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**Federal Office for the Environment FOEN**  
Air Pollution Control and Chemicals Division  
Transport Section

# WG Remote Sensing

## **Study on the durability of European passenger car emission control systems utilizing remote sensing data - DETERS**

ERMES Plenary Meeting, May 14th 2019

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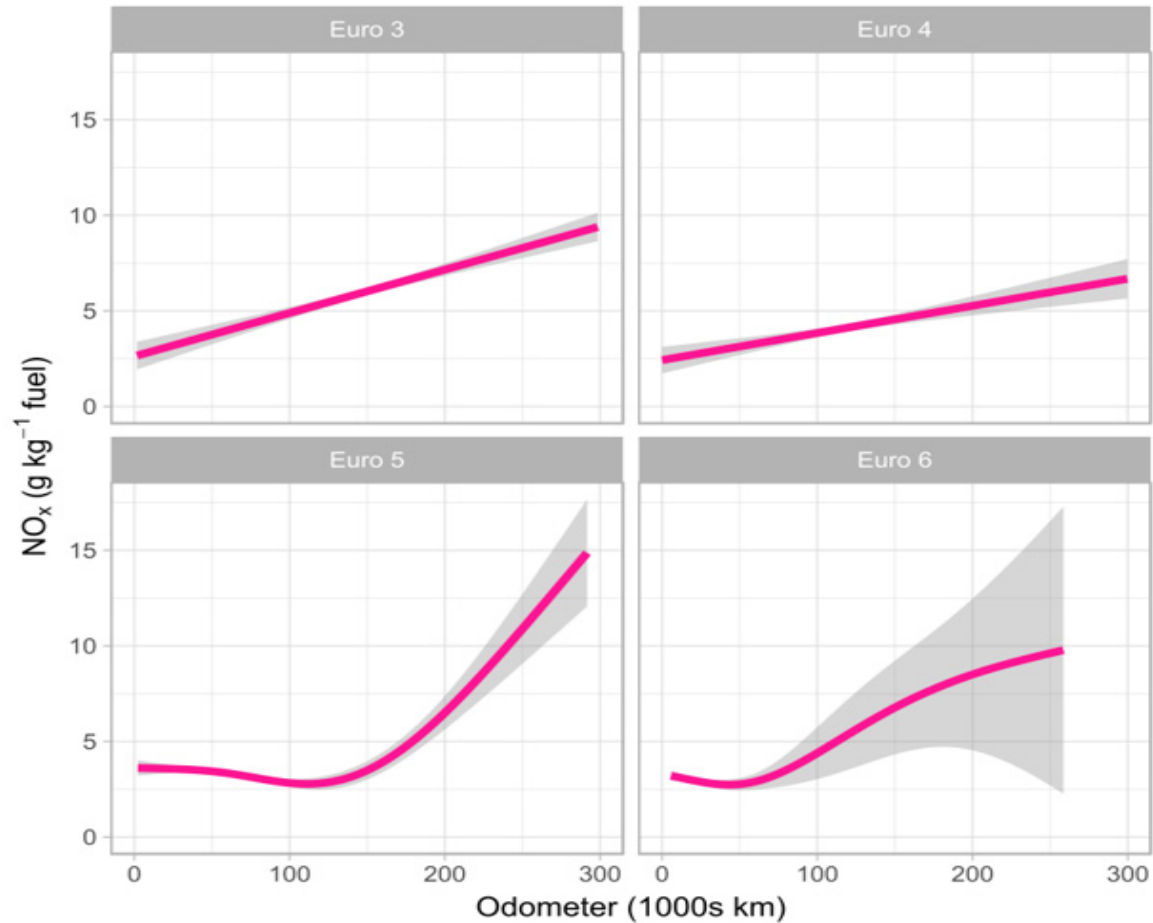


# Goals

- This study analyses comprehensive remote sensing data to better understand deterioration effects from passenger cars on the emissions of NO<sub>x</sub> (including NO<sub>2</sub>), CO and hydrocarbons (HC).
- The CONOX database has been analysed to consider also the mileage deterioration effects for individual manufacturers



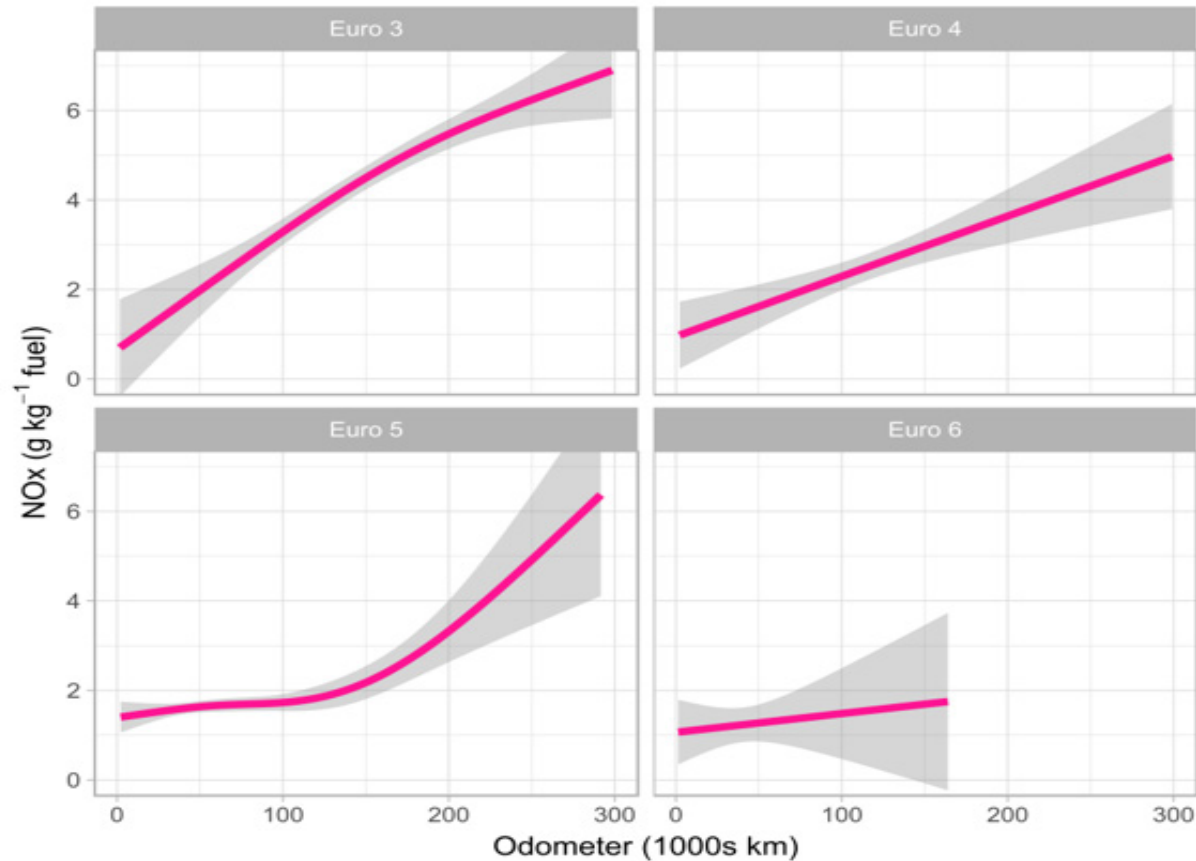
# Petrol cars – Emissions of NOx



**Figure 7.** NO<sub>x</sub> emissions from petrol passenger cars, split by Euro standard. The smooth lines show the results of fitting a GAM to the data.



# Petrol cars – Emissions of Nox (UK data)



**Figure 15.** NOx emissions as a function of vehicle mileage for petrol passenger cars, split by Euro standard. The smooth lines show the results of fitting a GAM to the data.



# Petrol cars – Emissions of CO (UK data)

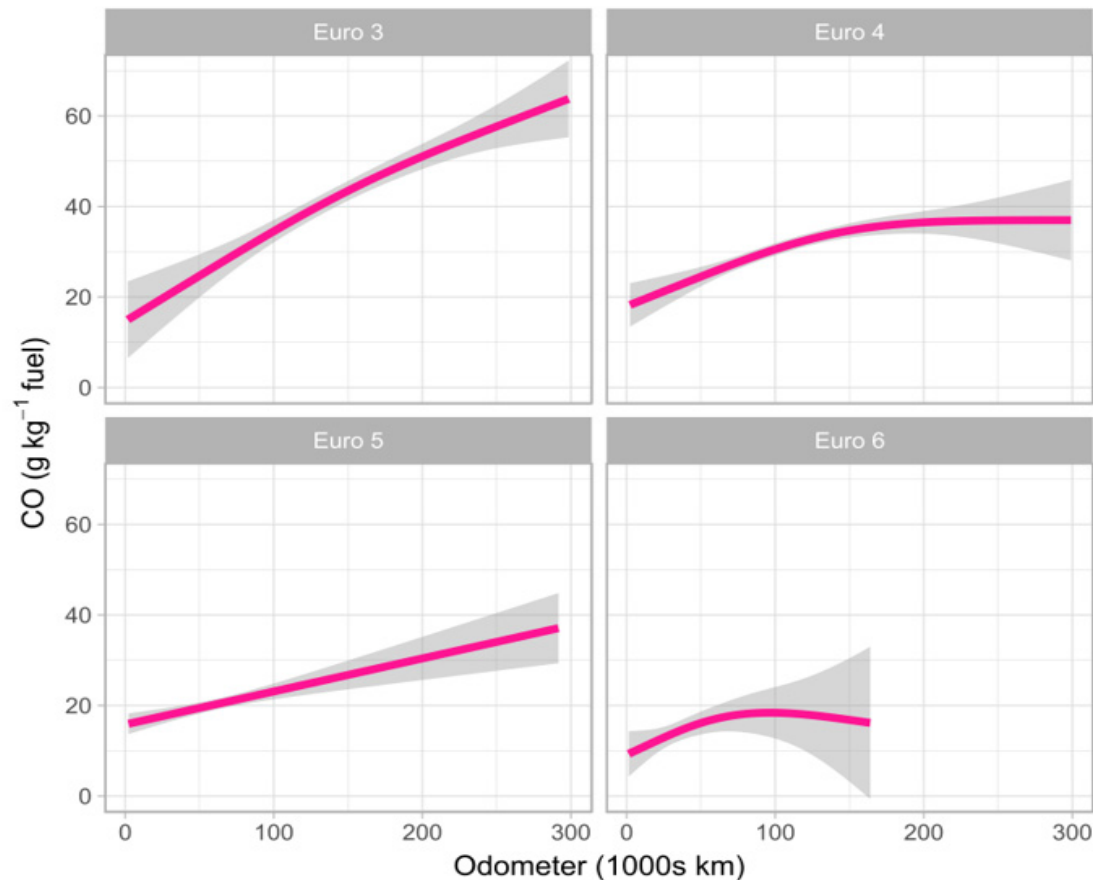
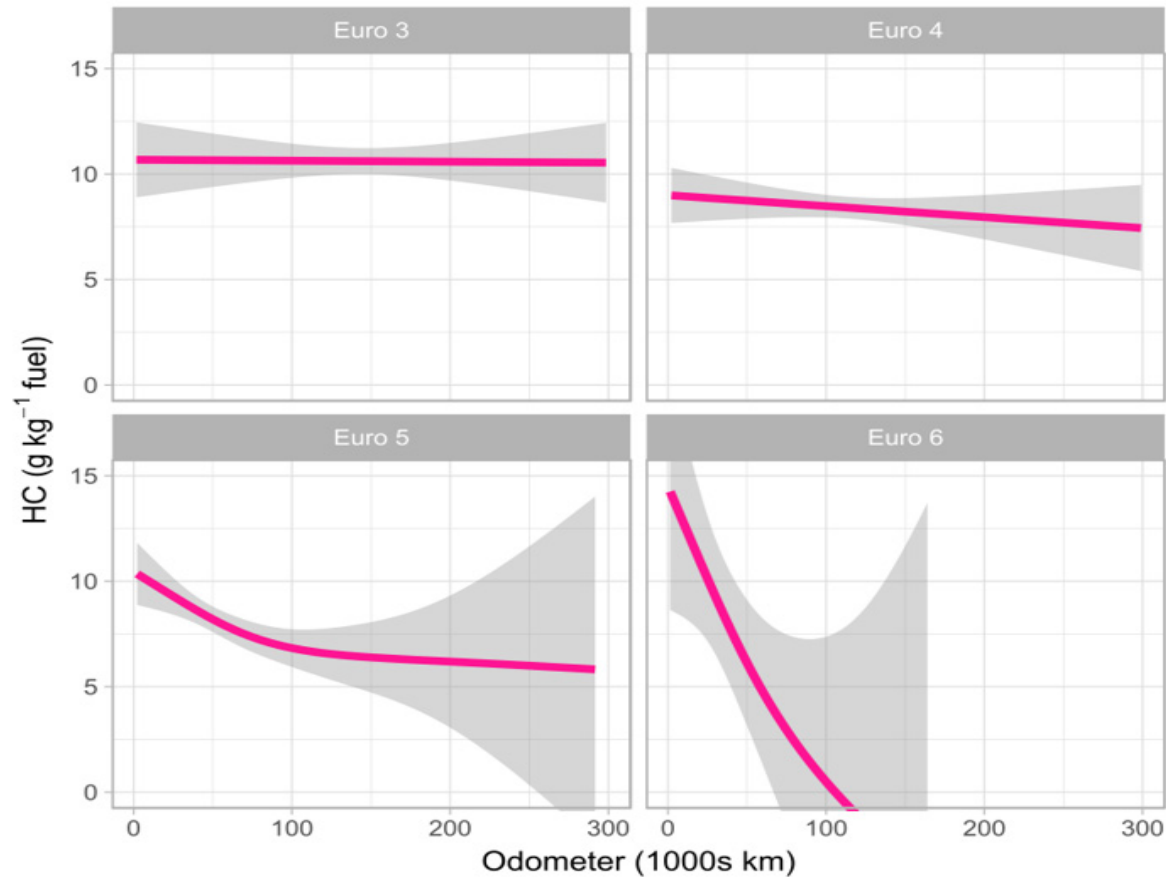


Figure 11. CO emissions (g kg<sup>-1</sup> fuel) vs vehicle mileage for UK petrol passenger cars, split by Euro standard. The smooth lines show the results of fitting a GAM to the data.



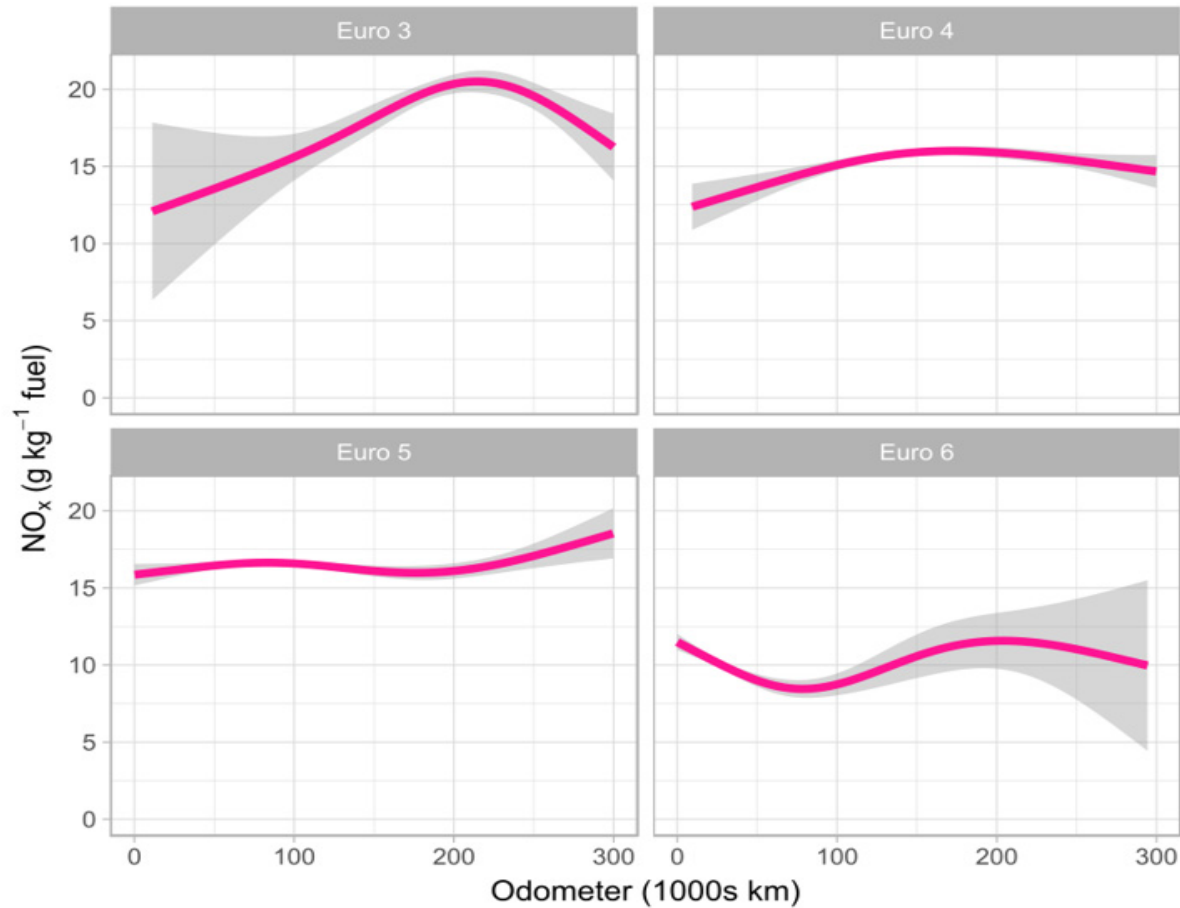
# Petrol cars – Emissions of HC (UK data)



**Figure 12.** HC emissions as a function of vehicle mileage for petrol passenger cars, split by Euro standard. Data from Opus and FEAT instrument.



# Diesel cars – Emissions of NOx

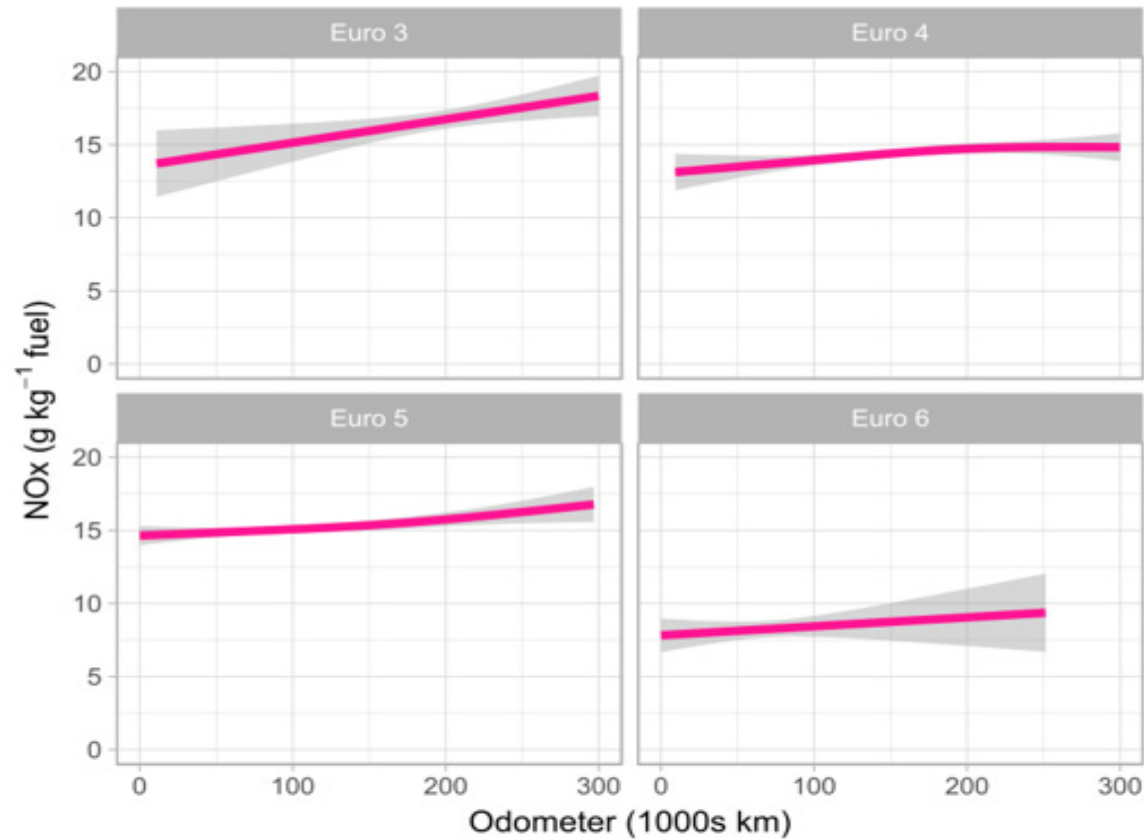


**Figure 8.** NO<sub>x</sub> emissions from diesel passenger cars, split by Euro standard. The smooth lines show the results of fitting a GAM to the data.





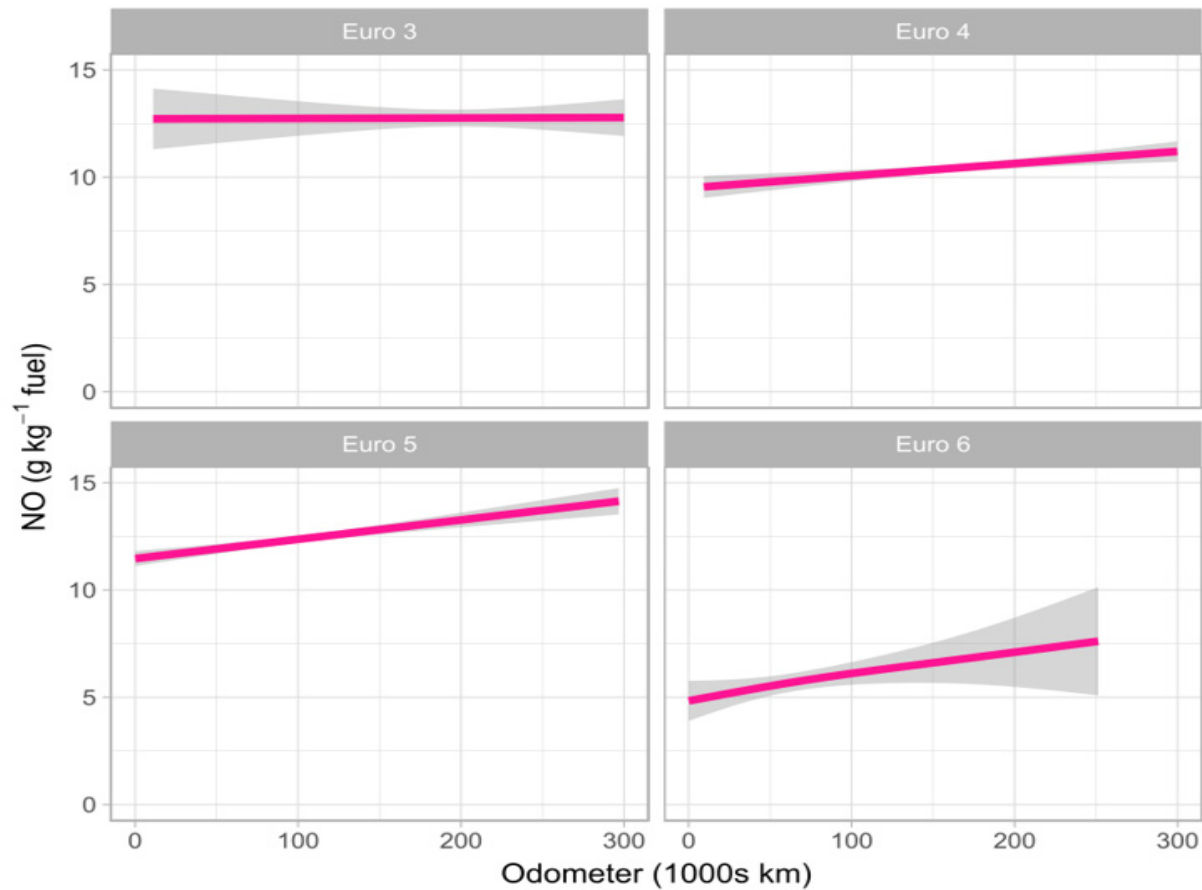
# Diesel cars – Emissions of Nox (UK data)



**Figure 20.** NOx emissions as a function of vehicle mileage for diesel passenger cars, split by Euro standard.



# Diesel cars – Emissions of NO (UK data)



**Figure 18.** NO emissions as a function of vehicle mileage for diesel passenger cars, split by Euro standard. The smooth lines show the results of fitting a GAM to the data.



# Diesel cars – Emissions of NO<sub>2</sub> (UK data)

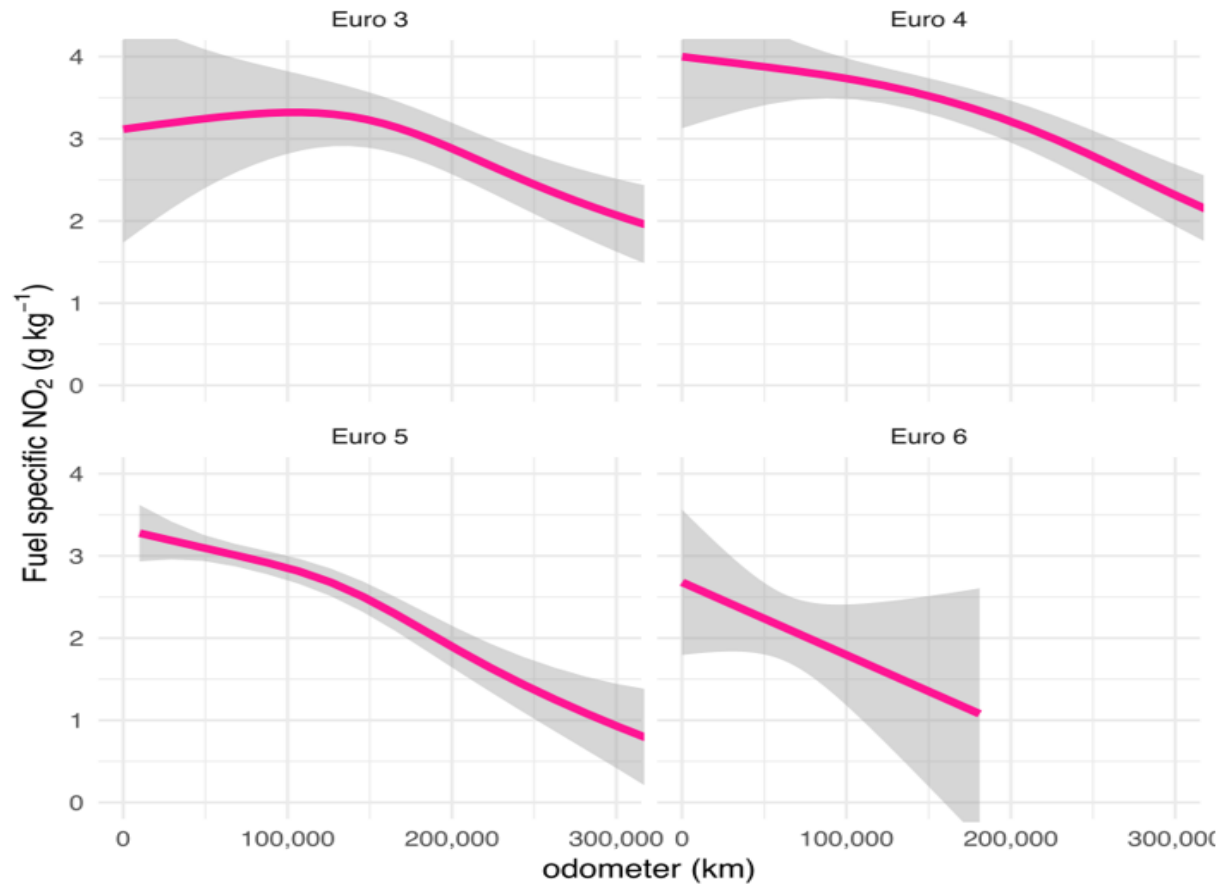
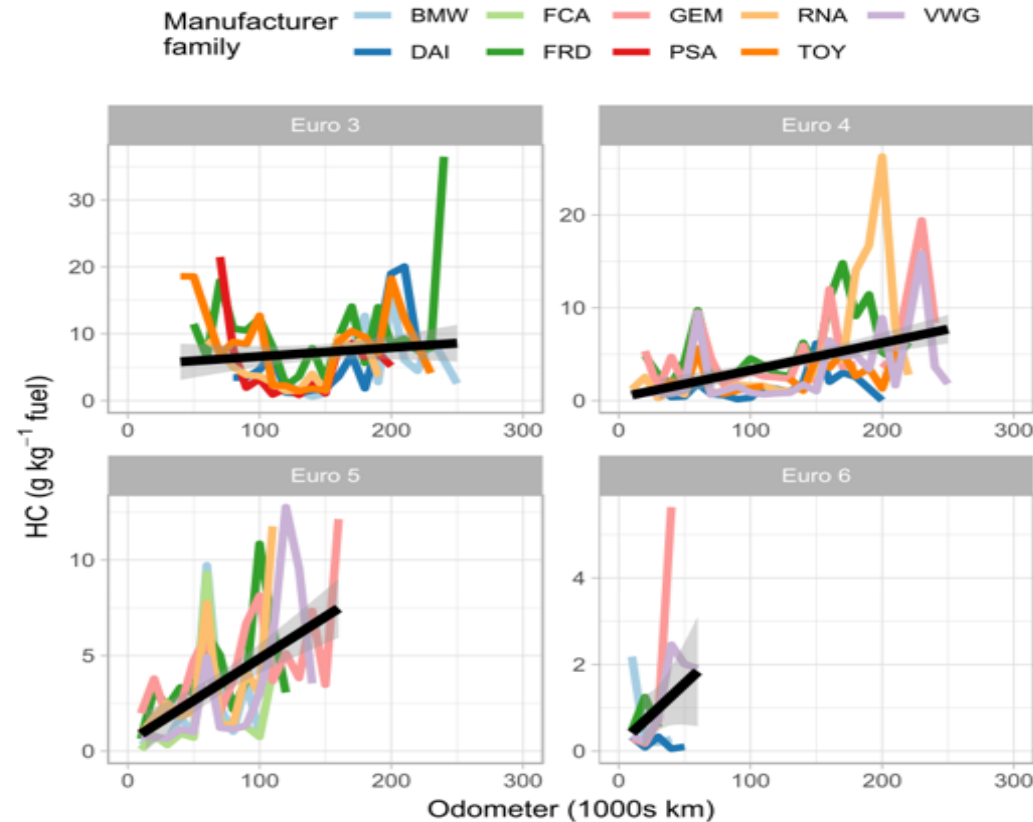


Figure 19. NO<sub>2</sub> emissions as a function of vehicle mileage for diesel passenger cars, split by Euro standard.



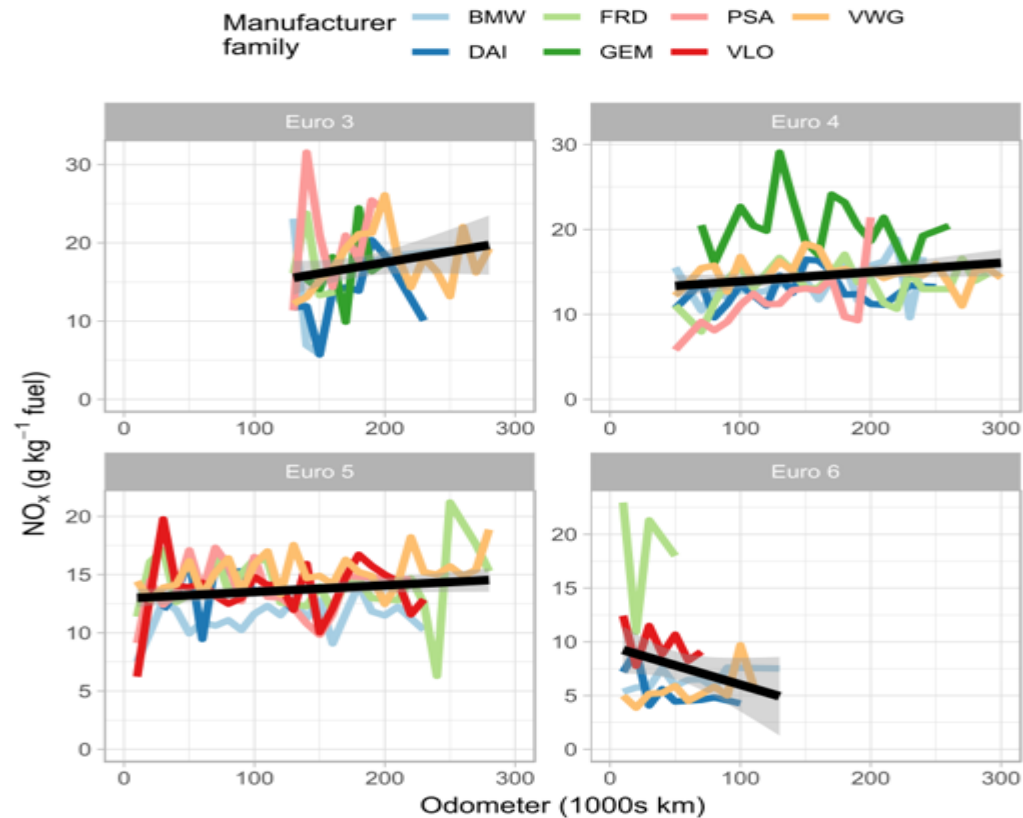
# Petrol cars – Emissions of HC by manufacturer



**Figure 26.** The effect of vehicle age on emissions of HC for petrol passenger cars across Europe, split by the six most popular manufacturer groups for each Euro class. The black smooth lines show the results of fitting a GAM to the data and the legend provides information on the manufacturer group and engine size in cc.



# Diesel cars – Emissions of NO<sub>x</sub> by manufacturer



**Figure 28.** The effect of vehicle mileage on emissions of NO<sub>x</sub> for diesel passenger cars across Europe, split by the six most popular manufacturer groups for each Euro class. The black smooth lines show the results of fitting a GAM to the data and the legend provides information on the manufacturer group.