What is the evidence on car ownership and use in the UK?

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About the centre

The Production and Consumption Transformations Centre (PACT) brings together researchers, policymakers, businesses and civil society to understand the wider economic, social and political systems that drive emissions.

By developing practical, evidence-based solutions, the centre supports a transition that not only cuts emissions, but also protects jobs, shares costs and benefits fairly, and builds a more resilient, sustainable economy

About the report

This briefing examines evidence on patterns of car ownership and usage in the UK, including recent trends, purchasing behaviours across different demographic groups, and the broader context of vehicle consumption. Particular focus is given to issues surrounding car ownership, as well as the increasing size and weight of vehicles.

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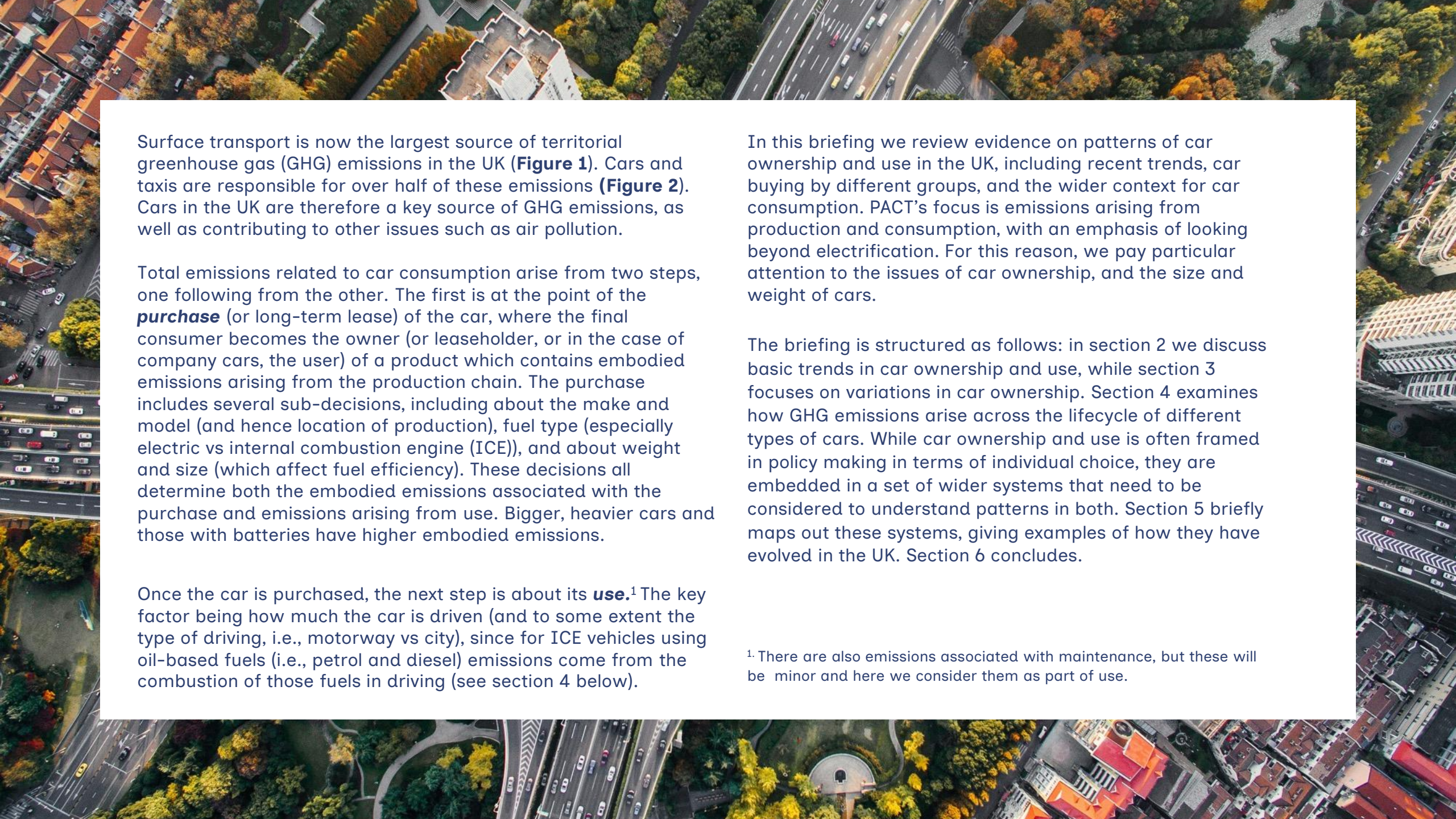
Introduction



Surface transport is now the largest source of territorial greenhouse gas (GHG) emissions in the UK (**Figure 1**). Cars and taxis are responsible for over half of these emissions **(Figure 2**). Cars in the UK are therefore a key source of GHG emissions, as well as contributing to other issues such as air pollution.

Total emissions related to car consumption arise from two steps, one following from the other. The first is at the point of the ***purchase*** (or long-term lease) of the car, where the final consumer becomes the owner (or leaseholder, or in the case of company cars, the user) of a product which contains embodied emissions arising from the production chain. The purchase includes several sub-decisions, including about the make and model (and hence location of production), fuel type (especially electric vs internal combustion engine (ICE)), and about weight and size (which affect fuel efficiency). These decisions all determine both the embodied emissions associated with the purchase and emissions arising from use. Bigger, heavier cars and those with batteries have higher embodied emissions.

Once the car is purchased, the next step is about its ***use.***[1] The key factor being how much the car is driven (and to some extent the type of driving, i.e., motorway vs city), since for ICE vehicles using oil-based fuels (i.e., petrol and diesel) emissions come from the combustion of those fuels in driving (see section 4 below).

In this briefing we review evidence on patterns of car ownership and use in the UK, including recent trends, car buying by different groups, and the wider context for car consumption. PACT's focus is emissions arising from production and consumption, with an emphasis of looking beyond electrification. For this reason, we pay particular attention to the issues of car ownership, and the size and weight of cars.

The briefing is structured as follows: in section 2 we discuss basic trends in car ownership and use, while section 3 focuses on variations in car ownership. Section 4 examines how GHG emissions arise across the lifecycle of different types of cars. While car ownership and use is often framed in policy making in terms of individual choice, they are embedded in a set of wider systems that need to be considered to understand patterns in both. Section 5 briefly maps out these systems, giving examples of how they have evolved in the UK. Section 6 concludes.

1. There are also emissions associated with maintenance, but these will be minor and here we consider them as part of use.

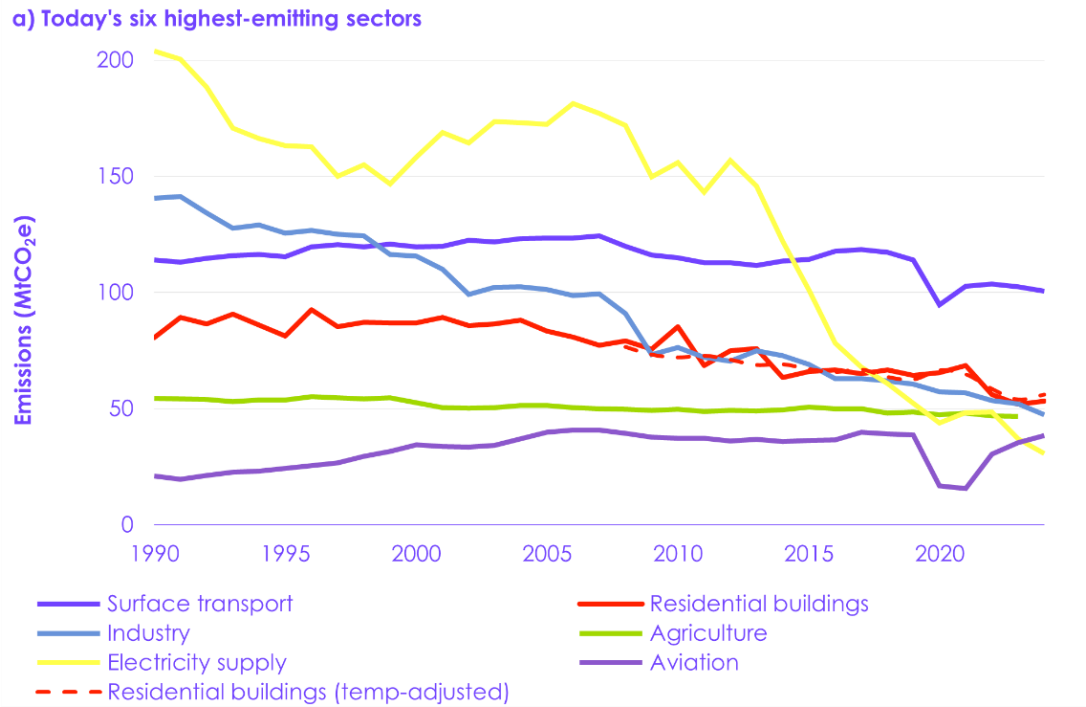


Figure 1: Greenhouse gas emissions from the UK by sector

Source: Climate Change Committee (2025)

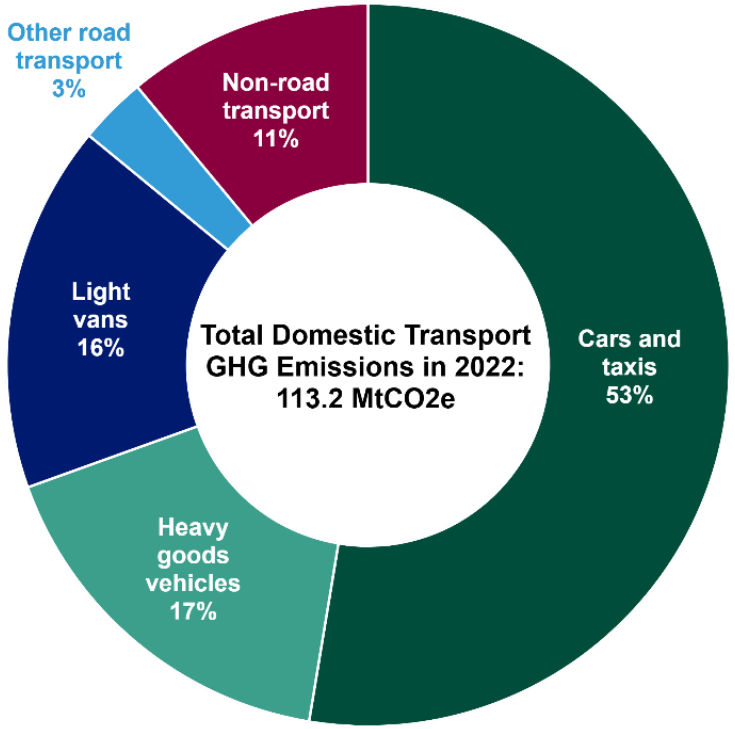


Figure 2: Domestic greenhouse gas emissions for the United Kingdom by road transport modes and non-road transport, 2022.

Source: Department for Transport (2024)

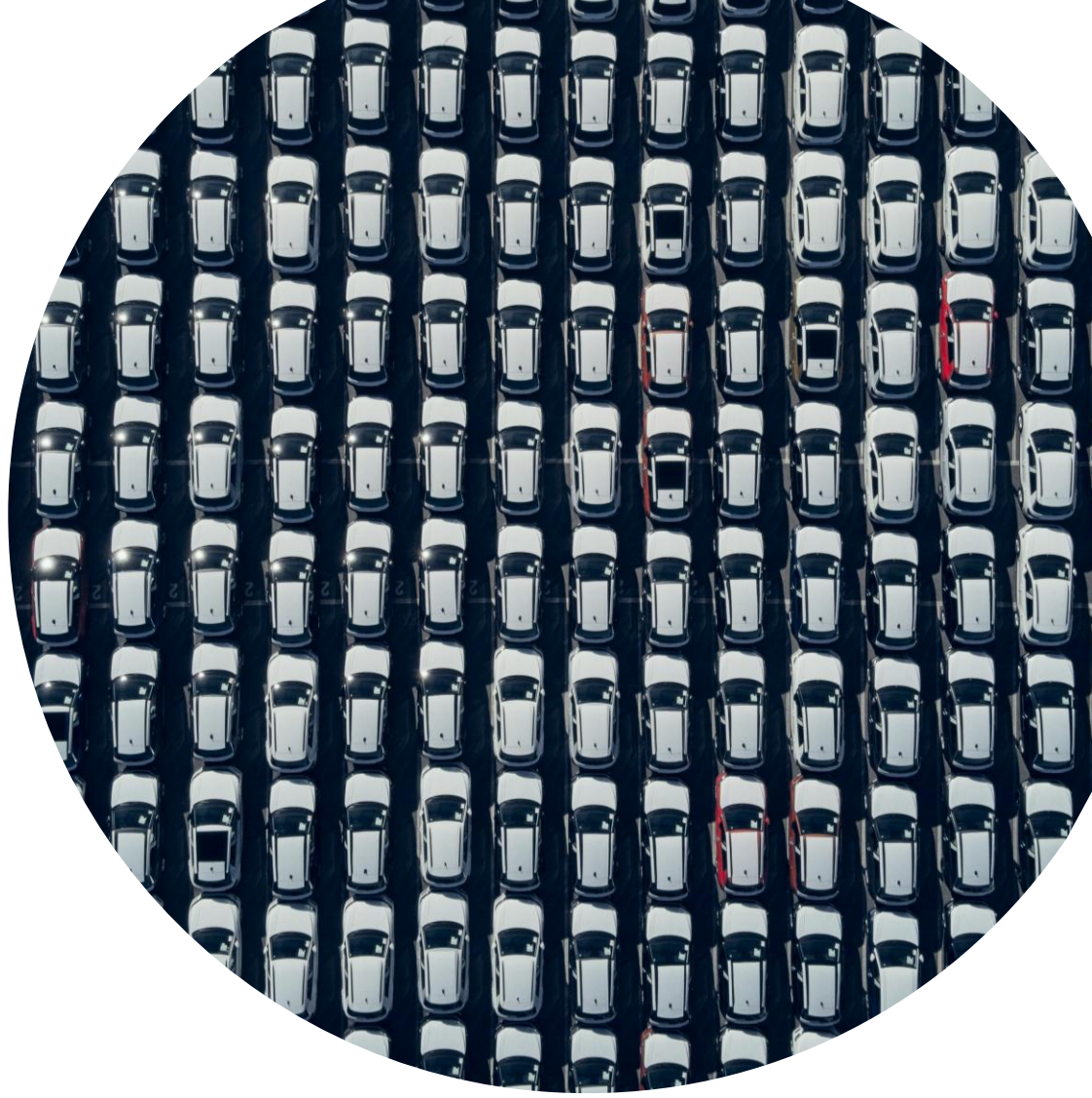
Funded by UKRI Engineering and Physical Sciences Research Council

Trends in car ownership and use

Car ownership in the UK has grown steadily on most metrics over the last 40 years. Except for a period of no or very low growth in the mid-2000s (prompting speculation about 'peak car' in the late 2000s), the total number of licensed cars has increased every year from just under 22 million in 1994 to 33.4 million in 2024, i.e., an increase of 52% (**Figure 3**). However, sales of new diesel cars have collapsed since 2015, followed by a sharp downturn in sales of petrol cars in the Covid pandemic from which they did not recover. These falls have been partially offset by sales of hybrids, plug-in hybrids and battery electric vehicles (BEVs) since the late 2010s (**Figure 4**).

Beyond the number of cars in the fleet, the average mass and power of cars have also increased sharply. Since 1980, the fleet average weight has increased by 40%, and the fleet average power has increased by 75% (**Figure 5**) (although there is some evidence since 2015 that the increase in average power has levelled off) (Bhagat et al 2024). As well as increase in the mass, the size of popular cars has also increased since the 1960s (with a break in the 2000s when superminis were in fashion) (**Table 1**). The total area of the five top selling models was almost 30% larger in 2015 than in 1965.

Conversely, the average distance driven (i.e., vehicle km per car) has declined after peaking in the late 1980s and is now around half of what it was in 1980. Average occupancy has also fallen. These latter trends are partly related to changes in car ownership (**Figure 6**).



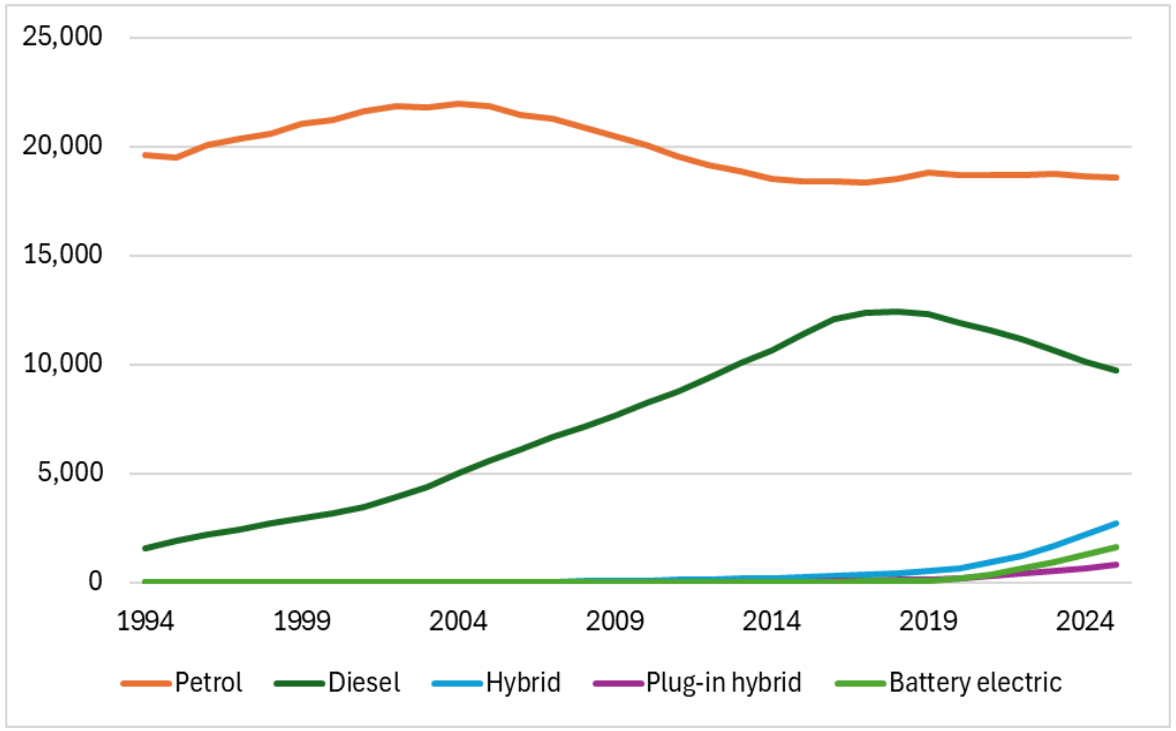


Figure 3: Licensed cars at the end of Q4 by fuel type, 1994-2024 (thousands)

Source: Department for Transport

Note: 2025 is end of Q3

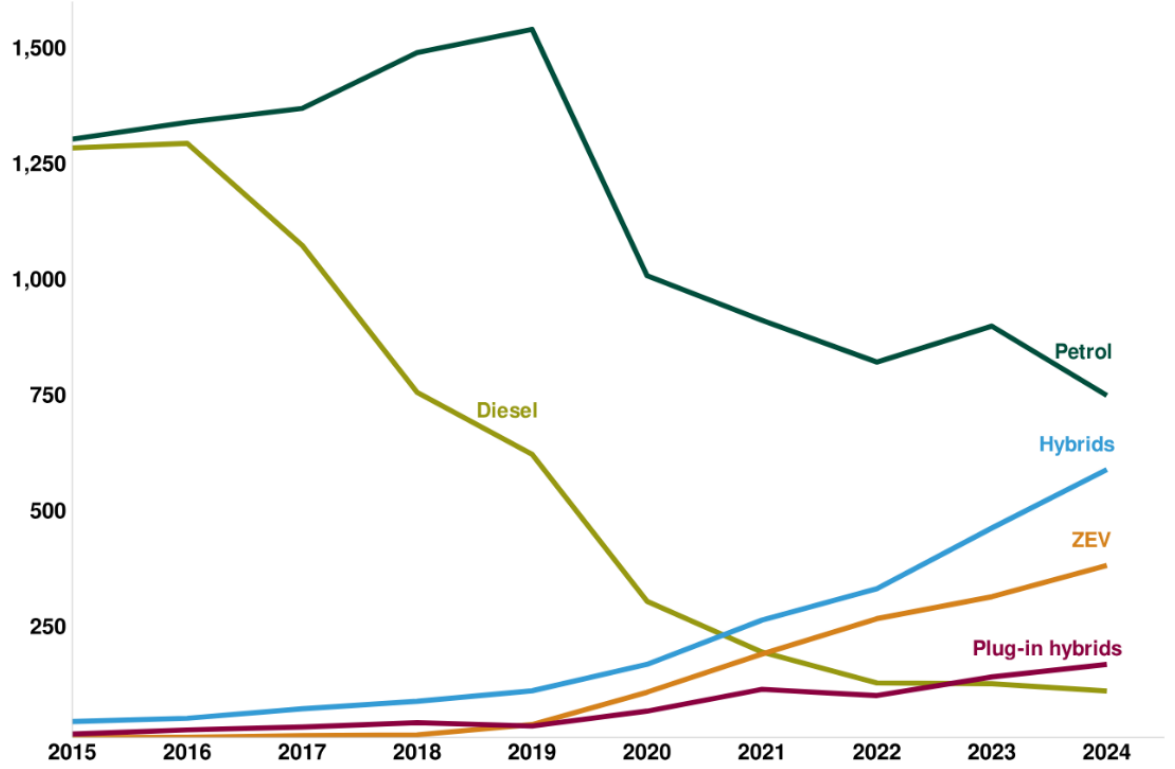


Figure 4: Thousands of cars registered for the first time by fuel type, UK, 2015 to 2024

Source: Vehicle licensing statistics, United Kingdom: 2024.

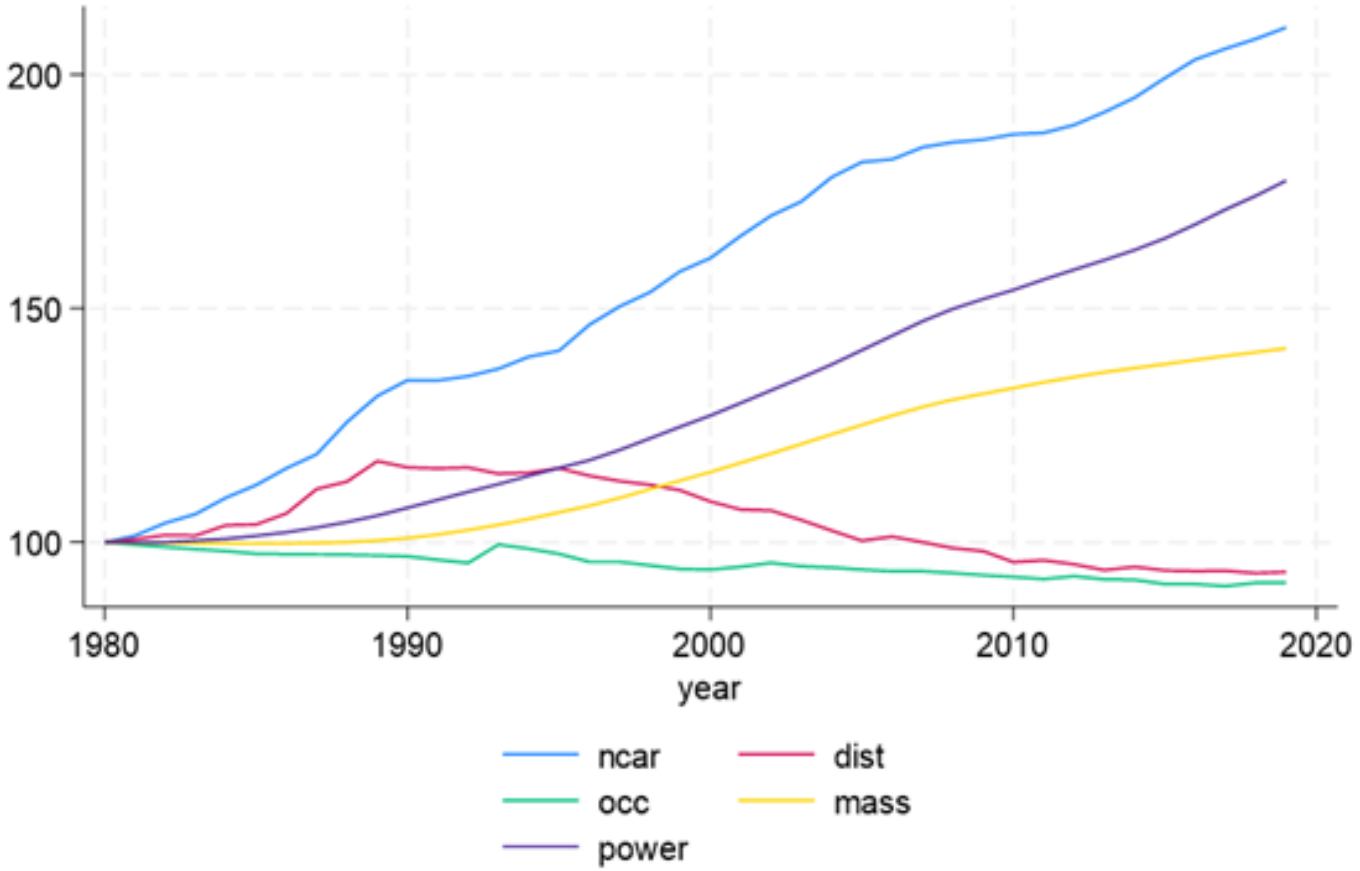


Figure 5: Changes in the number of cars, vehicle km per car, average occupancy of cars, average mass of cars, and average power of cars, UK 1980-2019

Note: UK Fleet changes normalised on 100 in 1980 in the number of cars (ncar), vehicle km per car (dist), average occupancy of cars (occ), average mass of cars (mass), and average power of cars (power).

Source: Steve Sorrell, personal communication.

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Year	Average width (m)	Average length (m)	Average total area (m2)
1965	1.5	3.9	5.9
1985	1.6	4	6.4
1995	1.7	4.3	7.3
2005	1.7	3.8	6.7
2015	1.8	3.9	7.3
2020	1.8	4.3	7.6

Table 1: Car dimensions averaged across the top five selling models for 1965–2020 (UK)

Source: Nagler (2021)

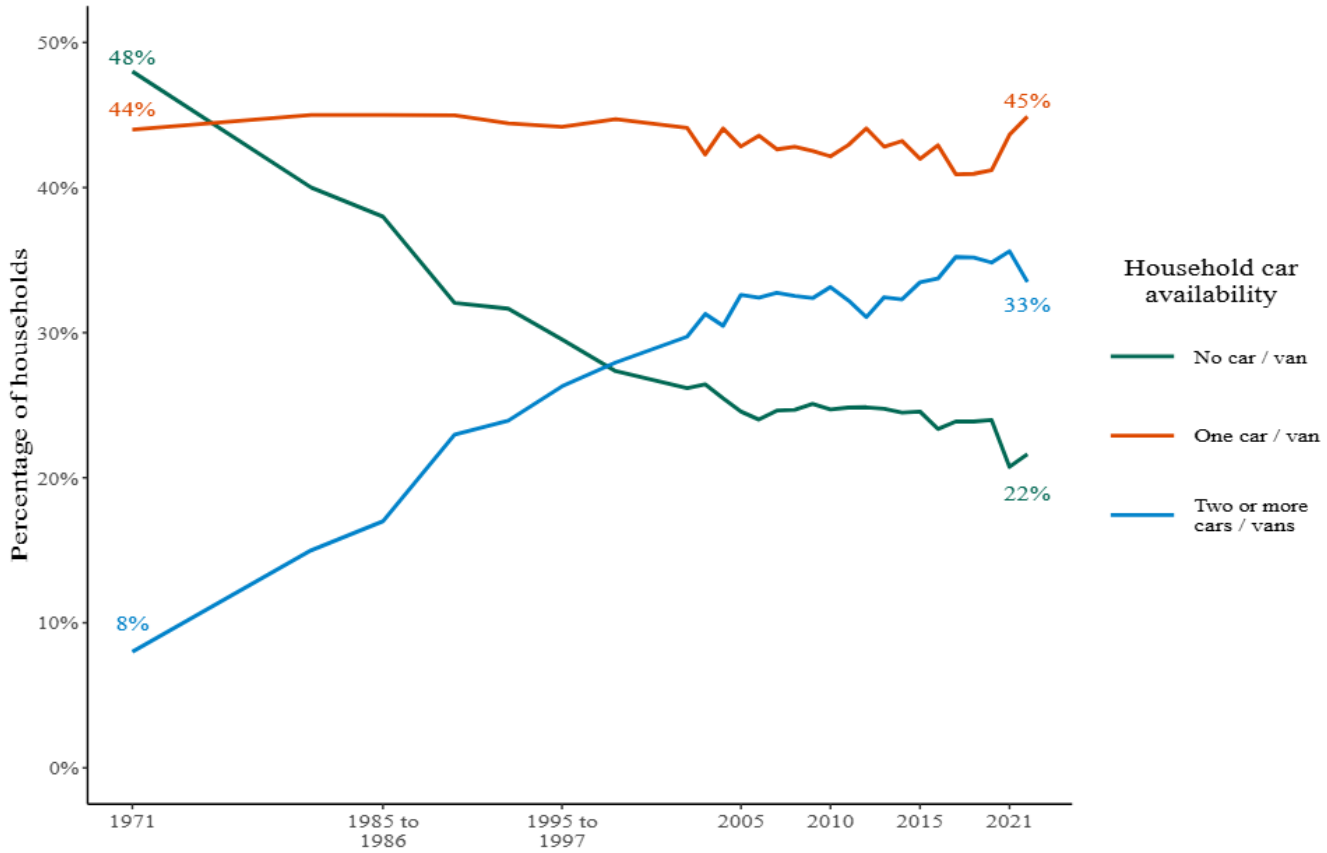


Figure 6: Household car availability 1971 to 2021

Source: National Travel Survey 2021,

The proportion of households not owning a car fell from around one-half in 1970 to one fifth in 2021, but the proportion of households owning two cars rose from less than a tenth to around a third. Overall, the number of cars per household has increased from 8 cars for every 10 households in 1985 to 1987 (Great Britain) to 12 cars for every 10 households (England) in 2021. The number of cars per person, per adult and per driver have also all risen significantly since the 1980s (**Figure 7**).

Although the car fleet and the number of cars per person have grown significantly over the last 40-50 years, the proportion of time cars are being used is very low (**Figure 8**) and has not changed significantly since the 1990s (Nagler 2021).

In summary, over the last 40-50 years more households in the UK have come to own cars, which are larger and more powerful, but which are on average used less. A wide range of factors may drive trends in car ownership and use, including changes in household size, age structure, incomes, fuel costs, urbanisation and congestion, the rise of higher education leading to delays in car ownership amongst young people, and the rise of homeworking amongst others, with a large literature on each, and no consensus on their individual and relative importance. However, stepping back from the detail, taken together the trends towards more, larger cars used less suggests that, while emissions from car use in the UK were relatively level from 1990 up until the pandemic years, embodied emissions have been on an upward trend, along with the material mass of the stock of cars in the built environment. At the same time, the utilisation rate of this stock is very low.

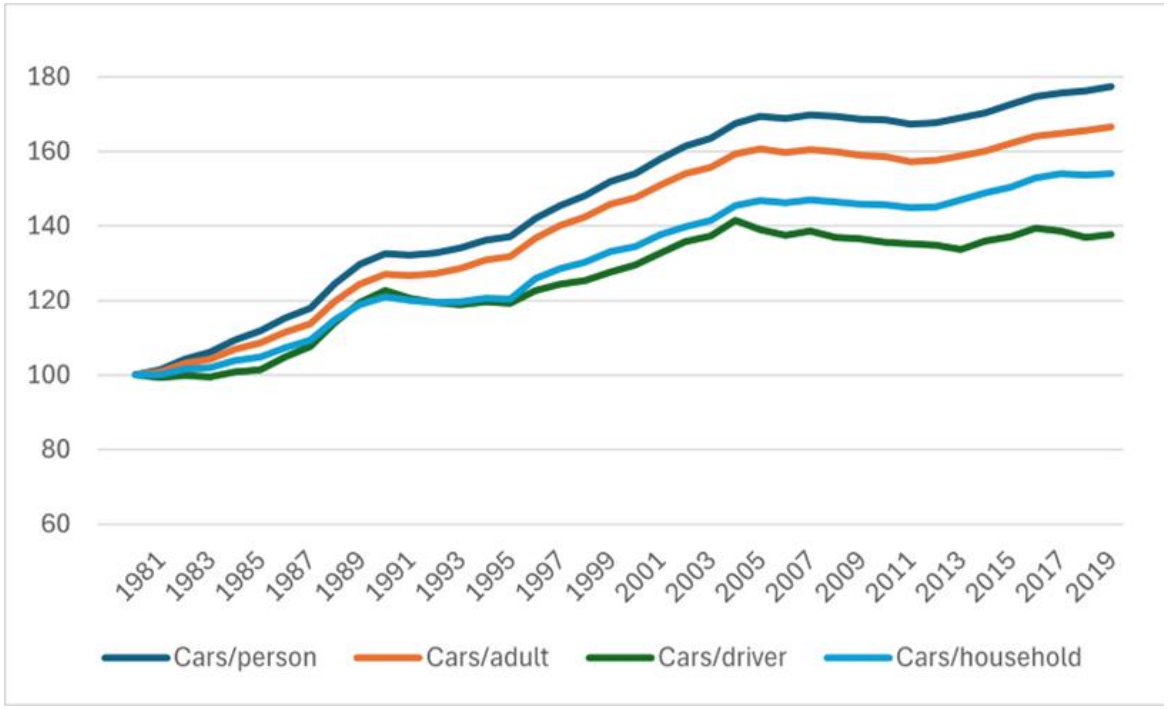


Figure 7: Number of cars per person, adult, driver and household, normalised.

Sources: Steve Sorrell, personal communication. Underlying data from: ICCT (2024); Schipper (2011); Transport Statistics Great Britain.

Note: The figure shows changes in metrics normalised to 100 in 1981

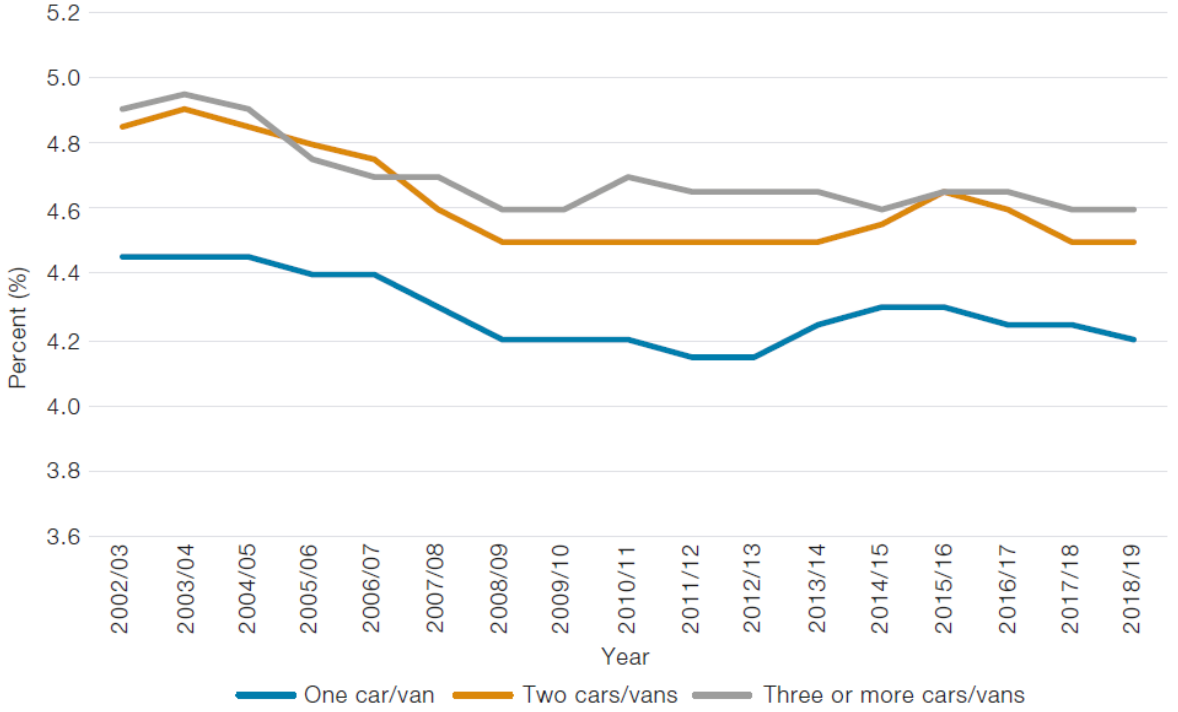


Figure 8: Proportion of weighted drive time, based on the average personal car/light van within a one, two or three-plus car/van household in England

Source: Nagler (2021), based on National Travel Survey data.

Who buys (which) cars?

The UK car market has a segmented structure. Over half of new cars are bought by companies as fleet vehicles (**Figure 9**). After a few years these then feed through into the second-hand market, which is where most households obtain cars. Cars are being kept for longer; the average age of a car in 2014 was about 8 years, but by 2023 this had increased to 9.3 years (Bhagat et al 2024). Pre-pandemic, second-hand car sales were of the order of 7-8 million a year, which has drifted down to around 6.5 million in 2022. New registrations declined over the same period from around 2.5 million to 1.6 million (Bhagat et al 2024).

Most new cars – around 90% in recent years - are bought on finance packages (Bhagat et al 2024). This reflects the development of personal contract hire leasing growth, i.e., long-term leasing with fixed monthly fees rather than outright ownership. However, there is evidence that this model may have peaked and be in decline since 2021 (Masson 2023).

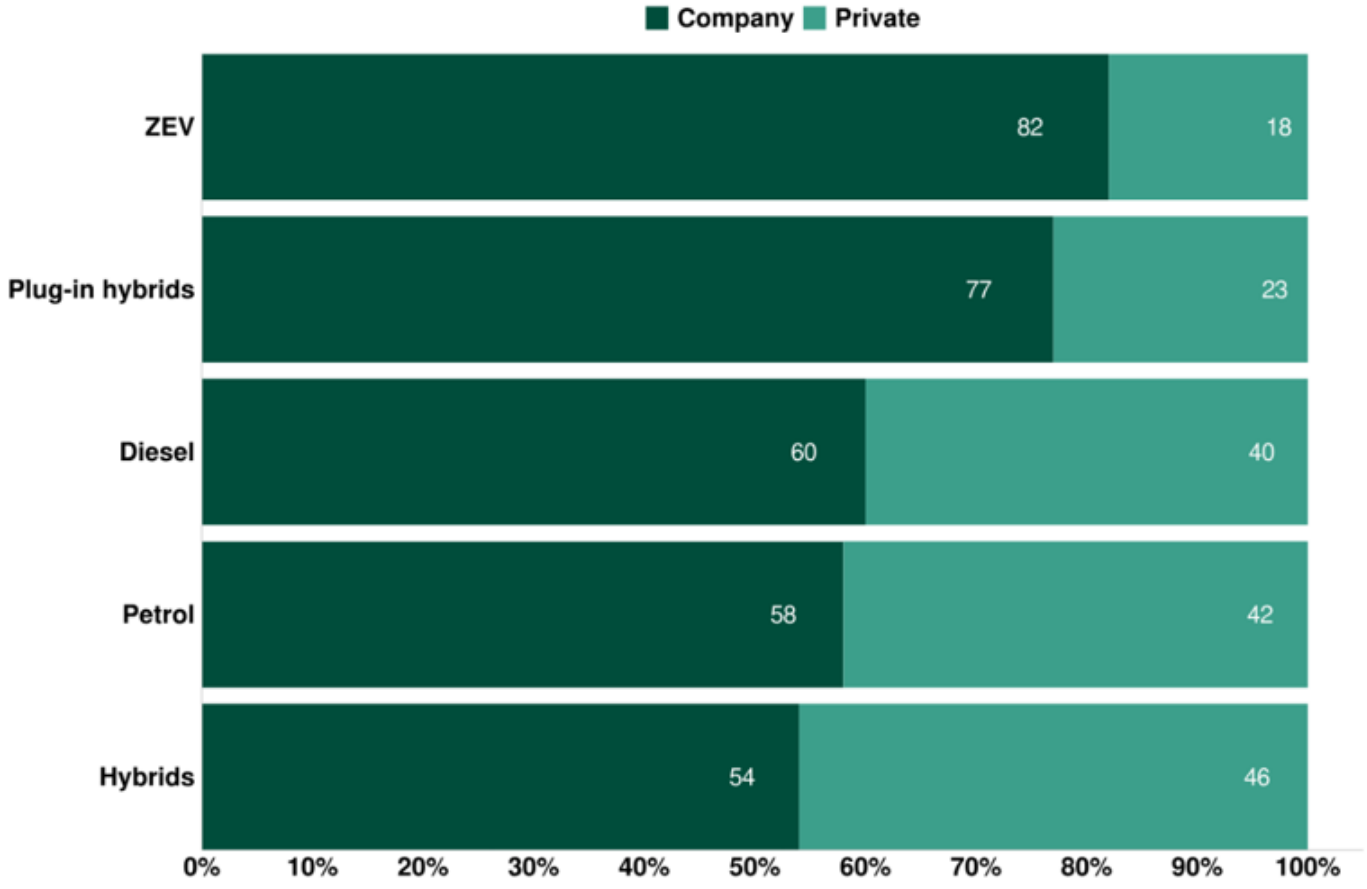
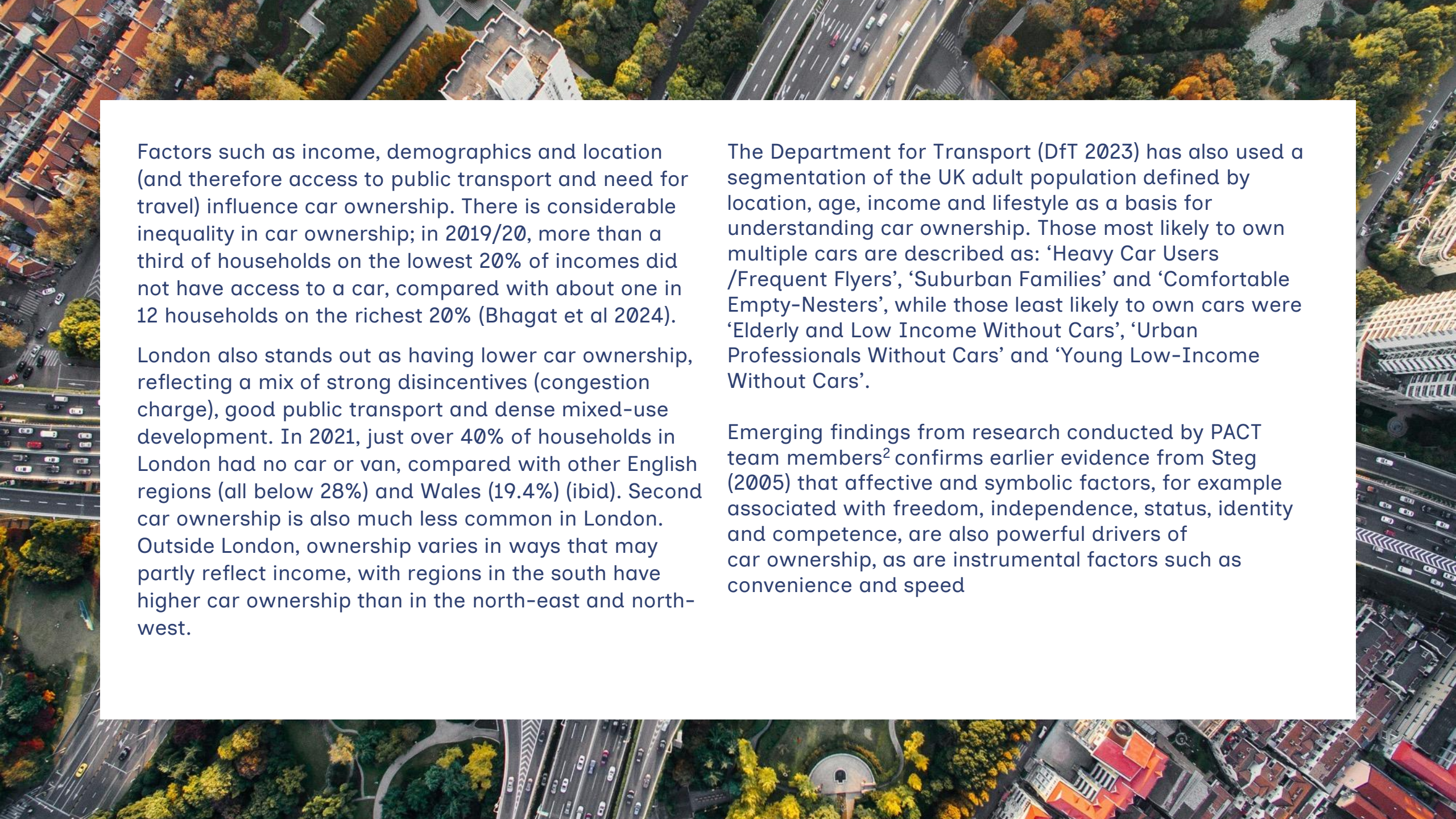


Figure 9: Proportion of new car registrations by keepership and fuel type, UK, 2024

Source: Vehicle licensing statistics, United Kingdom: 2024.



Factors such as income, demographics and location (and therefore access to public transport and need for travel) influence car ownership. There is considerable inequality in car ownership; in 2019/20, more than a third of households on the lowest 20% of incomes did not have access to a car, compared with about one in 12 households on the richest 20% (Bhagat et al 2024).

London also stands out as having lower car ownership, reflecting a mix of strong disincentives (congestion charge), good public transport and dense mixed-use development. In 2021, just over 40% of households in London had no car or van, compared with other English regions (all below 28%) and Wales (19.4%) (ibid). Second car ownership is also much less common in London. Outside London, ownership varies in ways that may partly reflect income, with regions in the south have higher car ownership than in the north-east and north-west.

The Department for Transport (DfT 2023) has also used a segmentation of the UK adult population defined by location, age, income and lifestyle as a basis for understanding car ownership. Those most likely to own multiple cars are described as: ‘Heavy Car Users /Frequent Flyers’, ‘Suburban Families’ and ‘Comfortable Empty-Nesters’, while those least likely to own cars were ‘Elderly and Low Income Without Cars’, ‘Urban Professionals Without Cars’ and ‘Young Low-Income Without Cars’.

Emerging findings from research conducted by PACT team members[2] confirms earlier evidence from Steg (2005) that affective and symbolic factors, for example associated with freedom, independence, status, identity and competence, are also powerful drivers of car ownership, as are instrumental factors such as convenience and speed

Evidence on who buys EVs, and why, is growing.[3] A review of 211 studies by Singh et al (2020) found that EV buyers tended to be older, well-educated professionals, while another review (Corradi et al 2023) found that consumers who are more technologically driven were more likely to buy EVs. Social status and reputation appear to also play a role in purchasing an EV, as well as wanting to appear as an 'opinion leader' (ibid). For the UK specifically, Bhagat et al (2024) cite evidence from the DfT's Transport and Technology Tracker Wave in December 2022 that suggest that environmental considerations and lower running costs are important for adopters, while range anxiety and upfront cost are identified as factors working against EV purchase.

There is less research on who buys larger, heavier and more powerful cars. A recent survey by YouGov in 2025 suggests that those intending to buy an SUV (sport utility vehicle) are more likely to be younger, wealthier men, relative to the population in general (**Figure 10**).

2. Andy Yuille, personal communication.
3. Although Wicki et al (2023) argue that "findings on widely presumed key determinants are surprisingly mixed and context-dependent" and that robust evidence is still lacking

Demographic profile of Britons planning to buy an SUV or hatchback in the next 12 months

Which type of car are you likely to purchase next? - Hatchback/ SUV (% of UK adults planning to buy a new or used car in the next 12 months)

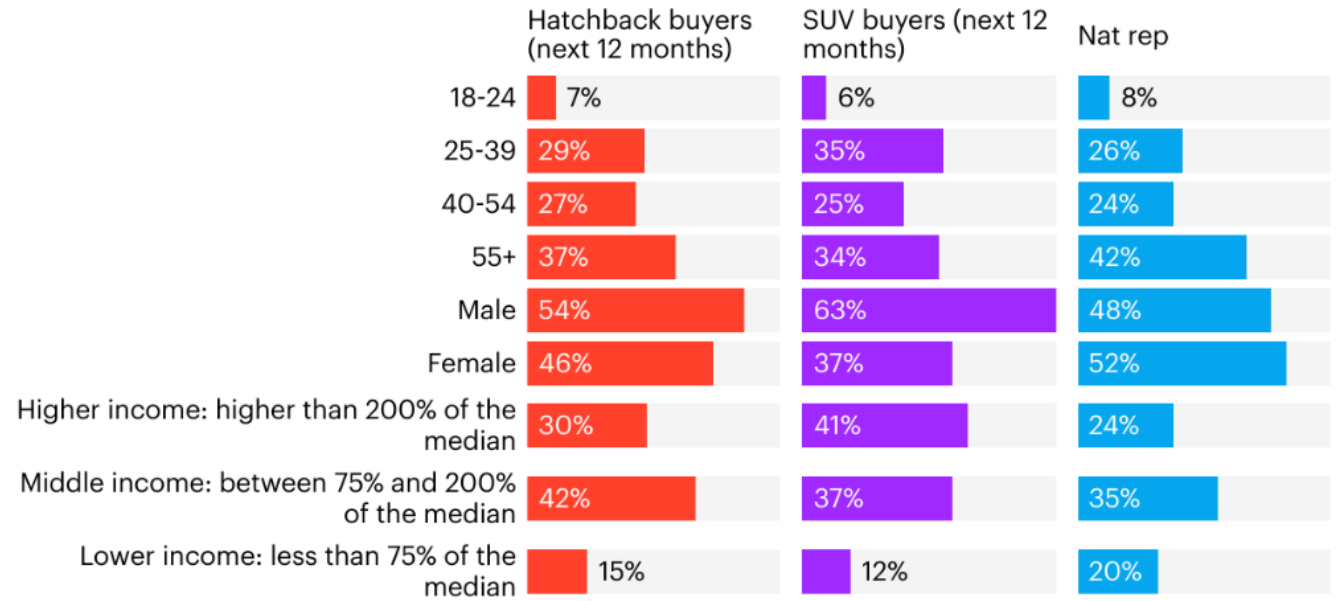


Figure 10.

Source: https://yougov.com/en-gb/articles/53684-what-sets-suv-and-hatchback-buyers-apart-in-the-uk-car-market

This is consistent with studies in other countries. For example, Vögele et al (2021) found that a preference for SUV ownership is associated with status-seeking through conspicuous consumption in a German study. An early American study by Choo and Mokhtarian (2004) found that SUV owners were more likely to be younger, have higher education, earn higher incomes, live in larger households and are drawn to travel freedom and urban living. Similarly, Axsen and Long's (2022) Canadian study showed associations between SUV ownership, higher incomes and household size.

Emerging findings from research conducted by PACT team members suggest that those who have bought (rather than intend to buy) SUVs and other larger cars are strongly motivated by safety concerns, and in part specifically due to a safety 'arms race' (where more, larger cars on the road mean that smaller cars do not feel safe) and due to limited choice and availability of smaller cars. This research also suggests that at least some owners of larger cars feel inconvenienced by them and have changed their travel habits to adapt to the needs of the car. Purchase of larger cars may thus partly be a function of a higher number of larger cars being on the road, in a feedback loop, and of more, larger cars being bought new by fleet owners filtering through to the second-hand market, in parallel with the driver of status-seeking.[4]

The YouGov survey also found that SUV buyers are less likely to be concerned with running costs, and are more focused on space and size, performance, comfort and features. This grouping of drivers of purchase choice is consistent with the study by Chng et al (2019) using UK Household Longitudinal Study data. They are also related to perceptions of safety (for people in the car) that some studies find important for the choice of larger cars (e.g., see Thomas and Walton 2008 for a study from New Zealand).

4. Andy Yuille, personal communication

Emissions from cars

The majority of GHG emissions associated with ICE cars comes from the burning of fossil fuels in their use (e.g., Hall and Lutsey 2018). ICE cars are also much less energy efficient than EVs (e.g., Howey et al 2011). As a result, while the impact of electrification on emissions varies according to a range of factors, especially the carbon intensity of electricity, the average effect is large. The world average emissions for internal combustion engine vehicles (ICEVs) are 202 gCO_2e/km versus 83 gCO_2e/km for battery electric vehicles (BEVs), i.e., a difference of almost 60%.[5]

In the UK, with a carbon intensity of electricity of around 125 gCO_2e/kWh, the Faraday Institution estimates that electrification of a medium-sized car reduces life-time emissions from around 38 tonnes to 11 tonnes, i.e., a reduction of just over 70% (**Figure 11**). The reduction is larger for bigger cars. By the 2030s the carbon intensity of electricity in Britain is expected to be approaching zero.

Nevertheless, embodied emissions in vehicle production remain, and these are larger for EVs because of emissions arising from the manufacture of batteries. These in turn also vary across countries in line with the carbon intensity of electricity. For example, the Faraday Institution (2021) estimates that embodied emissions in batteries produced in Poland are around five times those from batteries made in Sweden.

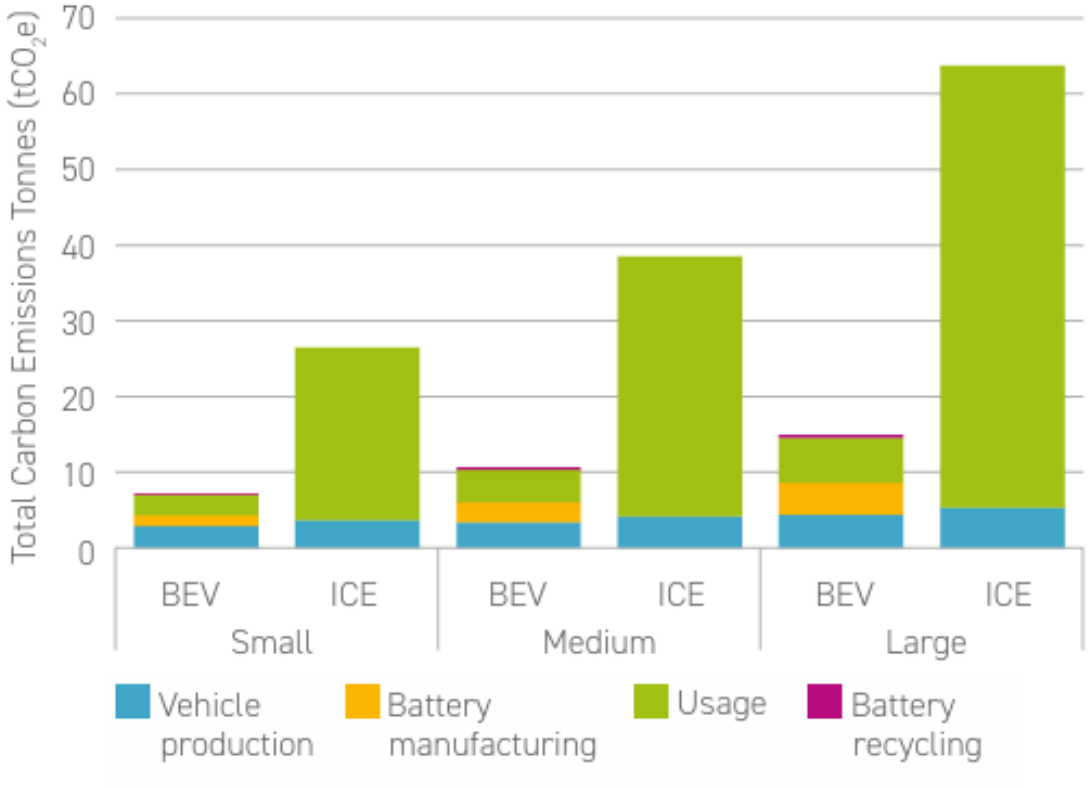


Figure 11: Total life cycle carbon emissions from EVs and ICE sold in 2025 in the UK

Source: Faraday Institution (2021)

[5]. https://www.iea.org/data-and-statistics/charts/well-to-wheels-greenhouse-gas-emissions-for-cars-by-powertrains

The context for car consumption

Decisions about car purchase and use are taken by individuals (or in the case of fleets sometimes by companies), but they are at the same time taking place within wider *systems* of consumption and production (Pichler et al 2025). For cars, these systems are typically seen as have multiple overlapping elements, including manufacturing of cars, cultures of use, supporting infrastructure, maintenance, fuel supply, patterns of development affecting the demand for mobility, and provision of alternatives such as public transport, cycling and walking. Each element has actors and governance regimes with rules and regulations (e.g., Geels 2005; Matioli et al 2020). These systems, which differ from country to country but with many core common characteristics, were originally built up over long periods of time (Geels 2005) and have created strong path dependence and lock-in (Unruh 2000).

These processes apply to the UK. For example, the government oversaw the development of a national road network from the 1920s and then a motorway system was constructed between 1959 and 1991 (Gunn 2018; Spence and Linneker 1994), both free to use. While the costs of expansion and maintenance of the road system were nominally funded by a tax on vehicles, i.e., excise duty (VED), in practice these costs have tended to exceed the revenue from VED (Adam and Stroud 2019).

The use of buses and coaches has been in long term decline since the 1950s (Gunn 2018), with local journeys in Britain down more than 60% since 1960, largely due to a fall in the proportion of the population who are bus users (Le Vine and White 2020). This trend is explained in part because of choices by households to buy and use cars, but it is further reinforced by the decline of service provision, from a peak in 1999 (ibid). This is particularly the case for local authority subsidised service; Tyers and Stewart (2024) note a decrease of 45% in council-subsidised bus services in England (outside London) between 2005 and 2024, and a similar decline is noted by Friends of the Earth (2023) for the whole of Britain (see also **Figure 12**).

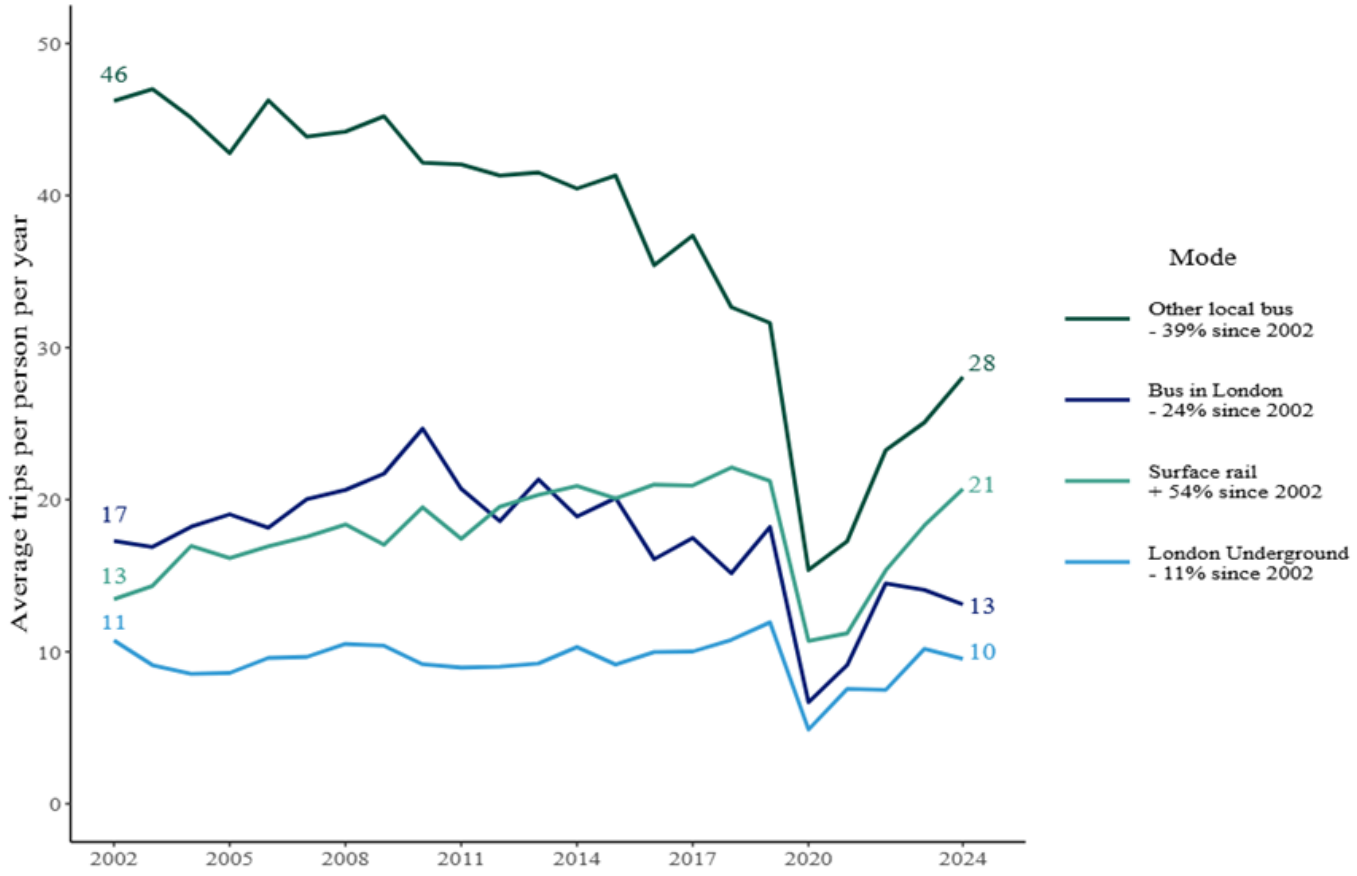


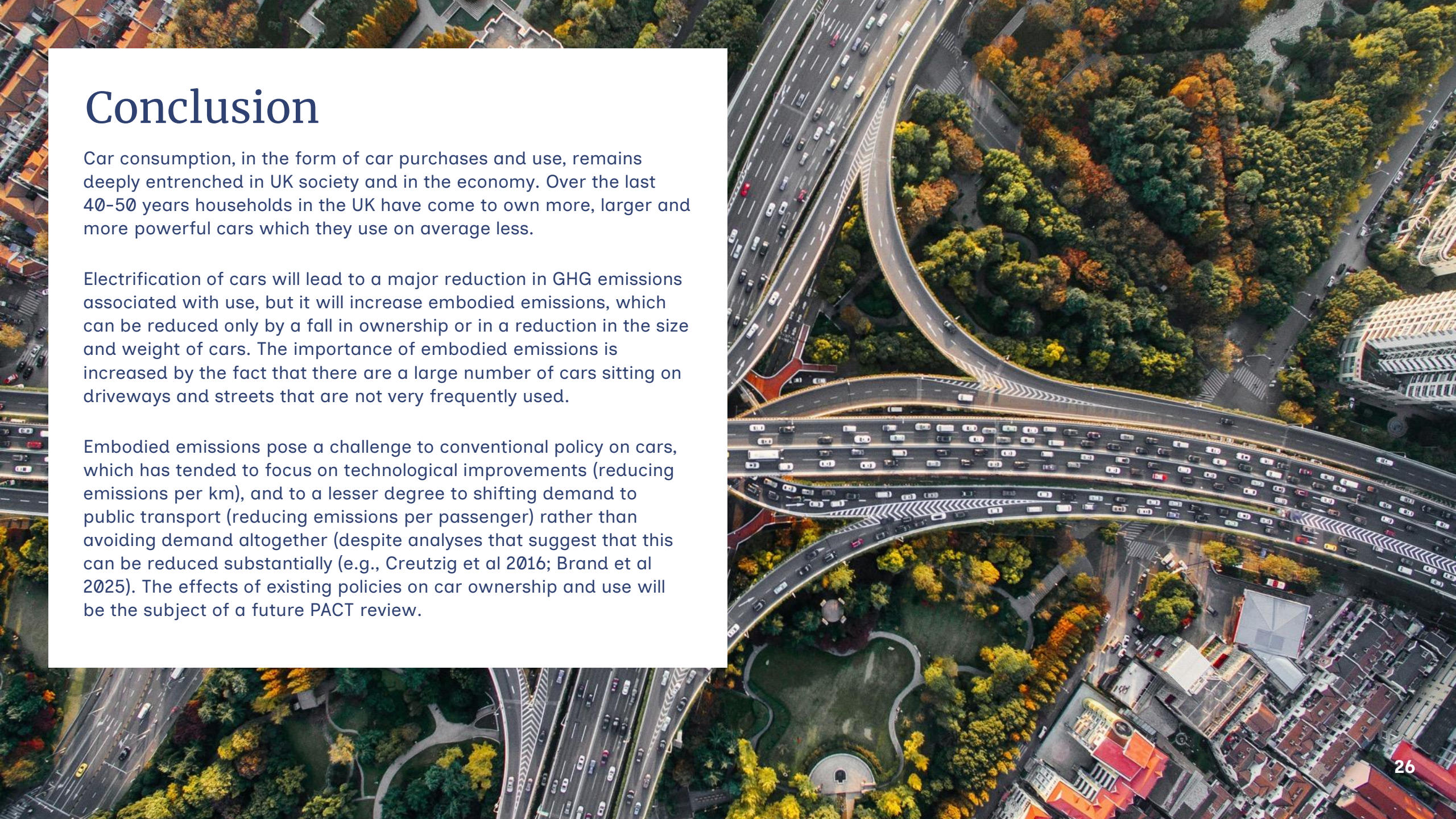
Figure 12: Trips per person per year by selected public transport modes: England, 2002 to 2024

Source: Department for Transport 2024

Patterns of shopping dependent on car use have expanded, facilitated by an accommodating approach to planning at national level, especially in the 1980s (e.g., Headicar 2003). This has taken the form of the expansion of retail parks often solely or primarily accessible by car between the 1960s and the 1990s. By 1999 there were 485 retail parks in Britain, providing over 5.7 million m^2 of retail floor space (Thomas et al 2004). A 2004 survey found that around half of food and grocery shopping and a majority of bulkier items such as furniture and electrical goods were bought at out-of-town shopping facilities (Ipsos 2004). However, since then, especially the latter categories, online shopping has played an increasing role.

As a result, especially outside of London and major cities, car use in the UK is strongly locked in. Cars (and vans) dominate mobility, making up 85% of passenger miles travelled across all passenger transport modes in 2024.[6]

[6]. https://www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons#mode-share



Conclusion

Car consumption, in the form of car purchases and use, remains deeply entrenched in UK society and in the economy. Over the last 40-50 years households in the UK have come to own more, larger and more powerful cars which they use on average less.

Electrification of cars will lead to a major reduction in GHG emissions associated with use, but it will increase embodied emissions, which can be reduced only by a fall in ownership or in a reduction in the size and weight of cars. The importance of embodied emissions is increased by the fact that there are a large number of cars sitting on driveways and streets that are not very frequently used.

Embodied emissions pose a challenge to conventional policy on cars, which has tended to focus on technological improvements (reducing emissions per km), and to a lesser degree to shifting demand to public transport (reducing emissions per passenger) rather than avoiding demand altogether (despite analyses that suggest that this can be reduced substantially (e.g., Creutzig et al 2016; Brand et al 2025). The effects of existing policies on car ownership and use will be the subject of a future PACT review.

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