

# Covid-19 and air pollution: A case study of a London street

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# Outline

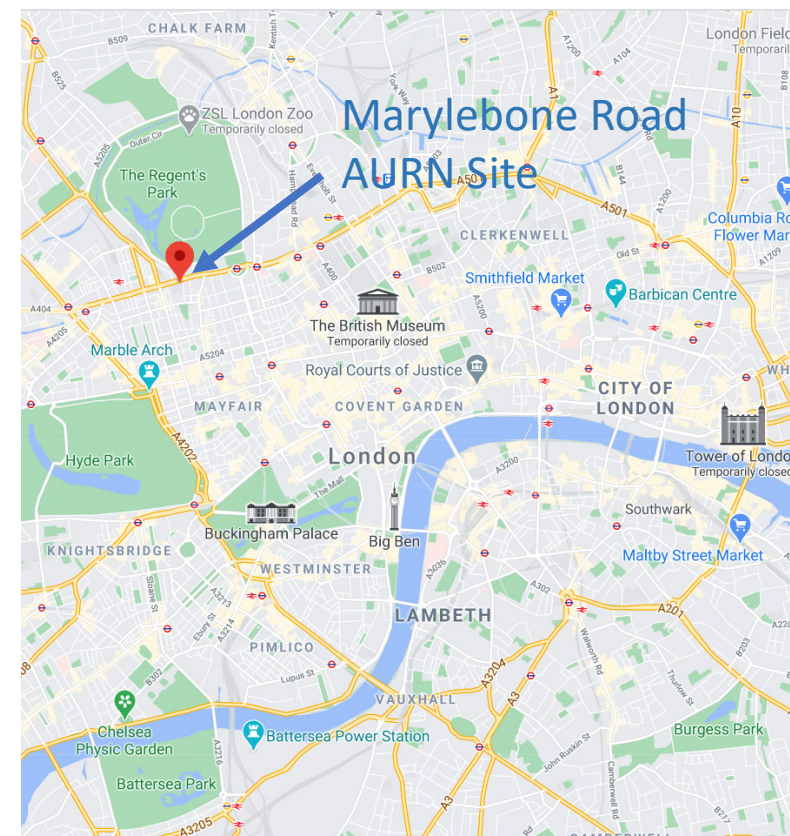
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# Introduction

In March 2020, the UK entered its first Covid-19 lockdown. As this led to a sudden reduction in road traffic, it is a good time to ask the question:

**Does reduced traffic lead to better air quality?**

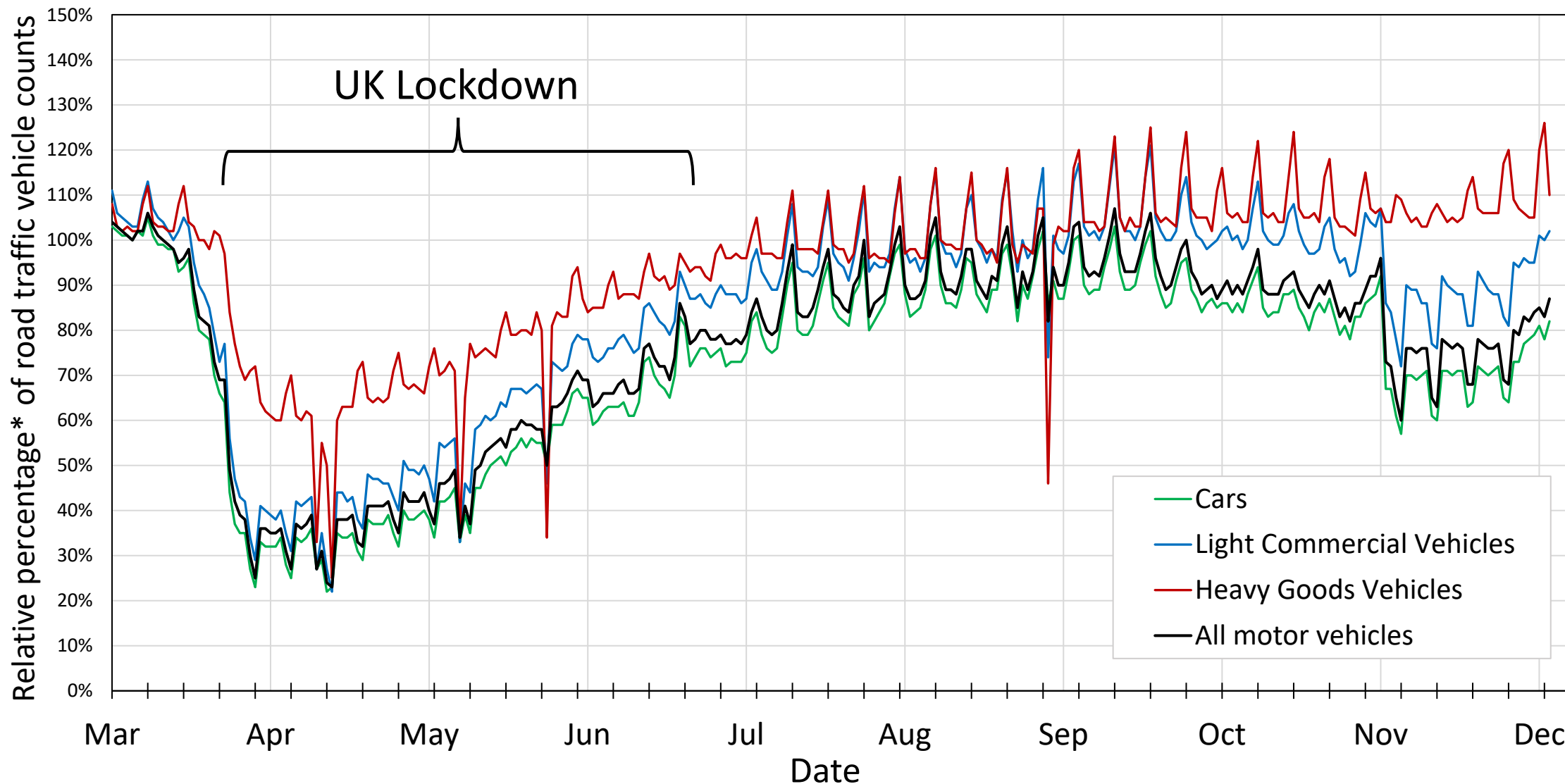
This presentation will study the air quality at Marylebone road in central London. Data was gathered from the Marylebone AURN air quality monitoring site<sup>1</sup> and compared with national traffic usage data<sup>2</sup>.



<sup>1</sup> available at <https://www.airqualityengland.co.uk/>

<sup>2</sup> available at <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

# Transport use during the Coronavirus pandemic

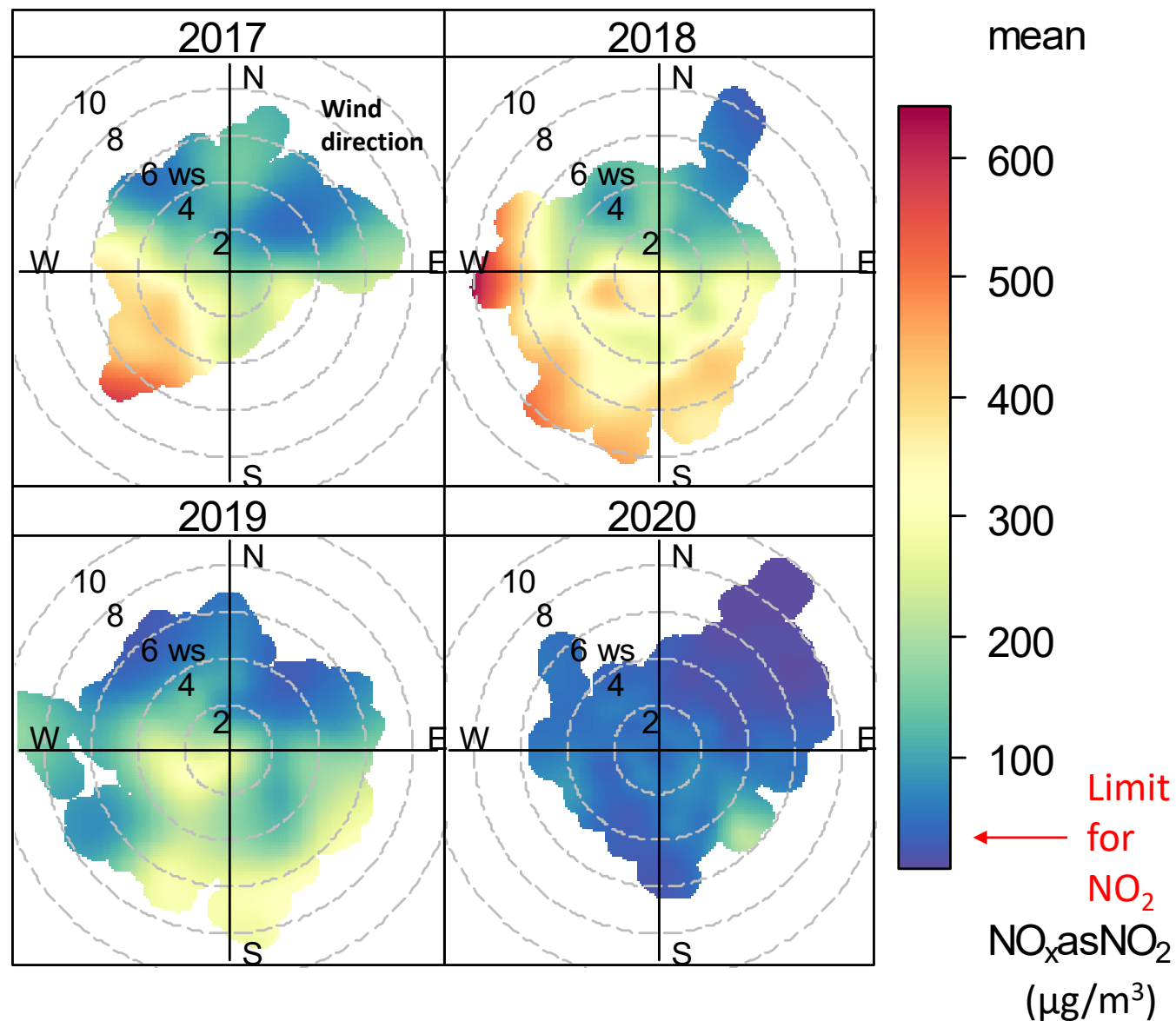


\*Compared to equivalent day of the week during the first week of February 2020

# NOx from 2017-2020

Average NOx concentrations at Marylebone Road Air Quality monitoring site from 23<sup>rd</sup> March – 27<sup>th</sup> April for years 2017-2020.

Concentrations of NOx are lower for the period in 2020 compared to previous years.

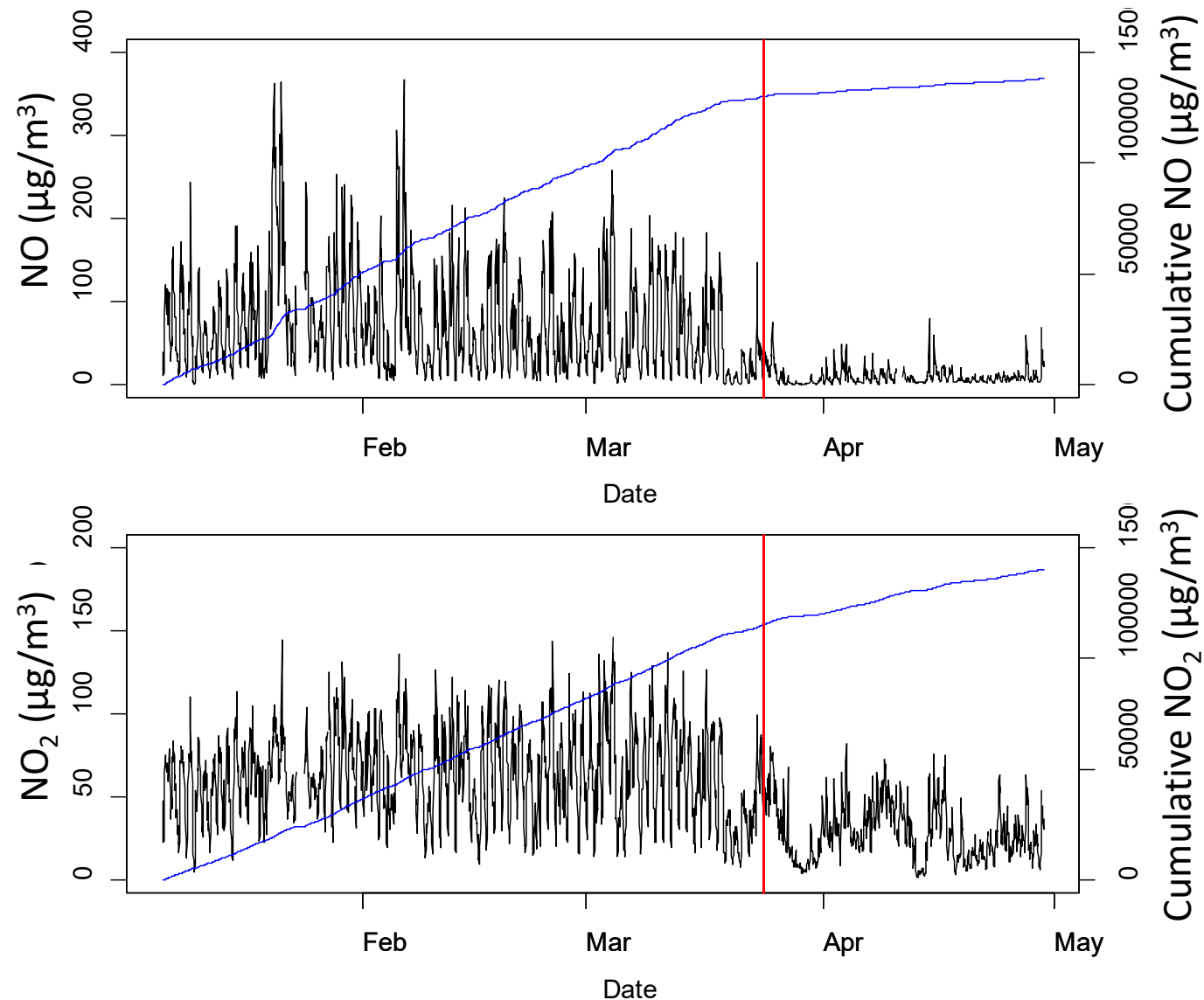


# NO and NO<sub>2</sub> concentrations during lockdown

NO and NO<sub>2</sub> concentrations at Marylebone Road for January – May 2020.

Significant decrease in NO and small decrease in NO<sub>2</sub> during the lockdown.

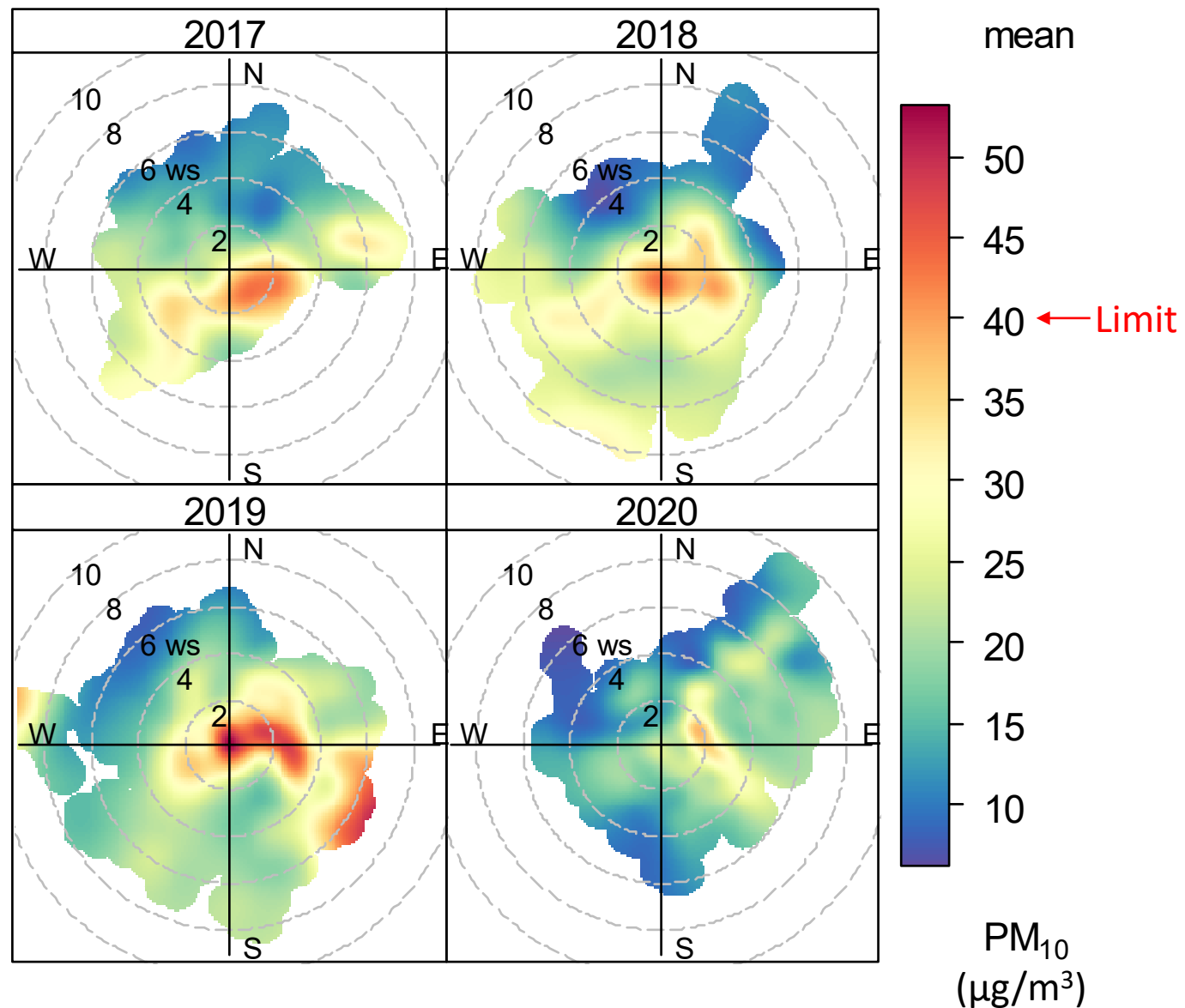
NO<sub>2</sub> decreased less than NO because HDV use did not decrease as much as LDV use.



# PM<sub>10</sub> from 2017-2020

Average PM<sub>10</sub> concentrations at Marylebone Road Air Quality monitoring site from 23<sup>rd</sup> March – 27<sup>th</sup> April for years 2017-2020.

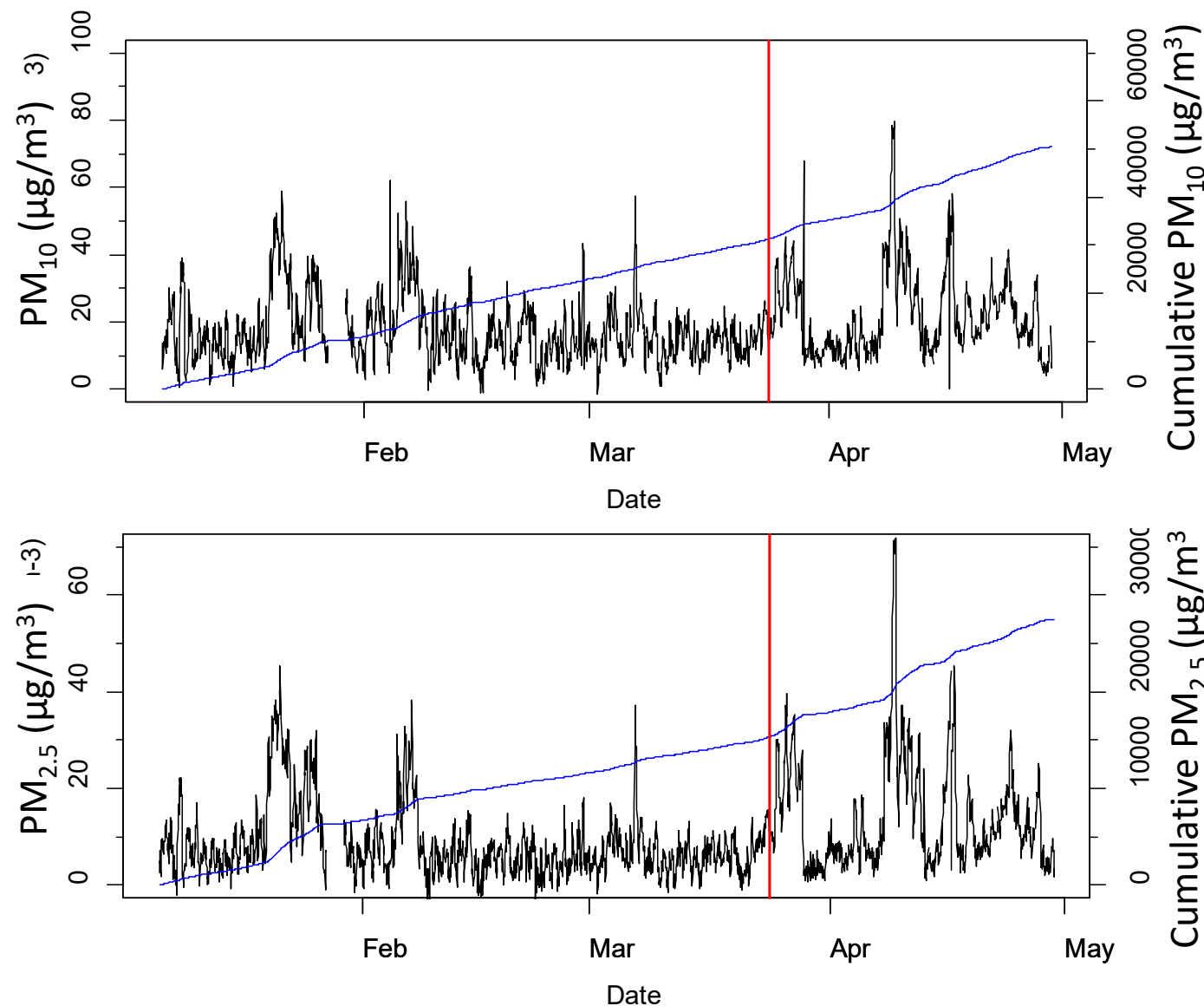
Concentrations of PM<sub>10</sub> appear only slightly lower for the period in 2020 compared to previous years.



# PM<sub>10</sub> and PM<sub>2.5</sub> concentrations during lockdown

PM<sub>10</sub> and PM<sub>2.5</sub> pollutant concentrations at Marylebone Road for January – May 2020.

Less decrease in PM<sub>10</sub> or PM<sub>2.5</sub> seen during the lockdown.





# Summary

This presentation has shown how the lockdown affected motor traffic use across the UK, and the effects of this on air pollution in a busy urban centre:

- Road traffic decreased, more for light duty vehicles than heavy duty;
- NO<sub>x</sub> drastically decreased, -88% for NO and -62% for NO<sub>2</sub> for the first month of lockdown compared to previous years;
- PM did not decrease as much as NO<sub>x</sub>, -20% for PM<sub>10</sub> and -26% for PM<sub>2.5</sub>.

These results show the potential for drastic action to improve our urban air quality. However, it has also demonstrated that it is not a simple problem to solve: A targeted approach is needed.

*It should be remembered that the pollutant concentrations discussed are only representing a single air quality monitoring site, so not wholly representative.*

# Final Thoughts

Many researchers around the world are linking increased levels of pollution to increased covid-19 mortality:

- Many of the diseases – such as asthma and chronic obstructive pulmonary disorder (COPD) – that are known to be associated with increased air pollution also increase the risk of mortality from covid-19<sup>1,2</sup>.
- Particulate matter air pollution *may* also be a vector for the spreading of covid-19, by providing a surface onto which the virus can stay suspended in the air for longer periods, and be transported deeper into the lungs<sup>3</sup> (research is ongoing<sup>4</sup>).

... Therefore there are now even more reasons to improve our air quality!

1 Wu et al. 2020, *Science Advances*, **6**(45). doi: 10.1126/sciadv.abd4049

2 Pozzer et al. 2020. *Cardiovascular Research*, **116**. doi:10.1093/cvr/cvaa288

3 Comunian et al. 2020. *Int J Environ Res Public Health*, **17**(12). doi:10.3390/ijerph17124487

4 <https://airqualitynews.com/2020/12/01/study-to-investigate-link-between-covid-19-and-air-pollution/>

# Thank you for listening!

If you found this presentation interesting, please see the full blog post article for more detail:

[https://www.linkedin.com/posts/daisy-b-thomas\\_is-covid-19-solving-our-air-pollution-problem-activity-6665891175058284546-GLQm](https://www.linkedin.com/posts/daisy-b-thomas_is-covid-19-solving-our-air-pollution-problem-activity-6665891175058284546-GLQm)

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