London's Low Emission Zones improve air quality, health, and people's well-being, says new analysis

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The introduction of London's Low Emission Zone (LEZ) in 2008 and subsequent Ultra-Low Emission Zone (ULEZ) from 2019 has

significantly improved air quality, benefiting Londoners' physical and mental health, according to new analysis from the Department of Economics at the University of Bath.

A new Institute for Policy Research (IPR) policy brief, presenting research from health economists at the university, indicates that the introduction of the LEZ helped to reduce particulate matter (PM_{10}) in Greater London by 13% between 2008-13, compared to pre-LEZ levels (2003-07).

The ULEZ has had an even more substantial impact, reducing nitrogen dioxide (NO_2) in 2019 by 18.4% in Central London as compared to pre-ULEZ levels (2016-18). Comparing London to other large cities such as Manchester, Leicester, Liverpool, and Leeds without such schemes, the IPR policy brief finds that the benefits far exceed implementation costs.

Cleaner air in the city brought about by the LEZ contributed to a 4.5% reduction in long-term health problems and an 8% decrease in respiratory issues like asthma and bronchitis. Furthermore, it concludes that the LEZ and ULEZ have helped to generate cost savings of over £963 million in Greater London.

Notably, the analysis suggests that LEZ led to a reduction in hospital admissions for respiratory conditions like COPD, avoiding 12 respiratory admissions and 2.88 acute respiratory admissions per 10,000 people in Greater London compared to other areas in England.

Further analysis of prescription data in the IPR policy brief reveals additional NHS savings, with a 9-prescription reduction per 1,000 patients for respiratory infections, resulting in a cost saving of around £74 per 1,000 registered patients due to ULEZ.

The research uses data on general health—rated from "very bad" to

"very good" on a 5-point scale—and on well-being and anxiety from the Annual Population Survey. This suggests that ULEZ has helped to improve general health by 3% and has reduced anxiety by 6%.

A progress report released earlier this week into the impact to date of ULEZ in London revealed that the number of the most polluting vehicles driven in London has fallen by almost half since the scheme was expanded, with almost 80,000 older cars off the road. More than 95% of vehicles are now compliant.

Lead author Dr. Habtamu Beshir from the University of Bath's Department of Economics explained, "With this analysis, our goal was to offer an objective overview of the impact of low emission zones in the capital and beyond. Our study compares London to cities like Manchester, demonstrating the effectiveness of LEZ and ULEZ in improving air quality, enhancing health, and alleviating the economic burden of ill health."

Professor Eleonora Fichera and colleagues Beshir and Dr. Andrea Serna Castano acknowledge broader policy challenges arising from compliance costs for owners of older vehicles, particularly affecting poorer communities.

Despite these challenges, they emphasize the importance of providing suitable transport alternatives and progressive subsidies for compliance, especially in areas already burdened by poor air quality and pollution.

Fichera added, "Our analysis confirms the effectiveness of Low Emission Zones in improving air quality and health—crucial for residents in large cities. It shouldn't be a choice between health and affording schemes like ULEZ. We must explore innovative policy solutions to make these schemes viable and effective."

More information: Low Emission Zones improve air quality, physical health and mental well-being, DOI: 10.5281/zenodo.8360286

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