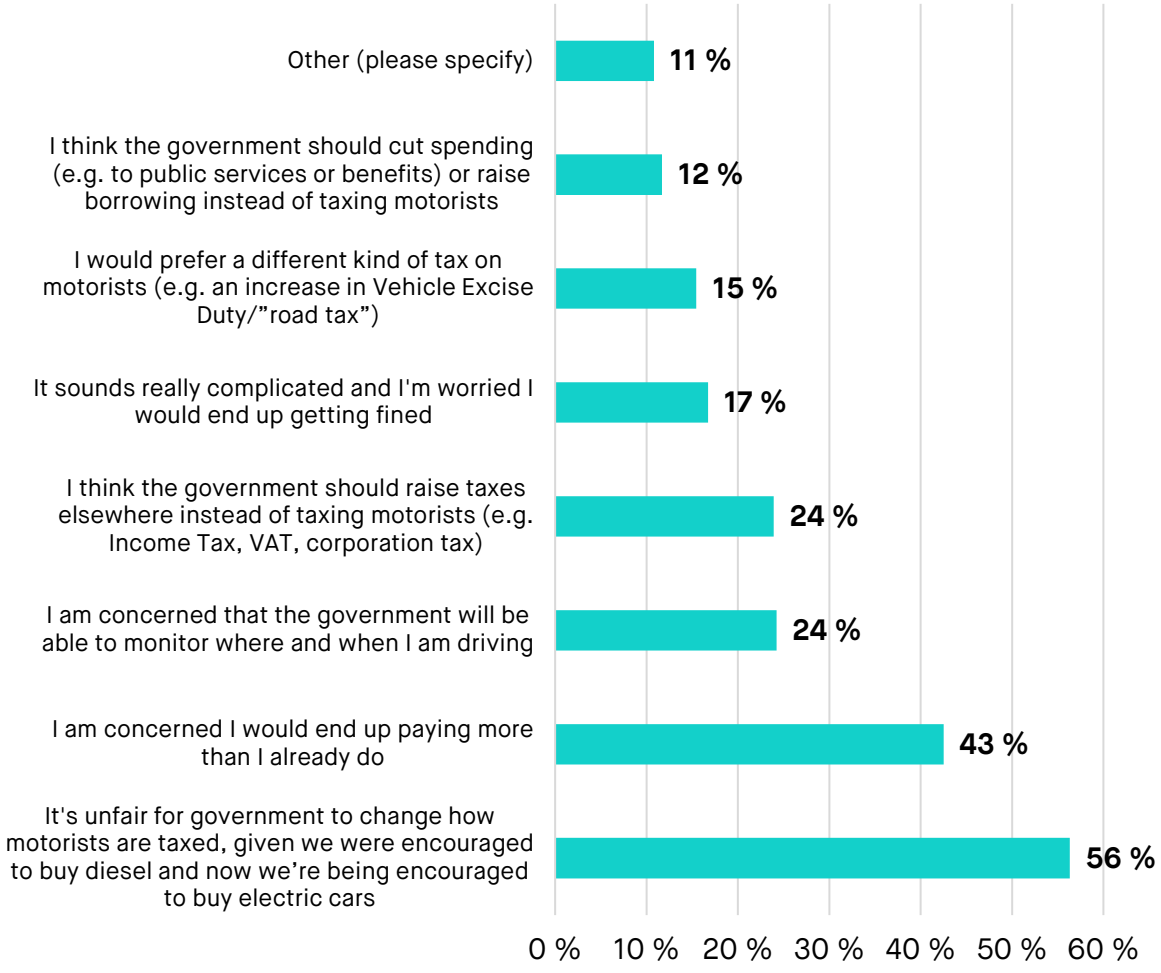
Source: Opinium survey

Opposition to road pricing and potential sticking points

While public opinion has moved on from New Labour's forays into road pricing, one should not gloss over public concerns about road pricing, which a well-designed scheme should take steps to overcome.

A significant minority of just over a quarter of survey respondents expressed opposition to road pricing as a replacement to fuel duty. Some 43% of this group expressed fears about paying more than they currently do as a primary source of concern. A majority – 56% – felt that it was unfair for government to change how motorists are taxed, especially given the government encouraged people to buy diesel vehicles and is now discouraging their purchase. This latter concern suggests a significant lack of trust in how the Government treats motorists – highlighting the need for assurances and safeguards to prevent motoring taxation becoming a "cash cow" going forward. It also highlights the importance of getting any future motoring tax regime right from the outset, to reduce the chance of a trust-eroding policy U-turn.

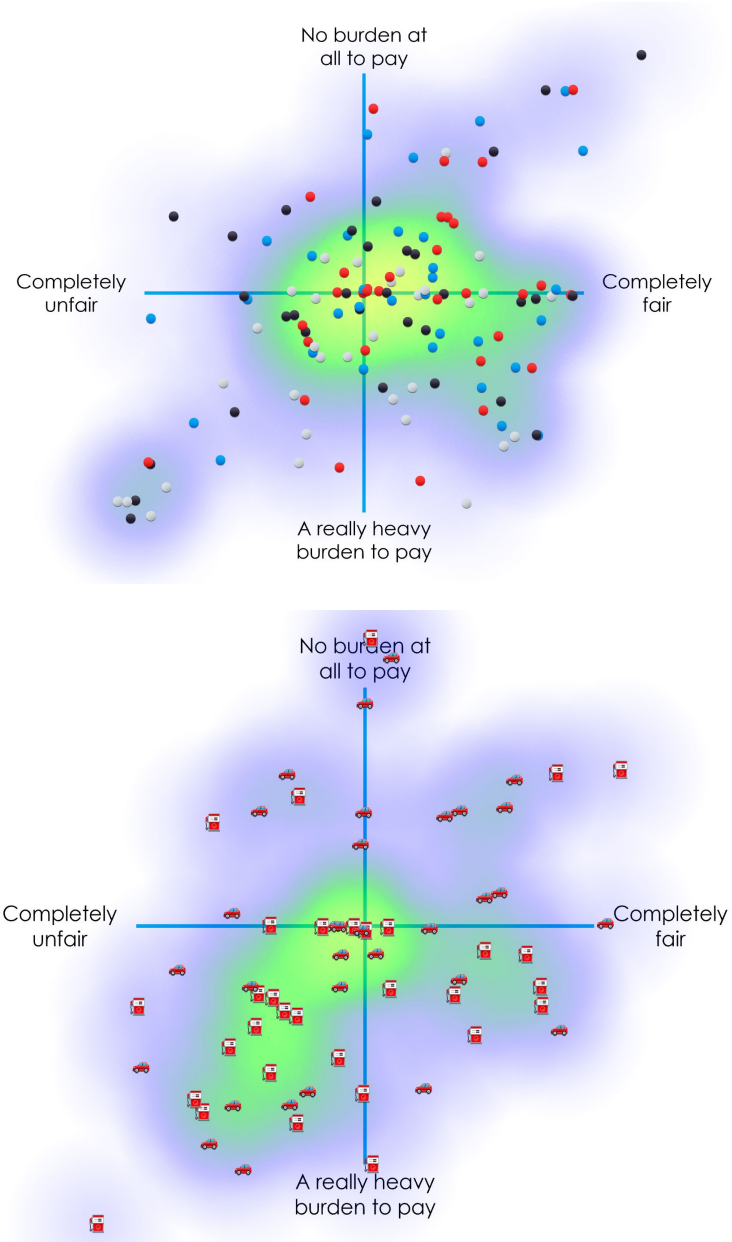
Figure 10: You mentioned that you oppose road pricing as an alternative to fuel duty. What are your reasons for this? (tick up to three)



Source: Opinium survey

Indeed, the heavy burden and perceived unfairness of road and fuel taxes was a theme in a qualitative online "pop-up community" which we commissioned from Opinium as part of this research, in which 31 members of the public undertook a range of online tasks over the course of a week. One task was a pin-drop exercise in which participants were asked to show the extent to which they felt motoring taxes were fair and a financial burden, versus taxes more broadly. Notably, fuel and road taxes were considered more unfair and more of a burden than taxes more broadly – further suggesting that policymakers, in revamping motoring taxation, will need to go the extra mile to show that any new tax is proportionate and fair.

Figure 11: Findings from online focus group pin-drop exercise. Taxes in general (first chart below) and motoring taxes (second chart below). Green areas denote hotspots of pin drops.



Source: Opinium pop-up community

Figure 12: Quotes from the Opinium pop-up community, regarding the fairness of motoring taxes

> *A tax on taxed income, unfair for those who live in rural locations, where public transport has diminished, so little option other than to drive."*
>
> **Elaine, 55+, East of England**

> *"Reasonable that road users pay for this facility – perhaps unreasonable that the money raised is not necessarily used for maintenance and repair of the roads network."*
>
> **John, 55+, Scotland**

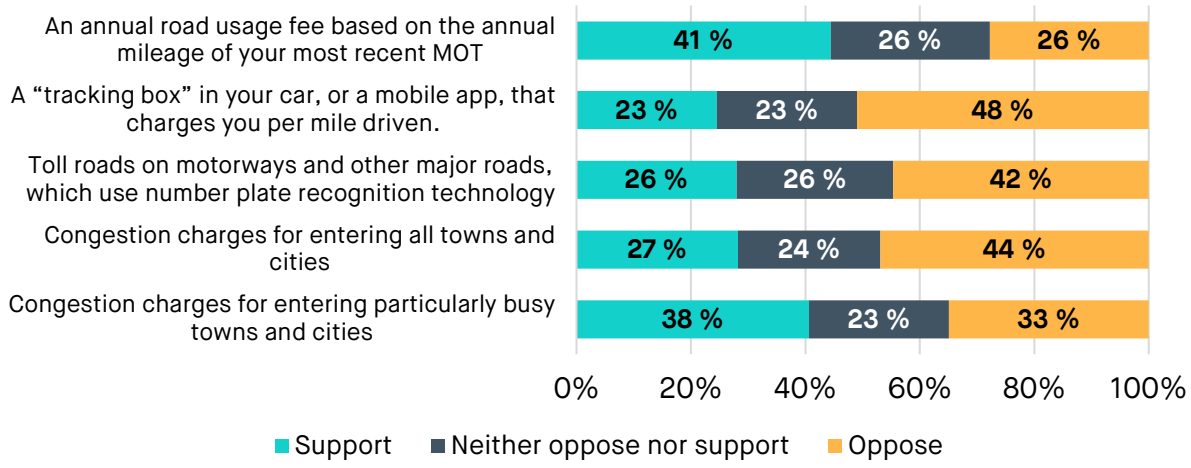
> *"It always seem a lot of money and you never seem to get anything in return for it."*
>
> **James, 35-54, Yorkshire and the Humberside**

> *"Looking at other countries around the globe tells you right away: we pay far too much for our fuel in this country and it really is unfair. It is definitely a burden and a difficulty to make the payment every time it creeps up beyond inflation yet again!"*
>
> **Paul, 35-54, South East**

Source: Opinium pop-up community

About a quarter of those opposing road pricing as an alternative to fuel duty in the Opinium survey cited reservations about the government being able to monitor where and when they are driving as a primary concern. This is not just a concern of road pricing sceptics; across the entire survey sample, including those the support road pricing as a broad concept, about half of respondents (48%) opposed the notion of having a tracking box in their car, or a mobile app that charges per mile driven. Just a quarter (23%) supported the concept.

Figure 13: Thinking about the following ways of implementing road pricing, to what extent would you support or oppose these?



Source: Opinium survey

This was also a theme that emerged in the online pop-up community; one task asked respondents to give views on having a telematic "black box" installed in their car to facilitate electronic road pricing. While participants generally believed that this would be useful for a new motoring tax system, there were concerns about the technology being intrusive, inaccurate, or unfair (e.g. by excluding foreign-registered vehicles from motoring taxation).

Figure 14: Quotes from the Opinium pop-up community, regarding a "black box" being installed in cars to facilitate road pricing

> *"I don't like the idea of being tracked, this can be abused and lead to greater restrictions in the future."*
>
> **Gavin, 55+, Yorkshire and Humberside**

> *"Whilst I understand the reasoning, it is intrusive and I don't want my every movement being known"*
>
> **Elaine, 55+, East of England**

> *"Needs to work for motorbikes and foreign registered vehicles too"*
>
> **Bridget, 55+, South East**

> *"One issue would be has the technology progressed to be 100% accurate and totally dependable?"*
>
> **Francis, 55+, East of England**

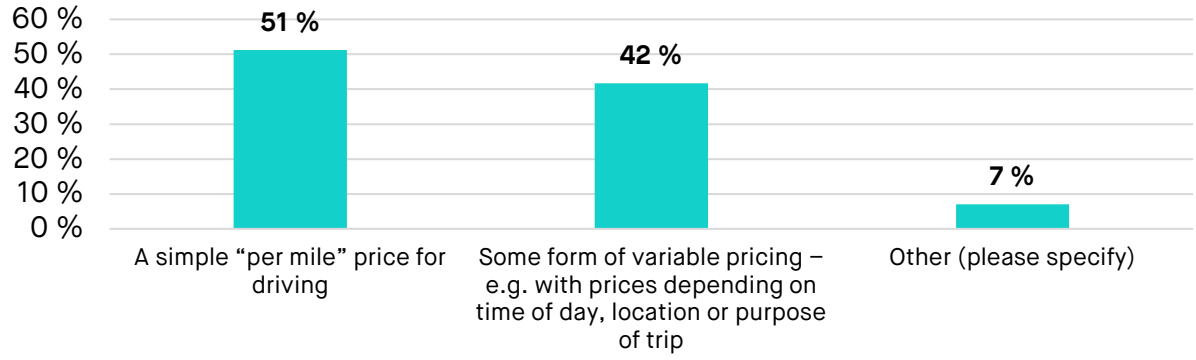
Source: Opinium pop-up community

Designing a popular, fair and effective road pricing scheme

There will inevitably be a number of trade-offs involved in designing a road pricing scheme, particularly one which needs buy-in from politicians and the electorate.

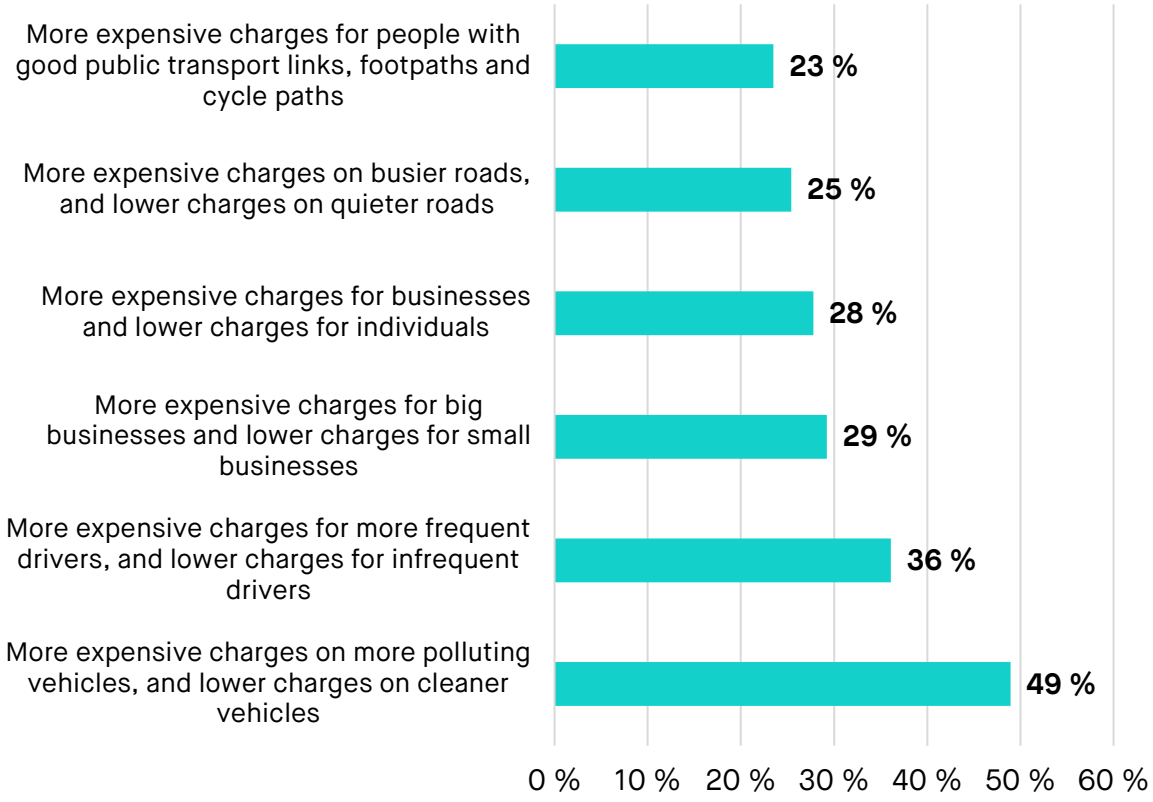
For example, while our survey suggests public preference for a flat per-mile charge over variable road pricing, and limited support for more expensive charges of busy roads, such an approach would limit the ability of road pricing to reduce congestion in urban areas (e.g. by charging higher prices in peak hours).

Figure 15: Imagine a road pricing system was going ahead, which version would you prefer?



Source: Opinium survey

Figure 16: Which of the following would be your preferred options? Please select up to three



Source: Opinium survey

On the other hand, while variable pricing would be more effective in tackling congestion and reducing other motoring-related externalities, introducing such complexity would not only reduce popularity of the measure, but bring with it significant implementation costs and challenges. Variable road pricing would probably require significant investment in electronic toll booths, telematic devices in vehicles, and would be likely to involve long-lasting and lengthy debates on the price-setting process. It is noteworthy that sophisticated road pricing schemes across the globe are currently constrained in their scale, reserved to city states such as Singapore or cities within countries, or limited to motorways, rather than being nationwide schemes across large geographies and multiple types of road. This is likely to reflect in part the significant logistical challenges in rolling out a national-level road pricing scheme.

One particular concern we have is that a complex scheme could delay implementation of road pricing in the UK significantly, raising the prospect of road pricing *never* being introduced. A key risk is that the public becomes used to tax-free motoring amid the transition to EVs, making it far harder for politicians to introduce road pricing in the future.

In contrast, a uniform per-mile charge could be implemented at relatively low cost to the Exchequer. For example, an annual charge based on miles recorded at the time of an MOT/at an annual check-in at a garage, or at the point of vehicle sale, could be used for road pricing. Road users could also have the option of submitting more regular

mileage readings, perhaps akin to providing a gas or electricity meter reader to an energy provider.

One benefit of this approach to road pricing is that it would negate the need for telematic devices in cars – something that the Opinium survey and pop-up community suggested was a strong source of opposition to road pricing among motorists.

A key downside of going down the simplistic road pricing route is that it would limit the ability to use motoring taxation to curb congestion in parts of the country where it is particularly problematic. But this could be resolved by complementing a flat-rate national road pricing scheme with localised road pricing initiatives (e.g. modelled on the London Congestion Charge) in areas where motoring-related externalities are greatest, such as cities. This has the benefit of only introducing complexity where the need to do so is greatest.

We also believe that there is a case for including a free mileage allowance within a national road pricing scheme, which would allow motorists to drive a given number of miles before road pricing kicks in – something that was also proposed by Edmund and Deirdre King in a 2017 Policy Exchange report on road pricing[21]

Not only would a free mileage allowance increase support for road pricing but, if rolled out in a revenue-neutral way, it would steer the burden of motoring taxation onto higher mileage drivers that generate the greatest externalities – i.e. the flat per-mile rate would need to increase if a free mileage allowance were introduced. Furthermore, this would shift the burden of motoring taxation away from lower income drivers and onto higher income ones, given that they drive more miles on average. The House of Commons Transport Committee recently argued that a free allowance of miles should be explored as part of a road pricing regime, to "support vulnerable groups, such as those with mobility issues, and people who reside in the most remote areas".[22]

Ultimately, no road pricing scheme will be perfect, with significant variations in ease of implementation, likely public support and effectiveness in reducing the externalities associated with motoring. We summarise these trade-offs in Table 1. In our view, a relatively simple national road pricing scheme, complemented with local-level initiative, offers the best balance.

Table 1: Assessment of different road pricing regimes

Road pricing scheme	Ease of implementation	Ease of getting public buy-in	Ability to reduce societal costs of motoring
Flat per mile road price	Could be introduced with fairly limited investment, if based on mileage readings at time of MOT/point of vehicle sale	Opinion research suggests the public favour a simple road pricing system	A flat rate road price would limit the ability of road pricing to curb congestion and pollution in parts of the country where this is particularly problematic
Flat per mile road price with free mileage allowance (with the flat rate set at a higher level so as to be fiscally neutral)	Could be introduced with fairly limited investment, if based on mileage readings at time of MOT/at an annual garage "check-in"/point of vehicle sale	A free mileage allowance could be attractive to the electorate	By taxing high mileage drivers more, this approach might be more effective in curbing societal costs of motoring. However, it would still be a relatively blunt approach.
Variable road pricing by location and time of day	Would require extensive investment in tolling infrastructure	Likely to face considerable public and media opposition, especially if telematic devices need to be installed in vehicles	Highly variable road pricing would be most effective for curbing the societal costs of motoring
A national flat per mile road price with free mileage allowance, complemented with local-level congestion charge schemes in areas with particularly high motoring-related externalities	As above, such a national scheme could be implemented with limited investment. Existing local-level congestion charge schemes (e.g. in London) provide a blueprint that other urban areas could follow.	There is likely to be considerable opposition to at least some local-level congestion charges.	The twin-pronged approach of a relatively simple national road pricing scheme and complementary local government-run schemes could be successful in reducing congestion, pollution and other societal costs.

Source: SMF analysis

The “messy” interim period in which ICE vehicles and EVs are on the road

Another challenge related to road pricing is how to proceed during the “interim period” in which there is a mix of ICE vehicles and EVs on the road, potentially subject to different motoring tax regimes. A number of options could conceivably be explored during this time period, including:

1. **Abolishing fuel duty.** Abolishing fuel duty altogether once road pricing is introduced, with no variation in road user charging between ICE vehicles and EVs.
2. **Retaining fuel duty while introducing road pricing.**
3. **Two tier road pricing.** Abolishing fuel duty but subjecting ICE vehicles to a higher road user charge than EVs (an “ICE vehicle surcharge”).
4. **Cutting fuel duty while introducing flat-rate national road pricing.**

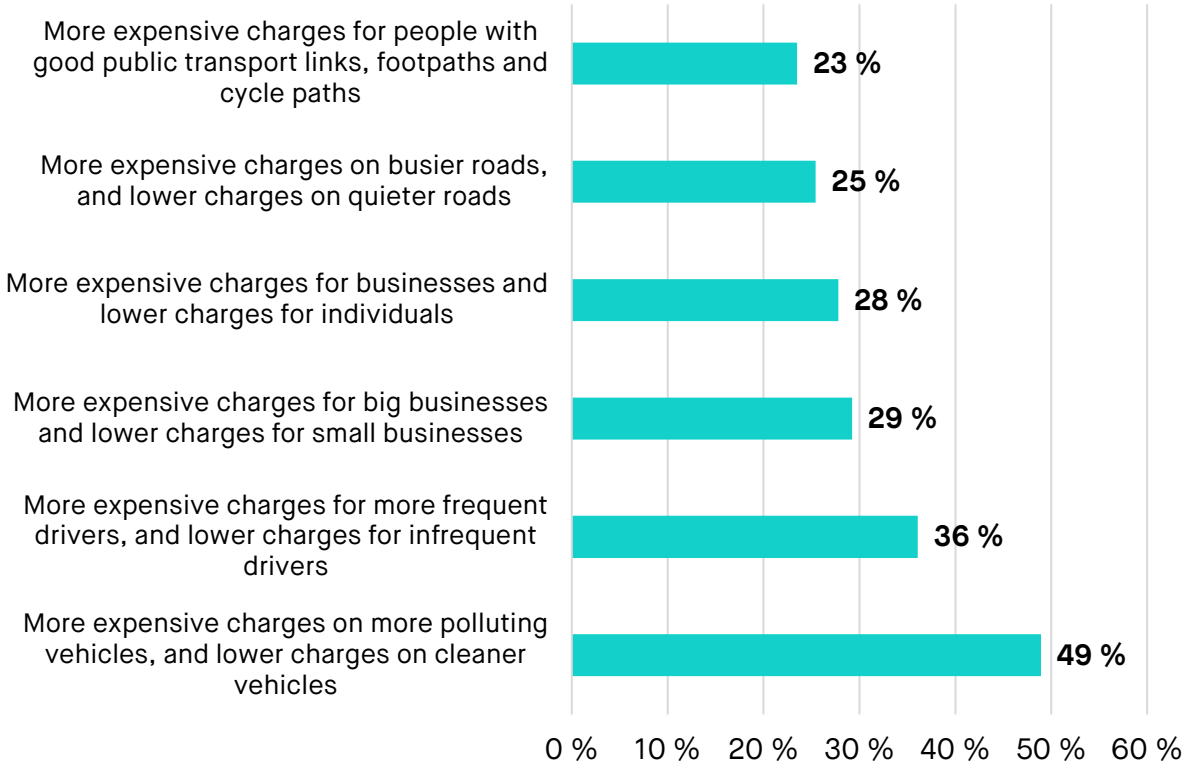
In our view, the latter two approaches would be most compelling. Abolishing fuel duty and introducing flat-rate road pricing (option 1) would undermine incentives for motorists to transition from ICE vehicles to EVs.

Leaving the fuel duty system untouched while introducing road pricing (option 2) would incentivise EV usage over ICE vehicle usage (as EV users would not pay fuel duty), but this would probably be regressive, with those on the lowest incomes more likely to be driving ICE vehicles and thus facing both road pricing and fuel duty. As we argued earlier, this regressivity is a particular concern given that the societal costs of motoring are not just pollution from combustion of petrol and diesel, but issues such as congestion which (disproportionately higher income) EV drivers also contribute to.

Options 3 and 4 would maintain incentives for shifting to EVs, with lower rates of motoring taxation for EV drivers, but an abolition or reduction of fuel duty would reduce the extent to which the motoring tax burden falls on lower income motorists.

While the Opinium survey shows more support for a uniform per mile road price (51%) than a variable price (42%), there were relatively high levels of support for more expensive road user charges on more polluting vehicles. About half (49%) preferred this kind of variable pricing. In contrast, just 25% cited more expensive charges on busier roads as a preferred option.

Figure 17: Which of the following would be your preferred options? Please select up to three



Source: Opinium survey

Table 2 below summarises the merits and drawbacks of the interim motoring taxation regimes described above.

Table 2: Pros and cons of interim motoring taxation regimes

	Pros	Cons
Abolishing fuel duty. Abolishing fuel duty altogether once road pricing is introduced, with no variation in road user charging between ICE vehicles and EVs.	Abolishing fuel duty would reduce the regressivity of motoring taxation.	Abolishing fuel duty would reduce financial incentives for individuals to shift away from ICE vehicles and towards EVs.
Retaining fuel duty while introducing road pricing.	Would create strong financial incentives for individuals to shift to EVs.	Would be regressive while low-income motorists are more likely to drive EVs, leaving ICE vehicle drivers facing "double taxation" Lack of transparency for motorists around how much motoring tax they are paying in aggregate.
Two tier road pricing. Abolishing fuel duty but subjecting ICE vehicles to a higher road user charge than EVs (an "ICE vehicle surcharge").	Would retain financial incentives for individuals to shift to EVs, in the form of lower road user charging. Our survey findings suggest relatively high levels of support for higher road user charges for polluting vehicles.	Level of regressivity would depend on the level at which the ICE vehicle surcharge is set.
Cutting fuel duty while introducing flat-rate road pricing.	Would reduce the regressivity of the interim period by curbing the scale of "double taxation" faced by ICE vehicle drivers.	Lack of transparency for motorists around how much motoring tax they are paying in aggregate.

Source: SMF analysis

There is uncertainty over the extent to which the interim regimes described above would impact uptake of EVs. It seems plausible the most important cost factor influencing uptake at present is the purchase or leasing price of EVs versus ICE vehicles, rather than day-to-day running costs. If the price premium of EVs fades significantly or completely over the coming years, then these differences in running costs may become a more significant influencer of purchasing decisions.

CHAPTER FOUR – MODELLING OUR PREFERRED ROAD PRICING REGIME

We have argued above that there is a strong case for implementing a national motoring taxation system that:

- **Is simple**, with a flat per mile charge, and a free mileage allowance that steers the burden of taxation onto those that drive the most
- **Is complemented by local toll road/congestion charging schemes,** where additional complexity may be necessary, e.g. because congestion is a particularly significant issue.
- **Differentiates between EVs and ICE vehicles, either by running fuel duty in parallel with road pricing, or abolishing fuel duty and introducing an ICE vehicle road user surcharge.** To protect lower-income households, however, fuel duty should be cut if it remains in place, and a surcharge on road pricing should be set at a level that is lower than the implied per mile price of fuel duty at present.

We argue that this approach is justified on the basis of likely public appeal, relative fairness and the fact that a simplified scheme could be introduced more rapidly – avoiding the risk of road pricing never being introduced as motorists get used to untaxed electric vehicle driving.

But what would be the impact of such a scheme on UK households? How does this differ across demographic groups? And what would be the impact on congestion?

To answer these questions, the SMF has undertaken an economic modelling exercise. Drawing on the 2019/20 Living Costs and Food Survey, we used data on household petrol and diesel expenditure to estimate the fuel duty burden faced by different types of household (assuming fuel duty is for the most part passed onto households in the form of higher pump prices). We also used data on petrol and diesel expenditure to estimate the number of miles driven by each household.

We then considered the per mile road charge that would need to be introduced to raise broadly the same amount of tax revenue for the Exchequer from households as fuel duty, varying the free mileage allowance under a range of scenarios. Our calculations take into account behavioural change from the introduction of road pricing, such as individuals driving more in response to lower costs, or driving less in response to higher costs under road pricing.

Distributional impact of our national road pricing regime

Our calculations suggest that in 2019/20, fuel duty cost UK households £14.5bn. This amounts to about seven pence per mile driven by households.

To be revenue neutral for the Exchequer, a simple fixed rate road pricing regime with a free mileage allowance would need higher per-mile costs once the free allowance is exceeded. We estimate that per-mile costs would need to stand at 8p if a 1,000 mile allowance were introduced, 10p for a 2,500 mile allowance and 16p for a 5,000 mile allowance, for road pricing to raise the same amount of revenue as fuel duty.

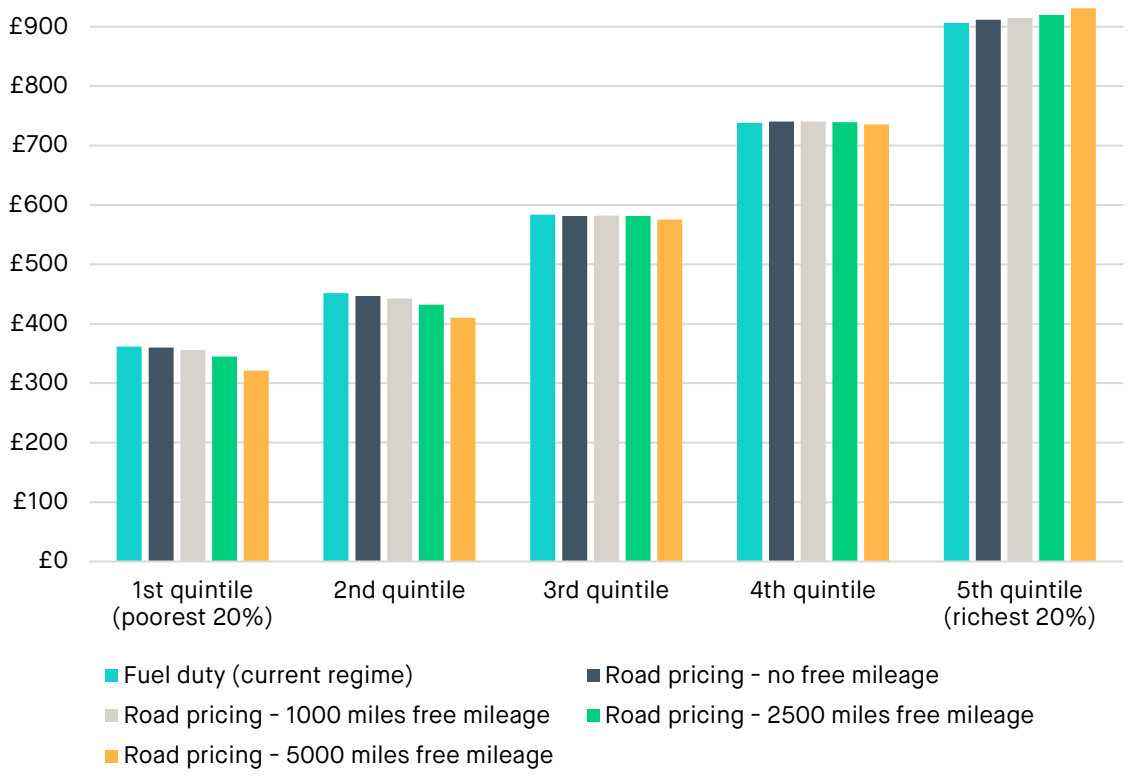
Table 3: Per mile road prices needed to raise the same amount of revenue from households as fuel duty, 2019/20

	Estimated per mile cost faced by UK households
Fuel duty (current regime)	£0.07
Road pricing with:	
No free mileage allowance	£0.07
1,000 free miles per vehicle	£0.08
2,500 free miles per vehicle	£0.10
5,000 free miles per vehicle	£0.16

Source: SMF analysis

Our modelling shows that a road pricing regime with a uniform per mile charge and a free mileage allowance per vehicle would be slightly financially beneficial to lower income motorists, compared with the current fuel duty regime, given that they are more likely to drive fewer miles. For example, a revenue-neutral regime with a free allowance of 2,500 miles would leave motorist households in the bottom two income quintiles about £20 per year better off than the current fuel duty regime, amounting to about £92 million in aggregate. This rises to about £40 per year with a free allowance of 5,000 miles – £188 million in aggregate

Figure 18: Mean fuel duty costs versus mean road pricing costs for a range of scenarios, vehicle-owning households. Per-mile road charge set at a rate that raises the same amount of revenue as fuel duty does at present. Free mileage is on a per vehicle basis.



Source: SMF analysis

The introduction of a free mileage allowance would also lead to a marginal reduction in the number of miles driven by households in the UK, using our central model assumptions. For example, a scenario with a free allowance of 2,500 miles would lead to a marginal reduction in aggregate miles driven by UK households of 0.1% or 171 million miles. The reduction in miles driven rises to 0.3% or 630 million miles with a free allowance of 5,000 miles. Although those driving low miles (below the mileage allowance) would be incentivised to drive more, this would be offset by higher mileage drivers reducing the amount they are driving.

Figure 19: Modelled estimates of change in miles driven by UK households if fuel duty were replaced with a revenue-neutral road pricing regime

	Road pricing - no free mileage	Road pricing - 1000 miles free mileage	Road pricing - 2500 miles free mileage	Road pricing - 5000 miles free mileage
Change in miles driven (million miles)	-75.4	-107.3	-170.9	-630.5
Change in miles driven (percentage change)	-0.04%	-0.05%	-0.08%	-0.30%

Source: SMF analysis

Our model assumes that miles driven are relatively insensitive to changes in the marginal cost of driving, whether that be in the form of road pricing, fuel costs, or electric vehicle charging costs. This reflects the findings of a range of studies that have looked at the sensitivity of car demand to changes in fuel costs and show that miles driven are relatively unresponsive to changes in fuel prices.[23] More details on the assumptions made can be found in the appendix to this report.

In economic terms, motoring is relatively *price inelastic*, which means that large changes in the cost of driving are needed to have a significant impact on congestion levels. Local-level congestion charges and other road pricing schemes, involving significant cost increases for motorists, have been successful in improving outcomes in high traffic areas – for example in London and Singapore, as discussed earlier.

Conceivably, it may be possible to evoke greater behavioural responses from motorists in response to national road pricing, even if it does not involve a significant increase in marginal costs compared with fuel duty. However, we acknowledge there is significant uncertainty here. Having a free allowance of mileage could prove psychologically important, with motorists striving to stay within the free allowance. Submitting a regular mileage reading and seeing clearly how much tax this translates into could also lead to greater behavioural change than the current fuel duty regime, where the tax burden on motorists per trip is far from obvious. This is especially true given that motorists do not technically pay fuel duty – rather it is paid by producers and importers of fuel, and then reflected in pump prices.

Modelling the interim period

The calculations above look at the implications of replacing fuel duty with some form of road pricing. But, as we have discussed, there will be a potentially lengthy interim period in which there are both ICE vehicles and EVs on the road. We argued in the previous chapter that there is a case for either retaining fuel duty during this interim period, in order to maintain incentives for road users to transition to EVs, or alternatively abolishing fuel duty and introducing an "ICE vehicle surcharge" to an otherwise flat-rate national road pricing scheme.

The key issue with introducing road pricing and retaining fuel duty at current rates – or increasing them further – is that this risks making the motoring tax regime increasingly regressive. This seems likely in the short-to-medium term if uptake of electric vehicles is relatively concentrated among higher income households. This would also be an issue with pursuing an ICE vehicle surcharge within a road pricing regime.

To illustrate this, we have modelled a scenario in which EV vehicle ownership rates for car-owning households are as follows:

Table 4: A hypothetical scenario where EV ownership is concentrated among higher income households

	EV ownership rate for vehicle-owning households
1st quintile (poorest 20%)	15%
2nd quintile	25%
3rd quintile	50%
4th quintile	75%
5th quintile (richest 20%)	85%

Source: SMF. These assumptions are used to provide an illustrative example of the impact of differential rates of EV uptake among income groups.

Under such a scenario, if EVs were exempt from motoring taxation and the Government were seeking to preserve motoring revenues through fuel duty hikes, the share of fuel duty costs borne by the poorest 40% of households would rise from 20% at present to 41%. Vehicle-owning households in the 1st income quintile (the poorest 20%) would end up facing fuel duty-related costs £423 per year more than at present, on average, while those in the 2nd income quintile would be paying £421 per year more. In contrast, the richest 20% of households would save over £500 in fuel duty on average given their high ownership of EVs under this scenario.

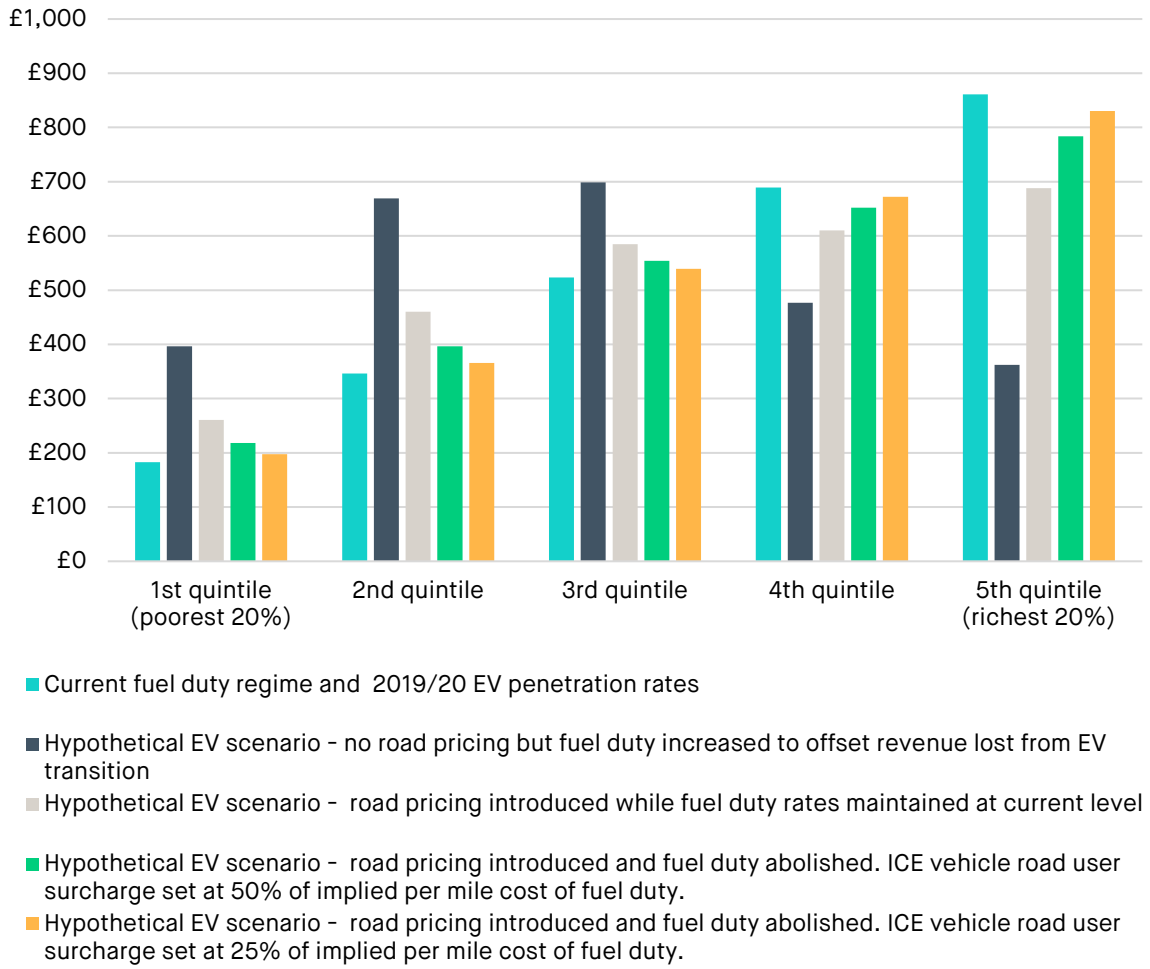
Given that congestion is the biggest motoring-related externality, in excess of pollution and greenhouse gas emissions from ICE vehicles, imposing such a high tax burden on lower income households is not just regressive in financial terms, but also defies the idea that those generating the greatest motoring-related externalities should pay the most motoring tax. Despite driving more miles on average, higher income motorists would pay less tax than lower income ones.

As argued earlier, introducing road pricing and either:

1. Abolishing fuel duty but subjecting ICE vehicles to a higher road user charge than EVs (an "ICE vehicle surcharge"). Or
2. Cutting fuel duty while introducing road pricing

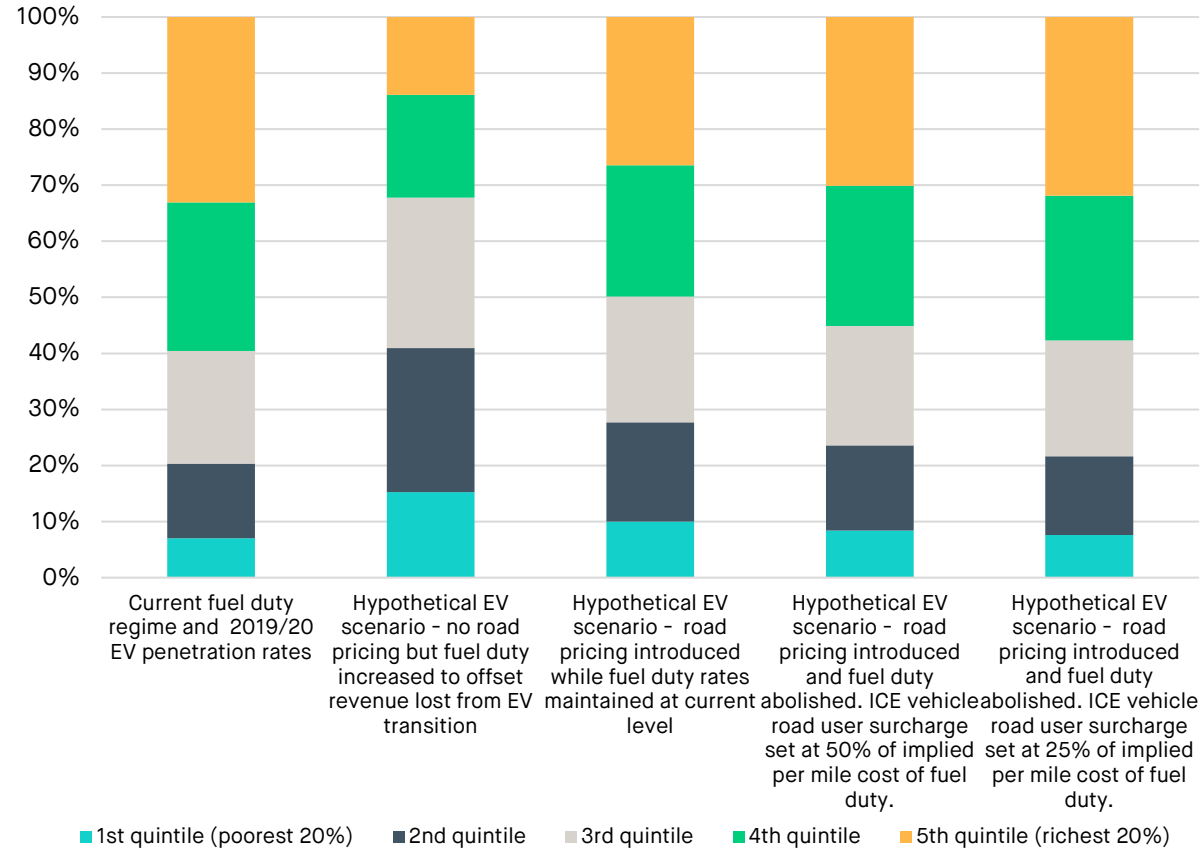
would be the best way of ensuring the balance of motoring taxation falls more equitably across income groups. It would also ensure that the government is able to prevent the erosion of tax receipts show in chapter two.

Figure 20: Combined mean cost of fuel duty and road pricing under a range of policy scenarios, vehicle-owning households by household income quintile. Road pricing regime has a free mileage allowance of 2,500 miles per vehicle and is set at a flat rate per mile beyond this. Road pricing and fuel duty rates set to raise the same amount of revenue under each scenario.



Source: SMF analysis

Figure 21: Distribution of fuel duty and road pricing costs (combined) across household income quintiles under a range of policy scenarios. Road pricing regime has a free mileage allowance of 2,500 miles per vehicle and is set at a flat rate per mile beyond this. Road pricing and fuel duty rates set to raise the same amount of revenue under each scenario.



Source: SMF analysis

Other considerations

Our economic modelling focuses on UK households – looking at a road pricing regime that would raise the same amount of revenue from household road usage as fuel duty currently does.

This excludes business road usage, which accounts for a sizeable share of the total. According to Department for Transport statistics, light commercial vehicles, heavy goods vehicles and buses accounted for about a quarter (24%) of the 280.5 billion miles drive on Great Britain's roads in 2020.[24] Business use of cars and motorcycles adds to this percentage.

Including business road usage in our analysis is complicated by data availability. For households, the Living Costs and Food Survey has provided us with a good overview of motoring usage across different demographics, including expenditure on fuel, number of vehicles owned and miles travelled (which we have derived from fuel expenditure data). There is no analogous dataset for the business population allowing us to estimate the likely impact of applying the exact same road pricing regime to the commercial vehicle fleet, including how this will impact different types of business.

A national road pricing regime need not be exactly the same for commercial vehicles and indeed there are likely to be compelling reasons for applying a different per mile rate to commercial road users, and similarly a different or no free mileage allowance. This would reflect the fact that externalities generated by commercial vehicle use are likely to differ from household use – for example in terms of risks to public safety and the types of roads used by commercial vehicles.

Heavy goods vehicles are the only vehicle type to travel more distance on Strategic Road Network roads[ii] than on locally-managed roads.[25] Combined with their heavier weight, they are likely to contribute proportionally more to damage to major roads in Britain, something that might need to be reflected in the per mile charge in any road pricing regime.

[ii] Motorways and major trunk roads managed by Highways England

CHAPTER FIVE – WHERE DO WE GO FROM HERE?

This report has argued that it is vital that policymakers reform motoring taxation as soon as feasibly possible. While the Government needs to retain incentives for motorists to transition to EVs, drivers of electric vehicles need to be subject to motoring taxation to avoid a substantial hole in the public finances emerging, and to prevent congestion and other societal harms from motoring rising to ever higher levels. It is also vital for ensuring that lower income households, who are likely to transition to EVs at a slower rate[iii], are not subject to an unfairly high proportion of the nation's motoring tax bill in the form of fuel duty.

There is a clear risk associated with dithering on this issue: the longer EVs are exempt from any kind of motoring taxation, the harder it will become for politicians to introduce the necessary motoring tax measures. There is likely to be a public outcry that politicians encouraged households and businesses to purchase EVs, using tax exemption as a carrot, only to subject them to new taxes. Much like the Government's U-turn on diesel vehicles, from encouraging to discouraging purchase and usage, this could severely dent public trust in the motivations of policymakers.

The longer the problem is unaddressed, the bigger the hole that will emerge in the public finances and the less time that remains for a full and frank public debate about how to reform the policy framework.

We recommend that policymakers develop, at pace, the infrastructure needed to roll out a national-level road pricing scheme, with a flat per mile rate and a free mileage allowance to steer the burden of taxation onto those that drive the most (and thus generate the greatest societal harms). Policymakers should also set out a timetable for implementing national road pricing.

To assuage potential concerns about telematic devices in vehicles and enable swifter rollout, the road pricing infrastructure should include the ability to pay one's road pricing bill using a mileage reading registered at the time of vehicle MOT, point of sale/scrappage of car and point of exiting the UK in the case of foreign-registered vehicles. Telematic boxes and mobile apps, allowing more convenient payment and real-time display of one's tax bill, could be introduced in parallel to this for those less concerned about the prospect of a "black box" in their vehicle.

[iii] Given the upfront costs for purchase and learning costs

Recommendation 1

Government should work at pace to develop the infrastructure to support a simple national-level road pricing scheme, with a flat per mile rate and a free mileage allowance – and set out a timetable for implementing it.

To reduce concerns about telematic devices in vehicles and enable swifter rollout, the infrastructure should include the ability to pay one's road pricing bill using a mileage reading registered at the time of vehicle MOT, point of sale/scrappage of car and point of exiting the UK for foreign-registered vehicles.

In addition, as discussed in the previous two chapters, we believe that steps need to be taken to ensure that a motoring tax regime both incentivises EV usage and ensures an equitable balance of taxation between lower and higher income households. Fuel duty should be abolished and replaced with an ICE vehicle road user surcharge, or alternatively fuel duty should be reduced once a flat-rate national road pricing scheme is in place.

Recommendation 2

To reduce the burden on lower income motorists during the transition period from ICE vehicles to EVs, the government should either:

- Abolish fuel duty rates for petrol and diesel once road pricing is in place. ICE vehicle drivers would instead pay a road usage surcharge, set at a rate that is lower (in terms of per mile cost) than fuel duty.

OR

- Have a flat-rate national road pricing scheme, but reduce fuel duty rates to reduce the tax burden on ICE vehicle drivers.

This would send a clear message to the electorate that the aim of road pricing is not to use motorists as a cash cow, but to future proof the public finances and tackle issues such as congestion.

To embed further assurance into the road pricing system, policymakers must also tackle the detachment between motoring taxation and societal objectives – an issue we identified as a problem in Chapter Two. More needs to be done to ensure – and clearly show to the electorate – that motoring taxation is being set at levels proportionate to the societal costs of motoring such as pollution and congestion, rather than being used as a cash cow for the Treasury.

We believe that an independent Road Pricing Commission should be established, operating in a similar way to the Low Pay Commission, an independent body that advises the government about the National Living Wage and the National Minimum Wage.[26] The Road Pricing Commission, comprising economic, environmental, industry and transportation experts, would provide recommendations on the setting of road pricing, based on the latest evidence on the societal costs of motoring and the effectiveness of the pricing regime at achieving key objectives. The Chancellor would then be required to explain why they are not following these recommendations, should they decide to deviate from them.

Far from being a binary decision between raising road pricing rates or leaving them unchanged, this regime would leave open the possibility of lower rates of motoring taxation in the future if the societal harms of motoring start to decline – for example, as the shift to EVs reduces vehicle-related pollution and improved technology (e.g. autonomous braking and driving) makes motoring safer. Higher rates would be pursued if there is clear evidence that the societal costs of motoring are increasing, or larger than previously estimated.

Recommendation 3

To improve transparency around motoring taxation and show clearly that road pricing is to be used to tackle congestion and other societal harms – rather than as a money-spinner for government – a Road Pricing Commission should be established. The Commission would provide annual recommendations for the setting of road pricing rates to meet social objectives such as reduced pollution and congestion

Lastly, to truly tackle congestion, pollution and public safety issues in urban areas, a simplified national road pricing regime needs to be complemented by more sophistication in parts of the country where such issues are particularly problematic. While we believe that local government should be given significant autonomy in devising local-level road pricing schemes, such as congestion charges, it is crucial that authorities have the financial ammunition needed to implement such schemes – e.g. funding for electronic tolling infrastructure.

Recommendation 4

The Department for Transport should identify areas where motoring-related externalities such as congestion are notably higher than the national average. Central government funding should be made available to allow local authorities in these areas to roll out road pricing schemes such as congestion charges.

ANNEX 1 – ABOUT THE SURVEY AND POP-UP COMMUNITY

The SMF commissioned an Opinium survey of 3,000 adults (aged 18 and over) in the UK to support this research. The survey results were weighted to be nationally representative, and the survey took place between 18th and 26th August 2021.

We also commissioned an Opinium online pop-up community as part of the research, which had a total of 31 participants. Theis study ran between the 3rd and 7th September 2021. As with much qualitative research, this was not nationally representative, nor was it intended to be. A breakdown of the 31 participants is provided below:

- 61% of participants were male, 39% were female.
- The regional distribution of respondents is shown below:

- 6% of participants were aged 18-34, 54% aged 35-54 and 40% aged 55 and over.
- 71% of participants were employed, 4% were students, 17% were retired and 8% were unemployed.

ANNEX 2 – ABOUT THE ECONOMIC MODELLING

To examine the distributional implications of the current fuel duty regime and an alternative road pricing regime, we drew on data from the ONS Living Costs and Food Survey (LCFS) – a detailed survey of household spending patterns.

The LCFS contains data on expenditure on petrol and diesel, and vehicle ownership. To estimate miles driven by UK households we assumed a uniform fuel efficiency of:

- 36 miles per gallon for petrol vehicles
- 43 miles per gallon for diesel vehicles

This drew on assumptions made elsewhere.[27]

To estimate the road pricing rate needed to raise the same amount of revenue from households as fuel duty, we adopted an iterative approach, with our model increasing the per mile price incrementally from zero and then ceasing to do so once revenue raised from road pricing starts to exceed that raised from the current fuel duty regime.

Our calculations take some steps to account for behavioural change in response to motoring tax reform, given that one would expect any reduction in marginal motoring costs to incentivise households to drive more, wherease an increase in marginal costs would discourage driving.

To do this, we assumed a driving elasticity of car demand (in terms of miles driven) of –0.13, drawing on an econometric analysis of car demand in the UK between 1950 and 2000 and by Bradburn and Hyman.[28]

ENDNOTES

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