# Electric avenue

## Increasing access to electric vehicles for low-income households

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SMF Social Market Foundation

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## ABOUT THE AUTHORS

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Gideon joined the research team in August 2022 having previously worked as a policy researcher and writer. His research portfolio focuses on environmental policy, poverty, and inequality.

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Jake's research portfolio covers a wide range of policy issues, from in-work poverty to gambling, the four-day week to drug reform. Jake has appeared in various print and broadcast media including The New Statesman, The Independent, The Times, Times Radio, and BBC Radio 4.

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Danila joined the SMF research team in January 2024. She studied Political Thought and Contemporary History in Italy, with a focus on British economic policy. Her MA thesis was on the impact of Brexit on party dynamics in England. She is now completing her MA in Public Policy at King's College.

# EXECUTIVE SUMMARY

The transition to electric vehicles (EVs) is one of the largest changes in our transport modes since the invention of internal combustion engines (ICEs) running on petrol and diesel. Yet in many ways Britain's transition remains haphazard. High upfront costs for EVs mean they are disproportionately available to the richest households. Increasing accessibility to these vehicles for lower income deciles will be essential to meeting our climate targets and justifying them to the population. In doing so, policymakers can decarbonise our highest-emitting sector while pulling some of our most disadvantaged communities out of poverty.

## Electric vehicles can pull over one million people out of poverty – if the cost of buying them comes down

Transport poverty affects over five million individuals across the UK who are pushed into poverty as a result of transport costs. The transition to EVs is an opportunity to significantly decrease that number. EV drivers spend 40% less on fuel and 43% less on servicing than ICE drivers. Coupled with other savings, this would pull 940,000 people out of poverty in England, and an additional 136,000 in the rest of the UK. The benefits are particularly large in rural areas where drivers must travel greater distances, saving £1485 per year, while in urban areas drivers would save £950 per year.

However, these numbers depend on the upfront price of EVs being no higher than ICE vehicles. Prices are coming down, but this parity is not expected to be reached until 2030. Currently, EVs continue to be more expensive, with a used EV costing £6,500 more than an ICE vehicle. Although cheaper fuel and maintenance more than compensate drivers for this initial cost over the course of a vehicle's life, motorists on lower incomes will likely not be able to cover the initial costs of the vehicle. Low-income drivers would see a net loss over the first five years after buying an EV compared to a petrol car despite the operational savings.

## Other countries have done a better job increasing EV take up while protecting motorists from high costs

In some countries, policymakers are setting hard ceilings on the proportion of auto-manufacturers' sales which can be ICE vehicles. The UK's is one of these, through its Zero Emissions Mandate, which demands that automakers increase the proportion of their sales which are EVs until it makes up 100% in 2035. However, the policy is reliant on EV demand, which has slowed over the past year as manufacturers have focussed on low-volume, high-cost products.

Elsewhere, countries directly intervene to increase demand by subsidising EVs, artificially bringing EVs closer to price parity with ICE vehicles. However, these policies are extremely costly for the state. Further, the policies are limited in that they require a high proportion of money to be wasted on drivers who would have bought an EV without the subsidy, with previous UK policies spending over £15,000 for every additional vehicle on the road. A £5,000 grant for used cars today would likely put an

additional 16,500 EVs on the road, decreasing annual CO2 emissions by 24,716 tonnes, and cost £600 million.

## Social leasing should be introduced to help low-income drivers access EVs and improve social mobility

There is a more efficient alternative. France has developed an innovative social leasing system which targets funding to low-income households, minimising costs for the state and assisting those most at risk of transport poverty. Under the social leasing policy, poorer households can lease a car for €100 per month from a private leasing company, with the government paying the difference between that cost and the market price. At the end of a three-year lease, households have the option to purchase the car for its remaining price or return it to the company.

In the UK, a similar scheme to provide social leasing for 100,000 EVs would initially cost £175 million per year, rising to £520 million if continued. Policymakers should prioritise households with less than £8,000 per person annually, potentially increasing to £18,000 depending on demand. In addition, geographic eligibility should be limited to those households with high driving needs, including those who live more than three miles from their workplace and who drive more than 3700 miles (or 6,000km) annually.

If properly targeted, this could pull over 500,000 people out of poverty, while taking between 900,000 and 1.5 million tonnes of carbon out of the atmosphere every year, over 36 times the effect of a £5,000 grant, meeting environmental goals while improving social mobility.

## CHAPTER ONE – INTRODUCTION

For many of us in Britain, EVs represent the most tangible aspect of the green transition. The transition will directly change our daily habits more than any other technology. And one of the greatest threats facing the green transition is the political backlash caused by those on lower incomes who feel that the promises of a "just" transition are being broken. Speaking to policymakers, it is clear that the protests of the *gilets jaunes* in France, farmers in the Netherlands, or fossil fuel workers in the United States, all loom large in EV policy design.[1]

Although EVs can save drivers over £1,000 a year, used EVs are approximately £6,500 more expensive than ICE vehicles, leaving those savings tantalisingly out of reach for those who need them most. Righting this wrong will be essential over the coming years not only to ensure the transition is just, but to ensure it continues at pace.

For the last ten years, Western EV manufacturers have focussed on low volume, high cost models which cater to higher income earners. This was originally designed to offset the high cost of batteries and has continued due to the profits available. But the market for high-price luxury EVs appears to be drying up, slowing the pace of the transition.

This paper looks at how to make EVs more affordable to poorer households who could benefit the most from these savings. It is split into two sections. The first describes the breadth of transport poverty in the UK and analyses how EVs pull households out of poverty due to their operational cost savings. This builds on previous SMF research which studied the prevalence of transport poverty in the UK.[2]

The second section integrates this data into different policies around the world are attempting to increase EV access. We analyse the affect these policies would have on EV uptake in the UK and further study the effects from that uptake on transport poverty. This is complemented by interviews with policymakers around the world who have had firsthand experience designing and implementing EV policy.

It should be noted that while EVs can and will be a powerful tool to fight poverty and decrease emissions, they are not enough in themselves to end transport poverty. To do so, more alternatives will be needed, in particular the increase in availability, reliability and affordability of local public transport services. These can enable individuals to move more efficiently, decreasing environmental emissions, lowering costs, increasing productivity, and allowing more space on our roads and in our towns and cities.

# CHAPTER TWO – ESTIMATING TRANSPORT POVERTY

This chapter utilises the transport poverty metric that we developed last year to analyse the implications for the poorest in society of wider uptake of EVs. It starts with a brief outline of our measure and what it represents.

Transport poverty has different, competing definitions designed to measure different barriers obstructing people's movement. In some cases, it refers to the inaccessibility of certain destinations, while in others, it refers to constraints on one's mobility based on the available options. In a third case, it can refer to the affordability of transport based on the cost of certain modes and one's income. Further measures may combine these in composite metrics to track multiple elements of transport poverty.

Our metric takes the third approach, looking at affordability. Essentially, we classify a person as being in transport poverty if the amount of money that they spend on transport costs are high enough to push them below the poverty line. A person could be in transport poverty using this metric even if their destination were accessible by the available modes of transport, but cost too much to be considered affordable.

For more detail on our conceptual and methodological judgements, and the underlying data we used, see Chapter One of last year's report "Getting the Measure of Transport Poverty."[3]

## Datasets

Our transport poverty measure seeks to do the following:

- Measure the geographical breadth of transport poverty.
- Measure the depth of poverty in which transport poverty places households.
- Reflect the expenditure of households on different transport options by mode, including public transport.
- Be as intuitive as possible to allow for public understanding while maintaining usefulness and validity.

To do so, we used the National Travel Survey (NTS) and the Scottish Household Survey (SHS) to understand household transport usage and preferences. We decided to track households rather than individuals due to the availability of data and the fact that finances and transport decisions tend to be pooled at a household level. For instance, an unemployed parent may drive their children to school using the income of their high-earning partner.

Importantly, these surveys do not collect data on transport costs. Therefore, the Living Cost and Food Survey (LCFS) was used to understand all data related to spending, which covers the entire UK. All analyses were based on 2019 data, as the only subsequent years available for analysis were heavily impacted by the COVID-19 pandemic. We plan to update our findings once 2023 data is made available.

## Analysis

Our metric models cost by finding the average expenditure on transport for each household based on three variables: its region, its income decile, and its rural-urban classification. For instance, our metric shows how much the average household in Wales spends if it is in the lowest decile and in a rural area. To understand how these costs break down by vehicle, we calculated separate averages for motoring, busing, and rail, and added them together to find a household's total transport expenditure.

This allowed us to estimate the cost of motoring based on a household's characteristics. Motoring expenditure was split into two categories based on their LCFS classifications: operational and fixed costs. Fixed costs were estimated based on the average expenditure in each region, income decile, and rural-urban classification. However, as operational costs increase with greater mileage, we estimated the average household's mileage based on its characteristics and multiplied it by the operational costs per mile using the NTS or SHS. This isolated the average operational cost per mile, showing an additional £0.577 was required on average for every mile driven. It should be noted this is a simplifying assumption – in practice, it is cheaper to make longer journeys which require less fuel per mile.

When estimating the benefits of the EV transition, operational costs had to be adjusted down to recognise the savings of EVs compared to ICE vehicles. This was done based on existing market data. Fuel savings were based on advisory fuel rates set by the government which estimate the cost of fuel per mile depending on fuel type. The advisory fuel rate for the average petrol car is 15p, while for diesel it is 14p.[4] Electric vehicle energy is advised to cost 9p per mile. Therefore fuel spending was multiplied by these factors. After the transition, a driver's spending on fuel would be 60% (9/15) what they had been spending on petrol, and 64% (9/14) what they had been spending on diesel. [i]

To calculate maintenance savings, we used real time market data from Zapmap and Bookmygarage. This data tracks the ongoing market prices of an EV's operating cost compared to internal combustion engine (ICE) vehicles. Motor oil, for instance, is entirely unnecessary for EV drivers, meaning it is multiplied by 0. Overall maintenance bills are 43% lower in EVs than ICE vehicles, partly because EVs have fewer elements that may require servicing (including spark plugs and exhaust pipes), so these were multiplied by 0.57.[5] Some costs remain the same, such as motor organisation payments, garage rents, and driving lessons. The only operational expense that is higher in EVs than traditional vehicles is insurance, which the Association of British Insurers lists as a 25.5% additional expense.[6] Insurers have claimed that while EVs break down less than ICEs, the cost to repair them when they do is higher, and there are fewer technicians trained in EV maintenance.[7] The Institute of the Motor Industry claims the number of technicians trained for EVs is

[i] Note that this is based on government fuel advisory rates in the Spring of 2024, which assume a household has access to off-street home charging, which is cheaper than public or street charging. As urban households without off-street parking tend to drive less and pay less in fuel costs, this calculation is reasonable when designing policy, however it should not be used for budgeting among urban drivers.

increasing, so this problem should abate over time.[8] But for the moment we have added a 25.5% surcharge to estimated insurance costs.[9]

Finally, given that car hires and car leasing is impacted more by a vehicle's purchase price than by the distance it travels, we changed these costs from their LCFS listing in operations costs into fixed costs.

**Table 1: Breakdown of motoring expenses with EV operational cost savings**

| Fixed Costs | Operational Costs | EV costs as % of ICE |
|---|---|---|
| Cost of new car/van outright | Other motor oils (including fuel duty) | 0 |
| Cost of second hand car/van outright | Car/van accessories | 57% |
| Cost of motorcycle outright | Car/van spare parts | 57% |
| Loan / HP purchase of new car/van | Motorcycle accessories | 57% |
| Loan / HP purchase of second hand car/van | Petrol (including fuel duty) | 60% |
| Loan / HP purchase of motorcycle | Diesel oil (including fuel duty) | 64% |
| Motoring fines | Car / van servicing | 57% |
| Net vehicle road tax (payments – refund last year) | Car / van other work | 57% |
| Hires | Motorcycle servicing | 57% |
| Car leasing | Motor organisation fees | 100% |
| | Garage rent | 100% |
| | Parking fees | 100% |
| | Driving lessons | 100% |
| | Cleaning materials | 100% |
| | Insurance | 122.5% |

*Source: Living Cost and Food Survey, SMF analysis*

Fixed costs were evaluated separately. Table 2 breaks down the cheapest 10 four-seater EVs and petrol vehicles available to buy new or lease, splitting the cost over five years and adding 10% for interest payments (the standard policy in the UK). New vehicle and lease prices are taken from Carwow while Autotrader was used for the used market, which tracks average selling prices.

**Table 2: Breakdown of monthly cost comparisons between ICE models and EV equivalent**

| | Primary market | Second-hand market | Leasing market |
|---|---|---|---|
| **Petrol average** | £403 | £274 | £179 |
| **EV average** | £481 | £391 | £245 |

*Source: Carwow, Autotrader, SMF analysis*

Bus, coach, and rail expenditure was estimated separately. Bus and coach expenditure was estimated by modelling a household's average number of bus trips based on their region, income, and rural-urban classification with the average fee for a local bus in the area. For instance, we modelled the average number of trips in a North Western household in the fifth income decile in a rural area, and multiplied it by the average bus fare in the rural North West. Rail expenses were estimated using the LCFS average given the same characteristics.

We have applied the modelled costs to lower layer super output area (LSOA) level in England and Wales which contain on average 1500 people or 650 households (with the equivalent in Scotland known as Data Zones). Each LSOA was assigned its respective region and rural-urban classification. To apply the appropriate expenses based on income deciles, we modelled income distribution in each LSOA using Nomis data on income distribution and ONS median household income data in each local authority.

Before subtracting modelled costs from income, we observed how many deciles in each LSOA were below the poverty line. The poverty line was calculated based on those on relative low incomes, set at 60% of the median income according to the House of Commons library.[10] We used ONS data to find the median household income in 2019 was £29,600, and multiplied this by 0.6 to determine the household poverty line at £17,760. The number of deciles with incomes below this poverty line were multiplied by one-tenth the LSOA/Data Zone population to show the number of individuals in poverty. For instance, if an LSOA's population was 1750 in 2019, and three deciles were observed to be in poverty, the number of households would be calculated as 1750 multiplied by 0.3 equating to 525. This shows 525 individuals in poverty before accounting for transport.

A separate calculation was then run which included the modelled transport costs in each LSOA. This was done by taking the modelled income for each decile in each LSOA, and subtracting the modelled costs of motoring, bussing, and rail. The number of people below the poverty line now included those who are poor as a result of transport costs. The difference between the number in poverty before accounting for transport costs and after accounting for transport costs represents the total population in poverty as a direct result of transport expenditure.

Finally, a new calculation was run which modelled the effect of EVs on transport poverty, which discounted the operational expenses according to the multipliers outlined in Table 1. This showed us the effect of the EV transition on transport

poverty assuming purchase price parity. Separate analyses were then run which factored in the alternative purchasing costs of major EV models, as laid out in Table 2.

For a more detailed overview of our findings, including data sources and limitations, see Chapter One of "Getting the Measure of Transport Poverty."

# CHAPTER THREE – HOW CAN ELECTRIC VEHICLES DECREASE TRANSPORT POVERTY?

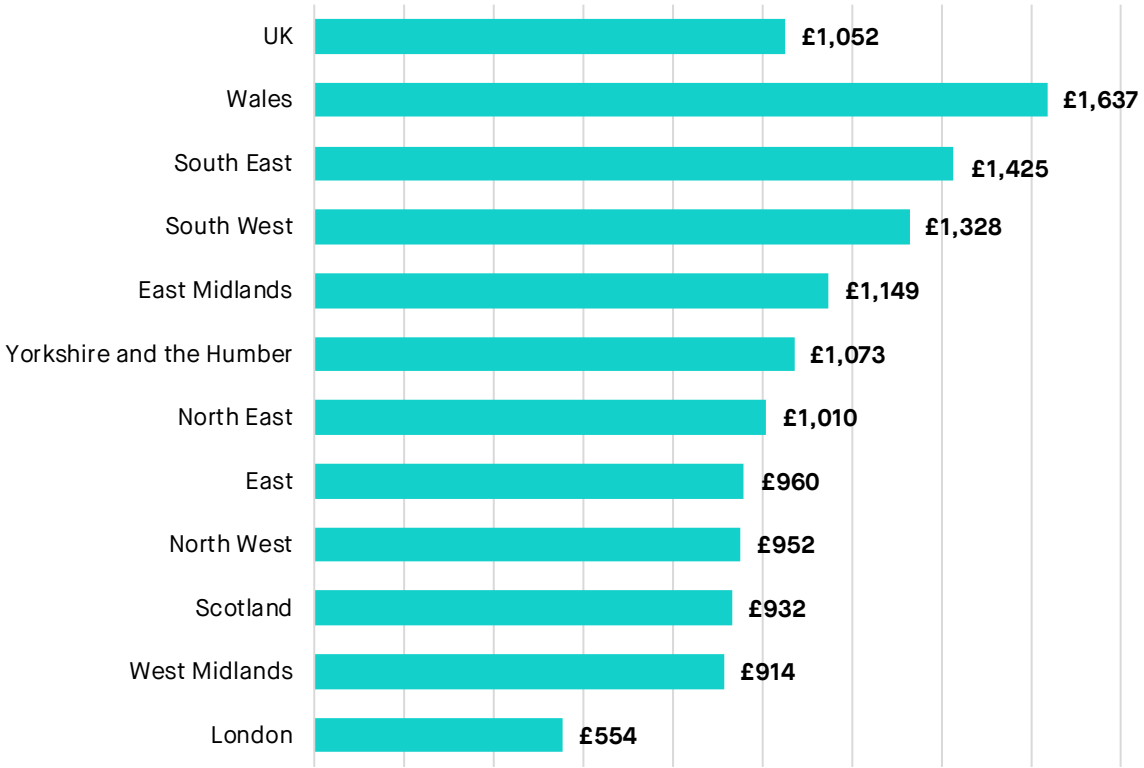
There are different ways to calculate the savings from an EV, depending on whether we assume price parity, whether we assume the EV is new, or whether it is used.

## Operational savings at price parity

Price parity between new EVs and their ICE equivalents is expected by 2030, but may come sooner based on the rapid advances made in affordable EV manufacturing in China. It's worth noting that seven out of eight car sales in the UK are in the used market, where some executives are already claiming price parity has been achieved on certain models.[11] The following chapter breaks down how transport poverty would be affected by the EV transition at that date, or if subsidies were introduced which decreased the cost difference.

The amount of money households spend on transport varied by a variety of factors including their region, their income, and their rural-urban classification. Overall, the operational savings from the EV transition for each household range from £914 per year in the West Midlands to £1,637 in Wales, with the exception of London where there are fewer drivers and those that exist drive shorter distances (Figure 1).

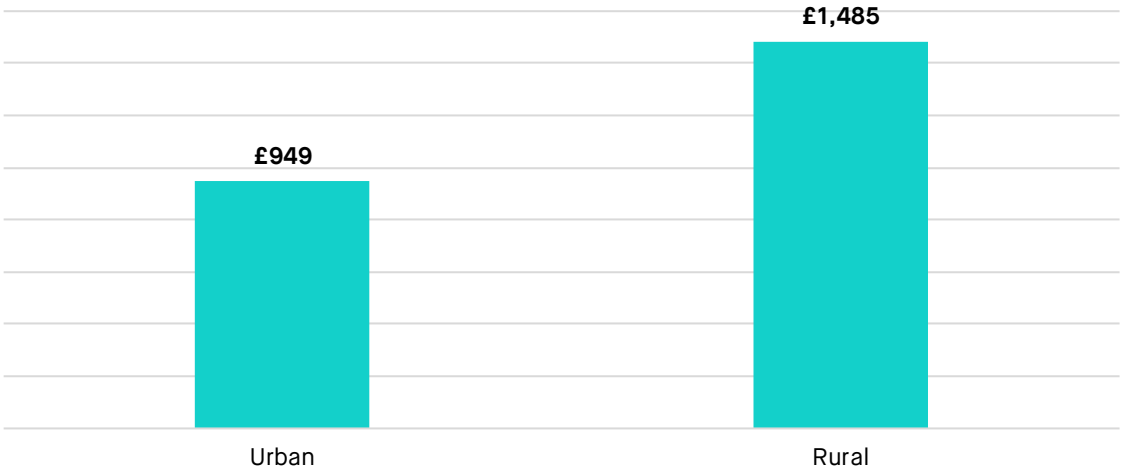
**Figure 1: Average annual operational savings by region**




*Source: NTS, SHS, LCFS, SMF Analysis*

This is felt most strongly in rural areas, where drivers could save £1485 per year, compared to urban drivers who would save on average £950 (Figure 2).

**Figure 2: Average annual operational savings between urban and rural households**




*Source: NTS, SHS, LCFS, SMF Analysis*

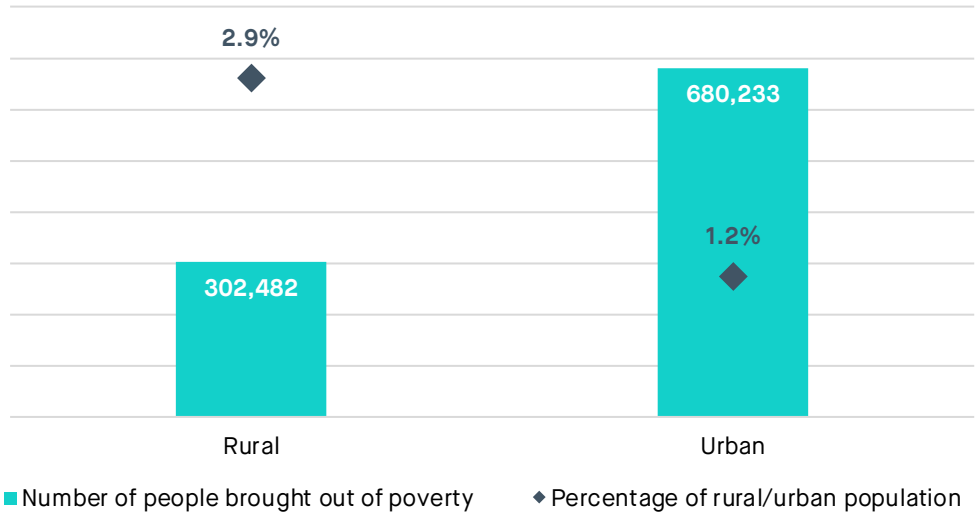
Yet transport poverty is felt most strongly among the lowest quintile of earners. These include those who make relatively low earnings yet continue to own a car, often due to a lack of alternatives. The average savings in this group are lower. In Wales, these drivers see only £650 in annual savings from switching to an EV, which is nearly £1,000 lower than the regional average. The national average is also lower among low-income motorists, who save over £260 less than the average driver.

**Figure 3: Average annual operational savings by region among the poorest fifth of households**


*Source: NTS, SHS, LCFS, SMF Analysis*

Overall, 982,000 people could be pulled out of poverty in the UK by the savings on operational costs from the EV transition. This include 847,000 million in England, 56,000 in Scotland, and 79,000 in Wales. 680,000 of these come from urban areas, while 302,000 are in rural areas. As a percentage of rural-urban populations, however, rural areas see the highest benefit, with a 2.9 percentage point reduction in poverty in rural areas compared to a 1.2 percentage point reduction in urban ones.

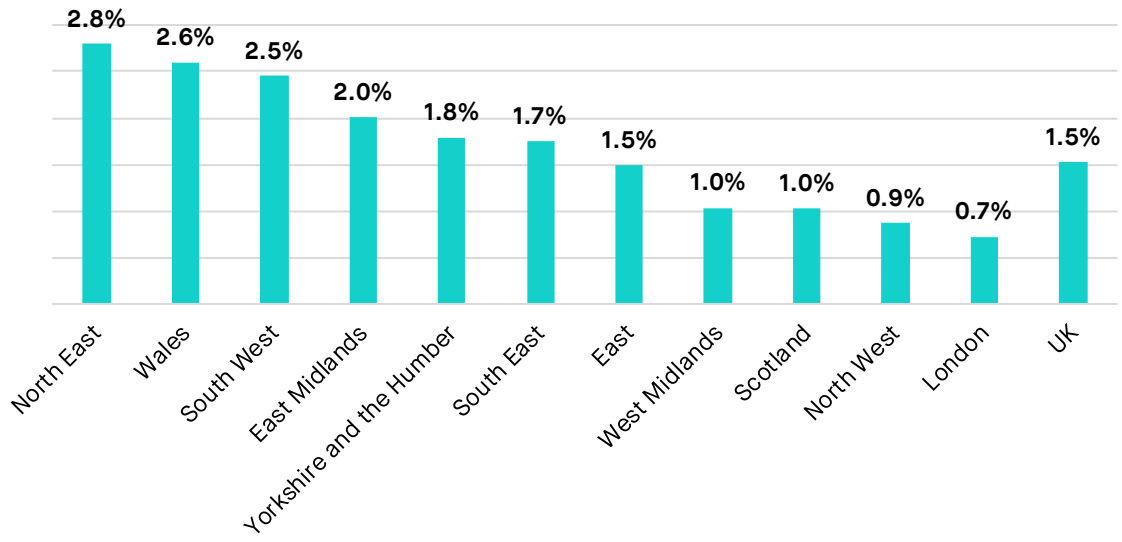
**Figure 4: Number of individuals pulled out of transport poverty by rural-urban classification assuming price parity**




*Source: NTS, SHS, LCFS, SMF Analysis*

As a percentage of the population, the highest effects in rural areas are in the North East, where 2.8% of all households would be brought out of poverty, and lowest in London where 0.7% of all households would be brought out of poverty. There is a decrease across the UK of 1.5%.

**Figure 5: Percentage of households brought out of poverty by region assuming price parity**




*Source: NTS, SHS, LCFS, SMF Analysis*

## Factoring in the price tag

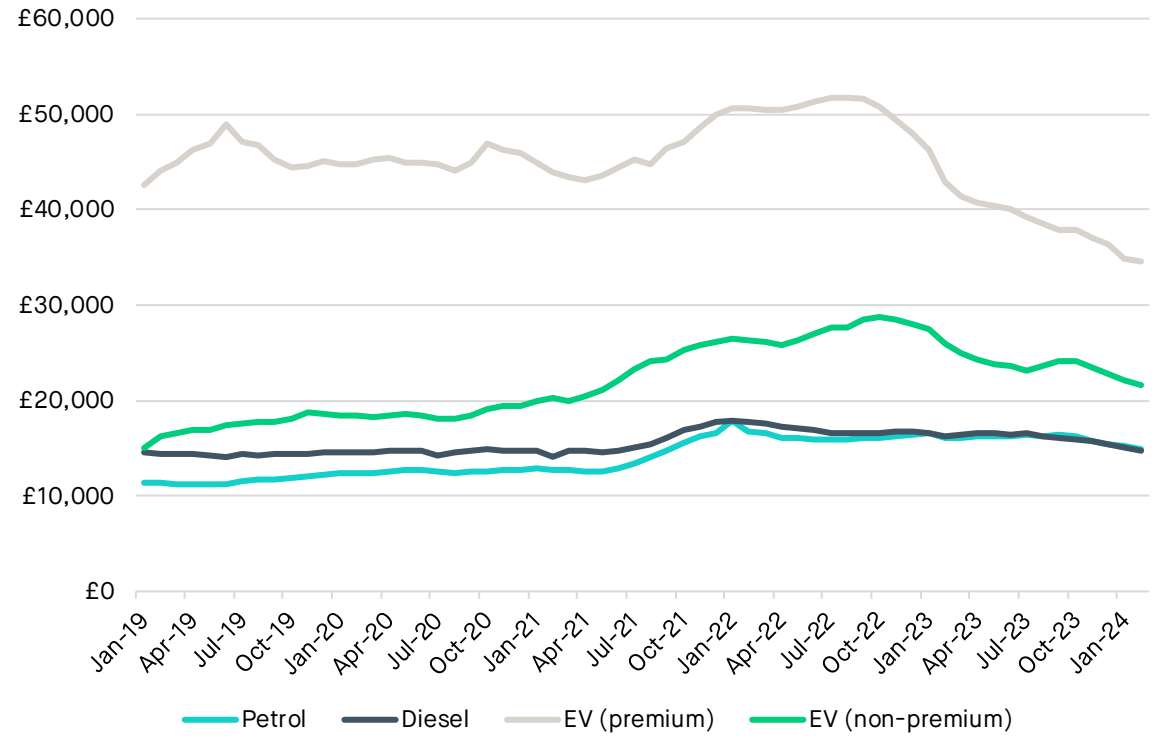
Despite these numbers, EVs are currently not as cheap as ICE cars. While households can still benefit from the operational savings of an EV which accrue over the course of a vehicle's lifetime, these disproportionately go to upper-income households who drive more. The expensive upfront costs are a major burden for those in transport poverty.

### How much more expensive are used electric vehicles?

Seven out of eight car sales in the UK are in the used market, and a majority of drivers buy from this sector. This is particularly true on the lower end of the income spectrum, which includes most households in transport poverty. As such, this section looks in particular at the used car market.

EVs have always been more expensive than petrol or diesel cars. Yet prior to 2019, used EVs were closer to price parity due to their poor quality and limited range caused by batteries with relatively low durability. One could buy a used EV, but it wouldn't last very long. As battery technology improved, so too did EV prices. It was not until 2022 that cost began falling. The price of used premium EVs, which include brands like Tesla, Lexus, and BMW, are now 45% below their peak in the Summer of 2022, yet continue to cost almost £20,000 more than petrol and diesel engines (Figure 5). However, non-premium EV models such as those manufactured by Ford, Kia, Nissan, and Vauxhall are now more available. Their price differential is also falling, and have recently decreased enough to bring EVs into reach for middle-income drivers.

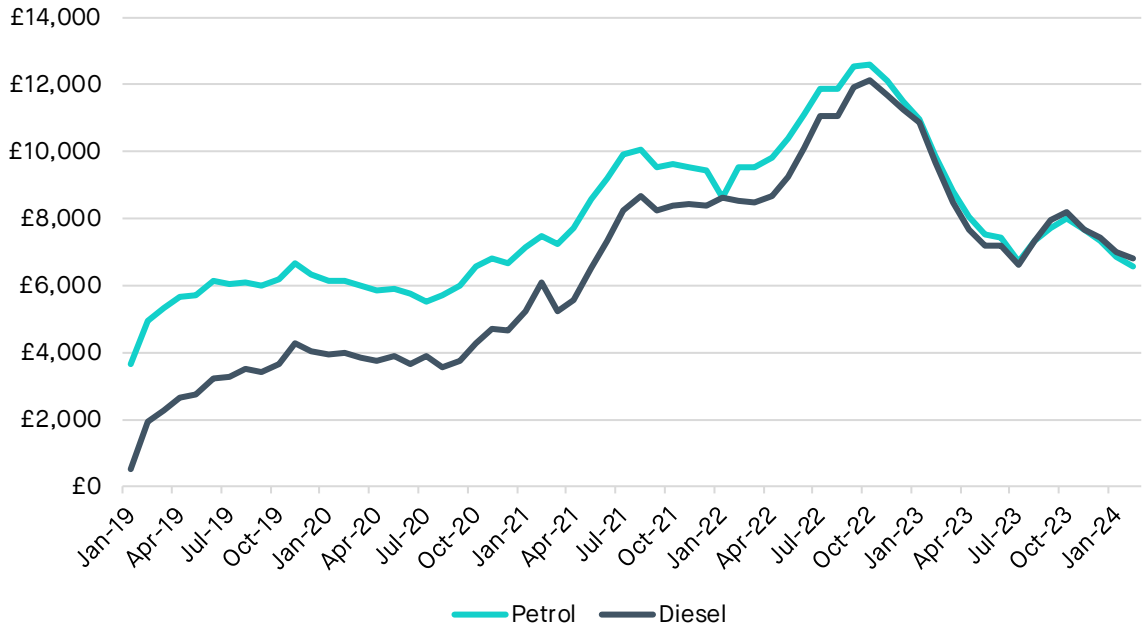
**Figure 6: Average price paid for used vehicles by fuel type over time**




*Source: Autotrader and SMF analysis*

Over the last 18 months, the extra cost associated with a non-premium EV in the used market has fallen almost in half (Figure 6). In October of 2022, a non-premium used EV cost £12,603 more than the average petrol car. Yet by February 2024 that number had fallen to £6,578.

**Figure 7***: Additional cost of used non-premium EVs compared to petrol and diesel vehicles*




*Source: Autotrader and SMF analysis*

Differences compared to diesel cars have seen a similar decline, falling from a high of £12,136 to £6,789. This leaves used EVs 44% more expensive than used petrol cars and 46% more expensive than used diesel cars.

## How does their higher purchase price impact EVs' potential to alleviate transport poverty?

Overall, the pivot to an EV still saves households considerable money over the vehicle's lifetime. However, the impact on transport poverty decreases significantly, particularly among households which are in the lowest income decile who may not be capable of paying the additional upfront costs.

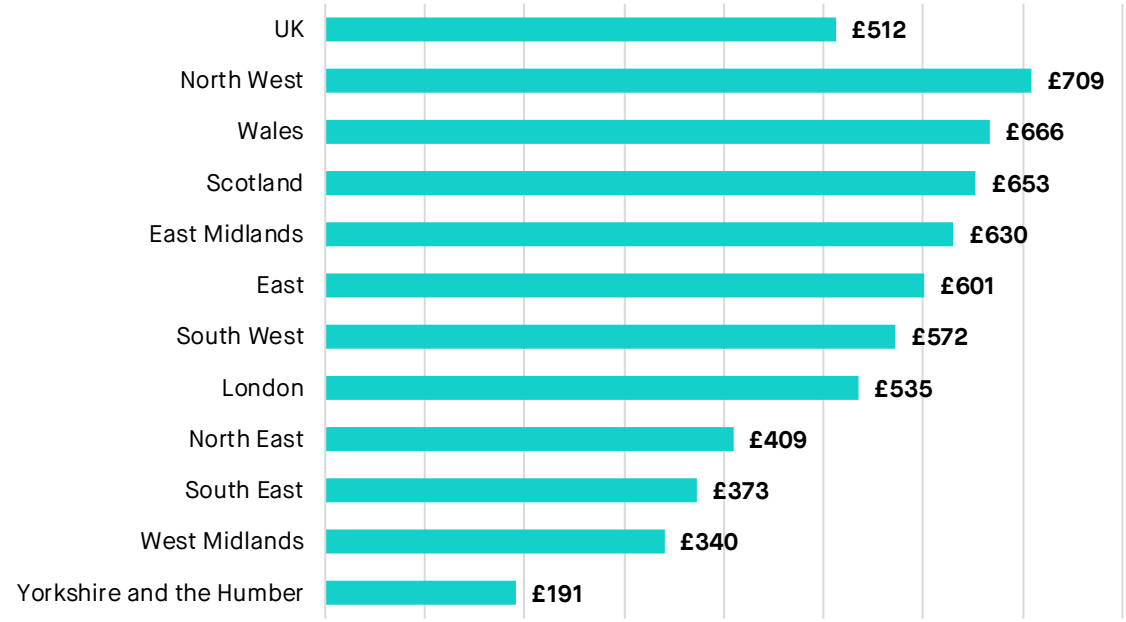
To model the effect on household budgets of a used EV purchase, we used real world market data. Used EVs are still £6,578 more expensive than petrol cars. That means a household with a five year loan, either through a hire purchase or personal contract purchase, will end up paying an additional £1,316 per year on their vehicle, rising to £1,447 when accounting for interest. Currently, this is slightly outweighed by the annual operational savings an average household can expect from an EV, but it is difficult not to empathise with a risk-averse household who choose not to invest in the vehicle. Here we focus on the used market as we assume those households facing transport poverty would be more likely to buy a car used than to buy new.

Overall, the additional burden of a used EV would without government support is unaffordable for most individuals in transport poverty. Across the UK, only the South

West and the East of England would see transport poverty decrease following a mass takeup of EVs. Everywhere else, transport poverty would either be unaffected or increase.

This is because low-income households tend to drive less and spend less on fuel, lowering the EV's operational savings. The bottom 20% of earners would save just £960 from the cheaper fuel and maintenance EVs can offer, yet spend an additional £1,447 annually on the higher upfront costs, leaving them with, on average, £487 in additional annual costs. This increases for households seeking to buy more than one EV.

**Figure 8: Net additional costs for households in lowest income quintile for first five years after buying an EV (additional upfront cost over five years – annual operational savings)**




*Source: NTS, LCFS, and SMF analysis*

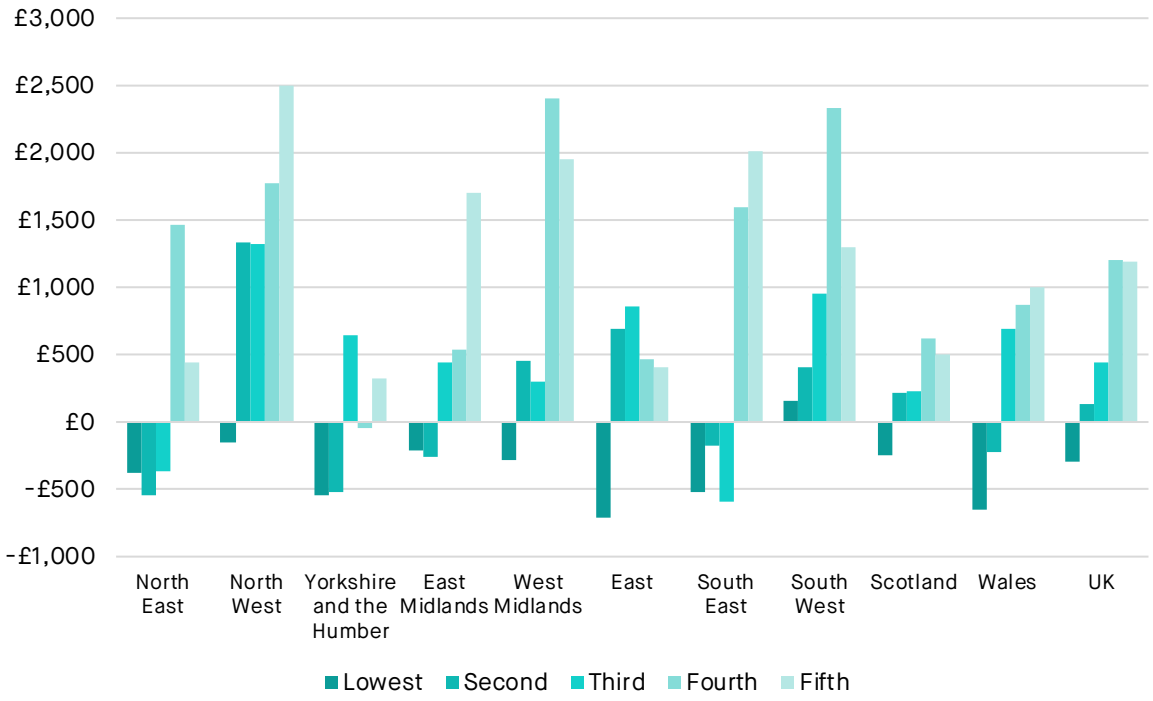
These are the same households most likely to be affected by transport poverty. Regionally, the only place where the average lowest quintile household would see any short-term gain from their EV purchase is the rural South West, which spends the most of any region on operational motoring expenses.

**Figure 9: Net benefits and costs for households in the lowest quintile for the first five years after buying an EV by region and rural-urban classification**


*Source: NTS, LCFS, and SMF analysis*

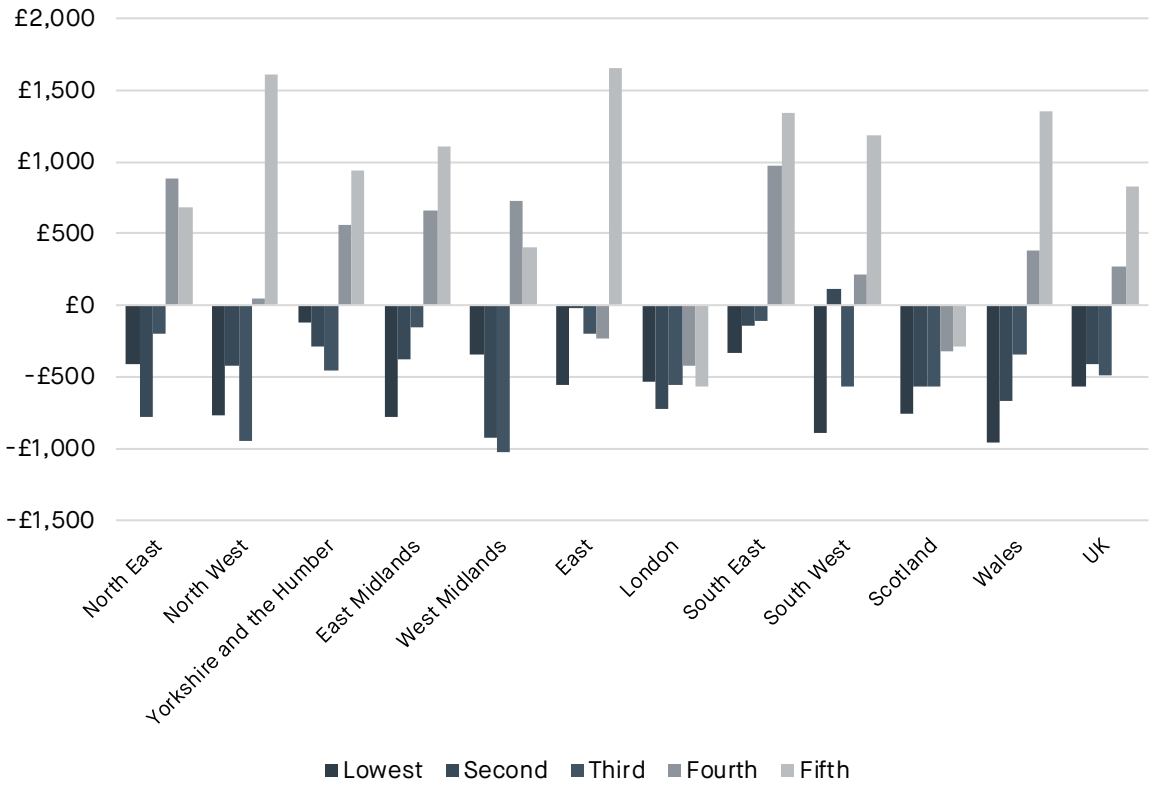
In the second poorest quintile, more rural households benefit, but it is not until the fourth income quintile that this is true across regions. Among urban households, it is not until the fourth income quintile that a majority benefit (Figure 9, Figure 10).

**Figure 10: Rural annual savings over first five years by quintile**




*Source: NTS, LCFS, and SMF analysis*

**Figure 11***: Urban annual savings over first five years by quintile*




*Source: NTS, LCFS, and SMF analysis*

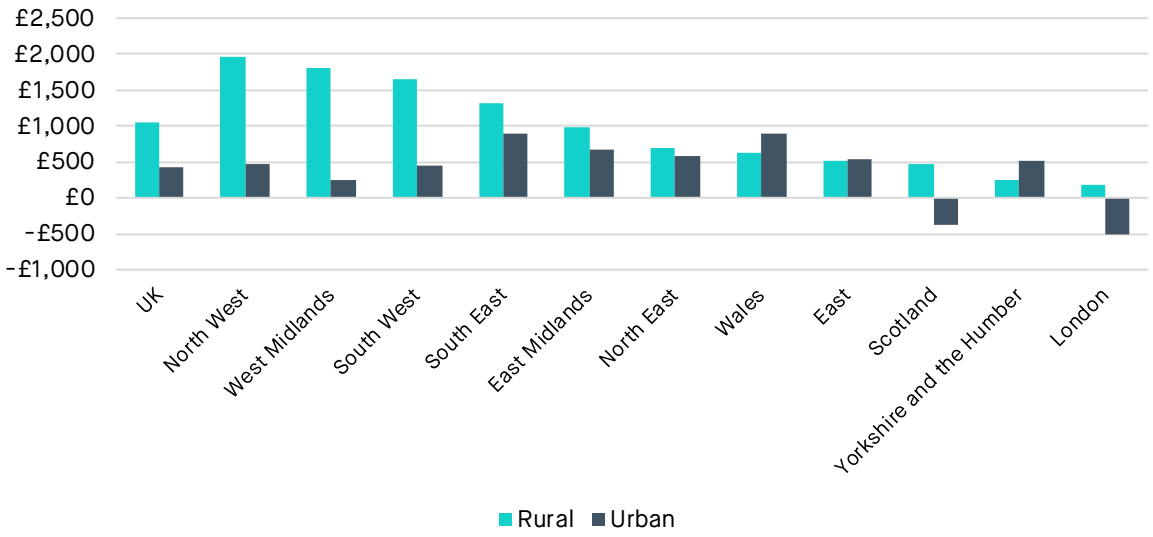
Once the vehicle loan is paid off, low-income households generate large returns through operational savings that would more than offset these additional costs. On average, a low-income household would need to drive an EV for less than three years after the loan is paid to make up the additional costs they carried throughout the loan, and would save thousands more over the course of an EV's average lifetime. Yet the prospect of carrying an additional burden over the first five years makes such a prospect unlikely. An Autotrader survey in May 2023 found that 56% of drivers listed the cost of EVs as a barrier to considering them - ranking it as the largest obstacle.[12]

Further, operational savings are largely the result of decreased fuel costs, which are unpredictable. If the price of oil decreases, or if energy rates increase, the amount of savings an EV driver enjoys might fall. Further, the concept of road pricing, which would introduce taxes on EV usage analogous to fuel duty, is often discussed in policy, with a House of Commons Transport Committee publishing an inquiry on the subject in 2022.[13] SMF has supported a move towards road pricing since 2021, particularly if charges could be set lower than fuel duty to incentivise EV-takeup while generating useful revenue for the exchequer.[14] Nonetheless, some EV buyers may be conscious of this threat. Additional costs associated with EVs, in particular chargepoint installation costs, add to their hesitation. 32% of drivers felt the exepense of installing a chargepoint was a barrier to consideration.[15]

Finally, there are other factors to consider. 47% of drivers feel there are not enough chargepoints, 38% worried they would not be able to drive as far, and 32% felt charging them would take too long. These factors exist outside of cost calculations, and will require other policies in the private and public sector to address them, including infrastructure investment and communications outreach.[16]

Of course, households that are not in poverty can also benefit from EV adoption. Higher income drivers who tend to drive more and spend more on operational costs see a net increase in savings from an EV purchase. Outside London, a rural household living above the median income would save £1,010 even during the first five years of car ownership, while urban drivers save £37. Within the top 50%, only urban drivers in Scotland and London would see costs increase during their loan due to lower rates of motoring among these demographics.

**Figure 12: Annual savings from EV ownership over first five years among top 50% of earners**




*Source: NTS, SHS, LCFS, SMF Analysis*

Too often, consumers' hesitancy to buy an EV is dismissed by policymakers and academics who explain it as drivers failing to understand the lifetime savings available through EVs. Oral evidence presented to the Environment and Climate Change Committee claimed, "Most people expect the headline price [of EVs] to be slightly higher, but it is really hard to do the maths on the overall cost to our lifestyle," also stating "that is really hard for consumers to work through."[17] These descriptions of consumer irrationality miss the very practical financial barriers to take-up among low-income households, who simply cannot afford the additional cost of an EV.

EVs are capable of decreasing transport poverty, but at current prices it is infeasible for households in poverty to access them, while those in poverty would likely see the least operational savings. Upfront costs are so much higher even among used EVs compared to ICE vehicles that they obstruct access to operational savings for those households who would see the highest benefit. Government intervention is required to bring savings to those households who need it most while decarbonising our transport sector. Many foreign countries are already attempting to do so.

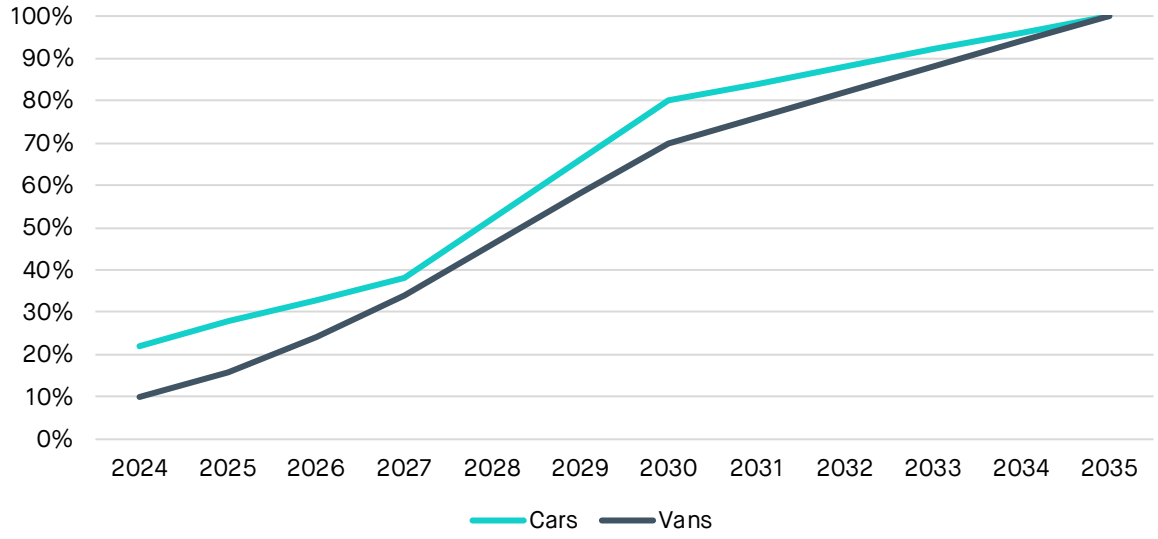
# CHAPTER FOUR – HOW DO OTHER COUNTRIES' EV POLICIES AFFECT TRANSPORT POVERTY?

In response to the high upfront cost of EVs, policymakers around the world have embarked on ambitious policies designed to increase access to EVs among lower income households. The first way in which governments have tried to make EVs more attractive than ICEs is by levying greater taxes on ICEs. Some go further, with the state directly intervening to subsidise EVs and thereby lower their cost. This chapter looks first at the role of regulation – a key policy area in Europe and the UK. It then moves on to evaluate the costs and benefits of various forms of financial subsidy, including direct grants, tax incentives, and social leasing.

## Regulation

Of the UK's various EV policies, the Zero Emissions Vehicle (ZEV) mandate is among its most ambitious. It demands that EVs make up an increasing proportion of new car sales, which by 2030 must reach 80% for cars and 70% for vans. Both are then projected to rise gradually to 100% by 2035, however targets after 2030 have not yet been passed in legislation. If automakers fail to meet those targets, they will be fine £15,000 for each car and £18,000 for each van. However, a system of credits and swaps gives automakers some flexibility. In years where they exceed targets, they can bank them for future years, or trade them with other companies who are falling short. In 2024 they can borrow for 75% of their annual target, falling to 25% in 2026.

**Figure 13: Zero Emissions Vehicle (ZEV) mandate targets**



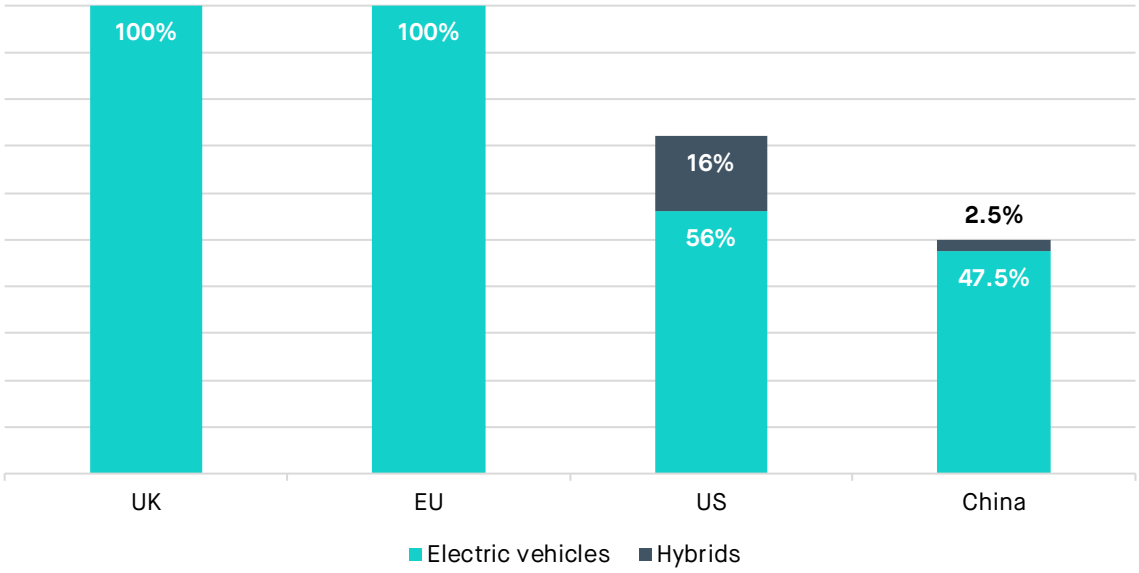

*Source: Department for Transport*

The ZEV mandate has three major benefits. The first is to ensure the transition of the UK's new vehicle fleet. The second is the indirect impact on the second-hand market. Those looking to buy a used EV can be assured of a reliable and increasing flow of EVs into the second-hand market, filtering through to affect the stock on the roads. Thirdly, neither of these directly cost the exchequer. By focussing on government regulation, the financial cost of the transition is borne by the market.

Auto manufacturers who have profited from selling ICE vehicles (and will continue to profit after the transition) must also innovate ways to make EVs accessible to an increasing proportion of consumers.

The policy is in line with other countries' schedules, though both the EU and US have targeted tailpipe emissions rather than mandate a change in the types of vehicles sold. While the EU will require all new cars sold in the region to be zero-emission vehicles starting in 2035, and the bloc allows each country to decide their own pace so long as the 2035 goal is met.[18] Additionally by 2030, the average emissions from new cars must drop by 55% and new vans must drop by 50% compared to 2021. Other countries have introduced alternative schedules, including the United States where cars must produce no more than 139 grams of $CO_2$ per mile in 2027, falling to 73 grams per mile in 2032. The Environmental Protection Agency projects this can be accomplished if 56% of new cars sold in the US by 2032 are EVs, and 16% are hybrids (Figure 13).[19] China has mandated that 50% of their vehicles be electric or hybrids by 2035, but recent developments in the sector have led to some groups now predicting this number to be as high as 80%.[20] The China Society of Automotive Engineers announced EVs would make up 95% of this total with hybrids making up 5%.[21]

**Figure 14: EVs as a proportion of vehicle sales by 2035 according to current regulations in major markets**




*Source: Department for Transport, European Parliament, Environmental Protection Agency, S&P Global, SMF analysis*

The UK and EU's plans ensure the flow of electric vehicles so long as they remain in place. However, there are fears that these mandates overestimate demand for EVs. In 2023, the share of electric cars sold in the UK stalled for the first time, falling from 16.6% to 16.5%. Automakers have blamed high prices, which have obstructed them from progressing beyond early adopters (generally wealthy households) and reaching middle-income earners and the mass market. However, until automakers are able to manufacture EVs at a lower cost, thereby allowing cheaper prices, expanding to this market is unlikely. Automakers are permitted to sell up to 75% below their targeted

EV share until 2026, so long as these deficits are "banked" and made up at a later date by selling above the targeted share.

Low demand is therefore incentivising these automakers to broaden public interest in EVs by making them more affordable, pushing beyond the current strategies which have up to now marketed to upper-income households with luxury cars. This has sped up the path to affordability in each jurisdiction. In the UK, price parity in cars is expected as soon as 2027 according to the DfT, and 2030 according to the CCC.[22] In the EU, parity is also expected between 2027 and 2030, while parity in the US is expected later, with estimates ranging up to 2035.[23]

## Subsidies

### Why subsidise?

So long as the ZEV mandate remains in place, the flow of EVs is secure over the next ten years. While concerns over that flow remain, distribution is the more pressing concern. EVs can be a powerful tool to decrease poverty and empower communities by increasing connectivity. One policymaker in the Netherlands described seeing EVs as "tools" to empower communities, saying, "We have to develop policies that give potential to people from lower or middle income groups, to provide them with the tools and the feeling that they can take part in this transition, that it's not just something for the wealthy." Yet without subsidies, the market will not be capable of making EVs accessible to those impoverished households for years to come, as it will only occur after price parity is reached when the new cars begin to filter through to the second-hand market. Further, the economic and social benefits which can accumulate over that time are startling, with over a million people potentially pulled out of poverty through the transport transition alone.

Secondly, there are also direct environmental benefits which would come from decarbonising low-income households earlier. Low-income households are the least likely to purchase an EV, while upper income households are more likely to buy EVs even without incentives. As discussed in Chapter Three, this is largely the result of financial practicalities, as high-income households save more on operational costs and therefor see net savings after their purchase. By intervening in the market for low-income households, policymakers can increase the number of EVs on the road, boosting EV demand by helping automakers reach previously inaccessible demographics.

Finally, there are political benefits to intervening. If working class households feel left behind by the transport transition, they may become the largest political threat to climate action. These responses have stymied environmental legislation in France under the 2018 *gilets jaunes* protests, in the Netherlands under their 2023 farmers' protests, and in the United States where Trump has increasingly claimed EV uptake runs counter to workers' interests.[24] Here in the UK, Rishi Sunak delayed major green commitments in government policy in 2023 by claiming that "it cannot be right for Westminster to impose such significant costs on working people." The Reform party has promised to put net zero at the heart of its electoral campaign, after Nigel Farage claimed EVs "Represent an idealistic dream that bears no relation to the hard realities

of life for the majority" and that "many – perhaps most – people cannot afford these products.[25]

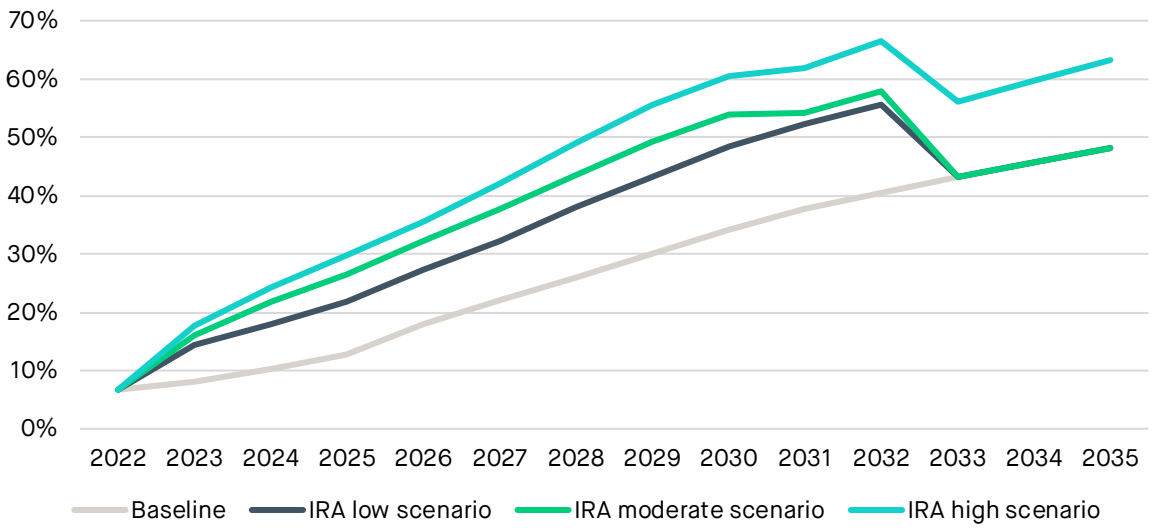
These campaigns tend to ignore the dangers of climate change, the economic hazards involved, and the long-term savings that are available to households with net zero products. Yet it would be equally perilous to ignore their legitimate complaints about green products being inaccessible to the working class. Despite the savings available over the course of their life, these products often demand high up-front costs which put them out of reach for those on low incomes, and imply to these households that net zero mandates go against their interests. Supporting low-income households through the pivot to EVs therefor appears not only economically and environmentally sensible, but politically imperative.

### Direct grants

To help close the costs gap between EVs and ICE vehicles, governments often provide grants. These are either provided directly to the distributor or as a tax deduction for the consumer, and are popular in North America as well as some countries in Europe.

The most famous is the $7,500 (£6000) tax incentive towards new EVs provided by the United States in its Inflation Reduction Act (IRA) of 2022. The incentive is provided to the consumer so long as the vehicle was manufactured in North America. A 2023 white paper from the International Council on Clean Transport predicted that after the IRA, EVs would make up between 22% and 30% of sales in the new car market by 2025, compared to just 13% without it. By 2030 the effects moderate slightly as prices approach parity, with between 48% and 61% take-up compared to a baseline of 34%. A later report in 2024 found that that eighteen months into the policy the reality was closest to the high scenario.[26]

**Figure 15: US light-duty EV sales share**




*Source: Peter Slowik et al. "Analysing the impact of the Inflation Reduction Act on electric vehicle uptake in the United States (International Council on Clean Transportation, 31 January 2023). Note that the original authors' inclusion of a "moderate with increased state advanced clean cars rule" scenario has been excluded.*

In the UK, the plug-in vehicle grant (PIVG) originally offered a discount of up to £5,000 on purchases of new plug-in cars and vans. According to a report commissioned by the Office for Zero Emission Vehicles (OZEV), this led to over 90,000 EV registrations between 2011 and 2021, out of a total 740,000 new plug in car registrations and 30,000 plug in van registrations during this time.[27] However its impact diluted over time as the value decreased in real terms and as price became a lesser obstacle relative to charge-point distribution. After various cuts to the grant, in 2022 the government cut it entirely for new cars, though it is still available to mopeds, motorcycles, vans, trucks, and wheelchair accessible vehicles.

### The case for direct grants

As those in transport poverty are more likely to buy a used vehicle, we look specifically at the prospect of grants in second-hand market. This would significantly narrow the gap in upfront costs between non-premium EVs and ICEs. Reinstating the PIVG at its original price for used vehicles would decrease this difference by over 75%, from £6,578 to £1,578.

Split over five years, the result would shrink the additional upfront cost of a used EV such that it would be smaller than the operational savings, providing net savings to EV purchasers. This would allow more households to afford an EV. Here we define "affordability" as the ability to make a purchase without going into poverty.

In total, a £5000 grant on used EVs would make EVs affordable to an additional 786,000 individuals, making up 80% of the number when EVs reach cost parity. The findings even apply to the lowest income quintile, which would save on average £642 per year. In this quintile, rural households who made use of the programme would save £1165 per year, almost double that of urban households at £661.

The benefits of a subsidy vary with its size. A subsidy worth the full additional cost of an EV would put it on price parity with ICEs, therefore allowing nearly one million people to afford an EV who would otherwise be pushed into poverty by the purchase, while a subsidy worth just £2,000 would have the potential to increase affordability to 140,000 individuals. One worth just £1,000 would not compensate on the low end of the spectrum for the additional cost of the EV, and therefore would not be taken up by those households in transport poverty. Overall, a grant of at least £1,250 in the used car market would be needed to outweigh the upfront costs and for transport poverty to fall.

However, these numbers should be taken cautiously. Because lower-income households would struggle more with the price, it is not certain a subsidy would convince them to switch to an EV. Defining "affordable" as being able to purchase an EV without being pushed below the poverty line sets a low bar, and many households on the low end of the income spectrum will likely still opt for a petrol car if it is cheaper than an EV. Further, even if a subsidy were provided for £6578, which would account for the full average additional cost of an EV, there are still more ICEs available at lower prices. The cheapest EVs in the used market today cost between

£1700 and £2500.[ii] The cheapest petrol cars cost £190 and £300. This means that even if policymakers subsidised EVs to be, on average, the same price as ICEs, low-income consumers would be able to find cheaper ICE alternatives, decreasing the impact of the grant among households in transport poverty.

### The case against direct grants

There are three problems with subsidies. First, their impact on EV take up is relatively modest, certainly relative to their cost. The OZEV report found that the price decreases caused by the plug in car grant (PICG) between 2011 and 2021 increased takeup by 90,000, out of a total of 740,000 plug-in cars newly registered in that time, pushing new EV registrations 14% higher than they otherwise would have been. While this does not include the indirect network effects of the grant to stimulate demand by socialising the concept of EVs, it does indicate a fundamental concern with the EV grants. Many people who use these grants would have bought an EV anyway, or would have bought them if the grant provided less money, meaning a portion of the grant is wasted. That proportion appears high: In the ten years from 2011 to 2021, spending on the plug-in car grant amounted to £1.36 billion. This means although the grant was only worth £5,000, OZEV was spending £15,100 for every additional EV on the road.

Secondly, subsidies may fail to address EV anxieties. The effectiveness of the grant in stimulating takeup decreased over time as price became a less important factor among early adopters relative to chargepoint avaiability and range anxiety. It is therefore unlikely that it would today have as high an impact as the 13% increase in take-up stimulated between 2011 and 2021. Used EVs reached record sales in 2023, with 119,000 vehicles sold. If the effect of such a grant today were comparable to the PICG, it would only increase sales by 16,477 vehicles, and would cost nearly £600 million annually before accounting for any stimulated demand. Assuming each of these purchases means an additional ICE vehicle off the road, such a grant would only extract 24,716 tonnes of CO2 from UK emissions annually.[iii] While any individual switching from an ICE to an EV is beneficial, it is unclear whether subsidies are cost-effective. The PIVG (including grants for cars and other vehicles) cost £1.5 billion between 2011 and 2021, and that money may have been more effectively spent if it had been used to decarbonise other sectors.[28] Given the questionable ability of the grant to increase take-up, it is uncertain such an investment would be decent value for money.

Lastly, direct grants provided by the government tend to be untargeted. This led to a high proportion going to high-income households who were more likely to buy an EV without the grants, meaning in a time of austerity, government money was flowing to those with the least need. Further, based on their existing driving habits, most motorists in the upper half of the income spectrum would see net savings on their transport expenditure even while they are paying off their car loan, because they tend to drive more and therefore benefit more from the operational savings an EV

[ii] Includes the five lowest priced used cars found on Autotrader as of April 2024

[iii] Based on Octopus Energy which estimates switching to an EV saves 1.5 tonnes of carbon per year

offers. Households could also use the grant to buy multiple vehicles, which would be useful from an environmental perspective but would result in a poor distribution of resources by adding to the number of cars on the road. This was partly because the policy was designed to motivate uptake in the new market and encourage the flow of EVs onto UK roads. Today, the ZEV mandate means that is unnecessary, and if it were repeated, it would likely mean a large amount of cash flowing from the exchequer to households who are not in need.

Targeting future grants would solve these problems, but create others. If such a grant were targeted to the lower half of the income spectrum, there would likely be lower take-up, particularly among those households most at risk of transport poverty. Further, as low-income drivers tend to drive less, the effect on greenhouse gas emissions would also decrease. Finally, there is an industrial problem to targeting, as industry is likely to continue focussing on luxury cars.

Some have called for PIVG to be re-instated at its original £5,000 price for all EVs in order to boost demand and increase affordability. However, the appeal of the grant to boost new EV car sales as a share of total stock has fallen with the announcement of the ZEV mandate, which appears to accomplish this goal at no cost to the exchequer. Further, as prices have fallen, EV costs among wealthy buyers is not the issue it once was. While the grant would likely increase sales to some degree, it is questionable whether the policy provides good value for money, especially if alternatives are available that can put more EVs on the road at lower cost.

## Tax incentives

### VAT, VED, and Vehicle First Registration Fees

There are two forms of tax incentives for EVs. The first increase taxes on ICE vehicles. For instance, ICE drivers may pay additional charges on their annual vehicle tax, or to drive in urban centres. This decreases price discrepancies by increasing the cost of ICEs. Alternatively, tax breaks may be offered for EVs, such as by eliminating VAT. Purchase tax subsidies behave similarly to direct grants in that they provide direct relief for consumers at the time of the purchase.

In the UK, VAT is currently levied on used EVs, adding 20% to the purchase price. This is worth, on average, £1,316 for non-premium used EVs. This is in addition to a Vehicle First Registration Fee of £55. Beginning in April 2025, EVs will also be charged Vehicle Excise Duty, also known as the ‘car tax’. The first year of payments are based on carbon emissions, and EVs will be charged the lowest rate among petrol and diesel cars, currently set at £10. Following this, they’ll move to the standard annual rate currently set at £190 per year. EVs with a list price of over £40,000 will also need to pay the expensive car supplement, currently set at £600 per year, but this will not apply to non-premium vehicles.

Due to their higher tax regimes, Northern European countries have made better use of tax incentives that levy additional taxes on ICE vehicles. Norway, where EVs now represent over 90% of car sales, for years has taxed ICE vehicle purchases heavily while lowering or eliminating multiple taxes on EVs. EV tax advantages include the elimination of VAT for the purchase, and lower taxes for the weight of the car, taxes

on the engine size, and emissions taxes. "It makes the car cheaper," one Norwegian policy advisor explained, "a lot, a lot cheaper." Norway's registration tax was introduced in 2007 based on the car's carbon intensity, and is extremely expensive, often reaching 100% to 200% of the vehicle's production price.[29] Later studies showed that the elastic effect of the carbon price on car prices was -0.5, meaning if the tax is adjusted such that it makes the average car price 10% more expensive, the average car will see a 5% reduction in carbon emissions.[30] This is partly accomplished by making larger and heavier cars more efficient while also shifting demand towards smaller and more efficient vehicles. Other countries have introduced differential registration taxes for EVs, including the Netherlands, Iceland, Finland, Denmark, and parts of Belgium. VAT has been made free or reduced relative to ICEs in Norway, Iceland, China, Korea, and parts of Australia.[31]

Other countries have manipulated a vehicle's annual taxes, akin to the UK's VED. Denmark, for instance, uses its green vehicle tax and CO2 tax charge ICE car owners based on their vehicle's fuel efficiency. Annually this can reach DKK 25,640, or GBP £2,950.[32] EVs, however, are classed in the lowest tax band, charged just DKK 740 or £85 per year. Other countries which privilege EVs over ICEs in their annual taxation include Germany, Austria, Belgium, the Netherlands, China and Japan. This is largely due to taxation based on a vehicle's CO2 emissions intensity.[33] Some municipalities may levy charges on ICEs in addition to national taxes, akin to London's Ultra-Low Emissions Zone (ULEZ), including Stockholm and Paris. Finally, some countries and cities offer additional incentives which may include free parking, access to bus lanes, and exemption from tolls.

Many of these countries are able to offer high discounts on EVs relative to ICEs due to pre-existing high taxes on ICEs. Countries like Germany, Norway, the Netherlands, Denmark, and Belgium tax ICEs sufficiently that they can increase demand for EVs among motorists hoping to escape from registration fees and annual car ownership taxes, without forcing the government to pay the price of tax subsidies.

While this is useful in that it decreases greenhouse gas emissions at minimal cost to the exchequer, it depends on political willingness to raise taxes on ICE ownership. High pre-existing taxes in Europe has allowed policymakers to leverage the tax structure in favour of the transition. As described by a Danish policymaker, "In Denmark we have always had high taxes on cars. And that is why we don't have any subsidies for EVs, we just have lower taxes...For instance at the moment you basically don't pay any registration tax on electric vehicles, but you pay it on fossil cars."

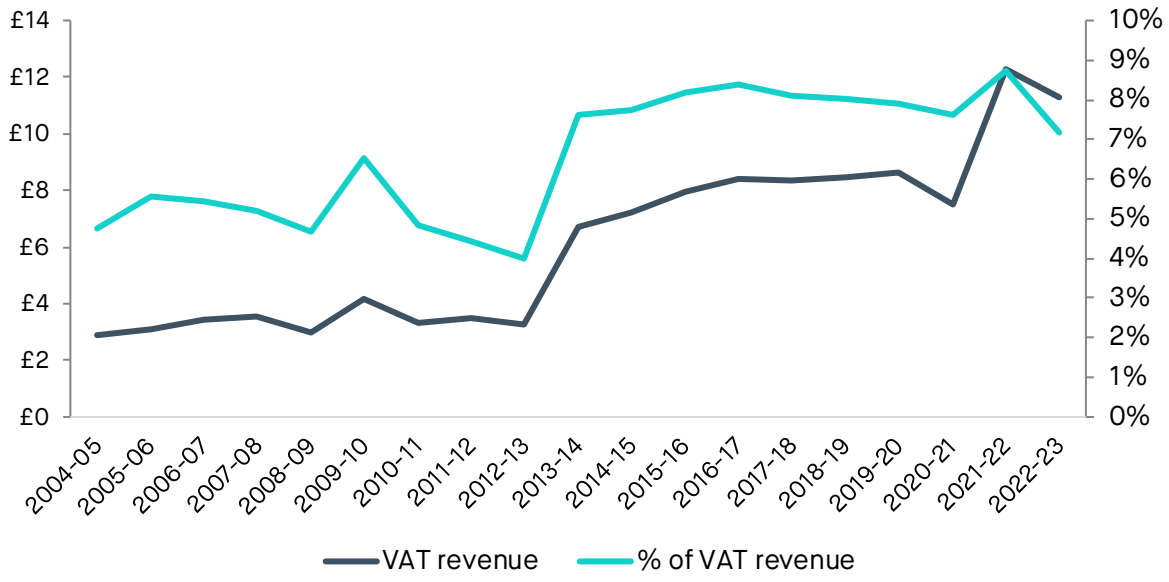
Compared to Northern European countries, Britain has mild taxes on ICE ownership. Most drivers pay just £200 per year on VED, with the exception of those who drive inside London's ultra-low emissions zone. This means an ICE driver in the UK will be less motivated by tax cuts. Even VAT, 20% in Britain, is set lower here than it is in those countries with more aggressive charges on ICEs like Norway, Denmark, and the Netherlands. Based on European studies, decreasing average car emissions by 1% through price increases would require increasing VAT by two percentage points, adding £500 to the price of a new vehicle. Despite its powerful impact on emissions,

Britain's political context means none of the major parties are likely to make such a move.

Lowering taxes on EVs would be more palatable politically but would likely have more diluted effects. For instance, VAT is the only vehicle tax which has a material impact on transport poverty, increasing used car prices from £17,060 to £21,326. Its elimination in European countries has had two advantages. Firstly, it increases the proportion of EVs on the road. Yet this is redundant when set in the context of the UK's ZEV Mandate. Secondly, it decreases prices, making EVs more accessible. Its elimination in the UK would be equivalent to a £4,000 subsidy, increasing access to over 500,000 individuals. However, these sales are not guaranteed, and previous direct grants worth more money only increased sales by 13%.

Additionally, eliminating VAT would be costly, as VAT on motor vehicles is currently worth over £11 billion to the exchequer. The cost to the exchequer of eliminating VAT on EVs would increase at the same time EVs grow as a proportion of sales, and it is unclear whether this represents value for money. The arguments against the tax cut are therefore similar to those against subsidies, as the high expense may not be justified by the relatively low increase in EV sales which would result. At its worst, the programme may encounter the same fate as Germany's subsidies, which were suddenly halted after a court ruling demanded the state balance the budget.

**Figure 16: VAT revenue on wholesale and retail trade of motor vehicles as a % of total and in £000s[iv]**




*Source: HMRC*[34]

Finally, eliminating VAT would effectively mean the government is using revenue to subsidise car ownership, potentially increasing the number of vehicles on the road,

[iv] Includes revenue from repair of motor vehicles

rather than shifting modes to greener choices including public transport and active travel.

### Fuel duty and road pricing

Unlike purchase and ownership taxes, the UK does levy a valuable tax break to EVs in the form of fuel duty. Other countries including Singapore and Germany have taxes on driving which are based on road usage, that can therefore be applied to EVs. Because the UK charges motorists at the pump through their purchases of petrol and diesel, EV drivers are currently exempt. Given the cost of the tax to the average household, the subsidy is worth over £526 every year to EV drivers. The charge functions similarly to an emissions tax as seen in Europe which bases rates on fuel efficiency, but combines this with actual fuel usage.

In total, the exchequer received £25 billion in fuel duty receipts last year.[35] But as EVs take up an increasing share of the road, these funds will dry up. This will incentivise government to levy some form of taxes on EVs. This is partly based on financial arguments, but there is also a question of fairness: although EVs do not cost British households in their tailpipe emissions, there are still costs associated with their road usage, including construction, maintenance, land costs, policing, signage, traffic lights, small particle emissions, and the opportunity cost of the space the vehicles take up.

Road pricing has been floated across the political spectrum as a way to increase the Treasury's revenue, and would apply to EVs alongside ICE vehicles. Road pricing would charge EV owners based on the distance their vehicle is driven over the course of a year, potentially through annual checks of the vehicle's milometer. The timing of the levy's introduction is critical, as it must avoid disincentivising electric vehicle take-up, but SMF has explored ways to do so in its 2022 report "Miles Ahead."[36]

If road pricing is introduced, EV owners will lose a portion of the benefits they are gaining from what is effectively an existing tax break on fuel duty. How much, however, depends on how the policy is designed, and there are forms it could take which would not involve paying the full £526. Some forms of hypothetical road pricing would privilege EV drivers by charging them at a lesser rate than ICE drivers. Other forms may allow a certain number of miles to be driven for free each year to allow for essential driving while disincentivising unnecessary car travel. By directly paying the fee to the government rather than through fuel distributors, it is even possible that the fee could make allowances for low-income drivers.

### Social leasing

Direct subsidies and tax incentives seek to increase the proportion of EVs on the road by effectively decreasing the price difference between these and ICEs. However, these are expensive, as many drivers who use the programme may have bought an EV anyway or would have done so for less subsidy. In total, OZEV's £5,000 grant for plug-in cars cost £1.36bn, increasing the amount of electric cars by 90,000, effectively spending over £15,000 per car. To ensure takeup, these subsidies are

often untargeted. Tax incentives work the same way, and may cost more than emerging alternatives.

France's social leasing programme aims to change that. Here, the government subsidises EV leases for low-income households such that they can lease an EV for on average €100 per month.[37] The household makes an application to the government which prioritises them based on their income, annual mileage, and distance from their workplace. It then signs a trilateral agreement with the household and a private leasing company such that the household pays €50 to €150 per month depending on the model and the government pays the difference between this and the market rate.[38] Lease agreements are typically signed for an initial three year term, renewable once for another three years. At the end of the contract the household has the ability to give the vehicle back to the leasing company or purchase it at its market rate minus the payments already paid during the lease. This means households also benefit from the depreciation the car goes through over the first three years, effectively allowing them to buy a used car with their savings. Low-income households can lease a car for less than they would otherwise spend on an ICE vehicle, while also benefiting from operational savings.

The scheme attracted enormous demand. Applications opened in 2024, and immediately provoked more interest than policymakers had expected. Facing high demand, eligibility was doubled from 25,000 to 50,000, before policymakers announced the programme was closed for new applications until the next year. The government claims it received more than 90,000 applications before the end of January. A French policymaker claimed this success "showed that the French are ready for EVs if they are affordable."

Supply constraints were the primary reason for he programme's temporary closure. Aside from being a battery electric vehicle, the socially leased EV must meet two additional qualifactions to qualify for the programme. Firstly, it must be manufactured in Europe in order to boost domestic manufacturing. Secondly, the vehicle must cost less than €47,000 new, though most cars made available by the French ministry have been cheaper. The latter stipulation is intended to minimise costs for the state while also increasing manufacturers' incentive to build more affordable EVs. While this has limited the availability of EVs for the programme, it also increases pressure on France's automanufacturers to design and build more EVs than they otherwise would, fulfiling the policy's missions to decrease the proportion of ICEs on the road and increase investment in the auto sector. The same French policymaker said the second success story of social leasing, after the high take-up, was the "signal to manufacturers to produce smaller cars." As French minister of industry Roland Lescure told reporters, "[the scheme] is a victim of its success. It all happened quicker than we thought. We'll perhaps slow down a bit to give the French manufacturers some time and then, accelerate, accelerate, accelerate."[39]

In contrast to subsidies and tax breaks, a high proportion of contracts signed through France's social leasing programme will go to a household that would have otherwise used an ICE. Low-income households are the least likely to purchase or lease an EV due to the high costs relative to ICE vehicles. By providing leases to these

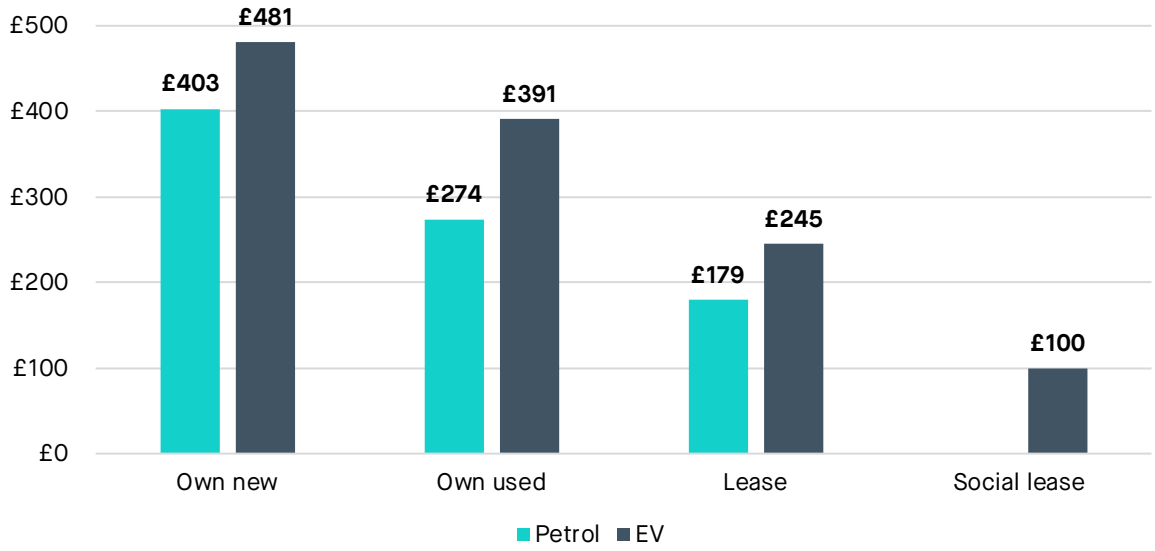
households, policymakers can ensure good value for money as the EVs leased in the programme will replace the ICEs the households would likely have otherwise used. At the same time, it will pull households out of poverty by decreasing their monthly payments on upfront costs and providing them with operational savings.

# CHAPTER FIVE – RECOMMENDATIONS

## Introduce social leasing for electric vehicles at £100 per month for low-income consumers

In the UK, social leasing could make EVs affordable for hundreds of thousands more households. Currently, the cheapest ten models available for leases range from £213 to £269 per month averaging £245.[v] Petrol cars, in contrast, range from £151 to £200 per month, averaging £179. [vi] This means household can expect to pay an additional £800 annually just to lease an EV, and pay nearly as much for it over five years as it would cost to buy a used petrol car. Figure 17 compares this to new and used monthly payments assuming the upfront price[vii] comes with a 10% interest rate over five years (the standard agreement in the UK).

**Figure 17: Monthly cost of vehicle payments based on a 10% interest rate over five years**




*Source: Autotrader, Moneyshake, Car Magazine, SMF analysis*

Through social leasing, the government would subsidise EV leases for eligible households such that they would not pay more than £100 per month, thereby making them more financially appealing than petrol cars. Subsidising leases for £100 per month rather than, say, £179 to match petrol vehicles, would increase the incentive to use an EV, have a stronger effect decreasing transport poverty, and would resonate stronger in the public consciousness.

[v] These include the Nissan Leaf, the GWM Ora/03, the Vauxhall Mokka, the Cupra Born, the Peugeot 208, the Vauxhall Astra, the Vauxhall Corsa, the Volkswagen UP, the MG Motor UK / Zs, and the Mazda MX-30 as seen on Moneyshake.com in April 2024

[vi] These include the Hyundai I10, the Seat Ibiza, the Fiat 500, the Vauxhall Corsa, the Renault Clio, the Peugeot 208, the Suzuki Swift, the Suzuki Vitara, the Toyota Aygo X, and the Citroen C3 as seen on Moneyshake.com in April 2024.

[vii] New car prices were based on the ten cheapest four-seat electric vehicles in the UK in 2023 according to Car Magazine

Subsidising these households would at maximum cost £145 per month per household, or £1,740 per year. However, over time, this cost will fall in line with EV prices. Following the French example, agreements would be made over three years. Following the contracts' expiry after three years, households could renew the lease for one more term, purchase the car as a used vehicle subtracting the payments already made, or relinquish it back to the leasing company.

Eligible households would not only benefit from the upfront costs subsidised by the government, but the operational savings of EV usage. The number pulled out of poverty as a result of social leasing is difficult to determine as it depends on eligibility, uptake, and government investment. However, based on existing motoring expenses, over 500,000 people are currently near enough to the poverty line that they could be pulled out of poverty as a result of social leasing. On average, a household in the lowest quinitle would save almost £1,800 per year on social leasing an EV compared to leasing a petrol vehicle, with £948 in leasing savings unlocking £833 in operational savings. They would save £2,921 annually compared to buying for a used vehicle.

Secondly, expanding social leasing could come with powerful benefits for the green transition. Although low-income drivers tend to drive less, they are also the least likely to use an EV. By targeting funds to this demographic, government can directly stimulate demand for new vehicles to be purchased by leasing companies. In France, social leasing has created a surge in EV demand, increasing EV sales by up to 50,000, with manufacturers racing to provide more models at lower prices.

The Plug-In Car Grant acted as a subsidy, which cost £15,100 for every additional EV on the road. This was primarily because the grant went towards a demographic who was already likely to buy an EV without it. Social leasing, in contrast, would provide vehicles to the demographic least likely to use an EV, thereby maximising the impact of the policy on the green transition.

An additional 100,000 electric vehicles on the road would allow the country to reach its 2024 target of 22% car sales in 2024, while decreasing carbon emissions by 1.5 million tonnes per year.[40] In the context of slowing EV demand and frustration with high prices, social leasing could ensure the UK continues to meet its ZEV mandate targets. As low-income drivers tend to drive fewer miles per year, the impact on carbon emissions may decrease. In total, the average household in the bottom income decile drives 60% as many miles as the average.[41] Yet even accounting for this discrepency, multiplying carbon reductions by 60% would reduce impact to 900,000 tonnes per year, over 36 times the impact of a £5,000 grant. Transport emissions from the cars and taxis would fall by between 1.6% and 2.6%.[42]

Finally, social leasing would allow Britain's policymakers to adapt to the country's changing car use dynamics. In 2021 ACL Automotive, a car leasing company, estimated 1.6 million people in the UK now lease their car, meaning between 20% and 30% of new cars are now leased rather than purchased.[43] Changing attitudes to ownership, particularly among young drivers, has also impacted this trend. If a household wishes to continue leasing, they may give up their contract at the end of its term, and if they wish to purchase the car at a used price, they may do so minus

the costs they and the government already comitted to it. Total payments after three years would equal £8,820, combining household and government payments.

Based on existing prices, subsidising 100,000 EVs would cost £174 million per year. Assuming leases were provided in three year terms and an additional 100,000 vehicles were provided each year, the programme costs would increase to £348 million in the second year before reaching a maximum cost of £522 million in the third year. At this point, programme costs would level out as the original leases would expire and be replaced by new ones.

It is difficult to calculate how many people would be brought out of transport poverty as it is dependent on which households are eligible. However, if policymakers targeted low-income households in areas with high transport poverty, a vast majority of benefiting households would be in transport poverty.

## Prioritise households in transport poverty

### French policy

France prioritises households for social leasing based on three key categories. Firstly, an income ceiling is enforced such that households eligible cannot have a taxable income per household unit (one per adult, half per child) no greater than €15,400 (£13,220). For instance, a household with two adults and one child would require an income of no more than €38,500 (€15,400 + €15,400 + €7700). This is restrictive, as the threshold excludes some in the bottom quintile of earners, which ends at €16,500 (£14,165). However, experience with the popularity of the programme has galvanised staffers to expand eligibility next year, encouraging more applications from across the bottom half of the income spectrum. This has two benefits. The first is the impact on carbon emissions. Because social leasing has proven so popular, it can more effectively decrease carbon emissions by targetting those households with higher incomes who tend to drive more. The second is electoral. Politicians feel that more households which can benefit will increase support for both the programme and their party. Households closer to the median income also tend to be swing voters, increasing the value of their support.

Other requirements are geographic. Households must travel more than 8,000km every year by car. As the average French person drove over 12,000km. this is not a high bar, but it does dissuade those who may not need a car from driving.[44] Importantly, it also prevents those who currently do not drive from accessing the programme. This is designed so that modal shift towards greener public transport modes might still be encouraged while also speeding the shift towards EVs. Finally, households must live at least 15km from their workplace. This was again meant to ensure that social leasing vehicles went to those households most in need, while also maximising the impact of the policy on carbon emissions. In total, the French government estimates that between four and five million people are currently eligible for social leasing.

### Financial eligibility

When prioritising who is eligible for social leasing, there is a tradeoff between impacts on transport poverty and the impacts on carbon emissions and electoral support. By limiting eligibility, policymakers could target support to those households in poverty, but at the same time would decrease the impact on carbon emissions as these households tend to drive less, and decrease the breadth of electoral support the policy might create.

As such, we recommend a phased approach. To provide social leasing for 100,000 vehicles, the government should begin by allowing applications from those households making up to £8,000 annually per household unit (one per adult, half per child). For instance a family with two parents and three children reliant on a £25,000 wage would be eligible (with household original income being less than £8,000 + £8,000 + £4,000 + £4,000 + £4,000 equalling £28,000). This group would have priority access to the first 50,000 vehicles.

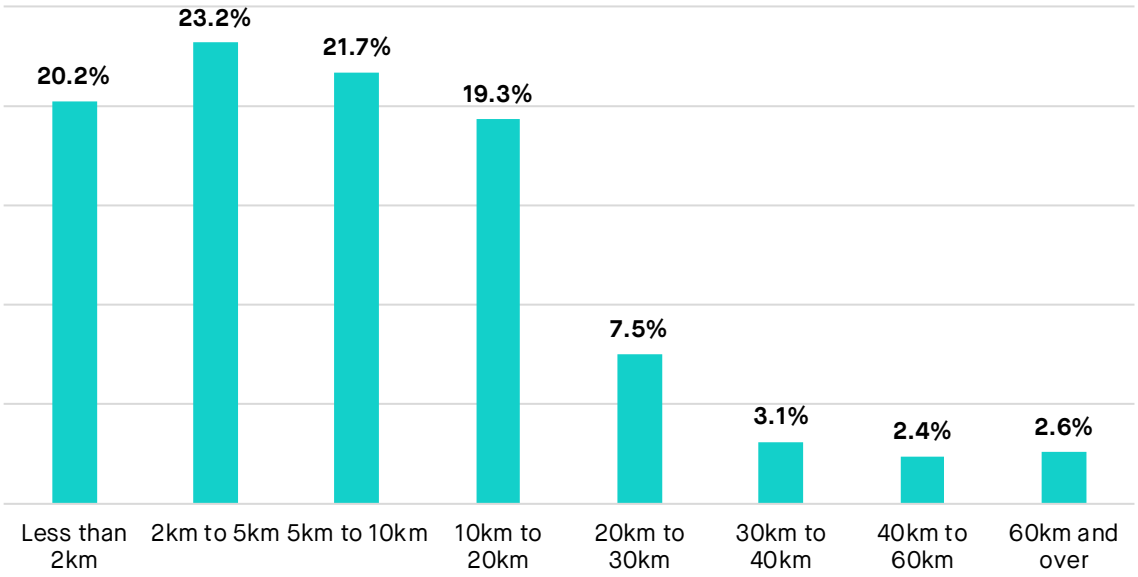
Following this stage policymakers could evaluate the next step based on demand. If they successfully attracted attention and demand among the bottom quartile in the first phase, as was the case in France, they may wish to continue offering exclusively to this group. However, if demand struggled or slowed, eligibility could be expanded to households making up to £18,000 per unit such that the following 50,000 vehicles are available to the bottom half of the income spectrum.

### Geographic eligibility

Geographically, government should prioritise households in areas with high transport poverty. This would include the North, the Midlands, Scotland, and Wales. To begin, a certain proportion of vehicles should be earmarked for these regions.

While the French Government limited eligible households to those which are more than 15km from their workplace, the same policy does not easily translate to the British context as we tend to commute shorter distances. In England and Wales, the same rule would only cover between 15% and 35% of commuting workers. As such, we recommend lowering this floor to 5km (or three miles), which would cover 56% of commuting workers (Figure 18). These details could be confirmed by employee pay stubs, or policymakers could rely on self reports.

**Figure 18: Distance travelled to work as a percentage of employed commuting adults (England and Wales)**[viii]




*Source: Census 2021*

Given that vehicle odometers are recorded at each annual MOT check, checking annual mileage would be simple. The average annual distance per car is around 11,000 km, slightly less than the French who travel 12,000 km. As such, minimum distance for eligibility should be decreased from 8,000 km to 6,000 km, with the option for policymakers to raise this threshold the following year depending on demand.

By checking annual distance, policymakers would also be able to ensure the social leasing policy is not adding new cars to the road. While EVs emit far less emissions than ICE vehicles, they are still not as green as public transport. As such, while we increase the pivot to EVs, we should be maintaining or reducing the number of cars on the road. The odometer check would allow policymakers to ensure this by limiting eligibility to those households who are replacing their existing car.

Following in France's footsteps, the UK can pull hundreds of thousands out of poverty at the same time we decarbonise our transport sector, and this can be done at less cost to the exchequer than grants or tax subsidies. While no single policy can end transport poverty for all, this would represent a massive step forward in how we move, entrenching more equitable and efficient forms of transit. Further investments will be required, such as in charging infrastructure and public transport, but by introducing social leasing, policymakers can decarbonise personal vehicles in a way that is equitable, environmental, and cost-effective.

[viii] Excludes those working from home, at no fixed place, or outside the UK

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