

# Emissions of Air Quality pollutants from **PASSENGER CARS** in Leeds: *Now & future trends*

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# Vehicle Emission Measurements in Leeds

## Real Driving Emissions

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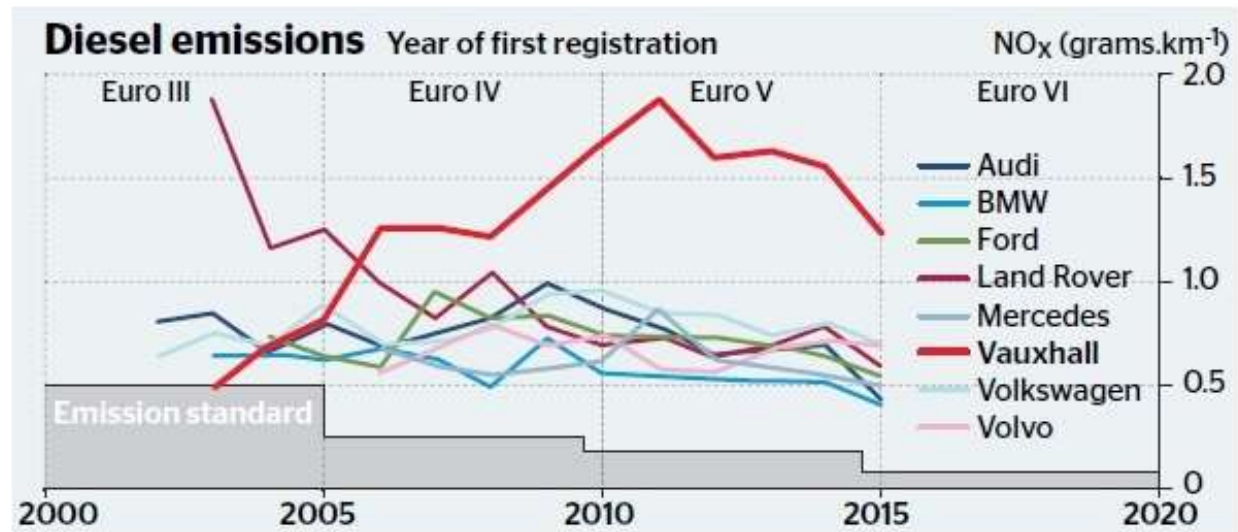
# Expert points finger at Vauxhall over diesel emission test results

Billy Kenber Investigations Reporter  
Alexi Mostrous Special Correspondent

Vauxhall faces being dragged into the diesel emissions scandal after research found that its vehicles produced “suspiciously high” levels of poisonous fumes.

James Tate, an expert on air pollution, presented research yesterday suggesting that the British manufacturer’s entire fleet of diesel cars was significantly more polluting on the road than its rivals, including Volkswagen.

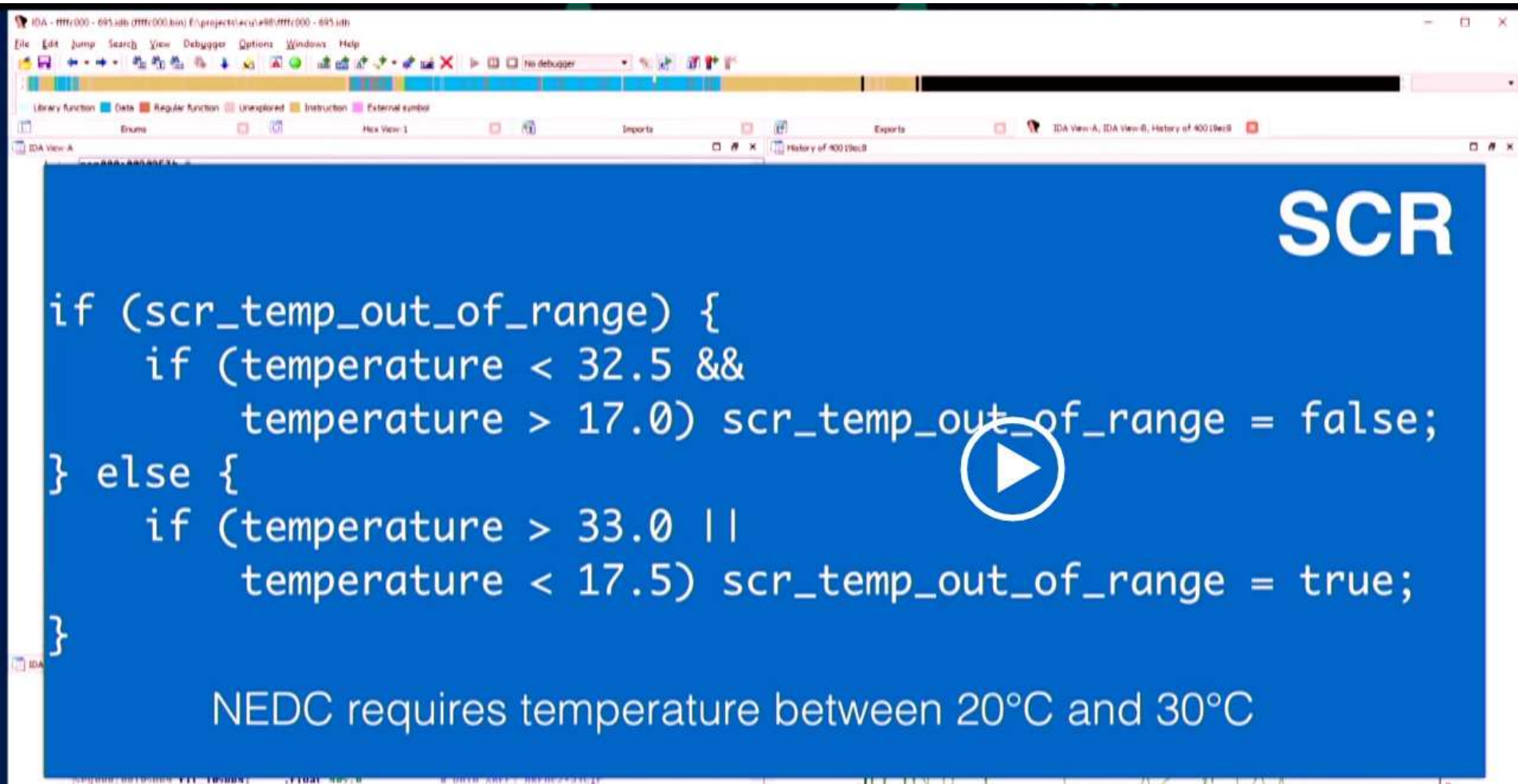
A second study, by a group of Swiss researchers, raised questions about



# SOFTWARE DEFINED EMISSIONS

A hacker's review of Dieselgate | 27<sup>th</sup> December 2016

Felix „tmbinc“ Domke [@tmbinc](#)



## Supermini or superpolluter?

Legal limit for diesel cars

**0.08g** nitrogen dioxide (NO<sub>2</sub>)  
per kilometre

VW Polo 1.4 TDI

**1.2g/km**

Highest NO<sub>2</sub> emissions  
of diesels tested

Fully-laden  
Scania R 450

**1.2g/km**



The Polo's emissions  
equalled those of a diesel  
lorry with a 13-litre engine



# VW Polo as toxic as fully laden lorry

**Jonathan Leake**

ENVIRONMENT EDITOR

BRITAIN'S leading supermini, the Volkswagen Polo, is among the worst polluters on the road, according to newly revealed test data.

VW, disgraced in the 2015 Dieselgate scandal, pledged then to slash emissions but researchers found that the latest diesel-engined version of the Polo emitted as much toxic



was that small diesel cars emitted far more pollution than larger cars and even lorries," said Tate. Other high polluters included a Vauxhall Astra, Ford Focus and BMW 318d. "On average, the diesel cars tested emitted as much NO<sub>2</sub> as 1,000 petrol-hybrid cars.

"These results also suggest that replacing diesel taxis with petrol-hybrids would be one of the quickest ways to improve city centre air quality," he said.

**The Sunday Times | 5<sup>th</sup> March 2017**

## Transport for London:

Taking the road into the lab.  
Real London Driving (spds)  
Supporting ULEZ plans  
Euro 6 testing.

- 9 diesel cars
- 2 petrol cars
- 1 hybrid car
- 2 HGVs

Moody, A., Tate, J. 2017. In Service CO<sub>2</sub> and NO<sub>x</sub> Emissions of Euro 6/VI Cars, Light- and Heavy- duty goods Vehicles in Real London driving: Taking the Road into the Laboratory. Journal of Earth Sciences and Geotechnical Engineering 7(1):51-62 01 Jan 2017.

# Passenger cars NO<sub>x</sub> emissions

Taking the road into the Laboratory (TfL)

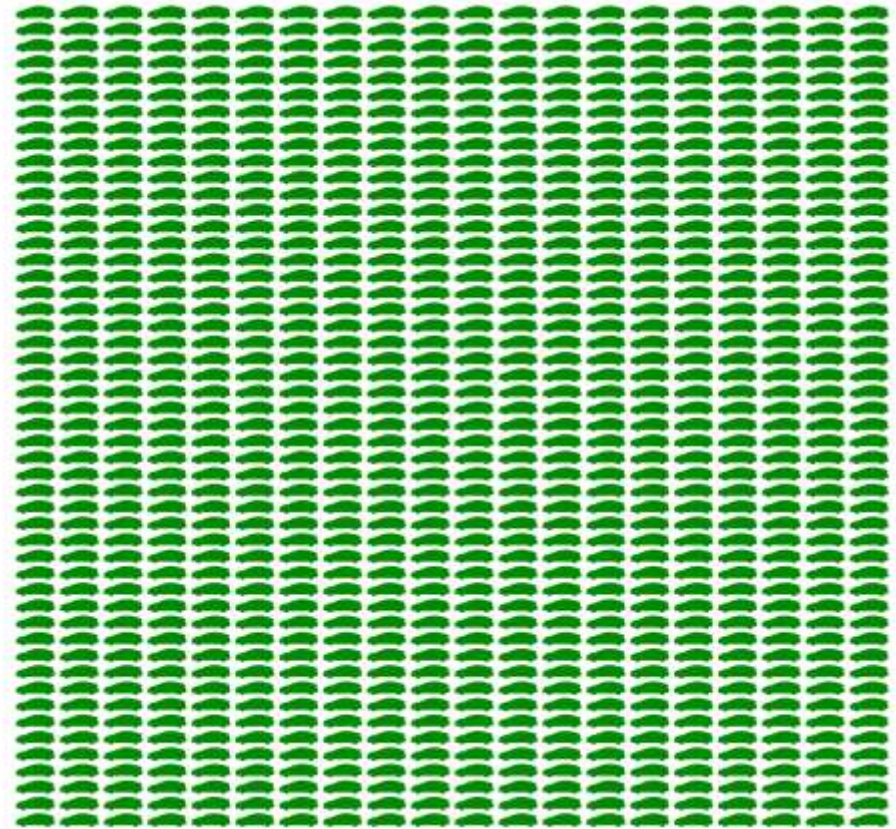


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SINGLE (average) Euro 6 diesel car = 1000 hybrid EV cars e.g. Toyota Prius



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# PASSENGER CARS

## Vehicle Emission Standards



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EUROPE					
Euro 1	Euro 2	Euro 3	Euro 4	Euro 5a	Euro 5b
			Revised ECE + EUDC cycle		
1995	Jan 98	Jan 01	Jan 05	Sep 09	Sep 11
					Sep 14
					Sep 17
					Jan 21
					2025

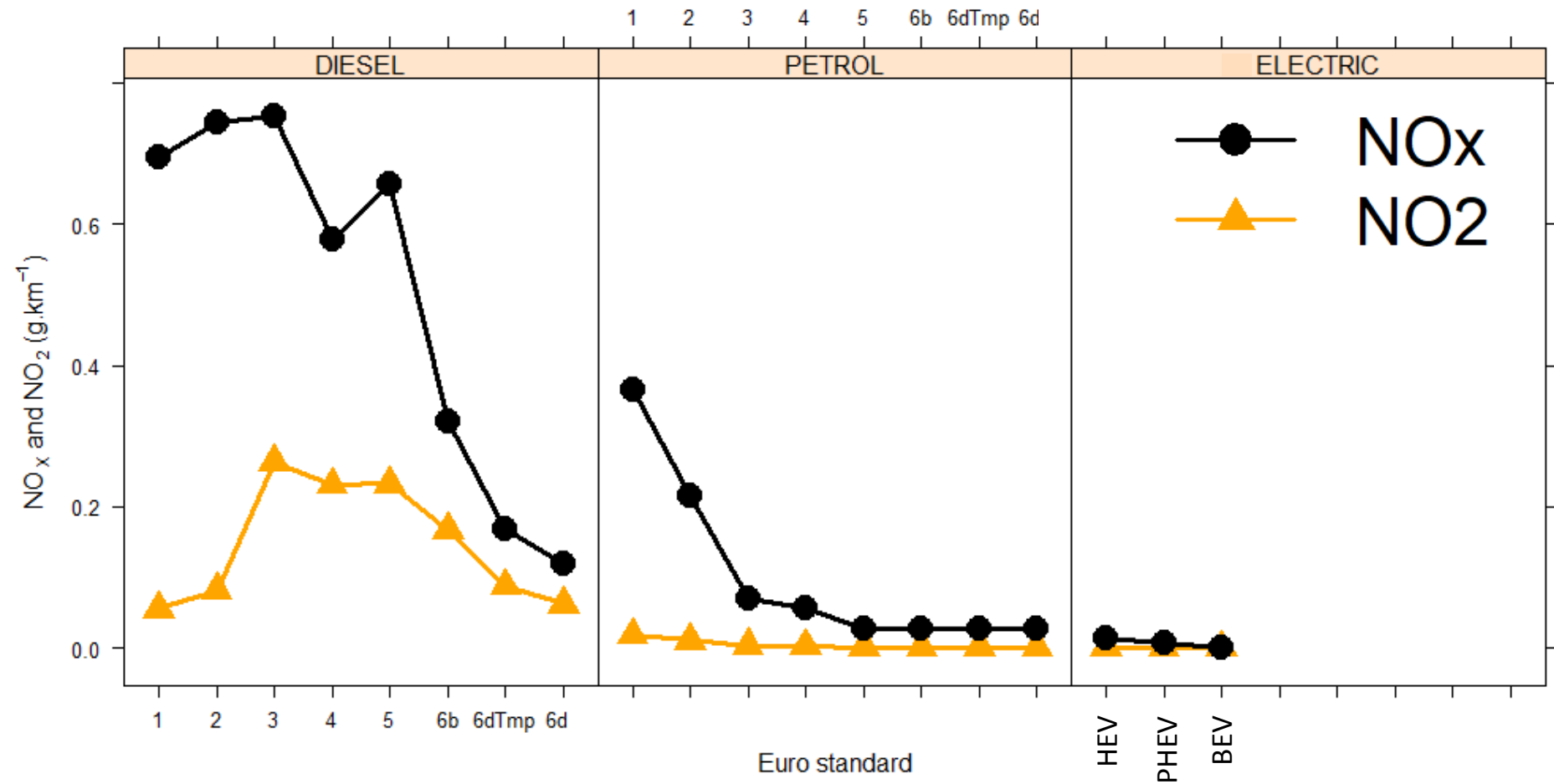
	Euro 5b	Euro 6b	Euro 6d-TEMP	Euro 6d
			WLTC + RDE	
new TYPES	Sep 11	Sep 14	Sep 17	Sep 20
ALL new VEHICLES	Jan 13	Sep 15	Sep 19	Sep 21

# PASSENGER CARS

Emission Factors (grams.km<sup>-1</sup>)



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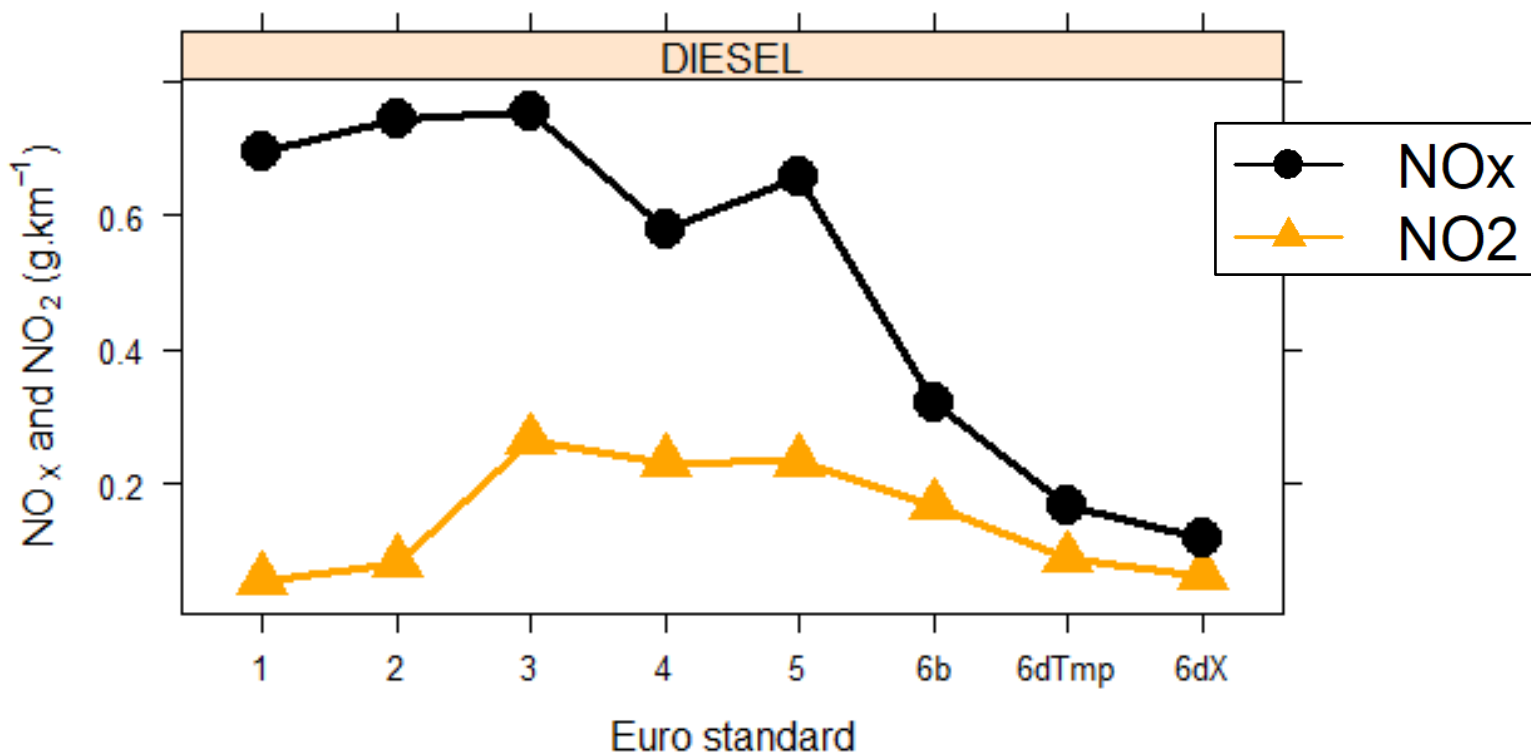


# PASSENGER CARS

Emission Factors ( $\text{grams.km}^{-1}$ )



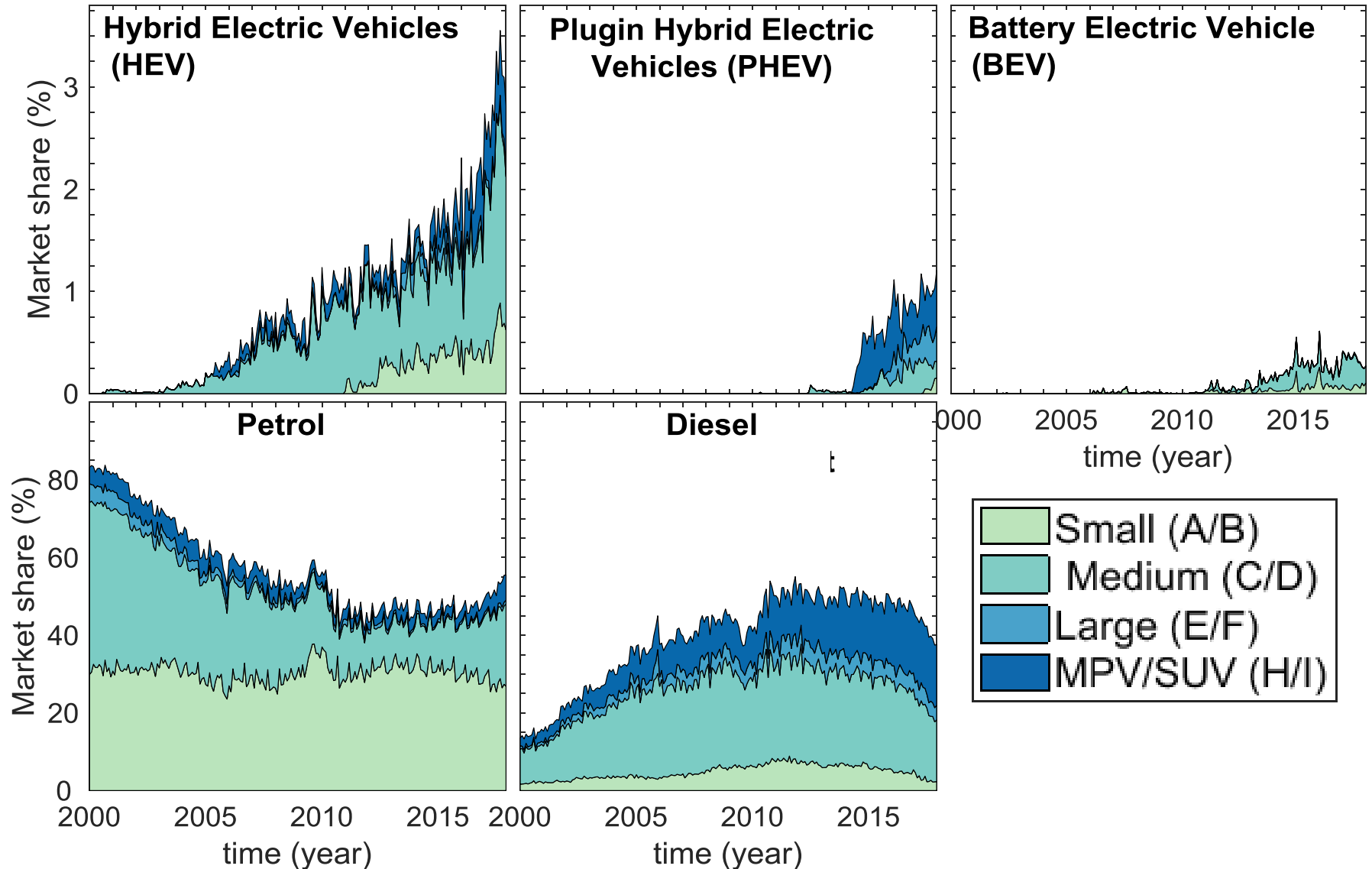
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	Euro 5b	Euro 6b	Euro 6d-TEMP	Euro 6d
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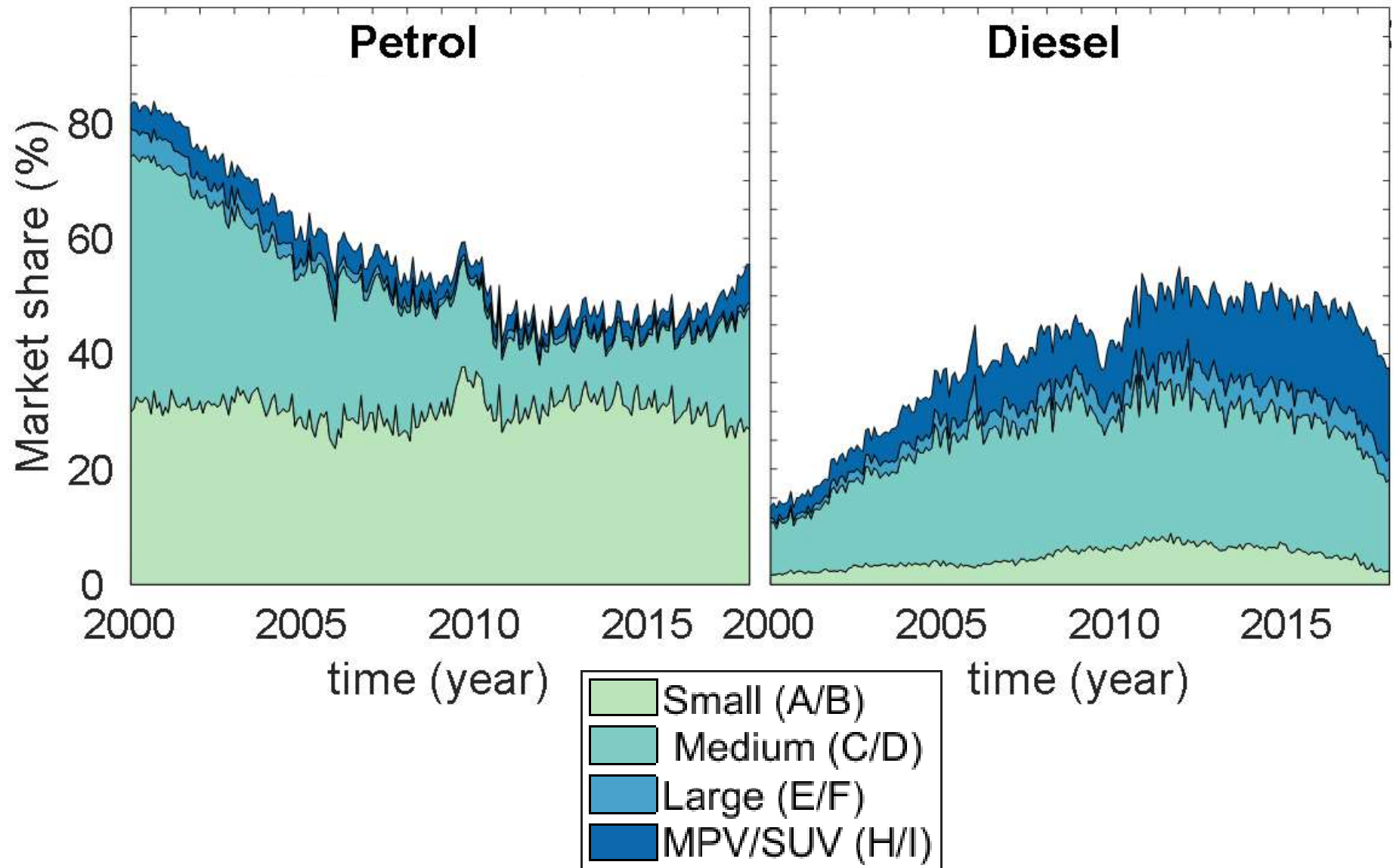
# UK passenger car fleet sales:

Monthly 2000-17 SMMT



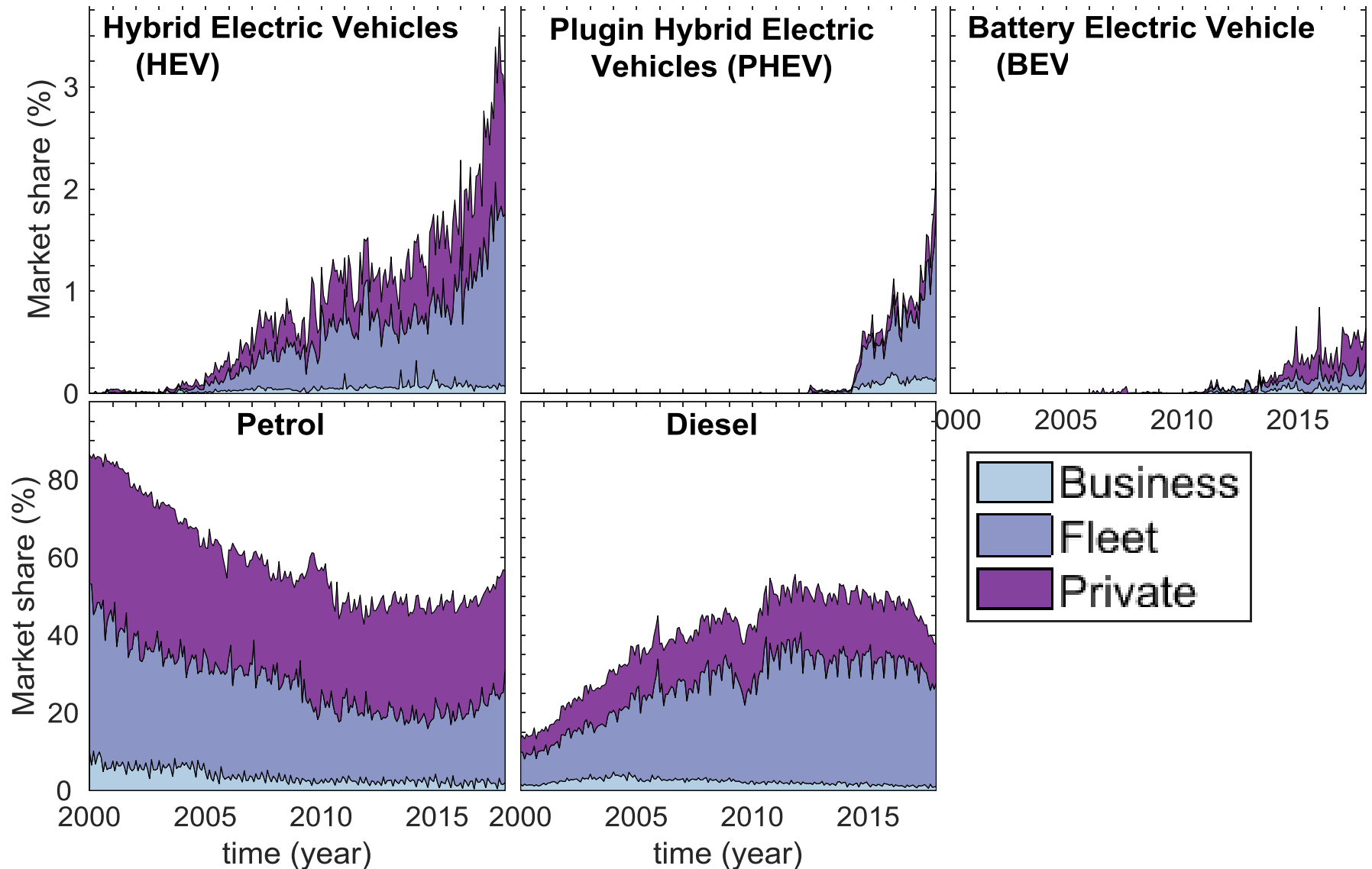
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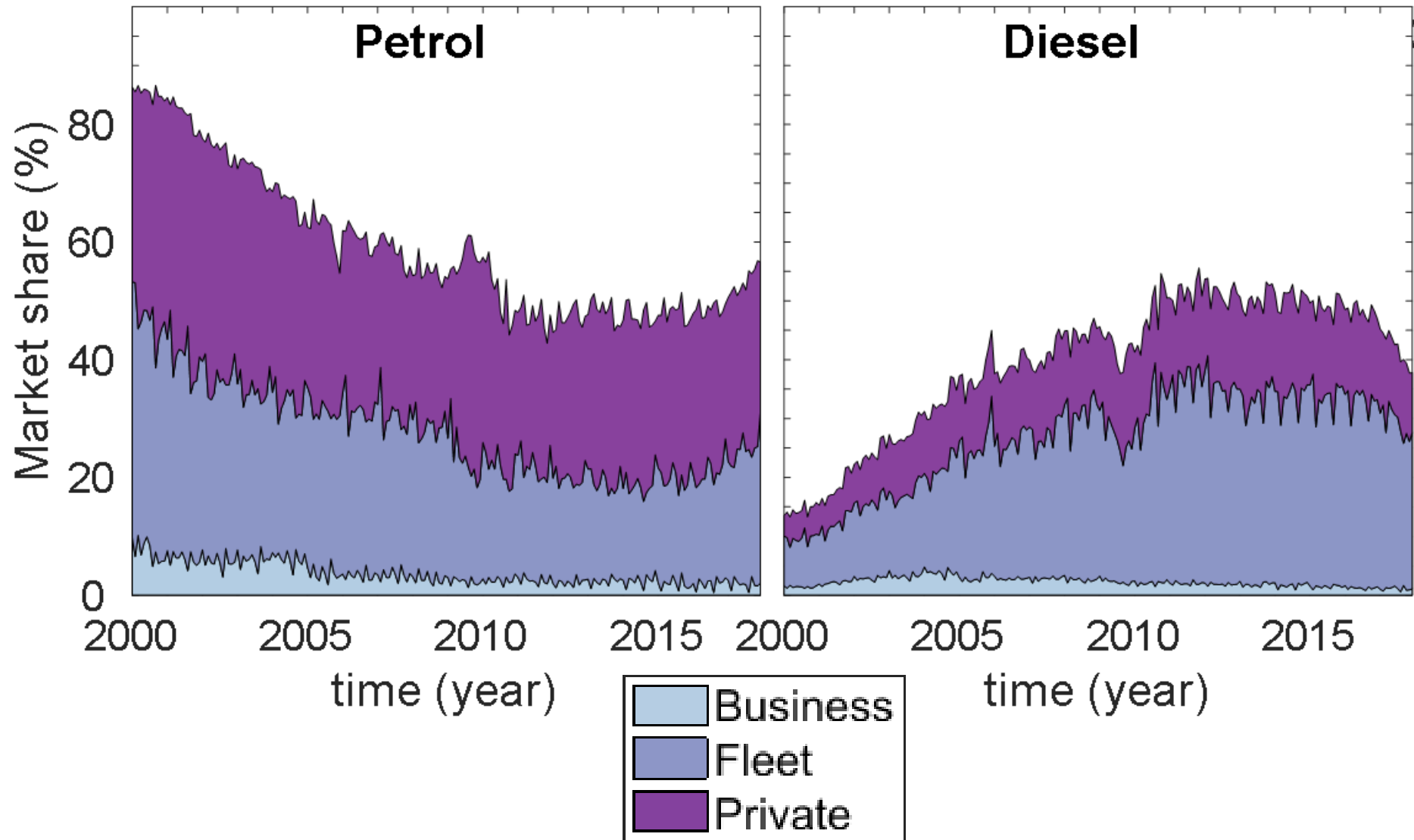
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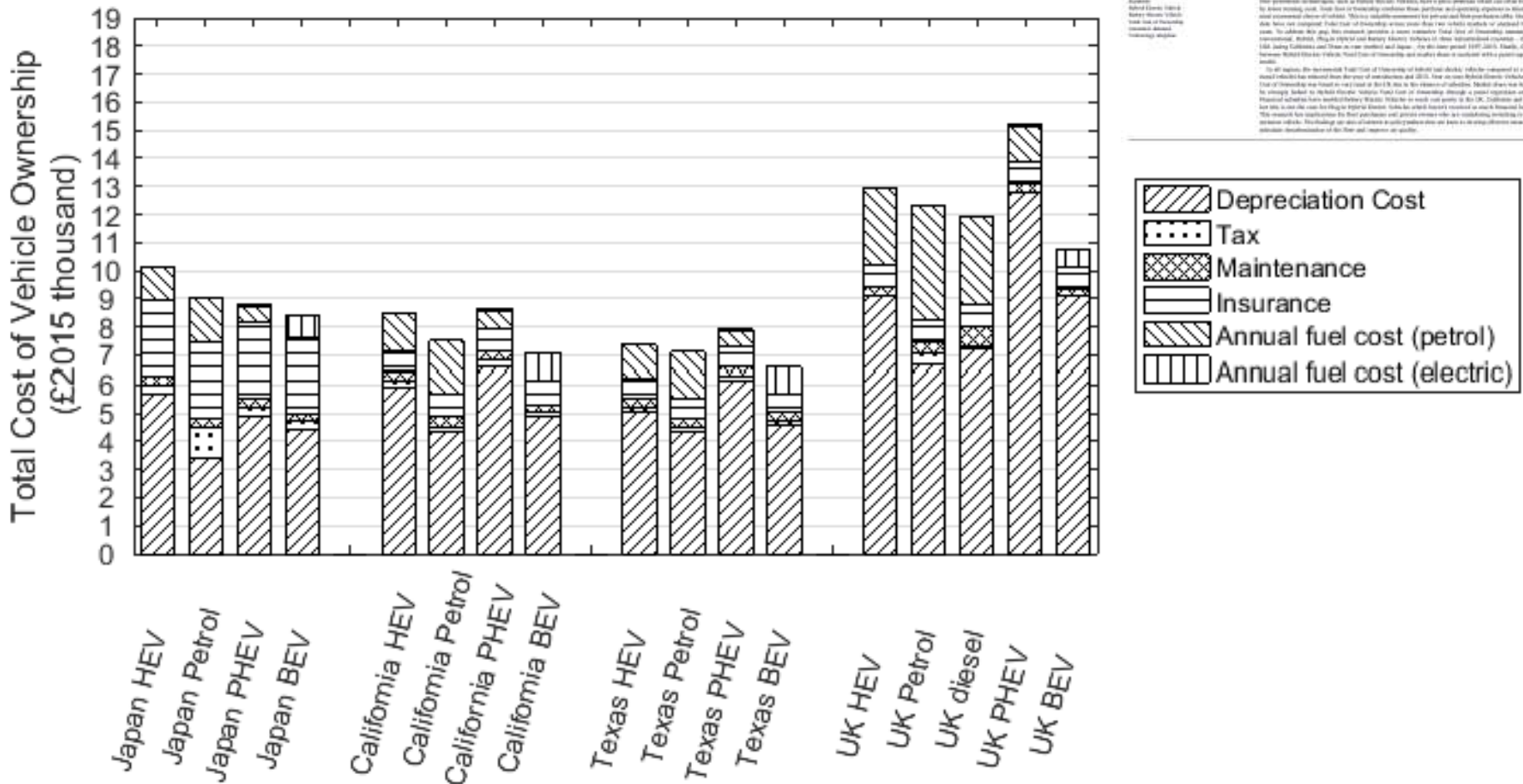
# UK passenger car fleet sales:

Monthly 2000-17 SMMT



# Total Cost of Ownership

Hybrid and BEV cars: Japan, US & UK in 2015



Palmer, K., Tate, J., Wadud, Z., Nellthorp, J. 2018. Total cost of ownership & market share for hybrid & electric vehicles in the UK, US & Japan. *Applied Energy*, 209, pp108-119, doi:10.1016/j. apenergy.2017.10.089

Environment ► Climate change Wildlife Energy Pollution

**Electric, hybrid and low-emission cars****Electric cars already cheaper to own and run than petrol or diesel – study**

Exclusive: Pure electric cars cost less over four years than petrol or diesel cars in the UK, US and Japan, researchers say, but China is set to lead the market

**Damian Carrington**  
*Environment editor*

🐦 @dpcarrington

Fri 1 Dec 2017 17:00 GMT



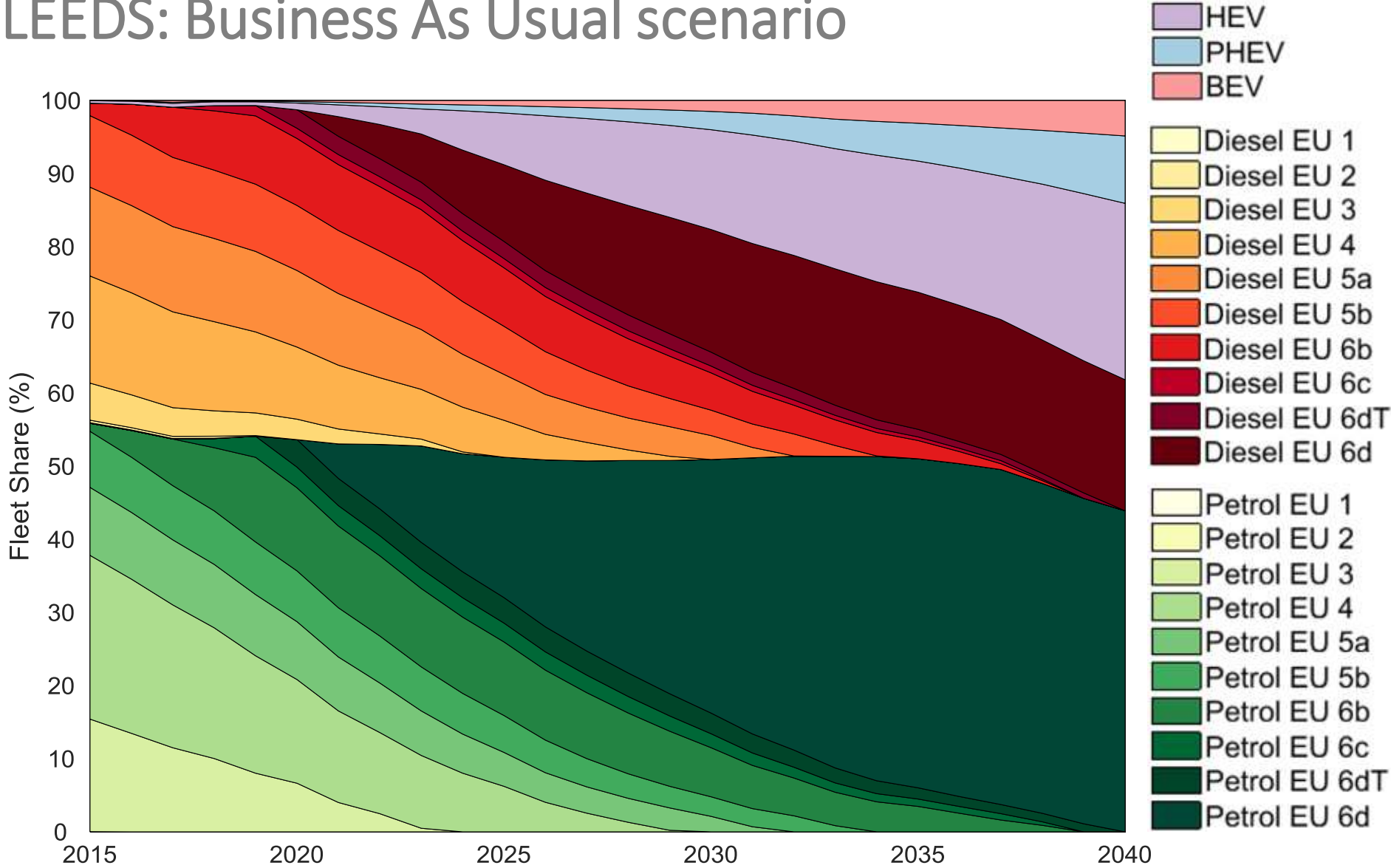
🕒 This article is 2 months old

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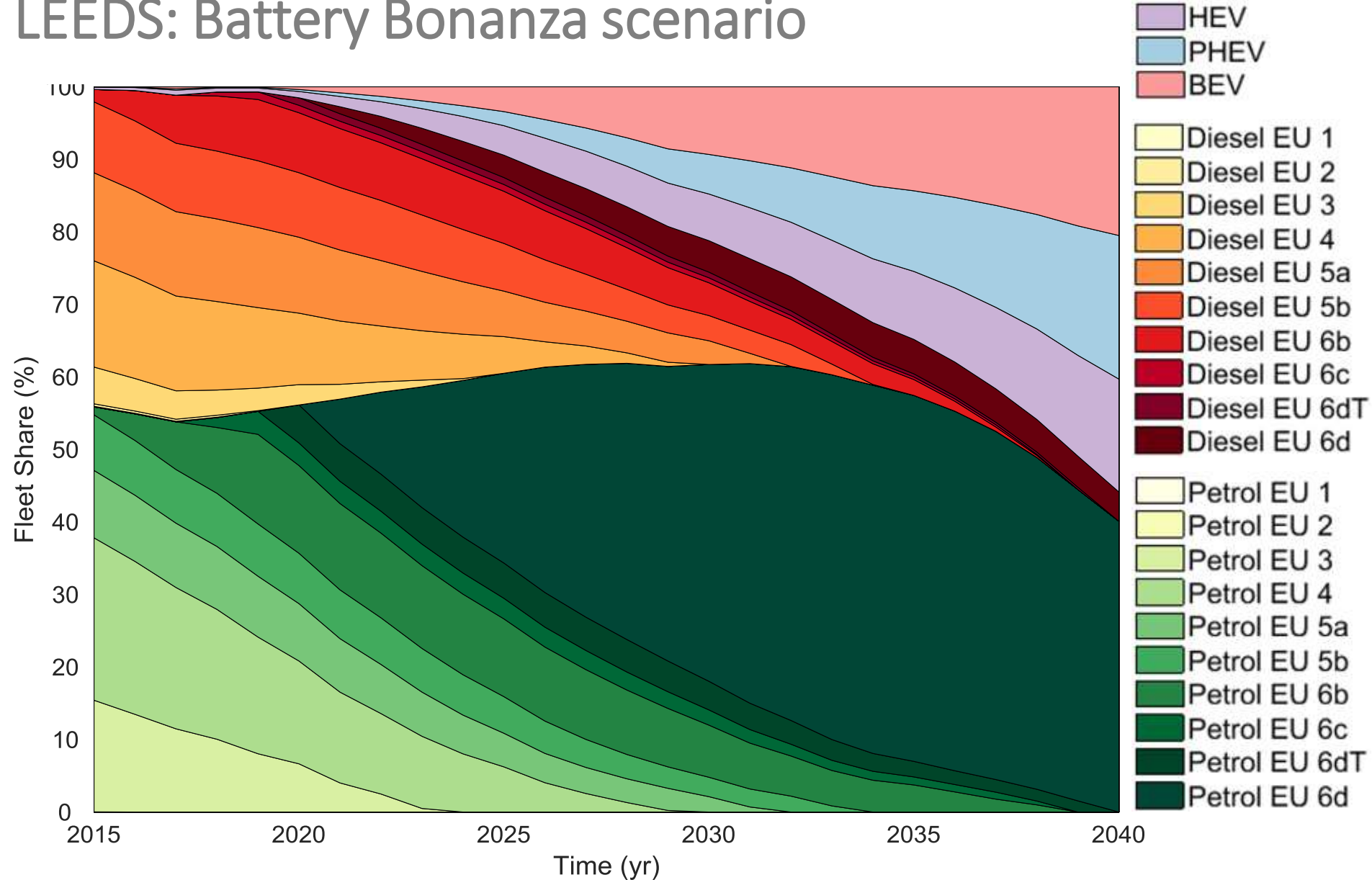
# Fleet share (vehicle kms) projections

LEEDS: Business As Usual scenario



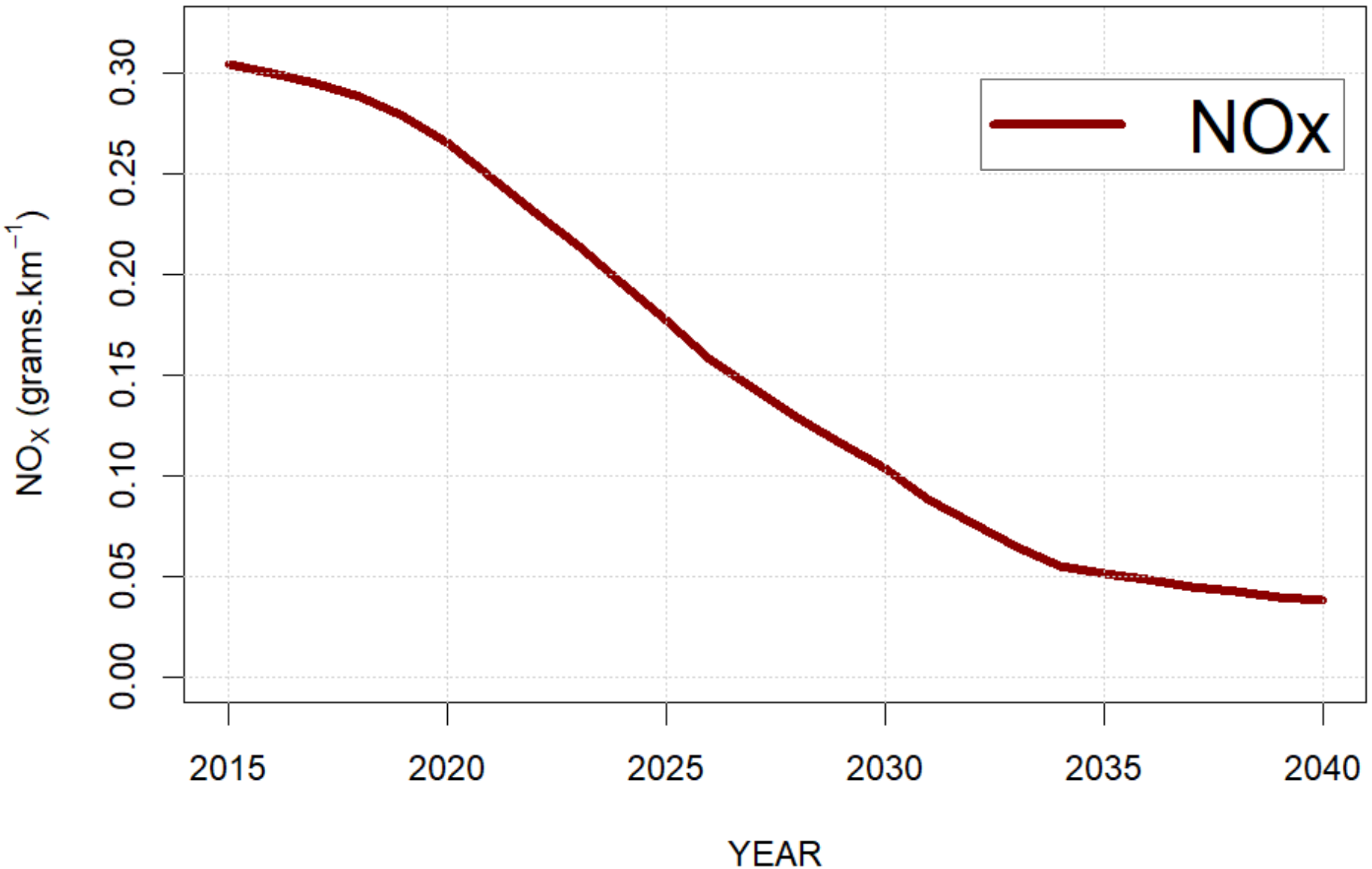
# Fleet share (vehicle kms) projections

LEEDS: Battery Bonanza scenario



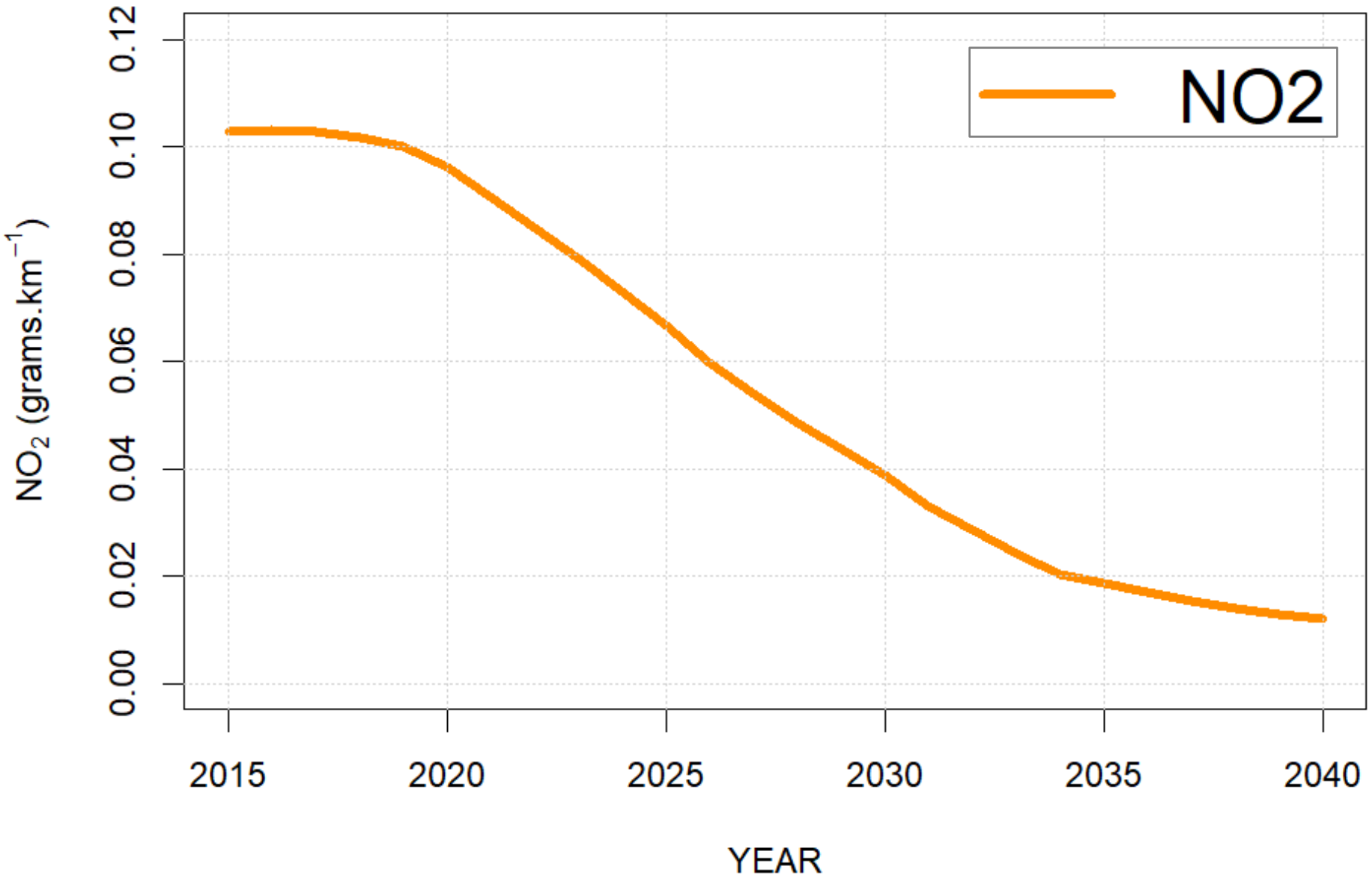
# Passenger Car NO<sub>x</sub> emission projections

Battery Bonanza scenario | Average car Emissions



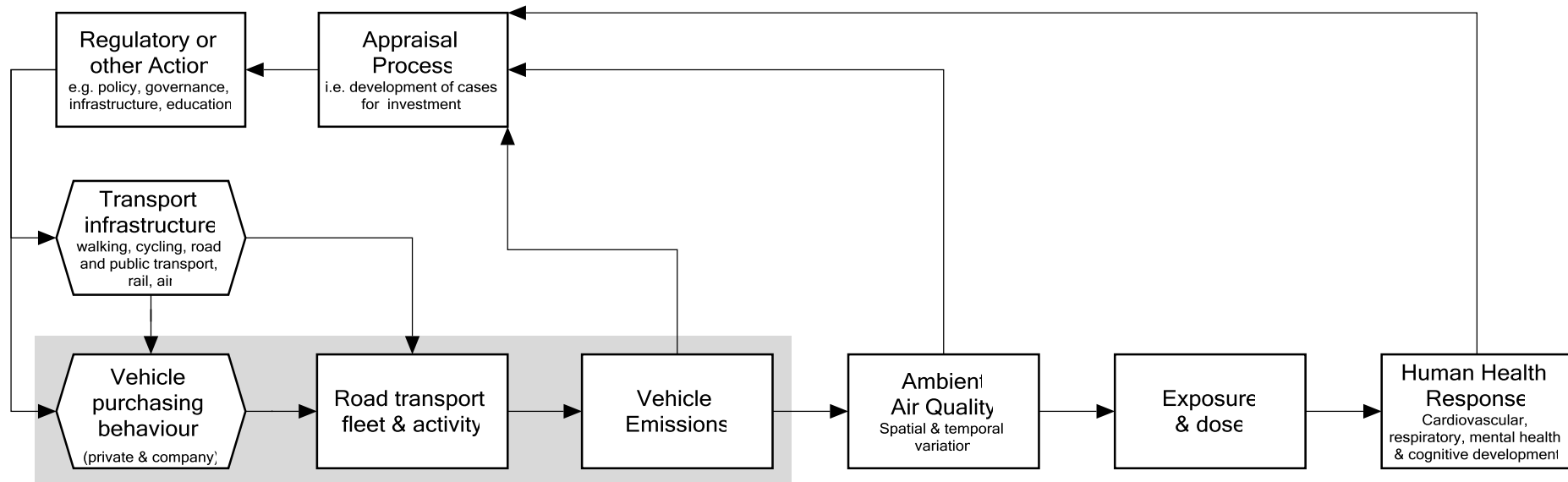
# Passenger Car NO<sub>2</sub> emission projections

Battery Bonanza scenario | Average car Emissions



# Urban Air Quality

## Transport & Health



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