

Examining the ‘reach’ of Greater London’s Clean Air Zone

Summary

New data analysis from Environmental Defense Fund Europe reveals how the true ‘reach’ of Clean Air Zones goes far beyond their boundary, likely bringing air quality benefits to millions of people across the country. A sample week of vehicle journeys shows that heavy duty vehicles crossing through Greater London’s Clean Air Zone were driven on average twice as far outside the Zone than within and passed through nearly 95% of major towns and cities in England and Wales, with the potential to reduce harmful emissions for up to 18 million more people.

Diesel pollution and freight

Air pollution across the UK is damaging people’s health. An estimated 28,000 – 36,000 deaths were attributable to toxic air in 2019¹, and many more people continue to suffer from daily health impacts, such as lung and heart disease. Research has shown that reducing this health burden could provide £1.6 billion for the UK economy each year².

Diesel vehicles are a major cause of dirty air. Diesel is carcinogenic and a source in towns and cities of nitrogen oxides (NO_x) pollution, which includes lung- and heart-damaging nitrogen dioxide (NO₂). EDF Europe analysis has also shown how marginalised communities bear the greatest burden from air pollution³. The most deprived Londoners are six times more likely to live in areas with higher NO₂ pollution than the least deprived. Levels of NO₂ in areas where people of Black, Asian or minority ethnic backgrounds are most likely to live are on average 24-31% higher than areas where white people are most likely to live.

One of the quickest and most efficient ways to reduce NO₂ and to tackle diesel pollution is by introducing Clean Air Zones⁴. Defra published a framework for Clean Air Zones in 2017⁵, otherwise known as low emission zones⁶, to tackle illegal levels of NO₂ by requiring the strictest emission standard for diesel vehicles driven in a polluted area (usually a town or city). Outside of London, Clean Air Zones are now in place in Bath and Birmingham, with Bristol and Manchester set to launch one in May 2022.

Clean Air Zones could be more important than ever as new consumer habits lead to more freight vehicles driven in urban areas (e.g., online grocery deliveries). This trend was recently demonstrated as the UK recorded its highest ever monthly volume of new vans registered in April 2021⁷. Freight movements are a challenge for air quality because most freight is transported by diesel-powered road vehicles and, right now, electric propulsion technology for heavy duty vehicles is in its infancy. The British Vehicle Rental & Leasing Association (BVRLA) has also raised concerns that zero-emission vans are not yet affordable, accessible or feasible for most use cases⁸.

¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938623/Review_of_interventions_to_improve_air_quality_March-2019-2018572.pdf

²<https://www.cleanairfund.org/publication/breathing-life-into-the-uk-economy-cbi-economics-2020/>

³<https://www.edf.org/media/young-activists-and-nhs-doctors-warn-breathing-kills-london-air-pollution-hits-deprived-areas>

⁴https://green-alliance.org.uk/resources/The_case_for_clean_air_zones.pdf

⁵<https://www.gov.uk/government/publications/air-quality-clean-air-zone-framework-for-england>

⁶<https://urbanaccessregulations.eu/low-emission-zones-main>

⁷<https://www.smmf.co.uk/2021/05/new-van-market-records-highest-april-registrations-in-history/>

⁸<https://www.bvrla.co.uk/resource/bvrla-van-plan-2021.html>

London's Clean Air Zones

In London, EDF Europe estimates that diesel vehicles (including heavy duty vehicles) are responsible for 89% of total NO₂ concentrations from road transport, based on modelled data produced by Cambridge Environmental Research Consultants (CERC) for the Breathe London pilot⁹. The Ultra Low Emission Zone (ULEZ), established in 2019, was a major step to addressing the diesel pollution problem. The ULEZ mirrors a Clean Air Zone Class 'D' under the Defra framework¹⁰ and covers 21km² of central London, effectively serving as the first Clean Air Zone in the UK for NO₂.

EDF Europe analysis of monitoring sites after the ULEZ start date and before the pandemic found a 25% drop in NO₂ levels near roads inside the zone and an average 8% drop across London¹¹. Signs indicate the ULEZ has also led people to switch to cleaner cars, or opt to walk, cycle or use public transport.

Although the success of the central London ULEZ has been widely reported, it is less known that in March 2021 the Mayor of London applied the Euro VI emissions standard to all lorries, buses and coaches driven in Greater London¹². Euro VI is the emissions standard of a Clean Air Zone for heavy duty engines, meaning nearly the entire capital became an NO₂ Clean Air Zone for heavy vehicles (Class B), covering roughly 1,500km². Euro VI has been mandated for new vehicles since 2014 and research shows that Euro VI heavy duty vehicles (e.g., lorries, buses and coaches) emit up to 90% less harmful NO_x emissions in comparison to earlier Euro V models¹³.

When combined with the upcoming expansion of the ULEZ in October 2021, London's Clean Air Zones are anticipated to contribute to a roughly 30% reduction in NO_x emissions from road transport in Greater London¹⁴.

Monitoring data of the central London ULEZ from Transport for London demonstrates how a Clean Air Zone spurs an acceleration in the volume of cleaner heavy duty vehicles that meet the Euro VI emissions standards (see table below)¹⁵.

Compliance with Euro VI emission standards in the ULEZ

Period	Month	All vehicle avg.	HGVs	Coaches
Pre-implementation¹⁶	Feb-17	39.2%	-	-
Post-implementation	Apr-19	73%	87%	74%
	Jul-19	75%	88%	71%
	Oct-19	77%	89%	77%
	Jan-20	79%	90%	77%
	Apr-20	ULEZ suspended due to COVID-19		
	Jul-20	83%	92%	77%
	Oct-20	84%	92%	87%

⁹ EDF Europe analysis <https://www.globalcleanair.org/edf-europe-london-clean-air-zones-methodology/>

¹⁰ There are 4 types of Clean Air Zones, Class A to D. Class D includes all types of vehicles, including cars.

¹¹ <https://www.globalcleanair.org/files/2021/05/BL-Pilot-Final-Technical-Report.pdf>

¹² This was implemented using the existing London Low Emission Zone scheme

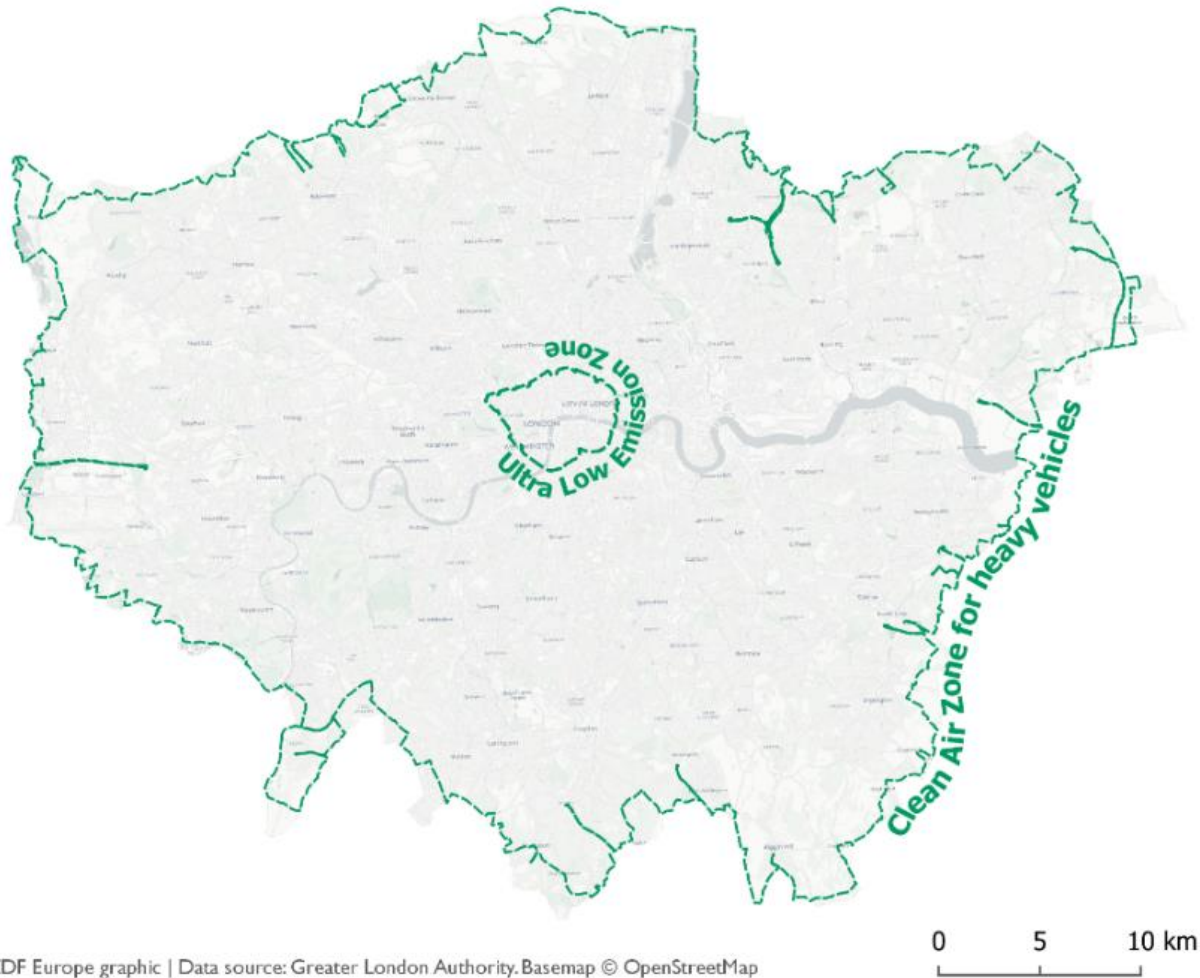
¹³ https://consultations.tfl.gov.uk/environment/air-quality-consultation-phase-3b/user_uploads/supporting-information-document-updated-12.12.17.pdf (page 40)

¹⁴ <https://tfl.gov.uk/info-for/media/press-releases/2020/august/major-milestone-for-ulez-as-installation-of-new-infrastructure-gets-underway>

¹⁵ <https://tfl.gov.uk/corporate/publications-and-reports/ultra-low-emission-zone#on-this-page-7>

¹⁶ February 2017 is the only month with data available prior to the start of the scheme as provided by Transport for London and is only available for all vehicle types

London's existing Clean Air Zones



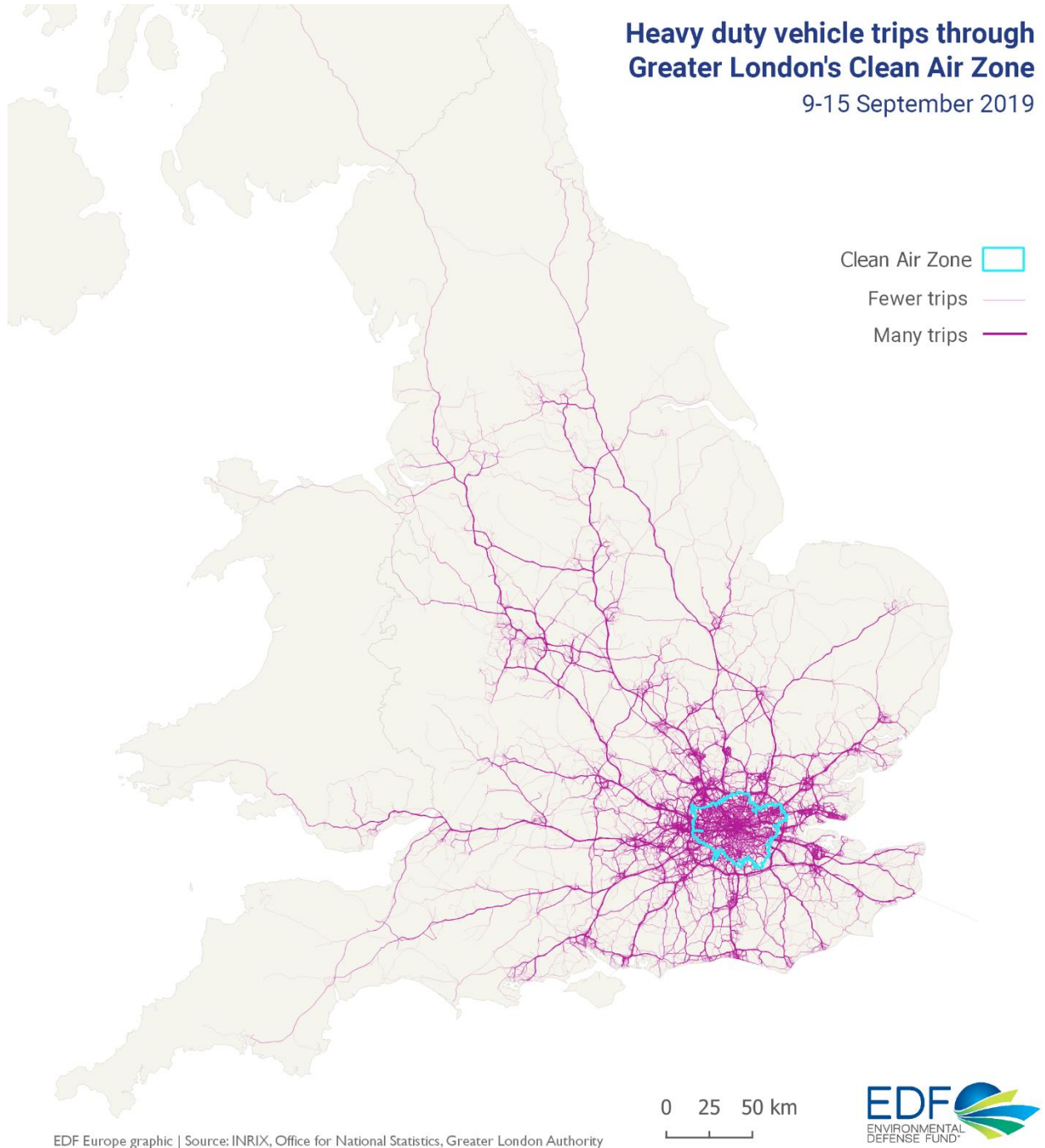
The emission standards are enforced for vehicles driven in the Clean Air Zone – but many of these heavy duty vehicles drive far outside of the zone and for great distances, delivering further health benefits and reflecting the extended ‘reach’ of the scheme¹⁷.

To examine this ‘reach,’ EDF Europe analysed a dataset produced by INRIX¹⁸ that represents trips made by heavy duty vehicles in the week commencing 9 September 2019. Our analysis of trips that passed through Greater London’s Clean Air Zone during this week found:

¹⁷ This is evidenced in part in analysis by the Greater London Authority, which attributed a 13% reduction in NO₂ concentrations to the central London ULEZ at roadside sites located in inner London outside in the period January to February 2020.

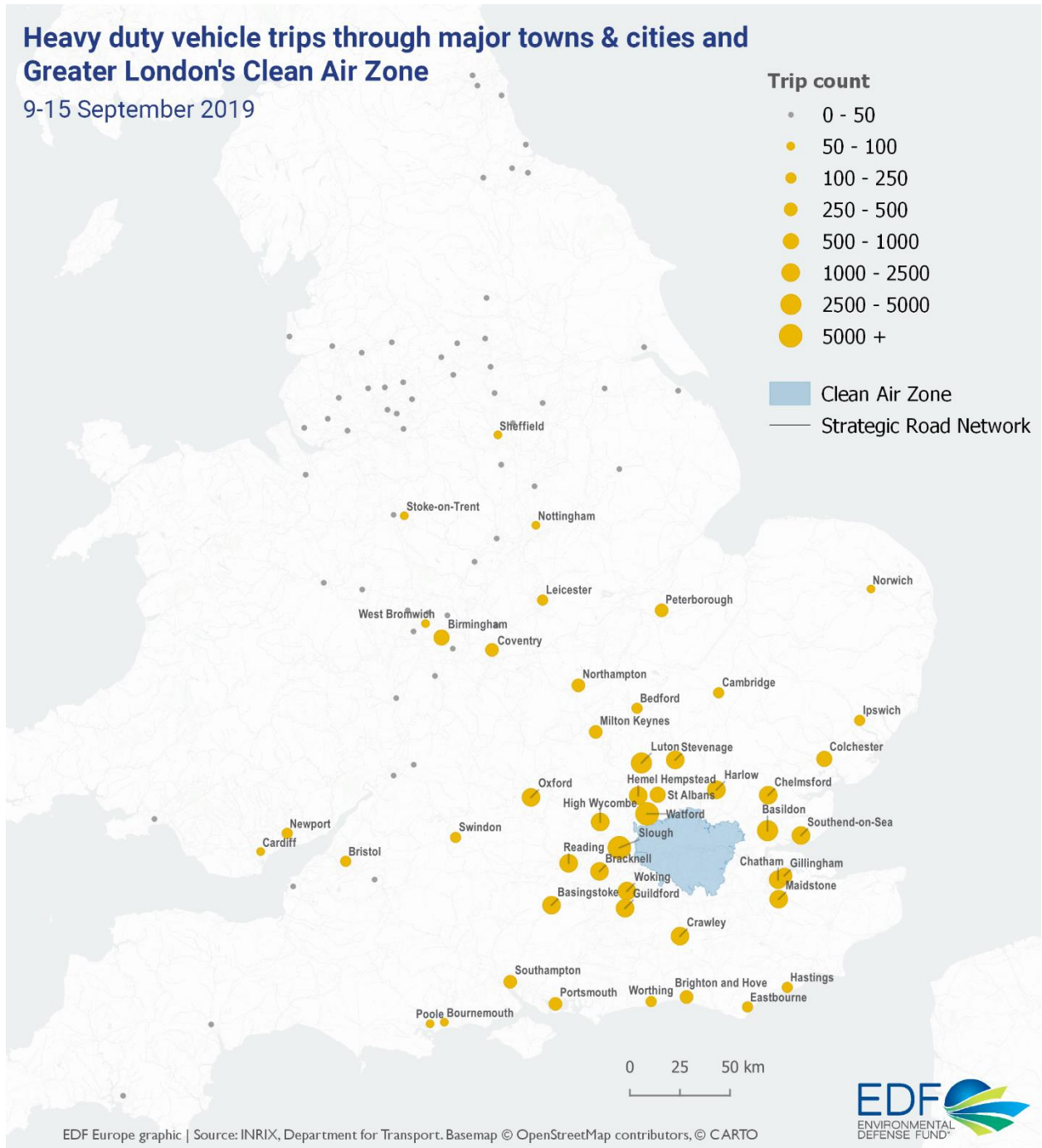
¹⁸ Data was procured from INRIX. INRIX has no affiliation with the analysis or results.

- Heavy duty vehicles were driven on average for twice as much distance outside the zone than within (33km outside compared to 14km inside).¹⁹



¹⁹ EDF Europe analysis <https://www.globalcleanair.org/edf-europe-london-clean-air-zones-methodology/>

- Heavy duty vehicles passed through 95% of major towns and cities in England and Wales, which together have a combined population of around 18 million people.²⁰



²⁰ EDF Europe analysis <https://www.globalcleanair.org/edf-europe-london-clean-air-zones-methodology/>

The analysis reveals that heavy duty vehicles in the capital – which needed to become cleaner and less polluting to meet Clean Air Zone standards – frequently travel far beyond the boundaries of Greater London’s Clean Air Zone. These findings show how people living and working outside the zone, even as far as Cardiff and Stoke-on-Trent, are also likely to benefit from the cleaner vehicles and reduced emissions brought about by the zone.

Note on dataset

Data was procured from INRIX. INRIX has no affiliation with the analysis or results.

The INRIX data consists of the GPS waypoints for “field service and local delivery fleet vehicles” that travelled in Greater London during the week commencing 9 September 2019, and the majority of which (>96%) range in weight from 6 – 12 tonnes. The dataset records over 20,000 unique vehicles each day, which make 750,000 trips, covering a total of ~18 million kilometres in a week.