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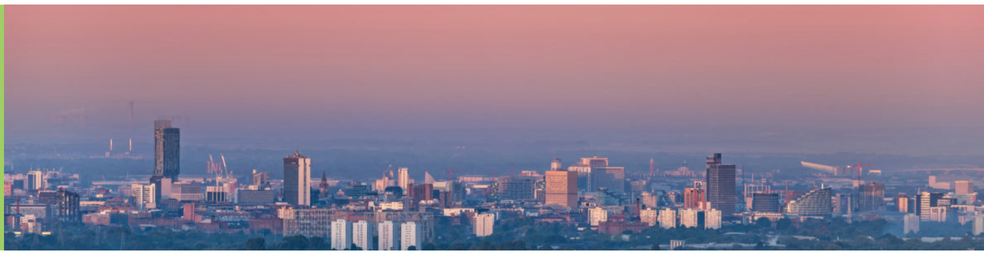


How have the Covid pandemic and lockdown affected air quality in cities?

The pandemic has pushed air quality concerns down the agenda as national and local policymakers grapple with immediate healthcare and economic impacts. Important measures like Clean Air Zones (CAZs) have lost what priority they had, sometimes on the grounds that air quality has improved this year as a by-product of restrictions to control the spread of the virus.

To show that this is not the case, this briefing uses data from the European Environmental Agency (EEA) and the Department for Environment, Food and Rural Affairs (Defra), and draws on analysis by the Centre for Research on Energy and Clean Air and Environmental Defense Fund Europe.

It finds that, first, although in cities and large towns like Glasgow, Warrington and Oxford, NO_2 concentration levels more than halved during lockdown, not all cities and large towns experienced a significant improvement in air quality. And, second, when restrictions were lifted, air pollution returned to its pre-pandemic levels in 39 of 49 cities and large towns studied, even though none had returned to previous levels of economic activity.

The implication is that, while many cities and large towns felt the benefit of a short-term reduction in air pollution, the long-term impact of the pandemic may be to make pollution worse as changed behaviour becomes entrenched even as economic activity is restored. Urgent policy action, particularly, but not exclusively, on car- and other vehicle-related pollution is required to improve the air we breathe – and our health – in the long-run.

In partnership with:

CREA
Centre for Research on Energy and Clean Air

Introduction

In 2016, air pollution was estimated to be responsible for an effect equivalent to 40,000 deaths each year in the UK.[1] This year has served as a grim reminder of the harmful impact of air pollution on health, with research showing the link between toxic air and Covid vulnerability, through its impact on respiratory and cardiovascular conditions.[2]

To combat toxic air, a number of cities were scheduled to launch long-awaited CAZs[3] in their most polluted areas, including two this year in Birmingham and Leeds, to be followed by Sheffield, Bristol and Manchester.

But, since the pandemic hit, many of these plans have been shelved. A number of cities have at best delayed the implementation of their CAZs or consultation on them, and at worst have scrapped their plans entirely, claiming that because air quality swiftly improved in 2020, further measures are no longer needed.

The large fall in travel and economic activity as a result of the pandemic and associated restrictions brought with it a fall in the concentration of pollutants like NO_2.[4] This briefing looks at how the size of the fall varied across the UK's largest cities and towns, and examines what has happened since the first national lockdown was lifted.

1 Royal College of Physicians (2016), Every breath we take: the lifelong impact of air pollution. Report of a working party, London: RCP

2 Pozzer et al (2020), Regional and global contributions of air pollution to risk of death from COVID-19, Cardiovascular Research

3 The 2017 and 2018 Air Quality Plan mandated 63 local authorities to come up with plans to tackle illegal levels of air pollution. It specified that Clean Air Zones were the quickest way to clean up the air and were therefore the preferred option.

4 Air Quality Expert Group (2020) Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK. Rapid evidence review - June 2020, https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2007010844_Estimation_of_Changes_in_Air_Pollution_During_COVID-19_outbreak_in_the_UK.pdf

Box 1: Methodology: how to measure air pollution?

Air pollution is difficult to measure. There is no single way to capture it or to assess the quality of air. In this briefing, we focus on concentration data, which gives an indication of how polluted a place is. The data comes from Defra and is measured at 232 monitoring sites, located either near to (roadside) or further away (background) from roads and then modelled for a specific area, correcting for weather conditions.

It focuses on two pollutants: nitrogen dioxide (NO_2) and particulate matter with a diameter of 2.5 μm or less (PM2.5). Prior to the crisis, the UK did not meet the legally-binding target for nitrogen dioxide concentration of an annual mean of 40 micrograms per cubic metre ($\mu g/m^3$). This target was set for 2010, and has not been met for 10 consecutive years. While legal limits for PM2.5 (set at 25 $\mu g/m^3$) were not breached in most places, they exceeded World Health Organization's (WHO's) guidelines of 10 $\mu g/m^3$.

In this work, only cities and large towns with at least one monitoring station from the Department for the Environment, Food and Rural Affairs (Defra) have been included, meaning this briefing looks at 49 of the UK's 63 primary urban areas usually analysed by Centre for Cities.

This research is based on data computed for Centre for Cities by the Centre for Research and Energy on Clean Air (CREA) and Environmental Defense Fund Europe.

The first national lockdown had a positive effect on air quality, particularly in cities

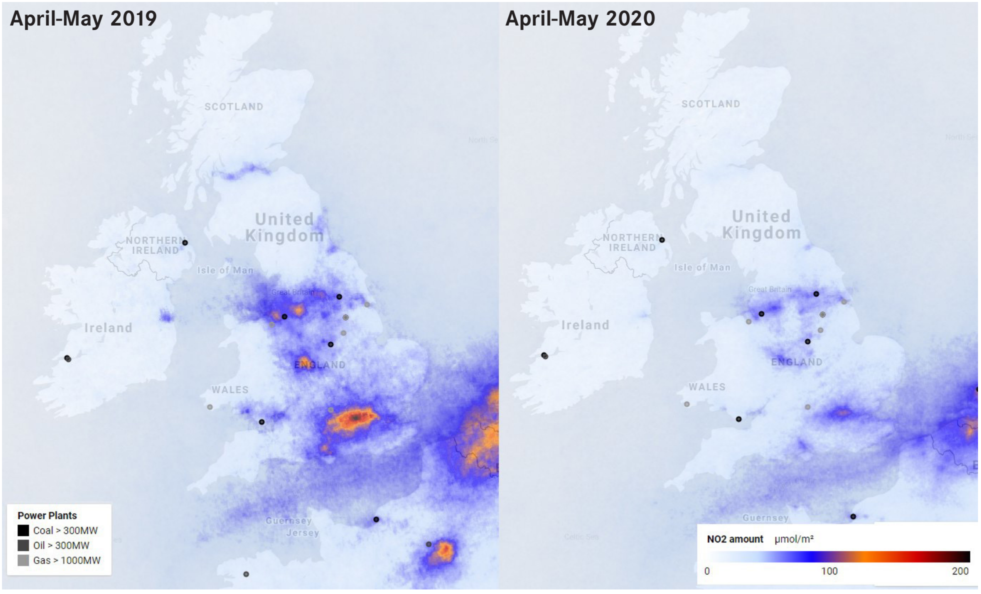
Previous Centre for Cities' research showed that air pollution is particularly an urban issue, with cities having generally higher levels of NO_2 and PM2.5 concentrations than non-urban areas.[5] This can largely be explained by the density of people and economic activity in cities and large towns, as well as their role as transport hubs.

But the pandemic has had a large impact on air pollution. Figure 1 shows that, in the period of the first national lockdown (between the end of March and mid-May 2020),[6] the UK experienced a rapid decrease in NO_2 concentration. This was particularly the case in cities and large towns, where the average concentration dropped by 38 per cent on the previous year, compared to 35 per cent elsewhere. This corresponds to a 9.3 $\mu g/m^3$ in cities against 6.2 $\mu g/m^3$ outside cities.

5 At the start of 2020, Centre for Cities' Cities Outlook 2020 looked at air pollution trends in urban areas. It identified which cities were the most affected by toxic air, what the consequences were in terms of health and why it should be tackled urgently by local and national policymakers. https://www.centreforcities.org/wp-content/uploads/2020/01/Cities-Outlook-2020.pdf

6 We have defined this period as 27 March 2020 to 11 May 2020, when 'Stay at home' advice first changed in some areas

Figure 1: Satellite-based NO_2 measurements, April-May 2019 and April-May 2020



Source: CREA based on TROPOMI S5-P, 2020

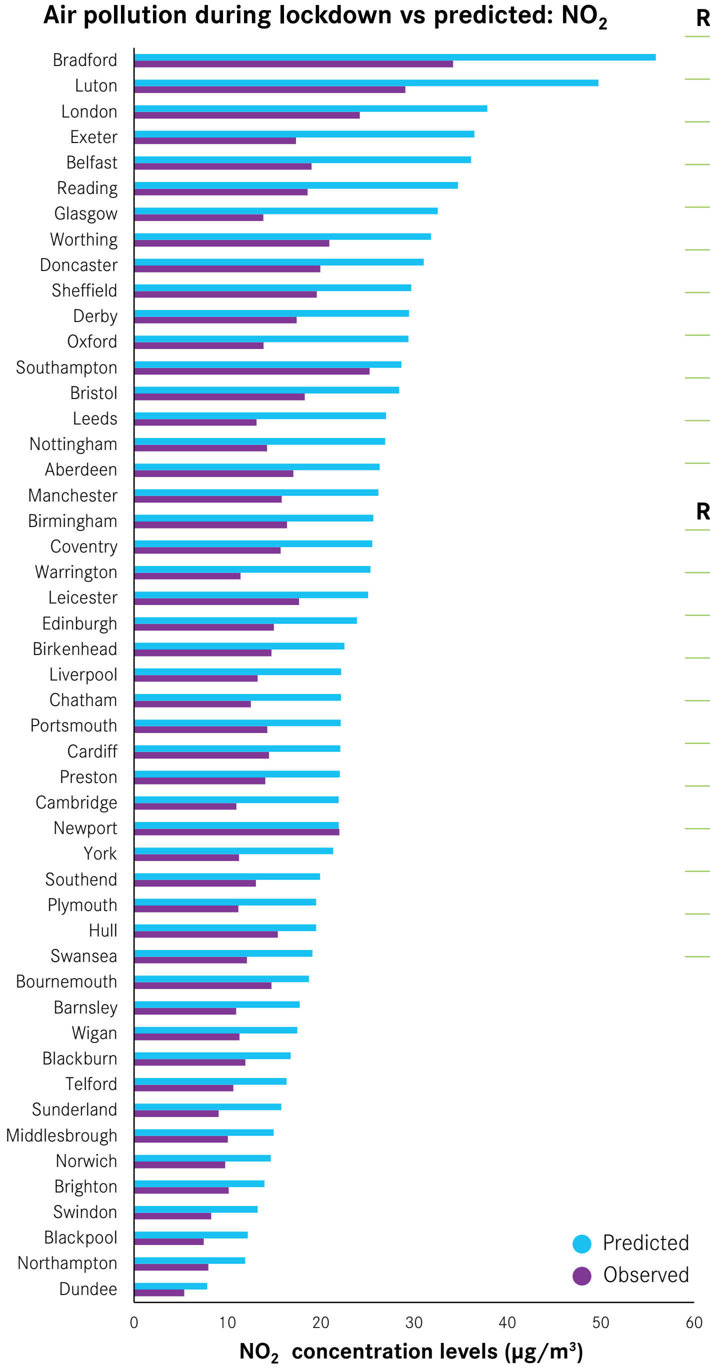
Almost all cities and large towns experienced falls in their NO_2 concentration levels between the end of March and mid-May 2020.[7] But the extent of the reduction varied across them, as shown in Figure 2, which looks at the gap between pollution levels measured during the lockdown period and those predicted for these months based on historic values, ranked by predicted concentration levels.

Looking at cities and large towns that saw the biggest and smallest reductions, Glasgow experienced the largest falls in NO_2 concentrations, which were down by almost 60 per cent. It was followed by Warrington and Oxford, where pollution levels also more than halved. In contrast, Southampton saw falls of 12 per cent. For Bradford and Luton, the impact of lockdown pushed their average NO_2 concentration levels below the legal threshold of 40µg/m^3.[8] The overall differences among cities and large towns can in part be explained by different sources of emissions within them, as discussed in more detail later in this briefing.

7 Importantly, improvements in air pollution were observed at the city level (which includes urban background stations) and not just from traffic monitoring stations located on busy roads. This shows that, in normal times, air pollution from cars spreads in the air and exposes many more people than just those living close to these roads.

8 The modelling is based on historic data from previous years. More information in Box 2.

Figure 2: Impact of the first lockdown on NO_2 levels after adjusting for weather conditions



Rank	Top 10	Change (%)
1	Glasgow	-57
2	Warrington	-55
3	Oxford	-53
4	Exeter	-52
5	Leeds	-51
6	Cambridge	-50
7	Belfast	-48
8	York	-47
9	Nottingham	-47
10	Reading	-46

Rank	Bottom 10	Change (%)
40	Northampton	-33
41	Middlesbrough	-33
42	Dundee	-32
43	Leicester	-30
44	Brighton	-28
45	Blackburn	-28
46	Hull	-21
47	Bournemouth	-20
48	Southampton	-12
49	Newport	0

Note: In Newport, the lockdown did have an impact on NO_2 concentration levels (see Figure 4) but levels immediately before the pandemic were unusually high compared to historic levels, as a result the table shows only a minor difference between expected and observed levels.
Source: Defra, CREA, 2020

Box 2: Isolating the impact of Covid-related lockdowns from weather conditions

Air pollution is heavily affected by weather conditions. To account for this effect and to isolate the impact of Covid related lockdowns, a 'de-weathering' methodology has been used.[9] With this methodology, it is possible to compare predicted values (based on weather-corrected historical data from 2017, 2018 and 2019) and observed values (the actual measurements obtained from Defra sensors).

The gap between the observed and predicted values is called the anomaly: a negative anomaly indicates a lower pollution level than what would have been expected in the city under the observed weather conditions. We use this anomaly as a proxy for the impact of Covid-related lockdowns on air pollution.

The predicted and observed values for the 49 cities and large towns are shown in Figure 2 and 3.

The impact of the lockdown on other contributors to air pollution was much more muted. Figure 3 shows the impact on PM2.5. The largest reduction was in Belfast where the lockdown generated a 42 per cent decrease in PM2.5 concentrations. But in most cities and large towns falls were either more modest, or levels actually increased.[10] In Norwich, for instance, PM2.5 concentration increased by 15 per cent. The appendix shows how this was also the case for PM10 and ozone.

And even where PM2.5 did fall, in 30 of 36[11] cities and large towns the concentration levels remained well above the WHO guidelines of 10 μg/m^3.[12] These cities include Sheffield, Manchester and London.

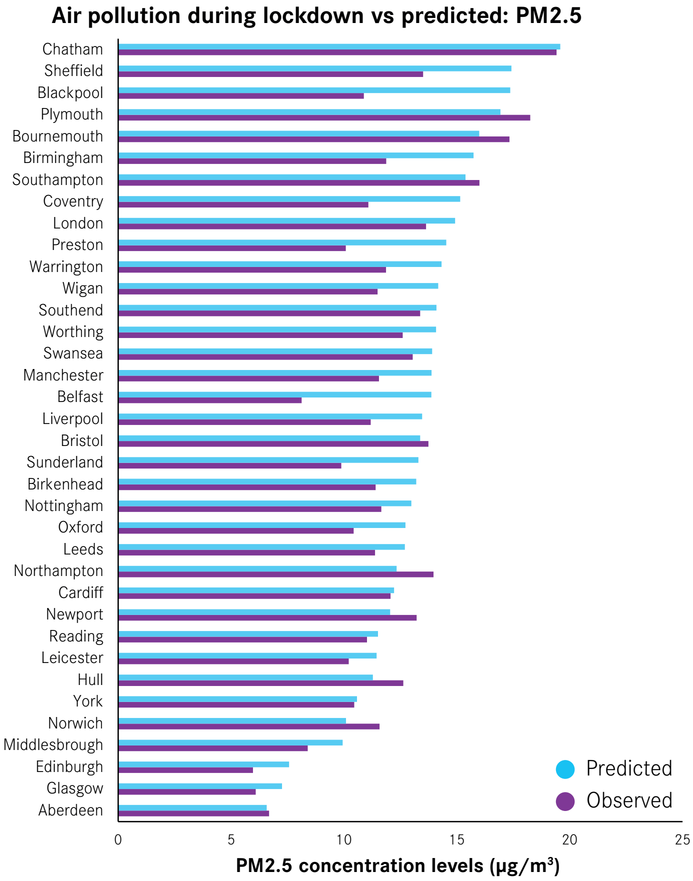
9 https://energyandcleanair.org/weather-correction-of-air-pollution-application-to-covid-19/

10 A note from Defra published in June 2020 explains that this is because "PM2.5 is influenced not only by local emissions and meteorology but also by longer-range mass trajectory and origins". See: Defra, 2020. Estimation of changes in air pollution during Covid-19 outbreak in the UK. https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2007010844_Estimation_of_Changes_in_Air_Pollution_During_COVID-19_outbreak_in_the_UK.pdf

11 This analysis includes a smaller number of cities and large towns than for NO_2 (36 out of 49) because not all monitoring stations record PM2.5 levels.

12 WHO guidelines are projected as annual means, so this is only if the conditions of the lockdown were the same throughout the year.

Figure 3: Impact of the first national lockdown on PM2.5 levels after adjusting for weather conditions



Source: Defra, CREA, 2020.

Rank	Top 10	Change (%)
1	Belfast	-42
2	Blackpool	-39
3	Preston	-31
4	Coventry	-27
5	Sunderland	-26
6	Birmingham	-24
7	Sheffield	-22
8	Edinburgh	-21
9	Wigan	-19
10	Oxford	-18

Rank	Bottom 10	Change (%)
27	Chatham	-1
28	Southampton	-1
29	Aberdeen	2
30	Bristol	4
31	Plymouth	8
32	Bournemouth	8
33	Newport	10
34	Hull	12
35	Northampton	13
36	Norwich	15

When lockdown eased, NO_2 emissions bounced back in most cities

The improvement in air quality was short-lived. Pollution levels increased again after the first national lockdown was lifted. But places experienced different rebound patterns. Figure 4 shows NO_2 concentration levels from January 2020 until the end of October. The dotted lines mark the date and value for each city or large town when the lockdown was introduced. Overall, three different groups can be identified in terms of their recovery:

a) **V-shaped recovery**. These cities and large towns returned to their previous levels of pollution (e.g. Liverpool, Luton, Exeter, Telford).

b) **Plateau-shaped recovery**. These cities and large towns saw air pollution increase, but it settled at a lower level than prior to the crisis (e.g. Manchester, Wigan, Aberdeen).

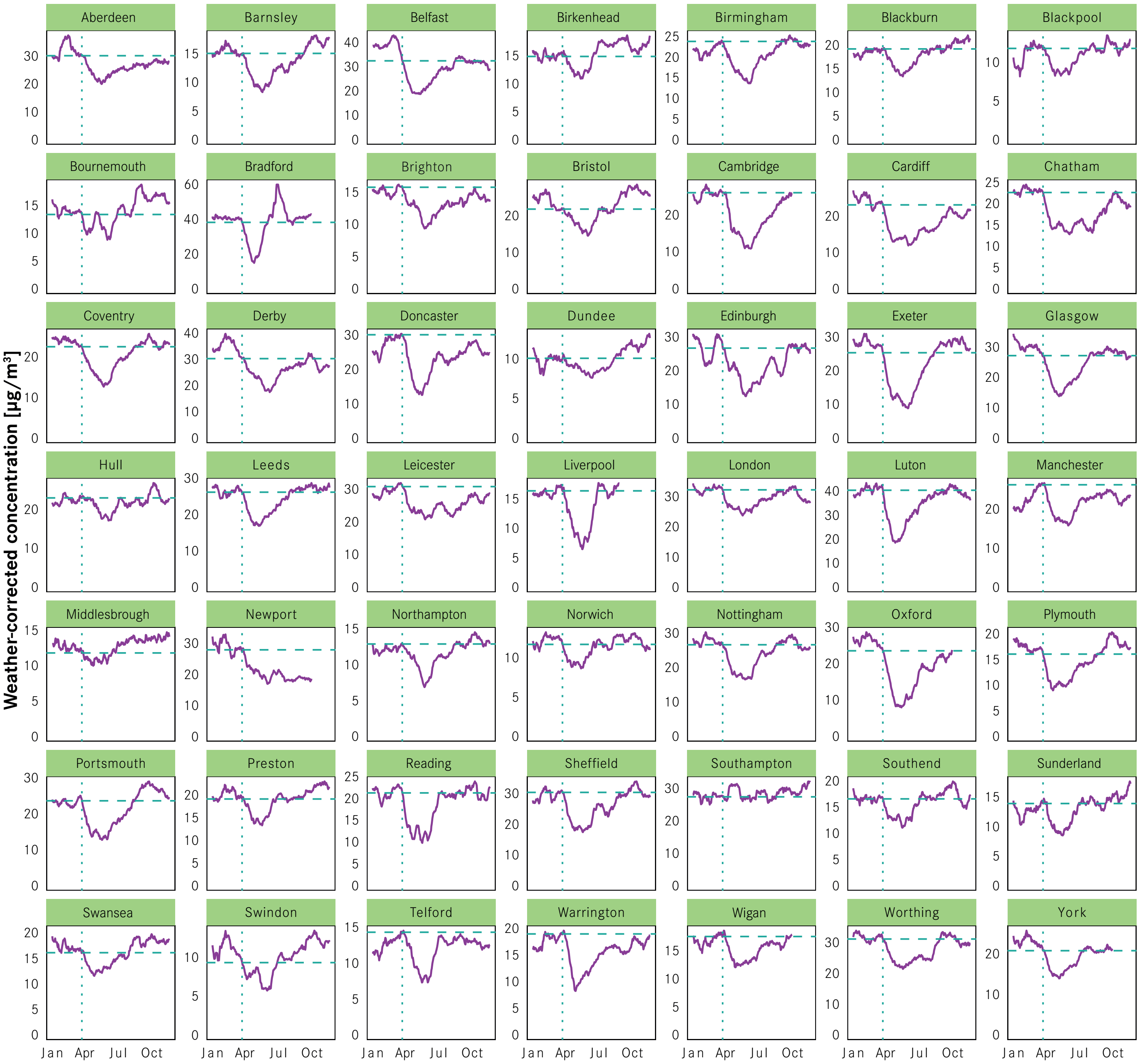
c) **Tick-shaped recovery**. Pollution in these cities and large towns now seems higher than it was pre-lockdown (e.g. Barnsley, Bournemouth, Portsmouth).

For 39 out of 49 cities and large towns, this meant that by September 2020 the pollution levels were at least back to pre-lockdown levels. And this is despite economic activity not having fully recovered by then.[13] This has two implications. First, human-made air pollution can be reduced if behaviour changes and, second, if there are no measures in place to keep the levels low, air pollution is likely to bounce back.

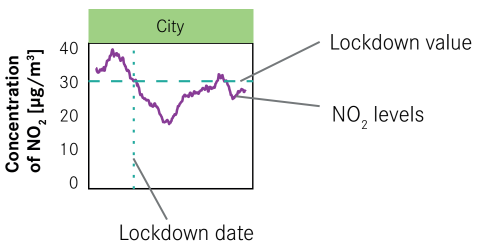
13 Centre for Cities, 2020. High street recovery tracker. https://www.centreforcities.org/data/high-streets-recovery-tracker/

Figure 4: Evolution of NO_2 concentration levels before and after the introduction of the first national lockdown

NO_2 weather-corrected values. 30-day running average



How to read this chart



Source: Defra, CREA, 2020.
Note: the scales for each figure are different as cities went into lockdown with different baseline levels.

Traffic is likely to be the main explanation for the fall in pollution levels during lockdown, and for the geographic variation in rebound

One of the major consequences of the first national lockdown is that, as a result of the 'stay at home' advice, traffic and congestion levels fell dramatically across the country. Given that transport accounts for 42 per cent of all NOx[14] emissions in UK cities,[15] this is likely to explain a large part of the fall in air pollution.

Modal share data from the Department for Transport (DfT), which is not available at a local level, provides a national picture of the impact of the pandemic on the usage of different transport modes. As Figure 5 shows, across the country car use was around 30 per cent of its pre-lockdown levels (and reached a daily minimum of 22 per cent in early April) while public transport usage dropped to 6 per cent. [16]

Data shows that the drop off for motor vehicles was rather short-lived, as levels started to bounce back as early as mid-April. This stands in contrast to the take-up of public transport, which remains below its previous levels, and reached a maximum of 40 per cent of its pre-lockdown levels at the end of August. This gap is likely to explain the rebound in air pollution levels, which might rise even further. Indeed, by early September, before new restrictions were announced, car usage had already reached 97 per cent of its previous levels despite economic activity being 8 per cent lower than in February.[17] If this switch from public transport to cars persists when more people decide to travel to work again then, despite the short-term improvements, the pandemic will actually make air quality worse.

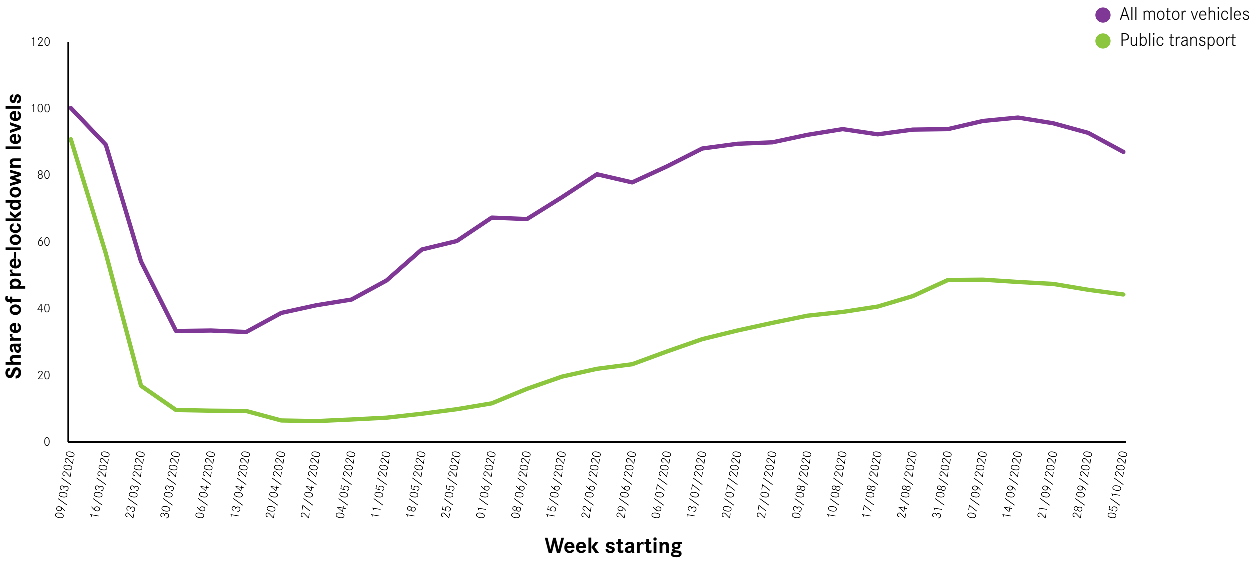
14 The majority of NOx emitted as a result of combustion is in the form of nitric oxide (NO). When NO reacts with other gases present in the air, it can form nitrogen dioxide (NO_2)

15 Centre for Cities, Cities Outlook, 2020. Data for 63 primary urban areas.

16 Department for Transport, 2020.

17 ONS, 2020. GDP monthly estimate, UK: September 2020. https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/gdpmonthlyestimateuk/september2020

Figure 5: Use of transport mode in Great Britain during the Covid pandemic



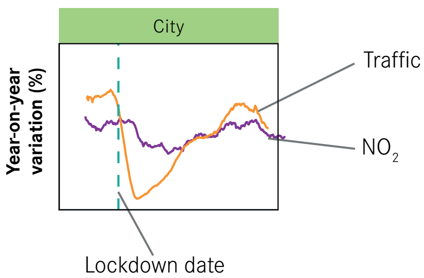
Source: DfT, 2020.
Note: data for cars and HGVs is the percentage of the equivalent day of the first week of February 2020. Data for public transport is a combination of national rail, buses outside London, and London tube and bus networks.

Traffic data from TomTom - available for 21 cities and large towns - shows how the relationship between traffic and air pollution plays out locally (see Figure 6). In most, NO_2 emissions and traffic track each other.

Figure 6: Relationship between traffic and NO_2 pollution

2020 vs 2019 NO_2 concentration and traffic congestion levels
30-day running average

How to read this chart



But there are exceptions. During the lockdown, some cities like Southampton, Middlesbrough and Hull experienced large drop-offs in traffic, but NO_2 levels did not follow. This is because in these places, traffic is not the main source of NO_2 emissions. Non-road transport emissions and industrial activity contribute to a higher-than-average share of NO_2 emissions,[18] and these sources were less affected by the restrictions of movement. In places like Bournemouth and Portsmouth, where non-road transport also contributes to a large share of NO_2 emissions, pollution levels bounced back faster than traffic when the restrictions were lifted and activity (mostly port-related) resumed.

Box 3: Case study – How did air quality change within individual cities? Examples from London and Manchester

The previous analysis looks at the evolution of air quality at the city scale, but there are reasons to assume that the impact of the pandemic on air quality played out differently within cities. Remote working, for instance, was mostly adopted by office workers, and therefore primarily affected commutes to and from city centres. The city average can therefore hide some variation, particularly in large urban areas.

While in most cities the small number of monitoring stations makes such analysis difficult, this is not the case in larger cities such as Manchester and London. Data for both confirms that city centres have seen the largest drops in pollution.

London

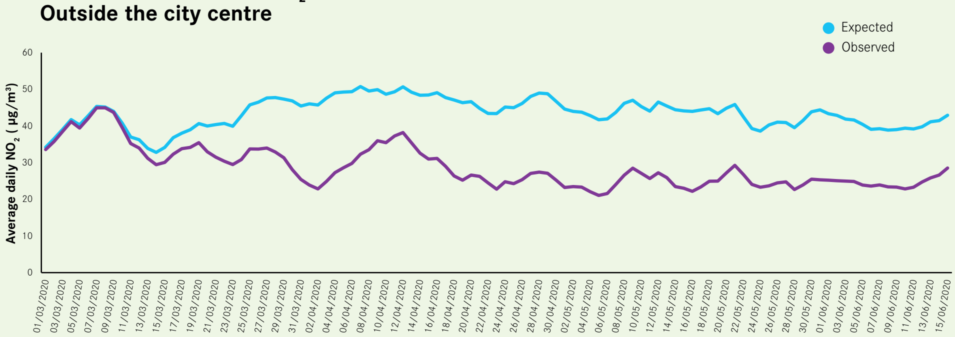
Analysis by the Environmental Defense Fund Europe shows that kerb- and roadside monitoring sites outside the city centre saw a smaller reduction in NO_2 during lockdown compared to more central ones. While in the city centre (defined here as the congestion charging zone), NO_2 concentration decreased by around 52 per cent, it dropped by 39 per cent in less central neighbourhoods.[19] This is illustrated in Figure 7, which shows the expected and observed NO_2 levels. For both areas, the relationships between expected and observed NO_2 levels closely mirror each other, but for monitors within the city centre the gap is much larger, due to much lower levels than expected.

18 BEIS 2019. UK National Atmospheric Emissions Inventory (NAEI).

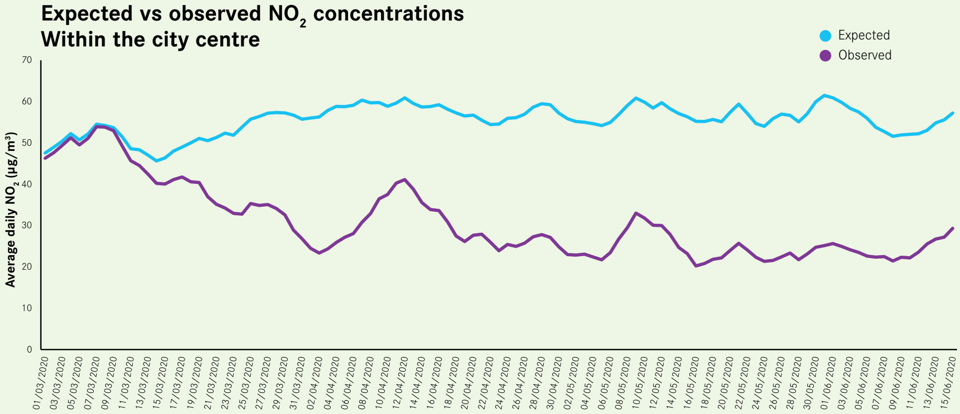
19 This difference was measured between 17 March 2020 (the day after lockdown measures were introduced), and 15 June 2020, when non-essential shops opened again for the first time in most of England.

Figure 7: Expected vs. observed NO_2 concentrations in Greater London

Expected vs observed NO_2 concentrations
Outside the city centre



Expected vs observed NO_2 concentrations
Within the city centre



Source: Environmental Defense Fund Europe, 2020

Manchester

Similar developments can be found when looking at data from the Greater Manchester Clean air data hub. Figure 8 shows that central Manchester experienced a much larger drop in pollution levels than surrounding town centres and suburban areas. While central Manchester saw a reduction in air pollution of almost 60 per cent, in Trafford and Salford, NO_2 concentration levels fell by no more than 35 per cent compared to the pre-lockdown period.

Figure 8: Impact of lockdown on NO_2 levels in Greater Manchester

Area	Pre-lockdown NO_2, February 2020 (µg/m³)	Lockdown NO_2, April-May 2020 (µg/m³)	Absolute value difference (µg/m³)	Percentage difference (%)
Central Manchester	51	21	30	-59
Bury	26	12	14	-54
Stockport	36	18	18	-50
Wigan	20	10	10	-49
Oldham	29	17	12	-42
Salford	24	16	8	-33
Trafford	16	12	4	-26

Source: Clean Air Hub, GM, 2020

Implications for policy

There are four main implications for policy that this data illustrates.

1. The pandemic does not lessen the need for action on air quality

A number of cities (including Leeds, Bristol, Sheffield and Greater Manchester)[20] have either delayed the implementation of Clean Air Zones or cancelled their plans on the grounds that these measures were not immediately necessary. The data above shows that this is not the case. In all of these cities, air pollution has either already reached its pre-lockdown levels (as in Leeds, Bristol and Sheffield) or is about to do so (as in Manchester), despite economic activity remaining below pre-lockdown levels.

2. Greater home working is not the answer to cleaner air

A number of commentators[21] have argued that a longer-term uptake of remote working is the solution to improve air quality in cities. The data above does not support this.

London is the city that has had the highest levels of home working during the pandemic, with over half of workers being able to work from home and many continuing to do so.[22] Despite this, London's NO_2 concentrations are back close

20 For example see:

Sheffield https://airqualitynews.com/2020/09/11/sheffield-city-council-to-axe-clean-air-zone-plans/

Leeds https://airqualitynews.com/2020/08/19/leeds-clean-air-zone-suspended-for-foreseeable-future/

Bristol https://airqualitynews.com/2020/08/20/bristol-city-council-to-backtrack-on-clean-air-zone/

21 For example, see https://www.globalactionplan.org.uk/news/remote-working-vital-post-lockdown-to-keep-air-pollution-lowwith-87of-workers-wanting-to-continue-to-do-so

22 Office for National Statistics, 2020. Labour Market Survey, Coronavirus and home-working in the UK.

to pre-pandemic levels. This is likely to be because journeys to work are not the largest contributor to pollution levels, a result of the much higher usage of public transport - around 62 per cent of Londoners use public transport or active travel to get to work, rising to 90 per cent for workers in central London.[23 24] Meanwhile, research has shown that people who work from home are more likely to use their car for other purposes, such as leisure or shopping.[25 26] It has also been suggested that more people spending more time at home as a result of remote working could worsen air quality because energy consumption overall increases.[27]

3. Policy needs to disincentivise car and other vehicle usage to improve air quality

What 2020 does show is that human-made air pollution generated by traffic can be cut if behaviour changes, and that behaviours will not change without policy action. While it is clear that reducing vehicle usage to levels seen in April is not achievable any time soon, policies such as charging zones contribute to making driving less attractive, particularly for the most polluting vehicles. For example, the Ultra Low Emission Zone in London led to a 44 per cent decrease in NO_2 concentrations between February 2017 and February 2020 – more than five times the national average reduction.[28]

4. Reducing car usage does not affect all pollutants equally

While NO_2 concentrations did fall with the reduction in traffic in most cities and large towns, PM2.5 did not. This is because of the differing sources of PM2.5. In cities and large towns, half of PM2.5 emissions stem from domestic combustion such as wood- and coal-burning.[29] Action on traffic alone will not be enough to improve air quality.

23 ONS, 2011 Census.

24 DfT, 2019. Transport Statistics Great Britain, Usual Method of travel to work by region of workplace.

25 Budnitz, H. et al, 2020. Telecommuting other trips: an English case study. Journal of Transport Geography.

26 Using data from the Waze Cities programme, researchers from Environmental Defense Fund Europe have shown that congestion outside the city centre during the summer was worse than in 2019. See https://www.edfeurope.org/news/2020/15/09/traffic-congestion-increasing-london-above-2019-levels-outside-city-centre

27 A recent paper by the Energy and Climate Intelligence Unit showed that work from home could drive up NOx emissions by approximately 12 per cent in towns and cities. See https://eciu.net/analysis/reports/2020/gas-boilers-and-nox-the-hidden-emitter

28 Greater London Authority, 2020. Air quality in London, 2016-2020.

29 Centre for Cities, 2020. Cities Outlook

What needs to change

Air pollution is a killer. Research shows it causes 40,000 deaths a year.[30] And a recent study suggested that 15 per cent of Covid deaths could be attributed to air pollution, through its harmful impact on cardiovascular and respiratory conditions.[31] To reduce deaths in the future, the following needs to happen:

1. **Accelerate the implementation of charging Clean Air Zones.** Those cities that have cancelled them should reverse their decisions, and those that have not brought proposals to consultation, despite poor air quality caused by traffic, should do so.
2. **Encourage people to return to – and swap to – public transport once the pandemic is under control**. The implementation of charging Clean Air Zones will only be successful if people have alternatives to private vehicles. Expanding public transport usage must therefore be at the core of long-term strategies for cleaner air, which need to work hard to rebuild habits and confidence eroded by the pandemic. This will likely require a large public awareness campaign comparable to the one launched to encourage mask wearing earlier this year.
3. **Evaluate temporary active travel measures introduced during the pandemic and implement them if they are shown to be effective.** A number of cities have put temporary measures in place to encourage walking and cycling, such as the pop-up cycle lanes in cities like Manchester, Bristol and London. If these measures are shown to be effective in encouraging people to change behaviour then they should be made permanent, and other cities should take note of the lessons from these experiments.
4. **Adopt World Health Organization (WHO) guidelines for PM2.5 in the Environment Bill.** The current limit for PM2.5 is more than twice as high as the one recommended by the WHO. The 2019 Clean Air Strategy acknowledged the need to meet the WHO guidelines and included a commitment to set an ambitious target for PM2.5. But in March 2020, as the pandemic began, MPs voted not to introduce the WHO guidelines, and the current Bill includes only a commitment to set a target by 2022, with no certainty over what this target will be. As the Bill continues its passage, its amendment should be the first of a number of steps needed to bring down PM2.5 emissions.

30 Royal College of Physicians (2016), Every breath we take: the lifelong impact of air pollution. Report of a working party, London: RCP

31 https://airqualitynews.com/2020/10/27/15-of-global-covid-deaths-attributed-to-air-pollution/

Appendix

Figure 9: Impact of first national lockdown on four pollutants: NO_2, O3, PM10 and PM2.5

Source: CREA, 2020. Note: this looks at the reduction in pollution levels for the duration of the lockdown.

Figure 10: Number of monitoring stations considered in each city

City	Number considered	City	Number considered
Aberdeen	5	London	42
Barnsley	5	Luton	1
Belfast	8	Manchester	14
Birkenhead	2	Middlesbrough	4
Birmingham	22	Newport	1
Blackburn	1	Northampton	4
Blackpool	2	Norwich	4
Bournemouth	2	Nottingham	2
Bradford	3	Oxford	2
Brighton	5	Plymouth	2
Bristol	7	Portsmouth	2
Cambridge	1	Preston	1
Cardiff	9	Reading	3
Chatham	1	Sheffield	8
Coventry	4	Southampton	2
Derby	1	Southend	1
Doncaster	1	Sunderland	4
Dundee	1	Swansea	9
Edinburgh	9	Swindon	1
Exeter	1	Telford	1
Glasgow	15	Wakefield	1
Hull	3	Warrington	1
Leeds	4	Wigan	1
Leicester	3	Worthing	1
Liverpool	3	York	2
		Total	232

About the authors

Valentine Quinio, Researcher
v.quinio@centreforcities.org

Kathrin Enenkel, Senior Analyst
k.enenkel@centreforcities.org

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Centre for Cities is a research and policy institute, dedicated to improving the economic success of UK cities.

We are a charity that works with cities, business and Whitehall to develop and implement policy that supports the performance of urban economies. We do this through impartial research and knowledge exchange.

This report is published as part of an occasional series by guest experts to provide a platform for new ideas in urban policy. While they do not always reflect our views, we consider them an important contribution to the debate.

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Centre for Cities Second Floor, 9 Holyrood Street, London SE1 2EL

www.centreforcities.org

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