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CHANGE

Avoiding Gridlock Britain

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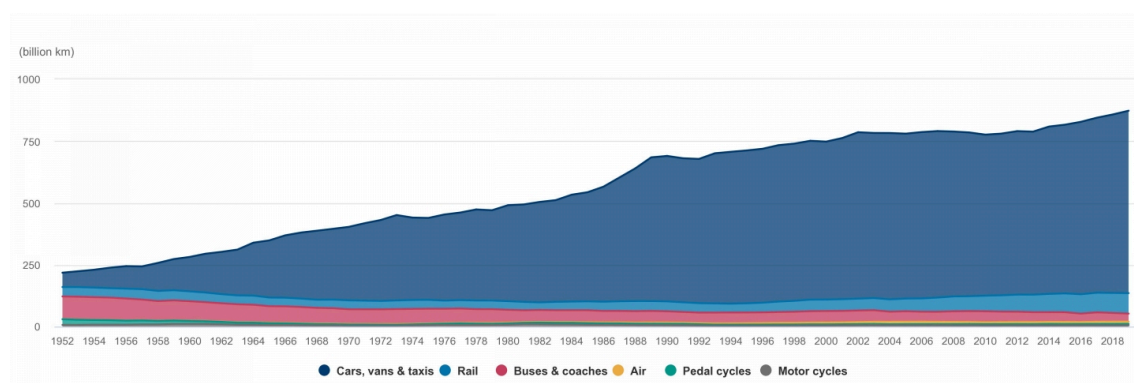
Introduction

An Uneasy Equilibrium

Cars are the dominant form of transport in the UK, and for good reason: they offer us a convenience and freedom that other ways of getting around can't always match.

The past 100 years have been the age of the fossil-fuelled vehicle – 84 per cent of kilometres travelled are by car, and our urban and rural environments are often dominated by private vehicles and their associated infrastructure. And we are now a more car-centric society than ever before. As late as 1955, we covered more passenger kilometres by bus than in cars. Since then, car usage has exploded.

Figure 1 – Passenger kilometres by mode, Great Britain 1952–2019



Source: Department for Transport Statistics, *Modal comparisons*, Table TSGB0101, *Passenger transport by mode from 1952*, <https://www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons>

As a result, while increased use of public transport, walking and cycling are of course desirable – and should be encouraged by policy – any comprehensive approach to transportation policy needs to acknowledge the central role of the car, both now and in coming decades.

Despite – or perhaps because of – the centrality of cars in our lives, in public-policy terms we have reached an uneasy equilibrium in our relationship with them and their place in our society. But our dependence on our cars is not cost-free; it comes with real downsides to our environment and quality of life.

Take congestion. We have, like the proverbial frog in ever-heating water, tolerated a gradual increase in cars on our roads. A 40 per cent increase in miles travelled since 1990 has increased traffic across the road network, most dramatically at key intersections and on urban residential streets. But while the

downsides of the resulting congestion are clear – reduced productivity, higher costs for drivers, increased time stuck in traffic, more air pollution – this issue has never achieved national political salience.

This uneasy equilibrium applies to taxation as well. The British political calendar has many traditions – and over the past ten years they have been joined by the chancellor’s annual consideration of the option of increasing fuel duty, and subsequent decision not to do so in the face of concerted campaigns from the media and some motoring organisations.

We’ve also come to accept the inequality that comes with high levels of car ownership and usage. The poorest people in our society are much less likely to own cars but are more exposed to the associated problems, such as air pollution; and for those who do own cars, those with less money spend a significantly higher proportion of their income on using them.

Change Is Coming

The current equilibrium is not sustainable. While the dominance of the car is likely to continue, the nature of that dominance is about to change.

To meet the level of electric-vehicle deployment indicated by government analysis,¹ we could see the number of electric vehicles on our roads rising from around 100,000 now to 3 million by 2025, 10 million by 2030 and 25 million by 2035.

One simple difference between battery electric vehicles (BEVs) and petrol- or diesel-fuelled vehicles means that we now stand on the cusp of a transformation. Our system of taxing car usage is based around taxing fossil fuels. That simple fact means that running a BEV is almost tax-free, and as a result much cheaper to drive.

That might seem like good news for motorists – but in fact if we don’t act now, there are three big implications that will make inaction a disaster both for motorists and society at large, and a looming nightmare for our politicians:

- **Congestion will rapidly get worse:** economic literature suggests drivers respond to changes in the cost of motoring.² With a collapse in the marginal cost of driving we can expect the amount of time we waste in traffic to rise by up to 50 per cent, with huge costs to quality of life and the economy.
- **Annual fuel duty revenues will plummet, requiring tax rises elsewhere:** we are on track to lose over £30 billion in revenue, requiring tax rises equivalent to up to 2p on income tax by the end of the next Parliament and up to 6p by 2040.
- **Unfairness will rise:** Drivers of new BEVs pay 71 per cent less than owners of petrol or diesel vehicles to drive their cars, and 98 per cent less in tax. In the next 15 years, drivers of BEVs will inevitably be drawn mainly from wealthier income deciles, who drive newer cars – meaning wealthier

BEV drivers can avoid tax and ordinary motorists will be left picking up the tab. And as things stand, this will exacerbate regional unfairness as well as wealth unfairness – directly conflicting with the government’s purported commitment to “levelling up”. There will be greater inequalities between urban centres and rural areas, and between the south (which has a much higher penetration of EV charging points) and other parts of the country. This might be politically sustainable now, but it won’t be when there are millions of electric vehicles on the road in the coming years.

Letting that happen would be a disaster – for motorists, society, and local and national politicians. Without action, the system is going to be practically and politically unsustainable.

So action is needed – “do nothing” is not a viable option, economically or politically. But the road to a new equilibrium is full of hazards. The roads will stop working if we do not act now; but if we get it wrong, we will slow the decarbonisation of our vehicle stock and miss our ambitious climate targets.

The Way Forward: Road Pricing

We should not treat the transition away from our current system of vehicle taxation simply as a risk to be managed. It offers a huge opportunity to rethink our relationship with our cars and the incentives we put around their use. Fuel duty and road tax are blunt tools that do not deal with the real social costs of driving, from air pollution to congestion.

We have, in the next couple of years, a once-in-a-century opportunity to address these problems through the introduction of road pricing. Such a scheme could slash congestion, maintain tax receipts and mitigate unfairness – delivering better outcomes both for drivers and other road users.

But while implementing road pricing is now technologically achievable, it comes with huge challenges. Any new scheme would need to avoid slowing the uptake of BEVs – vital if we are to meet our climate targets. And it must be designed and delivered in a way that is politically acceptable, and fair to motorists and other road users.

There is real urgency: while the government avoided this issue in its recent Transport Decarbonisation Plan, we need to act now. If we do not, then congestion, reduced revenue and higher unfairness will create political problems in the next five years, and millions of BEVs will be purchased on the assumption they will be cheap to use for their lifetimes. Introducing a pricing scheme at that point will be politically impossible.

This paper argues that a failure to address this challenge now may seem the easy option but comes with huge political and economic risk; explores the political challenges that must be addressed for road pricing to be implemented; and proposes a way forward for resolving these questions.

It will be followed by a series of round-tables and other discussions, and by a further report setting out a recommendation for a proposed approach to road pricing.

The Case for Action

We are on the cusp of the kind of revolution not seen since the transition from horse-drawn vehicles to the internal combustion engine. The rapid uptake of electric vehicles in the next ten years, driven not just by climate policy but by plummeting costs, fundamentally changes the economics of driving and – without action – its impact on drivers and society.

We currently have around 300,000 BEVs on our streets, and that number is set to rise rapidly to around 3 million by 2025, 10 million by 2030 and 25 million by 2035. But electric vehicles are much cheaper to drive, and pay virtually no tax. The cost of petrol, fuel duty and Vehicle Excise Duty (VED) is around £1,100 per year for the average petrol or diesel car; the equivalent cost for an electric vehicle is just £320. And while the overall cost is 71 per cent lower, the amount paid in tax is 98 per cent lower.

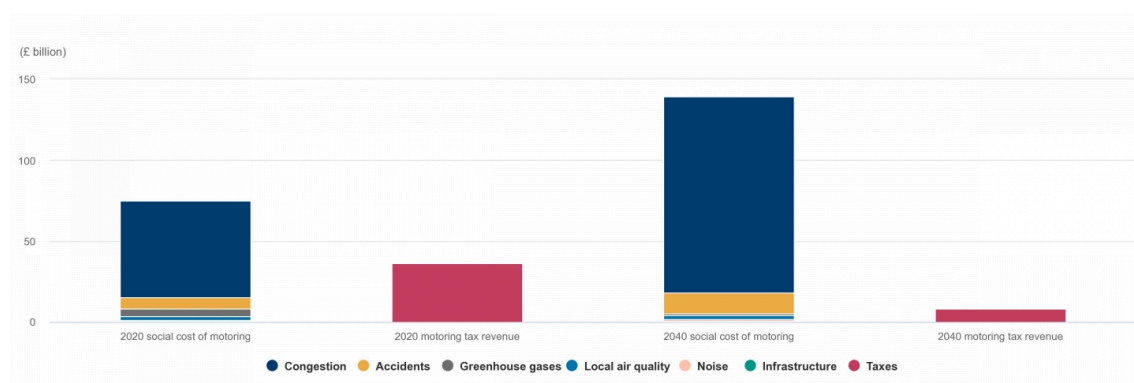
That means that our uneasy equilibrium on road usage is about to be dramatically destabilised:

A Once-in-a-Century Chance to Address the Externalities of Car Use

Every challenge is an opportunity – and the change we are about to see gives us a unique, single-shot chance to deal with the external costs of driving, delivering a more efficient outcome for both motorists and society more widely.

At the moment, the externalities of driving – the costs that each journey imposes on other motorists and wider society – are far higher than the direct costs that motorists pay. We might expect the key external cost to be from emissions of CO₂ and the particulates that cause air pollution. But in fact, over 75 per cent of the external costs of driving are from congestion.

Figure 2 – Costs of motoring to society vs tax revenues raised, 2020 and 2040



Source: DfT TAG tables; TBI analysis

While approximating the cost of these externalities is challenging, we estimate them at a total of £74.9 billion³ per year. But motorists pay only £36.4 billion⁴ in road tax, fuel duty and VAT. Without action, by 2040 those costs could rise to £144.6 billion⁵ per year – but the revenue raised would fall to £8.1 billion even assuming fuel duty were to be uprated with inflation. Were fuel duty to remain frozen, the revenue raised would fall to £5.9 billion in real terms by 2040.

That means that the cost to society of driving will rise enormously, and while the monetary costs for motorists will fall, they will pay in other ways – particularly in terms of congestion. In short: the drop in revenue doesn't save money, it simply transfers costs to others. That would be a huge drag on both UK productivity and our quality of life.

So, to maximise social welfare, we should look to use the opportunity of the BEV transition to internalise more of these costs and distribute them in a fairer way. We now have the technology to do that: the challenge is political.

A Burning Platform: The Three Reasons Why “Do Nothing” Is Not an Option

The transition to electric vehicles means we need to rethink our approach to vehicle taxation – focusing on three key issues.

Congestion

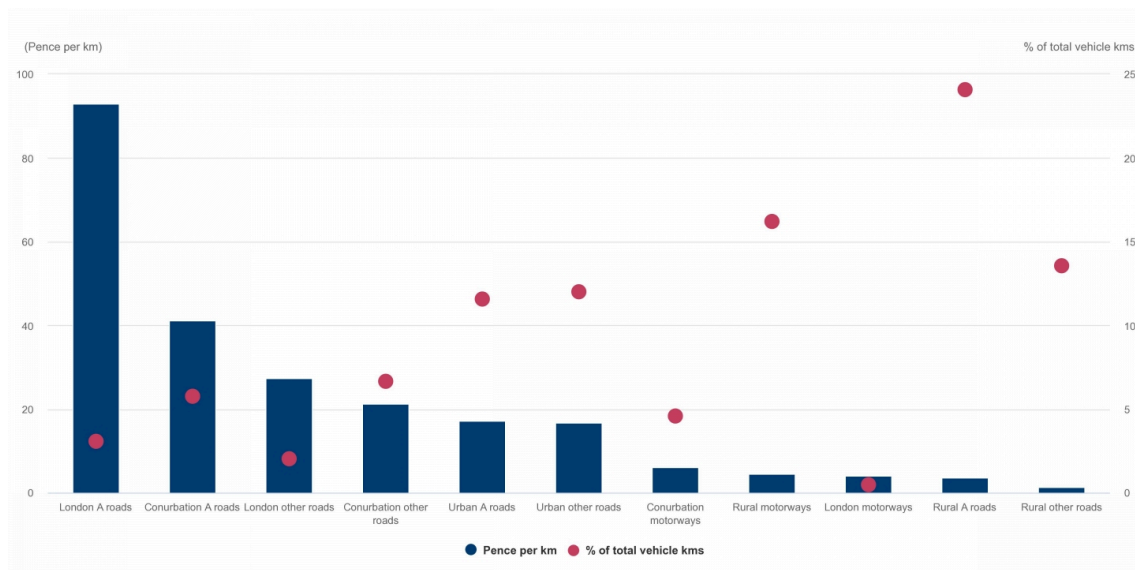
Where Are We Now?

While our relationship with our cars is increasingly contentious, there's one thing that everyone agrees on: congestion is a bad thing. It is a major drag on the UK economy, costing us £59.5 billion a year (or £900 for every person in the country);⁶ it undermines quality of life and wellbeing; it leads to us being late for work or to pick up our children from school. On average, each of the 444 billion kilometres we drive per year results in a social cost from congestion of over 13p.

The issues created by congestion demonstrate that not all car journeys are created equal: unlike greenhouse-gas emissions, the costs of congestion vary enormously depending on where and when the driving takes place. For example, only 3 per cent of passenger kilometres are driven on London's A roads, compared to 24 per cent on rural A roads. But the per-kilometre cost to society of the kilometres driven in London is 25 times higher.

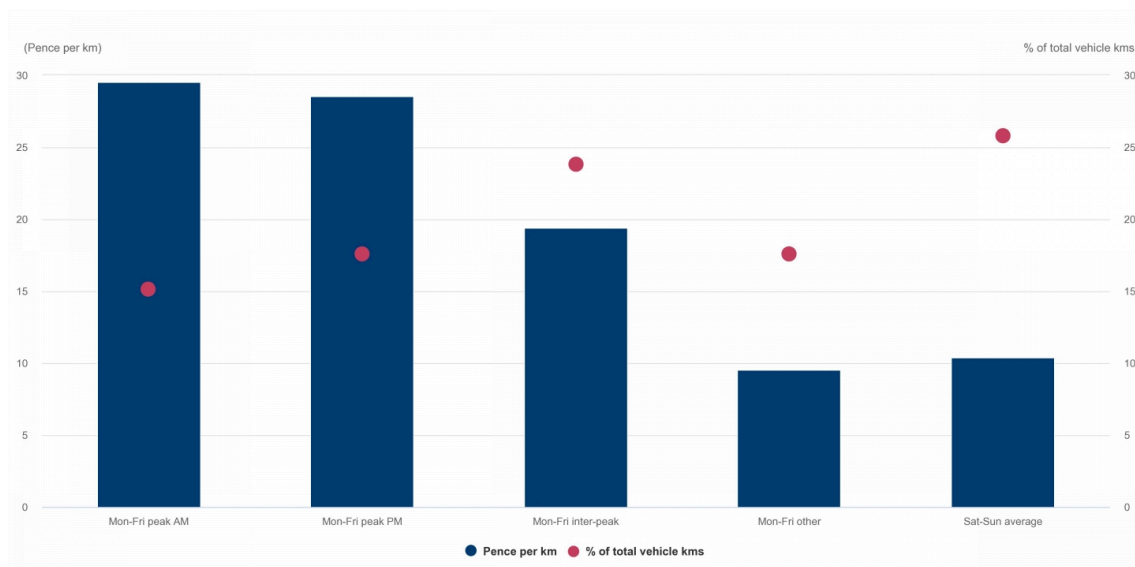
And the issue is not just about type or location of road, but the times at which we drive. The societal cost of kilometres travelled in the weekday rush hour is two to three times higher than for those travelled at other times.

Figure 3 – Marginal congestion externality and share of total vehicle km by road type, 2020



Source: DfT TAG Data Book, July 2021 v1.15, rebased to 2020 prices

Figure 4 – Marginal congestion externality and share of total vehicle km by day and time, 2020



Source: DfT TAG Data Book, July 2021 v1.15, rebased to 2020 prices

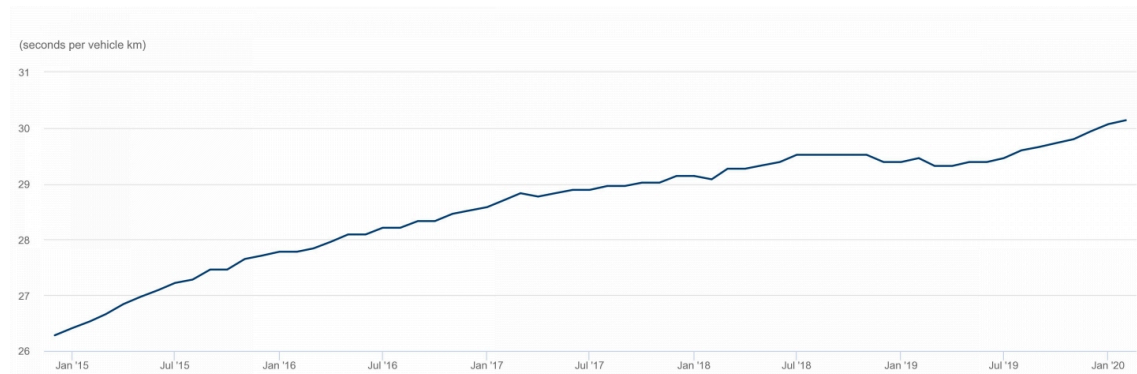
So where and when we drive matters. Our current approach to fuel taxation provides some incentives to avoid congestion, but not enough to stop it – we pay more than we need to most of the time and less at peak times. But fuel duty is on the way out, and the problem of external costs will be far worse as a result if we do not act.

What Happens If We Do Nothing?

A failure to act will dramatically increase congestion. In short, we face two big changes: the number of cars on the road is expected to rise significantly, and making driving cheaper will encourage us to use

those cars more. Cheaper driving as fuel duty has remained frozen and fuel efficiency has improved is already having that effect; this year's decision to retain the fuel-duty freeze could result in the equivalent of another 400,000 cars on the road by the end of this Parliament.⁷

Figure 5 – Average delay on local A roads over time

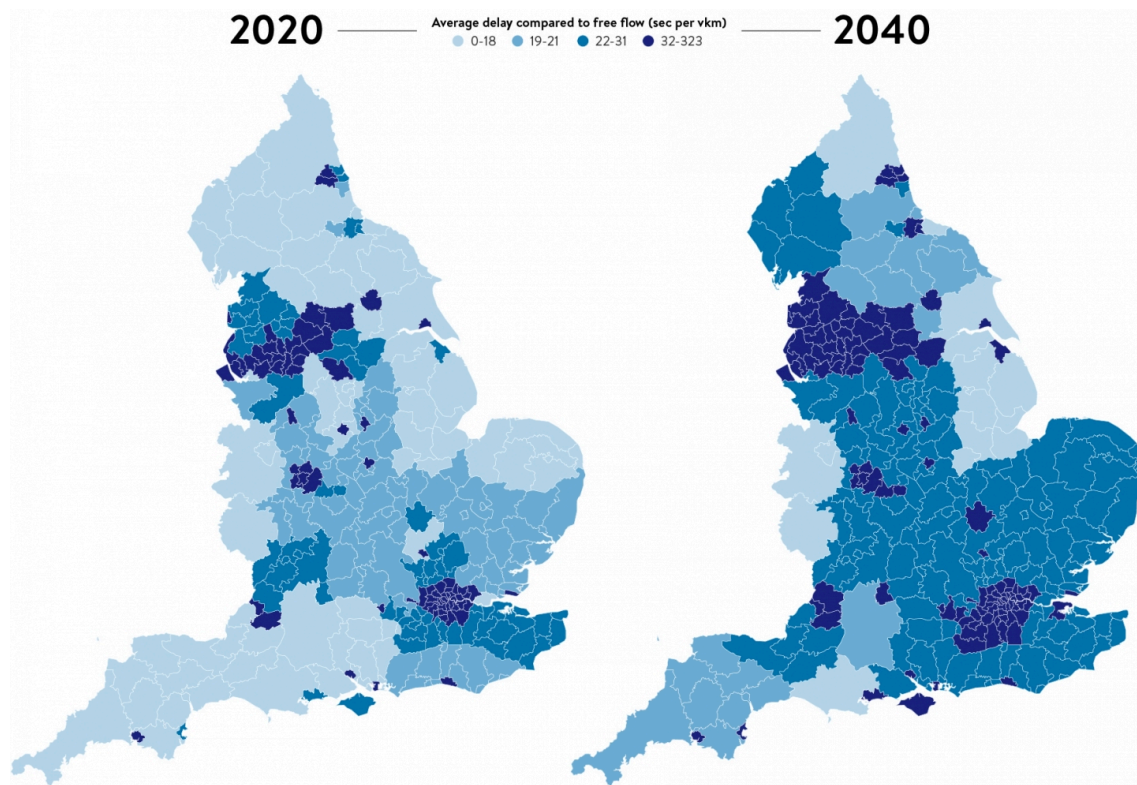


Source: DfT, Road Congestion statistics table CGN0502b. Note: Due to a step change in the series as a result of a change in flow weighting in 2019, we have applied the growth rate in delay from December 2018, the latest non-reweighted data point, onwards. We excluded 2020 due to Covid-19.

For a sensible elasticity,⁸ a 70 per cent drop in fuel cost is expected to see a 7–14 per cent increase in vehicle kilometres in the short run with the effect rising closer to 40 per cent in the long run. Consistent with this, the Department for Transport forecasts electric vehicles will result in a rise in traffic of 30 per cent and an increase in the proportion of vehicle kilometres driven in congested conditions up by 5 percentage points to 12 per cent.⁹

Without action, this increase in congestion could push up the costs of congestion to the UK from £59.5 billion to £121.54 billion by 2040 and increase the amount of time the average driver wastes in traffic by nine hours, to 32 hours a year (an increase equivalent to five additional seconds per km¹⁰). This will not be felt equally across the country. While by 2040 those driving will be experiencing delays closer to 15 seconds per kilometre or greater than 25 on most local A roads, cities like Liverpool and Birmingham, as well as the North West and London, are likely to be hit disproportionately.

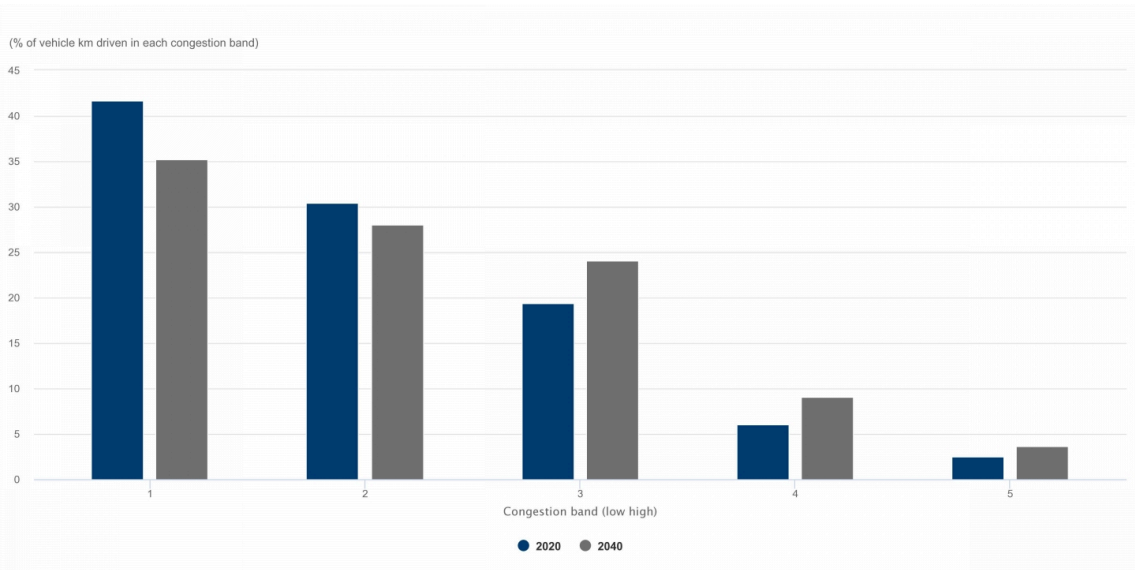
Figure 6 – Average delay compared to free flow on local A roads in England, by local authority, 2020 compared to 2040



Source: Left: DfT Road Congestion Statistics Table CGN0502; Right: Author's calculations using DfT Road Congestion Statistics Table CGN0502 & Road Traffic Forecasts 2018, Regional delays scenario 7

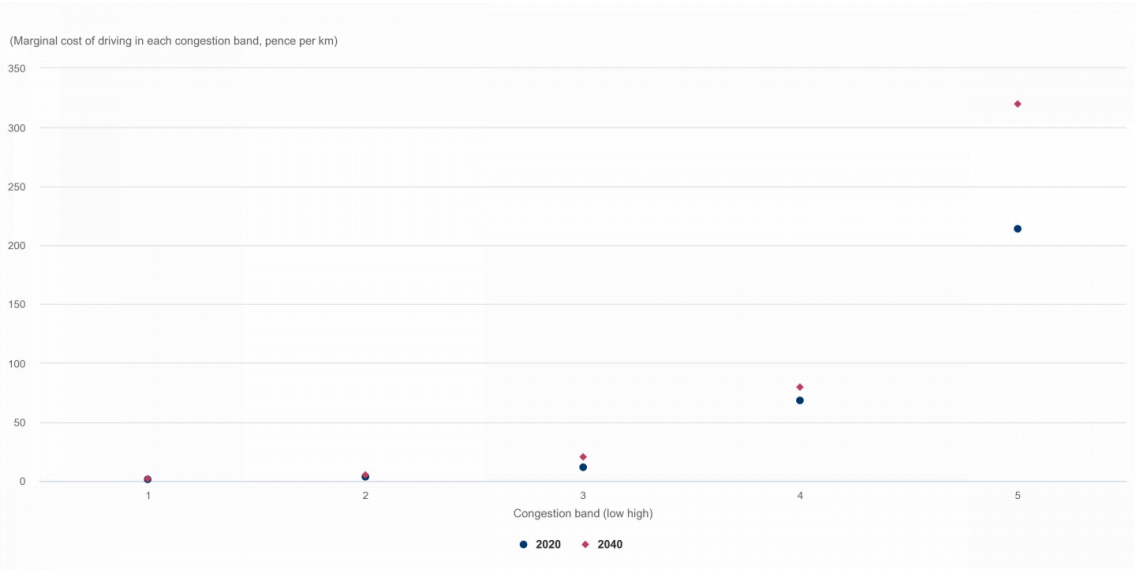
So not only will we spend more time driving in congested conditions: the cost per mile of the time we spend in those conditions will increase. As the chart below shows, the amount of time we spend driving in free-flowing conditions will be reduced, and the amount we spend in congested conditions increase. The cost of time we spend in congestion will also rise – raising the societal value of measures that can reduce congestion.

Figure 7 – Increased congestion in “do nothing” scenario



Source: Author’s calculations using DfT TAG Data Book, July 2021 v1.15

Figure 8 – Increased costs of congestion in “do nothing” scenario



Source: Author’s calculations using DfT TAG Data Book, July 2021 v1.15

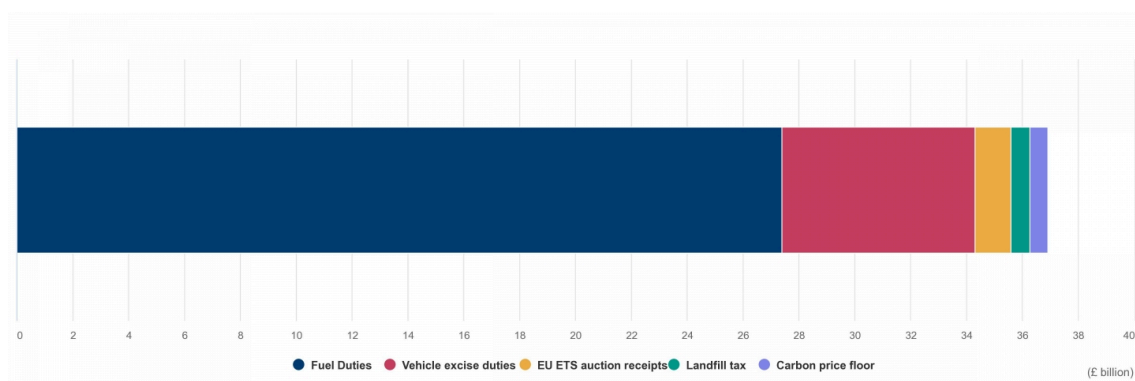
Finally, we will also see an acceleration in the current trend, driven by app-based map services, to move traffic away from main roads and onto residential streets not designed to accommodate high volumes of traffic.

Fiscal

Where Are We Now?

Fuel duty and VED currently raise around £35 billion for the Treasury each year.¹¹ They are by far the largest revenue-raising “green taxes” (though “green tax” is perhaps a misnomer here, as their purpose is not simply to cut emissions). They have, for decades, been a reliable cash cow – even if income in the past ten years has been significantly lower than it would have been had fuel duty risen as planned in the past.

Figure 9 – Tax revenues from greenhouse-gas consumption



Source: HMRC tax receipts and NIC contributions, 2020; PAYE deducted from pay, 2020; OBR economic and fiscal outlook, 2020. Accessed from HMT Net Zero Review: Interim report, December 2020 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945827/Net_Zero_Review_interim_report.pdf

Note: Current revenues from EU ETS receipts are at risk due to low greenhouse gases at the end of the transition.

Electric vehicles, on the other hand, produce virtually no revenue for the Treasury when they are filled up; those who purchase them can cut the fuel costs of driving by around 71 per cent, or more by using smart charging to refuel vehicles when costs are low. As noted above, lower costs of motoring will also incentivise owners of electric vehicles to drive more – cutting revenue and increasing congestion at the same time.

What Happens If We Do Nothing?

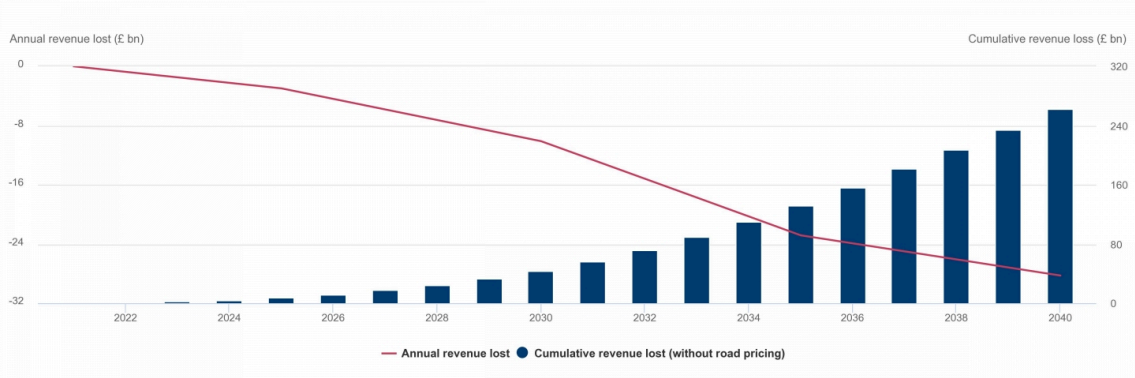
As a result, if the government does not act, the revenue from fuel duty will erode quickly.

Irrespective of the pace of uptake in the 2020s, if we are to hit the government’s deployment targets we will lose a total of almost £260 billion in revenue by 2040.

If we look at annual reduction, tax revenues from car usage will fall by around £10 billion by 2030, £20 billion by 2035 and £30 billion by 2040. This change might start slowly, but the pace will rapidly increase in the next few years. With each £5.5 billion equating to a penny on income tax, compensating for this loss would require the basic rate of income tax to rise by around 6p in the pound – or 2p by the

end of the next Parliament; a 4.5 percentage point increase in VAT; ¹² or huge rises in other consumer taxes.

Figure 10 – Revenue levels without road pricing



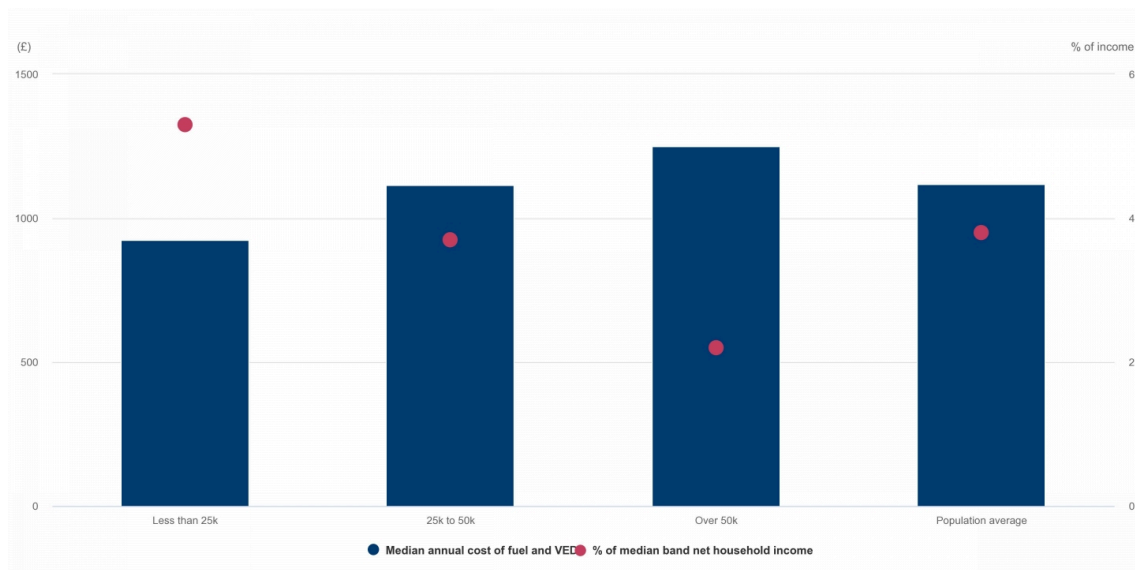
Source: Author's calculations using DfT vehicle licensing statistics 2021, Tables VEH0101 & VEH0203, DfT Road Traffic Forecasts 2018, Scenario 7, National Travel Survey statistics & OBR tax by tax data on fuel duty and vehicle excise duty. Rebased to 2020 prices.

Fairness

Where Are We Now?

As things stand, vehicle taxation is fair in one sense – everyone pays the same tax on each litre of fuel, irrespective of income. But it is unfair in others: while the wealthier pay more in absolute terms, people in lower income deciles pay 4 per cent of their income on fuel and tax, while those in higher income deciles pay 2 per cent. But this differential has not – yet – proved politically salient.

Figure 11 – Median annual vehicle fuel and VED cost (2015–2019)



Source: TBI calculations using the National Travel Survey, Family Resource Survey, DfT TAG tables A3.3 and RAC foundation pump prices

What Happens If We Do Nothing?

While the current system of fuel taxation may appear moderately unfair, it can of course be argued that fairness of individual taxes is less important than the fairness of the taxation system in the round. Unfairness in road taxation is, it could be argued, compensated for with differential rates of income tax, tax credits and so on.

But without compensatory action elsewhere, that argument is going to change radically in the coming years as road taxation changes. In short: if you think the amount we spend on cars is unfair – it's about to get a lot worse.

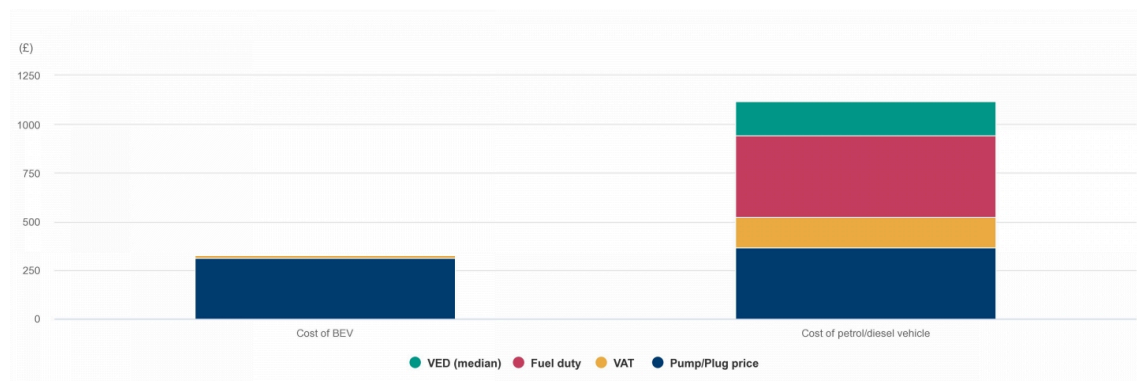
Currently, the median driver spends around £1,100 a year on fuel and VED, of which around £750 is tax. But electric-vehicle drivers – who, given wealthier people tend to drive newer cars, tend to be from higher income deciles – pay only £320 a year, of which around £20 is tax. By charging at the right time, they can pay even less.

This is currently politically sustainable – perhaps because electric vehicles are more expensive to buy, and still relatively few in number.

But in a scenario where there are around 3 million by 2025, and 10 million by 2030, principally owned by wealthier drivers and directly causing increased congestion, this will surely be the subject of considerable political backlash on the basis that vehicle taxation is fundamentally unfair. If the wealthiest members of society are paying much less tax and clogging up the roads as a result, the scope for this being politically weaponised is high.

And that's not all: two further injustices will be layered on top. First, there will be regional differences – people in the south of England will be more likely to adopt electric vehicles first, risking a policy that directly conflicts with the government's stated objective of "levelling up". And introducing a tax on BEVs later – when people on lower incomes are able to adopt them – would be incendiary.

Figure 12 – Relative running costs of petrol and battery electric vehicles



Source: TBI calculations using the National Travel Survey, Family Resource Survey, DfT TAG tables A3.3 & RAC foundation pump prices, ONS Annual domestic energy price statistics

Conclusion: “Do Nothing” Is Not an Option

Debates about the transition away from fuel duty have, to date, felt largely theoretical in nature – a “nice to have” rather than an essential.

But that has to change – for reasons of pure politics, not just economic efficiency. If we do not act quickly, we lock ourselves into a scenario where:

- **Congestion is higher**, resulting in costs to society increasing from £59.4 billion to £121.5 billion;
- **Revenues are lower**, resulting in tax increases equivalent to 6p on income tax or 4.5 percentage points on VAT;
- **Inequality is increased**, with those still driving petrol and diesel vehicles hit with a triple whammy: forced to spend longer in traffic; paying higher taxes elsewhere to compensate for the lost fuel-duty revenue from those who have transferred to electric vehicles; and paying three to four times more to tax and fuel than those who drive EVs.

Furthermore, if the government does not act quickly to develop a clear direction of travel, more and more road users will have purchased electric vehicles on the implicit promise that they will not be taxed. Trying to introduce a new tax system later will likely be politically impossible.

So the time to act is now. If we do not, it seems inevitable that public unrest and anger will be unleashed, and the government will be left with no good options to deal with it.

The Elephant in the Room: Cutting Emissions

We need to act quickly. But in doing so, we need to tackle the elephant in the room – namely that increasing our tax take from BEVs risks slowing the transition away from fossil-fuelled vehicles.

Transport is our largest-emitting sector, producing 27 per cent of UK emissions in 2019. ¹³ Road transport constitutes the vast majority of that.

There is no question that rapid decarbonisation of our road transport is core to any coherent strategy to meet both the UK's net-zero target and its extremely ambitious targets for 2030 and 2035.

The good news is that sales of electric vehicles – both battery electric and plug-in hybrids – are rising rapidly. But they need to accelerate very quickly. In order to meet the government's 2030 and 2035 targets, we need to deploy around 10 million vehicles by 2030 and 25.5 million by 2035. Even with the rapid cost reductions in the purchase price of EVs, that is an enormous challenge. But fail to meet it, and it is hard to envisage how our economy-wide targets can be achieved.

What Happens If We Do Nothing?

The key advantage of the transition away from fuel duty is it acts as a potential accelerant for the deployment of battery electric vehicles by artificially reducing their running costs; in short, the low cost of driving EVs will help incentivise their purchase. Those very significant running-cost savings – allied with consumer purchase support in the early 2020s, purchase prices achieving parity with petrol and diesel vehicles in the mid-2020s, improved consumer choice and increased battery capacity – mean that, in the absence of action, we can expect consumer preference to very rapidly move from petrol and diesel to BEVs.

So while all other considerations mean we need to accelerate reform of motoring taxes, the need to cut emissions pulls in the other direction. Given the centrality of BEVs in achieving emission targets, any road-pricing scheme must aim not to slow that transition.

The Options

The challenge is clear: we must use the burning platform created by the transition to BEVs to better internalise the social costs of motoring, but do so in a way that is fair (and perceived to be fair) and which does not slow the pace of uptake of zero-emission cars.

Two possible options can be quickly ruled out.

- **A “cigarette tax” approach**, where falling revenues are compensated for by increasing the level of taxation, will not work. While it would accelerate the transition, it would do little to address congestion and would be hugely unfair to those unable to afford electric vehicles – requiring politically unsustainable increases in fuel duty. Put simply: any model that assumes the last petrol-vehicle driver will pay £35 billion in taxation is doomed to fail.
- **Seeking to add duty to electricity used to charge EVs**, while superficially attractive on the basis that it is similar to the current model, would be technologically extremely difficult, and would slow the transition to electric vehicles.

So that leaves us with a forerunning option: road pricing. There are a variety of ways that road pricing can work, which fall into four broad categories:

- **Flat rate per mile:** road users are charged for each mile they drive.
- **Geographic or toll-based charging:** costs vary depending on geographic area or specific roads, with cost being focused on areas with higher congestion levels (as in the case of the London Congestion Charge).
- **Time-based rate:** road users are charged for each minute they spend driving.
- **Dynamic rate:** an “Uberised” model, where charges vary dynamically based on the road being used and time of travel.

All forms of road pricing have some upsides in common: revenue-raising and pricing some or all of the externalities of driving. All are technologically deliverable, though they come with challenges and costs. Only one – a fully dynamic scheme – would resolve the economic problem of internalising the externalities. But they all come with significant design issues and trade-offs, and real political challenges.

IN FOCUS: High-Level Proposals for Road Pricing¹⁴

Flat rate per mile: This is a simple per-mile charge. The flat rate could vary by vehicle weight and fuel consumption to reflect the trip and vehicle's greenhouse-gas and air-pollution impact as well as the damage done to the road network. The system would replace fuel duty and VED, and could include a "free allowance" of miles for drivers. Monitoring would be relatively unobtrusive – for example, by simply checking miles travelled and fees paid at the annual MOT check. The key downside is that such models provide minimal incentives to reduce congestion.

Geographic or toll-based charging: These systems target costs on specific geographic areas or roads. The London Congestion Charge, applied on a geographic boundary basis and enforced via cameras, provides one example; Stockholm, Oslo, Bergen and Gothenburg also use systems that charge vehicles each time they enter different zones. The charges can depend on the time of day and are capped at a daily maximum.

Time-based pricing: A "per-minute" model would charge drivers on the basis of the amount of time they spend driving. It could be enforced using either smartphone apps or on-board devices. This model provides sharper incentives to avoid congested roads than a per-mile flat rate, but has bigger privacy impacts and could incentivise speeding.

Dynamic road pricing: Variable or dynamic road-user charging could be implemented through fluid real-time pricing, similar to that for ride-hailing services like Uber. Drivers could pick a route through a smartphone app or other satellite-based device and get a real-time price estimate. Such a system was introduced in Singapore in 1998 with vehicles required to carry an in-vehicle device that could be detected by radio frequency when passing under gantries in the most congested routes, linked to a pre-paid card from which payment can be deducted. This option would be most effective in reducing congestion, but has the biggest privacy impacts.

All of these can be varied and augmented in a variety of ways, for example by increasing charges for heavy or highly emitting vehicles, or including a standard charge per vehicle similar to existing VED. And they could, to some degree, be used in combination (for example by combining a flat per-mile rate with additional local charges in cities).

A Model of Road Pricing for the UK

Road Pricing: A Political Challenge

The key common factor with all road-pricing models is that they come with significant design issues and trade-offs, which means that – as things stand – none are politically attractive. The collective challenge we face is to work out how to deal with these challenges, or risk sleepwalking into all the downsides of a “do nothing” scenario.

Designing an effective road-pricing system for the UK means that we have to address all these political challenges; failure to resolve any one of them is enough to collapse any proposed scheme.

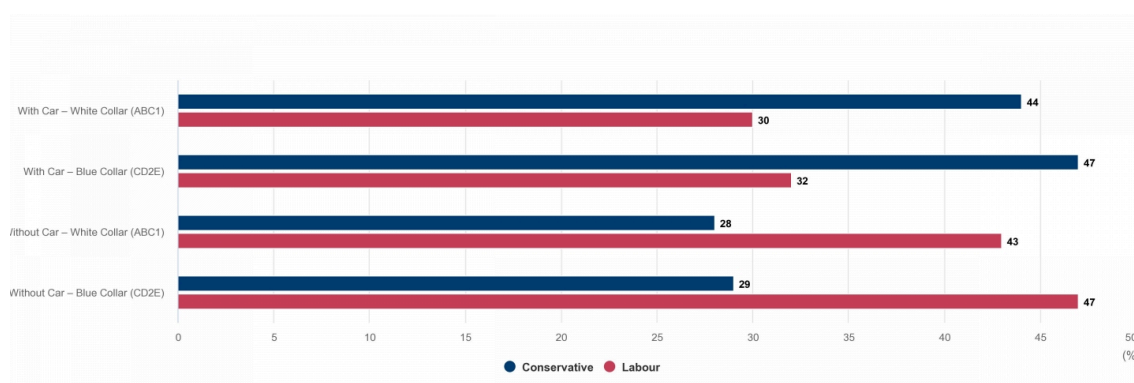
There are nine key political challenges that a road-pricing model for the UK needs to address.

Avoiding an “Attack on Motorists”

Any intervention to change the status quo around motoring taxation and car usage comes with the political risk that it will be perceived as an “attack on motorists”. We see this in the annual discussion around fuel duty (where increases are generally opposed by organisations purporting to represent motorists), and in the politically charged local debates on Low Traffic Neighbourhoods (LTNs). In some cases, such as fuel duty, a majority oppose action that would disincentivise car usage; in others, such as LTNs, a vocal minority oppose action. ¹⁵

Politicians – particularly Conservative politicians – have strong incentives not to antagonise motorists, as they are currently much more likely to vote Conservative.

Figure 13 – Voting intention by social class and car ownership



Source: *Opinium*

Any move to a system of road pricing will face opposition. But if it can be framed as an “attack on motorists”, we can expect the political opposition to be high enough to prevent such a move.

Revenue Levels – How Far to Internalise the Externalities

Motoring currently imposes an external cost far higher than the tax imposed on cars. The costs to society of congestion, emissions, accidents and so on are two times higher than the revenue secured.

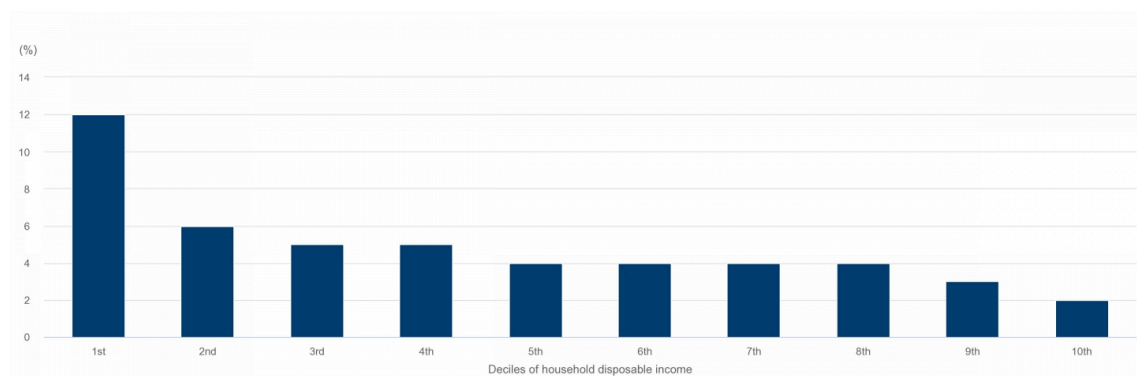
There is a sound argument that a road-pricing system can and should enable those externalities to be internalised – for motorists to pay the costs they impose on society. That argument is strengthened by the fact that without action, those costs will get significantly higher. The extent to which they do that depends on the model; a dynamic system will be far more effective in doing so than a simple per-mile system.

But attempting to fully internalise the externalities comes with a big political challenge: it either means significantly increasing the tax take from motorists, or working out how to rebate the additional costs in a way that is fair and doesn’t blunt the incentives to reduce congestion. A road-pricing system needs to tackle this problem head on – working out how far externalities are reflected in the pricing system and potentially using rebates to offset them.

Fairness Impacts – Winners and Losers

Fuel duty is a regressive tax – hitting the poorest motorists, who spend 12 per cent of their income on fuelling their cars, much harder than the wealthiest, who spend just 2 per cent.

Figure 14 – Fuel expenditure as a share of disposable household income, 2019–2020



Source: TBI calculations using the 2019–2020 Living Costs and Food Survey

But we have become used to those inequalities. A road-pricing system, unless designed specifically to recreate fuel duty, will create winners and losers. Models that more directly target externalities such as congestion will increase costs for those who drive in more congested areas and at busier times, while

reducing costs for those who do not. It would also remove one of the options for low-income motorists to reduce their costs – namely, buying a smaller and more efficient car.

If everyone was equally well placed to respond to those incentives, that need not be a problem. But of course, people are not. Key workers who have to get to work at specific times and don't have practical non-car options, parents dropping off their kids on the school run and disabled people living in congested areas are just some of those who could be negatively affected, and who have little ability to avoid increased costs.

There are ways of addressing these inequalities, for example through rebates in the tax system. But the politics of winners and losers will be a central challenge for any new system.

Protecting Privacy

A widely deployed argument against road pricing has been its impact on the privacy of motorists. Broadly speaking, the current system allows a high level of privacy – journeys are not required to be recorded in any way, and as long as a car is being driven legally, the likelihood of any significant incursion on individual privacy is limited.

But that notion of privacy is increasingly a myth. It is estimated that as many as 90 per cent of smartphone users use mapping apps to plan their journeys, ¹⁶ and the UK's penetration of enforcement cameras is among the highest per capita in the world.

It is undoubtedly true that any system of road pricing will impact on privacy. Those impacts vary depending on the model; a simple per-mile system would have relatively low impact, whereas a dynamic system could have much more intrusive impacts. But it is also true that the extent of the incursion on individual privacy is highly dependent on how a scheme is enforced; for example, an enforcement approach that requires centralised recording of journeys would be far more intrusive than one that devolves that responsibility to private technology firms.

Simplicity

While motorists grumble about fuel duty – and many think it should be reduced ¹⁷ – one of its main advantages is simplicity, as a tax that is charged at point of sale on a uniform basis.

Road pricing models inevitably mean a different way of paying for our vehicle use. Some – such as charging per mile – are both easy to understand and relatively simple. But, as noted above, that simplicity comes with downsides. Other models – particularly dynamic pricing – have major advantages, but are more complex both to understand and administer, and require a more complex set of decisions from drivers. If drivers can't easily understand the system, it will fail.

Predictability

When we set out on a journey in a petrol-fuelled car, the costs are pretty certain. While a more congested journey might marginally increase costs, the differences are based around marginal changes in fuel efficiency.

A poorly designed road-pricing model is at risk of creating significant unpredictability – for example, a dynamic model could result in a driver being charged five or ten times more for a journey on a congested day than an uncongested day. Well-designed models, which incentivise travelling away from peak times but do not penalise drivers for unexpected problems, can partly mitigate that risk. But it will be challenging to design a system that both strengthens incentives to reduce congestion and avoids unpredictable impacts on individual drivers. A key principle of any road-pricing system must be that, if it is strengthening incentives to reduce congestion, drivers need to have a way of responding to those incentives.

Pace of Implementation

As previously set out, the erosion of fuel duty is a burning platform – we need to act now if we are to avoid a world of high congestion, increased inequality and tax rises to compensate for loss of revenue.

But it is also a burning platform in two other senses.

First, we are about to see an explosion of sales in battery electric vehicles. Those who buy them are doing so on the assurance that they will not pay tax on their fuel and will not be subject to VED. If we allow that situation to continue for the next decade, 10 million cars could have been purchased on the expectation of such low taxes. Retrospective introduction would, at that point, be likely to be politically impossible.

Second, because of the scale of change that road pricing involves. While the technology to deliver it exists, a change of this scale will take time to get right. It requires careful design and piloting, and gradual rollout if it is to succeed. The challenges of introducing universal credit – a system that is conceptually simple but hugely complex to deliver – provide a lesson in the scale of the task at hand. The government must act now to refine options, identify a preferred model, pilot it and deliver it.

The Right Role for Government and the Private Sector

At the moment, decisions on vehicle taxation are made almost exclusively by the government, and delivery is almost entirely by the private sector (through petrol stations). But the shift to road pricing

offers both the chance to rebalance decision making, and important choices on the roles of government and the private sector in delivery.

Introduction of road pricing means that we could look to depoliticise the cost of driving – for example by empowering a body at arm's length from government to target particular outcomes, as we do with the Bank of England and inflation. Such an approach could avoid vehicle taxation being seen as a cash cow and mitigate the risk of perceived attacks on motorists. But in considering such approaches we also need to ensure proper democratic accountability, and the right balance between centralised and localised decision-making.

On technology, the approach that we take to road pricing could either be statist and centralised or devolved and innovative. A centralised approach could involve all journeys being recorded by a central system through a government-designed app or website. But a more devolved approach would enable private-sector actors to play a bigger role, potentially incentivising innovation and reducing privacy concerns.

Cohesion With Wider Transport Policy

Finally, it is essential that our approach to taxation of motor vehicles does not treat it as an isolated issue.

The centrality of cars in our lives is reflected in their primacy in urban design and infrastructure investment. But only 78 per cent of households have access to a car – and in London, the city with the highest congestion and air pollution, that falls to only 56 per cent.¹⁸ Our approach to road pricing needs to be fair not just to motorists, but to those who are exposed to the downsides of cars without enjoying the upsides.

That means that our approach to road pricing needs to form part of a wider strategy – allied with redesign of our urban and rural spaces to reduce car dependence; investment in public transport; and the introduction of traffic-calming measures where they have local support.

What Next?

We propose two next steps:

- First, government should take action now to signal its direction of travel: that it intends to introduce a form of road pricing in the near future to compensate for the loss of fuel duty; that it will use that opportunity to reduce the external costs of driving, delivering benefits both to motorists and to society at large; and that it will set out proposals on how to do so in the next 12 months.
- Second, that the debate on road pricing moves from op-eds to substance with detailed proposals

being developed now to inform government's thinking. We will be running a series of round-tables and debates to seek consensus around a possible model – helping to inform government's thinking, and to identify how the trade-offs can be managed and opportunities seized.

Charts created with Highcharts unless otherwise credited.

Footnotes

1. ^ Impact assessment for the sixth carbon budget, April 2021 https://www.legislation.gov.uk/ukia/2021/18/pdfs/ukia_20210018_en.pdf
2. ^ Dunkerley, F., Rohr C., Daly A., “Road traffic demand elasticities: A rapid evidence assessment”, Rand 2014 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/395119/road-traffic-demand-elasticities.pdf
3. ^ This includes cost of time lost due to congestion given occupancy rate and purpose of travel (<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.375.1581&rep=rep1&type=pdf>), damage costs due to increased pollutants, cost per tonne of carbon in the atmosphere. Costs are monetised by DfT and DEFRA and exclude intangibles such as the impact on townscape or biodiversity. More information on what is included can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940962/tag-a1-1-cost-benefit-analysis.pdf. We calculate social costs of driving using the average marginal cost per km as calculated by DfT in TAG tables (<https://www.gov.uk/government/publications/tag-data-book>) rebased to reflect 2020 prices. For an average marginal cost per km of 16.7p in 2020, rising to 28.6p in 2040, and total car km travelled at 447.7 billion (according to the 2019 National Travel Survey) rising to 505.3 billion (according to DfT Road traffic forecasts for high EV uptake, scenario 7), the total cost of driving cars to society amounts to £74.8 billion in 2020, rising to £144.6 billion in 2040.
4. ^ OBR, Fuel duty <https://obr.uk/forecasts-in-depth/tax-by-tax-spend-by-spend/fuel-duties/>
5. ^ This includes cost of time lost due to congestion given occupancy rate and purpose of travel (<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.375.1581&rep=rep1&type=pdf>), damage costs due to increased pollutants, cost per tonne of carbon in the atmosphere. Costs are monetised by DfT and DEFRA and exclude intangibles such as the impact on townscape or biodiversity. More information on what is included can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940962/tag-a1-1-cost-benefit-analysis.pdf. We calculate social costs of driving using the average marginal cost per km as calculated by DfT in TAG tables (<https://www.gov.uk/government/publications/tag-data-book>) rebased to reflect 2020 prices. For an average marginal cost per km of 16.7p in 2020, rising to 28.6p in 2040, and total car km travelled at 447.7 billion (according to the 2019 National Travel Survey) rising to 505.3 billion (according to DfT Road traffic forecasts for high EV uptake, scenario 7) the total cost of driving cars to society amounts to £74.8 billion in 2020, rising to £144.6 billion in 2040.
6. ^ Department for Transport, TAG Data Book, July 2021 v1.15. For a more detailed account of

how the calculation is done see endnote 3.

7. ^ <https://institute.global/policy/our-response-chancellors-2021-budget>
 8. ^ Dunkerley, F., Rohr C., Daly A., “Road traffic demand elasticities: A rapid evidence assessment”, Rand 2014 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/395119/road-traffic-demand-elasticities.pdf
 9. ^ Department for Transport, Road traffic forecasts 2018, Scenario 7 <https://www.gov.uk/government/publications/road-traffic-forecasts-2018>
 10. ^ Using DfT 2018 road traffic forecasts, electric vehicle uptake scenario (Scenario 7), average delay compared to free flow for cars increases from 10.9 seconds per km (17.5 spm) in 2020 to 14.9 in 2040 (23.9 spm). According to the National Travel Survey in 2019, 580 trips were made by car per person on average (source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906847/nts-2019-factsheets.pdf). The average trip was 13km (or 8.4miles) (source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906276/national-travel-survey-2019.pdf). The total time lost is calculated as 580 trips x 8.4 miles per trip x (23.9-17.5) additional seconds per mile = 30867 seconds = 515 minutes = 8.57 additional hours a year
 11. ^ <https://obr.uk/forecasts-in-depth/tax-by-tax-spend-by-spend/fuel-duties/>; <https://obr.uk/forecasts-in-depth/tax-by-tax-spend-by-spend/vehicle-excise-duty/>
 12. ^ <https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes/direct-effects-of-illustrative-tax-changes-bulletin-june-2021>
 13. ^ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/984685/transport-and-environment-statistics-2021.pdf
 14. ^ Adam S., Stroud R., “A road map for motoring taxation”, IFS Green Budget 2019 <https://ifs.org.uk/uploads/GB2019-Chapter-9-A-road-map-for-motoring-taxation-update2.pdf>; Raccuja G., “Miles Better”, Policy Exchange <https://policyexchange.org.uk/wp-content/uploads/2017/07/Gergely-Raccuja-Miles-Better-Revised-Submission.pdf>
 15. ^ <https://redfieldandwiltonstrategies.com/steady-support-for-for-low-traffic-neighbourhoods-in-london/>
 16. ^ <https://www.pewresearch.org/fact-tank/2016/01/29/us-smartphone-use/>
 17. ^ <https://youngov.co.uk/topics/politics/articles-reports/2020/03/10/budget-2020-what-tax-changes-would-be-popular>
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18. ^ <https://www.centreforlondon.org/reader/parking-kerbside-mangement/chapter-1/#car-ownership-in-london-has-changed-little-over-time>
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