

To: Transport & Health Policy Makers, & Practitioners
From: Prof Adrian Davis, TRI, Edinburgh Napier University
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Subject: Essential Evidence 4 Scotland: Air pollution and child lung health in UK cities

Top line: Most people are unaware of the full effects of polluted air on their health and that of their family.

It is now well established that air pollution constitutes a significant public health problem in the UK, in Europe and in many other countries across the globe. However, statements on air pollution and health are typically on a whole population basis and on rarer but more severe endpoints such as death. While important in overall public health terms, it may be harder for the public to identify with these statements, compared with statements based on specific susceptible groups and/or more commonly observed health outcomes. Breathing polluted air, of which road transport is the dominant national source of air pollutant exposures in UK cities, can affect physical wellbeing at every stage of life, from the womb to old age, and can lead to a lifetime of symptoms of ill health in some people.

A study which focuses on the impact of pollution on specific population groups e.g. children at the local level, looking at 9 UK and 4 Polish cities, makes clear how pollution has a widespread and personal impact on individual health.¹ The research comparing 13 different health outcomes including heart disease, lung cancer, strokes and bronchitis across the 13 cities. Wherever sound studies were available the researchers used meta-analyses rather than rely on single papers. Where meta-analyses were not available, the most comprehensive and sound single studies were used. Thirty-one health outcomes were identified where there is good evidence to link exposure and an impact on health. The focus included reduced lung function in children below the age of 14 from long term exposures. Findings for children include:

- There would be 74 fewer children admitted to hospital for asthma if air pollution (nitrogen dioxide - NO₂) was reduced by 22.0% on half the days of the year. This reduction is the difference between a typical higher air pollution day and a typical lower pollution day.
- Roadside air pollution in Oxford stunts lung growth in children by 14.1%, 3% in London, 8% in Birmingham, 5% in Bristol, 5% in Liverpool, 3% in Nottingham, and 4% in Southampton
- Living in London, your risk of being admitted to hospital for asthma would be reduced by 4.2%, if air pollution (NO₂) was reduced by 22% on half the days of the year. This air pollution reduction is the difference between a typical higher air pollution day and a typical lower pollution day.
- In London, air pollution may contribute to an 8.7% greater chance of low lung function for children living beside a polluted road compared those living on a quieter street.
- Living near busy roads in London may stunt lung growth in children by 12.5%.
- In London, air pollution may contribute to 144 babies born underweight each year if mothers live beside a polluted road compared with living on a quieter street
- Cutting air pollution in London by one fifth could contribute to 3,685 fewer asthmatic children with bronchitic symptoms each year.
- Cutting air pollution in London by one fifth may result in 7,927 fewer children with low lung function each year.

¹ Williams, M., et al 2019. Personalising the Health Impacts of Air Pollution – Summary for Decision Makers. London: Kings College.