

# Imbalanced inhalation: inequality in air pollution in London's open spaces



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## **More than a quarter of London's "lungs of the city" poisoned by air pollution**

In 2016, the UK's cross-party Environment, Food & Rural Affairs Select Committee declared air pollution "[a public health emergency](#)", insisting that action be taken immediately to reduce the tens of thousands of preventable deaths attributable to harmful emissions.

In the years since, however, little has changed. [Recent data](#) suggests only coastal and sparsely populated UK regions comply with EU air quality requirements, with cities by far the worst offenders. With over 92 per cent of the UK's population [predicted](#) to be city-based by 2030, it becomes clear that this is more than an emergency: it's a disaster waiting to happen.

This is particularly true for the next generation, growing up in an environment that will permanently affect their lung development and capacity, and that will make them much more likely to develop a range of chronic or fatal conditions.

Air pollution affects children at all stages of development. [Research has found](#), for example, that high nitrogen dioxide (NO<sub>2</sub>) exposure can harm foetal development and increase miscarriage risk as much as smoking. The risk continues into education too, with [over 1,000 nurseries](#) in the UK located within 150 metres of a road breaching legal NO<sub>2</sub> limits and [over 400 London primary schools](#) in areas which exceed legal pollution limits.

Clearly, something needs to be done if we are to avoid a generation of children developing health issues, but the problem is so widespread and entrenched that it is difficult to know where to start.

### **Unequally equal**

In order to address this issue, we looked into air quality in the UK's most populous and most polluted city – London. However, while many of London's busiest streets, such as Oxford Street and Brixton Road, are among its most polluted, they do not necessarily draw many children.

With that in mind, we focused our research on areas designed for or visited by children. Buildings can act as a buffer to reduce NO<sub>2</sub> levels indoors, therefore we

specifically looked at the capital's open spaces, including [parks and playgrounds](#). We calculated average NO<sub>2</sub> levels in all of London's open spaces; while the results supported what we already knew – that the city has an air quality problem – it was particularly telling that London's green spaces also fit this bill.

24 per cent of outdoor play spaces and 27 per cent of public parks exceeded the annual legal NO<sub>2</sub> limit

These various parks, green spaces and play spaces are considered the lungs of the city and an escape from the pollution of built-up areas, but our results showed that 24 per cent of outdoor play spaces and 27 per cent of public parks exceeded the annual legal NO<sub>2</sub> limit.

On top of this, our research also showed that harmful concentration levels were not spread equally throughout the city. Across London, we noticed a strong positive relationship between increasing average NO<sub>2</sub> levels and increasing deprivation levels. In the most deprived areas, a far greater proportion of children found their nearest play space to have air containing NO<sub>2</sub> concentration above the legal level, compared to the least deprived areas.

### **Take a deep breath**

These findings serve to demonstrate the scale of the challenge, but the bigger question is what to do about it. There are two aspects to this: the individual and the societal. On an individual basis, it is tempting to think that the best response would be to keep children inside, using buildings to minimise their exposure to harmful pollutants. However, research has found that the benefits of exercise and physical activity still outweigh the negative effects of pollutants.

Furthermore, if we look beyond NO<sub>2</sub> levels to the full bevy of harmful particles in the air, it is possible that air quality indoors and in cars [is actually worse than outdoors](#). The responsible response, then, is to pick where you go and how you get there; walk, scoot or cycle, solely or in combination with public transport, and [use maps](#) to help find less polluted routes and spots in local areas, while taking advantage of the [extra benefits](#) of physical activity.

On a societal level, meanwhile, we need to see policy change, both locally and nationally. Within London, for example, our research demonstrates that open spaces

in Inner London and the most deprived neighbourhoods suffer disproportionately from poor air quality; targeted measures in these areas would be of great benefit to those who live in and around them.

The faster we take meaningful action, the better the prospects for the next generation

Across London, we need to see a change in transport habits, improvement in active transport infrastructure and, most importantly, a serious environmental and health impact assessment of new development projects, as health impacts are still omitted from project evaluations.

When pollution already exceeds legal levels, any increase cannot be ignored. Car-free days (as have been [successfully trialled in Paris](#)) for local areas, or the introduction of car-free zones ([as planned for Barcelona](#)) are not sufficient to respond to the current air quality crisis. On a national level, initiatives such as [a diesel tax](#), subsidisation of [electric vehicles](#) or car pooling schemes are already in play, but could be prioritised and accelerated.

Local councils and city-wide authorities also need to start working together; in London, for example, "red route" roads see some of the heaviest traffic pollution, but are under mayoral control, which means borough councils are powerless to make changes to them – this needs to change.

The faster we take meaningful action, the better the prospects for the next generation; the onus is on the here and now to ensure the equal distribution of clean, breathable air for the future.

*This article draws on findings from the paper "[Inequalities in Exposure to Nitrogen Dioxide in Parks and Playgrounds in Greater London](#)", published in the International Journal of Environmental Research and Public Health, by Charlotte E. Sheridan, Charlotte J. Roscoe (both School of Public Health, Imperial London), John Gulliver (University of Leicester), Laure de Preux (Imperial Business School) and Daniela Fecht (School of Public Health, Imperial London).*

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## About Laure de Preux

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Laure de Preux is Associate Professor in the Economics & Public Policy department and a member of the Centre for Health Economics & Policy Innovation. As a health and environmental economist, she has extensive expertise in the use of hospital and climate data and her work has featured in *Health Economics* and other publications.

Read [Laure's Imperial Profile](#) for more information and publications.