

Statement 2: Dr Suzanne Audrey**Clean Air Zone**

I have been repeatedly disappointed to see that the information and modelling provided in relation to the case for Bristol's Clean Air Zone does not include public health information specific to Bristol. I fail to see how the need for, and benefits of, the Clean Air Zone can be properly assessed without this information. The history of Bristol's Clean Air Zone suggests reluctance on the part of the mayor and his team, couched in terms of concerns for members of low-income groups with non-compliant vehicles. But the health impacts of poor air quality on members of low-income groups are not mentioned.

Below I have listed information from 'Personalising the Health Impacts of Air Pollution – Summary for Decision Makers, Kings College London, November 2019'. This detailed academic work includes the negative impacts of air pollution in Bristol on: out of hospital cardiac arrests, stroke, asthma admissions in children and adults, reduced lung growth and lung function, lung cancer, asthma symptoms in children, term low birth rate, respiratory admissions all ages, cardiovascular admissions all ages, coronary heart disease incidence all ages, bronchitic symptoms (asthmatic children), acute bronchitis in children, COPD admissions all ages, and pneumonia admissions in children.

Is it possible to ensure that such public health information is provided with other documents relating to Bristol's air quality and the clean air zone?

These health issues are occurring now. Each delay in cleaning up our air adds to the number of people affected. And so, I hope members of OSMB share my concerns that the recent Bristol City Council press release appeared to celebrate a further delay in implementing the Clean Air Zone, with no reference to the on-going health implications for citizens.

Bristol from Personalising the Health Impacts of Air Pollution – Summary for Decision Makers, Kings College London, November 2019. <http://erg.ic.ac.uk/Research/docs/Personalised-health-impacts-Summary%20for%20Decision%20Makers.pdf>

Out-of-hospital cardiac arrests (pp79-80)

The risk of out of hospital cardiac arrest in Bristol is 2.2% higher on high air pollution days than lower air pollution days (short-term).

Each year on average, higher air pollution days in Bristol are responsible for 4 more cardiac arrests outside hospital than lower air pollution days (short-term).

Stroke (p83)

The risk of emergency hospitalisations for stroke in Bristol is 2.8% higher on high air pollution days than on lower air pollution days (short-term).

Living near a busy road in Bristol increases your risk of hospitalisation for stroke by 2.8% (short-term).

On high air pollution days in Bristol, there are on average 9 more hospital admissions for stroke each year than on lower air pollution days (short-term).

Lowering air pollution by 35.9% on high air pollution days in Bristol could save 9 hospital admissions for stroke each year (short-term/alternative).

Each year on average, higher air pollution days in Bristol can send up to 14 more people to hospital for stroke than lower air pollution days (short-term).

Asthma admissions in children (p88)

In Bristol, your child is 4.4% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term).

In Bristol, an extra 5 children are hospitalised with asthma on days where air pollution is high compared to days where air pollution is low on average each year (short-term).

Asthma admissions in adults (p91)

In Bristol, adults are 1.5% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term).

In Bristol, an extra 4 adults are taken to hospital with asthma on days of high air pollution compared to days with lower air pollution (short-term).

Reduced lung growth and low lung function (p94-5)

Roadside air pollution in Bristol stunts lung growth in children by 5.3% (long-term).

Cutting air pollution in Bristol by one fifth would increase children's lung capacity by around 2.3% (long-term).

Living near busy roads in Bristol may contribute to an 3.0% greater chance of reduced lung function in children (long-term).

Cutting air pollution in Bristol by one fifth may contribute to a 1.2% greater chance of better lung function in children (long-term).

Cutting air pollution in Bristol by one fifth would result in 199 fewer children with low lung function each year (long-term).

Lung cancer (p99)

Cutting air pollution in Bristol by one fifth would decrease lung cancer cases by around 5.9% (long-term).

Cutting air pollution in Bristol by one fifth would result in 18 fewer lung cancer cases each year (long-term).

Asthma symptoms in children (p101)

In Bristol, children with asthma are 0.2% more likely to experience asthma symptoms on high air pollution days than on lower pollution days (short-term).

On high air pollution days, 12 more children with asthma in Bristol experience asthma symptoms than on lower pollution days (short-term).

Term low birth weight (p103)

Living near busy roads in Bristol may contribute to a 0.2% greater risk of babies being born underweight (long-term).

Cutting air pollution in Bristol by one fifth would decrease the risk of babies being born underweight by around 0.1% (long-term).

Respiratory admissions all ages (p106-7)

The risk of emergency hospitalisations for respiratory disease in Bristol is 1.4% higher on high air pollution days than on lower air pollution days (short-term).

On high air pollution days in Bristol, there are on average 43 more hospital admissions for respiratory disease each year than on lower air pollution days (short-term).

Lowering air pollution by 27.7% on high air pollution days in Bristol could save 43 hospital admissions for respiratory disease each year (short-term/alternative).

Each year on average, higher air pollution days in Bristol can send up to 68 more people to hospital for respiratory disease than lower air pollution days (short-term).

Cardiovascular admissions all ages (p110)

The risk of emergency hospitalisations for cardiovascular disease in Bristol is 0.5% higher on high air pollution days than on lower air pollution days (short-term).

On high air pollution days in Bristol, there are on average 10 more hospital admissions for cardiovascular disease each year than on lower air pollution days (short-term).

Lowering air pollution by 45.5% on high air pollution days in Bristol could save 10 hospital admissions for cardiovascular disease each year (short-term/alternative).

Each year on average, higher air pollution days in Bristol can send up to 19 more people to hospital for cardiovascular disease than lower air pollution days (short-term).

Coronary Heart Disease (CHD) Incidence (all ages) (p114)

Living near busy roads in Bristol may contribute to an 8.0% greater chance of coronary heart disease (long-term).

Cutting air pollution in Bristol by one fifth would decrease the risk of coronary heart disease by around 3.1% (long-term).

Cutting air pollution in Bristol by one fifth would result in 62 fewer cases of coronary heart disease each year (long-term).

Bronchitic symptoms (asthmatic children) (pp116-7)

Air pollution may contribute to asthmatic children that live near busy roads in Bristol may experiencing a 4.5% greater chance of developing bronchitic symptoms (long-term).

Cutting air pollution in Bristol by one fifth would decrease the risk of bronchitic symptoms in asthmatic children each year by around 1.9% (long-term).

Cutting air pollution in Bristol by one fifth would result in 94 fewer asthmatic children with bronchitic symptoms each year (long-term).

Acute bronchitis in children (p120)

Living near busy roads in Bristol may contribute to a 0.8% greater risk of a chest infection (acute bronchitis) in children (long-term).

Cutting air pollution in Bristol by one fifth would decrease the risk of a chest infection (acute bronchitis) in children by around 0.3% (long-term).

Cutting air pollution in Bristol by one fifth would result in 114 fewer children with a chest infection (acute bronchitis) each year (long-term).

COPD admissions (all ages) (pp122-3)

The risk of emergency hospitalisations for COPD in Bristol is 2.0% higher on high air pollution days than on lower air pollution days (short-term).

On high air pollution days in Bristol, there are on average 20 more hospital admissions for COPD each year than on lower air pollution days (short-term).

Lowering air pollution by 27.7% on high air pollution days in Bristol could save 20 hospital admissions for COPD each year (short-term/alternative).

Each year on average, higher air pollution days in Bristol can send up to 30 more people to hospital for COPD than lower air pollution days (short-term).

Pneumonia admissions in children (p126)

The risk of emergency hospitalisations for pneumonia in children in Bristol is 2.2% higher on high air pollution days than on lower air pollution days (short-term).

On high air pollution days in Bristol, there are on average 1 more hospital admission for pneumonia in children each year than on lower air pollution days (short-term).

Lowering air pollution by 27.7% on high air pollution days in Bristol could save 1 hospital admission for pneumonia in children each year (short-term/alternative).

Each year on average, higher air pollution days in Bristol can send up to 1 more people to hospital for pneumonia in children than lower air pollution days (short-term).

Statement 4: Katrina Billings

Please find below my Statement challenging the delay to Clean Air Zone implementation into “spring 2022” announced by the city council on Friday 2nd July 2021:

**Recommendation - to honour the proposed implementation date of October 2021
Overview and Scrutiny Management Committee (OSM)
Monday 12 July 2021 at 5pm at City Hall**

After attending the Full Council Meeting on July 6th in order to present my question, I was left with the impression of a city council floundering to come up with reasonable reasons for what has been a long line of delays and procrastination leading back to 2016.

While the mayor is adamant that compliance will be achieved at the same time despite the delay, I am extremely concerned that more delays will only have a negative impact on the health of the most vulnerable in the city.

I must urge the committee to identify the latest pollution statistics and emergency asthma admissions in the wards that will be the most affected by this delay. These wards will likely be in the areas of most deprivation in our city - which flies in the face of the mayor's apparent regard for a fair and just approach to tackling air pollution.

I understand from my colleague Christina Biggs that the city council has repeatedly failed to inform her of the calculated NOx for the proposed CAZ compared with “do nothing” and or the delay in implementation. This figure is critical and it is one that the city council must be aware of - why are they not prepared to release this information?

I am extremely concerned that given the track record, there will be further watering down (boundary changes) of the proposed CAZ and the impact of this decision on the total NOx value.

Finally despite the mayor's insistence at the Full council meeting this week any delay now will change the month in which compliance is reached - even if it is technically in the same year.

Katrina Billings
Bristol Clean Air Alliance

Statement 5: Christina Biggs**Bristol Clean Air Alliance**

Statement challenging delay to Clean Air Zone implementation into “spring 2022”; Recommendation to honour the proposed implementation date of October 2021 Overview and Scrutiny Management Committee (OSM) Monday 12 July 2021 at 5pm at City Hall

1. Narrative: a long-drawn-out and increasingly watered-down process The Clean Air Directive

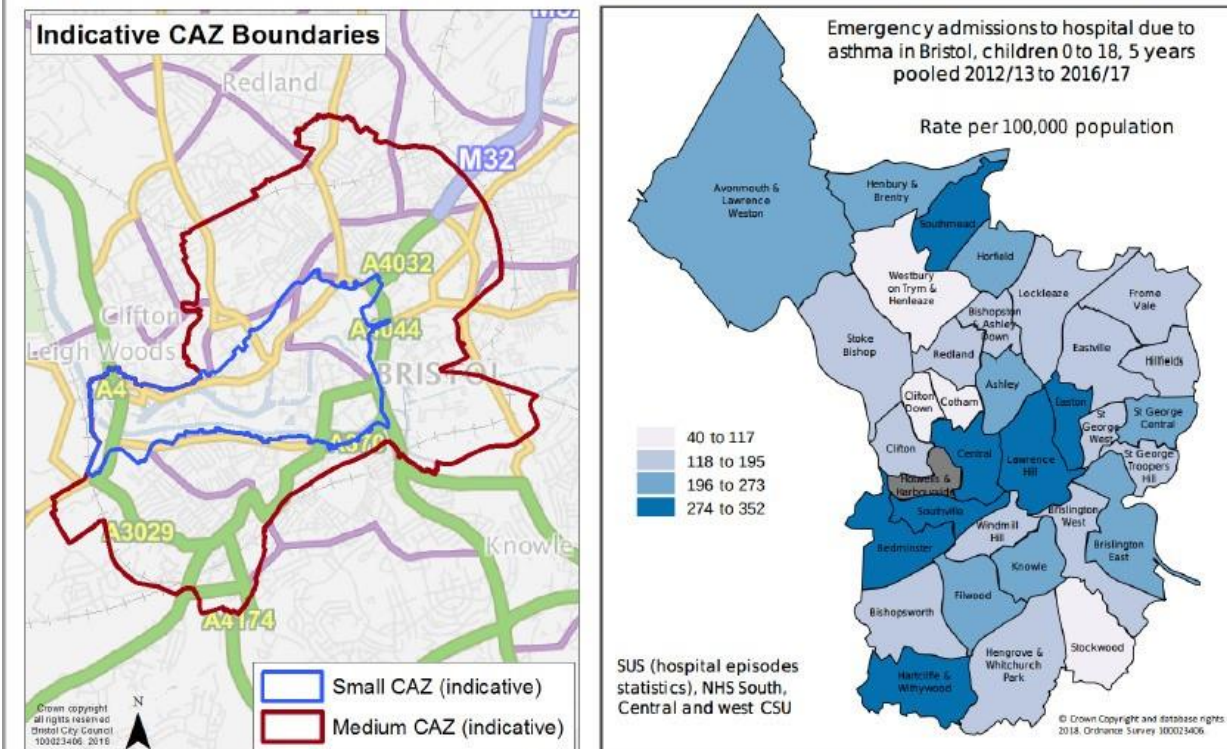
It is now four years since Client Earth took the UK Government to court for the third time for breaching EU Nitrogen Dioxide standards (currently 40 microgrammes per cubic metre) in most of its main cities. The government responded by issuing clean air directives to these cities, instructing them to reach compliance with this 40ug/m³ nitrogen dioxide legal standard “in the shortest possible time”. There was no parallel instruction to reduce particulates at this time as the EU legal limit is 25 microgrammes per cubic metre for fine particulates and 40 ug/m³ for coarse particulates and this limit was generally not breached in the cities.

Campaigning: a series of defeats

Bristol Clean Air Alliance was formed around the time that the Green Party launched their Let Bristol Breathe campaign and the Bristol Friends of the Earth called on Bristol City Council to adopt a Large Clean Air Zone. This was rejected by BCC in the spring of 2018 on the grounds that it would take too long to implement. Subsequently, Bristol Clean Air Alliance launched a postcard campaign (see below) in 2018 which asked the Mayor of Bristol to adopt a Medium Clean Air Zone for all vehicles.

Dear Marvin,

Please clean up Bristol's dangerous air pollution in the fairest, fastest and most comprehensive way. Both nitrogen dioxide from diesel vehicles and particles from wood burning are known to hasten death from respiratory illnesses, reduce lung capacity in children and to exacerbate asthma. All road traffic, whether from petrol or diesel cars, contributes to poor air quality and climate change. I pledge to examine my own travel patterns and act to reduce my pollution production now. *Please implement a Medium Clean Air Zone!*



The Small Area Diesel Ban hybrid option would have reduced pollution by 12% overall
 After extensive stakeholder engagement and a public consultation in the summer of 2019, Bristol City Council proposed in November 2019 a Small Area ban on just private diesel cars (as 40% of diesel is due to private diesel cars) coupled with a Medium Area Class C Clean Air Zone, where private diesel cars in the Medium zone would not be charged, but commercial vans and lorries would have been. This “hybrid option” would have achieved a 12% reduction in the total NO_x for Greater Bristol, and therefore was calculated to reduce NO₂-related illnesses (arguably only 132 of the much-quoted 300 deaths, the remainder due to the particulate pollution) by that proportion – saving 16 premature deaths per year.

Currently proposed Clean Air Zone: unknown efficacy

When Bristol City Council therefore responded to the public reaction by in February 2021 proposing a Small Area Clean Air Zone for all vehicles which included Cumberland Basin and stated that this would achieve legal compliance in 2023, the most rapid of all the other proposals, it was welcomed by the Bristol Clean Air Alliance, but there was no response to our requests for the same NO_x calculation. It is therefore unproven that this new proposal reduces the total health burden over the whole of Bristol at all, and there was no evidence given of the very likely effect of cars

simply driving round the small zone and simply spreading the same total pollution (or perhaps even more pollution than before) wider.

Why even a zero-sum Clean Air Zone might still be worth it

However, it can still be argued that reducing pollution levels in the centre of Bristol at the expense of increasing pollution levels wider afield at least reduces the already disproportionate health burden for the disadvantaged residents of the centre of Bristol and moves some of that burden to more affluent areas. That and the side-effect of a clean air zone on reducing some of the traffic congestion in the centre and improving the experience of shoppers in Broadmead relative to competing out-of-town shopping centres, made the installation of this much reduced CAZ seem to still – marginally – be worthwhile, and the promise of an October 2021 implementation seemed to signal some kind of positive conclusion for this four-year saga.

Why are we particularly angry about this latest delay?

It was therefore with considerable alarm that BCAA learned in June 2021 of the proposed delay to this CAZ beyond the October 2021 promised date. We were aware of the concerns of the business community and also North Somerset Council with respect to the inclusion of the Cumberland Basin in the CAZ, but had already explained in our February 2021 statement to Council that the inclusion of the Cumberland Basin was key to ensuring that enough of the business fleet actually changed their polluting diesels (older than Euro 6, only 25% of the total diesel fleet) to cleaner vehicles. If this fleet change does not occur, the worst situation of all could occur – a fleet remaining largely intact but driving round the small zone to increase the total pollution, and business vehicles paying to pollute on the occasional journey into the CAZ – thus both impacting on their economic situation and still polluting the centre.

2. Legal points obscuring the public health reality

Why are we not reassured by the year of compliance (2023) being unchanged?

Although Bristol City Council state that compliance will still be reached in 2023 even with a six-month delay in implementation to “spring 2022”, it should be explained that the legal framework of the government directive only applies to the calendar year, so a six-month delay could technically be in the same calendar year even

though it pushes the month of compliance from (say) March to September, or more cynically December. Again, although the month in which legal compliance of air quality is reached does not legally need to be publicised, it will still be a reality to the many residents of the polluted areas of Bristol who already suffer twice the pollution of Greater Bristol as a whole and have six times the incidence of emergency asthma admissions – see diagram. In six months there will be 150 more premature deaths and many more emergency admissions for asthma.

Health impact – the 300 deaths metric explained

The much-cited 300 deaths per year is a calculation of premature death attributable to air pollution and is based on a formula relating the average exposure in microgrammes per cubic metre of not just NO₂ (which has a Greater Bristol average of 20ug/m³, 40 ug/m³ being the legal limit) but also fine particulates, PM_{2.5} in the air (a Greater Bristol average of 10ug/m³, with a legal limit of 25ug/m³). Particulates are known to have double the health impact of nitrogen dioxide for the same microgrammes per cubic metre, despite not being covered by the current Clean Air government directive. This formula, developed by COMEAP (Committee on the Medical Effects of Air Pollution) which is based on world-wide studies which for this level of NO₂ and particulates leads to an estimate of 8.5% of all annual deaths, or for Greater Bristol, 300 deaths per year, being premature and attributable to air pollution, for the whole range of pollution-related illnesses including asthma. This figure of 8.5% can also be applied to other measures of ill-health such as hospital admissions, life expectancy and cost to the NHS, as illustrated in a report by Kings College London. It should also be noted that simply achieving legal compliance of 40ug/m³ in the centre of Bristol leaves the barely-legal areas with twice the Greater Bristol average pollution, so that 17% of total deaths (compared with 8.5% as for Bristol as a whole) are attributable to air pollution in the barely-legally-compliant areas. This is why campaigners have been calling for stricter measures than those barely achieving compliance.

3 Two different types of pollution of which one is being ignored by the government Nitrogen dioxide and particulates have an equal health impact on Bristol

Particulates have not been as well mapped as nitrogen dioxide as they are not included in the Clean Air directive, but recent Saaf Hava data collection sponsored by the Council of Mosques show the finer particulates PM_{2.5} with a near-illegal daily average of 20 ug/m³ in the central lowlying areas of Bristol. However in areas such as Bond Street, the base of the M32, the nitrogen dioxide levels average 60 ug/m³, so even though particulates according to the HAZ ratio are twice as harmful, the NO₂

levels inside the proposed Clean Air Zone are more than twice the density of fine particulates and therefore equally significant to health. It has moreover been argued that Covid-19 can be transmitted on particulates in the air.

Please ban woodsmoke as well

The recent finding that 38% of particulates are from wood-smoke compared with only 11% from diesel cars underlines the issue of particulates as a wrongly-neglected issue. It is therefore very welcome that Bristol City Council are at last launching a public engagement campaign to reduce woodsmoke, but it would be better still to impose lower legal limits for particulates than the present EU standard (currently 25 ug/m³) and enforce the existing limits on woodsmoke burning or better still impose an outright ban on the whole of Greater Bristol, not just in the centre.

.. but don't lose the focus on nitrogen dioxide

As well as the asthma map which is shown here specifically for Bristol, there are many other pollution-related illnesses affected by nitrogen dioxide such as cardiac arrest, low lung capacity and low birth-weight in babies as well as a hallucinatory effect on young people; the Kings College report very helpfully illustrates what this means for a wide range of illnesses known to be exacerbated by poor air quality. This is why the Bristol Clean Air Alliance continue to support the Clean Air Zone despite its diminishing effectiveness.

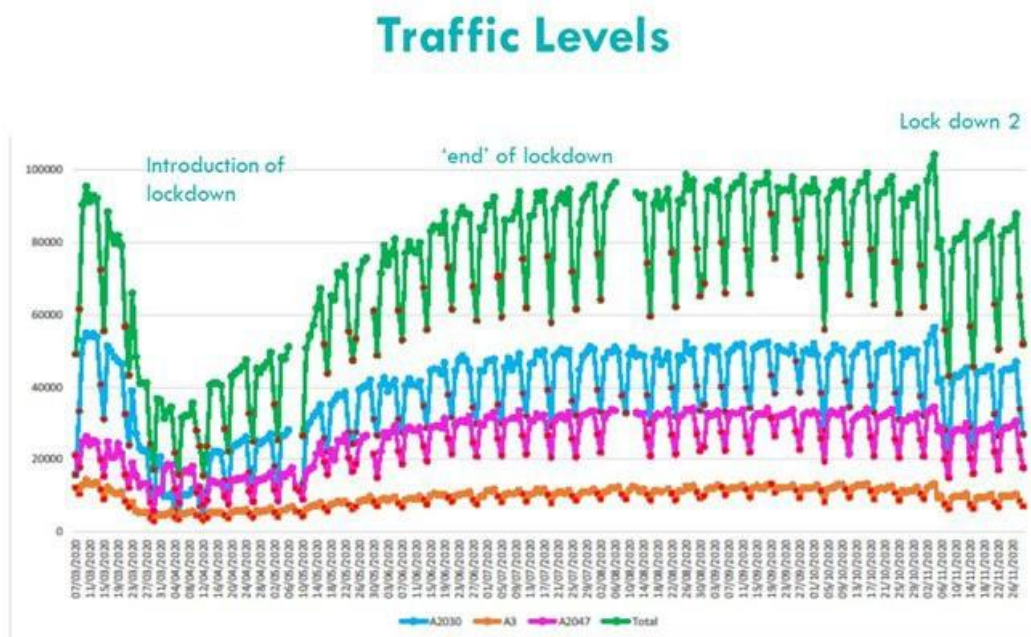
4. Are economic considerations now overriding health?

Current considerations on economic versus health impact

It is understandable that small businesses are apprehensive about the economic effect of the CAZ and we therefore applaud the provision of financial help. However, we fear that if the car lobby succeeds in further delaying the CAZ implementation date from October 2021 to an indefinite one in 2022, it is very likely that the purpose of this delay is to further water down the CAZ boundaries or seek more and more exemptions. The effect on the total pollution of the present CAZ proposal has still not been published and any more concessions could well see the total pollution for Greater Bristol rise. At that point the Council will need to ask how they can still regard the CAZ as a public health intervention and a moral responsibility. The Bristol Clean Air Alliance therefore urges the Council to stand firm on the current proposals and not to give away any more time, concessions or boundary changes. As stated before, the inclusion of Cumberland Basin in the CAZ is not financial (as the funding has already been promised) but is calculated to drive fleet change in the businesses to the west of Bristol that can arguably more well afford it.

Covid-19 has only made the traffic pollution worse

Covid-19 may have put a temporary lull on air-flight, but traffic levels in Bristol even during Covid19 bounced back to at least 100% of those pre-Covid. Businesses have been aware of the CAZ plans for several years now, and a further delay is unfair on conscientious drivers who have already taken action to change their vehicle, and makes it more likely that more concessions will be extracted. The Clean Air Directive instructed cities to achieve compliance “as soon as possible” and this is clearly no longer the case.



5. Conclusion

BCAA therefore urges BCC to implement the CAZ in October 2021 as promised. It has been four years now – 1200 premature deaths and counting, asthma rife in city centre schools and youth groups (see report from the Full Circle youth club in St Paul’s), a huge proportion of these in the deprived areas of central Bristol. BCC has implemented the Bristol Bridge at an admirably fast timescale – it is now time to put in place this marginally effective but fully government funded Clean Air Zone intervention and to move on to declare a woodsmoke ban and progress the welcome pedestrianisation of shopping streets, continue to invest in better public and active transport, and turn Bristol into a city of the future not of the past.

Christina Biggs Steering group member, Bristol Clean Air Alliance

11/07/2021

References

Committee on the Medical Effects of Air Pollution (COMEAP) reports:

<https://www.gov.uk/government/collections/comeap-reports>

Kings College report <https://www.kcl.ac.uk/news/lifetime-exposure-to-air-pollution-couldshorten-childrens-lives>

Childhood asthma reaches 47% in St Paul's:

<https://pressreleases.responsesource.com/news/99156/as-childhood-asthma-in-st-paul-sreaches-save-the/>

Transmission and exacerbation of Covid-19 by particulates in the air:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7345938/>