

The role of walking and cycling in solving the UK's air quality crisis

First of its kind model to quantify the contribution of walking and cycling to improving air quality and the subsequent benefits to public health.



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Key Findings

Investment in cycling and walking infrastructure must be prioritised by our Governments as part of wider measures to help tackle our air pollution crisis. Our model is the first of its kind to quantify the contribution of walking and cycling to improving air quality. It found that:

1. Savings to the economy of £567m each year would be realised from improved air quality alone, by delivering and meeting the targets to double cycling and increase walking set out in the Government's Cycling and Walking Investment Strategy in England. It would also mean more than 8300 premature deaths from air pollution would be prevented over ten years.
2. Savings of £364 million would be realised in Scotland from improved air quality alone if the vision of 10% of every day journeys by bike set out in Scotland's Cycling Action Plan were achieved. It would also mean nearly 4000 premature deaths would be avoided over a decade.
3. Increasing levels of cycling and walking by delivering the Cycling and Walking Investment Strategy would achieve over five times more savings to the economy through improved air quality over a ten year period than the Government's planned Clean Air Zones in England and must form part of the wider strategy to meet our air quality targets.
4. Investing in cycling and walking would further improve air quality by mitigating the 45% of particulate matter that comes from tyre and brake wear.
5. Area case study: Our area wide intervention model in Southampton using a conservative figure of a 10% drop in car use found air quality benefits to all residents of £477,000 per year from a reduction in nitrogen dioxide. This value would be even higher if particulate matter were also factored in.

The air quality problem

Air pollution is the term given for a number of different substances suspended in the air that are harmful to human, animal and plant life as well as the built environment. Both particulate matter (PM10 and PM 2.5) and Nitrogen Dioxide (NO₂ a part of Nitrogen Oxide [NO_x]) have detrimental effects on our health. Air pollution is killing tens of thousands of people prematurely across the UK every year.

Road transport is responsible for 80% of NO_x pollution where legal limits are being broken. But it's not just burning fuel that causes the problem. In London, where there is good data, 45% of the particulate matter comes from tyre and brake wear – so even if we switched all the vehicles to electric, we'd still have a damaging amount of very fine dust as a result of all the traffic.

Where we are now

The UK has repeatedly failed to meet legal limits for NO₂. In response to this, the UK Government published its Air Quality Plan to tackle NO₂ in July 2017. The plan mandates 29 local authorities in England that are repeatedly breaking legal air quality

limits to produce draft Clean Air Plans by March 2018 and final plans in November 2018. The Government will also produce a Clean Air Framework to support them. A Clean Air Fund of £220 million has been announced to support these local authorities in the formation and implementation of these plans. The devolved nations are also trialing a number of different plans to improve air quality including their own versions of Clean Air Zones.

The World Health Organization has stated there are no safe levels for particulate matter. In 2018 the UK Government will produce a Clean Air Strategy to tackle all air pollutants including particulate matter.

Modal shift from motorised transport to cycling and walking can have a positive effect on air quality as well as reducing congestion and improving public health through increased physical activity. Physical inactivity is currently costing the NHS £20 billion a year. In some cases, a person on a bike's exposure to air pollution is higher due to cycling along a busier road and having a higher respiratory rate than someone in a car or walking. However, the wider health benefits of increased physical activity from riding a bike compared to a sedentary form of transport always outweighs any potential cost of increased exposure to air pollution in all cases in the UK.

The Sustrans modelling

Sustrans commissioned Eunomia to construct a model that enables the quantification of the potential contribution of walking and cycling in the context of air quality, in relation to PM10 and NOx. The model measures the air quality benefits in a monetary value. The air quality benefits are a result of avoided car emissions as a result of a reduction in car journeys due to modal shift to active travel; and the health impacts from a route user's changed exposure to pollution.

The modelling analysed:

- Air pollution impacts of 19 Sustrans' schemes that all involved infrastructure improvements across England and Scotland;
- An estimate of the potential air pollution benefits associated with undertaking a wide-scale intervention across a city.

We scaled up results from the Sustrans schemes to achieve figures for the Cycling and Walking Investment Strategy and Scotland's Cycling Action Plan

Recommendations

1. Walking and cycling are a vital part of the solution to tackling poor air quality. The UK Government should actively encourage local authorities to invest in walking and cycling infrastructure in their Clean Air Plans and should ensure the capital and revenue funding in the Clean Air Fund is able to support the intervention of cycling and walking schemes.
2. The UK Government should be more joined up in properly linking the Clean Air Plan with the Cycling and Walking Investment Strategy and the Local Cycling and Walking Infrastructure Plans - providing greater funding for these plans to help tackle air pollution.

For further information on Sustrans & the role of cycling and walking in tackling air pollution contact:

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Sustrans is the charity making it easier for people to walk and cycle. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute.

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