

## Primary school children could die up to 6 months early due to lifetime exposure to air pollution

- **Research considers health impact in England's eighth biggest city, Bristol**
- **5 people dying prematurely every week - 260 for the year as a result of two most harmful forms of air pollution, PM2.5 and NO2**
- **The economic health impact costs of air pollution in Bristol estimated to be up to £170 million a year**

A new report released today from UK100, a network of local authority leaders, and King's College London, has shown the stark impacts of air pollution on life expectancy in one of England's largest cities, Bristol.

The new research, which is released ahead of a major air pollution summit (1) being convened by Marvin Rees, the Mayor of Bristol and UK100, shows that **in Bristol alone, air pollution contributed to five people dying prematurely every week (up to 260 for the year) as a result of high levels of air pollution from PM2.5 and NO2.** (2) (3)

The study looks at the combined impact of PM2.5 (particulate matter) - mainly sourced from domestic wood and coal burning and industrial combustion and NO2 (Nitrogen Dioxide) - which in cities primarily comes from older polluting vehicles. These pollutants were estimate to lead to up to 36,000 deaths across the UK in 2013 (4), and contribute to a wide range of health conditions including asthma, lung cancer, heart disease, strokes and, possibly, diabetes (5).

This is the first time that new government guidance on "mortality burdens" of air pollution developed by a government advisory committee (COMEAP) have been applied in practice to the largest city in the South West. The study found Bristol had higher levels of PM<sub>2.5</sub> pollution than Liverpool City and Greater Manchester, but a lower death rate and a smaller population.

The study shows that **an eight year old child (born in 2011) could die up to six months early if exposed over their lifetimes to air pollution**, even taking into account the anticipated reduction in air pollution from 2011 to 2030.

In response to the air pollution challenge, Bristol is planning to introduce the country's first ever complete ban on diesel cars. Under the plans, all privately owned diesel vehicles will be barred from entering a clean air zone in the city centre every day between 7am and 3pm by March 2021. (6) The proposals are subject to government approval and consultation with local residents and businesses.

The report calculates that the annualised **health impact costs of air pollution in Bristol is up to £170 million every year.** According to a 2018 Public Health England report, the total cost to the NHS and social care of air pollution is estimated to be up to £5.56 billion for PM2.5 and NO2 combined. (7) Although Bristol is considered to be one of the relatively less deprived English core cities, Bristol deprivation 'hot spots' are amongst some of the most deprived in the country. Overall, Bristol does not particularly show environmental inequality (in which socioeconomically disadvantaged populations are among the most exposed), except for **the area of Lawrence Hill identified as having both some of the highest levels of deprivation and air pollution in Bristol as well as by far the highest Black and Minority Ethnic population in Bristol.**

**Polly Billington, Director of UK100**, a network of local leaders that campaigns on clean air, said: "This data shows why we need clear and binding targets for every city in the UK to be compliant with WHO pollution guidelines to prevent deaths from air pollution. Bristol are taking action, but they need support and funding, including from businesses and central Government in order to expand on their planned Clean Air Zone."

**Marvin Rees, Mayor of Bristol,** said

“We have a moral, ecological and legal duty to clean up the air we breathe. This research emphasises how vital it is that we act quickly to improve health and save lives in Bristol. Our proposed plans for a combination of a small area diesel ban and medium sized Clean Air Zone gets us to legal air quality levels in the shortest possible time minimising the adverse impact on our lowest income households. The summit brings together key organisations from across the city to discuss the impact and potential mitigations. We have submitted the plan. We now need government to act strongly to support us to deliver.”

**Dr David Dajnak, Principal Air Quality Scientist, Environmental Research Group at King's College London,** said:

“This report shows that more needs to be done to address the level of threat air pollution poses to health in Bristol and highlights that the highest level of air pollution in Bristol coincides with zones of exceptional population growth and areas having the highest black and minority ethnic population.”

**Maria Bowler, 24, who lives in Sussex Place in the centre of St Pauls, one of the most polluted areas of Bristol,** said: “If I open my kitchen window I am hit with polluted air from the constant traffic jam on my road. After reading about carbon particles found in placentas and the potential link to miscarriages, I think we are just beginning to scratch the surface on the long-term health problems that pollution can cause. It's one of the few reasons that I have considered moving away.”

**Dr Jo Barnes, Senior Research Fellow on air pollution at Bristol UWE,** said:

“These new mortality figures for Bristol confirm previous estimates and highlight the need for immediate action to protect Bristol's children, the elderly and those living in poverty. Mortality is only the tip of the iceberg. Air pollution, mainly from road traffic, is the main environmental cause of stroke and heart disease in the UK and can have life-long health impacts for young children that are exposed.” (8)

UK100 is supporting major cities across the country including Birmingham to introduce ambitious 'Clean Air Zones' to tackle air pollution from polluting cars, HGVs, vans and buses. London's ULEZ (Ultra Low Emissions Zone) introduced earlier this year has already had an impact on reducing air pollution, with levels of NO<sub>2</sub> pollution having reduced by 29%. (9)

A recent Global Clean Air Summit hosted by UK100 and the Mayor of London, business and political leaders agreed to the adoption of World Health Organization recommended air pollution limits as legally binding targets to be achieved by 2030.

### **Areas of Bristol most affected by air pollution**

Table 6 Estimated burden (from the estimates derived by using information from multi-pollutant model results from 4 different cohort studies) of effects on annual mortality in 2011 of 2011 levels of anthropogenic PM<sub>2.5</sub> and NO<sub>2</sub> (without cut-off)  
(see p 21 of report)

| <b>Zone</b>         | <b>Anthropogenic PM2.5 and NO2 - Attributable Deaths</b> |
|---------------------|--|
| Bristol East        | 47 - 61  |
| Bristol North West  | 64 - 82  |
| Bristol South       | 51 - 70  |
| Bristol West        | 38 - 47  |
| <b>Bristol City</b> | <b>200-261</b>   |

**ENDS**

## Editor's Notes

For further information or interview bids, contact [alex.bigham@uk100.org](mailto:alex.bigham@uk100.org) or 07830 195 812

1. Marvin Rees and UK100 will host a Clean Air Summit on Mon 18 November 2019 at 10am - 1pm, Council Chamber, Bristol City Hall, College Green, Bristol BS1 5TR. Broadcast media are invited to attend from 9am for interviews (\*\*bids in advance\*\*).
2. Full report can be downloaded here: <https://www.uk100.org/wp-content/uploads/2019/05/Bristol-City-Health-and-Economic-Impact-Assessment-study.pdf>  
The report was commissioned by UK100 and the research conducted by King's College London. "In 2011 in Bristol the equivalent of[1] between 200 to 260 deaths are estimated to be attributable to anthropogenic PM<sub>2.5</sub> and NO<sub>2</sub>."
3. These deaths occur mostly at older ages, as is typical for deaths in the general population.  
  
The original studies were analysed in terms of 'time to death' aggregated across the population. Strictly, it is unknown whether this total change in life years was from a smaller number of deaths fully attributable to air pollution or a larger number of deaths to which air pollution partially contributed. The former is used with the phrase 'equivalent' to address this issue. See COMEAP (2010) <https://www.gov.uk/government/publications/comeap-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-uk> for a fuller discussion.
4. UK air pollution could cause 36000 deaths a year - King's College London  
[...https://www.kcl.ac.uk/archive/news/sphes/air-pollution-could-cause-36000-deaths-a-year-in-the-uk](https://www.kcl.ac.uk/archive/news/sphes/air-pollution-could-cause-36000-deaths-a-year-in-the-uk)
5. Committee on the Medical Effects of Air Pollutants (2018) Associations of long-term average concentration of nitrogen dioxide with mortality <https://www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality>
6. Bristol clean air diesel ban planned approved <https://www.bbc.co.uk/news/uk-england-bristol-50292596>
7. Public Health England - Estimation of costs to the NHS and social care due to the health impacts of air pollution (2018)  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/708855/Estimation\\_of\\_costs\\_to\\_the\\_NHS\\_and\\_social\\_care\\_due\\_to\\_the\\_health\\_impacts\\_of\\_air\\_pollution\\_-\\_summary\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/708855/Estimation_of_costs_to_the_NHS_and_social_care_due_to_the_health_impacts_of_air_pollution_-_summary_report.pdf)
8. Previous estimates:  
(<https://www.bristol.gov.uk/documents/20182/32675/Health+Impacts+of+Air+Pollution+in+Bristol+February+2017/4df2fce5-e2fc-4c22-b5c7-5e7a5ae56701>)
9. Greater London Authority - Central London Ultra Low Emission Zone – Six Month Report (October 2019) <https://www.london.gov.uk/WHAT-WE-DO/environment/environment-publications/central-london-ulez-six-month-report>