

Driving Growth



The Case for Road Pricing in the UK

Roger Bootle, Andrew Gilligan, Ben Sweetman and James Vitali

Foreword by Edmund King OBE

The Third Part of Policy Exchange's *Policy Programme for Prosperity*



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Endorsements

During my time as Transport Secretary 30 years ago, I raised several of the ideas contained within this excellent Policy Exchange report, including a pilot scheme on a motorway at 1p per mile. Technological progress has made road pricing much more feasible and could vastly improve the driving experience of British motorists by making better use of road space. It could also replace lost fuel duty and VED revenues as we transition towards electric vehicles, all without increasing the overall tax burden of road users. If we are to have a sustainable transport policy, I urge the ministers responsible to seriously consider the case for a new road pricing system and to take on board Policy Exchange's recommendations.

Rt Hon Lord Young of Cookham CH, former Secretary of State for Transport

Advocates for intelligent road pricing often point to its extraordinary potential to reduce congestion and increase productivity; and that it need not increase motoring costs if it replaced VED and fuel duty. This paper goes further, it demonstrates the powerful effect road pricing would also have on the whole road economy, ensuring public investment in new and increased capacity was made where it was most needed. Additionally, private capital could be put to work building public infrastructure, taking on the returns (and risks) of new capacity. Finally, for the first time, those who disrupt our roads could be made to bear the costs of the inconvenience they cause, encouraging much more efficient road works. Road pricing technology holds out the prospect of improving the quality of life for millions of road users whilst delivering a surge in much needed, growth generating infrastructure.

Lord Wolfson of Aspley Guise, founder of the Wolfson Economics Prize

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Foreword

Edmund King OBE

Road pricing has been a popular concept with economists since the early sixties. Over the last 60 years the idea has been resurrected every decade - but is always deemed to be ten years away as politically it has been perceived as unpopular.

I think that perception is now wrong. And it is time for the country and our politicians to start seriously debating how we fund roads and sustainable transport in the future.

Road pricing – or, as I call it, “Road Miles” - would bridge the gap between falling fuel duty revenue and the electric vehicle revolution. It would be a new way of paying for roads, with core money ringfenced for the road network, tunnels, cycling and buses.

It offers attractive possibilities to make the tax system more flexible and responsive to the needs of road users. For instance, it could offer free credits or compensation for excessive or overrunning roadworks. It would be designed to help those dependent on their cars – people in rural areas, disabled drivers, shift workers – who currently pay the same fuel taxes as everyone else.

It would mean that we can manage congestion better, with enormous benefits for drivers and the economy. In other words, unlike fuel duty, it doesn't just take something away: it gives things back.

The most important thing it gives back to the motorist is money. As this report argues, road pricing must not be additional to fuel duty and VED – it must be a complete replacement for them. And as the report also shows, under a system of pay-per-mile charges, most drivers would pay less than they do now. What's not to like?

A new funding system offers a chance to completely re-think our old “Ministry of Transport” mindset about roads - giving drivers fed up with the current cones, congestion and chaos a stake in how our roads are run. I believe, and will argue, that any charging scheme should be overseen by an independent body who will ensure that road users get a say. I would also like to see an innovation fund to promote radical ideas such as connected car data to reduce congestion, electric charging hubs, autonomous vehicles using tunnels, drone deliveries, and a vision zero road system with no fatalities.

This report is so valuable not just because it sets out the strong policy case for a new system – but because, more unusually, it also publishes a

road-map for how a government could overcome the political hurdles and actually get it done.

Our plea to politicians is to start an informed debate about a practical and equitable way to pay for our roads.

Edmund King OBE – *President of the Automobile Association, writing in a personal capacity.*

Executive Summary

- The new Government has stated that its highest priority is economic growth. There are few measures that would give an immediate, large boost to economic performance. Introducing a full system of road pricing, where motorists pay according to the distance, time and place they travel, is one such measure.
- Moreover, if we do not introduce such a system then economic performance will be severely impeded as the road system clogs up and people and businesses refrain from making journeys they otherwise would undertake.
- Our estimates suggest that road pricing would leave the majority of motorists in the same financial position or better off compared to what they pay now, and would reduce congestion and delays for everyone, with significant economic benefits. Even those who will pay more under the system would benefit in other ways, from faster and more reliable journeys.
- Based on a range of estimates, we reckon that a successful system of road pricing in the UK could bring direct economic benefits from reduced congestion of £15-30 billion per year, or 0.5–1% of GDP.
- But there would be significant indirect benefits as people and businesses adjusted to the new reality that road usage had a price.
- There could also be a significant effect on investment in the UK. By applying the price mechanism to road usage, public investment decisions in the road network could be partly evaluated on the basis of the actual revenue they would generate, rather than spurious appraisal systems or considerations of local politics. It could also open up new opportunities for private capital too, either through securitisation of public works or direct private investment.
- The main barrier to road pricing is political. This paper lays out not just the case for change, but also what has been missing from the debate so far – a political strategy for achieving it.
- Critically, road pricing must not be additional to - but a complete replacement for - fuel duty and vehicle excise duty, which raise about £40 billion a year but are largely disappearing with the growth of electric vehicles. Anyone who opposes road pricing must say how else they would raise this sum.
- Road pricing is pro-motorist, and must be promoted as such.
- It would also allow us to favour those who have no alternative to driving, such as the disabled or country dwellers, but currently

pay the same or almost the same tax as everybody else.

- In addition, motorists could benefit from improved road management. Road users could receive a discounted rate when driving on roads affected by disruption or maintenance. Those responsible for the disruption could be charged for the impaired revenue. This would provide an incentive for those performing road maintenance to complete their work more expeditiously.
- Road pricing has long been under consideration by government – including, as we reveal, active and detailed consideration during the last Conservative administration.
- The principle of charging for road use has been endorsed by economists for even longer, starting with Adam Smith in the 18th century. It is strongly supported by the overwhelming majority of economists today.
- And in an elementary form, road pricing is already with us. Indeed, charging for road access in the form of toll roads has been practised for more than two thousand years.
- Yet when mass use of cars began in the 20th century, access to roads was mostly free at the point of use. The taxes on travel by car have generally been very high but they have been unsophisticated and, in particular, have not varied with regard to the time of day or level of congestion.
- The costs of unfettered access to the road system have grown considerably, with congestion being the main one.
- There are several examples around the world of cities that have successfully imposed a congestion charge, including London, Stockholm and Milan.
- One city, Singapore, has gone much further and introduced a system of dynamic road pricing which allows for a considerable amount of differential pricing, depending upon time of day, the type of vehicle etc.
- Technological development has made such a sophisticated system a practical possibility, and not only in small city states like Singapore.
- The aim of such a sophisticated system of road pricing is to make the individual motorist confront the full social costs of their decision to drive a car at a particular time and place. The intention is to incentivise motorists to make their journeys at different times, or on different roads, thereby reducing congestion and making better use of our infrastructure.
- Concerns about official access to data can be dealt with by restricting the access to such information and by introducing sunset clauses such that it is destroyed after a short time period.
- It is our view that road pricing could end up being extremely popular and especially with the very group who have been most vociferous in their opposition – motorists. After all, they themselves would be the biggest gainers as journeys would be

quicker and more predictable.

- The economy would see greatest benefit from a swift move to full-fat road pricing, where motorists were charged more to drive at congested times or in congested places. The Government says it is committed to increasing investment. This is a classic case of an investment decision: some modest economic and political costs now in order to secure large economic and political gains later. We advocate this.
- But if ministers believe the political difficulties of this approach are too great, we also set out alternative, more gradualist approaches.
- Full fat road pricing could make the UK a world leader in this field – gaining significant economic advantage over slower-moving nations which have not acted to tackle road congestion. It is also likely that other countries would wish to learn from us and even pay for our expertise, rather like what happened with the privatisation programme in the 1980s.
- Admittedly, as was true then, it would take political courage and leadership from government to overcome initial opposition.
- But now that we have a government with a huge parliamentary majority, this is the time.

Policy Recommendations

1. The Government should move rapidly to introduce a full, nationwide system of road pricing, involving different prices for the use of different roads at different times of day, and different prices for different types of vehicle, and with concessions for designated types of driver.
2. The new system of charging should be introduced simultaneously with the abolition of Vehicle Excise duty and Fuel Duty.
3. The scheme would require all vehicles to be fitted with an On-Board Unit to record road usage. The cost of this installation should be borne by the Government, along with the costs of the rest of the basic infrastructure for a road pricing system – especially satellite technology and data centres.
4. A communications campaign should be launched immediately to make it clear that the objective of the scheme is to reduce congestion and improve the experience of drivers; that the system seeks to change the way motorists are taxed, not the amount of taxes levied on motorists; and that it will lead to the majority of road users paying roughly the same or less in motoring taxes. The main beneficiaries of the scheme will be drivers. Even those drivers who lost out financially would gain from shorter and more predictable journey times.
5. Secondly, the campaign should cite the boost that such a scheme will have on productivity, health and wellbeing – and how it would thus benefit the whole of the UK population and not simply those who drive.
6. The Government should make a commitment that any road pricing data is deleted within a certain timeframe. This should help to assuage legitimate privacy concerns.
7. A certain proportion of the proceeds from road pricing should be hypothecated to the National Roads Fund. This will also increase the legitimacy of the new system, and help convince drivers that road pricing is being introduced to improve their experiences, rather than to help prop up general government expenditure.
8. Existing forms of congestion or pollution-related charges should be replaced by the new system.
9. The Government should launch an online calculator so people can estimate the change in their annual tax liability. Users should be able to input their average annual mileage, their address, their vehicle, and their pattern of car usage and be able to receive an

estimated annual cost.

10. If the Government balked at the introduction of a new road charging system all in one go, it would be possible to implement it gradually. It could be introduced first for electric vehicles, given that a fuel duty rebate system will not be required, and there is an urgent need to establish the principle of taxing non-internal combustion engine vehicles. All new EVs should be fitted with an On-Board Unit as standard. To ensure the continued take-up of EVs, packages of free mileage credit within the new road pricing system should be offered.
11. Next should come HGVs, with the HGV Levy being scrapped. (Haulage vehicles already have tracking devices installed.)
12. Finally, all other vehicles – petrol and diesel cars and light vans - should be integrated into the nationwide system, and fuel duty ended.
13. At first, this could be voluntary, encouraged by free mileage credit. Anyone who chose to pay the per-mile charge would receive a rebate equal to the value of the fuel duty they have paid at the pump, worked out according to the fuel consumption of their vehicle and the mileage they declared, or were tracked doing.
14. There should then be a cut-off date by which all vehicles will need to have moved across to the new system, fuel duty ceases to be charged and any free mileage credit ceases to be offered for those making the transition. The existing ANPR camera network will need to be leveraged to ensure compliance with the new charging regime, along with a penalty regime sufficient to help deter non-compliance.

A) Principles and Practice

1. The history of the idea

The idea of charging for the use of roads is an old one. According to Munroe et al¹, toll roads were in use in India in the 4th century BC, in Europe in the 14th and 15th centuries and in the US in the 18th and 19th centuries. In England, starting in the 1660s, roads began to be owned privately by turnpike trusts established by their own Acts of Parliament.

In 18th century England, turnpike trusts experienced a boom, mirroring what happened with canals and foreshadowing what happened in the following century with the railways. When the last (and 942nd) turnpike Act was passed in 1836, turnpike trusts covered about 22,000 miles of road.

From 1815 onwards, however, there began a gradual shift towards state control. In the 1870s, turnpike trusts were discontinued and their powers were transferred to local Highways Boards, well before the era of mass transit and widespread ownership of cars. By the 1920s, nearly all road projects were led by the state.

Bearing in mind this history, the move towards directly taxing road usage – rather than indirectly through other duties and excises – would be more of a restoration than a revolution in policy, although with distinct improvements, as advances in technology make charging for road access seamless compared to the queue-inducing past practice of collecting tolls at booths.²

Support from economists

The idea of charging for road usage has received strong support from eminent economists, going back to the origins of the subject. Back in the 18th century Adam Smith laid out some of the key arguments. The essential idea was that roads should be like any other good or service. Those who benefited should pay for what they received. And the ability to earn a return from what they had built gave entrepreneurs the incentive to construct roads and to maintain them. In his 1776 *Wealth of Nations*, he wrote:

*“When the carriages which pass over a highway or a bridge... pay toll in proportion to their weight... they pay for the maintenance of those public works exactly in proportion to the wear and tear which they occasion of them. It seems scarce possible to invent a more equitable way of maintaining such works”*³

1. Munroe, T., Schmidt, R., & Westwind, M. (2006), 'Economic Benefits of Toll Roads operated by the Transportation Corridor Agencies', Emeryville, CA: LECC.
2. Walker, J. (2011), 'The Acceptability of Road Pricing', RAC Foundation, May. Available at: https://www.racfoundation.org/wp-content/uploads/2017/11/acceptability_of_road_pricing-walker-2011.pdf
3. Smith, A. (1776), 'Wealth of Nations', Book V: Chapter I: Part III

In the 1920s the distinguished Cambridge economist, Professor A. C. Pigou, drew attention to the way that free access to roads led to substantial negative externalities in the form of congestion. An individual driver would consider the costs of his own road trip, including non-pecuniary aspects such as the boredom and frustration of being caught in traffic jams. Yet he would not consider the effect of his actions on the umpteen other drivers whose experience would be worsened by the presence of an extra car on the roads. Hence there would be a tendency towards excessive use of roads, especially at peak times, leading to a significant social cost.

Attempts to introduce road pricing in the UK

Any attempt to introduce road pricing into the UK would not be starting with a blank sheet of paper. As far back as 1964, the Smeed Report put the cost of congestion caused by the lack of dynamic pricing for road travel at 1.5% of GDP. The Report was shelved. It later emerged that the Prime Minister, Sir Alec Douglas-Home, had written: “let us take a vow that if we are re-elected we will never again set up a study like this one”.⁴

In July 2003 the Blair Government published *Managing Our Roads* which said that road pricing should be considered as a solution to the congestion problem. The Government continued to publish papers which were enthusiastic about road pricing, culminating in a report by Sir Rod Eddington in December 2006.

But in the light of intense public opposition, government enthusiasm for road pricing waned. Plans were finally dropped in 2008 after 1.8 million people, 6% of all motorists, signed an online petition against them.⁵ In Edinburgh in 2005 and Greater Manchester in 2008, London-style congestion charging proposals were heavily defeated in local referendums.⁶ And in its manifesto for the 2010 general election, Labour ruled out a national road pricing scheme for the immediate future.

Nevertheless, during Boris Johnson’s time as Prime Minister, the Conservative Government came close to acting. In late 2021, the Government was on the verge of announcing a public consultation into what a replacement for fuel duty should look like, with a press release drafted by the Treasury and a quote from the then Chancellor, Rishi Sunak:

“Finding a long-term replacement [for fuel duty] will be key in protecting our public services for everyone across the UK. This is not about raising more money or charging motorists more to be out on the road. This is about finding a fair solution to protect these essential revenues and continue funding vital public services.”

Sunak and his Treasury officials and advisers were keen to move, and so was one of the present authors, who was then serving as Transport Advisor in Number Ten. But for two reasons, the press release was never issued and an announcement never happened. Firstly, Johnson himself, and other members of the Number Ten team, were still not convinced. And secondly, around the same time, the Government’s growing political meltdown, with more and more time taken up by crisis management,

4. Goodwin, P. (1997), ‘Solving congestion’, *ESRC Transport Studies Unit*, 23 October. Available at: <https://discovery.ucl.ac.uk/id/eprint/1244/>
5. Milmo, D. (2008), ‘£6bn to ease jams as road pricing shelved’, *The Guardian*, 17 July. Available at: <https://www.theguardian.com/politics/2008/jul/17/transport.congestioncharging>
6. BBC News, (2005), ‘Edinburgh rejects congestion plan’, 22 February. Available at: <http://news.bbc.co.uk/1/hi/scotland/4287145.stm>; Sturcke, J. (2008), ‘Manchester says no to congestion charging’, *The Guardian*, 12 December. Available at: <https://www.theguardian.com/politics/2008/dec/12/congestioncharging-transport>

reduced both Number Ten's appetite for risk, and the Prime Minister's bandwidth to consider such significant reforms.

In February 2022, the Commons Transport Select Committee reported, strongly backing change. By then, the Treasury had become more specific about its preference, in the long term, for a scheme which would manage congestion. It wanted to say this in the response to the committee. But the problems in Number Ten had intensified, and the proposed response sat on desks for weeks, to the committee's growing frustration. Shortly after, the Johnson administration collapsed – and the moment had passed.

The subsequent electoral weakness of the Conservative government made it extremely reluctant to discuss the issue. In August 2024 Adam Smith, the special adviser to Jeremy Hunt, the Tory chancellor under Sunak's premiership, said that in the second half of 2022 he “stop[ped] work being done” on a road pricing scheme by Treasury officials, and vetoed a government response to the Transport Select Committee which had “broadly agreed with the [committee's] recommendation to start work on a road pricing scheme.”⁷ The Conservatives subsequently attempted to use motorists as a dividing line in the 2024 election, though without success.⁸

Increasing Importance

The idea of road pricing has come to receive more attention because the social costs of the existing system are increasingly obvious.

Congestion costs are all too visible in London. Indeed, average road speeds in the capital have been more or less static for almost a hundred years. In 1949, the statistician, RJ Smeed predicted that average road speeds in London would never rise much above 9 mph. Anything much above that would encourage more driving which would bring more congestion, which would then discourage driving. The same forces would act in reverse if average speeds fell much below 9 mph. Remarkably, Smeed was correct: average road speeds in London have been about 9 mph for most of the last seventy years.

The externality argument, involving both congestion and environmental damage, has become the essence of the modern case for road pricing. Some people do still argue the case for charging for road access on the basis of equity, that is to say, the notion that whoever benefits from the provision of a service should be expected to finance it. But this doesn't typically carry the weight that it used to. Indeed, in most countries, including the UK, road users typically pay more in taxes than the whole budget for building and maintaining the roads.

Meanwhile, the externality argument has received a major boost from increased concern about the environment, and most recently, climate change. Again, the individual motorist, unless he is particularly environmentally motivated, will not give due weight to the effect of his road trip on the environment, including pollution levels, noise and the effect on the level of greenhouse gases, although many, and perhaps most, purchasers of electric cars are partly motivated by the idea of helping to

7. Ping Chan, S. (2024), 'Pay per mile road tax 'on Treasury agenda' as electric cars take over', *The Telegraph*, 12 August. Available at: <https://www.telegraph.co.uk/business/2024/08/12/treasury-officials-pushed-pay-per-mile-pricing-hunt-adviser/>
8. Churchill, D. (2024), 'Labour would 'declare war' on motorists by introducing ULEZ-style road pricing schemes and 20mph speed limits across the country, Tories claim', *Daily Mail*, 21 June. Available at: <https://www.dailymail.co.uk/news/article-13556663/Labour-declare-war-motorists-introducing-ULEZ-style-road-pricing-schemes-20mph-speed-limits-country-Tories-claim.html>

reduce pollution.

The way we approach roads and transport is an oddity. As the economist William Vickery put it in the 1960s:

*“In nearly all the other operations characterised by peak-load problems, at least some attempt is made to differentiate between the rates charged for peak and off-peak service. Where competition exists, this pattern is enforced by competition: resort hotels have off-season rates, theatres charge more on weekends and less for matinees. Telephone calls are cheaper at night... but in transportation, such differentiation as exists is usually perverse”.*⁹

But because we generally do not directly tax road usage according to location or time of day, the price for drivers is broadly the same, irrespective of whether someone is driving on a rural road on a Sunday or the M25 during the Monday rush hour.

Among economists, the arguments for road pricing have come to be accepted pretty much unanimously. As we shall see, the opposition to the introduction of road pricing has been political.

Popular opposition

It may seem surprising that, outside congestion zones of limited geographical extent, such as the London congestion charging zone, or tight urban areas such as the island of Singapore, access to river crossings, or fixed tolls for using motorways, road pricing has not been widely adopted.

Yet it is not difficult to see why this is. (We discuss this issue in relation to the UK case, but much the same points apply throughout the world.) Drivers typically see road pricing as something that would just add to the overall tax burden rather than something that would shift incentives within a given overall tax-take.

Moreover, many people, drivers and non-drivers alike, have been irked by the apparent loss of freedom involved in paying for road usage and, in particular, by the possibility of the state acquiring information about where and when they have been travelling and what they might be up to.

Over and above this, until recently, the practicalities of road pricing limited its appeal. On the Continent, there have long been tolls on the motorway network and these have also been employed in parts of the UK. However, these have tended to create long tailbacks and to be expensive to construct and operate.

The forces for change

Several factors have come together recently to make road pricing more attractive. Congestion has increased considerably, while concern for the environment has increased dramatically. So the economic and social costs of free access to roads have ramped up.

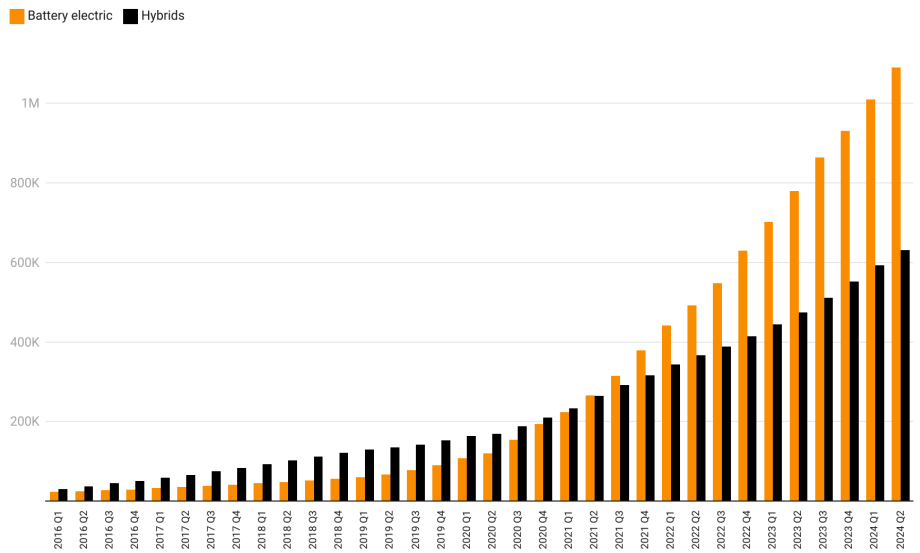
Meanwhile, the technology has improved no end such that it would be possible to establish a nationwide system of road pricing without resort to ugly and expensive gantries. Modern digital technology allows a system to

9. Vickery, W. (1963), 'Pricing in Urban and Suburban Transport', p.452, *The American Economic Review*, May. Available at: <https://www.jstor.org/stable/1823886>

be extremely flexible and fine-tuned to both traffic conditions, the type of vehicle and the type of driver.

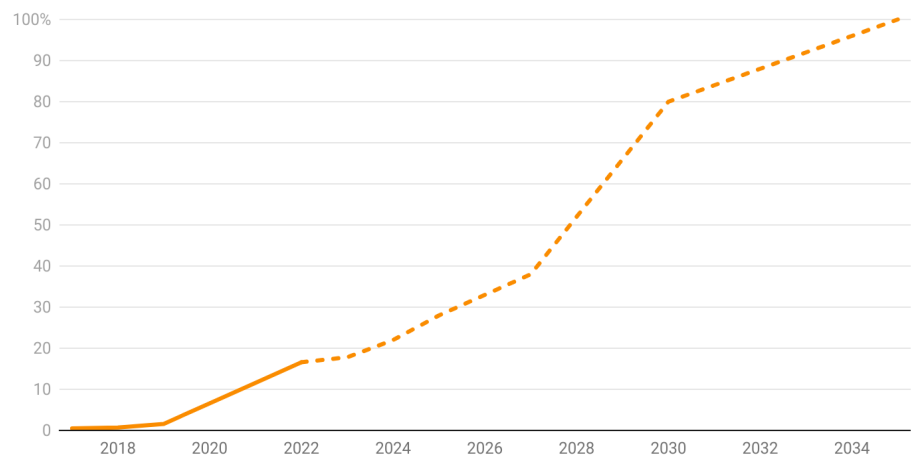
These developments have coincided with a gradual switch to electric vehicles, as shown in Charts 1 and 2.

Chart 1: United Kingdom - Number of licensed ultra low emission cars, 2016 - 2024



Source: DfT - Vehicle licensing statistics data tables

Chart 2: United Kingdom - Electric vehicle share of new car sales, historic and forecast data, 2017 - 2035



Source: Office for Budget Responsibility Economic and fiscal outlook – November 2023

Chart 2 shows that, in terms of market share, electric vehicles only began to take off around 2019. In 2022, electric vehicles represented 17% of new car sales, with this forecast to increase to 80% by 2030 and 100% by 2035.

As this switch continues, the Treasury will progressively lose a large chunk of revenue from fuel duty, VAT on fuel and vehicle excise duty (VED). (Electric vehicles are not currently subject to VED, but this is due to change next year.)

Table 1: United Kingdom - Tax receipts from motorists, 2023

Tax	Revenue raised (£bn)
VED	7.8
Fuel duty	24.9
VAT on fuel duty	5.0
VAT on fuel	6.0
Total tax receipts	43.6

Source: ONS - Public sector finances time series. Calculations for VAT on fuel assume 140p pump price per litre. Components may not sum to total due to rounding.

Table 1 shows the tax receipts from motoring in 2023. When you include the VAT paid on fuel, the receipts total some £43.6 billion, or £37.6 billion without the VAT on fuel. If a scheme of road pricing were introduced now, the revenue that would need to be replaced is £37.6 billion, because VAT would continue to be paid on petrol and diesel. But this form of revenue will fall away as ICE vehicles are phased out. At the final point, the total loss of revenue is £43.6 billion. However, there is a further complication that EVs will be liable for VED from next year. (In addition, there are various revenues from existing congestion charges and tolls which might be subsumed under a general road pricing scheme. These total about £1.5 billion.) Accordingly, it is common to refer to the loss of revenue as “about £40 billion”.

Of course, it would be possible to replace the lost revenue by sharply cutting spending or increasing other sorts of taxation. An increase in the basic rate of income tax by 6-7p would raise the same amount of revenue lost from VAT on fuel, fuel duty and VAT on the fuel duty. But this would be a retrograde step. If taxes on motoring were allowed to slip away, then the marginal costs to the motorist of making a road trip will have fallen, thereby encouraging more driving, potentially making the externality costs even higher than now.

The potential loss of revenue and the need to influence the marginal cost of driving provide a strong motive for finally grasping the nettle on road pricing. Road pricing is a venerable idea whose time has come.

2. Quantifying the costs of congestion, delays, uncertainty and environmental damage

Transport is the largest greenhouse gas emitting sector in the UK and was responsible for 26% of the UK’s total emissions in 2021, with 91% of domestic transport emissions coming from road vehicles.¹⁰

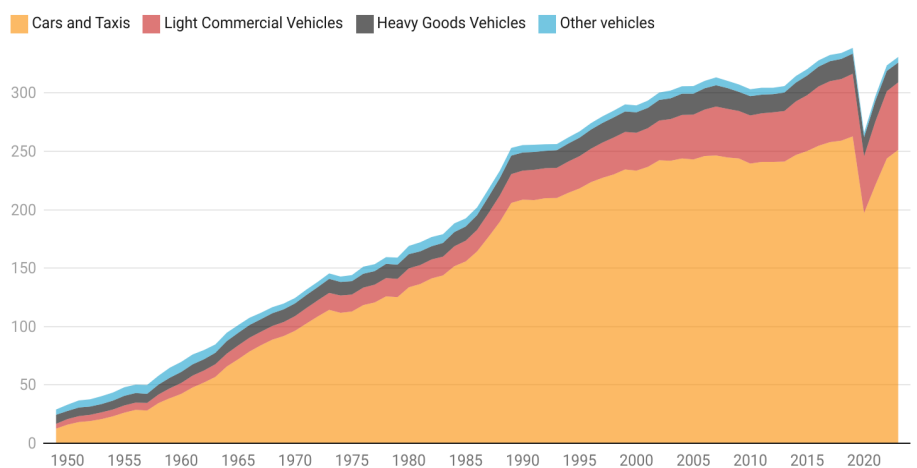
On top of their contribution to climate change there is the damaging effect that vehicles have on air quality and, consequently, health implications; hazardous air pollutants from exhaust emissions pose public health risks and can cause premature deaths.

A 2018 study estimated that air pollution from cars and vans costs the NHS and society around £6 billion per annum in health costs. This amounts to a cost to society of as much as £24,500 for a single diesel van driven in inner London over its lifetime, £16,400 for one diesel car driven in inner London, or £1,600 over its lifetime for an average car (petrol, diesel, hybrid or electric) across the whole country.¹¹ Even an electric car driven in inner London had emission costs to society of more than £800 across its lifetime, the study found.

But air pollution constitutes just one contributing factor to overall driving externalities. In terms of economic costs, congestion is by far the most significant. Congestion increases driving costs, reduces productivity, and worsens the environmental effects mentioned above.

And the problem is getting worse. Since 1990, the number of motor vehicle miles travelled has increased by 30%, as demand for road usage has increased. (See Chart 3.)¹² This has put a greater strain on the road network and, particularly in recent years, led to greater delays. (See Chart 4.)

Chart 3: Great Britain - Road traffic (billion vehicle miles), 1949 - 2023



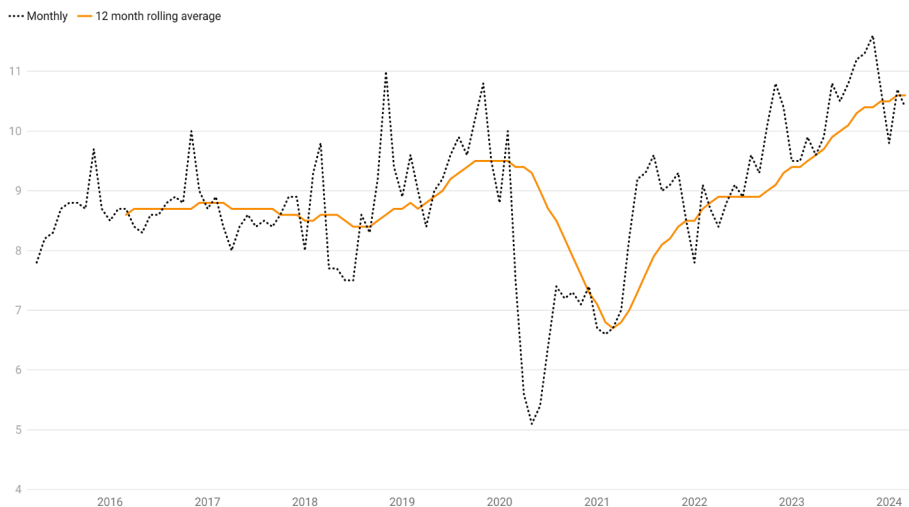
Source: Department for Transport - Road traffic estimates (TRA)

10. Department for Transport. (2023), 'Transport and environmental statistics: 2023', 19 October. Available at: <https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023/transport-and-environment-statistics-2023>

11. Brand, C. and Hunt, A. (2018), 'The health costs of air pollution from cars and vans', *Global Action Plan*, 18 May. Available at: https://www.cleanairday.org.uk/files/the_health_costs_of_air_pollution_from_cars_and_vans_20180518.pdf

12. Department for Transport, (2024), 'Transport Statistics Finder: interactive dashboard'. Available at: <https://maps.dft.gov.uk/transport-statistics-finder/index.html>

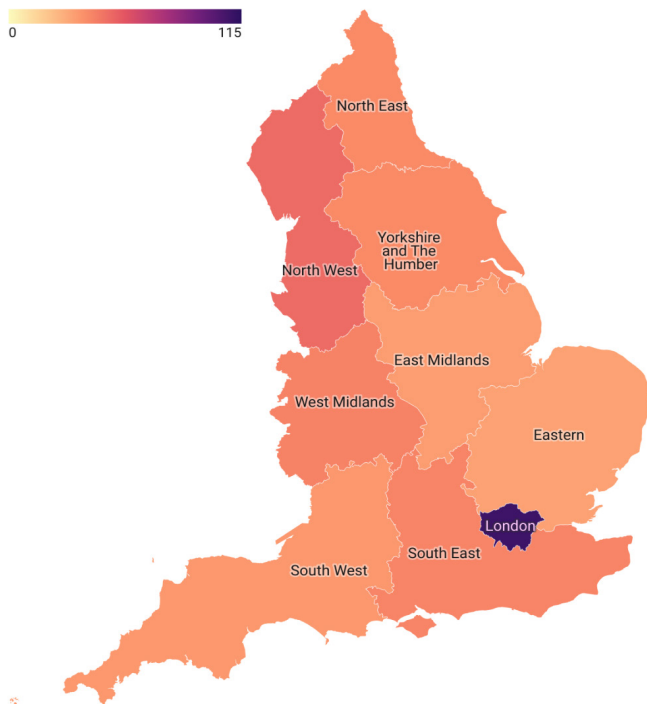
Chart 4: England - Average delay on the Strategic Road Network (seconds per vehicle per mile), 2015 - 2024



Source: Department for Transport - Travel time measures for the Strategic Road Network and local 'A' roads: April 2023 to March 2024

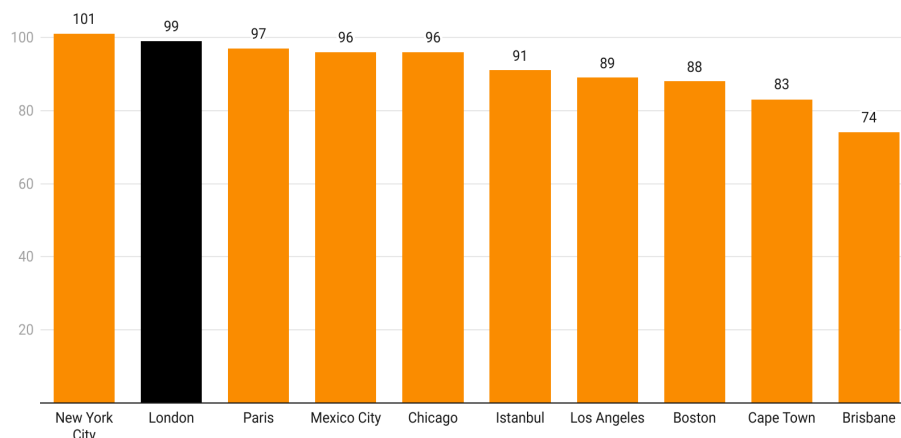
Congestion is a nationwide issue, but its severity is often most concentrated in our largest cities, with Greater London exhibiting the greatest average delays on its local 'A' roads. (See Chart 5.) Transport analytics firm Inrix estimated that in 2023, London had the second highest delays of any city in the world, with motorists losing an average of 99 hours each year sat in traffic, second only to New York City. (See Chart 6.)

Chart 5: England - Average delay on local 'A' roads (seconds per vehicle per mile), 2023



Source: Department for Transport

Chart 6: Global cities - Annual hours lost to congestion, 2022



Source: INRIX 2023 Global Traffic Scorecard

Of all the external costs of motoring, congestion costs are the most directly damaging for the economy. Whether such costs reduce measured GDP or simply impair the quality of life of people (which is in no way to be dismissed simply because it is not picked up in GDP), depends critically on the assumptions you make about the breakdown of the time lost by drivers being trapped in traffic between work and leisure time. To the extent that it is work time that is lost, this increases firms’ costs of production and effectively reduces the productive workforce. Without such wasted time, drivers would be available for more hours of productive work.

What does all this cost the economy? Transport analytics firm Inrix has made many estimates of the cost of congestion in recent years, which can differ significantly year-to-year. Their most recent, and more modest, estimate was made in 2023, where they suggested that congestion costs the UK economy £7.5 billion annually.¹³ This contrasts strongly with a previous estimate, made in 2017, that the cost was £38 billion in 2017 prices, or £49 billion in today’s prices.¹⁴

A range of estimates is discussed in *The Economic Costs of Road Traffic Congestion* (2004), a paper written by Phil Goodwin.¹⁵ Table 2 lists the sources referenced in this paper, as well as how much their estimates would be worth in today’s prices.

13. Inrix, (2024), ‘INRIX 2023 Global Traffic Scorecard: London most congested city in Europe; congestion costing the UK £7.5 billion’, 25 June. Available at: <https://inrix.com/press-releases/2023-global-traffic-scorecard-uk/>

14. Inrix, (2018), ‘TRAFFIC CONGESTION COST UK MOTORISTS OVER £37.7 BILLION IN 2017’, 6 February. Available at: <https://inrix.com/press-releases/scorecard-2017-uk/>

15. Goodwin, P. (2004), ‘THE ECONOMIC COSTS OF ROAD TRAFFIC CONGESTION’, *ESRC Transport Studies Unit University College London*, May. Available at: https://discovery.ucl.ac.uk/id/eprint/1259/1/2004_25.pdf

Table 2: United Kingdom - Estimates of the cost of congestion, various sources

Source	Estimated cost of congestion (£bn)	In today's prices (£bn)
Glanville and Smeed (1958)	0.2	3.4
British Road Federation (1988)	15.0	40.6
CBI (1989)	15.0	38.6
Newbery (1993)	19.1	39.7
Dodgson & Lane (1997)	7.0	13.4
Mumford (2000)	18.0	33.2
Smith Group (1999)	20.0	37.2

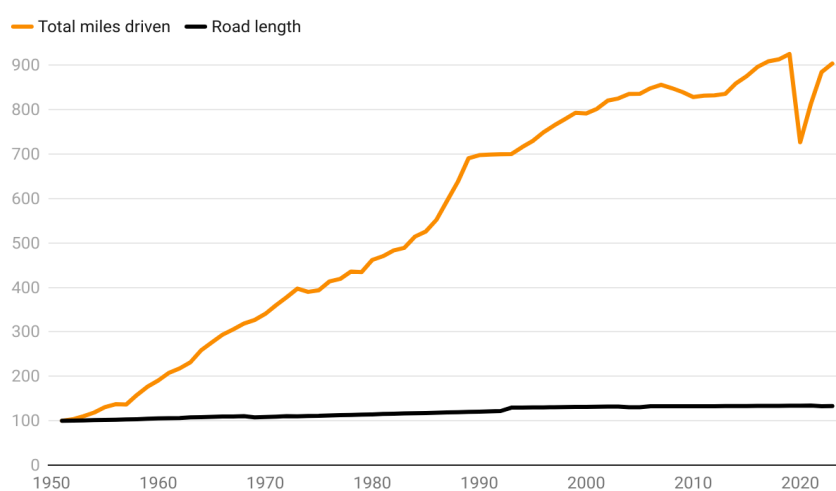
Source: Goodwin, P. (2004) *The economic costs of road traffic congestion*. Glanville and Smeed's estimate does not account for the value of non-working time.

The average valuation from these sources is around £30 billion in today's prices, and the paper notes that the most frequently cited figure is £20 billion in 2004 prices, or £35 billion today. It also makes the important point that these cost estimates are based on the relationship between real average speeds and a zero-delay scenario; in reality it would not actually be economically efficient (nor practically feasible) to attempt to operate at zero congestion.

Since these estimates were released, it is likely that congestion levels have risen considerably. There is not much data available for historical levels of congestion. However, since 1990, there has been an increase in total miles driven of 30% in Great Britain, whilst total road length has increased by only 10%. And since 1958 (the year of Glanville and Smeed's paper), distance driven has increased by 472%, and road length by only 29%. (See Chart 7.)

Chart 7: Great Britain - Total miles driven and road length, indexed, 1951 - 2023

Index, 1951 = 100



Source: Department for Transport statistics

Although this data can only be used as a proxy for traffic flows, an increase in the severity of congestion would of course imply an increase in its cost; congestion is surely now significantly more costly than estimated by the sources listed in Table 2.

Taking the difference between the total miles driven and the total road miles added, we could estimate that congestion is at least 20% worse than in 1990, around the time many of these earlier sources are from (this may be an underestimate, given that congestion increases rapidly when roads are at capacity). That would put the cost of congestion at closer to £50 billion in today's prices, which is closer to a recent estimate made by the Tony Blair Institute.

In 2021, the Tony Blair Institute estimated the total externalities arising from motoring to be worth £75 billion each year (2020 prices), or roughly 4% of GDP that year.¹⁶ Of this, congestion costs alone account for around £60 billion, or £72 billion when expressed in current prices. However, their methodology multiplies the total kilometres driven by the marginal external cost of driving per km, rather than the average, which would lead to this being an overestimate.

There is thus considerable uncertainty surrounding precisely how economically damaging congestion is. As is shown in Table 2, most estimates cluster around £35-40 billion in today's prices, or around 1.4% of GDP, but it could be that congestion costs us around £70 billion, or 2.5% of GDP, as per the Tony Blair Institute's estimate, so it seems reasonable to work with a range of 1.4-2.5% of GDP. However, we would not expect any road pricing system to completely eliminate congestion. If a road pricing system were to achieve a 40% reduction in congestion, this would give us benefits of £15-30 billion, or 0.5-1% of GDP.

Congestion also has indirect effects which are not factored into these externalities, one of which being that it limits potential gains from economic agglomeration - the benefits that businesses and workers can realise from being geographically closer together. For example, by decreasing commuting times and increasing labour mobility, reduced congestion increases the supply of labour available to firms, leading to a more efficient labour market.

One study found that the UK's congestion levels are a significant factor in why our largest non-capital cities are less productive than their European counterparts, since their effective size is reduced, limiting agglomeration benefits.¹⁷ So, those posited annual externality costs from vehicles using our roads could be a conservative estimate.

While decarbonisation and the transition to electric vehicles will probably improve environmental outcomes, without intervention we can expect to see a significant increase in the number of cars on the roads as driving costs fall and the incentives to drive increase, exacerbating congestion and its associated costs. (See Chart 8.) The Department for Transport projects a 22% increase in traffic between 2025 and 2060 under its 'Core Scenario', whilst its 'Technology Scenario', which assumes a fast uptake of EVs, estimates a 54% increase. (See Chart 9.)¹⁸

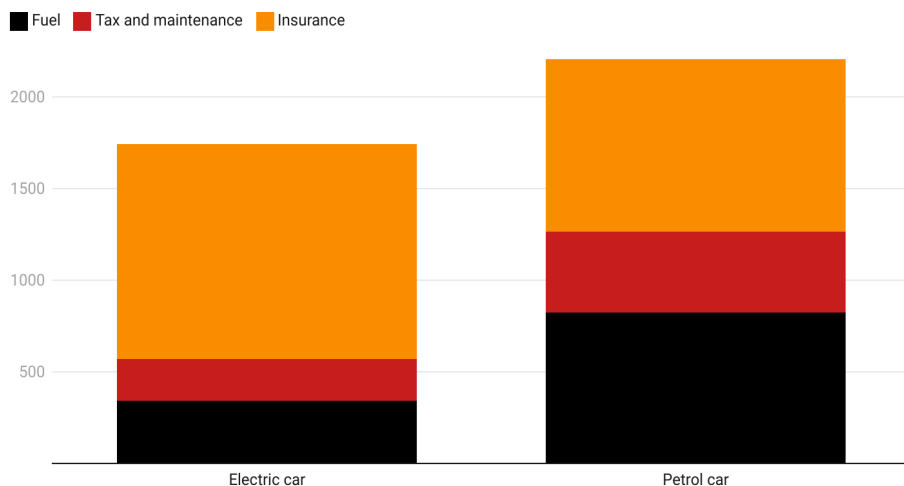
16. Lord, T. and Palmou, C. (2021), 'Avoiding Gridlock Britain', *Tony Blair Institute for Global Change*, 31 August. Available at: <https://institute.global/insights/climate-and-energy/avoiding-gridlock-britain>

17. CityMonitor, (2019), "'Birmingham isn't a big city at peak times': How poor public transport explains the UK's productivity puzzle", 31 January. Available at: <https://www.citymonitor.ai/analysis/birmingham-isn-t-big-city-peak-times-how-poor-public-transport-explains-uk-s-productivity/>

18. Department for Transport, (2022), 'National Road Traffic Projections 2022', December. Available at: <https://assets.publishing.service.gov.uk/media/6698c4f90808eaf43b50d193/national-road-traffic-projections-2022.pdf>

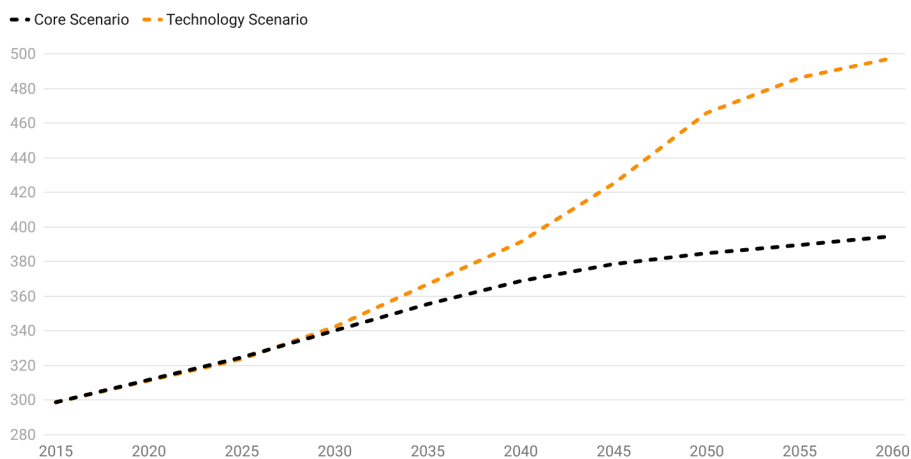
It also projects a 27% increase in the average delay per mile over this period across England and Wales. (See Chart 10.) The evidence suggests that, for most drivers, savings from lower driving costs will be outweighed by more time wasted from being stuck in traffic.

Chart 8: United Kingdom - Relative annual running costs of electric and petrol cars (£)



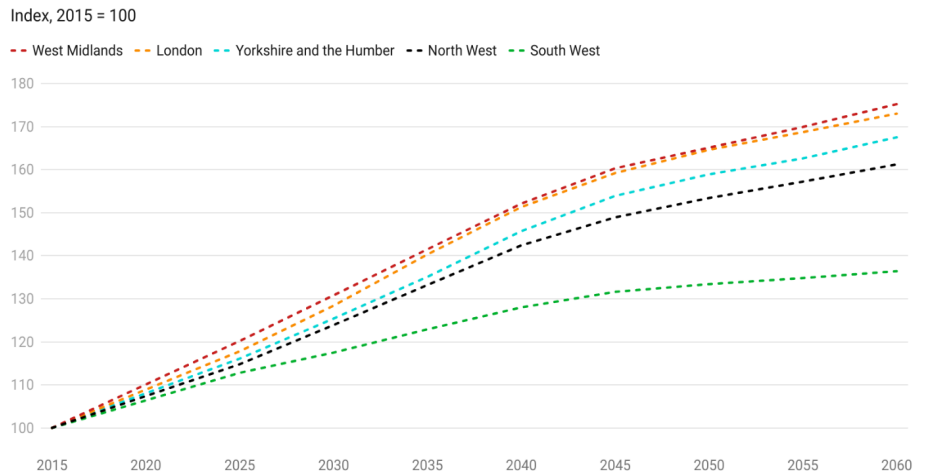
Source: Direct Line Car Insurance 2020

Chart 9: England and Wales - Distance travelled (billion vehicle miles), by scenario, 2015 - 2060



Source: Department for Transport National Road Traffic Projections 2022. The Core Scenario is based on the latest government projections of the main drivers of road traffic demand. The Technology Scenario assumes a high and fast uptake of EVs.

Chart 10: Selected English regions - Projected lost time for cars on 'A' roads under 'Core scenario', 2015 - 2060



Source: Department for Transport - National Road Traffic Projections 2022. The Core Scenario is based on the latest government projections of the main drivers of road traffic demand.

Under DfT’s ‘Core Scenario’, CO₂e tailpipe emissions are projected to decrease by 42% between 2025 and 2060.¹⁹ As such, the transition to electric vehicles will have a transformative impact on our environmental footprint as a country. But there are problems ahead which need to be addressed, particularly the vast spike in driving that is anticipated, the drag that increased congestion would have on the UK economy, and the fiscal implications of lost VED and Fuel Duty revenue.

Congestion slows down our economy, not just our cars. But the other side of the coin is that a new system of motor taxation might drastically improve the performance of the UK economy. Thankfully, we can learn lessons on how to create such a system from international case studies.

3. International examples of road pricing schemes

Several countries, including Western democracies, have already introduced distance-based road pricing, mostly for trucks and medium vans but some for electric cars. Other Western cities, including London, have introduced congestion charges.

Distance-based road pricing schemes

This January, Iceland became the first European country to introduce compulsory distance-based road pricing for electric cars. The scheme will extend to petrol and diesel cars by next year.²⁰ New Zealand, which has had distance-based road pricing for diesel cars, vans and lorries since 1978, extended it to electric and hybrid cars this year.²¹ In August, the country’s transport minister announced plans to “transition all light vehicles [ie petrol cars and vans] to road user charges by as early as 2027.”²²

In these schemes, the per-mile rate is the same at all times. But in 2020, the city of Brussels approved SmartMove, a full distance-based road pricing system for all cars and most commercial vehicles. This is one of the most sophisticated scheme in implementation, with variable rates depending

19. *Ibid.* In fact, emissions are projected to decrease in all of their scenarios.
 20. Thornton, J. (2023), 'Iceland to introduce distance-based charge for clean-energy vehicles in 2024', *Citti Magazine*, 30 November. Available at: <https://www.cittimagazine.co.uk/news/road-user-charging-tolling/iceland-to-introduce-distance-based-charge-for-clean-energy-vehicles-in-2024.html>
 21. NZ Transport Agency, (2024), 'About RUC'. Available at: <https://www.nzta.govt.nz/vehicles/road-user-charges/about-ruc/>
 22. Brown, S. (2024), 'Revenue Action Plan to support delivering infrastructure sooner', *Beehive*, 29 August. Available at: <https://www.beehive.govt.nz/release/revenue-action-plan-support-delivering-infrastructure-sooner>
 23. SmartMove, 'Introduction'. Available at: <https://smartmove.brussels/en/introduction-2/>
 24. Toll Collect, 'Toll roads'. Available at: https://www.toll-collect.de/en/toll_collect/rund_um_die_maut/mautpflichtige_strassen/mautpflichtige_strassen.html

on traffic density. It is currently in the test and pilot phase.²³

Compulsory distance-based road pricing for trucks and vans over 3.5 tonnes has in recent years been introduced in most European countries. In Germany, for instance, trucks and large vans pay a per-km charge on motorways and most major A-roads, totalling 51,000 km (32,000 miles) of route.²⁴ In Belgium, similar arrangements apply.²⁵

In Hungary and Switzerland, trucks and larger vans pay a per-km charge for driving on almost any main road.²⁶ In France, Italy, Austria, the Netherlands and elsewhere, trucks and large vans (and sometimes also private cars) pay per km to drive on motorways.²⁷ The tolls are usually collected by in-cab electronic boxes.

The price typically depends on the weight and emissions of the vehicle as well as distance travelled, though not usually time or place (there are a few time and/or place-based surcharges for specific locations such as mountain passes.) Trucks are subject to distance-based road pricing in four US states: New York,²⁸ Kentucky,²⁹ New Mexico³⁰ and Oregon.³¹

For cars, some of the most advanced schemes are in free-market American states, typically in the West, which often charge little or no state income tax and rely on now disappearing gasoline tax for much of their revenue. Three US states have active distance-based road pricing schemes for electric cars – Oregon, Utah and, from next year, Hawaii.³² In each case drivers can choose to pay a per-mile charge or a flat annual fee. Hawaii will make the per-mile charge compulsory for EVs in 2028 and all vehicles by 2033.³³ A further six states, including California, are operating pilot programmes and a further 11 are researching whether to implement distance-based pricing.³⁴ A national pilot is in preparation.³⁵

Distance-based road pricing for electric cars was introduced by the Australian state of Victoria, whose capital is Melbourne, in 2021, but was struck down last year by the Australian High Court, which said only the Federal Government had the power to levy it.³⁶ A similar tax in New South Wales is planned for 2027, but is likely to fall foul of the same ruling.

In the UK, in addition to the national plans that have been discussed, the Scottish Government is studying road pricing as a possible option,³⁷ the Welsh Government published an “independent review” in 2020 saying that there was a “pressing need for a national policy framework for RUC [road user charging] in Wales to be developed and introduced as soon as possible”³⁸ and in a 2022 addition to his transport strategy, the Mayor of London, Sadiq Khan, states that he “will seek to address the triple challenges of toxic air pollution, the climate emergency and traffic congestion through road user charging schemes.”³⁹ Under weak leadership, none of these efforts seem likely to amount to much, with both Khan and the Welsh government this year ruling out further road charging for the rest of their current terms.

25. Viapass, ‘Practical info’. Available at: <https://www.viapass.be/en/practical-info/>
26. National Toll Payment Services, (2024), ‘Toll road network subject to e-toll’. Available at: https://toll-charge.hu/api/uploads/NUSZ_UD_terkep_A0_20240901_EN_jpg_5debec9088.jpg; The Swiss Confederation, ‘HVC (LSVA) - General information and rates’. Available at: https://www.bazg.admin.ch/bazg/en/home/informationen-firmen/verkehrs-abgaben-und-strassenverkehrsrecht/schwerverkehrsabgaben-lsva-und-ps-va/lsva_allgemeines_tarife.html
27. ASFINAG, (2024), ‘GO toll rates 2024’. Available at: <https://www.go-maut.at/en/paying-the-go-toll/go-toll-rates/>
28. New York State Department of Taxation and Finance, (2016), ‘An Introduction to Highway Use Tax’. 13 April. Available at: https://www.tax.ny.gov/pubs_and_bulls/tg_bulletins/hut/introduction.htm
29. Commonwealth of Kentucky, (2024), ‘Kentucky Weight Distance (KYU)’. Available at: <https://drive.ky.gov/motor-carriers/Pages/KYU.aspx>
30. New Mexico Taxation and Revenue Department, ‘Weight Distance Tax’. Available at: <https://www.tax.newmexico.gov/all-nm-taxes/2020/10/21/weight-distance-tax/>
31. Oregon Department of Transportation, ‘Mileage Tax Rates’. Available at: <https://www.oregon.gov/odot/Forms/Motcarr/9928-2024.pdf>
32. RUC America, (2024), ‘New paths to road funding’. Available at: https://www.oregon.gov/odot/rucamerica/Documents/RUCAmericaFactSheet_01-02-2024_v1.2.pdf
33. Hawaii Department of Transportation, (2024), ‘A New Way to Pay for our Roads’, HIRUC. Available at: <https://hiruc.org/>
34. RUC America, (2024), ‘New paths to road funding’. Available at: https://www.oregon.gov/odot/rucamerica/Documents/RUCAmericaFactSheet_01-02-2024_v1.2.pdf
35. Ptolemus, ‘Road Usage Charging United States Report’. Available at: <https://www.ptolemus.com/research/road-usage-charging-united-states-study/#>
36. Karp, P. (2023), ‘Why the high court struck out Victoria’s EV tax – and the far-reaching effects of the decision’, *The Guardian*, 18 October. Available at: <https://www.theguardian.com/law/2023/oct/18/why-the-high-court-struck-out-victorias-ev-tax-and-the-ripple-effects-of-the-decision>
37. Johnson, S. (2022), ‘Drivers could pay to use Scotland’s roads under SNP net zero plans’, *The Telegraph*, 8 June. Available at: <https://www.telegraph.co.uk/politics/2022/06/08/drivers-could-soon-pay-use-scotlands-roads-snp-net-zero-plans/>
38. Turner, D. (2020), ‘An Independent Review of Road User Charging in Wales’, 17 November. Available at: <https://www.gov.wales/sites/default/files/publications/2020-11/independent-review-road-user-charging-in-wales.pdf>
39. Mayor of London, ‘Addendum to the Mayor’s Transport Strategy (MTS): Proposal 24.1’, *Transport for London*. Available at: <https://www.london.gov.uk/sites/default/files/2022-11/Mayors%20Transport%20Strategy%20Addendum%20Proposal%2024.1.pdf>

Singapore

Singapore is probably the most successful example of road pricing. The introduction of its system in 1975 secured a 44% reduction in city congestion during peak hours, while the later introduction of electronic road pricing reduced peak hour congestion by a further 10-15%.⁴⁰

Even though its population density is about one and a half times London's, even at peak times, cars move through the city at an average speed of over 18 mph. Moreover, average speeds have been rising over recent years.

Singapore road pricing is part of a suite of measures, introduced over many years, some of which would not be acceptable in the UK. These have included high taxes on car ownership, a vehicle quota system, an expanded railway network and improved bus services. As stated, UK road pricing should be a replacement for all existing taxes on car ownership, and nor should there be a quota system. It is therefore possible that the economic effects of UK road pricing, though substantial, would not be as great as Singapore's.

Since Singapore first introduced road pricing in 1975, the system has changed dramatically. Originally, its Area Licensing Scheme (ALS) required drivers to purchase paper licenses prior to accessing congested parts of the city in the Central Business District. Enforcement personnel were stationed at control points, and gantries were erected on access roads to the Restricted Zone (RZ). Licenses could be purchased from roadside booths on the approach to the gantries. ALS operated during restricted hours between 0730 and 0930, and these were later expanded.

There were considerable limitations to the manual scheme: it was labour intensive, and created perverse incentives for high traffic immediately before or after the restricted periods. In the 1990s, Singapore's Land Transport Authority (LTA) introduced an Electronic Road Pricing (ERP) system. ERP worked through In-Vehicle Units (IUs), which interacted with overhead gantries around the city. ERP allowed for more flexible and adaptable charging; prices were raised when average speeds fell below a certain threshold.

In 2023, the LTA began the phased introduction of its new road pricing system, ERP 2.0. It will replace the existing system based on physical gantries and tag-and-beacon technology with a Global Navigation Satellite System (GNSS).

The IUs currently fitted in Singaporean vehicles will be replaced with On-Board Units (OBUs), and all new vehicles will be pre-fitted. These OBUs consist of a processing unit and a touchscreen display, which give Singaporean drivers access to live traffic and charging data. The system will be integrated with Singapore's Electronic Parking System (EPS) too. Installation of the OBUs is expected to be completed in mid-2025.

The LTA awarded the contract for the project to a private consortium in 2016 at a cost of S\$566 million. When complete, it will represent the most technologically sophisticated road pricing system in the world.

40. Kian-Keong, C. (2005), 'Road Pricing - Singapore's 30 Years of Experience', CESifo DICE Report, Autumn. Available at: <https://www.ifo.de/en/publications/2005/journal-complete-issue/cesifo-dice-report-32005-autumn>

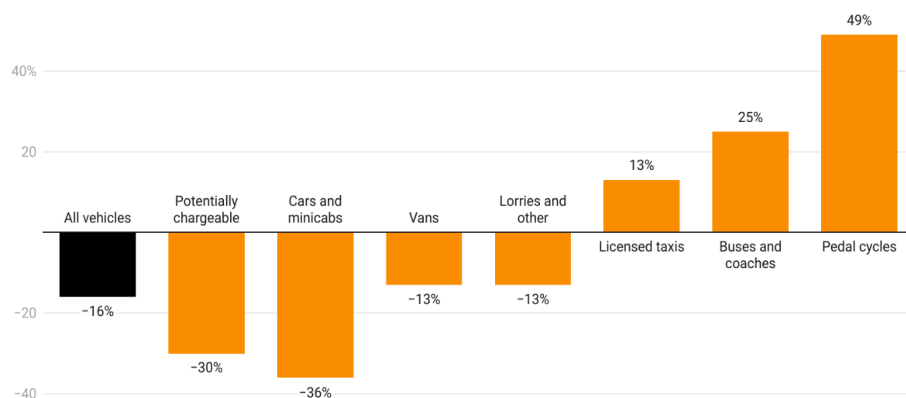
The London Congestion Charge

Inspired by the successes of Singapore's electronic road pricing system, London introduced its Congestion Charge in 2003.⁴¹ Established as a means to reduce traffic and congestion, the Congestion Charge was deemed the most effective of a series of measures, with expected improvements to the quality of life and appetites for business investment in London.⁴² Substantial net revenues were anticipated, all of which were to be re-invested into London's transport.

The charge is a flat daily rate applicable to most vehicles entering the Congestion Charge zone (central London) from 7:00-18:00 Monday to Friday and 12:00-18:00 Saturday to Sunday and bank holidays, with discounts available for residents of the zone.⁴³ Payments are made primarily through automatic number-plate recognition technology (ANPR) which uses cameras to record vehicles entering the zone, making it simple and convenient for motorists. When first introduced, the charge was £5. Since then, it has seen several increases and now stands at £15, a trebling of the initial nominal cost and a roughly 70% increase in real terms.

The London Congestion Charge is generally considered a success. In 2007, Transport for London reported that there had been a 30% reduction in the number of chargeable vehicles entering the zone since its introduction, whilst some non-chargeable vehicles, namely buses and taxis, had seen increases. (See Chart 11.)⁴⁴ Total traffic was reduced by 16% by 2006, with subsequent 2013 data showing a 10% decrease 10 years on.⁴⁵

Chart 11: London Congestion Charge - Changes in inbound traffic, 2002 - 2006



Source: Transport for London - Central London Congestion Charging - Impacts monitoring Fifth Annual Report, July 2007

Initially, the scheme improved average speeds in the central congestion zone from 8.5 mph to 10.8 mph, but by 2006 speeds fell back to 9.4 mph, raising concerns about the efficacy of the scheme.⁴⁶ However, its fifth annual report blamed this fall on increased street works and road safety adjustments, claiming that without the charge congestion would be much worse.⁴⁷

On top of reducing traffic and limiting congestion, the scheme led to small improvements in air quality, road safety and public transport usage,

41. Transport for London, (2023), 'Congestion Charge marks 20 years of keeping London moving sustainably', 17 February. Available at: <https://tfl.gov.uk/info-for/media/press-releases/2023/february/congestion-charge-marks-20-years-of-keeping-london-moving-sustainably>

42. Transport for London, (2002), 'The Greater London (Central Zone) Congestion Charging Order 2001: Report to the Mayor of London', February.

43. Transport for London, (2024), 'Congestion charge'. Available at: <https://tfl.gov.uk/modes/driving/congestion-charge>

44. Transport for London, (2007), 'Central London Congestion Charging: Impacts monitoring, fifth annual report, July 2007'. Available at: <https://content.tfl.gov.uk/fifth-annual-impacts-monitoring-report-2007-07-07.pdf>

45. Timms, C. (2013), 'Has London's congestion charge worked?', BBC, 15 February. Available at: <https://www.bbc.co.uk/news/uk-england-london-21451245>

46. London Assembly, (2007), 'Congestion Charge Zone Traffic Speeds', Mayor of London. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/congestion-charge-zone-traffic-speeds>

47. Transport for London, (2007), 'Central London Congestion Charging: Impacts monitoring, fifth annual report, July 2007'. Available at: <https://content.tfl.gov.uk/fifth-annual-impacts-monitoring-report-2007-07-07.pdf>

although these were not primary aims of the policy. Improvements to environmental outcomes were instead targeted by the subsequent ULEZ scheme, which the London Congestion Charge likely helped pave the way for.

Set up costs were £81 million plus another £81 million for associated road traffic measures.⁴⁸ The first three full years of operation produced revenues of £592 million and operating costs of £289 million giving a net operating income of £303 million, meaning the scheme quickly paid for itself and provided additional funding for London's transport infrastructure.

There is an argument that congestion charges can result in reduced footfall and lost business for firms located within the charge zone. Indeed, the scheme drew criticism from John Lewis, which referenced a study which found that the Congestion Charge had led to a statistically significant decrease in average weekly sales at their flagship Oxford Street store relative to other locations.⁴⁹ However, the study also found that the charge did not impact overall retail sales in central London.

A recent FOI request suggests that on weekdays 85% of chargeable vehicles pay the £15 charge, and of those who received a penalty charge notice for not paying, the vast majority result in full payment.⁵⁰ There is potential for evasion through the use of fraudulent number plates and otherwise, but these vehicles account for only 0.01% of the vehicles that enter the Charging zone, effectively making this a non-issue.⁵¹

Another limitation of the scheme is that it is relatively blunt instrument for tackling congestion. The charge has changed four times since its inception but does not allow for differential charging. In 2017, the London Assembly recommended that the charging system should be based on when and where drivers enter the zone and how long they spend there, although this of course would be less simple than its current form.⁵²

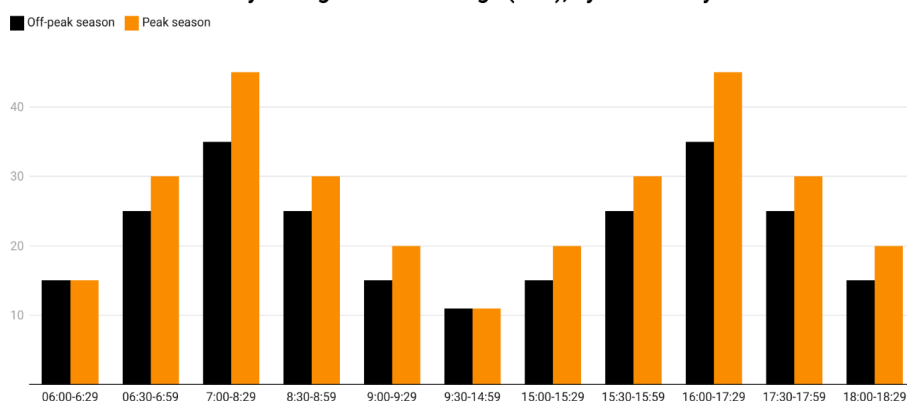
The Stockholm Congestion Charge

Stockholm's congestion charge was also inspired by Singapore and shares similarities with London's system: its area encompasses the city centre, it uses ANPR technology, and net revenues are allocated towards improving Stockholm's infrastructure.⁵³ It was introduced in 2007 with the primary goals of reducing congestion and benefiting the environment.

The key difference from London's system is that the amount of tax charged is dependent on what time of day a motorist enters the area. (See Chart 12.) This gives its pricing system more nuance than London's and allows traffic to be load spread towards quieter periods of the day, incentivising motorists to drive when the marginal cost of doing so is lower.

48. London Assembly, (2006), 'Congestion Charge Costs', *Mayor of London*, 17 September. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/congestion-charge-costs-1> - :text=The set up cost for, total of £161.7 million;
49. London Assembly, (2021), 'Revenue Raised by Your Congestion Charge Increase', *Mayor of London*. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/revenue-raised-your-congestion-charge-increase>
49. Quddus, M. Carmel, A. and G H Bell, M. (2005), 'Working Paper 12: The congestion charge's impact on retail - The London experience', *GLAECONOMICS*, May.
50. London Assembly, (2006), 'Congestion Charge Evasion', *Mayor of London*, 21 June. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/congestion-charge-evasion>; Transport for London, (2023), 'Congestion Charge Zone - vehicle entry data', 14 August. Available at: <https://tfl.gov.uk/corporate/transparency/freedom-of-information/foi-request-detail?referenceId=FOI-1265-2324>
51. London Assembly, (2009), 'Congestion charge avoidance', *Mayor of London*, 9 September. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/congestion-charge-avoidance>
52. Transport Committee, (2017), 'London stalling: reducing traffic congestion in London', *London Assembly*, January. Available at: https://www.london.gov.uk/sites/default/files/london_stalling_-_reducing_traffic_congestion_in_london.pdf
53. Jablonska, J. (2019), 'How Stockholm broke its gridlock with congestion pricing', *IBM*, 17 October. Available at: <https://www.ibm.com/blog/stockholm-congestion-pricing-iot-analytics-government/>

Chart 12: Stockholm City - Congestion tax charge (SEK), by time of day



Source: Transport Styrelsen

A seven-month trial period began in January 2006 following which a general election was won by a centre right coalition.⁵⁴ Whilst they had initially opposed the charge, they committed to implementing the scheme permanently following the results of a referendum, caveating that revenues would now be put towards the construction of new roads, rather than public transport infrastructure. Interestingly thereafter, public approval grew.

A five-year review of the tax found its impact to be both substantial and immediate, whilst also disproving the notion that these effects might wear off over time as drivers become used to paying the charge.⁵⁵ These findings are supported by a more recent study investigating the long-term effects of Swedish congestion charges, which also show air quality improvements.⁵⁶ The scheme was used as a model for a subsequent congestion tax introduced in Gothenburg in 2013, which has shown similarly positive results.

Prior to its introduction, there was extensive testing which accounted for a significant part of the set-up costs. These initial costs totalled 1900 million SEK, or around £140 million, and a cost-benefit analysis found a large social surplus resulting from the scheme, covering investment costs in 3.5 years.⁵⁷

The Milan Congestion Charge

Milan has historically struggled with issues of air pollution - particularly smog - and ranked second in 2007 for the highest European rates of car ownership.⁵⁸ In an attempt to counter pollution, the Ecopass programme was launched by mayor Letizia Moratti. Payments were determined by the vehicle's emission levels, with the least polluting vehicles facing no charge, and funds used to finance public transportation and other green schemes.⁵⁹ This proved effective, to some extent. Vehicles which exceeded the pollution threshold soon became a minority, but traffic levels rose again, and revenues fell.⁶⁰

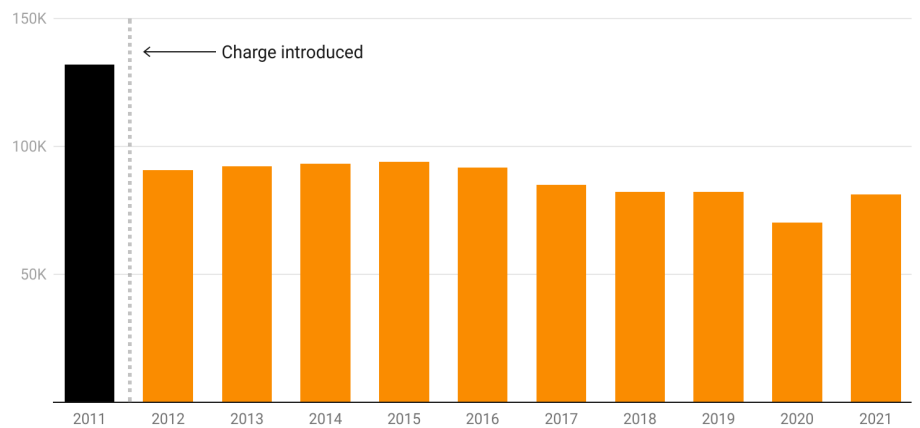
Consequently, Area C was proposed and implemented in 2011. This time around, the primary goal was not environmental but one of reducing

54. Southwood, B. (2022), 'A New Deal for Drivers', *Policy Exchange*, 4 February. Available at: <https://policyexchange.org.uk/wp-content/uploads/2022/02/A-New-Deal-for-Drivers.pdf>
55. Börjesson, M. Eliasson, J. Hugosson, M B. and Brundell-Freij, K. (2012), 'The Stockholm congestion charges—5 years on. Effects, acceptability and lessons learnt', *Transport Policy*, March. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0967070X11001284>
56. Börjesson, M. (2018), 'Long-Term Effects of the Swedish Congestion Charges Discussion Paper', *International Transport Forum*. Available at: <https://www.itf-oecd.org/sites/default/files/docs/swedish-congestion-charges.pdf>
57. Eliasson, J. (2008), 'A cost-benefit analysis of the Stockholm congestion charging system', *Centre for Transport Studies*, 24 November. Available at: <https://f.hubspotusercontent30.net/hubfs/4056033/A%20cost%E2%80%93benefit%20analysis%20of%20the%20Stockholm%20congestion%20charging%20system.pdf>
58. Bertacche, M. (2008), 'Milan Introduces Congestion Charge To Cut Pollution', *New York The Sun*, 3 January.
59. European Federation for Transport and Environment, (2008), 'Eco-Pass' begins as Milan fights city pollution', 6 February.
60. Santucci, G. (2009), 'Dam effect gives way, 7 thousand more cars', *Corriere Della Sera*, 12 January. Available at: https://milano.corriere.it/milano/notizie/cronaca/09_gennaio_12/ecopass_automatano-150890417368.shtml

congestion. The charge uses the same restricted zone as was used by the Ecopass scheme and is monitored by way of traffic cameras. The system is broadly similar to London’s; motorists must purchase a €7.50 day ticket or can top up a prepaid account to their license plate for automatic payments.⁶¹ Access is prohibited for the most polluting vehicles, whilst electric vehicles amongst others are exempt from charges, further encouraging the transition away from petrol and diesel engines.

The initial impact of Area C was substantial; entries to the restricted Cerchia dei Bastioni were down 33% after a month, equal to roughly 40,000 vehicles per day, and an area equal to 56 football pitches was freed from traffic.⁶² Traffic improvements were found to be sharpest during the morning hours (7:30-9:30) with 40-50% reductions. These results proved persistent, with average daily entries falling 38% from 2011-2021. (See Chart 13.) The congestion charge was deemed a success and in 2019 a larger restricted zone (Area B) was supplemented, further restricting city access to large and particularly high-polluting vehicles.⁶³

Chart 13: Milan's Area C - Average daily vehicle entries, 2011 - 2021



Source: Agenzia Mobilità Ambiente Territorio (AMAT)

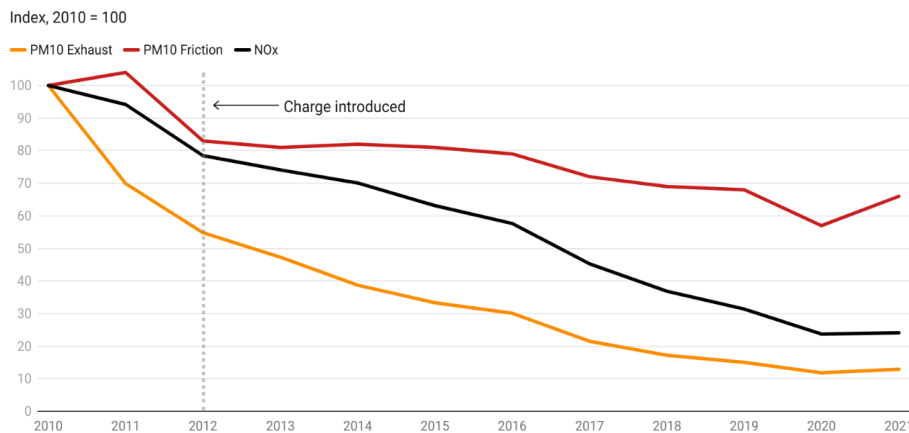
Chart 14 shows the resultant decrease in emissions of various air pollutants. Using a “willingness to pay” approach, one study estimated the annual welfare gain produced by Area C from PM10 (inhalable particles) changes alone to be worth \$3 billion.⁶⁴

61. Comune di Milano, (2024), 'Area C'. Available at: <https://www.comune.milano.it/en/aree-tematiche/mobilita/area-c>

62. La Repubblica, (2012), 'Area C, 700,000 fewer cars in one month And now you can also pay with Telepass', 15 February. Available at: https://milano.repubblica.it/cronaca/2012/02/15/news/area_c_in_un_mese_700_000_auto_in_meno_e_ora_si_pu_pagare_anche_con_il_telepass-29956694/

63. Comune di Milano, (2024), 'Area B'. Available at: <https://www.comune.milano.it/aree-tematiche/mobilita/area-b#navpageinside>

64. Gibson, M. and Carnovale, M. (2015), 'The effects of road pricing on driver behavior and air pollution', *Journal of Urban Economics*, September. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0094119015000467>

Chart 14: Milan's Area C - Index of average weekday daily emissions of air pollutants, 2010 - 2021

Source: Agenzia Mobilità Ambiente Territorio (AMAT)

That's not to say everyone was happy about Area C. Some called for a referendum to abolish the charge, claiming that "paying to pollute" encouraged environmentally damaging behaviour, traffic was generated outside the restricted zone, and the charge discriminated against residents, amongst other complaints.⁶⁵ And in 2012, the Peschiera Borromeo postal centre intercepted an envelope addressed to Mayor Pisapia containing a threatening letter regarding the congestion charge, and a bullet casing.⁶⁶

Toll roads

A common method of raising funds for road construction and maintenance in Europe is through toll roads. Their premise is simple: users must pay a toll to gain access to the road, often with 'vignettes' stickers used to allow road access over a specified period.⁶⁷

The UK now has 23 toll roads, but toll receipts are a relatively insignificant generator of total transport taxes with the majority of receipts instead coming from fuel excise duties.

Switzerland's current system charges cars the equivalent of £35 for a vignette but allows unlimited access to Swiss motorways and expressways for a 14-month period, with no daily, weekly or monthly vignettes available for purchase.⁶⁸ (As stated above, trucks and vans in Switzerland are subject to full road pricing, with a distance-based charge.) Unlike other examples, the primary function of Switzerland's road pricing system is to fund and maintain its motorway network.

After World War II, France underwent a radical economic transformation, experiencing average annual real GDP growth rates of 5-6% from 1950-1970.⁶⁹ Over this period, car ownership rose which led the Government to boost motorway investment. In fact, between 1960 and 1980, the length of France's motorways grew 2,800%, with three quarters of these being tolled.⁷⁰ In France, toll revenue amounts to roughly £9 billion per annum – around what the UK raises through VED.⁷¹

65. Masseroli, C. (2012), 'A referendum against Area C', *Corriere Della Sera*, 18 January. Available at: <https://milanesi.corriere.it/2012/01/18/un-referendum-contro-larea-c/>
66. Corriere Della Sera, (2012), 'Area C, envelope with a bullet addressed to Pisapia intercepted by the Carabinieri', 17 January. Available at: https://milano.corriere.it/milano/notizie/cronaca/12_gennaio_17/busta-bossolo-pisapia-minaccia-1902899930753.shtml
67. European Commission, (2019), 'Transport taxes and charges in Europe', *Publications Office of the European Union*, March. Available at: <https://op.europa.eu/en/publication-detail/-/publication/4de76a04-a385-11e9-9d01-01aa75ed71a1/language-en>
68. Confederation Suisse (ch.ch), (2024), 'Motorway vignette', Available at: <https://www.ch.ch/en/vehicles-and-traffic/how-to-behave-in-road-traffic/motorway-vignette/#costs-and-validity>
69. Bootle, R. and Vitali, J. (2024), 'Economic Transformation: Lessons From History', *Policy Exchange*, 14 March. Available at: <https://policyexchange.org.uk/publication/economic-transformation-lessons-from-history/>
70. Fayard, A., Meunier, D. and Quinet, E. (2009), 'Motorway Provision and Management in France: Analyses and Policy Issues', *Networks and Spatial Economics*, 15 December. Available at: <https://link.springer.com/article/10.1007/s11067-009-9122-y>
71. Southwood, B. (2022), 'A New Deal for Drivers', *Policy Exchange*, February 4. Available at: <https://policyexchange.org.uk/wp-content/uploads/2022/02/A-New-Deal-for-Drivers.pdf>; European Commission: Directorate-General for Mobility and Transport, El Beyrouly, K., Gatto, M., Essen, H., Kramer, H. et al. (2019), 'Transport taxes and charges in Europe: An overview study of economic internalisation measures applied in Europe', *Publications Office of the European Union*, March. Available at: <https://op.europa.eu/en/publication-detail/-/publication/4de76a04-a385-11e9-9d01-01aa75ed71a1/language-en>

B) The Practicalities

4. The technology of road pricing

Of course, there are many different types of road pricing: the term simply refers to the application of the price mechanism to road use. Depending on which particular method is used to “price” road usage, different technologies might be employed.

At one end of the spectrum, tolling represents the oldest and most rudimentary method of road pricing and, as discussed above, it is widely used on the Continent and, to a much lesser extent, in the UK. In the past, tolls would have been collected manually. Today, toll collection can be entirely automated, and tolls can be adjusted to distance travelled with entry and exit gantries. They usually have an extremely high compliance rate.

A more sophisticated form of road pricing is based on Automatic Numberplate Recognition (ANPR), which is used both for congestion charging and pollution-based charging like low emission zones. ANPR systems use cameras to capture a vehicle’s front and sometimes rear numberplate and determine the charge that ought to be applied. Such cameras are less expensive and conspicuous than tolling gantries or cantilevers (roadside poles can be used instead).

For some time, a generalised system of road pricing which applied across the highways network was considered technically out of reach. But technological developments have brought such a system into the realm of possibility.

Indeed, as we discussed above, Singapore has operated an electronic road pricing system (ERP), in which cars are fitted with “In-vehicles Units” (IU) which communicate with microwave beacons installed at gantries around the city. Drivers have a prepaid smart-card which is inserted into the IU. When a vehicle passes through an ERP gantry, the appropriate charge is deducted from the smart-card balance. If a smart-card is not inserted or has an insufficient balance, a set of enforcement cameras registers the vehicle’s numberplate.

Data collected at ERP gantries is sent to a control centre, which processes financial transactions and issues letters for fines or summonses. Such a system also enables variable or flexible charges, and thus connects the road pricing mechanism most closely to the timing and location of road usage (and thus the externalities of such usage).⁷²

72. Kian-Keong, C. (2005), ‘Road Pricing – Singapore’s 30 Years of Experience’, CESifo DICE Report, Autumn. Available at: <https://www.ifo.de/en/publications/2005/journal-complete-issue/cesifo-dice-report-32005-autumn>

Today, GPS technology has created the possibility of even more advanced “time-distance-place” (TDP) systems. In a satellite-based system, cars are equipped with an on-board unit which calculates the vehicle’s position and matches it to a digital map of charged roads. These units then communicate with a central office which determines the vehicle’s charge liability. Enforcement cameras can be used to register vehicles not equipped with the technology or not paying the correct charges. The on-board unit could be powerful enough to calculate charges itself, which could help to allay privacy concerns. Alternatively, a simpler, cheaper unit could be used which simply transmits the data to the central office.⁷³

The on-board unit could be connected to a mobile phone app, and drivers could use the app to estimate the length, journey time and price of a trip in a way analogous to ride hailing apps. Of all putative road pricing models, this system would have the most direct effects on the incentives of drivers, and it is one that is presently being introduced by the Singapore Land Transport Authority (LTA).

No large country in the world has yet piloted or implemented a generalised satellite-based TDP system, though in a number of jurisdictions, lorry tolls – which charges based on whether a heavy goods vehicle is on a particular segment of highway - use satellite technology. Nevertheless, particularly with the advent of apps like Google Maps and Uber, GPS-based technology is becoming much more commonplace across developed economies, and thus intelligible for members of the public.⁷⁴

None of these various technologies are discrete, of course. Tolling can be combined with ANPR-based congestion charge zones, for example. But the method by which particular technologies are implemented can make the future introduction of alternative charging technologies more complicated, and this is worth bearing in mind.

Today, technology does not present the principal barrier to the introduction of road pricing systems.⁷⁵ Rather, the issue for policymakers is that different technological approaches will raise different political challenges. Models that rely on sending location data to centralised computers will raise privacy and civil liberty concerns. The introduction of tolls on highways that were previously free of charge are likely to raise significant consternation amongst users. And any new system of taxing road use will create losers who will be highly hostile towards a change in the status quo.

We discuss the political problems and make some suggestions about how they should be addressed in Section D below.

5. The variability of charges

There are many ways in which a system of road pricing could work. At one extreme, there could be a flat rate charged per mile driven, without any variation with regard to the type of road, time of day or type of vehicle.

The essay which won the 2017 Wolfson Prize fell into this camp⁷⁶. It proposed a flat per mile charge with the only variability linked to vehicle type, regarding weight and the level of tailpipe emissions. The

73. Walker, J. (2011), ‘The Acceptability of Road Pricing’, RAC Foundation, May. Available at: <https://www.racfoundation.org/research/economy/road-pricing-acceptability>

74. *Ibid.*

75. Nor was it the principal problem in Smeed’s mind when he wrote his report on the introduction of road pricing in 1964.

76. Raccuja, G. (2017), ‘Miles Better A distance-based charge to replace Fuel Duty and VED, collected by insurers’, *Policy Exchange*. Available at: <https://policyexchange.org.uk/wp-content/uploads/2017/07/Gergely-Raccuja-Miles-Better-Revised-Submission.pdf>

essay suggested that the charge could be collected by insurance companies which would be paid a small fee by the Government for their services.

A flat rate per mile charge which replaced both fuel duty and VED would be a slight improvement on the current system, in that it would increase the marginal cost of driving. But apart from this, and the proposed higher charges for heavier and more polluting vehicles, in regard to economic efficiency and environmental impact, this scheme would be a step back from the existing indirect system of road pricing via the imposition of taxes on fuel (petrol and diesel). For at least the current system encourages fuel-efficient driving, including, wherever possible, the avoidance of congestion. And it already encourages the use of fuel-efficient vehicles.

Using a fixed rate per mile system of road pricing would be a very blunt instrument and would forego many of the possible gains that a flexible system of road pricing could bring. Surely, we can do better.

There are several ways in which road user charges should be varied:

- **Time of day.** The aim should be to levy maximum charges at peak commuting hours. By contrast, road usage in the middle of the night would incur minimum charges, perhaps even zero, and it would be possible to set a wide variety of rates in between, though as we discuss later, for simplicity and predictability there should not be an enormously wide range.
- **Types of road.** Roads that are busy should incur higher charges than roads that are normally empty.
- **Town versus country.** This distinction between busy and non-busy roads would normally encompass the difference between country and town roads. But perhaps a further distinction could be introduced, bringing discounts for those living in relatively remote villages where there is next to no public transport alternative.
- **Type of car.** It would surely be desirable to impose higher charges on large cars rather than small ones since they, by and large, have greater environmental and congestion impacts. It would also be advisable to apply higher charges on vehicles that were more polluting.
- **Type of driver.** This is where matters get more controversial. One potential criticism of a system of road pricing is that it could threaten to make travel by road the preserve of the rich. To deal with this, people below a certain income could be given a limited amount of free – or much cheaper – road travel per year.

Another controversial issue is whether the rate of charging, although variable in the ways described above, should be fixed and published or whether, mirroring the surge pricing model used by Uber and some other taxi companies, the charging rates should vary with the supply and demand at the time.

There is a spectrum of options here for the design of the charge. A fixed schedule published in advance would be highly predictable but less

targeted at road usage patterns. Real time surge pricing would be highly targeted, but very unpredictable for motorists. The best system is probably between these two extremes. As we discuss in the politics section below, for any system to be politically acceptable and for people to have a clear idea of what they will pay, there must be a strong element of predictability and a range between top and bottom that is not too enormous. We would recommend that a system seek to use satellite data and be variable based on day-to-day traffic patterns, but that drivers should know in advance what they are going to pay, within a range.

Finally, the Government could consider a discounted rate for highways affected by road works to account for the costs of disruption. Those responsible for the disruption could be charged for the impaired revenue. This would provide an incentive for those performing road maintenance to complete their work more expeditiously.

6. What would the implementation costs be?

Any new road pricing system would come with both upfront capital costs and annual operational costs, and these would be higher the more sophisticated the system. These are difficult to estimate, but we can draw on three different sources of evidence.

First, in 2010, the Commission for Integrated Transport estimated the set-up costs for a satellite-based system to be about £3 billion (the most significant component being installation of the On-board Units), with annual operating costs of £3-5 billion.⁷⁷ In today's prices, that sums to around £4.5 billion for the upfront costs and £4.5-7.5 billion for the annual running costs.⁷⁸

It is highly likely that these costs would be considerably lower today. The cost of a basic 4–6-inch GPS device has fallen from around £250 in 2008 to £120 today – a 70% fall in real terms.⁷⁹ And it is reasonable to expect that satellite costs will fall too.⁸⁰ In addition, the ANPR camera infrastructure that would be used to enforce the charge already exists, further reducing the potential upfront capital costs. A 35% reduction in costs would not be implausible – the capital cost of the in-vehicle units comprised half the set-up costs in Singapore's ERP system, and the price of similar devices has fallen precipitously.

Assuming such a reduction in prices, this approach to modelling would suggest upfront costs of around £3 billion or 0.1% of GDP and running costs of £3-5 billion or roughly 0.1-0.2% of GDP. The costs, under these assumptions, would amount to about 8-13% of annual revenues, should the system replace the amount currently raised by VED, fuel duty and VAT on fuel duty.

Secondly, and more robustly, we could look at the capital and operational costs of other road pricing schemes that have already been implemented. The London Congestion Charge, for example, had an initial set up cost of around £162 million (or £288 million in today's prices), and annual running costs of about £96 million (or £165 million per annum in today's prices).⁸¹

77. Centre for Integrated Transport. (2010), 'Transport Challenges and Opportunities: Getting More from Less'. These numbers are comparable to those in the Department for Transport's "Feasibility Study of Road Pricing in the UK" in 2004.

78. Walker, J. (2011), 'The Acceptability of Road Pricing', RAC Foundation, May. Available at: <https://www.racfoundation.org/research/economy/road-pricing-acceptability>

79. Mead, R. (2008), 'All you need to know about buying a sat nav', *Tech Radar*, 18 November. Available at: <https://www.techradar.com/news/car-tech/satnav/all-you-need-to-know-about-buying-a-sat-nav-486688>

80. House of Commons Transport Committee, "Oral Evidence: Road Pricing" 20 October 2021. committees.parliament.uk/oralevidence/2822/pdf/

81. The operational costs for the Congestion Charge were £289 million for the first three years of operation.

The Stockholm Congestion Charge for comparison had upfront costs of roughly £140 million (or £240 million in today's prices) and annual running costs of approximately £16 million (or £27 million per annum in today's prices).⁸²

The problem, however, is scaling these up in order to estimate the potential cost of a nationwide scheme in the UK. For one, the London and Stockholm schemes are based on ANPR technology and relatively fixed prices (though Stockholm's is somewhat more flexible), whereas the system advocated in this paper is satellite based, with prices varying depending on time and location. Moreover, it is difficult to estimate the vehicle population for which these congestion charges apply, given that numerous vehicles travel in to and out of the respective cities each day. Nevertheless, when considering the population sizes involved (London is approximately 13% of the total UK population), these would suggest operating costs of around £1 billion a year – even under the unlikely assumption that there no economies of scale.

A third approach would be to estimate the per vehicle expenditure associated with a road pricing system similar to the one advocated in this paper, and to scale up on that basis. The most comparable system to the one proposed in this paper is Singapore's Electronic Road Pricing (ERP).

ERP had an initial set up cost of £90 million and an annual operating cost of £11 million in 1998 prices, for a vehicle fleet of roughly 550,000 cars.⁸³ This gives a per vehicle set up cost of £163 and a per vehicle running cost of £20. Adjusted for inflation, that is equivalent to £325 and £40 respectively today.

In the UK today, there are 41.4 million licensed vehicles.⁸⁴ So, taking the per vehicle cost of the Singaporean system and scaling it up to the size of the UK vehicle population, that would suggest an initial startup cost of about £14 billion or 0.5% of GDP, and an annual operating cost of £1.7 billion or 0.06% of GDP, for a nationwide system of road pricing. The running costs would amount to 4.5% of annual revenue, should the system replace the amount currently raised via VED, fuel duty and VAT on fuel duty.

There are good reasons to believe there would be further savings on these estimated costs. For a start, economies of scale would probably be achieved with a nationwide rollout. Moreover, the Government would no longer have to collect VED payments and fuel duty payments which incur collection costs. And efficiency savings would be secured by incorporating the various charges that currently exist – congestion charges, low emission zones – into a single scheme. These potential savings are in addition to the aforementioned fall in technology costs.

There is a discrepancy between the figures produced by these different methods, not just in the absolute numbers, but in the ratio between up front and operational costs; in the first method based on adjusting the 2010 study, running costs are either the same or higher than the up front investment, but in the approach based on the per vehicle cost of the Singaporean scheme, the running costs are 12-13% of the implementation

82. Eliasson, J. (2008). 'A cost-benefit analysis of the Stockholm congestion charging system', *Centre for Transport Studies*. Available at: <https://f.hubspotusercontent30.net/hubfs/4056033/A%20cost%E2%80%93benefit%20analysis%20of%20the%20Stockholm%20congestion%20charging%20system.pdf>
83. Phang, S-Y. and Toh, R S. (2004), 'Road Congestion Pricing in Singapore: 1975 to 2003', *Transportation Journal*. Available at: <https://www.jstor.org/stable/20713563?seq=6>; Provonsha, E. (2018), 'ROAD PRICING IN LONDON, STOCKHOLM AND SINGAPORE A WAY FORWARD FOR NEW YORK CITY', *Tri-State Transportation Campaign*. Available at: https://tstc.org/wp-content/uploads/2018/03/TSTC_A_Way_Forward_CPreport_1.4.18_medium.pdf; CEIC, (2024), 'Singapore Number of Registered Vehicles'. Available at: <https://www.ceicdata.com/en/indicator/singapore/number-of-registered-vehicles#:~:text=Singapore%20Number%20of%20Registered%20Vehicles%20was%20reported%20at%20855%2C454%20Unit,Aug%202024%2C%20with%20356%20observations>
84. Department for Transport, (2024), 'Vehicle licensing statistics: January to March 2024'. Available at: <https://www.gov.uk/government/statistics/vehicle-licensing-statistics-january-to-march-2024/vehicle-licensing-statistics-january-to-march-2024#contact>

costs. We believe the latter set of figures are probably a more reliable guide to what the true costs of a UK scheme would be, since they are based on the real costs of an actually implemented system, rather than the adjusted estimates of a hypothetical model, and that the true operating costs are likely to be somewhere between £1 billion and £2 billion, at most. Nevertheless, we acknowledge that this is an area where there remains significant uncertainty.

How any expenditure on the introduction of a new road pricing system ought to be funded will be considered in section D.

7. What would happen to existing congestion schemes such as the London one?

In a fully-fledged national road pricing system, existing basic road pricing systems, such as the London congestion charge, and charges for using various bridges and tunnels would be subsumed into the national system.

It should be noted that, assuming a national road pricing scheme were to subsume existing additional road charges such as the London congestion charge, ULEZ and toll roads, there would be some lost revenue from these sources. However, in 2022/23, revenue raised by the London Congestion Charge was £358 million, whilst ULEZ raised £480 million.⁸⁵ Toll roads were estimated to raise £480 million in 2016, or £630 million in today's prices.⁸⁶ This puts the total lost revenue at around £1.5 billion.

8. How much would different motorists pay?

In 2022-23, motorists paid to the Treasury through VED, Fuel Duty, and VAT on the latter a combined total of £37.6 billion (or £43.6 billion including VAT on fuel). If we include various other congestion charges and tolls, the total is around £39 billion.⁸⁷ Given that some 330.8 billion vehicle miles were driven in the same year, the current system amounts to combined taxes on motorists of about 12p for every mile driven, or £120 for every thousand miles driven.

Given that our proposed system of road pricing is not aiming to raise any more revenue but rather to raise it differently, this gives us a starting point for how the system of charges should be structured.

The base rate per mile should be relatively low, given that the wear and tear of road usage comprises a very low proportion of the marginal externality cost of driving. It could be set at around 2-4p per mile and adjusted upwards depending on a vehicle's axle weight, raising £6-13 billion. Another £1-2 billion could be raised via a charge on ICE vehicles to cover pollution externalities at about 0.5p per mile.

That leaves roughly £25-30 billion to be raised via flexible road charging based on driving time and location. Driving within cities or towns could come with an additional charge scaling from 2-7p per mile; driving during rush hour could add an extra 2-7p per mile.

Of course, the particular rate for each component of the charge could

85. Mayor of London, (2023), 'Annual Report and Statement of Accounts 2022/23 – 27 September 2023'. Available at: <https://content.tfl.gov.uk/annual-report-and-statement-of-accounts-2022-23-acc.pdf>

86. European Commission, (2019), 'Transport taxes and charges in Europe'. March. Available at: <https://op.europa.eu/en/publication-detail/-/publication/4de76a04-a385-11e9-9d01-01aa75ed71a1/language-en>

87. Eventually, the system would need to replace receipts from VAT on fuel, once the vehicle population is entirely electric.

be different depending on what the Government wished to achieve. This would need to be properly modelled. The base rate per mile, for example, could be higher if the Government wished to hedge against potentially reduced revenue through behavioural change.

All these aspects of the system – from how the burden falls to what amount of revenue should ideally be raised – are flexible and can be adapted according to the end sought. Nevertheless, if a new tax is designed to encourage more economically efficient driving patterns, it is right to seek to raise a good amount of the revenue through the variable element of road pricing.

Below we have constructed a simple model to illustrate how a road pricing system might apply in practice. The model is indicative, and could be modified to be more sophisticated, to raise a different amount of revenue, or to target externalities differently.

The charge would have two basic components. The first, a base charge, would apply to every mile and be based upon the axle weight of a vehicle. We have suggested a range from 2p to 4p. Secondly, there would be a pollution surcharge on the base rate for ICE vehicles of 0.5p.⁸⁸

The charge would then have a variable component, which would increase depending on the level of demand for road space. This could obviously be relatively basic – for set times and locations or roads around the country based on an annual schedule – or highly sophisticated – using real time traffic data. For the purposes of our model, we use a continuous scale of 1-14p; this reflects the intention for the majority of road pricing revenues to be raised through the variable – and most targeted - component of the charge.

Charging Schedule	Component rate
Base Charge:	
(Light)	2p
(Medium)	3p
(Heavy)	4p
ICE Surcharge	0.5p
Time-Location Variable	1-14p

Based on this schedule, we can construct a range of scenarios for different types of driver. We have used three simple time-location situations: low demand (at a variable charge of 2p); medium demand (at a variable charge of 8p); and peak demand (at a variable charge of 14p). This is a simplified model of the system set out above, for illustrative purposes.

Assuming a fuel efficiency of 36 miles per gallon (or 8 miles per litre) an average annual mileage of 7000 miles per year, fuel duty of 52.95p per litre plus 10.59p per litre in VAT, and a standard rate of annual VED at £190, we estimate that the average driver’s tax liability is £745. For an above average mileage of 10,000 miles per annum, we estimate the liability to be £984. For a haulage driver driving 125,000 miles per

88. We haven't built the low emission zone charges into our estimated liability for a London commuter. Of course, the pollution surcharge on ICE vehicles could be increased in urban areas if that was desired to replace this.

year and paying the higher rate of VED, we estimate the liability to be £10,663.⁸⁹ We have cited an EV driver's current liability as £190 – the new rate of VED for such vehicles which comes into effect next year. For our low mileage driver (4000 miles per annum), we have estimated an annual liability of £510.

These are only rough calculations, but we believe they give a reasonable indication of where and how the tax burden of a road pricing system might fall. In the majority of cases, and given the current tax liability for road usage, we expect that the majority of drivers would be in roughly the same position, or better off.

Scenario 1	Rural Retiree
Description	A retiree who lives in the countryside. They rely on their vehicle to access amenities, and occasionally drive to help provide childcare for family members.
Vehicle type	ICE
Vehicle weight	Light
Miles per year, of which:	7000
% in low demand time and location	65%
% in medium demand time and location	20%
% in peak demand time and location	15%
Current liability	£745
New Liability	£532
Savings	£213

Scenario 2	Rural Tradesperson
Description	A tradesperson who works for a housebuilder in a rural area. They drive their van on predominantly rural roads to access sites.
Vehicle type	ICE
Vehicle weight	Medium
Miles per year, of which:	10000
% in low demand time and location	60%
% in medium demand time and location	25%
% in peak demand time and location	15%
Current liability (£)	£984
New Liability (£)	£850
Savings (£)	£134

89. The tax liability of many drivers is likely to be marginally higher, given VAT on the pre-tax price of fuel.

Scenario 3	Haulage Driver
Description	A HGV driver who uses major roads between a manufacturing plant and distribution centres, located in larger towns.
Vehicle type	ICE
Vehicle weight	Heavy
Miles per year, of which:	125,000
% in low demand time and location	45%
% in medium demand time and location	35%
% in peak demand time and location	20%
Current liability (£)	£10,663
New Liability (£)	£13,750
Savings (£)	-£3087

Scenario 4	EV Commuter
Description	A suburban dweller who works flexibly, and commutes into the centre of a large, congested town three times a week.
Vehicle type	EV
Vehicle weight	Medium
Miles per year, of which:	7000
% in low demand time and location	30%
% in medium demand time and location	30%
% in peak demand time and location	40%
Current liability (£)	£190
New Liability (£)	£812
Savings (£)	-£622

Scenario 5	School Run Parent
Description	A parent who does the school run five times a week in term time into a congested town but works from home.
Vehicle type	ICE
Vehicle weight	Light
Miles per year, of which:	7000
% in low demand time and location	35%
% in medium demand time and location	15%
% in peak demand time and location	50%

Current liability (£)	£745
New Liability (£)	£735
Savings (£)	£10

Scenario 6	London Commuter
Description	A plumber living in Zone Four who commutes five days a week. They have above average annual mileage and occasionally drive to the countryside to visit family.
Vehicle type	ICE
Vehicle weight	Medium
Miles per year, of which:	10,000
% in low demand time and location	5%
% in medium demand time and location	20%
% in peak demand time and location	75%
Current liability (£)	£984
New Liability (£)	£1570
Savings (£)	-£586

Scenario 7	Occasional urban driver
Description	An urban car owner who predominantly uses public transport, and commutes via rail. They use their vehicle for leisure and to attend occasional meetings.
Vehicle type	ICE
Vehicle weight	Light
Miles per year, of which:	4000
% in low demand time and location	40%
% in medium demand time and location	40%
% in peak demand time and location	20%
Current liability (£)	£510
New Liability (£)	£372
Savings (£)	£138

Of course, EV road users would see their liability increase, but that is from a very low starting point. There is no way to futureproof road-related tax revenues without their liability being increased, and that principle must be established rapidly. HGV road users would also see their taxes increase on what they currently pay.

It is clear from the above examples that many ICE drivers would be better off under our proposed new charging system. But how many people will benefit versus those who would end up paying more?

It is a difficult task to estimate the relative numbers of winners and losers from the introduction of road pricing. It depends partly on the numbers of road users based in rural versus urban areas. From Department of Transport data, we know that only 35-40% of vehicle miles are driven on urban roads, while the remaining 60-65% of miles are driven on minor or major rural roads and motorways. We also know from census data that it is only in urban areas where the number of households that own a car falls below 75%, but this is less helpful as urban areas are also denser, and so may have a high absolute number of drivers.

On this basis, it is reasonable to believe that a majority of road users would be in about the same financial position or would see some reduction in their tax bill, given the increased liability for urban road users at peak load times, and a lower liability for non-peak load rural drivers in uncongested areas. Moreover, even those drivers who ended up paying more for their journeys would still benefit overall, since journey times would be shorter and more predictable.

The above figures are only approximations, and do not take into account the dynamic effects of road pricing on driving behaviour. Yet the whole purpose of the proposed new system of charging is to change behaviour. So, we should acknowledge its possible dynamic effects on total revenue.

At the outset, it needs to be recognised that the effects on behaviour are unknowable. Surprisingly, it is possible that the overall effect will be to increase the number of miles driven and even to increase the amount of motoring taxes paid to the Treasury. This could happen, for instance, if a lot of motorists were incentivised to switch their driving times to off-peak, and the consequent reduction in traffic and the greater predictability of journeys encouraged other motorists to drive more at peak times.

But a more likely result is that while the new system may not encourage drivers to drive less (and indeed is not intended to), by encouraging them to drive at different times when the charges are lower, it will probably result in less revenue being collected than estimated in our base case which assumes no behavioural effects. Of course, it would be open to the Treasury to deal with this by increasing some of the proposed road charges outlined above for our new system. One option, as suggested above, would be to have a higher base rate to hedge against lost revenue from the variable component of the charge.

We think, however, that a better response would simply be to live with the slight loss of revenue from motorists, with it being offset elsewhere in the public finances. After all, the primary purpose of the new system of road pricing is not to raise revenue and there is nothing sacrosanct about the amount of revenue currently raised from motorists. It would be perfectly justifiable to raise a little less from motorists if the new system helped to reduce the huge externalities that the existing system currently gives rise to, thereby increasing GDP and improving the quality of life of

millions of people.

In a similar vein, the implementation cost (which could be around £14 billion or 0.5% of GDP) should be met through general government expenditure, rather than through road taxes. This would reflect the fact that more efficient use of the road network would, through increased productivity and economic growth, be of benefit to all taxpayers, not just motorists, and may help the Government to “sell” road pricing to drivers at the outset. The running costs of the system could also be financed through the general tax system or could be met through road pricing revenues. If the latter, this would have to be reflected in a higher base rate charge.

C) The Economic Effects

9. The wider knock-on effects on the economy.

At the most basic level, the benefits to the economy of introducing an effective system of road pricing would amount to substantially reducing the various costs detailed in section A2. If the cost of congestion is roughly £35 billion as suggested by many earlier sources, and road pricing achieved a 40% reduction in hours wasted in traffic, benefits to the tune of £15 billion (or about 0.5% of GDP) per annum might be realised by the UK economy, or around £100 billion over seven years. If the true cost of congestion is instead closer to the upper end of the range of figures we have considered, there would be savings of around £30 billion per annum, or about 1% of GDP. These savings would be rising year by year, as the unadjusted level of congestion is set to worsen.

But these are the static costs. We should also expect an effective system of road pricing to lead to far-reaching changes in people's behaviour.

One set of effects would derive from the direct linkage between road usage – particularly at peak times – with costs to the motorist. This might encourage a shift to more flexible working, a development that is underway already.

Greater certainty about travel times might encourage more long distance road commuting but this effect is likely to be greatest on commercial travel and the shipment of goods. This could have an effect on the desirability of new housebuilding in particular areas.

Explicit road pricing might well encourage greater sharing of car travel on an informal basis and additionally could stimulate a commercial market in shared taxi/minibus travel, as well as increasing the demand for public transport. Where good rail networks don't exist, workers often have little alternative to commuting by car since buses are regularly caught up in traffic and are accordingly extremely slow and unreliable. An effective road pricing scheme would discourage commuting by road at peak times and encourage the use of buses, now rendered faster and more reliable by the reduced number of cars on the roads at peak times.

The greater predictability of journey times would be a significant advantage for many businesses and this might help to stimulate investment and the location and retention of business activity in this country.

Road pricing would also have a positive effect on public investment too. Instead of new highway upgrades or expansion proposals being appraised by spurious impact assessments or on the basis of local political considerations, they could be evaluated partly on the basis of the actual

revenues they would generate. This could help improve public investment decisions, while creating opportunities for private capital – either through direct investment or securitisation of publicly built infrastructure.

The Chancellor has stated her intentions to support higher levels of investment in the UK economy, and to support public sector investment through borrowing. Road pricing would assist her in doing precisely that when it comes to the UK's highways.

Lastly, and as mentioned, road pricing could create incentives for the timely completion of road works, further minimising disruption on roads. By compensating drivers for slower journey times through reduced charges and requiring those responsible for works to compensate for the lost revenue, motorists might benefit from shorter road closures and fewer reduced speed limit zones.

10. Making the fiscal numbers add up.

Part of the justification for a new road pricing system is to replace the revenue that is currently raised by VED, Fuel Duty and the VAT on the duty. Of course, the system can be designed to achieve a range of outcomes, including raising the same amount of revenue as existing road taxes, raising less or raising more.

As explained above, the sum of tax revenues needing to be replaced by our system is about £40 billion. Yet the principal rationale for road pricing is not revenue replacement. Rather, it is to reduce the externalities of road usage, particularly congestion, by creating incentives for drivers that will encourage load-spreading on our highways.

At the 2021 Spending Review, the Government committed to £32 billion in road upgrades and maintenance for the period 2020-21 to 2024-25 – about £8 billion a year. That is much less than the sums currently raised by motor taxes. So currently a good deal of the proceeds from VED and Fuel Duty is used for non-road related expenditure too. As Huw Merriman, the former chair of the Transport Select Committee put it, “hospitals and schools could be [hit]” too by the loss of revenue.⁹⁰

We would argue against trying to use a system of road pricing to raise more revenue than existing taxes on motorists. Raising taxes on a particular subsection of the population (drivers) in order to cut them for a different group would simply confirm in the mind of drivers that the Treasury sees them as a cash-cow, and this is a sentiment that has galvanised opposition to reform in the past. The aim should be to raise the same amount of revenue as is raised by the current taxes on motorists, while being open to the possibility that behavioural changes by drivers mean that rather less revenue will be raised.

11. The effect of road pricing on electric vehicle uptake

Given the UK's commitment to greater sustainability and reduced emissions, the Government will need to account for the effects of a new regime upon incentives for transitioning away from internal combustion engine vehicles and towards electric ones.

90. BBC News, (2022), 'Fuel and excise duty must be replaced with new tax, MPs say', 4 February. Available at: <https://www.bbc.co.uk/news/business-60251046>

We believe that the tax system as a whole should not be designed around creating incentives for the shift towards electric vehicles, but the raising of revenue should be done in such a way that it incentivises motorists to reduce the externalities of road usage. To that end, we believe other micro incentives should be created for shifting to electric vehicles separate to the system of motor taxation, including grant funding for electric cars, investment in charging points, and potentially free mileage credit under the new road pricing system.

D) Policies and Politics

12. A changing political calculation

Many politicians see road pricing as an example of Jean-Claude Juncker's maxim: "We all know what to do – but we don't know how to get re-elected once we have done it."⁹¹ As we have seen, two recent attempts to move on this issue – by the Blair and Brown Governments of 2003-2008 and, behind the scenes, by the Johnson Government in 2021 – went nowhere, largely because of concerns about a political backlash.

But, at the outset, it should be recognised that the perception that road pricing is prohibitively unpopular is wrong. Public opinion on the subject has changed since 2008 and is more nuanced than many politicians realise. A striking range of voices across the political spectrum – including many on the right and most of the motor lobby itself – now support change. And as with other issues in transport, there is a difference between signal and noise, between what most voters think and the loud hostility often heard from the most entrenched voices.

The Johnson Government's discussions on road pricing (described above) were the subject of repeated leaks, including at least two national newspaper splashes.⁹² These triggered little controversy or pushback. Indeed, media coverage of the Government's transport decarbonisation plan and net zero strategy in this period noted fuel duty's replacement as a "missing" element.⁹³

As we have noted above, many other Western democracies, including some surprising ones, are already starting to implement road pricing. Compulsory distance-based pricing for electric cars is, or shortly will be, in force in Iceland, New Zealand, and some American states. Compulsory distance-based pricing for trucks and vans is now in operation in more than a dozen European countries, including Germany, and four US states.

That does not mean that there would be no opposition to a scheme of road pricing in the UK. There would be. Although public and interest-group opinion has moved in the last 15 years, new countervailing forces have also arisen, such as the social media-driven decline in political discourse and the rise of the new Reform party, for whom road pricing could be a potent issue.

Howard Cox, one of the country's most prominent campaigners against all forms of motoring taxation, was Reform's candidate in the 2024 London mayoral election, majoring his campaign on the extension to outer London of the ultra-low emission zone (ULEZ) charge on the most polluting vehicles. He got 3.1% of the vote and came fifth, but Reform did

91. Buti, M., Turrini, A., Van den Noord, P. and Biroli, P. (2008), 'Defying the 'Juncker Curse': Can Reformist Governments Be Re-elected?', *European Commission*, May. Available at: https://ec.europa.eu/economy_finance/publications/pages/publication12586_en.pdf
92. Swinford, S., Paton, G. and Wright, O. (2020), 'Charges for using roads to fill £40bn black hole', *The Times*, 16 November. Available at: <https://www.thetimes.com/uk/politics/article/charges-for-using-roads-to-fill-40bn-black-hole-t2bz9k6br>; Gatten, E. and Gill, O. (2021), 'Cars and flights to be hit with green taxes', *The Telegraph*, 15 July. Available at: <https://www.telegraph.co.uk/environment/2021/07/14/cars-flights-hit-green-taxes/>
93. *Ibid.*; Inman, P. and Wearden, G. (2021), 'Fuel duty losses in green transition may mean new taxes, Treasury warns', *The Guardian*, 19 October. Available at: <https://www.theguardian.com/environment/2021/oct/19/fuel-duty-losses-green-transition-new-taxes-treasury-warns>

win one of the 25 seats on the London Assembly.⁹⁴

13. Public opinion is up for grabs

Recent polling usually, though not always, shows that more people support road pricing than oppose it – but there are many who say that they do not know, and responses to the question often depend on how it is framed.

The latest published poll from a professional pollster, Ipsos in April 2023, found 30% support and 32% opposition.⁹⁵ Opinium in September 2022 found 38% in favour versus 26% against.⁹⁶ Research by the Campaign for Better Transport showed favourability of 49% to 18 – though it is not clear who carried out the poll.⁹⁷

Private UK Government polling in 2021 put favourability at 50 to 22%.⁹⁸ YouGov had it at 47 to 23%.⁹⁹ Ipsos in 2020 found 62% support for charging motorists to drive into “towns and city centres” versus 21% opposition.¹⁰⁰ There also appears to be greater support for charging if it is explicitly stated as being to tackle congestion or pollution in city centres.¹⁰¹

Polling also finds, however, that there is opposition to road pricing tout court, when it is not stated as a replacement for fuel duty or to achieve some other purpose; and strong opposition to schemes which are explicitly described as being additional to existing taxes. On the ultra-low emission zone, for instance, national polling in 2023 which called it (accurately) a “surcharge”, found 51% against such a scheme in their local areas, versus 34% supportive.¹⁰²

In the 2022 Opinium polling, over two-fifths of those opposed (43%) expressed fears about paying more than they currently do as their primary concern. About a quarter of those against were worried about the Government being able to track their movements (and many of those in favour of road pricing also expressed opposition to having tracking equipment in their car.) There was also more support for a uniform price than for prices which varied by place or time.

It has to be admitted, nevertheless, that people’s responses to an abstract in-principle question may differ from their reaction when the prospect of charging becomes real.

What all this suggests is that either opponents or supporters of road pricing could win the argument, depending on how they manage to define the scheme in the public mind and particularly in the minds of those without strong views at the moment. How the case is made, therefore, is important.

This section therefore suggests two things that have been missing in the debate until now: a set of political principles and a political roadmap, or manual, that the government could adopt to maximise support for road pricing and minimise opposition to it.

14. A range of voices support change

Among those who have expressed support for change are many in what might be called the motoring lobby, including:

- 94. London Elects, (2024), ‘Results 2024’, *Mayor of London & London Assembly Elections*. Available at: <https://www.londonelects.org.uk/results-2024>
- 95. The Economist, (2023), ‘Britain needs to embrace road pricing’, 20 April. Available at: <https://www.economist.com/britain/2023/04/20/britain-needs-to-embrace-road-pricing>
- 96. Corfe, S. (2022), ‘Miles Ahead’, *Social Market Foundation*, May. Available at: <https://www.smf.co.uk/wp-content/uploads/2022/05/Miles-Ahead-May-2022.pdf>
- 97. Campaign for Better Transport, (2022), ‘New report reveals public support for pay-as-you-drive scheme’, 29 September. Available at: <https://bettertransport.org.uk/media/29-Sep-2022-pay-as-you-drive/>
- 98. HM Treasury, (2021), July.
- 99. YouGov, October 2018.
- 100. Marshall, B. (2020), ‘Public support charging motorists to use roads, but want it to be done for the right reasons’, Ipsos, 21 December. Available at: <https://www.ipsos.com/en-uk/public-support-charging-motorists-use-roads-want-it-be-done-right-reasons>
- 101. By 62-21 in a Dec 2020 Mori poll, 53-17 in an Oct 2020 YouGov poll.
- 102. YouGov, (2023), ‘In London, the Ultra Low Emission Zone (ULEZ) is an area in which a fee is charged to the most polluting vehicles driving into the centre of the city. Would you support or oppose a similar ULEZlike surcharge in your local area?’, 21 July. Available at: <https://yougov.co.uk/topics/overview/survey-results/daily/2023/07/21/dd883/3>

The RAC, whose head of policy, Simon Williams, said: “We think replacing fuel duty with a pay-per-mile system as soon as possible is the way forward.”¹⁰³ Its head of roads policy, Nicholas Lyes, said: “It’s inevitable a new system will have to be developed. Our research suggests that drivers broadly support the principle of ‘the more you drive, the more tax you should pay’... the Treasury needs to get moving on this sooner rather than later.”¹⁰⁴

The RAC Foundation, which has said that “a distance charge appears to us to be the most attractive first step.”¹⁰⁵

The AA, whose president Edmund King has called for a “road miles” pricing system and said in 2020 that “the time is right” for such a system.¹⁰⁶ King added in 2022: “It has been obvious for some time that the transition to zero emission vehicles will mean the Treasury will need to recoup the £35 billion currently taken in fuel duty and VED.”¹⁰⁷

Logistics UK, formerly the Freight Transport Association, said that “in our view, some form of road pricing is now inevitable.”¹⁰⁸ It added that “road charging must replace rather than add to existing motoring taxes, and be revenue neutral.”¹⁰⁹

The British Vehicle Rental and Leasing Association, through its director of corporate affairs, Toby Poston, said: “Policymakers have to get off the fence and start providing a roadmap for the future of motoring taxation. BVRLA members have set out their road pricing principles... particularly the need to make any system revenue neutral and think about the needs of essential road users.”¹¹⁰

Meanwhile, political support has come from:

The cross-party Commons Transport Select Committee in the 2019-24 parliament, which had a Conservative majority and chairman. It unanimously recommended: “The Government must set out a range of options to replace fuel duty and vehicle excise duty. Those options should be revenue neutral and not cause drivers, as a whole, to pay more than they do currently. One of those options should be a road pricing mechanism that uses telematic technology to charge drivers according to distance driven, factoring in vehicle type and congestion. If motoring taxation is linked to road usage, the Committee has not seen a viable alternative to a road pricing system based on telematics.”¹¹¹

The Northern Research Group of Conservative MPs in the 2019-24 parliament, which called for road pricing in its ten-point plan for levelling up in 2021.¹¹²

Backbenchers on the Tory right in the Free Enterprise Group, including

103. Jervis, T. (2024), ‘Pay-per-mile road tax ruled out before Autumn Budget’, *Auto Express*, 27 September. Available at: <https://www.autoexpress.co.uk/consumer-news/364095/labour-could-introduce-regressive-pay-mile-road-tax-octobers-autumn-budget>
104. Moran, M. (2022), ‘We need to talk about road pricing’, *Parking Review*, 7 February. Available at: <https://www.transportxtra.com/publications/parking-review/news/70527/we-need-to-talk-about-road-pricing/>
105. RAC Foundation, (2021), ‘Written evidence submitted by RAC Foundation (EVP0045)’, *UK Parliament*, February. Available at: <https://committees.parliament.uk/writtenevidence/22763/pdf/>
106. Taylor, M. (2020), ‘AA president backs road miles scheme’, *The Guardian*, 3 June. Available at: <https://www.theguardian.com/money/2020/jun/03/aa-president-backs-road-pricing-scheme>
107. Moran, M. (2022), ‘We need to talk about road pricing’, *Parking Review*, 7 February. Available at: <https://www.transportxtra.com/publications/parking-review/news/70527/we-need-to-talk-about-road-pricing/>
108. Logistics UK, (2021), ‘Written evidence submitted by Logistics UK (EVP0083)’, *UK Parliament*, February. Available at: <https://committees.parliament.uk/writtenevidence/22826/pdf/>
109. Moran, M. (2022), ‘We need to talk about road pricing’, *Parking Review*, 7 February. Available at: <https://www.transportxtra.com/publications/parking-review/news/70527/we-need-to-talk-about-road-pricing/>
110. *Ibid.*
111. Transport Committee, (2022), ‘Road Pricing’, *House of Commons*, 25 January. Available at: <https://committees.parliament.uk/publications/8754/documents/88692/default/>
112. Cowburn, A. (2021), ‘Show the north some love’, and level up with greater speed, Tory MPs warn Boris Johnson’, *The Independent*, 13 July. Available at: <https://www.independent.co.uk/news/uk/politics/boris-johnson-levelling-up-tory-mps-b1883081.html>

Andrea Leadsom and Mark Pritchard.¹¹³

On the left, as discussed, the Labour administrations in London and Wales have both proposed some form of distance-based road charging. During the 2019-24 parliament, Labour's national policy forum draft document – intended as the basis of its election manifesto – stated:

“Labour supports the principle of clean air zones and recognises the huge damage to human health caused by air pollution and the damage to our climate caused by carbon emissions from polluting vehicles. However, they must be phased in carefully, mindful of the impacts on small businesses and low-paid workers, and should be accompanied with a just transition plan to enable people to switch affordably to low-emission vehicles.”

All mention of this was deleted from the final document, however, as Labour tried to avoid talking about measures deemed potential hostages to fortune.¹¹⁴

Think tank or pressure group support has come across the spectrum from Greenpeace, the Institute for Public Policy Research, the Tony Blair Institute, the Institute for Fiscal Studies, Bright Blue, Policy Exchange, the Centre for Policy Studies, the Institute of Economic Affairs, the Adam Smith Institute and many others. Institutional support has come from the National Infrastructure Commission, the Committee on Climate Change and others.

Clearly, some groups who have supported a scheme in principle might back away once it comes to the crunch, or might have difficulties with some aspects of the scheme proposed – although our proposals, such as on replacement not additionality and on revenue neutrality, closely align with the priorities of the supportive motoring organisations.

The AA, for one, has since said that such a levy would be “difficult to introduce” in the current cost of living crisis and that it “must have incentives for those dependent on their cars in rural areas, disabled drivers, and shift workers. The scheme should be overseen by an independent body and should not aim to raise more revenue than is currently raised from drivers.”¹¹⁵

15. Road pricing is controversial – until it happens

Even when change is fiercely debated, it is striking that after the contentious new policy begins, and people can see the benefits, opposition often falls, and the electoral penalty is limited or nil. That is what happened in London after the congestion charge, in Birmingham after a pollution charge was introduced in the city centre, and what may now also be happening with the London ULEZ, as we show below.

From the creation of the NHS to compulsory strike ballots or laws against drink-driving, no meaningful change was ever uncontested at the start. But few now would want to end the C-charge, or free healthcare, or compulsory strike ballots, or drink-driving laws.

Stockholm and Milan show something that has also been seen in Britain:

113. Millward, D. (2012), 'Tory backbenchers call for party to examine pay as you drive charges', *The Telegraph*, 29 September. Available at: <https://www.telegraph.co.uk/motoring/news/9568946/Tory-backbenchers-call-for-party-to-examine-pay-as-you-drive-charges.html>

114. Browne, D. (2023), 'Labour U-turns on support for clean air zones', *Highways Magazine*, 14 August. Available at: <https://www.highwaysmagazine.co.uk/Labour-U-turns-on-support-for-clean-air-zones/12440>

115. Jervis, T. (2024), 'Pay-per-mile road tax ruled out before Autumn Budget', *Auto Express*, 27 September. Available at: <https://www.autoexpress.co.uk/consumer-news/364095/labour-could-introduce-regressive-pay-mile-road-tax-octobers-autumn-budget>

however fierce the debate on a road charging scheme is beforehand, public opinion usually swings in favour once it is in place and people see the benefits – or at least see that the consequences are not as claimed by opponents. The electoral penalty turns out to be small, or even nil.

Ken Livingstone’s introduction of the original central London congestion charge in 2003 was deeply controversial – until it happened. Strong opposition was led by the Conservative Party, Westminster council, which covered most of the charging area, and the capital’s main newspaper, the Evening Standard. The then Labour Government threatened to block it,¹¹⁶ and even Livingstone’s own senior advisers wanted to retreat.¹¹⁷ But the implementation was widely seen as a success.

At the mayoral election the following year, Labour promised to extend the charge and the Conservatives to scrap it. The Tory candidate, Steve Norris, recorded only a small rise in his vote; Livingstone beat him by 11 percentage points.¹¹⁸

In Birmingham, the city council’s 2021 introduction of an £8 charge for high-polluting vehicles to enter the city centre was strongly contested, including by the then Conservative West Midlands mayor, Andy Street.¹¹⁹ It was the only such scheme outside London where private cars had to pay and was used by the local Conservatives as a major issue in the 2022 city council election campaign.¹²⁰ But the ruling Labour party secured a swing towards it and a rise of almost 50,000 in its popular vote.¹²¹

The extension of the London ultra-low emission zone (ULEZ) to the North and South Circular roads in 2021 (at that point prospective) barely featured in that year’s mayoral election. At the 2024 mayoral election, held nine months after the ULEZ was further extended, highly controversially, to outer London, it was the main issue. Candidates running against the extension won 40.4% of the vote, while supporters of it won 50.8% (the other 8.8% went to candidates on the fence).¹²²

In most parts of outer London, there were swings against the two pro-ULEZ parties, Labour and the Greens, but only small ones. (There were also swings in outer London against the main anti-ULEZ party, the Conservatives, but this is more likely to have been because of national factors.)¹²³ Although encouraging, these votes do not, of course, offer complete parallels, since they were on more limited initiatives than a national road pricing scheme.

16. A manual for making road pricing politically feasible

Start by setting out the problem and the unacceptability of alternative ways of tackling it

Earlier government research found that “to accept road pricing, people need to agree that it would deliver a solution to a problem which they can see needs addressing.”¹²⁴ Most people would accept that a roughly £40 billion fiscal hole in the public finances is a problem which urgently needs addressing.

The Government should set this out clearly - with support from

116. Local Government Chronicle, (2001), ‘SPELLAR THREATENS TO BLOCK LONDON MAYOR’S CONGESTION CHARGING PLAN’, 6 December. Available at: <https://www.lgplus.com/archive/spellar-threatens-to-block-london-mayors-congestion-charging-plan-06-12-2001/>
117. Beckett, A. (2003), ‘Ready, Ken?’, *The Guardian*, 10 February. Available at: <https://www.theguardian.com/politics/2003/feb/10/london.congestioncharging>
118. London Elects, (2024), ‘Results 2004’, *Mayor of London & London Assembly Elections*. Available at: <https://www.londonelects.org.uk/results-2004>
119. Street, A. (2021), ‘Andy Street: Birmingham’s clean air zones will come down unfairly hard on local people. The scheme needs an urgent rethink’, *Conservative Home*, 1 June. Available at: <https://conservativehome.com/2021/06/01/andy-street-birmingham-clean-air-zones-will-come-down-unfairly-hard-on-local-people-the-scheme-needs-an-urgent-rethink/>
120. Storer, R., Cramp, T. and Bourke, F. (2022), ‘Birmingham local elections 2022: Conservative manifesto and boosting the suburbs’, *Birmingham World*, 2 May. Available at: <https://www.birmingham-world.uk/news/birmingham-local-elections-2022-conservative-manifesto-and-boosting-the-suburbs-3677181>
121. Birmingham City Council, (2022), ‘Local election results’. Available at: https://www.birmingham.gov.uk/info/20097/elections_and_voting/2558/local_election_results
122. In favour: Khan (43.8%), Garbett (5.8%), Amin (1.2%). Against: Hall (32.7%), Cox (3.1%), four minor party candidates or independents (4.6%), Blackie (5.8%) and some of the other independents were on the fence.
123. Based on constituency votes for outer London seats in the London Assembly.
124. Department for Transport, (2004), ‘Feasibility study of road pricing in the UK - Full report’, July. Available at: https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/DfT%20road%20pricing%20feasibility%20study.pdf

independent bodies such as the AA and the Institute for Fiscal Studies, to avoid it becoming a new version of the much more contested £22 billion hole which it claimed to have inherited from the last administration. It should be explicit about alternative ways of raising the money: increasing fuel duty on the remaining petrol and diesel drivers; raising income tax by 6.5p; raising VAT; or making significant (and specific) cuts to public services.

The question for opponents, which you would want them asked in every media interview, would be: “If you disagree with road pricing, where would you get the money instead?”

The alternative, or rather non-alternative, that opponents are likely to alight on is some form of extra tax on any electricity used to charge an electric vehicle – so the Government needs to clearly explain why this would be at best extremely difficult, and at worst impossible. Most EV charging will happen at home, and the electricity you use for running your fridge can't be separated from the electricity you use for charging your car.

Announce at the same time some irrevocable basic principles for any scheme

Because public opinion is up for grabs, it is important to begin by closing off some of the most potent arguments likely to be used by opponents – above all, that this is a “stealth tax” or a way of extracting extra money from motorists. We suggest the first three principles below be announced at the beginning as iron pre-requisites for any consultation or public conversation which may follow. This is all the more important because the new government has said that it intends to raise some taxes.

The firm principles would be:

1. This will be a replacement of, not an addition to, fuel duty (and VED). Fuel duty will be abolished. No-one will have to pay both.
2. It will raise no more than fuel duty and VED do now.
3. It will cost most motorists – though of course not all – the same or less than now.

Depending on the scheme design and implementation process you are aiming towards, additional principles could include some or all of the following:

4. It will happen in stages, starting with vehicles other than petrol and diesel cars.
5. It will initially be voluntary for petrol and diesel car owners.
6. It will favour those with no alternative to using a car, such as country dwellers or the disabled, who are currently disadvantaged by paying the same fuel duty as everyone else. (There is already a VED reduction or exemption for disabled people, which will need to be reflected in the costs they face under any new scheme, but

there is scope to go significantly further.)

7. It will not disincentivise the uptake of electric vehicles.
8. It can be used to manage congestion, with potentially large benefits for the economy.

Charging motorists differently, not more

To try to win motorists over, the advent of road pricing should be combined with the abolition of fuel duty and the annual registration fee. Moreover, any black box or GPS system introduced to make road pricing work should be funded out of general taxation. After all, more efficient use of the road network helps the whole economy, and not just drivers.

It is important that a shift to a system of road pricing should happen relatively soon, before the switch to electric vehicles has gone much further. For all those who have already switched to electric and therefore pay no fuel duty or the annual license fee, the introduction of road pricing would involve an increase in the costs of motoring, thereby giving rise to the usual political objections discussed above.

To overcome natural resistance, what needs to be conveyed is that road pricing is not about revenue raising but rather about shifting the way that motorists are charged. The change should be revenue neutral, with many drivers, especially those who live in rural areas, paying less, while heavy commercial road users, such as Amazon, pay more. The change must not rely on a shift to public transport (although this could be one of the effects).

The result should be an improvement for motorists especially – less congestion and more predictable journey times. The great irony is that the group that sees itself as the greatest losers from road pricing – namely motorists – would in fact be the greatest gainers.

Relatedly, it must be communicated to drivers that the essence of the scheme is not to persuade them to drive less. Indeed, depending upon their flexibility with regard to the timing of travel, they might end up driving more and yet the scheme could still be a success.

Present it as a benefit for most motorists and the economy. Do not present it as green or anti-motorist.

Similarly, road pricing must be advanced not principally as an environmentalist policy, or an intervention to promote walkable towns and cities, but as a means of improving the quality of the UK driving experience, reducing the amount of time UK drivers spend in traffic, and potentially even as a tax cut for the majority of road users.

Accordingly, the communication strategy will be key. Two things should be emphasised in particular: firstly, how most rural drivers will see a significant fall in their tax liability; and secondly how the experience of regular road users in places with peak-load issues will improve vastly. For example, road pricing should be marketed as a means of supporting hardworking parents spending too long in traffic during the school run.

Allaying concerns about civil liberties

Opposition to road pricing is not all about money. Another set of objections comes from those worried about government access to information about citizens' movements. And there is no doubt that data about citizens' travel could provide governments with information that could be used to "spy" on what citizens were doing. Yet in order to get the most out of any road pricing system, the charging regime should be highly specific about the time and place of car usage.

In fact, existing charging schemes involve a certain amount of information being recorded about motorists' movements. Take the London Congestion zone system, for instance. Drivers pay their congestion charge for a certain date online and if they haven't paid for a particular date, when they enter the zone cameras record their entry at a particular time and place and this information forms the basis of the demand to the driver for payment.

Admittedly, so far, this aspect of the congestion charge has not given rise to massive objections. Still, a full system of road pricing would involve much more detailed information being recorded – and potentially being misused.

There are a number of ways in which such concerns could be assuaged. Our preference would be for tough regulations around the transmission of information about drivers' travel, with stiff penalties imposed for breaking these, in addition to "sunsetting" arrangements for citizen's travel data to be deleted within a certain period – perhaps a year.

In any case, it can be argued that concerns about the availability of personal information can be seriously overdone. Police can already access mobile phone data and are readily able to ascertain information on citizens' whereabouts and movements. People have become far more accepting of some degree of location tracking anyway with the advent of Google Maps and apps like 'Find my Friends'.

Stress fairness – and that this will end a lot of users being overcharged

Most people would agree that it is fairer to charge for something based on how much you use it. Most would also agree that it is fair that those with the greatest need for something be helped with the cost of it.

The current system does neither of these things (except in a limited way, with a VED discount for disabled drivers.) It in effect overcharges low and medium users to subsidise the highest users. It asks those who have the greatest need to drive – the disabled, or rural dwellers with no alternative – to pay the same in fuel duty as those with much less need to drive. The current system is unfair. The new one would be fairer.

Helping motorists to know how much they would pay

Opponents' tactics will almost certainly include exaggerated claims of how much more road pricing is likely to cost the average motorist. But as we show here in this paper, it appears likely that most private motorists will pay the same or less than now.

It is essential that the Government comes up with detailed and credible figures to show how much a scheme would cost, including an online calculator that lets people work out their liability. This means that – at least in a simple scheme - the price or prices per mile should be set up front.

In a completely dynamic scheme, the prices per mile would change very frequently, akin to fares with ride-hailing apps like Uber. Under this system, it would be harder to give people a clear idea of what they would pay.

Even with this type of scheme, however, the Government can reduce the potential for uncertainty and misrepresentation by announcing in detail how it would work and introducing strong elements of predictability: for instance, maximum and minimum charges per mile (with a relatively small range between them); by being clear about when and where the higher charges would be applied; and by saying that a high (and specific) percentage of journeys, say 80%, would only be charged the minimum throughout. We believe the best approach would be for the price of a journey to be displayed on a car's On-board Unit in advance, perhaps within a range.

All these things are a compromise from an ideologically pure system where users would be charged whatever the market can bear at any one point. But they are a politically necessary compromise.

Real versus nominal

There is one further complication to be faced. If a pledge is made that the new charge will raise “the same amount as fuel duty does now” and cost most motorists “the same as now,” logically this should be the same in real, not nominal terms. If the charge remains frozen in nominal terms, its real value will fall over time, giving the national coffers a slower-burn version of the same problem it was meant to solve.

But politically, a pledge to raise it by inflation – after many years when fuel duty has been frozen, or even cut, in nominal terms - could be used to show that the new system will, in fact, cost all motorists more money. One way to mitigate this could be to announce that it will be the same in nominal terms for, say, the next five years, but will rise with inflation each year thereafter.

A simpler scheme would be easier to sell politically, but would be less beneficial to motorists and the economy

A scheme with a single flat price per mile will be harder to misrepresent – and easier to explain the costs of to motorists - than one where pricing varies by time and place. Also, according to polling, it has more public support than a variable or “dynamic” scheme. Under a flat scheme, benefits could still be offered to groups which have no alternative to driving, such as the disabled – perhaps with a quota of free miles, or a discount on the flat price.

Organisations such as the RAC Foundation argue strongly for “keeping it simple...rather than contemplate a root and branch reform of motoring

taxation – an enterprise on a massive scale fraught with IT challenges and public hostility – the best approach would be a gradual move towards a distance charge.”¹²⁵ It is also notable that the overwhelming majority of road pricing schemes to have been implemented so far are simple, rather than variable by time or place.

But a simple scheme is clearly of much less use in reducing congestion than one where the price varies. Congestion relief is potentially a very big prize, and political gain. Moreover, under a variable scheme, those who lose financially will be much more likely to gain in faster, less frustrating, more reliable journeys.

We believe that a national variable road pricing system is a political risk worth taking. But if political leaders decide not to take the risk, one possible “third way” is to allow local leaders, such as mayors, to impose further charges at congested times or places in their own areas, as some do now, in addition to the national scheme.

Be honest that there will be losers

In any usage-based scheme designed to raise the same amount of money, as we outlined above, a minority of drivers – typically high-mileage and business users, and owners of electric vehicles – would pay more than they do now. It is important that the Government is clear and upfront about this to build trust in its estimates of the impact. Of course, losers will understandably make more noise than winners.

Nevertheless, opponents will seek to define the losing group as broadly as possible, so ministers should do their utmost to avoid undermining the credibility of their own estimates. Fundamental to the case for the introduction of road pricing is the contention that even the financial losers can be gainers in other ways. That is to say, those who choose to use congested roads at peak times will pay more than they do now but they will enjoy the benefit of shorter and more predictable journeys.

Ensure that measures are developed to address any hardships which may be caused

Ideas which are good for most people can fail because they are very bad for a few people – whose plight then becomes the focus of public debate, and a lightning-rod for political criticism. An exhaustive exercise must be undertaken to scope any group that may be caused significant hardship by distance-based pricing; and to work out and pre-announce ways to overcome that hardship.

To be clear, this is not aimed at those who are “intended” to be losers, such as EV drivers and discretionary heavy road users, but at those who have no choice but to drive everywhere, including the disabled or people living in the countryside.

With measures such as a discount, or a quota of free miles, road pricing could easily end up being better for such groups, whose needs go largely unrecognised by the current motoring tax system. Those points should be heavily stressed. But a line will still have to be drawn; if everyone

125. RAC Foundation, (2021), ‘Written evidence submitted by RAC Foundation (EVP0045)’, UK Parliament, February. Available at: <https://committees.parliament.uk/writtenevidence/22763/pdf/>

who loses is allowed to present themselves as needy and demand special treatment, the scheme will not fulfil its objectives.

Ensure that the abolition of fuel duty is passed on at the pump

Retailers are already accused of failing to pass on previous reductions in fuel duty.¹²⁶ So another way the scheme could fail is if the total abolition of fuel duty is not fully, universally and immediately reflected in the prices charged at the pump. Opponents will be on the watch for this; even a few examples could be destructive. The Government should take whatever action is necessary to ensure that retailers are obliged to pass on the full reduction, including investigating new legal obligations.

Think of a better name than road pricing – perhaps “road miles”

Many people think of roads (erroneously) as free, so to talk of “road pricing” might make them think they have to pay for something that was previously free. Any new name should be non-tendentious; some of the problems with “smart motorways” may have arisen because people instinctively felt that using hard shoulders as running lanes was not very “smart” and thought they were being misled.

The AA president, Edmund King, has suggested the name “road miles,” with everyone or some groups given a certain quota of free miles, which might be seen as the Government giving you something, rather than it taking away.

Do not allow Department for Transport officials to lead on implementation

Another way the scheme could falter is if the Department for Transport, an organisation with a record of failure and incompetence, is allowed the lead role in communicating and implementing it. Experience of the DfT’s performance over the rail strikes suggests that it is unfit to lead any work requiring skills of public persuasion or managing a campaign to achieve contested policy objectives. Its work on HS2 and many other issues self-evidently shows poor management and implementation skills on complicated projects.

To be clear, the essential political leadership will still need to come from ministers - both the Transport Secretary and, as the steward of tax policy, the Chancellor. But successful implementation and communication of the plan is beyond DfT’s capacities.

An independent body to set the prices and send out the bills?

Given the distrust of Government, it has been further suggested that a separate body, perhaps including representatives of the motoring organisations, be established to decide the level of charging and bill motorists. One partial model would be the Bank of England’s Monetary Policy Committee, which took politics out of interest-rate setting.

Policy Exchange does not, however, favour the removal of what are essentially political decisions from elected politicians. The politics of

126. RAC, (2023), ‘Drivers losing £184m a month as fuel retailers refuse to pass on 5p duty cut’, 4 December. Available at: <https://www.rac.co.uk/drive/news/fuel-news/drivers-losing-184m-a-month-as-fuel-retailers-refuse-to-pass-on-5p-dut/>

this issue are particularly unavoidable. They cannot really be swerved by delegating responsibility to a quango. The success or failure of the policy will depend on the quality of political leadership that political leaders are willing and able to exercise.

With that said, the Government should certainly set up a Vaccine Taskforce-style body with talented outsiders, above all communications and systems professionals, to implement and make the case for the scheme. They should be responsible for coordinating a major communications programme to inform people about the proposed reforms, why they are being introduced, and how they will directly benefit motorists. They should work with government departments to create a road pricing calculator so people can estimate the change in their tax liability.

17. A national scheme in one fell swoop or better to move gradually?

David Lloyd George once said: “Don’t be afraid to take a big step if one is indicated. You can’t cross a chasm in two small jumps. The most dangerous thing in the world is to try to leap a chasm in two jumps.”¹²⁷

Of course, he was right about two jump chasms. But the analogy doesn’t readily fit here. And there are some chasms that shouldn’t be attempted at all, whether in one jump or two.

This question of major change versus gradualism pops up with regard to almost all sorts of proposed radical reform. At the macro level, it played a prominent part, for instance, in the debates in the late 1980s and 1990s about how to shift from a centrally controlled economy to a market-based system. And, more than three decades on from the collapse of the Soviet system, the debate still rages.

In the case of road pricing (and just about all radical reform proposals) the main argument for going gradually is that this gives the opportunity to learn from mistakes and adapt the scheme accordingly. The small scale of early adoption means that the costs of any mistakes are minimised. Equally, done properly, a gradual approach could forestall the sort of outright opposition that could prevent a scheme from getting off the ground at all.

Against this, a slow introduction gives time for the opponents of the reform to organise opposition and, as the benefits will at that stage be minor, to argue that the reform is not worth doing.

Our preference is to move to a full system of variable road pricing as quickly as possible. In such a scenario, the Government would have to require that an On-board Unit be installed in each vehicle within a specified time period, perhaps six months to a year. Installation could be conducted at local garages.

Nevertheless, if it is decided that it is too difficult to implement road pricing in a big bang, it would be possible to implement it in stages for different users (as in fact most European countries are doing). This would help to address any potential technical and political problems before the

127. Lloyd George, D. (1933), ‘War Memoirs of David Lloyd George, Volume II’, Chapter XXIV: Disintegration of the Liberal Party, Page 740, Ivor Nicholson & Watson, London.

largest and most politically sensitive groups are brought within scope. A phased approach is detailed below.

Start with electric vehicles – at a rate still well below the cost of petrol and diesel motoring

EVs are, of course, where the revenue gap arises. They pay no fuel duty or other motoring taxes at the moment, though in 2025 they will start paying VED and the London congestion charge. EV users do pay VAT on the electricity they use to charge, but typically at the 5% domestic rate, much lower than the standard 20% rate charged on petrol and diesel sales, let alone fuel duty (electricity from public EV chargers attracts the standard rate.) Note that VAT on petrol and diesel is separate from, and additional to, the fuel duty also levied on those products; and that VAT is also levied on the duty itself as well as on the basic product.

EVs are the most urgent problem - because as the number of EV drivers used to paying little or no tax grows, the harder politically it becomes to levy new taxes on them. There are 1.2 million battery electric cars at the moment, up five fold in five years but still only 3.75% of cars. The vast majority of EVs already track their users' movements, sending the information to third parties, meaning that technological and privacy concerns will be less for this group of users.

As in other countries which are moving to per-mile pricing, EVs should be the first vehicles covered by the new scheme. But two policy problems arise. The first is that there is clearly a need to strike a balance between taxing EVs fairly and not discouraging their adoption. This can be achieved by setting the per-mile charge at a low rate initially – so it will still be substantially below the cost per mile of fuel duty to a petrol or diesel driver. As the penetration of EVs increased, the rate would taper upwards.

Secondly, doing variable pricing, where the price varies by time and place, in stages risks –to begin with – a second perverse incentive. Namely, that for the duration of the first stage, where only EVs are covered, they will be the only vehicles charged more to drive at busy times and places. For the duration of that first stage, EV drivers could find themselves paying more than the petrol and diesel drivers next to them in the traffic queue. This is another problem that could in practice be addressed by setting the variable rates low for EVs, but it needs to be recognised in the design of any scheme.

There would remain substantial financial and tax advantages to EV ownership, above all a very low “benefit-in-kind” tax for employees buying one through salary sacrifice, essentially allowing them to set almost all of the car's purchase price against tax. And in the end – whether or not the date stays at 2030, as at present – motorists wanting a new car are likely to be compelled to buy an electric one, driving uptake regardless of the tax position.

At the same time as the new charge is introduced, more urgent and concerted action should be taken to address the other factors that discourage EV adoption – such as the lack of public charging points and

the confusion around schemes for their use.

The next stage would be goods vehicles over 7.5 tonnes

Goods vehicles over 3.5 tonnes (that is, trucks or large vans) are already subject to distance-based charging in most other European countries. In Germany, for instance, trucks and large vans pay a per-km charge on motorways and most major A-roads totalling 51,000km of route.¹²⁸ In Belgium, similar arrangements apply.¹²⁹ In Hungary¹³⁰ and Switzerland,¹³¹ trucks and large vans pay a per-km charge for driving on almost any main road. In France, Italy, Austria, the Netherlands and elsewhere, trucks and large vans (and in some cases cars) pay per km to drive on motorways.¹³² The distance travelled is monitored by electronic boxes installed in the vehicles.

Note that these charges are additional to fuel duty, which continues to be levied in all these countries. Duty on diesel is lower than in Britain, however. By one measure the UK has Europe's highest duties on diesel.¹³³ All trucks, including British ones, already carry the vehicle-based tracking technology that makes distance charging possible - in the UK, it is used for checking drivers' hours and routes - so there would be no privacy concerns with this stage.

We suggest that, as most of the European schemes did, the charge should initially apply to vehicles over 7.5 tonnes. This would avoid the politically sensitive group of small independent traders - "white van man" - being brought immediately and compulsorily into scope; they would follow at the same time, and on the same potentially initially voluntary, basis as private cars. For larger trucks, over 12 tonnes, the charge would reflect not just fuel duty and VED but also an extra tax, known as the HGV Levy, which is currently paid on top of VED and collected in the same transaction. The levy ranges, depending on the size and emission class of the vehicle, from £150 to £749 per year.

If the Government wanted to move gradually, it would be possible to introduce distance-based charging initially at a low level and only as a replacement for one or more of these charges, such as VED and/or the HGV Levy - though doing so would risk confusing the message that road pricing is a replacement for fuel duty.

If distance-based charging replacing the full range of taxes is to be introduced for trucks ahead of other diesel or petrol vehicles, while fuel duty continues to be levied at the pump, a rebate scheme should be introduced to avoid them paying tax twice. Through the scheme, lorry and large van operators would receive a rebate equal to the value of the fuel duty they had paid at the pump, worked out according to the fuel consumption of their vehicle and the mileage they declared, or were tracked doing.

The next stage would be other petrol and diesel vehicles, possibly voluntarily to begin with

One political problem with road pricing is that while fuel duty is invisible,

128. Toll Collect, 'Toll roads'. Available at: https://www.toll-collect.de/en/toll_collect/rund_um_die_maut/mautpflichtige_strassen/mautpflichtige_strassen.html

129. Viapass, 'Practical info'. Available at: <https://www.viapass.be/en/practical-info/>

130. National Toll Payment Services, (2024), 'Toll road network subject to e-toll'. Available at: https://toll-charge.hu/api/uploads/NUSZ_UD_terkep_AO_20240901_EN_jpg_5debec9088.jpg

131. The Swiss Confederation, 'HVC (LSVA) - General information and rates'. Available at: https://www.bazg.admin.ch/bazg/en/home/informationen-firmen/verkehrs-abgaben-und-strassenverkehrsrecht/schwerverkehrsabgaben-lsva-und-ps-va/lsva_allgemeines_tarife.html

132. ASFINAG, (2024), 'GO toll rates 2024'. Available at: <https://www.go-maut.at/en/paying-the-go-toll/go-toll-rates/>

133. Macumber-Rosin, J. and Hoffer, A. (2024), 'Diesel and Gas Taxes in Europe, 2024', Tax Foundation, 13 August. Available at: <https://taxfoundation.org/data/all/eu/gas-taxes-in-europe-2024/>

lumped into the price of a litre of petrol and paid at the pump, receiving a monthly bill from the Government for your road usage most certainly will not be invisible. It will also be hard for most motorists to be really sure whether they are actually making savings, even if pump prices drop sharply in the absence of fuel duty.

For diesel and petrol cars and smaller vans, we therefore suggest investigating whether, for an initial period of at least two years, drivers could be allowed to choose whether they wanted to pay a per-mile charge or to carry on paying fuel duty. If they chose to pay the per-mile charge, they would receive a rebate equal to the value of the fuel duty they had paid at the pump, worked out according to the fuel consumption of their car and the mileage they declared, or were tracked doing.

That would show them, or most of them, in the clearest possible way, that they were saving money. It would also incentivise accurate reporting of mileage, discourage cheating and avoid anyone being forced into the scheme against their will, at least initially. Once the numbers choosing road pricing had grown, and the numbers not using it had shrunk, it would become compulsory for all.

There may be a number of risks with this approach, which is why it would need to be carefully considered. It could be confusing. Particularly if the pricing is dynamic (varying by place and time), most low-mileage users would probably choose road pricing and most high users travelling in congested places would probably stick to fuel duty. That would cause a temporary drop in tax revenue and would deliver fewer congestion benefits, at least initially.

It would, however, create a critical mass of road-pricing users – most of whom would be winners and would be pleased with the scheme. It would reduce the numbers of people who had to be compelled to join. And by the time the losers were forced to join, road pricing would be at least partly a fait accompli; they would lack the critical mass to block compulsion.

Do not hold a referendum beforehand

This might seem like obvious advice, given referendums' recent record of polarising opinion while not really settling the issues they are supposed to decide. But it needs restating, because in the Noughties some places, including Greater Manchester and Edinburgh, did hold referendums on proposed road-charging schemes, though more like the London congestion charge than per-mile pricing. They were heavily defeated, in GM's case on relatively low turnouts, 46% in Manchester itself.¹³⁴

This doesn't mean that road-pricing is a non-starter, certain to be rejected in any proper democratic exercise. It is always difficult to vote on a scheme that does not exist yet, and it is hard to reduce something both hypothetical and complicated to a yes/no issue. London did not hold a referendum on its congestion charging scheme - but it did have a mayoral election the year after, which strongly endorsed the mayor responsible.

Other cities which did hold referendums on charging schemes, including Stockholm and Milan, did so after implementing the schemes for

134. Manchester Evening News, (2010), 'C-charge verdict: Manchester', 19 April. Available at: <https://www.manchestereveningnews.co.uk/news/greater-manchester-news/c-charge-verdict-manchester-975886>

trial periods, so residents could see the substantial benefits for themselves before they voted. Both cities voted to keep their charging schemes. In Stockholm, support for road charging fell to 34% before the scheme, and then rose to 65% once the charge was implemented and benefits began to be realised.¹³⁵ If you must hold a referendum, do it afterwards.

“Grandfathering”: an alternative, low-controversy approach

A few days after the election of the new Government a senior DfT official, Michael Dnes, posted a long X thread advocating the introduction of road pricing. He was swiftly made to delete it and a spokesman for the department said that there were “no plans to introduce road pricing.”¹³⁶

Dnes’s now-deleted proposal is worth considering, however, as a low-controversy way into the policy. It is that distance-based charging be applied only to new electric cars; any owner of an existing car, whether petrol, diesel or electric, would never have to pay. The policy would still replace existing fuel duty, just a lot more slowly, over many years, through a natural death as the petrol and diesel fleet was replaced by electric.

With grandfathering, “you leave existing motorists alone,” said Dnes. “People who buy new cars are few in number—not enough to make an angry mob” and “people who buy new cars are seldom angry. Tax policy is about winners and losers, and you don’t feel like a loser when you pick up your new keys.”¹³⁷

So long as the Government acts soon, while the number of electric vehicles in use is still small, the pool of EVs exempt from the new tax would never be big enough to make a significant dent in future road-pricing revenues. The vast majority of EVs likely to be on the roads in future have not been bought or delivered yet. The charges on new EVs could also be varied by time or place to reduce congestion – though again the effect on congestion and the economy would be much, much slower.

The policy would clearly discourage the uptake of new EVs, while turbocharging the second-hand market. But as in the full-fat proposal, this can be mitigated by setting the per-mile charge at a low rate initially – so it will still be substantially below the cost per mile of fuel duty if you stuck with petrol or diesel. As in the full-fat proposal, the rate would taper upwards as the penetration of EVs increased.

But the policy could well avoid large amounts of controversy. As Dnes put it: “It turns out people don’t get angry when you tax something they don’t have. Grandfathering is the magic bullet of motoring tax. Historically, the downfall of every road pricing scheme is when you tell millions of people that they have to pay extra for journeys they don’t see as optional.”¹³⁸

Depending how brave the Government feels, this may be an option worth considering.

135. Eliasson, J. (2014), ‘The Stockholm congestion charges: an overview’, *Centre for Transport Studies*. Available at: <https://www.transportportal.se/swopec/cts2014-7.pdf>

136. Reid, C. (2024), ‘New U.K. Government Forces Senior Civil Servant To Delete Road Pricing Tweet’, *Forbes*, 9 July. Available at: <https://www.forbes.com/sites/carltonreid/2024/07/08/new-uk-government-forces-senior-civil-servant-to-delete-road-pricing-tweet/>

137. *Ibid.*

138. *Ibid.*

Conclusion

Road pricing introduces the market mechanism into the usage of scarce road space. In the absence of explicit prices, as in other aspects of the economy, access is effectively rationed by queuing at peak times, and there is a substantial waste of resources at non-peak times, including the under-utilisation of valuable infrastructure.

For a long time, technical limitations restricted the scope of what was feasible but advances in digital technology have overcome these problems. And now the shift towards electric cars which pay no fuel duty gives a direct push towards the adoption of road pricing.

The main barriers now are political: how to persuade drivers that road pricing makes sense – especially for them. This poses an acute political and presentational challenge but it can be successfully met. The prize is potentially highly significant. The key is to ditch the notions that motorists need to be taxed more, car usage has to be reduced and/or that the use of public transport needs to be increased. A shift to road pricing needs to be presented as being in motorists' own interests.

This can be done. Blessed with a huge parliamentary majority, the current government has an unparalleled opportunity to grasp this nettle and thereby bring huge benefits to the economy and enhance the quality of life for millions of people.



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