



WHY THE UK NEEDS TO REFORM MOTORING TAXES

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All of the views contained in this report are my own, and any errors remain mine alone.

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EXECUTIVE SUMMARY

UK motoring taxation is not fit for purpose. Fuel duty, vehicle excise duty (VED), and VAT on both fuel and fuel duty constitute a motor tax system that is unfair, fiscally unsustainable and unhealthy. It has changed little over almost a century and the time has come to reform it, with a view to completely replacing VED and fuel duty over time with a system based on the road usage of each individual driver.

Unfair

The basic characteristics of the current system of motor taxation in the UK have not changed for almost a century: fuel duty is a basic excise on hydrocarbon oils, and VED (despite some recent reform) is simply a levy on owning a vehicle driven on the Queen's highway. A century ago, there were few motor vehicles on the roads. Today, motoring is a fundamental aspect of British society. Of households in the lowest income decile (that is, those earning a gross annual income of £8,840 or less), 30 per cent own a car or van; among households in the fourth income decile, this rate rises to 74 per cent. Above that level of income, motor vehicle ownership becomes almost ubiquitous.

However, motoring costs have been rising in recent years. Between 2007 and 2012, the average total cost of motoring (including capital and operational expenditure) rose by 8 per cent, and the average cost of fuel by 23 per cent, in real terms. A poll conducted for this report showed that 53 per cent of respondents cited cost as their biggest worry about driving. The cost of motoring was even the top concern of non-vehicle owners (at 40 per cent), which suggests either that they were priced out of the market, or that the cost of driving was a significant expense for another member of their household. At the end of 2012, tax made up 61 per cent of the cost of petrol, and 58 per cent of the cost of diesel.

Analysis of the current motor tax regime by both the Institute for Fiscal Studies (Johnson et al 2012) and the Mirrlees review (Fullerton et al 2010) has confirmed that it is regressive. Public transport, worsened by recent cuts to bus services, fails to provide adequate services to those who can't afford to drive. Other areas of policy such as urban planning have left the public (outside central London) unnecessarily dependent on cars, and as a result the poorest quintile of the population take more expensive taxi trips each year than any other income quintile. Our own research shows that across all income levels expenditure on motoring has a direct relationship with expenditure on housing rent, water and energy. With the average cost of owning a car running at £90.70 per week, and average fuel costs at £32.10 per week, increasing motoring taxes would be both politically difficult and manifestly unfair.

Fiscally unsustainable

The dilemma for politicians is that cutting fuel taxes is fiscally unsustainable. Forecast receipts from VED, fuel duty and VAT on fuel duty amounted to £37.82 billion in 2012/13 – a sum almost twice the UK's entire transport budget. The country needs revenue from motor taxation in order to function.

However, motor tax revenues – dependent on the sale of polluting fuels – will inevitably decline. Countries that together make up two-thirds of global GDP now have emissions standards in place; the vehicle supply chain is making more fuel efficient cars with ever lower carbon emissions. In 2011, the Office for Budget Responsibility (OBR) projected that revenues from fuel duty would plummet from 1.8 per cent of GDP in 2010 to 1.0 per cent in 2030, and that VED receipts would also fall from 0.4 to 0.1 per cent of GDP over the same period. In 2011, research by IPPR research found that revenues from fuel duty could fall even further, to 0.72 per cent of GDP, by 2030, and that revenues from VAT on

fuel and fuel duty could likewise fall from 0.83 to 0.50 per cent of GDP. Cuts to motoring taxes risk accelerating this process. If left unaddressed, this decline will require further large spending cuts and/or other tax rises.

Unhealthy

Motoring taxes do little to address the adverse public health consequences of motoring. Fuel duty and VED are blunt tools for raising revenue: they don't have the flexibility to capture the marginal tipping point of any motoring externality. Taxes do not reflect where a car is driven, or at what time of the day or year. However, debates over motor tax tend to focus on two externalities caused by motoring: congestion, and wear and tear on the roads. These are undeniably significant problems. Estimates of the economic cost of congestion vary, but the most respected one puts the total cost at £22 billion by 2025. Likewise, it has been estimated that bringing all roads in England and Wales back into 'reasonable condition' would cost £10.5 billion. However, the focus on these two externalities has ignored others, including air pollution.

Vehicles emit toxic gases (such as nitrogen dioxide) from their exhausts, and microscopic airborne particles (known as particulate matter or 'PM') that break off from tyres and brakes as well as being emitted by exhausts. Diesel vehicles are the most polluting, but all road transport – including 'zero emission vehicles' – do in fact emit PMs from non-exhaust sources. PMs are hazardous to our health, and the World Health Organisation has concluded that there is no safe level of exposure to them.

Long-term exposure to air pollutants increases the risk of multiple cancers, causes cardiovascular conditions such as heart disease and strokes, and hinders children's development. It is currently regarded as the second biggest public health hazard in the UK after smoking, attributable to more deaths in 2008 than obesity and alcohol abuse combined. The most recent annual health costs for air pollution are £16.3 billion, and the economic costs £22.7 billion. The Department of Health has calculated that, in 2011, 5.4 per cent of all adult deaths across England were attributable to diseases caused by long-term exposure to PMs; in Westminster, Kensington and Chelsea this rate was 8.3 per cent. Congestion also worsens the effects of air pollution on vehicle occupants.

In addition, other externalities such as noise pollution and climate change also have negative health effects. Motoring also causes many members of the public to suffer stress on a daily basis, which can lead to long-term mental health problems. People sitting in buses and cars to get to their destinations are not travelling actively. The average time the public spends walking and cycling fell by 16.7 per cent between 1995 and 2012, and the British Medical Association has stated that the annual cost of transport-related physical inactivity in England is £9.8 billion, in addition to the £2.5 billion annual healthcare costs of obesity.

Implementing a new system

The unfairness, unsustainability and unhealthiness of current motoring taxation mean that reform is urgently needed to transform it into a progressive system that is based upon road usage. The technological options available today are numerous: wireless transmission of mileage data to fuel stations; GPS tracking using 'satnavs' or mobile phones; or using the same technology as pay-as-you-go insurance. These can be utilised to create taxation structures that encourage behaviour change through multiple means, such as seasonal pricing to encourage active travel in summer; charging comparatively more for shorter journeys; charging polluting vehicles more than less polluting vehicles; and linking motor

tax levels to personal information held by HM Revenue and Customs to make motor tax progressive. It is theoretically possible to create a system that targets individual unnecessary journeys and makes allowances for people's incomes. However, there are three big barriers to reform: the tension between the need to raise revenue and the need to encourage behaviour change; the practicalities of reform; and public acceptance.

If behaviour change is maximised then this would, in time, minimise the state's income from motor tax; the converse is also true. However, the potential economic benefits of reducing air pollution (which is exacerbated by congestion) easily justify some reduction in income. In today's tough economic times, that might be difficult for HM Treasury to accept – but if it wishes to preserve any level of income from motoring in the long term, it has no choice but to start reforming motor tax. The Treasury should therefore consider reform as a damage-limitation exercise. In any case, by the time any reform can be mandated, the current age of austerity will have passed.

Whereas chapters 1 and 2 of this report describe the current problems with the motor tax system in the UK in greater detail, chapters 3 and 4 explore the practical implications of reform. Chapter 3 sets out an analysis of Britain's experience to date of introducing new systems of motor taxation, and chapter 4 looks for lessons from international examples of the implementation of new systems in Milan, Stockholm and Oregon. Chapter 5 investigates the final barrier to reform – public support – by presenting an analysis of our original research into current UK public attitudes to reform, through the results of a YouGov poll and two deliberative workshops held in Newcastle.

Two major lessons emerged from this research, and from a number of other sources, all of which are set out in full in chapter 6. The first major lesson is that in delivering reform of motoring taxation, it is necessary to identify an issue that is already important to the public and develop a public debate on that issue. Only when public support for addressing that issue is maximised should reform be advocated as a solution.

Our research indicates two issues that might resonate with the public, although due to the size of our evidence base more work is required to confirm our conclusions. The first issue is the unfair nature of motor taxation itself. Instead of advocating fiscally unsustainable fuel duty cuts that do nothing to address the adverse public health consequences of motoring, politicians and other motor tax stakeholders should focus their complaints on the inequities of the current system. They should lead calls for motor tax to be made more progressive. The second issue is the negative impact that motoring and public transport has on quality of life in the UK, with a particular focus on air pollution. Politicians should pledge to make motoring a choice, rather than something that people are unnecessarily dependent on.

The second major lesson that we draw from our research is that politicians should avoid promising nationwide motoring tax reform. Instead, the process should begin on a local basis, as described below (and set out in greater detail chapter 6).

Referendums should be avoided if possible, or alternatively held only to validate mandatory but temporary reform. Civil liberties organisations such as Liberty should be consulted at the earliest stages of reforms planning, in order to mitigate and ease the public's concerns over privacy.

To establish the practicalities of a new system, multiple voluntary and temporary pilots should be started on a small scale around the country. These should be as innovative as possible, testing the utility and cost-effectiveness of different technological solutions and pricing structures. The principle of ‘user choice’ in how taxes are paid should be preserved if possible. As lessons are learned, the pilots should grow in size but decrease in variety around the country. In time, larger voluntary demonstration programmes should be carried out to showcase how a likely reform would work in practice before any mandatory reform is attempted.

Key to successful reform is devolution of some aspects of transport policy. This topic is outside the scope of this report, but we note that both funding and responsibility for public health has already been devolved to local authorities – they should be encouraged to conduct pilots of different technologies and pricing structures as one means of fulfilling these responsibilities.

Previous attempts to introduce new motor taxes have focussed on the fact that revenues from them would be hypothecated to improve public transport and fill in potholes. Such measures are an important part of the offer to motorists in exchange for reform, but not totally persuasive ones: the public have limited faith in the ability of public transport to meet their mobility needs, and see road repair as something they are already entitled to. However, our research suggests that the public may be more receptive to tax measures which incentivise active travel, and that greater emphasis should be given to these measures than there has been in the past.

Finally, the OBR, Treasury, Department for Transport and HM Revenue and Customs need to begin work on a number of issues. First, the OBR needs to start updating its predictions of the future decline in revenue from motor taxation annually so that policymakers can plan for that downturn; the assumptions used in 2011 have been undermined by the Coalition’s policy of freezing fuel duty. Second, further research is needed to establish how a new tax with a stronger influence on the public’s travel behaviour can meet the UK’s income needs; third, it also needs to establish how a new tax can be made progressive in practice, as this is a key factor in securing public acceptance of reform. Fourth, the government’s appraisal and quantification of motoring’s externalities needs to be updated in order to increase public confidence in the economic robustness of any new system.

Reform will not be easy, either practically or politically. However, those who oppose reform can validly be accused of wilful fiscal irresponsibility, ignoring both the plight of the poor and the squeezed middle, and turning a blind eye to the public health problems caused by motoring. At their 2013 party conference in Glasgow, the Liberal Democrats approved plans to reform the motor tax system into one based on road usage. Other political parties should follow suit.

1. THE DILEMMA IN UK MOTORING TAXATION

Britain is a nation of motorists. At the end of 2012, 28.7 million cars and 34.5 million vehicles were licensed in Great Britain, and on average 64 per cent of all personal trips in 2012 were made by car (DFT 2013a and 2013b). Motoring is a fundamental aspect of British society, one that generates a revenue stream upon which the state is dependent. Yet that vital system of motoring taxation is not fit for purpose, for three reasons:

1. it is compounding the growing cost-of-living crisis in the UK
2. it is regressive
3. its receipts will inevitably decline.

This report is about the reasons why motoring taxation needs to be reformed, how that reform should be implemented. This first chapter will describe the current system of motoring taxation in the UK, and explore the three key problems set out above. Chapter 2 will examine the question of why motorists are taxed at all, by examining motoring's externalities and public health consequences, and asking whether these could be better addressed by a reformed system of motor taxation. Chapter 3 then describes alternative systems of motor tax, academic theories of how to introduce new motor taxation systems, and Britain's experience to date of implementing new systems. In chapter 4 we analyse international case studies of the introduction of new motoring taxes, and in chapter 5 we present the results of our original research into the British public's attitudes towards reform. Throughout this report we make reference to findings from a series of anonymous interviews with experts in fields relevant to our research. In chapter 6 we conclude by offering our recommendations for how the UK's current motoring taxation system could be reformed in practice.

1.1 The current system of motoring taxation.

Motoring generates three forms of taxation:¹ vehicle excise duty, fuel duty, and the VAT paid on both fuel and fuel duty.

1.1.1 Vehicle excise duty

Vehicle excise duty (VED) is commonly and incorrectly known as 'road tax' – despite its name, it is not an excise duty. Excise duties are levied on the sale or production for sale of a good, whereas VED is an annual payment levied on the registered owner of a vehicle located on public roads.²

The first form of VED was a standard charge per vehicle, introduced in 1921 to replace the abolition of fuel duty (see below), which was hypothecated for building and maintaining roads. However, the Road Fund³ was not fully utilised, and the hypothecation of VED to it ended in 1937. VED receipts now count as general tax revenue: there is no such thing as a 'road tax'.

In 1999, VED was reformed to vary according to engine size, and then again in 2001 to vary on the basis of cars'⁴ CO₂ emission rates per kilometre: rates of CO₂/km are now banded, with different VED rates set for each band. Initially there were four bands, but by 2009 this had risen to 13. VED rates currently range from £0 per year for the least

1 Income tax and national insurance contributions levied on the value of company cars and employer-provided fuel fall outside the scope of this report.

2 Certain categories of vehicle are exempt from paying VED, such as vehicles registered as being out of use, snow ploughs and police vehicles.

3 The Road Fund was the government fund designated to pay for the building and maintenance of the UK's road network. It was eventually abolished in 1955.

4 In contrast to cars, VED for heavy goods vehicles is determined on the basis of size, weight and axle number; for motorcycles and tricycles it is based on engine size.

polluting band to £490 per year for the most polluting band. The most polluting bands also attract a higher rate of VED in the car's first year of registration. However, the link between these reforms and recent reductions in carbon emissions from new motor vehicles has not been firmly established (Johnson et al 2012).

1.1.2 Hydrocarbon oil duty (fuel duty)

Fuel duty is an excise tax paid on fuels⁵ sold in the UK. Most fuel duty paid is in respect of sales of ultra-low-sulphur petrol ('petrol') and ultra-low-sulphur diesel ('diesel'). The current rate for both petrol and diesel is 57.95 pence per litre, and receipts are paid into general funds.

A petrol duty was first introduced in 1909 but, after a decade of price rises, was abolished in the 1919 budget and replaced by the vehicle charge that became VED. In 1928, after prices had fallen again, the government reintroduced fuel duty. Expressed in cash terms, it must be adjusted each year for inflation – so, as the economy grows, there is always the prospect of headlines over a nominal rise. Conversely, falls in the price of oil, and economic decline, lead to demands for cuts to fuel duties.

In 1993, the Conservative government introduced the 'fuel duty escalator' to ensure that fuel duty rates rose in real terms. Initially set at 3 per cent above inflation per year, the escalator was soon increased to 5 per cent, and in 1997 the Labour government upped it further to 6 per cent. The escalator was abolished in the 1999 pre-budget report, before the fuel protests of 2000. Those protests ensured that, following initial cuts in 2001, the rate of fuel duty was either frozen or rose in line with inflation until 2009, when there was a 2p per litre increase to offset VAT reductions. The 2010 budget introduced a new 'penny'⁶ escalator that was to last until 2014, but this was promptly abolished by the Coalition government in 2011. The Coalition planned to introduce fuel duty rises, but these plans were abandoned in the face of strong opposition from Conservative backbenches. Current policy is to freeze fuel duty for petrol and diesel until the end of the current parliament.

Fuel duty has changed little over a century. Any environmental benefits from fuel duty are a happy but unintended consequence of a tax designed solely to raise revenue.

1.1.3 VAT on fuel and fuel duty

Petrol and diesel attract VAT at the standard rate (currently 20 per cent). VAT is applied both to the element of the price to which value has been added (the actual cost of the fuel) and to the element of the price to which no value has been added (fuel duty). This inequitable double taxation means that every 1p rise in fuel duty currently translates into an actual tax rise of 1.2p at the pumps. The impact of the 2011 fuel duty freeze on pump prices was largely negated by the corresponding increase in VAT from 17.5 per cent to 20 per cent. Like all VAT, VAT on fuel and fuel duty is paid into general funds.

1.2 The impact of motoring taxation

The remainder of this chapter will focus on three issues: the impact of motor taxation on the rising cost of living, its regressive nature, and the inevitable decline of its receipts.

5 Fuel duty is charged on most hydrocarbon oils: leaded, unleaded, ultra-low and sulphur-free petrol; conventional, ultra-low sulphur and sulphur-free diesel; gas oil and fuel oil, aviation gasoline, biofuels and road fuel gas. Aviation kerosene is exempt from fuel duty. Local bus service operators receive a fuel duty rebate, and certain construction and agricultural vehicles pay a reduced rate on diesel that is dyed red to differentiate it from diesel used for other applications. Train operating companies also pay a differing rate for biofuels.

6 That is, 1p above inflation per litre.

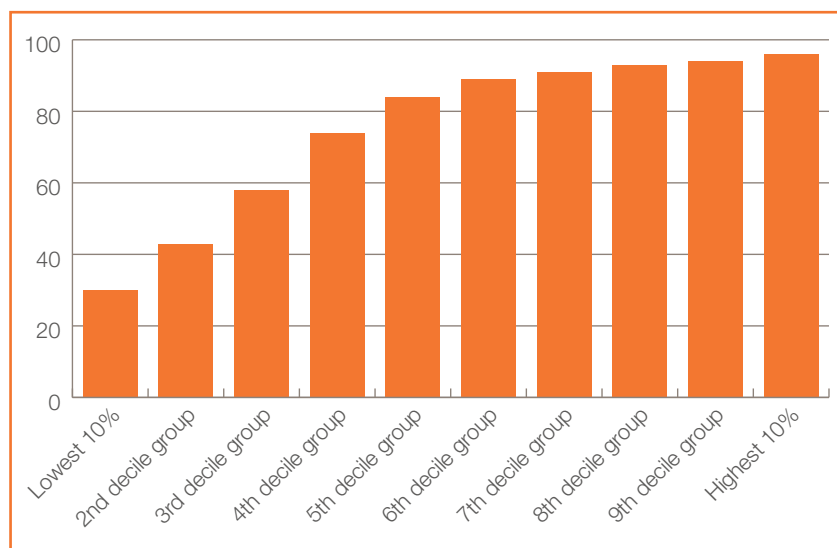
1.2.1 Motoring taxation and the rising cost-of-living crisis

The problem

The cost-of-living crisis currently dominates political debate, and has been caused in part by recent above-inflation rises in gas and electricity prices. Although transport has long been the largest item of expenditure for the average household, the latest family spending statistics from the Office of National Statistics (ONS) show that, as of 2012, 'housing, fuel and power (excluding mortgages)' is the most expensive category (at £68 per week), with transport relegated to second-highest (at £64.10) (ONS 2013a). However, these spending categories are not politically useful, as they do not reflect the way in which the public thinks about their bills. They need to be broken down further.

First we need to understand which households might be worst affected by a rise in the cost of car ownership. Figure 1.1 below shows the percentage of households in each income decile that owned at least one car or van in 2012. It shows that a substantial minority of households in the lowest income decile owned a car or van (30 per cent), and that ownership became almost ubiquitous among those households that fell into the top six income deciles (or had an annual gross household income of above £17,784) (ONS 2013b).⁷ Cars are important to the population as a whole, and particularly to the 'squeezed middle' and the wealthy.

Figure 1.1
Percentage of households owning at least one car or van, by gross income decile, 2012

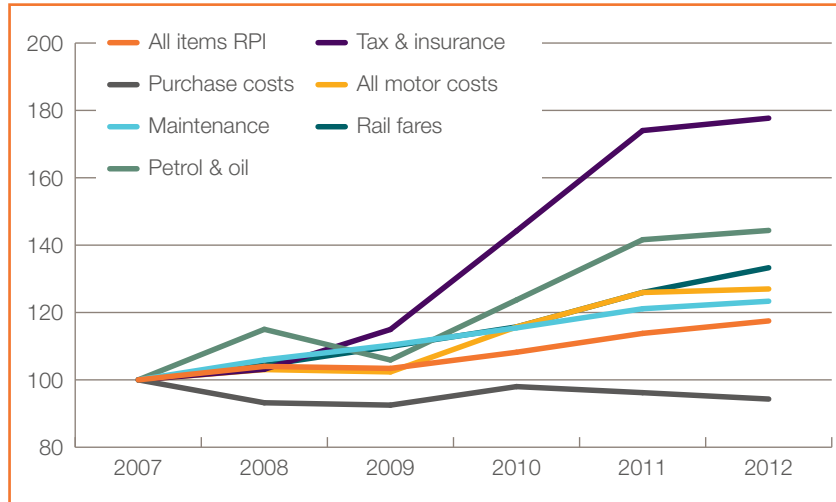


Source: ONS 2013b

Total motoring costs have fallen in real terms since 1997 because the average capital cost of motoring has fallen steadily since that date. However, there has been a large above inflation rise in operating expenditure since 2007 that has offset these capital falls (DfT 2013c). Figure 1.2 below shows a breakdown of the rising costs of car ownership since 2007. With average wages having risen below inflation, most voters are definitely feeling the pinch from rising motoring costs.

⁷ To give some perspective, a household with a gross annual income of £72,644 (or a couple earning £36,322 each) would fall within the top decile, whereas those in the bottom decile earned a gross annual household income of £8,840 or less (ONS 2013b).

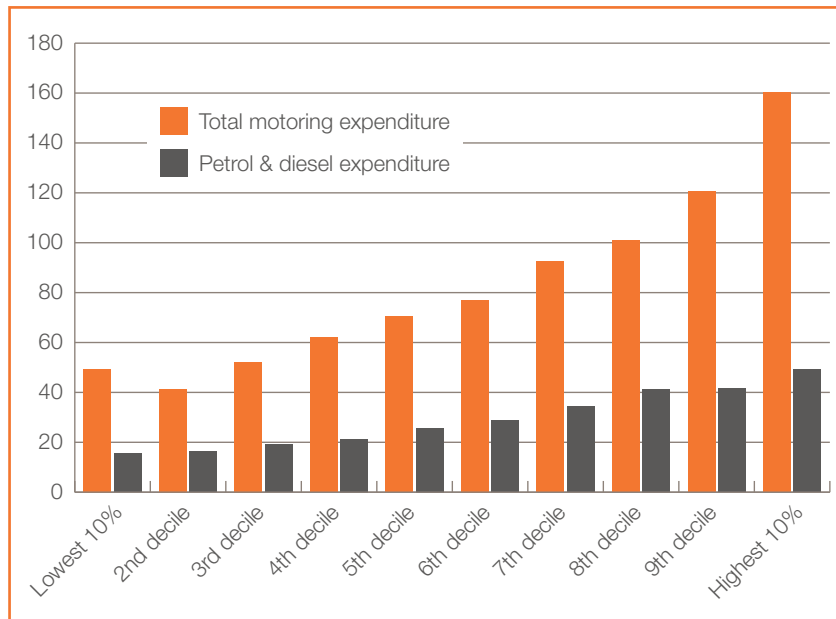
Figure 1.2
Rise in motoring costs since 2007



Source: DfT 2013c

Having established that most voters are experiencing rising motoring costs, we will now examine how much that cost is for different groups. Figure 1.3 below shows the average expenditure each car-owning households on their car(s) within each income decile. We have also isolated those households' expenditure on car fuel, as it is the single biggest line item in motoring costs. The average cost of owning a car is £90.70 per week, and fuel costs on average £32.10 per week (ONS 2013c).

Figure 1.3
Average household expenditure on fuel and on total car ownership (including fuel) among car-owning households, by gross income decile, 2012



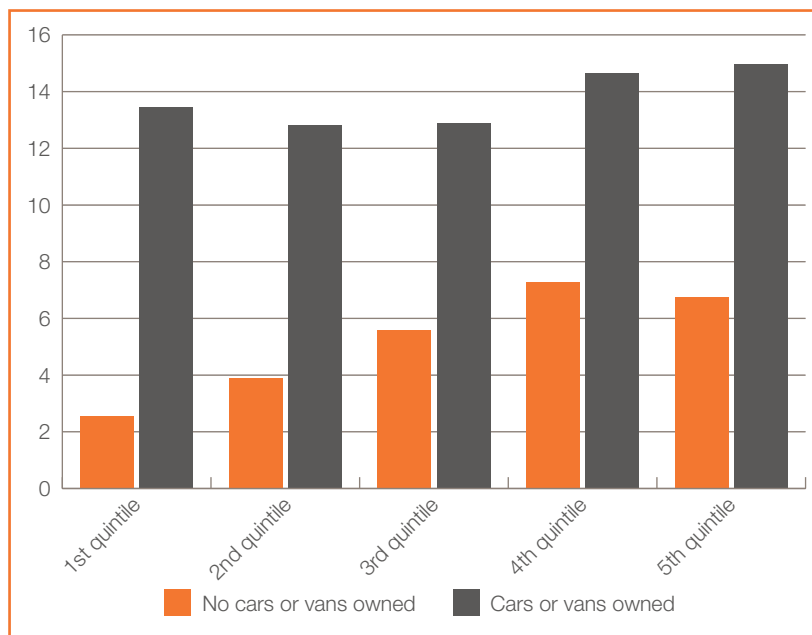
Source: ONS 2013c

What effect does this expenditure have on people's quality of life? Figure 1.4 below shows, predictably, that households that own a vehicle spend relatively more on transport than non-vehicle owners.⁸ However, figures 1.5 and 1.6 show that – surprisingly – vehicle-

⁸ In this graph, and in figures 1.5 and 1.6, we have used gross household income quintiles, rather than deciles, for ease of presentation.

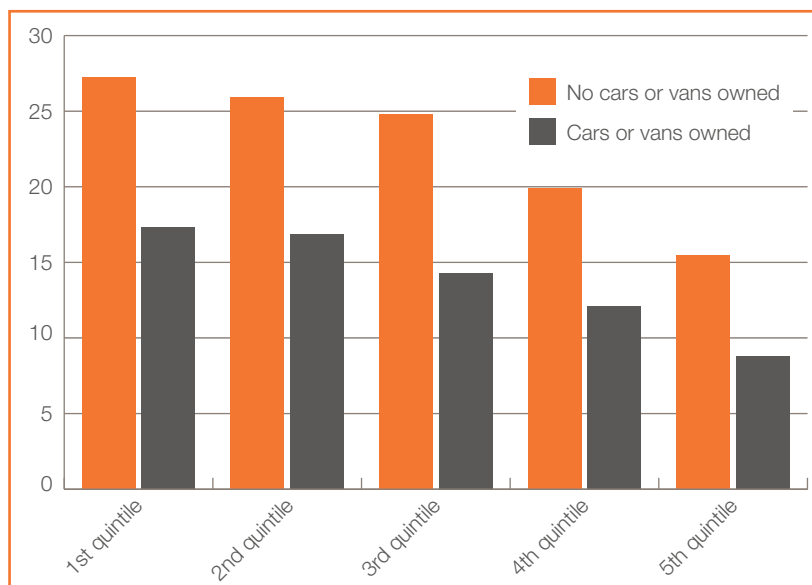
owning households also spend relatively less in markets with inelastic demand, such as utilities and the rental housing market, as opposed to markets with elastic demand.⁹ This may be because they have downsized their living arrangements as their budgets are more squeezed by motoring expenses, or – as is perhaps more likely – because within a given income quintile only households with relatively low housing costs can afford to run a car.

Figure 1.4
Transport spend as a percentage of the total expenditure of households with and without cars or vans, by income quintile, 2011



Source: ONS and Defra 2013

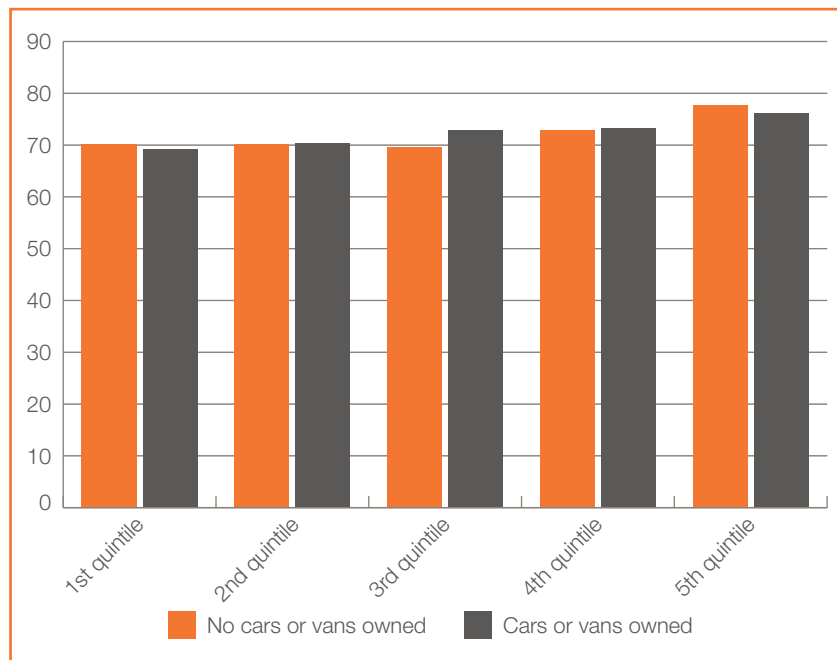
Figure 1.5
Housing (net), fuel and domestic energy spend as a percentage of the total expenditure of households with and without cars or vans, by income quintile, 2011



Source: ONS and Defra 2013

9 We also analysed the data again while separating London households from households outside of London, and found that this striking relationship between vehicle ownership and expenditure on housing rent and utilities existed both inside and outside London.

Figure 1.6
Other spend as a percentage of the total expenditure of households with and without cars or vans, by income quintile, 2011



Source: ONS and Defra 2013

More research is required to establish why this relationship exists: it is particularly important given the high and rising costs of housing and energy bills. The public are feeling this squeeze in relation to motoring costs. In our polling for this report, 52 per cent of respondents said that the cost of motoring was among the top three negative effects of driving: it was, in effect, the highest concern. This priority did not vary according to our respondents' age, gender, political affiliation or location; the cost of driving was even the top concern among non-drivers (at 40 per cent). These findings were also reflected by participants in our workshops, which are explored in chapter 5.

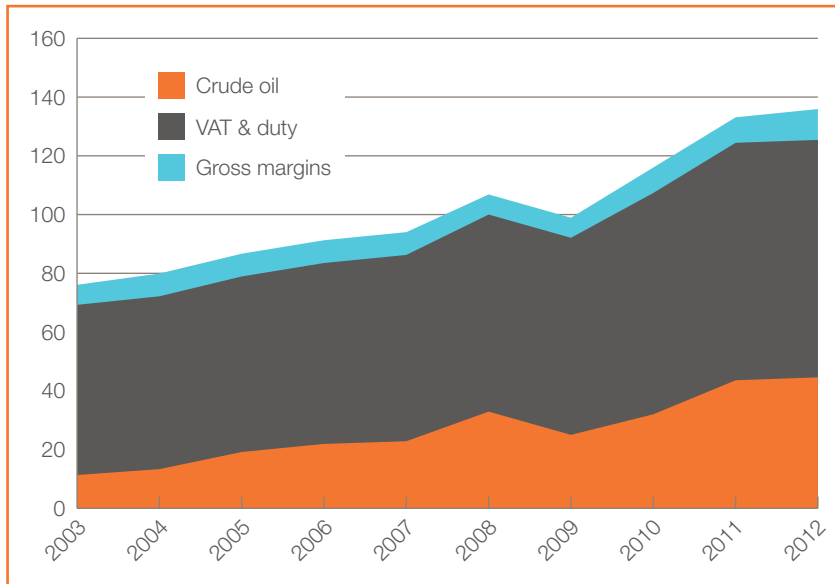
Addressing the problem of rising fuel costs¹⁰

The Office of Fair Trading (OFT) recently conducted a review of the petrol and diesel sector (OFT 2013). They divided the costs of both fuels into three elements: the cost of crude oil, tax (fuel duty and VAT), and the cost (including margin) of refining, wholesaling and retailing motor fuel.

The OFT found that between 2003 and 2012, the overall price of petrol in the UK increased by 60p per litre, and that of diesel by 64p per litre. These represent real-terms increases of 40 and 44 per cent respectively. The review also found that tax represents 61 per cent of the cost of petrol, and 58 per cent of the cost of diesel (OFT 2013). Figures 1.7 and 1.8 below show the OFT's breakdown of the rising costs of petrol and diesel respectively.

¹⁰ Rises in the cost of vehicle maintenance and insurance are outside the scope of this report. We note, however, that the government has frozen the cost of MOTs at £54.85 until 2015. In an effort to address rises in insurance premiums, the government is introducing measures to ensure that only accredited medical evidence is used in whiplash claims. Furthermore, the Competition Commission is currently investigating the motoring insurance industry, and its final report is expected at the end of 2014.

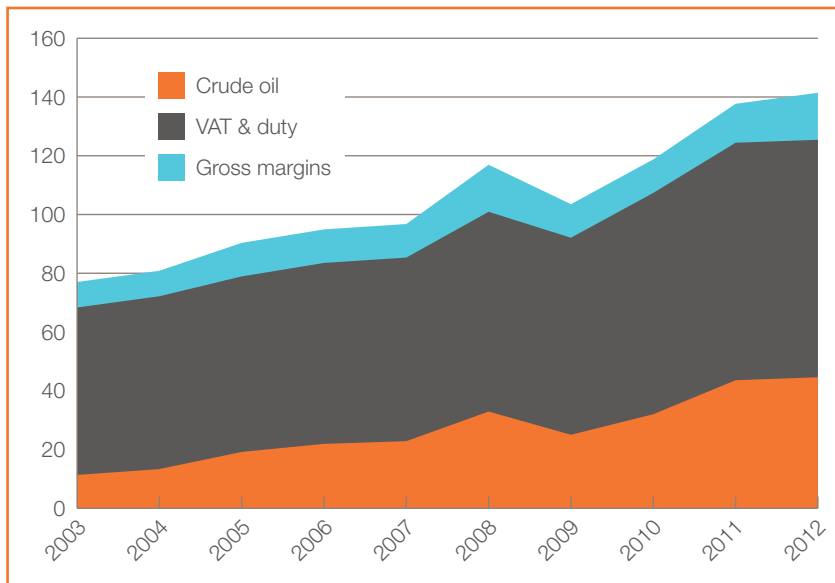
Figure 1.7
Petrol prices
(pence per litre),
by element,
2003–2012



Source: OFT 2013

The rise in the cost of petrol over this period was due to a 10 per cent real-terms rise in VAT and fuel duty, and a 214 per cent real-terms rise in the price of crude oil. The combined gross margin for refiners, wholesalers and retailers also rose by 14 per cent in real terms.

Figure 1.8
Diesel prices
(pence per litre),
by element,
2003–2012



Source: OFT 2013

The rise in the cost of diesel was due to an 11 per cent real-terms rise in VAT and fuel duty, and that same 214 per cent rise in in crude oil costs. However, the industry's gross margins on diesel sales rose by 41 per cent in real terms between 2003 and 2012.

The OFT concluded that ‘the UK has some of the cheapest prices in Europe before tax and duty, and increases in the pump prices of petrol and diesel over the past 10 years have been caused largely by higher crude oil prices and increases in tax and duty,’ but also that ‘competition in the UK road fuels sector is working relatively effectively’ (OFT 2013).

What to do about rising fuel prices?

The OFT’s analysis also shows that the lion’s share of what consumers pay for fuel is tax. Previous IPPR research predicted that the price of crude oil would continue to rise (Bradley and Pendleton 2011). The international oil market is beyond the control of any single government. If there is no market failure in the industry, and if the global price of crude oil is likely to continue to rise, then the only element of the price of fuel that can be tackled by government is tax.

1.2.2 Motoring taxation is regressive

The amount of fuel duty an individual pays depends not on their income but on how much fuel they use, which is itself dependent on multiple factors such as vehicle fuel efficiency, distance travelled, journey topography and driving style. If they have a car, people on lower incomes are likely to own an older, less efficient car, which in effect increases the amount that they will pay in fuel duty. Likewise, those with poor access to alternative modes of transport have little choice but to pay fuel duty. VAT simply compounds this by adding 20 per cent to the total fuel cost.

VED is set according to vehicle emission levels, not income levels. Generally, new cars tend to be less polluting but more expensive than older, second-hand cars. It may be that poorer people therefore have to pay more VED than the wealthy.

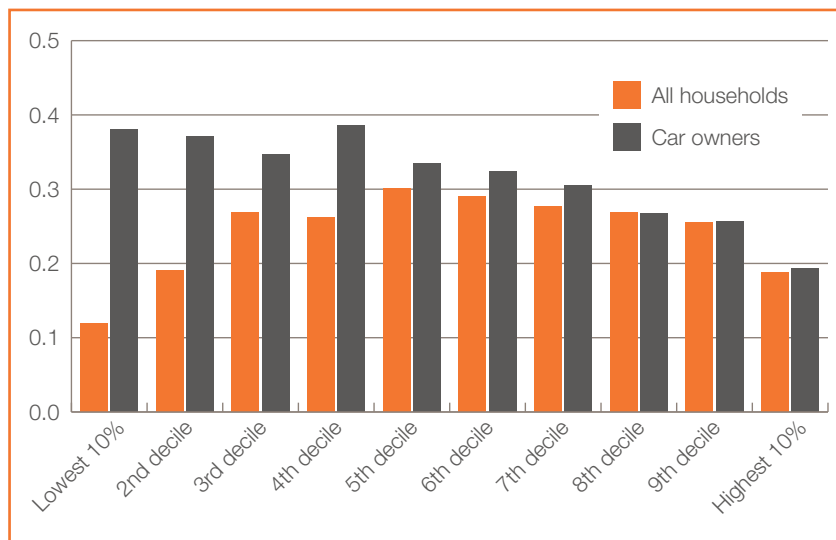
So is there evidence to show that poor people are likely to have to spend a larger proportion of their income on fuel duty and related VAT than the wealthy? Two recent studies have examined this question.

The Mirrlees review examined the effect of the 5 per cent rise in petrol prices¹¹ that occurred in 2006/07 (Fullerton et al 2010). Figure 1.9 below shows that this price rise had a greater impact on the cost of living for car-owning households with expenditure in the lower deciles than car-owning households who spend more money.

The second examination was conducted by the Institute for Fiscal Studies (IFS) using data for 2009, and looked at both VED and fuel expenditure (Johnson et al 2012). They found that the total amount paid for vehicle fuel and VED as a proportion of the share of total expenditure was progressive across all income deciles, except for the richest 10 per cent of households by income. However, like the Mirrlees review, the IFS recognised that the results would differ if non-car owning households were excluded from the analysis. This is what is set out in figure 1.10 below, which shows that among car owners, motoring taxes are broadly regressive. In 2009, before above-inflation price rises had kicked in, fuel costs made up 6.7 per cent of the average budget of the poorest tenth of car-owners, compared to 5.0 per cent of those of the richest tenth. For VED, the figures were 1.4 and 0.8 per cent respectively (ibid).

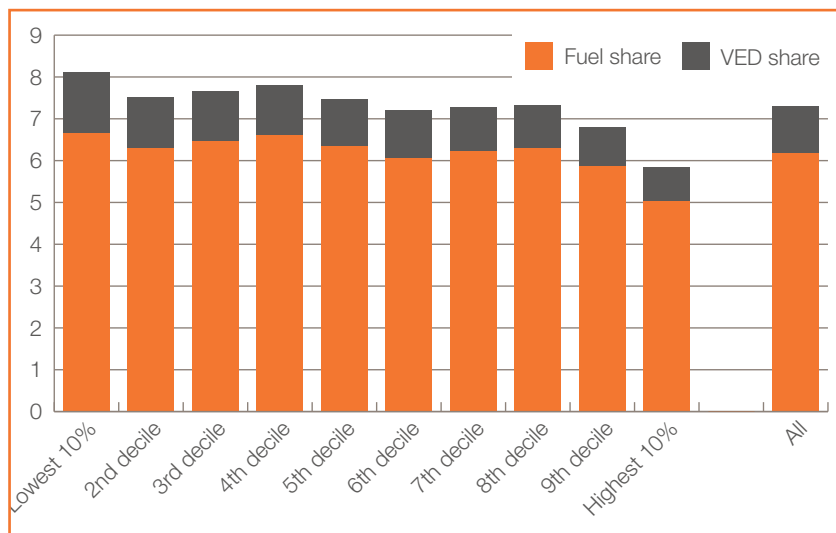
¹¹ This approach does not examine whether VED is regressive.

Figure 1.9
Percentage increase in the cost of living caused by 5 per cent rise in petrol prices in 2006/07, by expenditure decile



Source: Fullerton et al 2010

Figure 1.10
Share of average household budget accounted for by vehicle fuel and VED among car-owners, by equivalised household income decile, 2009



Source: Johnson et al 2012

The need to exclude non-car owning households to determine whether motoring taxation is regressive is unhelpful. To exclude these households from the distributional impact assessment assumes that they have not been priced out of driving a car in part as a consequence of the amount of taxation payable. Although there have been no declining trends in rates of car ownership, the ONS has concluded that because 'the price of petrol and diesel increased substantially [between 2001/02 and 2012]... it is likely that motorists responded to this inflationary pressure by reducing unnecessary journeys' (ONS 2013d). The analysis presented in the preceding section of this report showed how motoring taxes bear the greatest responsibility for the total cost of fuel.

To include all households in the assessment would assume that those who do not own a car are having their transport needs met by other means. However, as the analysis in the following box-out indicates, this is not the case.

The public's transport needs

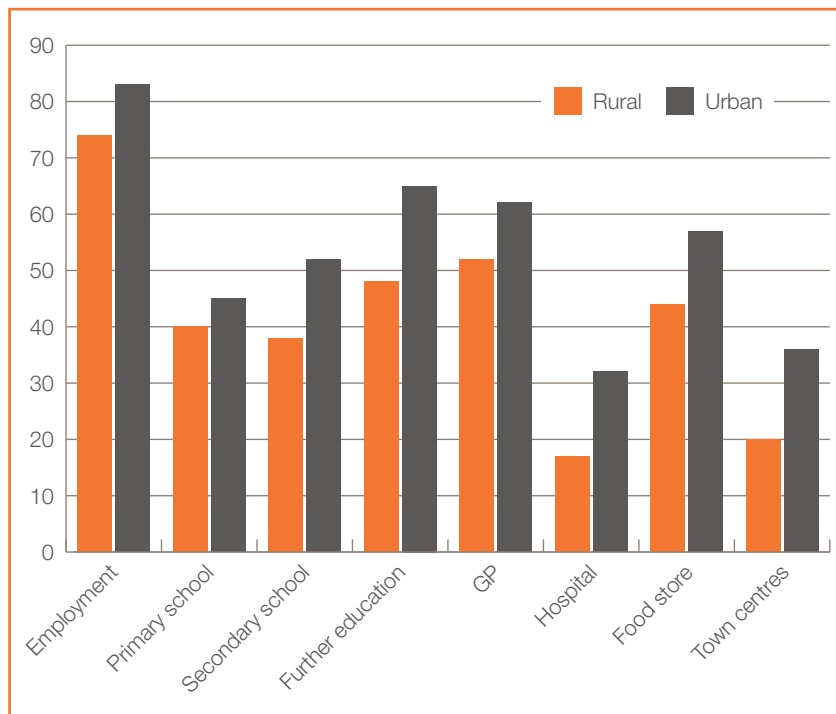
The only central government support provided directly to the consumer to relieve transport costs are free bus passes for the elderly and disabled; the VED exemptions and mobility elements of benefits provided to veterans and pensioners; the incentives given to reduce the cost of owning an ultra-low-emission vehicle; and the tax incentives offered to those purchasing a bicycle on the 'cycle to work' scheme. None of these are conditional on income levels. Other reduced travel fares on bus and rail networks are provided by the private sector and/or local authorities, and eligibility for many of them is dependent on factors other than income.

Furthermore, public subsidies of public transport have not resulted in universal coverage. Figure 1.11 below shows that access to key services via modes of transport other than the car is far from fully comprehensive, particularly access to hospitals. This is in part a failure in urban planning policy as well as transport policy. Failure to take a holistic approach to transport when planning key origins (such as homes) and destinations (such as hospitals) can mean that, for many, active travel is impracticable, and the economies of scale that would make public transport commercially viable are absent. If taxpayer subsidies for buses are cut, the public are left unnecessarily dependent on cars.

Partly as a consequence of this policy failure, the poorest 20 per cent of households take more expensive taxi journeys per year than any other income quintile. Figure 1.12 below shows that in 2012, households in the poorest quintile pay for just under 16 taxi trips per person per year on average, while the richest quintile of households pay for an average of just under nine taxi trips per person per year.

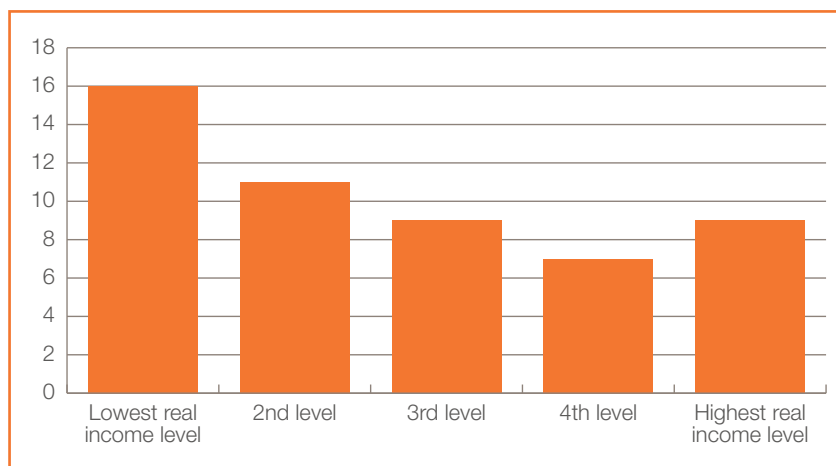
Because transport and urban policies leave the public dependant on cars, and because car ownership in the poorest income decile is not ubiquitous and the benefits system does not fill that gap in incomes, there are likely to be people who do not have access to either their own transport or public transport. Excluding non-car-owning households from distributional impact assessments of motor taxation therefore distorts the results much more than including them does. On a clear balance of probabilities, the current motoring taxation system is regressive.

Figure 1.11
Percentage of residents with 'reasonable' access to key services by public transport/walking, in rural and urban areas of England, by key service, 2011



Source: DfT 2011

Figure 1.12
Taxi trips per person per year by real household income quintile, 2012



Source: Data supplied to IPPR by the Department for Transport, 2014

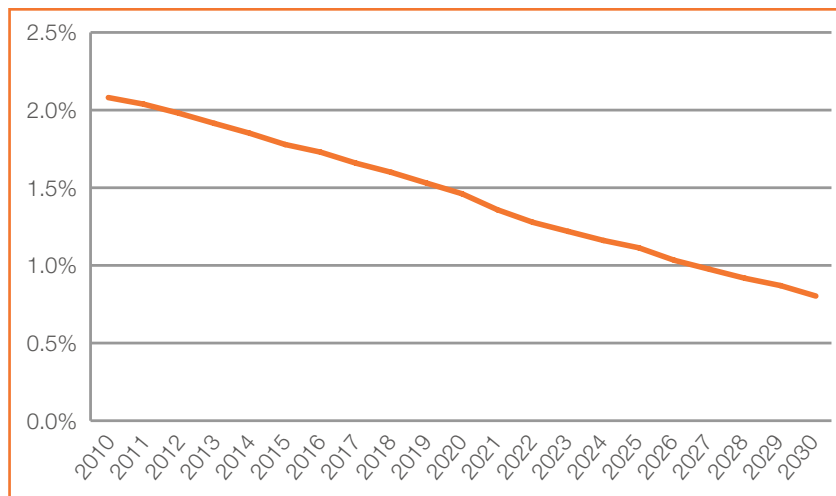
1.3 The decline in motoring taxation receipts

Countries that make up two-thirds of global GDP have emissions standards in place, and the supply chain is making cleaner and more fuel-efficient cars. Motor taxation is dependent on cars emitting carbon, and on fuel being consumed. Increased fuel efficiency means that the average new car sold in the UK in 2013 had emissions of 128.3 grams of CO₂ per kilometre, down from 181 grams in 2000 (SMMT 2014). Car manufacturers expect this trend to continue, and for the market in ultra-low-emission vehicles (which are not fuelled by hydrocarbons) to grow (Rowney and Straw 2013).

This means that motor taxation receipts will decline. The Office for Budget Responsibility's (OBR) *Fiscal Sustainability Report 2011* projected that by 2030, receipts from fuel duty would plummet from 1.8 per cent of GDP in 2010 to 1.0 per cent of GDP in 2030 (OBR 2011). This assumed that fuel duty would rise annually in line with inflation, which is not happening at present. It also predicted that VED receipts would fall from 0.4 per cent of GDP to 0.1 per cent (ibid).

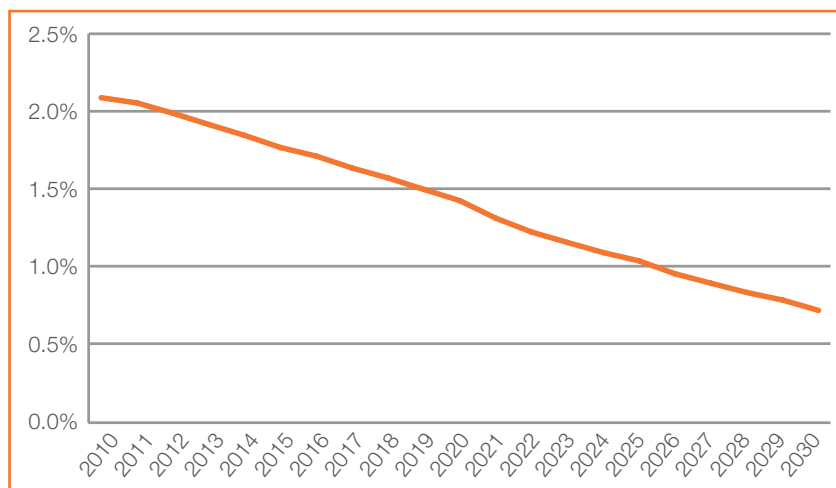
In 2011, IPPR calculated its own projections regarding motor taxation receipts. Assuming that fuel duty would rise by only 1 per cent per annum, we projected that returns from fuel duty would fall from 2.08 per cent to 0.80 per cent of GDP by 2030 (see figure 1.13 below). In another scenario, in which the overall number of cars in the UK does not increase, fuel duty receipts drop further still to 0.72 per cent of GDP by 2030 (see figure 1.14 below). Our research also found that, over the same time period, VAT revenues from fuel and fuel duty would fall from 0.83 per cent of GDP to 0.50 per cent, and VED receipts would fall to almost a quarter of their 2011 levels (Bradley and Pendleton 2011).

Figure 1.13
Projection of fuel duty as a percentage of GDP, assuming an annual fuel duty increase of 1 per cent between 2010 and 2030



Source: Bradley and Pendleton 2011

Figure 1.14
Projection of fuel duty as a percentage of GDP, assuming an annual fuel duty increase of 1 per cent, and zero traffic-growth, between 2010 and 2030



Source: Bradley and Pendleton 2011

However, the assumptions of both the OBR and our own earlier report have been negated by the current government's policy of freezing fuel duty. The OBR needs to start updating this analysis on a yearly basis to take account of changes to its assumptions, so that policymakers can plan for the inevitable decline in tax receipts.

Forecast receipts from VED, fuel duty and VAT on fuel duty amounted to £37.82 billion in 2012/13, compared to total UK public spending on transport in that year of £19.3 billion (DfT 2013d and HMT 2013a). Motoring taxation pays for the entire UK defence budget, or the combined UK budgets of transport, housing and amenities, science and technology, agriculture, fisheries and forestry. The country needs motor taxation receipts in order to function.

Current policies of reducing fuel duty for rural communities and freezing it for everyone else, and proposals for a fuel duty regulator, do nothing to address this trend. Reintroducing a fuel duty escalator would not only ignore the regressive impact of motor taxation, but would simply postpone the problem as well as being politically toxic. To continue to simply ignore the trends in motoring without preparing for other tax rises or greater spending cuts would be fiscally irresponsible. It would therefore be prudent to consider reforming the motoring taxation regime to address the impending gap in the UK's finances.

1.4 Conclusion

Politicians face a difficult choice. On the one hand, in a cost-of-living election, voters will look to the party that promises to do most to reduce their living costs. For most of the population, motoring is a significant household expense and fuel a significant regular bill. Both hit the poorest in society hardest. If, as our analysis suggests, there is a direct relationship between vehicle ownership and patterns of spending in markets with inelastic demand (such as the housing rental and utilities markets), then the expensive nature of motoring becomes even more politically pertinent. The only way to reduce these bills would be to cut taxes further.

Unfortunately, to do so would accelerate the apparently inevitable decline in receipts from motoring taxation. Overall, reform could make motor taxation progressive, but this in itself would be unlikely to leave taxpayers better off overall unless the government were to accept a decline in receipts to some degree. However, reforming motor taxation could go some way towards plugging the impending gap in the government's finances. Unless the government makes clear what spending cuts or tax rises will fill this gap, failure to begin planning for reform of motor taxation would be fiscally irresponsible.

As if that dilemma wasn't tough enough for politicians to deal with, there is a further twist. Those who may celebrate a fall in tax receipts as a consequence of steps taken to reduce the expense of motoring would be ignoring the public health consequences of motoring. Chapter 2 re-examines the fundamental rationale for taxing motoring, and asks how it could be redesigned to work in the interests of public health.

2. WHY TAX MOTORISTS?

Chapter 1 set out a political dilemma for politicians: how to resolve the conflict between lessening the impact of motoring taxes on the cost of living, particularly for the poor, and preventing the impending fall in revenue from motoring taxation, upon which the state heavily depends. Reform of motoring taxation could address these conflicting concerns to a degree, but it also presents an opportunity for it to do more than just raise revenue: it should also attempt to address the public health consequences of motoring. This chapter will explore that possibility.

2.1 What should the purpose of motoring taxation be?

Although there are many principles of taxation,¹² the two objectives of motoring taxation should be the income effect (raising revenue for the state) and/or the substitution effect (encouraging people to use other forms of transport, share vehicles, travel on different routes or at different times, or not travel at all and work from home). As we set out in chapter 1, our motoring taxation system is primarily about the first of these two objectives. In our literature review we found a consensus¹³ on the need to reform motoring tax so that it has a stronger substitution effect that does more to reduce the social and economic impact of motor transport's externalities. Before exploring how this might be achieved, it is first necessary to understand these externalities.

2.2 What are motoring's externalities?

The basis of the government's assessment of motoring's externalities was a study carried out in 1998 by the University of Leeds, which identified motoring's externalities as air pollution, noise, road accidents, congestion, damage to the roads and climate change (Sandler et al 2001). In planning transport, the government also considers other negative effects such as transport's impact on physical health and stress, both of which impose external costs on wider society. Concerns such as mental health and obesity were not so well understood in 1998 as they are today.

2.2.1 Air pollution

Road traffic is the single biggest cause of air pollution. Vehicles emit toxic gases such as nitrogen dioxide and carbon monoxide,¹⁴ and microscopic airborne particles (known as particulate matter or 'PM'), from engine emissions, tyre and brake wear and other non-exhaust emissions. Once released, these gases and PM react with each other, with the air and with sunlight to produce more toxic substances such as ozone and yet more PM (Defra, no date). Diesel vehicles are the most polluting, but all road transport – including 'zero emission vehicles' – do in fact emit PMs from non-exhaust sources. Since Sandler et al's work (2001), our understanding of air pollution's health impacts has improved a great deal.

In the short term, the healthy hardly notice the effects of air pollution: a dry throat, sore eyes or perhaps a tickly cough. However, those with poorer health, such as the elderly or those with pre-existing conditions, are more likely to become ill on a day of poor air quality and require medical treatment for complications such as life-threatening respiratory episodes, heart attacks and strokes (Defra 2013, BHF 2014).

12 These include certainty, simplicity, efficiency (in terms of raising revenue without discouraging economically beneficial activities), and that it should be progressive (that is, determined by people's ability to pay).

13 Mirrlees et al 2011, Thomson et al 2013, Fullerton et al 2010, Johnson et al 2012

14 Other emitted toxins include nitric oxide, benzene, 1,3-butadiene and polycyclic aromatic hydrocarbons.

For the healthy population, long-term exposure results in an increased risk of lung and skin cancers, leukaemia and lymphoma (Defra, no date); there is also a causal link to cardiovascular diseases such as coronary heart disease (BHF 2012). Poor air quality also affects the physical development and school performance of children (BMA 2012). The World Health Organisation (WHO) has stated that there is no safe level of exposure to PMs, or a threshold below which no adverse health effects occur (WHO 2013).

How severe is the problem? The statistics illustrate a public health catastrophe.

- Long-term exposure to air pollution reduces average life-expectancy by six months (BMA 2012).
- The Department of Health says that 5.4 per cent of adult deaths in 2011 in England can be attributed to long-term exposure to PM. This figure rises to 8.3 per cent of adult deaths in Westminster, Kensington and Chelsea, and to 8.9 per cent of those in the City of London (Public Health England 2014).
- In 2012, the London Assembly's health and environment committee found that 'thousands of Londoners per year die early as a result of long-term exposure to air pollution... over 4,000 extra deaths each year in London are attributable to one kind of pollutant, [PMs]' (London Assembly 2012).
- The UK Committee on the Medical Effects of Air Pollutants (COMEAP) calculated that exposure to PMs had an effect on mortality equivalent to 29,000 deaths in 2008 – more than the total number of deaths attributable to obesity and alcohol abuse combined (COMEAP 2010).
- COMEAP also stated, 'given that much of the impact of air pollution on mortality is linked with cardiovascular deaths, it is more reasonable to consider that air pollution may have made some contribution to the earlier deaths of up to 200,000 people in 2008' (COMEAP 2010).
- In 2013, the WHO published a book by the International Agency for Research on Cancer which confirmed that exposure to the smallest PM particles (PM2.5) was estimated to have contributed to 3.2 million premature deaths worldwide in 2010 alone (Straif et al 2013).

The most recent UK estimate of the health cost of air pollution is £16.285 billion a year (Defra 2010), and the most recent estimate of the total *economic* cost of air pollution is £22.7 billion a year (both in 2012 prices) (Cabinet Office 2009, DfT 2009).

2.2.2 Noise

Over 40 per cent of the UK population is affected by road traffic noise (SDC 2010), the sources of which include engine noise, tyre noise, car horns, car alarms, car stereos, slamming doors and squeaking brakes.

Although recent debate has focussed on noise pollution from aircraft, there is little doubt that road traffic is the biggest cause of noise pollution, and one that has a more significant adverse health impact (Mitchell 2009, Rodrigue [no date], WHO 2011). In 2011, the WHO reviewed the scientific evidence available in this field and concluded that it had both increased and improved greatly in recent years (WHO 2011). We now know that continual exposure to road traffic noise:

- increases the risk of high blood-pressure, hypertension, heart disease and heart attacks (AHEGNH 2010, Selander et al 2009, Babisch 2006, WHO 2011), and

- reduces the cognitive and learning abilities of school-age children, and continues to do so for some time after the cessation of exposure to noise (AHEGNH 2010, SDC 2010, WHO 2011).

The government has also recognised that noise pollution has impacts on mental health, and causes sleep disturbance, hearing impairment and general annoyance.

The government has calculated that the annoyance caused by noise pollution in urban areas costs the housing market up to £5.68 billion (in 2012 prices) a year; the cost of noise pollution's health implications has not been measured (Cabinet Office 2009, DfT 2009).

2.2.3 Road accidents

In 2012, 195,723 road accidents which resulted in a personal injury were reported to the police, from which 1,754 fatalities resulted. The costs of road accidents include pain, grief and suffering; lost economic output on the part of the casualties; medical and healthcare costs; material damage (to vehicles, road infrastructure, buildings and so on); police costs; insurance administration and legal and court costs. The total value of preventing those 195,723 reported accidents in 2012 was calculated to be £15.1 billion; allowing for unreported accidents, this figure rises to £34.3 billion (DfT 2013e).

2.2.4 Climate change

The Intergovernmental Panel on Climate Change has concluded that the scientific evidence demonstrates that the 'human influence on climate change is clear' (IPCC 2013). In terms of public health, one obvious consequence of climate change is that heatwaves are likely to become more frequent in the UK. The heat-related mortality baseline mortality in the UK was, in 2012, around 2,000 premature deaths per year, but because of climate change this could increase by around 70 per cent in the 2020s and by around 540 per cent in the 2080s (Vardoulakis and Heaviside 2012). This will not be the only health impact of climate change – the recent flooding in southern England shows the potential of climate change to increase stress and worsen all of our lives.

Domestic transport accounted for 20 per cent of total UK greenhouse gas (GHG) emissions covered by carbon budgets in 2012. Road transport made up 98.5 per cent of these GHG emissions, and so constitutes a significant portion of the UK's total contribution to international climate change and the public health consequences of it (CCC 2013). The Committee on Climate Change has estimated that, relative to a path on which no progress is made towards decarbonising transport during the 2020s, the estimated saving that could be achieved under the government's fourth carbon budget (covering 2023–2027) is £30–35 billion in present value terms under central case assumptions for fossil fuel and carbon prices (ibid).

2.2.5 The health costs of physical inactivity

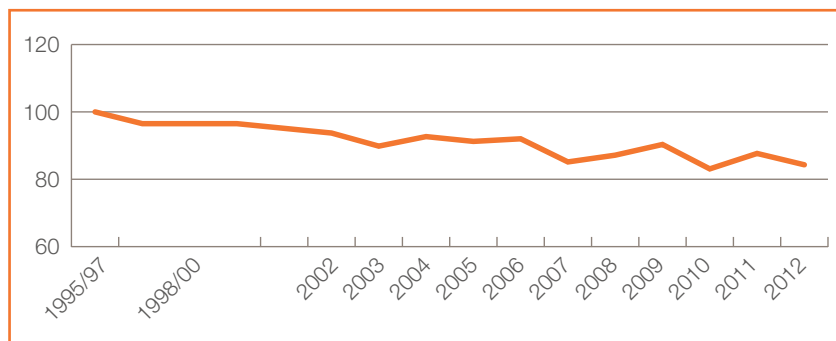
Active travel (walking and cycling) is associated with numerous health benefits, including improved mental health, a reduced risk of premature death, and the prevention of chronic diseases like heart disease, stroke, type 2 diabetes, osteoporosis, depression, dementia and cancer. The British Medical Association has cited the Cabinet Office estimate which puts the economic costs of transport-related physical inactivity in England at £9.8 billion per year,¹⁵ in addition to the £2.5 billion annual healthcare costs of obesity (BMA 2012). The recent report from the All Party Commission on Physical Inactivity cited economists' calculations that a 'doubling of walking and an eight-fold increase in cycling' would,

¹⁵ Note that this figure was based on research conducted in 1998, and which has not been updated since.

within 20 years, lead to savings of roughly £17 billion (in 2010 prices) for the NHS in England and Wales (APCPI 2014). Another assessment found that the benefit-to-cost ratio of active transport interventions in the UK is 19:1 (Davis 2010).

Figure 2.1 below shows that the time that people spent travelling actively fell steadily by 16.7 per cent between 1995 and 2012 (DfT 2013f). Given modern-day concerns about the growing number of overweight and obese, this is a worrying trend.

Figure 2.1
Total hours spent travelling per person per year in Great Britain (1995/97 = 100)



Source: DfT 2013f

Note: The source gives single figures for '1995/97' and '1998/00'.

The DfT generally only conducts quantitative appraisals of active transport in relation to 'schemes with a significant active modes focus' (DfT 2014a). These appraisals look at the multiple benefits derived from active transport, such as the health benefits and reductions in workplace absenteeism. However, non-active schemes are not generally appraised in this way, as it is difficult to predict modal shift. This highlights the need for a multi-modal approach to transport appraisal, as recommended by IPPR North (Cox et al 2013). Without using such an approach it is not possible to directly quantify the effect that a lack of exercise caused by motorised transport might be having on the nation's health.

2.2.6 Stress

Driver stress has been found to influence mood, thoughts, feelings and behaviours both at work and at home (Hennessy and Wiesenthal 1999). Another study has suggested that many drivers are not actually aware that they are stressed (TomTom 2011). As section 2.2.7 below demonstrates, congestion worsens the impact that stress may be having on the public's health.

However, compared to other externalities, the scientific evidence of the harm caused by transport specific stress is comparatively thin, and our research has not uncovered any costings. The DfT's appraisal of traveller stress (in DfT 2014b) is qualitative rather than quantitative. Until it is assessed quantitatively, this externality cannot be internalised through tax.

2.2.7 Congestion

Congestion is the temporary impairment of connectivity¹⁶ caused by high levels of demand and/or a reduction in system capacity. It can be unpredictable, and occurs only once there is already a sizeable volume of traffic on the road. Its marginal costs

¹⁶ Connectivity is the quality of the transport network that provides access between places that people want to travel to, measured by factors such as travel times and journey reliability.

are therefore always much higher than those of other externalities – the marginal car causes congestion for multiple cars, for example – but the additional impact that congestion has on total air pollution is small. However, the fact that it is highly marginal does not in itself make congestion the most concerning motoring externality; it simply means that a price differential (such as a congestion charge) will have more impact on congestion than it will on other externalities. Other externalities have higher total costs – and, in the case of air pollution, a direct effect on premature mortality.

There have been multiple studies into congestion in the UK, which have come up with varying cost estimates. The most respected of these studies (Eddington 2006) estimated that the total cost of congestion in England would reach £22 billion in 2025. More recently, the prime minister claimed in a speech that congestion costs the UK £7 billion a year (Cameron 2012); the Treasury has estimated that cost to be £19 billion a year (HMT 2013b). The most recent intervention, by Inrix and the Centre for Economics and Business Research, put the cost of congestion across the UK's 18 largest urban zones at £4.4 billion a year (Transport & Logistics 2013).

Professor Phil Goodwin cited the total cost as being £20 billion in 2004, but argued in the same report that such estimates are practically meaningless.

'The "cost of congestion", as used for these calculations, is based on relationships which in reality are not exact, stable or even meaningful... in the real world, speeds are different every day, and so is the level of congestion.'

Goodwin 2004

Sansom et al agreed, stating that the available data was so poor that it was not 'possible to test in any detail the sensitivity of the congestion costs estimates' (Sansom et al 2001).

Attention to detail is fundamental to understanding congestion. One stakeholder at the DfT¹⁷ made the point that the National Transport Model 'fails to identify the tipping point where traffic flows go from OK to bad. Local models will have a better representation.' The advance of GPS technology in satnavs and smartphones could also make possible the real-time measurements that Goodwin argued for 10 years ago. The companies that provide these services have developed databases of traffic flows based on real-time information, and produced localised estimates of congestion. Although to date their results have varied,¹⁸ it is likely that in time they will add to our understanding.

Our research¹⁹ shows that the public considers congestion a significant problem in its own right. Worryingly, it also exacerbates the negative health impacts of motoring.

Congestion worsens air pollution by causing longer journeys and significantly lower engine efficiency through slower speeds (DfT 2014c). Pollutants concentrate close to their emission source – that is, on and in close proximity to roads. Research by King's College London shows that exposure to these pollutants is worse for those in vehicles

17 Interviews with stakeholders from government and other organisations were held throughout the research presented in this report.

18 See for example <http://scorecard.inrix.com/scorecard/default.asp>, <http://www.tomtom.com/lib/doc/trafficindex/2013-1101%20TomTomTrafficIndex2013Q2EUR-mi.pdf> and <http://www.tomtom.com/news/category.php?ID=4&NID=1481&Lid=1>.

19 See chapter 5, and our poll results, a spreadsheet of which is downloadable from <http://www.ippr.org/publications/the-long-road-to-ruin-why-the-uk-needs-to-reform-motoring-taxes>.

than outside them (Barratt 2013).²⁰ Similarly, research conducted in the US found that congested traffic accounted for 3,000 more premature deaths in the country in 2005 than would have occurred had traffic been free-flowing (Levy et al 2010).

Several studies have also linked congestion to feelings of frustration, irritation, negative mood and aggression ('road rage'), and also to poor concentration levels leading to increased risk and frequency of road accidents. A recent study found that experiencing congestion three times a week increases the likelihood that an individual will report a high level of stress by 65 per cent (Haider et al 2013). Similarly, researchers at the University of California, Irvine found that negative emotional responses to daily repetitive events (such as congestion) can lead to psychological distress and/or to a diagnosis of anxiety or depression a full decade after the emotions were initially measured (APS 2013). However, as we mentioned in section 2.2.6 above, there is no way of costing the impact that congestion has on stress.

2.2.8 Wear and tear on infrastructure

The DfT 'does not have a systematic way of measuring the extent to which poor road maintenance wastes economic value' (Glaister 2013). There is, however, an estimated £10 billion backlog in local highways maintenance alone (HMT 2013b). In 2012, local authorities paid £32 million in compensation to motorists for vehicle damage that resulted from poor road maintenance, plus £13 million in administration costs (AIA 2013). The qualitative research we conducted for this report showed that hitting potholes also increased driver stress: 'You get such a fright.'²¹

2.2.9 Interim conclusion

Motoring has created a public health disaster – a much more significant one than is apparent from narrowly focussing on potholes and time lost in congestion. In 2009, the Cabinet Office began to think strategically about transport in urban areas (where its externalities are most concentrated) and concluded that too much weight had been put on congestion in the past (Cabinet Office 2009). The results of its analysis are below in table 2.1. Among its findings are that congestion only accounts for about one-third of the total costs of motoring's externalities in urban areas.

The Coalition government has failed to take motoring's impact on public health seriously, and did not continue the Cabinet Office's work in this area. Instead, it contested a case in the supreme court for breaching the European Commission's air pollution limits, which it inevitably lost (UKSC 2013). The UK now faces the prospect of large fines from the European Court of Justice.²²

Table 2.1
Selected costs (£ billions) of transport harm in urban areas with populations greater than 10,000 people, in 2009 prices*

Motoring externalities	Cost (billion)
Excess congestion	£10.9
Accidents	£8.7
Poor air quality	£4.5–£10.6
Physical inactivity	£9.8
Greenhouse gas emissions	£1.2–£3.7
Noise	£3–£5

Source: Cabinet Office 2009: 22

*Note: Figures for each indicator are taken from different studies published in different years.

20 Email to IPPR from Analytical and Environmental Sciences Division, King's College London

21 See chapter 4

22 <http://www.theguardian.com/environment/2014/feb/20/air-pollution-european-commission-legal-action-uk-nitrogen-dioxide>

2.3 Internalising motoring's externalities

The total costs of the externalities that have costings attached to them are in excess of motoring taxation receipts. Looked at from that perspective, and leaving aside the financial burden that motor taxation places on household expenditure, motorists are under-taxed. However, many economists argue that receipts from taxes shouldn't cover the total cost of externalities, or reflect their average cost. Instead,

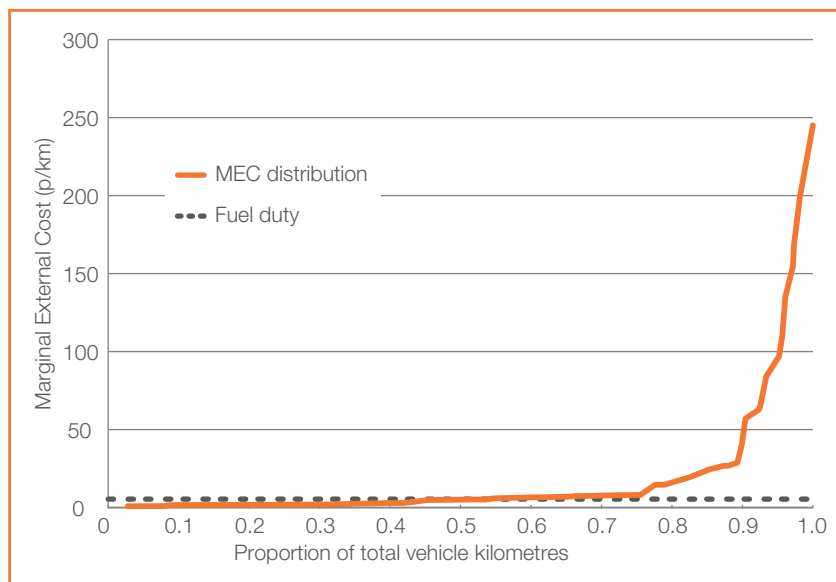
'the key feature of a tax system designed to ensure that individual decisions properly take account of external costs is that the taxes should impact on the marginal decisions regarding vehicle purchase and... use at a level that reflects the marginal externalities generated.'

Fullerton et al 2010

However, the current UK motor tax system is not capable of targeting marginal decisions. VED's impact on carbon emissions is questionable and, as figure 2.2 below shows, the ability of fuel duty to internalise externalities is limited. This is because externalities vary both in time and location, changing according to vehicle, engine and fuel type, and driving behaviours and styles.

Figure 2.2

Distribution of the marginal external costs (in pence) of motoring (and real fuel duty) by proportion of total vehicle kilometres



Source: Johnson et al 2012

A consideration of how the UK's motoring tax system can be reformed into one that better addresses externalities raises some interesting points.

2.3.1. Who should administer any new system?

Because externalities – particularly congestion and air pollution – are best assessed locally, a new system of taxation should be administered by local bodies rather than by central government.

2.3.2. Can we quantify the marginal costs of motoring's externalities?

Sandler et al (2001) quantified the marginal costs of motoring's externalities back in 1998; however, their health impact assessments were based on studies carried out in the 1980s and 1990s. Since we know more now, the DfT should actively improve its understanding of the impact that motoring has on active travel.²³

In the specific context of alternatives to the current system of motor taxation, all the government has done is update Sandler et al's study (2001) to reflect updated guidance from Defra on the cost of GHG emissions.²⁴ The most recent reevaluation of Sandler et al's work in this context was carried out by Bayliss et al. The researchers made changes to the average marginal costs of motoring externalities to take several factors into account, but not health impacts or new modelling of air pollution (Bayliss et al 2011). The results of his work are set out in table 2.2 below.

Table 2.2
Updated marginal cost analysis by vehicle class (average at 2009 levels, in pence per vehicle kilometre)

Vehicle types	Infrastructure operation & depreciation	Congestion	External accidents	Air pollution	Noise	Climate change	Total
Car	0.08	3.91	0.9	0.25	0.35	0.52	6.01
LDV	0.09	4.45	0.6	0.77	0.67	0.58	7.16
HGV – rigid	5.72	8.0	1.4	4.75	1.75	1.86	23.48
HGV – artic	11.40	11.18	1.0	4.30	2.62	3.06	33.56
All vehicles	0.57	4.6	0.88	0.57	0.50	0.64	7.76

Source: Bayliss et al 2011

Unsurprisingly, this table shows that congestion is, when averaged across all vehicle types, the most expensive marginal cost of motor transport. While reassessments of this analysis that take account of new evidence are unlikely to come up with significantly different findings because of the highly marginal nature of congestion, they should nevertheless be carried out. Failure to do so will be noted by key stakeholders, and damage public confidence in the economic case for any new system of motoring taxation.

2.3.3 Could a taxation system focussed on externalities also serve general revenue-raising purposes?

There is a clear tension between the need to raise revenue from, and the need to increase the substitution effect of, motoring tax. Maximising behaviour-change would have the result of minimising state revenue. Can a balance be struck?

The DfT considered this question in 2004, and concluded that it was possible (DfT 2004). More recently, Bayliss et al examined the issue using a ready reckoner created by the RAC Foundation that estimated the revenues that would be generated from mileage-based charges at various rates on different types of road. They produced several scenarios which showed how VED and fuel duty might be replaced with a taxation system based on mileage travelled. Seven out of the nine scenarios it considered were of net benefit to the Treasury (Bayliss et al 2011). For example, by abolishing VED, reducing fuel duty by 50 per cent and introducing a price-per-mile charge of 9.5p on all roads except minor ones, the Treasury would stand to gain a net benefit of £120 million per year.

²³ We have not investigated whether Defra has updated its methodology for costing air pollution.

²⁴ For transport infrastructure appraisals, the government has updated Sandler et al's work (2001) to include new evaluations of the value of time saved by improving traffic flow, and guidance on the current cost of nitrous oxide and PMs. The value of accidents, local air pollution, noise and infrastructure costs, on the other hand, are all assumed to have grown in line with GDP.

Both studies emphasised the need for more work to be done, and clearly a new system would have to change as progress is made towards reducing externalities. However, although technological changes and other policies should significantly reduce some of the harm caused by motoring, others – such as congestion, accidents, stress, road maintenance and lack of physical exercise – will persist for as long as motoring remains popular. Given the health and economic costs of air pollution, exacerbated by congestion, the benefits of addressing these externalities are easily justified by some reduction in income to the exchequer. In any case, the inherent difficulties of reform mean that the current age of austerity will hopefully have passed by the time it can be implemented, and an element of behavioural change introduced into the tax system.

2.4 Conclusion

It is feasible to replace our motor tax system with a new system that better addresses the public health consequences of motoring, but a lot more work needs to be done. This work needs to begin soon in order to offset as much of the expected decline in receipts as possible, and to explore the possibility of making the system progressive. However, these practical difficulties are not the biggest barrier to reform. Public acceptance of a new motor tax will be critical: chapters 3, 4 and 5 focus on this issue.

3. THE BRITISH EXPERIENCE OF ALTERNATIVE SYSTEMS OF MOTOR TAXATION

Chapters 1 and 2 set out a strong case for reform of motor taxation, in order to make it progressive, make it a better tool for tackling motoring's adverse effects on public health, ensure that the state continues to receive the revenues it needs. This chapter will briefly outline what an alternative system might look like, survey academic theories about how the public reacts to change, and the UK's experience of and public reaction to these systems. Chapter 4 will then set out lessons from three international examples of reform, and chapter 5 will showcase the results of our original research into current public attitudes to reform.

3.1 What are the alternative systems?

Alternative systems of motoring taxation are based on charging motorists directly for using the road. There are several types, but the terminology for each system is not well-defined and tends to be used interchangeably. This reflects the variety of technologies used, the purposes for which they are used, and the multiple taxation structures that can be applied in such a system. Ideas for how new forms of motor taxation might actually be administered in practice include the following.

- Using GPS tracking technology linked either to an in-vehicle unit or to a person's smartphone.
- Linking payments for a new form of motor taxation to payments for other products such as 'pay as you go' insurance or mobile phone bills.
- Using wireless technology that transmits mileage data from the vehicle to the petrol station upon refuelling.
- Mandating that the communications ability necessary to permit a new taxation system is a requirement of eCall²⁵ technology.
- Making the VED disc electronic²⁶ and introducing a new tax through it.
- Allowing people unlimited travel in consideration of paying a tax premium.
- Using automatic number plate recognition (ANPR) technology in urban areas and on the strategic road network.

These can be utilised to create taxation structures that encourage behaviour-change for multiple reasons, such as seasonal pricing to encourage active travel in summer, charging comparatively more for shorter journeys, and charging highly polluting vehicles more than less polluting vehicles. Theoretically, a replacement motoring tax in the UK could be progressive by linking information on vehicle ownership held by the DVLA to information on income held by HMRC. It would thereby be possible to create a system that targets individual unnecessary journeys but which makes allowances for people's incomes. However, the system design will always be limited by set-up and running costs, and the need for it to be simple to understand. Our research did not reveal any up-to-date analysis of the utility, set-up and running costs of different options such as those above.

For our workshop research, we chose to describe alternative systems as follows, according to the relationship that the driver might have with it.

25 eCall is an EU initiative that intends to mandate a device included in all new vehicles which, in the event of a serious accident, would automatically notify the emergency services of its occurrence, its seriousness and its location. <http://ec.europa.eu/digital-agenda/en/ecall-time-saved-lives-saved>

26 Current government policy is to abolish the VED disc altogether and make VED entirely electronic.

27 IPPR | The long road to ruin: Why the UK needs to reform motoring taxes

a. Tolling (point-based charges)

'Tolling' refers to the imposition of a tax or charge for passing a particular point on the roads network, such as a motorway, bridge or tunnel.

b. Controlled access zones or area/cordon/screenline charges

This refers to a tax that is imposed for driving within a particular area (such as the London congestion charge) and/or for entering it (as in the proposed Manchester charge). Such taxes can be collected through multiple technologies like ANPR and GPS tracking. In Stockholm, an island city, tolling is used on all bridges into the city, in effect creating a controlled access zone (CAZ).

c. Pay as you go

Pay as you go (PAYG) refers to systems in which drivers are taxed for their use of the road, often but not necessarily on a per-mile basis. What differentiates it from tolling and CAZs is that it involves some form of continuous monitoring of where the vehicle is driven. Singapore achieves this effect but using tolling technology (see box below)

Road pricing in Singapore

Singapore arguably has the world's most sophisticated system of motor taxation. The current electronic system was introduced in 1995. It is a network of over 80 over road gantries which vehicles pass under without slowing down or stopping. Vehicles are fitted with 'in-vehicle units' (IUs) that are registered by gantries' sensors, and they are also monitored by ANPR cameras every time they pass a gantry. Tax is deducted from a pre-paid smart-card fitted inside the IU. The tax rates charged varies according to both time of day and location within Singapore, and are adjusted several times a year to take account of different congestion levels.

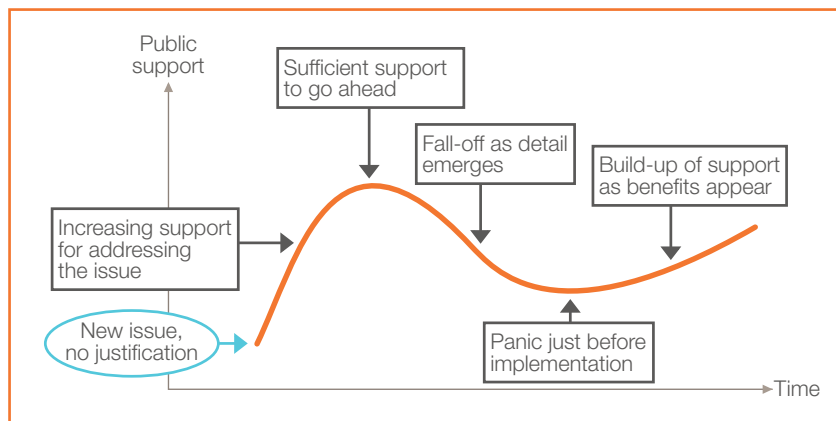
What Singapore has is technically a network of tolls, but in effect it has created a CAZ; from the perspective of the driver, it is also a PAYG system. Singapore has just announced that it intends to replace this system by 2020 with one that uses GPS technology (Wilson 2014).

3.2 The theory of reforming motor taxation

The theory of how the public is likely to react to a proposed change to motor taxation for driving on existing roads is credited to Professor Phil Goodwin (2006). Figure 3.1 below illustrates his theory of the cycle of public acceptability.

This cycle can be split into three distinct phases. At first there is no latent desire for change, so a problem first needs to be identified, and then the public persuaded that the existing policy must be changed as it does not address this problem. Goodwin does not stipulate what that problem might be – it could be congestion, air pollution, accidents and so on. Motor taxation reform should not be immediately advocated as a solution, and during the debate, the best that can be hoped for is that the public are open to (rather than supportive of) the idea of motoring taxation reform. Taxation reform should only be introduced to the debate as a solution to the problem in question when public support for solving that problem is at its peak (Goodwin 2006).

Figure 3.1
Goodwin's cycle of public acceptability



Source: Bird and Morris 2006

At this point, the second phase begins. Public support for reform begins to wane. The more detailed the proposals the faster support declines, because its complexity means that different factions' preferences cannot all be satisfied. Eventually, as the reform is introduced, opponents of it incite panic. Once it is introduced, however, the third phase begins and public opinion begins to shift in favour of the new system (Goodwin 2006).

3.3 Alternative motoring taxation systems operating in the UK, and public reactions to their introduction

This section explores systems of directly charging for use of roads that currently exist in the UK. It is important to note that under all of these systems, motorists are incurring costs in addition to the taxes they pay under the existing national system of motoring taxation. We must emphasise that we are not advocating increased cost for motorists, but rather reform of the current systems of VED, fuel duty, and VAT on fuel and fuel duty.

3.2.1 Tolls

There are numerous toll roads, bridges and tunnels in England and Wales,²⁷ as shown in table 3.1 below.

Table 3.1
Road toll schemes in place in England and Wales, their fees (£) and the conditions of them, 2012

Toll	Fees for medium-sized cars	Condition of charge
Aldwark Bridge	£0.40	One way
Batheaston Bridge	£0.50	One way
Bournemouth–Swanage Motor Roads	£3.50	One way
Cartford Bridge	£0.40	One way
Clifton Suspension Bridge	£0.40	One way
Dartford River Crossing	£2.00	One way
Dartmouth–Kingswear Floating Bridge	£4.70	One way
Dunham Bridge	£0.30	One way
Humber Bridge	£3.00	Round trip
Itchen Bridge	£0.60	Peak, one way
M6	£5.30	Monday to Friday, day charge
Mersey Tunnels	£1.40	One way

²⁷ Scotland abolished all tolls in 2008.

Toll	Fees for medium-sized cars	Condition of charge
Middlesbrough	£1.20	One way
Rixton and Warburton Bridge	£0.12	One way
Severn River Crossings	£6.20	One way
Shrewsbury (Kingsland) Bridge	£0.20	One way
Swinford Bridge	£0.05	One way
Tamar Bridge/Torpoint Ferry	£1.50	One way
Tyne Tunnel	£1.20	One way
Warburton Bridge	£0.12	One way
Whitechurch Bridge	£0.40	One way
Whitney-on-Wye Bridge	£0.80	One way
Cleddau Bridge	£0.75	One way
Newport Bridge	£0.50	One way
Penrhyndeudraeth Bridge	£0.40	One way

Source: RUA 2014

A charge has been payable for use of all of these roads either since the day they were opened or for centuries. Both our literature review and workshops showed that the public are generally willing to pay for new roads, but not for an existing one (even if it had been improved). As such, Goodwin's cycle is not applicable.

3.2.2 Durham

Durham introduced a CAZ in 2002, reducing congestion within the zone by 85 per cent (City Transport 2014 and Wilson 2011). It operates as a toll on the road into the Durham peninsula. It is enforced using ANPR, and costs £2 per day on weekdays between 10am and 4pm. Certain vehicles are exempt, and residents who live within the zone can apply for exemption. Our interviewees said that its introduction never became a large political issue because it covered a small area. Opposition was never strong enough for Goodwin's cycle to come into play.

3.2.3 London

London has two systems of road pricing in operation, the London Congestion Charge (LCC) and the London Low Emission Zone (LEZ).

The London congestion charge

In 1999, the *Lex Report on Motoring* stated that 80 per cent of motorists thought that air pollution and congestion in London were very serious problems (Lex Service Plc 1999). The independent working group tasked with reviewing charging options found that 90 per cent of Greater London residents agreed with the statement, 'There is too much traffic in London' (Bird and Morris 2006). Therefore, following a detailed study published by the independent working group in 1999²⁸ which recommended introducing a congestion charge in London, Ken Livingston included a commitment to implement one in his manifesto as he bid to become Mayor of London.

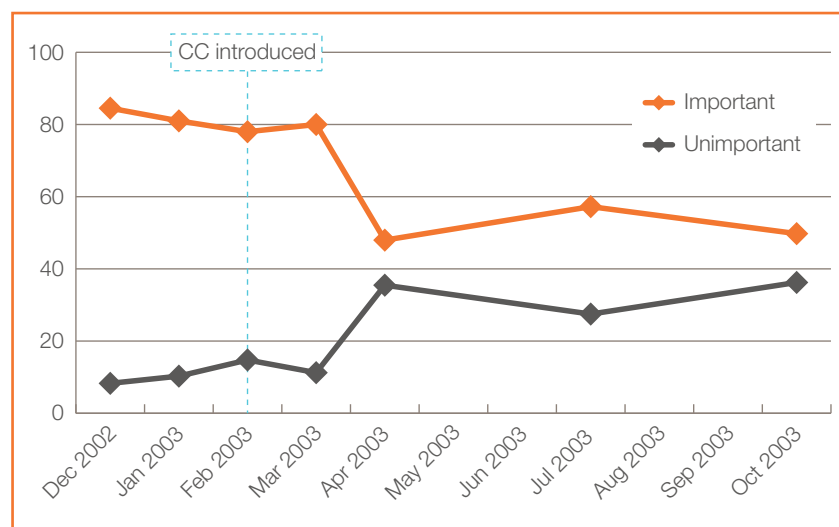
28 http://webarchive.nationalarchives.gov.uk/20100528142817/http://www.gos.gov.uk/497417/docs/204399/ROCOL_report_foreword_8k.pdf

However, the mayoral election was something of a non-event. Turnout was only 34.43 per cent, with one academic study concluding that ‘too few voters failed to see enough of a difference between the main protagonists to consider it worthwhile going to the polls. To this was added low expectations of what the new institutions could achieve’ (Curtice et al 2001). Over half of Londoners (52 per cent) felt that the new mayor could not make any difference to congestion in London (ibid). The LCC was given an electoral mandate despite a wave of voter apathy.

Immediately following his election, Mayor Livingstone published a discussion paper on the LCC,²⁹ and Transport for London (the public body responsible for most aspects of the city’s transport system) ran a formal public consultation in 2001. Despite some opposition, the LCC went live on 17 February 2003, almost three years after the election. It covered only eight square miles, representing 1.3 per cent of the area of Greater London. Vehicles were tracked within the zone using ANPR technology. The charge was originally £5 per day, and residents within the zone received a 90 per cent discount.

Following the introduction of the charge, public concern about congestion dropped, as figure 3.2 below illustrates.

Figure 3.2
Public attitudes towards the importance of reducing congestion in central London, December 2002–October 2003



Source: Bird and Morris 2006

Proposals to extend the LCC area westwards began in 2003, when public concern about congestion was much lower than in 1999. By December 2003, the London Assembly’s transport committee had concluded that ‘the economic case [for the western extension] has not yet been fully understood’ (London Assembly 2004). Nonetheless, the mayor ploughed ahead with a public consultation in February 2004. This did little to address the public’s concerns. The western extension began in February 2007, in an adverse media environment engendered by ‘that petition’ (see below) and was both more controversial and much less popular than the original LCC. In 2008 Boris Johnson, while running for Mayor of London, stated that the LCC was ‘no longer proving an effective means to tackle congestion’.³⁰ Immediately upon Johnson’s election as mayor, a public consultation on the removal of the western extension was carried out. It received 28,000

²⁹ <http://webarchive.nationalarchives.gov.uk/20100528142817/http://www.gos.gov.uk/gol/161402/267325/440302/>

³⁰ <http://image.guardian.co.uk/sys-files/Guardian/documents/2009/04/27/Transportmanifesto.pdf>

responses: 67 per cent of individual respondents and 86 per cent of businesses supported the removal of the extension (TfL 2008). It was abolished on 4 January 2011; on the same day, Johnson increased the original LCC charge to £10 per day.

On balance, the LCC remains a more popular policy than not. One survey in 2006 showed that 59 per cent of respondents supported the LCC, while only 25 per cent rejected it (Walker 2011). The Automobile Association (AA) carried out the most recent survey, among its own members, in 2013. Even among the AA's members in London, 45 per cent were in favour of the LCC, while only 41 per cent opposed it (AA 2013).

Lessons from the LCC

The two different stories – of the LCC's original introduction and its failed westward expansion – both reflect Goodwin's theory. The LCC was brought in on the back of a pre-identified issue that had reached its peak in terms of public support. Voter apathy towards the election in 2000 helped to avoid panic among the electorate over LCC proposals during the campaign. The existence of a robust business and economic case, followed by two and a half years of preparation and consultation, ensured that by 2003, opposition had not reached toxic levels. In fact there was little panic at its implementation, and it has since remained relatively popular – which reflects the third and final stage of Goodwin's theory.

By contrast, when the western extension was originally proposed, the peak of public support that characterises the end of Goodwin's 'phase one' had not been reached. This, combined with the failure to provide a robust economic case, proved fatal to the western extension.

The London low emission zone

The London low emission zone (LEZ) was established in February 2008 to specifically target PM emissions from larger diesel-propelled traffic. Larger vehicles now incur a daily charge of either £100 or £200 for entering the LEZ. The charge applies all day, 365 days a year, and covers most of the area within the M25 motorway. It is enforced using the LCC's ANPR network and, outside of that area, mobile ANPR cameras. However, as set out in chapter 2, air pollution levels remain unacceptably high in London, and in 2013 Mayor Boris Johnson called for the London LEZ to be extended to apply to all vehicles other than ultra-low emission vehicles (BBC News 2013). Some of our interviewees said that the reason that the LEZ has not faced strong public opposition is because it mostly impacts upon commercial rather than personal vehicles, which means that Goodwin's theory is not applicable.

3.2.4 HGV charging

In April 2014 the government introduced a UK-wide road pricing system for heavy goods vehicles (HGVs) weighing over 12 tonnes (DfT 2014d). The prices are time-based, and depend on the vehicle's weight and axle configuration – for example, the operator of a 40-tonne, five-axle articulated lorry will pay either £10 per day or £1,000 per year. The charges are set according to current VED bands, and UK-based operators will have their charges offset against their VED payments: only foreign operators will pay the charge. This has been a longstanding demand of the UK haulage industry – hence, it has not encountered opposition. However, for the same reason as before, Goodwin's theory is not applicable because the system only applies to commercial vehicles.

3.3 Failed attempts to introduce new motor taxation in the UK

The remainder of this chapter will look at the attempts to introduce new motoring taxation across the UK between 2005 and 2010 that have failed. Each of these represented attempts to increase the cost of driving, which, we are not advocating.

3.3.1 Edinburgh, 2005

Facing increasing congestion, in 2002 the City of Edinburgh council escalated a consultation that it had begun in 1999. Only 36 per cent of respondents to the consultation were in favour of a new scheme (Gaunt et al 2007) – public concern over the issue of congestion had clearly not been maximised.

Nonetheless, in 2003 the council decided to introduce a city centre CAZ and an outer CAZ. Travellers faced a daily £2 charge for crossing one or both ‘cordons’ if travelling towards the city centre. The cordons applied on weekdays: the outer cordon between 7am and 10am, and the inner cordon between 7am and 6.30pm. Only residents living outside the outer cordon received a limited discount on entry to the outer cordon. Funds were to be hypothecated for road and public transport improvements.

The referendum was held by post in February 2005. The question asked was

‘The leaflet enclosed with this ballot paper gives information on the Council’s transport proposals for Edinburgh. The Council’s “preferred” strategy includes congestion charging and increased transport investment funded by it. Do you support the Council’s “preferred” strategy?’

Edinburgh Council 2005

It thereby required the potential voter to evaluate the enclosed literature in order to understand and answer the question. The ballot paper had to be separated into four sections: two sections were retained by the voter, and two returned to the council in two envelopes, along with a security declaration. Confusion reigned, and on a single day the ballot helpline received 943 calls (Scotsman 2005). The proposal was rejected by 74.4 per cent of voters, on a turnout of 61.9 per cent (Edinburgh Council 2005).

Lessons from Edinburgh

A study by the University of Edinburgh (Gaunt et al 2007) dissected the campaign and came to the following conclusions about the why the proposal was defeated.

- The principal determinant of voting behaviour was car use; car owners generally opposed the proposal. Support among non-motorists was neither as strong nor as reliable as motorist’s opposition. Car owners felt that cost was tangible, but that decongestion benefits were intangible and would not be addressed by a charge.
- The proposed scheme was too complicated to be understood, with many thinking that the charges applied multiple times a day.
- There was little support for the scheme from either Whitehall or Holyrood, and the council’s minister for transport ‘appeared isolated in his commitment and belief in the scheme’. Gaunt et al felt that the decision to hold a referendum was a political ploy by the Labour party to save face in abandoning the scheme due to its unpopularity.
- The public felt that the planned public transport improvements would arrive too late, or were insufficient or irrelevant. This was compounded by distrust of the council’s ability to deliver these improvements (Gaunt et al 2007).

Key to the scheme's failure, however, was that it did not address an issue that the public were, at that point at least, deeply concerned about. Subsequent mistakes simply compounded this failure.

3.3.2 The Transport Innovation Fund, 'that petition', and the Manchester referendum

The national Transport Innovation Fund (TIF) was formally launched in 2005. Initially, £18 million was allocated for the period 2005–2008 to pump-prime initial transportation schemes developed by local authorities. Substantive money became available in 2008/09, with a total of £9.5 billion made available until 2014/15 (Butcher 2010).

TIF was divided into two strands. The 'productivity strand' was directed at regional development authorities to improve connectivity for business. The 'congestion strand' was aimed at schemes that combined 'effective demand management with better public transport', and 'those identifying and utilising new sources of funding to deliver priority transport schemes' (Butcher 2010). Although local authorities were responsible for designing these schemes, the House of Commons' transport select committee criticised the DfT, stating

'Access to Transport Innovation Fund money is entirely dependent on those authorities being prepared to introduce charging schemes... This risks blackmailing local authorities to conduct road pricing trials on behalf of Government in advance of a possible national scheme.'

HoC-TSC 2007

Pump-priming was awarded to local authorities in three rounds in 2005, 2006 and 2008, with Greater Manchester receiving funds in all three rounds. 'That petition' occurred between the second and third rounds.

'That petition'

During this early stage of TIF, the national government put little effort into engaging with the public on transport reform, believing that this was a role for local authorities. By late 2006, only a handful of feasibility studies were being conducted, and authorities that weren't running consultations could be forgiven for thinking that the case for reform was not yet made. Public awareness of TIF was low.

In November 2006, online e-petitioning of Downing Street was launched as a pilot. One of the first petitions posted was by a member of the Alliance of British Drivers (ABD) and read

'We the undersigned petition the Prime Minister to scrap the planned vehicle tracking and road pricing policy. The idea of tracking every vehicle at all times is sinister and wrong. Road pricing is already here with the high level of taxation on fuel. The more you travel – the more tax you pay. It will be an unfair tax on those who live apart from families and poorer people who will not be able to afford the high monthly costs. Please Mr Blair – forget about road pricing and concentrate on improving our roads to reduce congestion.'

Politics.co.uk 2007

The wording of this petition did not accurately reflect government policy, which was to conduct feasibility studies into such policies; neither was there any policy to track vehicles 'at all times'.

The ABD posted the petition on its own website. By Christmas it had 50,000 signatures, a week later 100,000, and by 11 January it had 250,000 signatures. The petition was going viral – then still a relatively new phenomenon which the government had little experience of. It also coincided with the launch of the western extension of the LCC, and the story exploded in the press. The petition closed on 20 February with 1,810,687 signatures, forcing Tony Blair to write an email to all signatories in an attempt to reassure them. This petition demonstrates the need for the government to be clear about its policy on motor tax reform from the outset, and particularly about the reasons why reform needs to be introduced. Such policies can only succeed when they address genuine public concern.

Manchester

Undeterred by that petition, Greater Manchester continued to develop plans for a congestion charge. In June 2008 the DfT announced that Manchester would receive £2.777 billion from the TIF to fund both public transport improvements and the introduction of a congestion charge. Only £318 million was allocated to the latter.

The scheme proposed was a dual cordon system, and was huge, covering 80 square miles. Crossing the outer cordon would cost £2 in the morning and £1 in the evening. Crossing the inner cordon would cost £1. Charges would only apply if the motorist was travelling with the peak flow – that is, into the city centre in the morning and out of the city centre in the evening. Inbound charges were to apply on weekdays between 7am and 9.30am, and outbound charges on weekdays between 4pm and 6.30pm.

The proposal was party political from the outset, with Labour backing the plans, the Conservatives opposing them and the Liberal Democrats split over the issue. Our interviewees felt that ‘that petition’ had made up many minds nearly two years before the referendum was held in Manchester. In March 2007, two-thirds of those surveyed by the *Manchester Evening News* were against a scheme. Full details of the scheme were only revealed in May 2007, and were approved in July by the Association of Greater Manchester Authorities, albeit with opposition from Stockton and Trafford borough councils (MEN 2010). Public consultation formally began in July 2008; the first meeting attracted only 44 people. At this time, no technical trials had been carried out. Public concern over congestion had not been maximised.

Businesses organised themselves into groups in favour of (United City) and opposed to (the Greater Manchester Momentum Group) the charge. Seven local MPs and several councillors united in a ‘stop the charge’ coalition. The ‘yes’ campaign kicked off in September 2008, only three months before the referendum.

The December referendum was held by post, and was a simpler process than Edinburgh’s. The question asked was, ‘Do you agree with the Transport Innovation Fund proposals?’³¹ thus requiring voters to research a complicated scheme before they could properly answer. The result was decisive: 53.2 per cent of voters from 10 regions turned out, and across the region 78.8 per cent voted ‘no’.³²

Fallout

The referendum killed the Manchester bid and marked the beginning of the end for TIF. Durham pulled its bid, and Cambridgeshire scaled back its proposals. With the country now in recession, opinion turned to ‘use it or lose it’ – use the money set

31 <http://www.manchestereveningnews.co.uk/news/local-news/the-question-is-do-you-agree-971099>

32 <http://www.manchestereveningnews.co.uk/news/greater-manchester-news/c-charge-a-resounding-no-976016>

aside for TIF, or scrap it and use the money in for other transport projects. The Centre for Cities called for the government to abandon road pricing, as local authorities had no appetite for it (Marshall 2009); the Commons' transport select committee agreed (HoC-TSC 2009). TIF was scrapped in 2010.

Lessons from Manchester and TIF

Our interviewees criticised the referendum question as 'a concept not a proposal', and also singled out the late start to a short 'yes' campaign, without first accruing practical experience of the proposals through trials, as a reason for the scheme's failure. The focus of the 'yes' campaign on the public transport proposals offered in exchange for acceptance of the congestion charge was also criticised. One said 'it became all about the PTE³³ not the driver', and 'no one answered the question why someone would want to pay for someone else to use a bus'. Another said that there was no attempt to build a new relationship with motorists, and that expenditure on road improvements from the TIF funding was not emphasised heavily enough. A recent report has also highlighted the importance of a strong online 'no' movement (with no corresponding online 'yes' campaign) and a weak online presence on the part of the Labour party, the chief proponent of the scheme, as contributing factors (Hepburn 2014). However, a fundamental issue, for this failed initiative as for others, was policymakers' failure to identify and/or maximise support for addressing an issue that the public found deeply concerning.

More generally, a discussion paper on a replacement for TIF stated that its 'weaknesses lay in its too narrow a focus on the issue of congestion, the failure to win public acceptance for the more challenging proposals, and inability to transform governance at the same time as delivering radical change' (DfT 2010).

3.4 Conclusion

The results of the Manchester and Edinburgh referendums, and of 'that petition', have effectively meant that, with the exception of the HGV road-pricing policy, any changes to motor taxation is seen by as politically toxic. Yet that toxicity has to be challenged if the issues outlined in chapters 1 and 2 are to be resolved and a replacement motoring taxation system introduced. The Manchester and Edinburgh schemes, and the LCC's western extension, failed in part because they attempted to make motoring more expensive, but mainly because the proposals failed to address an issue of serious public concern. The question becomes, what might that issue be today? The next chapter looks for answers from international examples of reform.

33 Passenger Transport Executive

4. INTERNATIONAL EXAMPLES OF REFORM

In chapters 1 and 2 we came to the conclusion that our current system of motor taxation is not fit for purpose, and needs to be replaced. However, in chapter 3 we found that recent public backlashes against reform in the UK indicate that while it will be extremely difficult to do so in the near future, the key to success is the identification of and debate over an underlying issue that resonates with the public. This chapter will examine international approaches to the introduction of new forms of motoring taxation.

We selected Stockholm and Milan on the basis that these cities have introduced new motoring taxes that were approved by referendums. On the basis of stakeholders' recommendations, we also chose to look at the experience of the US state of Oregon.

4.1 Oregon

Oregon's reform programme began in 2001 with the creation of the Road User Fee Task Force (RUFTF) to 'develop a revenue collection design through user pay methods' (ODOT 2014). The state legislature had realised that new technologies would lead to a decline in fuel tax receipts. Revenue collection remains the state government's sole motivation for implementing a new system of taxation (ibid); it is not trying to use the new system to tackle externalities, but has not ruled it out for the future.

The RUFTF considered 28 different funding ideas, and then recommended a year-long pilot programme to study the technological and administrative feasibility of replacing the gas tax with a mileage-based fee collected at petrol stations. The pilot began in 2006, with 285 volunteer vehicles and two petrol stations using a combination of GPS technologies and wireless technologies to transmit odometer data to those petrol stations. The pilot demonstrated that road user charging was viable, affordable, practical and popular among participants (Whitty 2007). However, the legislature still had several concerns regarding privacy in relation to the use of GPS systems; the risk that the system would be complex, bureaucratic and costly; and the possibility that the system would be nationalised, and therefore both costly and slow to evolve (Whitty 2013a).

In 2010, as fuel tax receipts started to decline and electric cars entered the market, RUFTF was reconstituted and a second pilot was run in 2012, in which 93 volunteers participated over a two-month period. Five different plans were trialled; two were administered by government and three by the private sector. One imposed a flat fee for unlimited travel, and two involved the wireless reporting of data without tracking equipment. In the other two trials, tracking equipment was used to avoid charging drivers for travelling out-of-state and on private roads; one used in-vehicle GPS technology, while the other used smartphone technology (Whitty 2013a).

The results of the pilot showed that offering a variety of technologies and payment options was practicable, and that – due to privacy concerns – there was slight preference among participants towards private-sector operators (Whitty 2013a). It also found that 'on average, rural residents will not be affected in any significant way by a road usage charge' (Whitty 2013b).

In August 2013, having achieved cross-party consensus on the issue, Oregon legislated to begin a demonstration programme (Oregonian 2013). In 2015, 5,000 volunteers will pay 1.5 cents per mile rather than 30 cents per gallon. 'Gas-guzzlers'³⁴ are only eligible for half the places. The pilot is still being designed, but the principle of motorist choice

34 That is, cars with fuel efficiency of less than 22 miles per gallon.

of payment system and operator is established. The American Civil Liberties Union has given its approval to the pilot, countering concerns over privacy (Gilroy 2014).

So how have Oregonians themselves reacted to this programme? IPPR consulted journalists in Oregon, only one of whom knew of the programme. His opinion was that it was not contentious because it was not mandatory. Meanwhile, in anticipation of a future mandatory roll-out, the Oregon Department of Transportation (ODOT) is developing a communications strategy using evidence from the pilot and demonstration programmes. The immediate problem is volunteer recruitment. Only drivers of vehicles with fuel efficiencies of less than 17 miles per gallon will benefit financially from the programme. Options being considered to address this problem include exemptions from emissions testing and free parking (Snyder 2014).

4.1.1 Lessons from Oregon

These initiatives in Oregon demonstrate that motoring taxation reform can be introduced without fuss. The state government is fully open and transparent about what it is doing, but these measures are not contentious because they are not yet mandatory for all motorists. When the time for compulsory reform comes, the state government will be sitting on a body of evidence, including personal testimony, about the benefits of the new motoring tax system. It would make sense for that approach to be duplicated in the UK.

4.2 Stockholm

Stockholm is an island city. Its congestion CAZ covers the city centre, and is enforced by 18 tolling stations on roads into the city, manned by ANPR cameras. It applies on weekdays (except public holidays and in July) between 6.30am and 6.30pm. Passing a toll incurs a charge of between 10 and 20 Swedish kronor, depending on the time of day (capped at 60 kronor per day), and motorists are sent a bill at the end of each month.

The charge was introduced in a two-stage trial. In August 2005, improvements were made to public transport, and new park-and-ride facilities were introduced. The trial charge itself began in January 2006. During this trial charge period, traffic was reduced by 20–25 per cent, queuing times were shortened by 30–50 per cent, and emissions were down by 10–15 per cent. The results were visible to the naked eye, and when the statistics were published a typical response from journalists was ‘Really, is that all? The roads seem empty’; media coverage went from negative to positive (Eliasson 2008).

At the same time, a comprehensive communications campaign was mounted, which included personally addressed letters sent to all vehicle owners in Sweden, public meetings, a dedicated website, leaflets, adverts, media coverage and events (Bird and Morris 2006). Daily and then monthly reports on traffic levels were issued. In a survey of roughly 35 per cent of people responded to the direct question ‘Have you changed your mind during the trial?’ by answering ‘Yes, I’ve become more positive towards it’ (Eliasson 2008). However, as the date of the referendum on whether the scheme should be introduced permanently approached, negative opinion increased again (see table 4.1 below) – evidencing Goodwin’s theory about the cycle of public support (see section 3.2).

Table 4.1
Support for and
opposition to the
congestion tax
in Stockholm,
2001–2006

Date	Results	
2001	Oppose road pricing in Stockholm: 51 per cent	Support road pricing in Stockholm: 38 per cent
November 2004	Oppose tolls: 50 per cent	Support tolls: 43 per cent
February 2006	Would vote 'no' if referendum held today: 47 per cent	Would vote 'yes' if referendum held today: 44 per cent
May 2006	Oppose Stockholm charge: 30 per cent	Support Stockholm charge: 62 per cent
June 2006	Plan to vote 'no' in referendum: 50 per cent	Plan to vote 'yes' in referendum: 52 per cent

Source: Bird and Morris 2006

The trial ended on 31 July 2006. The next day, traffic levels rose by 22 per cent, and the public again had to readjust. Six weeks later, on the day of the general election, referendums on reintroducing the scheme were held in Stockholm and 14 neighbouring municipalities. All parties had pledged to abide by the outcome of the referendum in Stockholm, but it was not clear what impact the referendums in the municipalities might have. The question in Stockholm was:

'Environmental charging/congestion tax involves the levy of charges on motor traffic with the aim of reducing jams and improving the environment. All income goes to the Stockholm Region for investing in public transport and roads. Do you think that environmental charging/congestion tax should be imposed in the City of Stockholm?'

Gullberg and Isaksson 2009

In the municipalities the questions were simpler – one example was, 'Do you believe that congestion tax should be permanently introduced in Stockholm?' (Gullberg and Isaksson 2009).

In Stockholm, the referendum result was not as positive as the opinion polls had suggested they might be: only 51.3 per cent voted 'yes'. Across the municipalities, the average vote was 60.2 per cent against. Overall, of those who voted in the referendums an average of 47.5 per cent were in favour of and were 52.5 per cent were against the tax. At the same time, the national government changed, from a coalition of centre-left parties that was broadly in favour of the tax to a coalition of centre-right parties that was broadly against it. The legal power to reintroduce the new charge lay with national government.

Eleven anonymous, non-socialist members of parliament announced they would vote to impose the charge – enough to secure a majority vote in favour. The press called for the government to show statesmanship and approve the charge. Those in favour of the charge announced that they would continue to vote for it, respecting the wishes of Stockholm's residents. The new government had little choice: the bill to reintroduce the charge passed through parliament by 185 votes to 100, and the charge was reintroduced in August 2007 (Gullberg and Isaksson 2009).

Since then, the scheme's popularity has increased. A poll conducted in May 2011, which encompassed most of Stockholm county, showed support for the charges at over 70 per cent, evidencing the final phase of Goodwin's cycle (Börjesson et al 2012).

4.2.1 Lessons from Stockholm

Stockholm did everything right. It presented a clear case based on the best possible evidence: real-life experience. Its campaign was strong, and the referendum question in Stockholm precisely worded. However, on the day of the vote, the charge was only approved by a whisker, and arguably not at all. Rather than demonstrating a 'silver bullet' for making a new motor tax popular, Stockholm's experience shows just how difficult it is to implement new systems of taxation on the back of public concern over congestion.

4.3 Milan

Milan introduced a low-emission CAZ called the 'Ecopass' area in 2008. Ecopass was replaced in 2011 with a congestion charge that covers the same area; this CAZ is now known as 'Area C'.

4.3.1 Introducing the Ecopass, 2006–2008

Between 2006 and 2008, Milan experienced a record rise in PM levels. With the EU threatening sanctions for breaching air-quality rules, media interest in the subject increased. As public awareness of the mortality effect of air pollution in Milan increased, the city's mayor Letizia Moratti issued a 'bolt from the blue' – she banned the most polluting vehicles from the city centre (Duff 2007).

Interviewees told IPPR that the 'element of surprise' meant that effective opposition to the policy from politicians or civic society did not have the chance to form. Meanwhile, air pollution escalated into a national issue of great public concern. Reporting on the need to combat air pollution, the press tended either to call for unspecified action, or else connect the increase in air pollution to unrelated factors such as disappearing flora. The national, regional and provincial Italian governments responded with a €3.5 billion programme for tackling air pollution (Bertacche 2008). In the Milanese context, debate on the ban focussed on the creation of a low-emissions zone; the issue of congestion was forgotten. The mayor, who by this point was fully committed to the scheme, put her full political weight behind the low-emissions zone proposal. The opposition called for her resignation, and her coalition council appeared to come close to collapse (Balducci et al 2008).

The debate led to concessions being made in the design of the scheme, including some irrational ones such as exceptions for diesel vehicles (ostensibly because their owners bought them without knowing that they were more polluting than other types of vehicle). Ecopass was approved in October 2007. The council then began a communications strategy which focussed on quality-of-life messages and on how the Ecopass would work in practice. The mayor, however, was left politically isolated within her own party (Balducci et al 2008); she survived in office until 2011, when she failed to win re-election.

4.3.2 The Ecopass, 2008 to 2011

The Ecopass entered into operation as a one-year pilot scheme in January 2008, and was extended twice to the end of 2011. It covered an area of just 8.2km², and vehicles entering the area between 7.30am and 7.30pm on weekdays incurred a fee of between €2 and €10, depending on how polluting it was. Exceptions were made for the greenest

vehicles, and for residents (provided that they bought an annual pass). It was enforced using ANPR cameras on 43 access roads.

The Ecopass was a success. By the end of 2010, the volume of road traffic inside the area had dropped by 16.2 per cent, and average daily emissions of exhaust PMs had dropped by 25 per cent (Martino 2012). However, the scheme was also a victim of its own success. Because it targeted only the dirtiest of vehicles, its revenues fell as more people bought cleaner vehicles. For this reason, work began at the end of 2010 on developing a new charging scheme that would tackle congestion.

Milan went to the polls on 12 and 13 June 2011, holding referendums on nine questions – only one of which related to ECOPASS. Our interviewees told us that on this question, there was not a ‘no’ campaign of any significance. The specific question asked was:

‘Do you agree that the Commune of Milan should pass a plan to strengthen public transport and a cleaner alternative to the car, through the extension to all vehicles (excluding zero emissions vehicles) and the widening of the ECOSPASS area up to the “rail circle”, with the aim of reducing by 50% traffic and air emissions?’

Danielis et al 2011

The ballot paper then listed 11 different actions required under this plan, including a doubling of pedestrian areas and incentives to support public transport (CdM 2014a). On a turnout of 49 per cent, this measure was supported by 79 per cent of voters (CdM 2014b).

4.3.3 Area C, 2012 onwards

Following the referendum, the local government decided not to extend the geographical coverage of ECOPASS, as it was concerned about its impact on the poor. Instead, it decided to include all vehicles within its remit, and to ban the most polluting vehicles altogether, thereby turning the CAZ into a congestion charge. It was renamed ‘Area C’, and came into operation in 2012. As before, it is enforced on weekdays between 7.30am and 7.30pm (although it finishes earlier on Thursdays to encourage late-night shopping). The charge is a daily fee of €5 for all vehicles, with goods vehicles receiving free parking. Again, exemptions are again made for residents.

Those who opposed the plan failed to garner enough support to mandate a referendum on it, although it was temporarily suspended in order to resolve some legal issues. Today there is little opposition to Area C, and with its revenue spent on public transport it would be politically difficult to abolish it. The inclusion of all cars within its scope means that Area C is more effective at tackling congestion and air pollution than ECOPASS was. In the scheme’s first six months, traffic volume fell by 34 per cent, and total PM emissions dropped by 18 per cent (Di Bartolo 2012 and Martino 2012).

4.3.4 Lessons from Milan

The case of Milan demonstrates that air pollution can be a much more powerful issue than congestion when considered in terms of the first phase of Goodwin’s cycle of public support. However, capitalising on public fear over the issue is a risky strategy politically, and debate on the issue must be measured. The approach of offering motoring taxation reforms as one of a range of issues to be voted on in referendums shows merit. The fact that the idea of the new system arose from public debate about air pollution rather than

coming from government, and that Area C remains popular today, provides evidence of the validity of the first and final stages of Goodwin's theory.

4.4 Conclusion

Our three international examples offer us several valuable lessons. Oregon's experience shows that a new taxation system could be introduced by using a variety of technologies and pricing structures that give motorists choice: such an approach can be popular, though it is important to try out different systems before mandating any new regime. In Stockholm we saw a textbook example of how change might be introduced: following a pilot (in this case, one very large pilot) that gave the public an excellent evidence base on which to base their decision in the eventual referendum. However, even after doing everything 'by the book', the fact that the scheme's proponents chose congestion as the underlying issue meant that it was only narrowly passed. Milan, by contrast, demonstrates that air pollution could be a much more powerful issue than congestion in terms of winning public support for motoring taxation reform, but also that a reckless approach to such reforms can amount to political suicide. Finally, these examples indicate that referendums should only be held to validate *existing* schemes. The campaign in Stockholm in particular offers a number of lessons regarding how referendums should be conducted, including the fact that referendum questions should be self-contained – that is, all the information that the voter requires should be set out within the body of the question. This was the case in both Milan and Stockholm.

The next chapter will present the results of our original research into the public's attitudes towards reform in the UK, as we attempt to identify the emotive issue that might create a favourable political environment for motoring tax reform in this country. In chapter 6 we will then conclude by offering our recommendations on how motor tax reform should be carried out.

5. CURRENT PUBLIC ATTITUDES TO MOTOR TAX REFORM IN THE UK

This chapter describes the results of our research into current public attitudes towards reform of motoring taxation in the UK. It sets out findings from a YouGov poll and two deliberative workshops in Newcastle, all of which were conducted in December 2013.

5.1 IPPR's poll

Our poll results are available in full on our website.³⁵ We used it as a baseline against which to measure the findings of our other research. In it we focussed in particular on the public's current reactions to externalities that are not normally tested in motoring polls (such as stress); on whether the principle of piloting new systems of tax collection in advance had any bearing on current public opinion; and whether proposing reform measures that were revenue-neutral to drivers changed the respondents' opinions.

Our results showed significant levels of concern about externalities that polls do not normally focus on, but these were still outweighed by concerns over costs, the condition of roads and congestion. This was as we expected. We believe that our poll is inconclusive on the issue of whether or not piloting effects people's opinions on reform, but that it does show that the number of people who are open to volunteering is adequate to make piloting and demonstration programmes viable. A revenue-neutral approach only increased support for reform by between 4 and 8 per cent (depending on the type of reform proposed). We have used key findings from this poll to further illustrate the findings of our workshops (in section 5.2 below), and those described elsewhere in this report.

However, there our poll did result in some unexpected findings. Support for introducing CAZs following a successful pilot in a city was almost as strong as the opposition to it (42 per cent compared to 45 per cent); if the proposal was cost-neutral for drivers, support increased to 44 per cent (compared to 36 per cent in opposition). London did not bias this result – there, the results were 38 per cent in favour and 43 per cent in opposition (and, if cost-neutral, 38 per cent for and 39 per cent against). Interestingly, opinion in Scotland was evenly split, with 43 per cent of respondents supporting the proposal, and the same proportion opposing it. Support for the proposal was also stronger among younger respondents (35 per cent of 18-to-24-year-olds) and among Liberal Democrat voters (54 per cent). Among non-drivers, support (at 39 per cent) was also slightly stronger than opposition (36 per cent).

However, in light of the other evidence produced by our research, we have not interpreted responses to this question as strong evidence of stronger public support for CAZs as opposed to tolling or PAYG systems of taxation. Rather, we see this poll result as strong evidence that it is important to introduce change only as a means of addressing an underlying issue. This is because in the poll question, when we described what a CAZ is, we alluded to the reasons why a new system might be introduced (in order to tackle congestion or air pollution), but did not do the same when describing tolling or PAYG.

5.2 Deliberative workshops

The workshops were made up of 16 people aged between 20 and 62, who we split into two groups of eight. Each group had an even gender split and two non-drivers. The hypothesis we wanted to test was that people would become more amenable to motoring taxation reform if a scheme was piloted in advance, was designed to tackle issues that matter to them in a localised area, and left them at least no worse-off financially than they would otherwise have been.

³⁵ <http://www.ippr.org/publications/the-long-road-to-ruin-why-the-uk-needs-to-reform-motoring-taxes>

The workshop began with an introductory session in which we asked all 16 participants to brainstorm the benefits and drawbacks of motorised transport. Nothing unexpected was listed, but it was notable that no participant mentioned air pollution, noise pollution, lack of exercise or carbon emissions; this reflected our poll results. However, in contrast to our poll – which listed stress as the issue of least concern, followed by carbon emissions and noise pollution – our workshop participants quickly highlighted the stress involved in driving by expressing concerns about issues such as road rage, fear of hitting pedestrians and cyclists, bad drivers, and the confusion caused by an abundance of road signs.

After this initial discussion, we split the participants into their two groups (groups A and B). They then engaged in the following sessions.

1. A discussion on the externalities of driving.
2. A ‘mapping session’, in which the participants plotted on a map of Newcastle the points at which congestion, potholes, noise pollution and the likely impact of air pollution are worst.
3. A discussion about the personal cost of driving (or not driving) to the participants, and about motoring taxation.
4. A discussion about the possibility of introducing different ways of collecting motoring taxation (tolling, PAYG and CAZs).

The aim of sessions 1, 2 and 3 was to empower the participants with information and evaluate how they used that information when considering new forms of taxation in session 4. At the end of this final session, participants were asked if they would be willing to engage in a temporary pilot of new taxes that were cost- neutral or better to the driver. Six people in group A were willing to try it, but only two in group B. Our hypothesis was therefore proven in group A but disproven in group B. A thorough evaluation of the conversations that both groups had is necessary in order to establish why they reached such different conclusions.

5.2.1 Session 1

Participants in both groups were enthusiastic about discussing externalities, freely exchanging personal stories and experiences. Invigilators allowed the conversation to flow, but occasionally intervened to offer statistics and further information relating to air pollution, congestion, noise pollution and stress. Both groups reacted with scepticism towards all statistics initially, but then took the information on board and discussed the externalities further.

As was reflected in our poll, neither group considered noise pollution to be an issue that seriously affected their lives, and the information they were given did not change their attitudes.

‘I don’t notice it until it’s gone.’

Workshop participant, group B

Although air pollution, like noise pollution, was not among those externalities that were mentioned in the initial discussion, people became more willing to recognise it as a problem when the topic was raised.

‘If I’m cycling I notice it, but never when I’m in the car.’

Workshop participant, group A

Both groups began to take the issue more seriously when given information about air pollution. Group A began to discuss solutions, whereas group B's conversation was cut short due to time constraints.

'I drive through the tunnel every day and if you leave the window open, you can smell it. You start to think of the guys that work there every day.'

Workshop participant, group B

'Do you get free parking? Because that would be a good incentive to get [an electric car].'

Workshop participant, group A

Congestion and stress were problems that both groups considered linked, but unlike air pollution, further information on these subjects did not change the tone of the conversation.

'I get anxious when I'm standing still. If it takes longer to get there, it doesn't bother me – so long as I'm moving.'

Workshop participant, group B

'One-way streets and parking affect your journey – I get lost on the one-way street, and I can't handle it.'

Workshop participant, group A

Participants in group B talked about potholes (largely at the insistence of one individual), and through this topic the theme of stress and anxiety also emerged. Group A, on the other hand, did not currently consider potholes a problem in Newcastle.

'You get such a fright.'

Workshop participant, group B

'This time last year they were really bad, with the weather, but as the year has gone on they have fixed quite a few.'

Workshop participant, group A

During this session, and throughout the workshops, both groups demonstrated strong support for improving public transport. This support mellowed, however, as views were expressed on how public transport ultimately has its limits.

'I live 15 minutes' walk from the main road. You'll never see a bus down my way.'

Workshop participant, group A

'You can never rely on public transport.'

Workshop participant, group A

'I can't get the bus because I have 15 minutes to pick up my little boy from school. I have no choice but to zoom along the coast road.'

Workshop participant, group B

5.2.2 Session 2

In the second session, each group was given a detailed map of Newcastle city centre and a large-scale map of the Newcastle area. They were asked to use different colours to mark where congestion, noise pollution and potholes were at their worst, and also where it would be worst for air pollution to exist – close to schools or hospitals, for example. The purpose of this session was to allow the participants to cement both their opinions and understanding of motoring's externalities. Again, both groups were very enthusiastic, and both produced quite similar maps.

The maps showed air pollution to be a bigger geographical concern than congestion, because air pollution was feared in both congested and uncongested areas. Group B marked potholes on the map, but this was led largely by a sole participant; group A did not mark potholes, which reflected their pre-agreed consensus on the issue. Noise pollution was marked on the map, but with much less enthusiasm than for other externalities.

During this session, both groups were given further information about how a lack of active travel impacts on health. This led to two very different and but equally passionate conversations.

Participants in group A talked specifically about their own desires to do more exercise, and how the weather and the seasons affected their travel decisions.

'I am guilty of that – I drive to the shop, and it's very walkable.'

Workshop participant, group A

'Winter and summer definitely [change my habits,] because you think about the kids then.'

Workshop participant, group A

By contrast, group B immediately shared unanimous and deeply felt concerns about safety for cyclists. (Group A had also discussed this issue during session 1.)

'I don't blame you [for not cycling, given] all the deaths recently.'

Workshop participant, group B

'I saw one yesterday – the four-by-four actually went *around* her to turn left.'

Workshop participant, group B

'I always want to have enough room to pass the cyclist, and sometimes you have to stay behind them. They should have a lane.'

Workshop participant, group B

5.2.3 Session 3

Session 3 presented participants with the opportunity to express their concerns about the cost of driving. Participants in both groups gave similar testimonies.

'This is why I don't drive. I can't afford to learn, buy a car and pay insurance.'

Workshop participant, group B

‘If I fill the tank it’s £75, and you are filling that every week. It’s a lot of money, £75 a week on fuel, and that’s without the other costs.’

Workshop participant, group B

‘It seems like I’m going to work to pay for the commute.’

Workshop participant, group A

‘When I think about where I live and what I need, [the cost is] excessive.’

Workshop participant, group A

We then gave participants information about motor taxation, at which point the two groups’ conversations diverged.

Group A continued to exchange testimony about the cost of driving, in the course of which it emerged some people were unaware that VED varies according to vehicles’ carbon emissions. One woman said:

‘Road tax is horrendous though. £120 for my car, and I pay it six monthly so it’s £240 a year. My husband’s is less and I don’t understand why I pay so much, it’s a 1.6 [litre] car. I keep thinking, Why is it so much?’

Workshop participant, group A

They asked further questions, and so received more information about motor taxation than group B did. In the specific example above, they realised that the newer, bigger, more expensive car owned by the woman’s husband was less polluting than her own smaller car. This realisation prompted a further examination of the current system. Consequently, group A developed a very strong sense that the current system of taxation was unfair and in need of change, particularly with regards to the fact that VED is currently paid regardless of how much a car is actually driven. The group proposed new motoring tax systems themselves. Debate then turned to the need to reduce the cost of driving, and introducing a PAYG system of taxation.

In contrast, group B stopped reflecting on driving costs, and accepted the truth of the information the invigilators gave them. They didn’t question it or discuss the impact of this information on their own daily lives. Instead, the first response of the group was:

‘Could you pay according to how many miles you did?’

Workshop participant, group B

They concluded that under a PAYG system, everyone would end up a loser, and that tolling would simply increase congestion elsewhere. When the topic of congestion charging was raised, they said:

‘You have to drive where you have to drive.’

Workshop participant, group B

Instead, group B advocated other traffic management measures such as park-and-ride. Unlike group A, group B did not develop either their own intellectual argument, or an emotional attachment to reform.

5.2.4 Session 4

We had planned to introduce motoring tax reform to the conversations at this stage, but both groups had already done so of their own accord. Nonetheless, we explained the differences between tolling, PAYG and CAZs. We asked the participants to consider whether any of these schemes should be trialled in Newcastle. Two very different conversations took place.

Group B continued where they had left off. The first response was:

'It's better the devil [you know].'

Workshop participant, group B

Nevertheless, group B debated the three forms of motor taxation as requested, but only the non-drivers among them felt that reform could be advantageous. They developed a consensus that charging per mile was the lesser of three evils, but continued to argue for other traffic improvement measures. Overall, the conversation focussed on the detail and problems of motor tax reform, rather than on its merits.

Despite having already begun, of their own accord, to debate reform in session 3, group A's reaction was initially hostile. They asked:

'Is this something we *must* do?'

Workshop participant, group A

The group had not yet consolidated their own opinions, and our transition to session 4 was rushing them. However, having been assured that they were free to reject reform completely, they continued with their earlier debate.

Their discussion focussed on the principles of reform, while appreciating that in practice it would likely result in winners and losers. They approved PAYG as the better of the three options, and dismissed tolling for the same reason as group B did – that it would simply push congestion onto untolled roads. They also agreed that charging to tackle congestion would not work.

'I think if you have a system of paying per miles, [that] would be a fairer way than punishing people who have to get into the city centre.'

Workshop participant, group A

Group A remained adamant throughout that reform could not be allowed to make driving more expensive, especially for the poor (group B also stressed this point repeatedly). They also raised the question of why they should pay to drive. Having already dismissed the issue of congestion, they focussed on pollution.³⁶ They realised and discussed the fact that by focussing on pollution, taxation reforms could disadvantage the poor, as they tend to buy cheaper, older, dirtier vehicles. However, one participant suggested car-sharing as a mean of easing this burden. When another participant asked whether everyone was agreed that any reform should try to combat pollution, no one dissented. The tone of the group's discussion was important at this stage: there was no *enthusiasm* among them for introducing a new tax, unlike during session 3. Rather, their heads ruled their hearts, and they developed an intellectual argument for a reformed tax which they grudgingly accepted. This change in emotions reflects Goodwin's second stage.

³⁶ The participants did not distinguish between air pollution and carbon emissions, and noise pollution did not enter into the discussion.

5.3 Conclusions

The difference in the groups' approaches reflects the first phase of Goodwin's theory: that motor tax reform should be presented as a solution to a pre-identified problem. Group B simply accepted the information we gave them about the current system of motoring taxation. They didn't question it or otherwise assess its implications for their own lives, and they did not develop as strong an emotional attachment to the issues as group A did, or feel as pressing a need for reform. When we suggested different forms of motor tax as possible alternatives, group B very quickly dismissed them. The fact that group B raised the possibility of reform of their own accord during session 3 did not affect their final conclusion because they had not established an emotional attachment to a *need* for reform.

Group A, on the other hand, took the same information as a prompt for a discussion, rather than as a *fait accompli*. Their initial hostility in session 4 underlines the need for the concept of motoring taxation reform to emerge during the course of debate about an issue, rather than for government to 'ordain from on high' the need for reform. With 53 per cent of our poll's respondents (including 40 per cent of non-drivers) identifying the cost of driving as being among their top three 'negative effects of driving', it is no surprise that for group A, the inequities of motor taxation became the issue out of which an attachment to the need for motor tax reform emerged.

The outcome of group A's discussion of the need for a tax to address pollution is also important. It demonstrates that it does not matter how strong their emotional attachment to the need for motoring tax reform is – the proposed solution is, unlikely to be enthusiastically embraced by the public. The caveat to this conclusion is that our workshop participants showed no knowledge of how serious a problem air pollution is, and we did not push them to discuss it rather than other issues (in order to protect our hypothesis). However, as awareness of the seriousness of air pollution grows, there is every possibility that the public's reaction (and group A's reaction) to it could change.

In the final chapter we will apply the lessons learned in this analysis, and in the preceding chapters, by setting out the steps needed to reform motoring taxation in the UK.

6. HOW TO REFORM UK MOTOR TAXATION

This report has concluded that the current system of UK motor taxation is unfair, fiscally unsustainable, and – because it has done little to avert the negative public health effects of motoring – unhealthy. Steps to reform fuel duty and VED, and to create a progressive system based upon road usage, are urgently required. The government must begin to build a new relationship with motorists. The process will be difficult, but far from impossible.

Drawing from the analysis presented in chapters 1 through 5, this chapter will outline the measures required to reform UK motoring taxation.

6.1 Identify an issue of concern to the public

In chapter 3 we set out Professor Phil Goodwin's theory of the cycle of public acceptability, and our research has led us to the conclusion that the first phase of that cycle is the most important. Attempting to popularise the idea of reform itself, and then introducing it as quickly as possible before support wanes, is not the key to reforming motoring taxation. Instead, at the outset, an issue must be identified that is important to the public, and through debate over that issue, reform of motor taxation must be accepted as a necessary element of a solution to that issue.

The fiscal unsustainability of current motoring taxation is unlikely to resonate with the public as an issue that is important to their lives. However, our research suggests that the unfair and unhealthy nature of motor taxation might do so, and that these issues should therefore be capitalised upon by politicians.

6.1.1 Explain the unfairness of the current motor tax system

Given that it has changed little over the last century, it is no surprise that the public is either ignorant of the current UK motoring taxation system's inequities, or resigned to them. As a result, the current debate over motoring tax focuses on cuts to fuel duty, and not to more fundamental reform. However, our workshops indicated that the inequitable nature of motoring taxation (the fact that it is regressive, for instance, or the fact that VED is not linked to the actual amount of pollution that a vehicle emits) could be the problem that is most likely to lead to public support for reform from the public.

Advocates of fuel duty cuts may be attempting to address a legitimate concern – the unfair nature of motor tax – but their approach is fiscally unsustainable and ignores the public health impact of motoring. Furthermore, in the past, politicians could be forgiven for shying away from these inequities because addressing them would threaten a vital revenue stream for the state. But that revenue stream is now destined to decline. Both politicians and stakeholders in motoring taxation should instead confront the current system's inequities as problems to be solved, and lead campaigns to make it more progressive.

6.1.2 Raise awareness of the impact motoring has on public health and quality of life

Chapter 2 outlined the national chronic public health problem of air pollution, primarily caused by motoring. Our poll showed air pollution to be low in the public's priorities and all of our workshop participants were ignorant of its impact on health.

However, the information that we gave to the workshop groups on air pollution was the only evidence on externalities that changed the tone of participants' conversations. The mapping exercise showed that our small sample of the public was, once they better understood its health impacts, very quick to decide in which locations they feared air pollution most. Furthermore, over the timespan of the research presented in this report, the issue of air pollution appeared to gain a greater amount of media coverage. For example, the Parisian mayor recently

banned vehicles from the city centre during the week, and in April 2014 unusual weather substantially increased pollution levels in the UK (Schofield 2014 and Ghosh 2014).

More qualitative research is required on this topic, but it could be that air pollution is an issue that could give rise to more calls for reform of motoring tax as public awareness of its health impact increases. Nevertheless, its high mortality rate means that raising awareness of the issue is simply the morally right thing to do. Politicians should do more to increase public awareness of, and call for solutions to, the issue of air pollution. Initially this should be focussed on diesel vehicles, which are the most polluting vehicles, but in time attention should move towards addressing emissions from all road transport.

However, caution should be taken with this approach for the following reasons.

1. The Milanese case study in chapter 4 demonstrates that while air pollution can be a very powerful narrative for reform, inciting panic over the issue could be political suicide. Any campaign must be calm and measured in its approach.
2. Critics will be quick to point out that motoring taxation cannot serve as a magic bullet for solving the problem of air pollution. They are right, but reforming motor tax could be an important element in efforts to address it.
3. One of the key lessons from the TIF case study in chapter 3 was that the initiative focussed too narrowly on a single issue: congestion. Politicians should be careful not to repeat the same mistake.

A focus on air pollution should therefore be accompanied by calls for measures to address transport's negative impacts on quality of life (in part to support the introduction of active transport schemes, as advocated in section 6.2.5 below). This will allow externalities such as congestion (which also compounds the public health impact of air pollution) to become part of the rationale for reform. Our workshop suggests that such a holistic approach could resonate with the public. Our workshop participants demonstrated a strong awareness that motoring (including public transport) has a negative effect on quality of life for a variety of reasons, such as stress, lack of exercise, time sacrifice and pollution. Politicians should pledge to adopt transport and planning policies that, over time, end the public's unnecessary dependency on the car.

6.1.3 Government must remember that the current system is unsustainable

Although this point is unlikely to resonate with the public to a significant extent, it is a serious issue for politicians and for the Treasury in particular. For that reason, practical steps to reform motor tax must be taken.

6.2 Don't promise reform by central government on a nationwide basis

As set out in chapter 3, a great deal of research still needs to be done into the practicalities of reform: we don't know what the likely set-up or administrative costs of a new taxation system might be. The stakeholders we spoke to gave conflicting opinions about such costs.

Promises to introduce reform on a nationwide basis (or fears that reform might occur in this way) will only highlight this lack of knowledge. The public will have a legitimate fear that reform will be forced upon them in an incompetent, ill-informed way, and that they will be the ones to suffer. The government must be seen by the public to learn how to implement reform at a localised level. Local authorities and devolved administrations are best placed to carry out reform, with support from central government as required.

6.3 Other steps to facilitate reform

6.3.1 Don't hold referendums as a condition precedent to reform

Referendums should be avoided if possible. However, if that is politically difficult, they should only be held to validate mandatory but temporary reform, as was the case in Milan and Stockholm. The question itself should contain all the information that the voter needs to make his or her decision (as in Milan and Stockholm, and unlike in Edinburgh and Manchester), and lessons from the extremely strong Stockholm campaign should be drawn upon.

6.3.2 Don't ignore the public's privacy concerns over a new motor tax

Oregon engaged with the American Civil Liberties Union at an early stage of its work in order to ease privacy concerns. The government should also publically engage with civil liberties organisations such as Liberty in the early stages of pilot programme design (see below), in order to ensure that piloted schemes address privacy concerns to the fullest practicable extent.

However, we note that this concern was not raised by participants in either our workshops. Instead, they saw the prevalence of GPS tracking in mobile phones and satnavs as a *facilitator* of reform. They concluded that these technologies could make it cheaper to introduce a replacement tax, and that the resultant savings should be passed on to motorists. Further research into the impact that new technologies might have on the public's attitudes towards motoring taxation should be carried out.

6.3.3 Start local piloting and demonstration programmes – 'let a thousand flowers bloom'

Government should demonstrate that it is engaging in a learning process on how to carry out reform through publicised voluntary and temporary piloting and demonstration programmes of different technologies and taxation structures around the UK.

These pilots should be small, and as innovative as possible to begin with – for example, trying out seasonal pricing that encourages people to use active travel in the warmer seasons. Government should look to Oregon for lessons, and the principle of 'user choice' in how the public chooses to pay new taxes should be observed wherever possible. Our workshop participants also exhibited a bias towards PAYG over both tolling and CAZs, and this finding should be tested further through pilot schemes. As lessons are learned, the pilots should grow in size but decrease in variety around the country.

As well as testing out different technologies and payment methods, pilots should also aim to establish the right balance between the need to keep a new system simple, the need for the state to raise revenue, and the need for the new system to be sophisticated enough to accurately capture the marginal tipping point of externalities at a local level.

In time, larger voluntary demonstration programmes should be rolled out to showcase what a likely reform would look like in practice before any mandatory reform (either temporary or permanent) is attempted.

6.3.4 Devolve responsibility for reform – a problem shared is a problem halved

Throughout the research, the need to devolve responsibility for reform of motor taxation (including the retention of receipts by the devolved bodies involved) became apparent for four reasons.

- a. National transport appraisal models largely fail to accurately determine the marginal cost of externalities, whereas local models can be much more accurate (see chapter 2).

- b. The failure to reform local transport governance was a key factor in the failure of the last government's TIF policy (see chapter 3).
- c. The practicalities of reform are unknown and will be difficult to address. Encouraging local authorities and devolved administrations to assist in reform will increase the amount of intellectual capital spent on the issue.
- d. Reform should be predicated on issues that matter at a local level (see chapter 5).

The practicalities of further devolution of transport policy is outside the scope of this report. However, the 2012 Health and Social Care Act gave local authorities compulsory duties to improve public health, and wide discretion as to how they do so. This may include taking measures to address the various public health impacts of motoring transport, including air pollution. Funding is also being devolved to local authorities to allow them to carry out these duties. Local authorities, the Department of Health and Public Health England should consider motor tax reform as an essential means of fulfilling these duties.

The Treasury may wish to consider sharing the problem of declining revenues by devolving motoring taxation receipts to the Scottish, Welsh and Northern Irish administrations, and reducing the central government grants to those administrations accordingly. This would create an incentive for the devolved administrations to consider new, alternative sources of motoring taxation, and possibly the elimination over time of VED and fuel duty altogether.

6.3.5 Encourage modal shift and fill in potholes

Our research has shown that the public is very open to modal shift. Despite the fact that our poll showed that the public's top two concerns were the cost of motoring (at 53 per cent) and potholes (at 40 per cent), the two most, and almost equally, popular means of addressing these concerns were cutting fuel duty (at 43 per cent) and improving local buses, trams and trains (at 42 per cent). Widening or improving roads (by repairing potholes, for example) came in a distant third, at 24 per cent – only just ahead of improving cycling facilities (23 per cent).

All of the initiatives we looked at in our domestic and international case studies (except Oregon) focussed heavily on improving public transport as part of their efforts to introduce new taxation systems. However, both those case studies and our workshops demonstrated the limitations of relying on improving public transport as a rationale for motoring tax reform. Public transport will not be a suitable alternative for everyone, and in the specific context of air pollution, buses are themselves significant polluters. Therefore, although improvements to public transport should be part of the offer for proposed reformed motoring tax reforms, they should not be relied upon as a major opinion-changer.

Our workshop participants did express a strong desire for promoting and improving active travel which does not contribute to pollution. This finding, combined with the high cost–benefit ratio of active transport investments (see chapter 2), suggests that these should be given priority over public transport improvements in any modal shift element of a motoring tax reform campaign (as was the case in Milan). More qualitative research into this finding should be carried out by the DfT.

Finally, potholes affect everyone who uses the road, regardless of how they travel. Since our poll shows that people really do care about them, fixing potholes before mandating any change of the tax system is a sensible precaution to help secure public support for change.

6.3.6 Keep predictions of revenue decline updated

The OBR has not updated its prediction of the decline in motor taxation revenues since 2011. As set out in chapter 1, the Coalition's policy of freezing fuel duty has since undermined one of the OBR's assumptions, so the rate and pace of the decline in motor tax revenue may have increased. At the very least, the OBR must start updating its analysis on an annual basis to allow politicians to make important judgement calls, such as when to begin piloting new systems, on the basis of accurate predictions about the rate of decline in revenue.

6.3.7 Carry out further research to improve the political and economic offer of new motoring taxes for the public

First, the Treasury needs to start modelling to determine the extent to which a tax with a stronger substitution effect can also have an income effect. This work will be essential for designing pilots.

Second, our research has led to the conclusion that a new motoring tax must be progressive to be acceptable to the public. A poor person driving a certain car a certain distance, in a particular area and at a particular time, should be charged less than a rich person making the same journey. The Treasury needs to collaborate with the DfT and HMRC to work through the practicalities of this element of reform.

Third, chapter 2 set out the need for the costing of motor transport's externalities to be regularly updated, and this will be necessary to increase public confidence in the economic robustness of any new system. For some externalities, further scientific research is needed so that the causal link between the externality and its impact on the health budget can be determined – noise pollution and stress, for example. A multi-modal methodology should be developed to establish the impact that motorised transport has on active transport; if that impact can be quantified, then the costs could also be factored in to new motoring taxes. The DfT needs to prioritise this work as soon as possible so that other departments, particularly the Treasury, and local governments can conduct their own work with accuracy.

6.4 Conclusion

This report has set out the need for a strategy to reform motoring tax. It will require a great deal of political courage. Those who might oppose reform can validly be accused of wilful fiscal irresponsibility, ignoring the plight of the squeezed middle and the poor, and turning a blind eye to the tens of thousands of people suffering from illnesses attributable to long-term exposure to the externalities of motoring. The Liberal Democrats have already promised to introduce 'a system... [which] would be revenue-neutral for motorists... [and] to abolish Vehicle Excise Duty and reduce fuel duty' (Liberal Democrats 2013). Since the Liberal Democrats have already fired the first salvo in this debate, other parties should follow suit.

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