Air Quality Fact Sheet:
Electric Vehicle Uptake in the UK and London

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Experts in air quality management & assessment

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Introduction

1.1 The uptake of Battery Electric Vehicles (BEVs) is expected to accelerate in the near future with the upcoming ban on new petrol and diesel vehicle sales from 2035, as well as the implementation of Clean Air Zones (CAZs) around the UK to help reduce road traffic pollution in the worst affected areas.

UK Vehicle Fleet

1.2 Data from the Department for Transport (DfT) and Driver and Vehicle Licensing Agency (DVLA) show that the vast majority of the car fleet in the UK is still fuelled by petrol and diesel[1,2] (see Figure 1). While BEV[3] and hybrid[4] cars currently make up a small proportion of the overall car fleet across the UK (with 5.1% of licenced cars being hybrid and 1.9% being BEVs at the end of December 2022) that proportion is growing; the number of new registrations of BEV and hybrid cars has shown a strong upward trend in recent years.

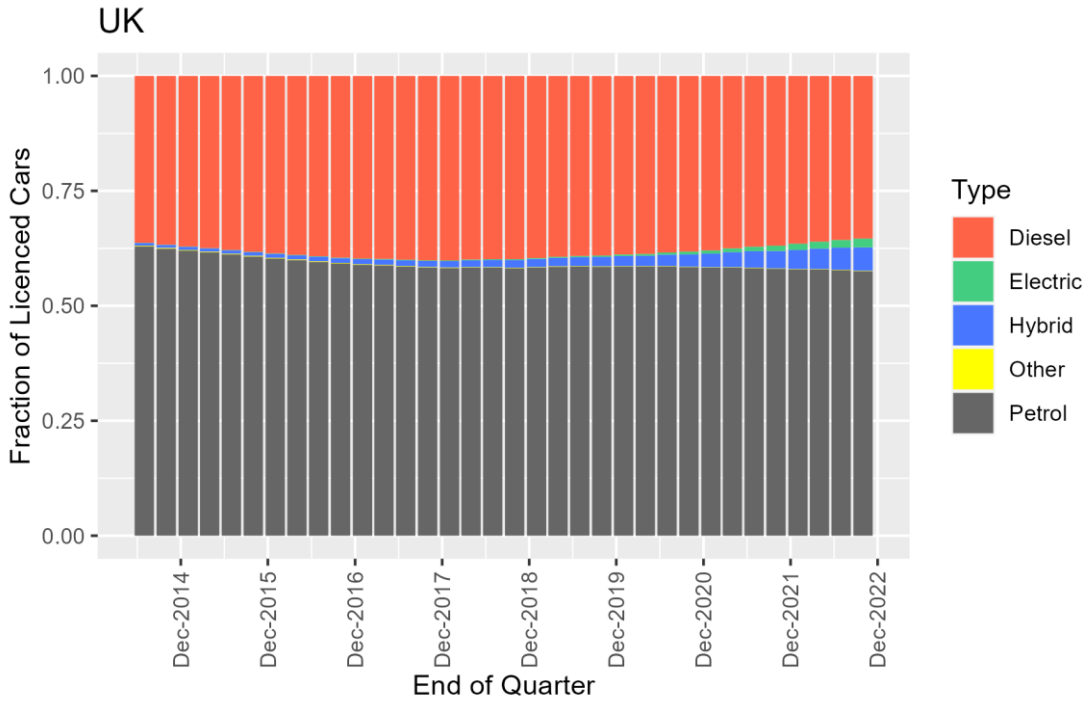

Figure 1: Licenced cars in the UK at the end of each quarter, split by fuel type[1,2].

1 DfT and DVLA (2023), Licensed vehicles at the end of the quarter by body type and fuel type [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1162893/veh1103.ods

2 Using data on "Road-using vehicles", which are described in the dataset as the following: "*Road using vehicles would reasonably be expected to make significant use of the public highway and to be used as a mode of transport*".

3 This term is used here to describe zero tailpipe emission vehicles - full electric and fuel cell electric cars (which make up a very small proportion of the fleet).

4 Hybrid petrol and diesel, plug-in hybrid petrol and diesel and range extended electric cars.

Electric Car Registrations vs Other Fuel Types

1.3 Figure 2 shows the proportion of BEVs in new car registrations in the UK collated by the Society of Motor Manufacturers and Traders (SMMT)[5] for DfT from March 2019 to June 2023. Each point relates to sales in the preceding four months, e.g., the value shown for April 2023 relates to total sales in January to April 2023. Despite this smoothing, Figure 2 seems to show a seasonal variation, which might be explained by seasonality in the buying cycle of certain commercial fleets. Nevertheless, it is clear that BEV sales have increased rapidly since 2019.

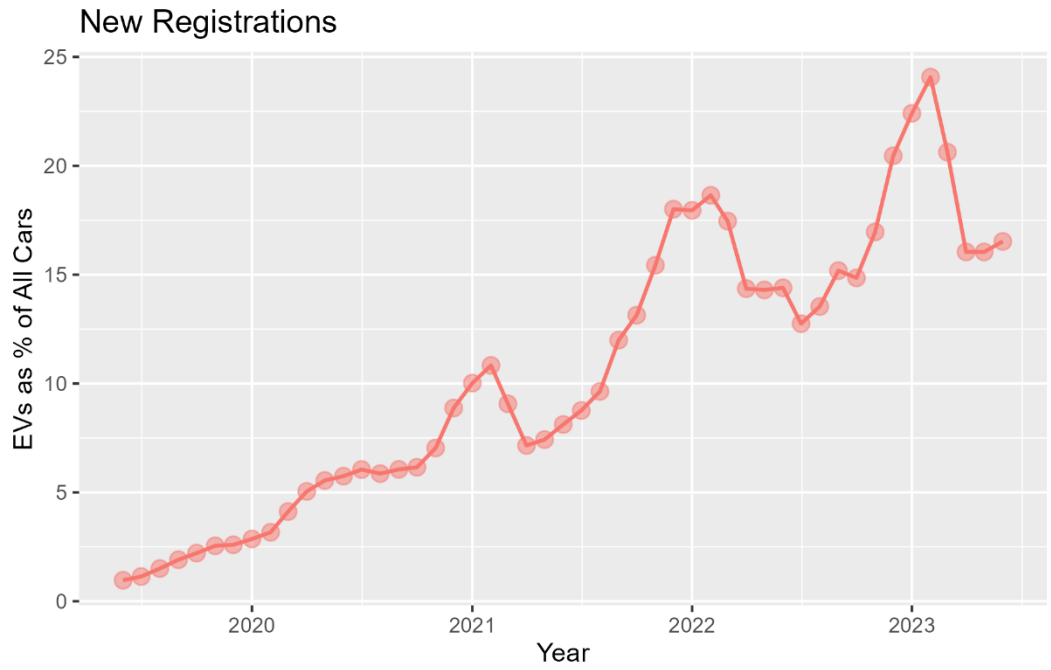

Figure 2: UK BEV car registrations as % of all new car registrations in the preceding four months.

London vs Rest of the UK

1.4 The trend in BEV uptake is not uniform across the UK. Figure 3 shows the number of licenced cars first registered in each year[6,2] between 2002 and 2022 split by fuel type in inner London and outer London (based on the borough boundaries), and Figure 4 shows the whole of London and the rest of the UK (excluding London). This shows that diesel registrations reached a peak in London in 2016 (at 38.6% of new car registrations), then sharply fell, with relatively few in London in 2022 (4.6%). This is likely to be due to the wider awareness of the pollution impacts of diesel vehicles, as well as the implementation of the Ultra Low Emission Zone (ULEZ) in 2019 and subsequent

5 https://www.smmt.co.uk/vehicle-data/car-registrations/

6 DfT and DVLA (2023), Licensed road using cars and light goods vehicles by local authority, body type, fuel type, CO2 band, keepership, and year of first registration [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1162901/veh9901.ods

expansion in 2021. In the rest of the UK there was a plateau in new registrations between 2011 and 2016, with new registrations subsequently falling. In all areas, the proportion of new diesel registrations in 2022 was similar to that in 2002, while the proportion of new petrol registrations fell appreciably during that time, with the difference being made up by BEV and hybrid cars. 'Other' fuel types made up a very small proportion of the total[7].

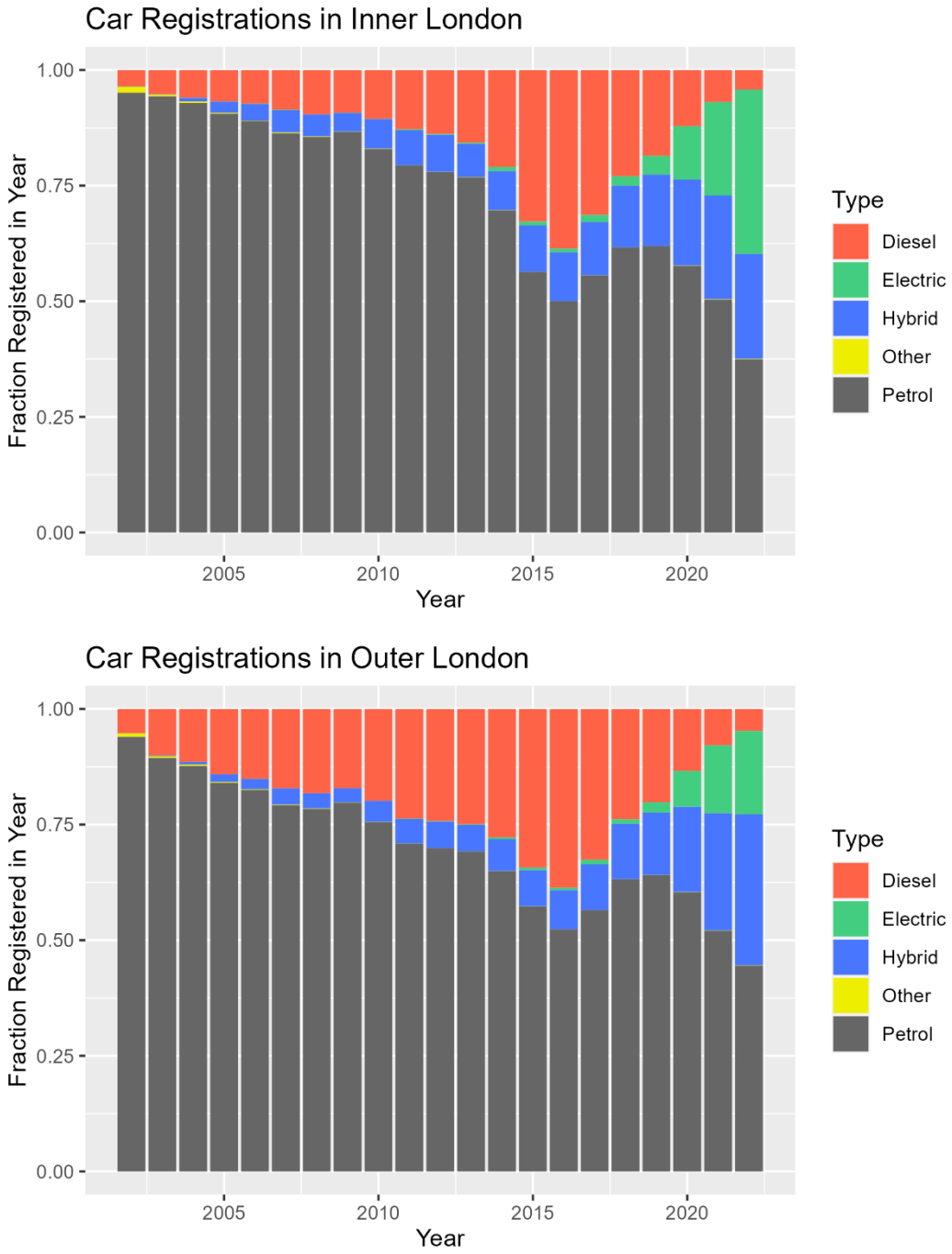

Figure 3: Fraction of licenced cars first registered by year in inner London (top) and outer London (bottom) by fuel type[6].

[7] 'Other' includes gas, gas bi-fuel, petrol/gas and gas-diesel, new fuel technologies and steam.

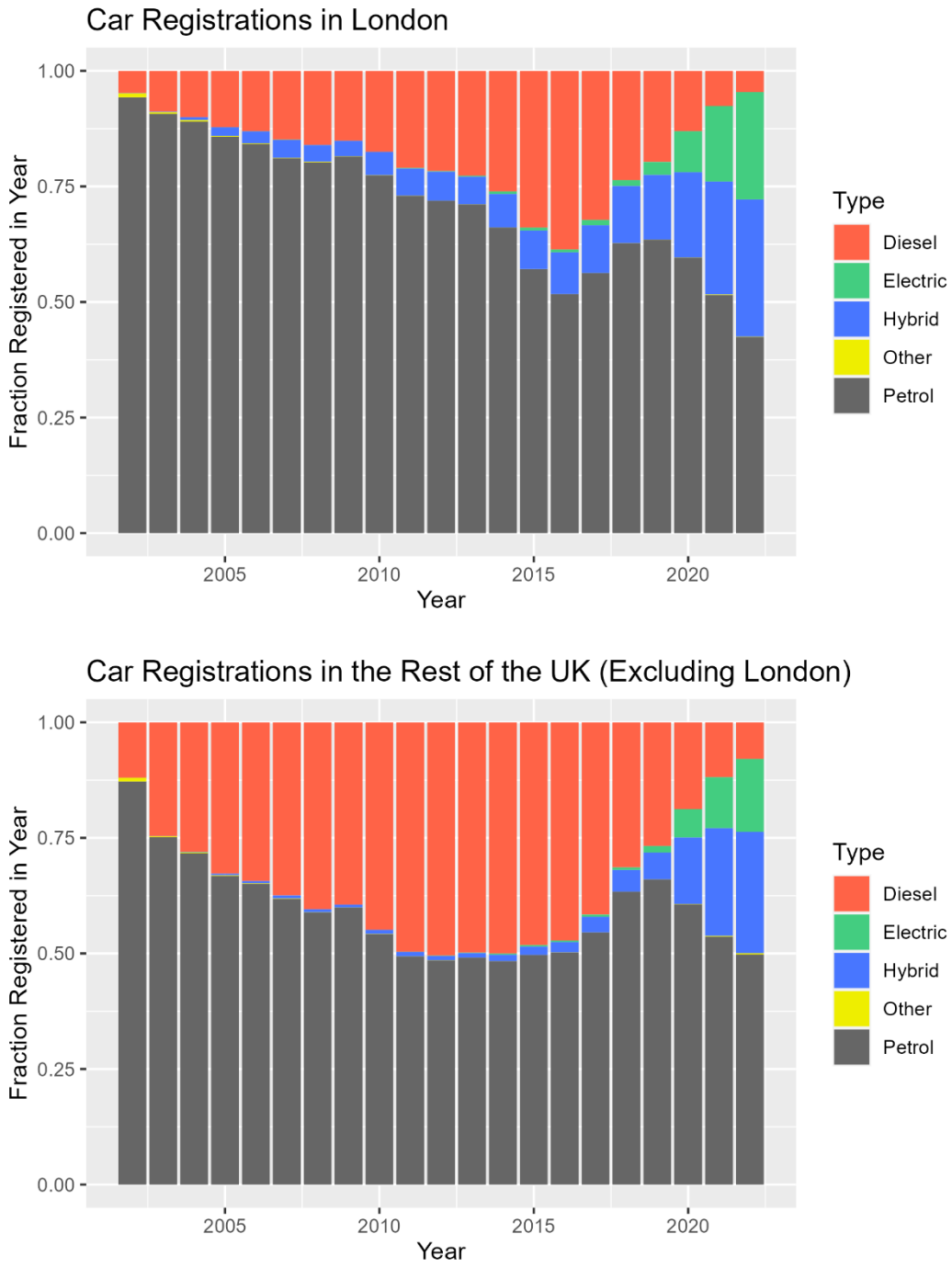

Figure 4: **Fraction of licenced cars first registered by year in all of London (top) and the rest of the UK excluding London (bottom) by fuel type[6].**

1.5 These data also show that the proportion of new BEV cars registered in inner London compared to other fuel types has outpaced those elsewhere, having grown from 2.0% in 2018 to 35.5% in 2022, at an average rate of 8.4% per year (see Table 1). In outer London, new BEV car registrations increased from 1.0% in 2018 to 18.0% in 2022, at an average rate of 4.3% per year. In London as a whole, new BEV car registrations increased from 1.3% in 2018 to 23.2% in 2022, at an average rate of 5.5% per year. Elsewhere in the UK they increased from 0.6% in 2018 to 15.8% in 2022, at an average rate of 3.8% per year. The average rate of growth in the proportion of BEV car registrations in inner London between 2018 and 2022 was 2.2 times that of the rest of the UK, and the rate in outer London was 1.1 times that of the rest of the UK.

1.6 The proportion of new hybrid cars registered in inner London compared to other fuel types has grown from 13.3% to 22.7% between 2018 and 2022, at an average rate of 2.3% per year, in outer London the proportion has grown from 12.0% to 32.6% at a rate of 5.2% per year, and across the whole of London the proportion has grown from 12.3% to 29.7% at a rate of 4.3% per year. In the rest of the UK, those proportions were 4.7% in 2018 and 26.2% in 2022, at an average growth of 5.4% per year (see Table 1). The average rate of growth in the proportion of hybrid car registrations in inner London was 0.4 times that of the rest of the UK (less than half), and the rate in outer London was very similar to that outside London. The lower uptake of hybrids in inner London should be viewed in the context of the higher uptake of BEVs.

1.7 Data from four other cities are also shown in Table 1 for information (Birmingham, Bristol, Manchester and Sheffield). All of these cities are identified in the Recharge UK: Charging Forward to 2020 report[8] as being in the top 20 postcode areas for anticipated public charging demand, with Birmingham being the top area due to it having the largest vehicle count of any part of the UK. Table 1 shows that in 2018, Sheffield had a similar proportion of BEV registrations to the rest of the UK (not including London), while Manchester and Birmingham had a lower proportion and Bristol had a higher proportion. However, by 2022, all cities had a lower proportion of new BEV registrations than the average across the UK (not including London) and a lower growth rate. Conversely, hybrid registrations have been higher in both 2018 and 2022 for all of those cities than the UK average (not including London).

[8] Recharge UK (2023) Charging Forward to 2030 [online]. Available: https://www.r-e-a.net/wp-content/uploads/2023/07/Charging_Forward_to_2030_Report-19th_July_2023.pdf

Table 1: Licenced cars by fuel type as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022 with average growth per year[6].

Area		BEV (%)			Hybrid (%)			Other (%)[7]		
		2018	2022	Growth per year	2018	2022	Growth per year	2018	2022	Growth per year
Inner London		2.0	35.5	8.4	13.3	22.7	2.3	0.0	0.1	0.0
Outer London		1.0	18.0	4.3	12.0	32.6	5.2	0.0	0.1	0.0
All London		1.3	23.2	5.5	12.3	29.7	4.3	0.0	0.1	0.0
Rest of the UK	All UK (not London)	0.6	15.8	3.8	4.7	26.2	5.4	0.0	0.3	0.1
	Birmingham	0.4	8.4	2.0	6.5	28.4	5.5	0.2	0.9	0.2
	Bristol	0.8	12.2	2.9	6.4	26.9	4.8	0.0	0.6	0.1
	Manchester	0.4	7.6	1.8	8.1	31.0	5.7	0.0	0.2	0.0
	Sheffield	0.6	10.6	2.5	6.4	29.7	5.8	0.0	0.2	0.0

Area		Petrol (%)			Diesel (%)		
		2018	2022	Growth per year	2018	2022	Growth per year
Inner London		61.6	37.5	-6.0	23.0	4.2	-4.7
Outer London		63.2	44.5	-4.7	23.9	4.8	-4.8
All London		62.8	42.4	-5.1	23.6	4.6	-4.8
Rest of the UK	All UK (not London)	63.4	49.8	-3.4	31.4	7.9	-5.9
	Birmingham	65.0	55.5	-2.4	28.0	6.8	-5.3
	Bristol	69.6	56.1	-3.4	22.0	4.2	-4.4
	Manchester	62.8	55.0	-2.0	28.6	6.2	-5.6
	Sheffield	63.4	50.3	-3.3	29.6	9.3	-5.1

1.8 Figure 5 to Figure 9 show licenced BEV, hybrid, 'other' fuel type, petrol and diesel cars, respectively, as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022. These use the same information for London and the UK excluding London as shown in Figure 4 in a different way to better highlight the trends for each fuel type. Figure 5 and Figure 6 demonstrate the sharp upward trajectory of BEV and hybrid car registrations in recent years. While London's BEV uptake trajectory has been sharper than other areas shown, its hybrid uptake has slowed compared to elsewhere, with the proportion of hybrid cars being similar in all areas shown by 2022.

1.9 Figure 7 shows that 'other' fuel types have increased, albeit at a steadier rate, but they remain a very small proportion of all new car registrations. Birmingham has a much larger proportion of registrations of those cars than other regions.

1.10 Figure 8 and Figure 9 clearly show the downward trends in petrol and diesel registrations. London has continued to have among the lowest proportions of petrol car registrations of the areas shown, while Bristol has had the lowest proportions of diesel car registrations, followed by London.

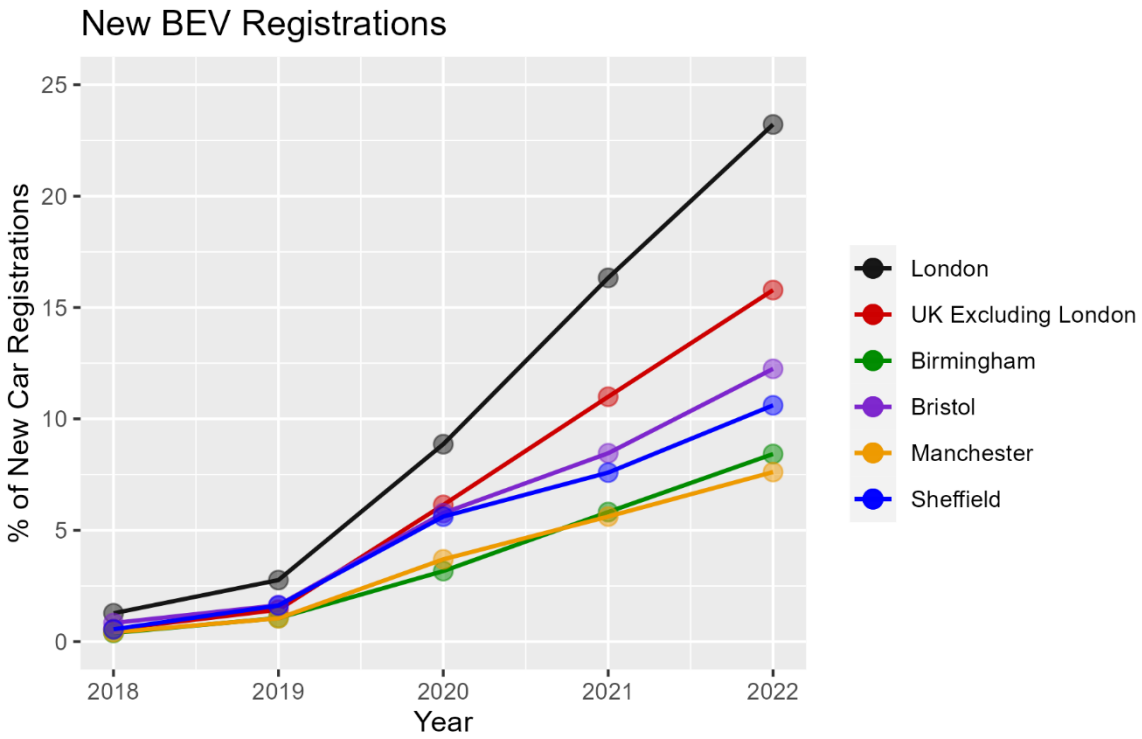

Figure 5: Licenced BEV cars as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022[6].

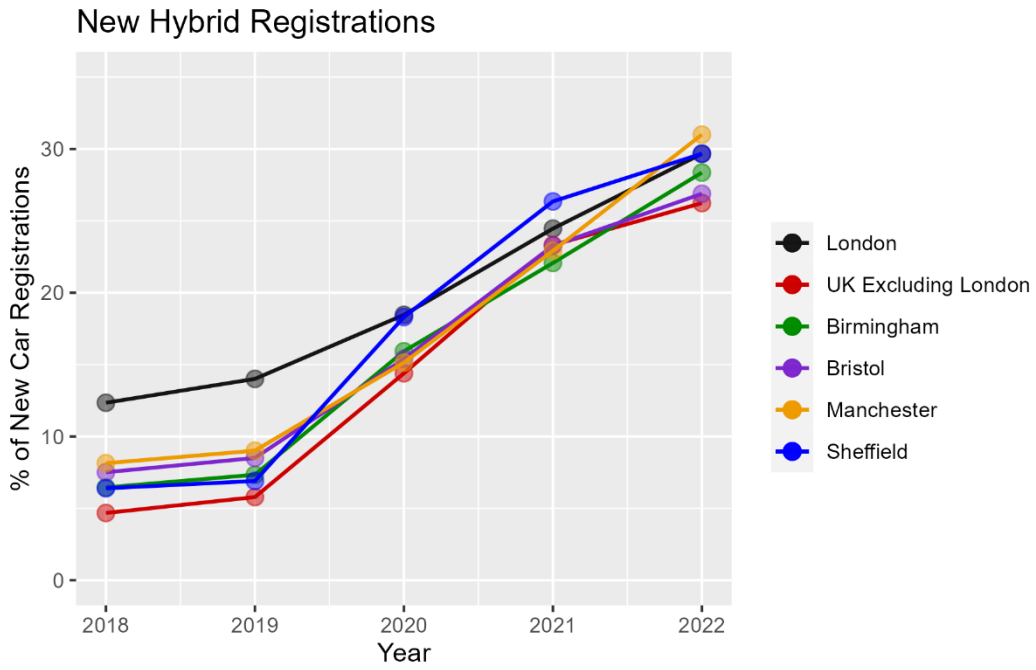

Figure 6: **Licenced hybrid cars as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022[6].**

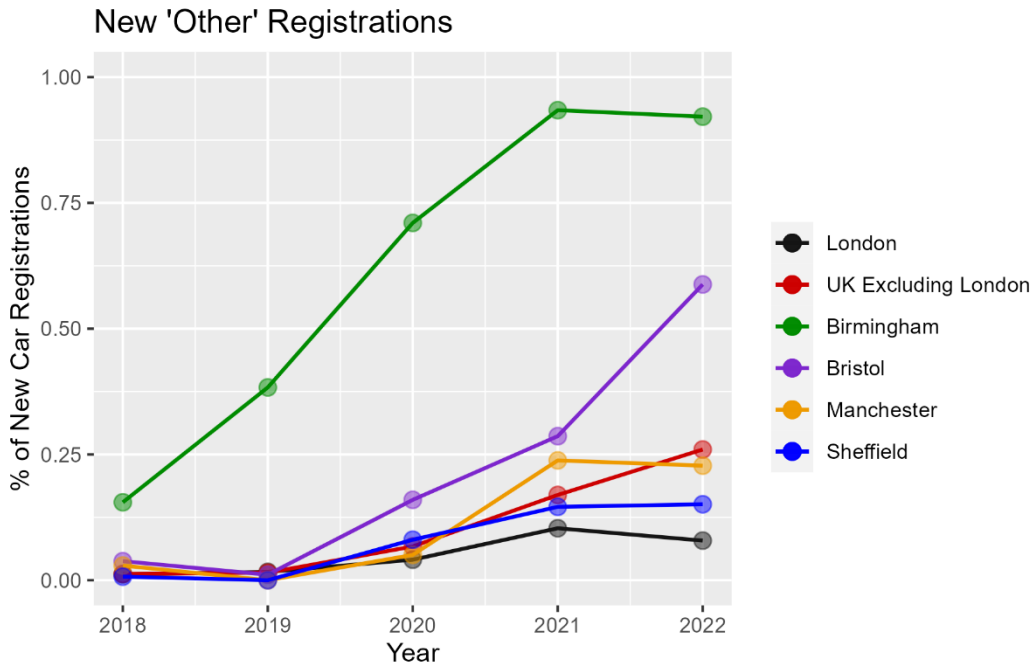

Figure 7: **Licenced 'other' fuel type cars as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022[6].**

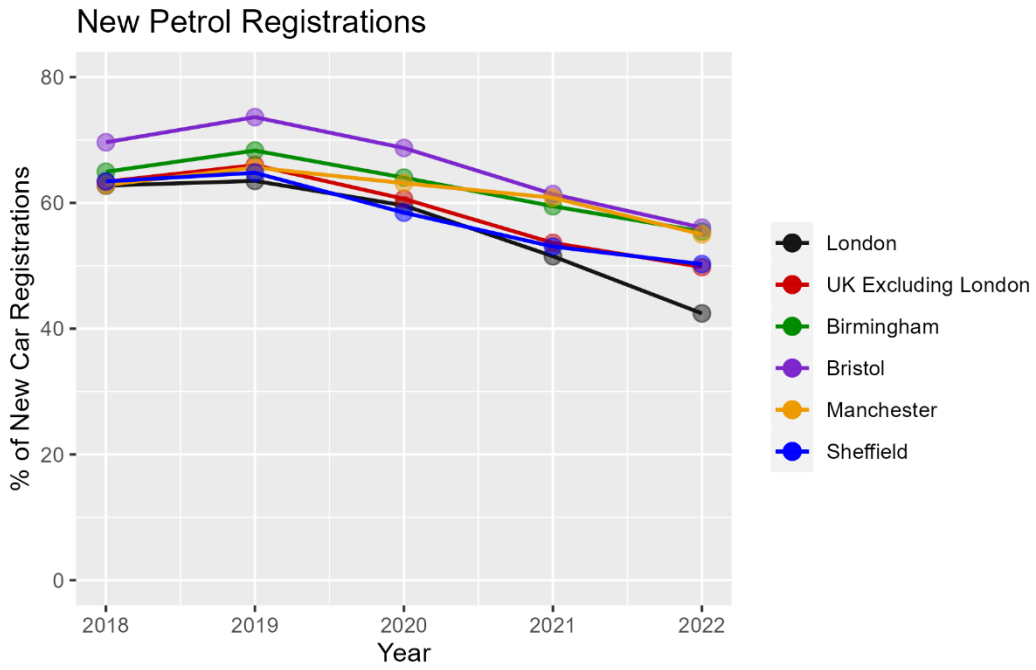

Figure 8: **Licenced petrol cars as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022[6].**

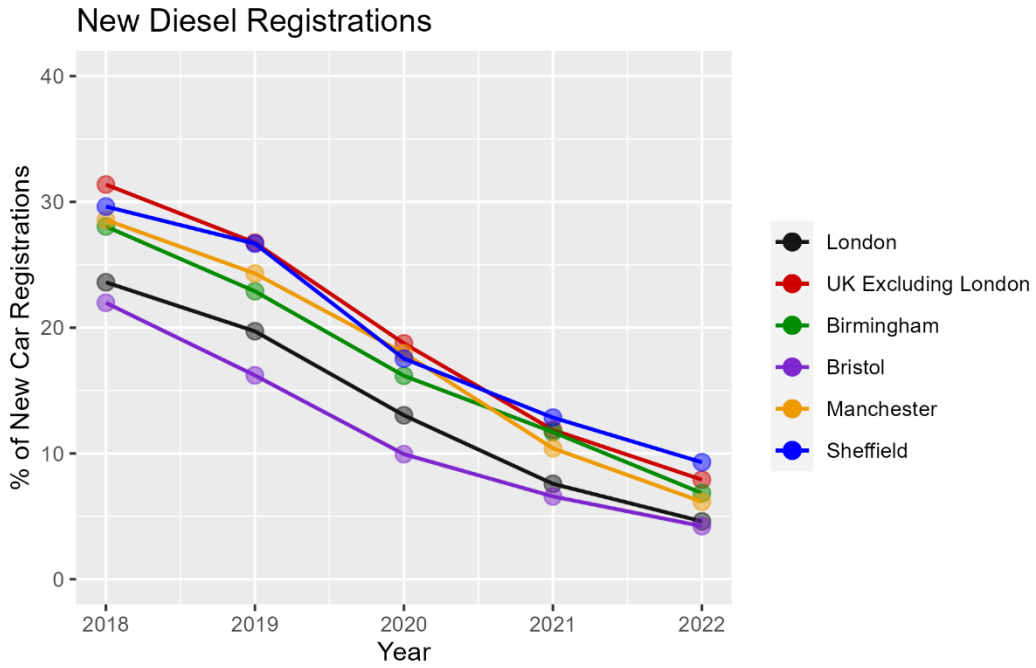

Figure 9: **Licenced diesel cars as a percent of all cars registered in London, the UK excluding London, Birmingham, Bristol, Manchester and Sheffield between 2018 and 2022[6].**

Electric Vehicle Charging Infrastructure

1.11 Zapmap provides statistics on electric vehicle charging infrastructure across the UK on a monthly basis[9]. Data from the end of October 2023 show that London's charging infrastructure makes up a large proportion of that available across the UK, at 35.5% of the total number of UK charge points; Greater London had a total of 18,287 charge points out of 51,516 in the whole of the UK. Overall, there has been a 45% increase in the total number of charging devices in the UK since October 2022.

Summary

1.12 While BEV and hybrid vehicles still make up a small proportion of the total car fleet, the uptake of BEV and hybrid cars has been rapid in recent years. In London a much larger proportion of the car fleet is made up of BEVs compared with elsewhere in the UK, and the proportion is growing at a faster rate, also outpacing the rate of hybrid uptake in London. London also has a large proportion of the total number of electric vehicle charge points in the UK.

[9] Zapmap (2023) EV charging statistics 2023 [online]. Available: https://www.zap-map.com/ev-stats/how-many-charging-points

Methodology and Additional Information

1.13 Data on licenced vehicles[1,6] in the UK have been used to calculate the proportion of BEVs in the car fleet by summing data on battery electric and fuel cell electric vehicles. The proportions of hybrid vehicles have been calculated by summing data on range extended electric, hybrid petrol, hybrid diesel, plug-in hybrid petrol and plug-in hybrid diesel vehicles. 'Other' vehicle types include gas, gas bi-fuel, petrol/gas and gas-diesel, new fuel technologies and steam. Values have been normalised where necessary to correct for rounding errors in the original dataset.

1.14 Data on vehicle registrations have been taken from the SMMT website[5]. Some months of data are missing between March 2019 and June 2023. The values presented in Figure 2 relate to sales in the preceding four months to smooth out missing and anomalous months (data for March 2020 are highly skewed by a strong downturn in car sales).