

# COVID-19 and Air Pollution: A case study of a London street

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CARTEEH Transportation, Air Quality and Health  
Symposium  
Virtual Meeting  
May 18 – May 20, 2021

TAQHS 2021 | May 2021



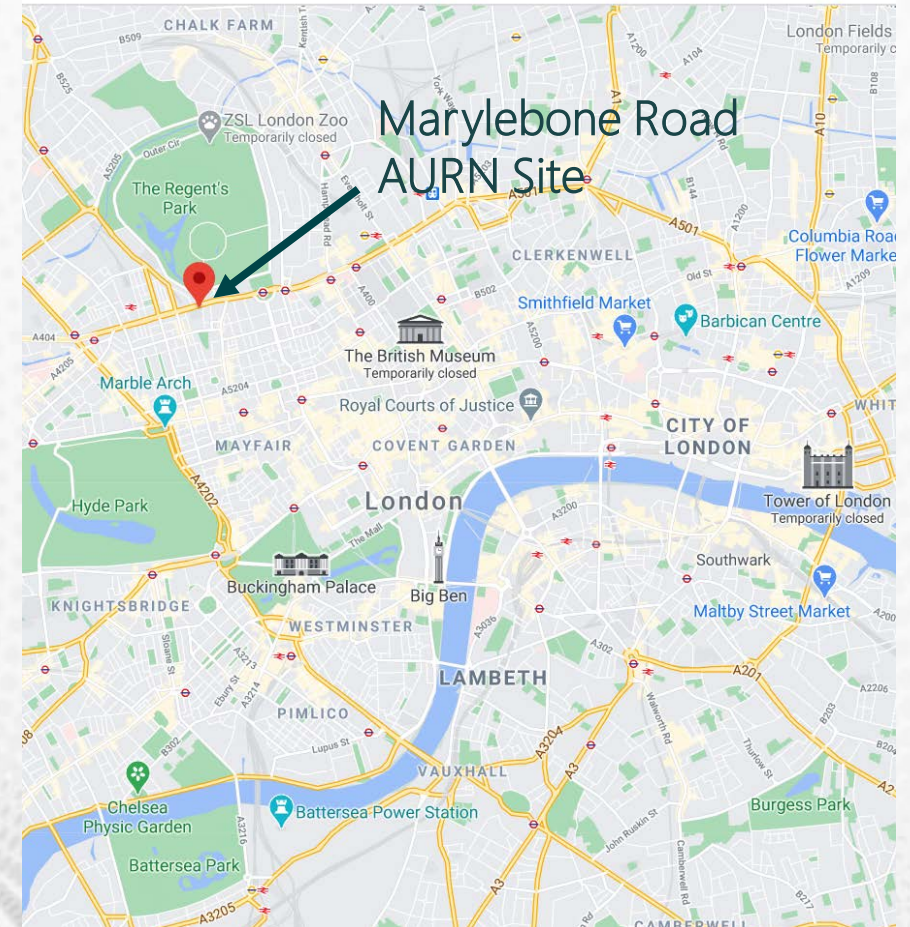
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In March 2020, the UK entered its first Covid-19 lockdown. As this led to a sudden reduction in road traffic, it is a good time to ask the question:

## What is the impact of reduced traffic on 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>.

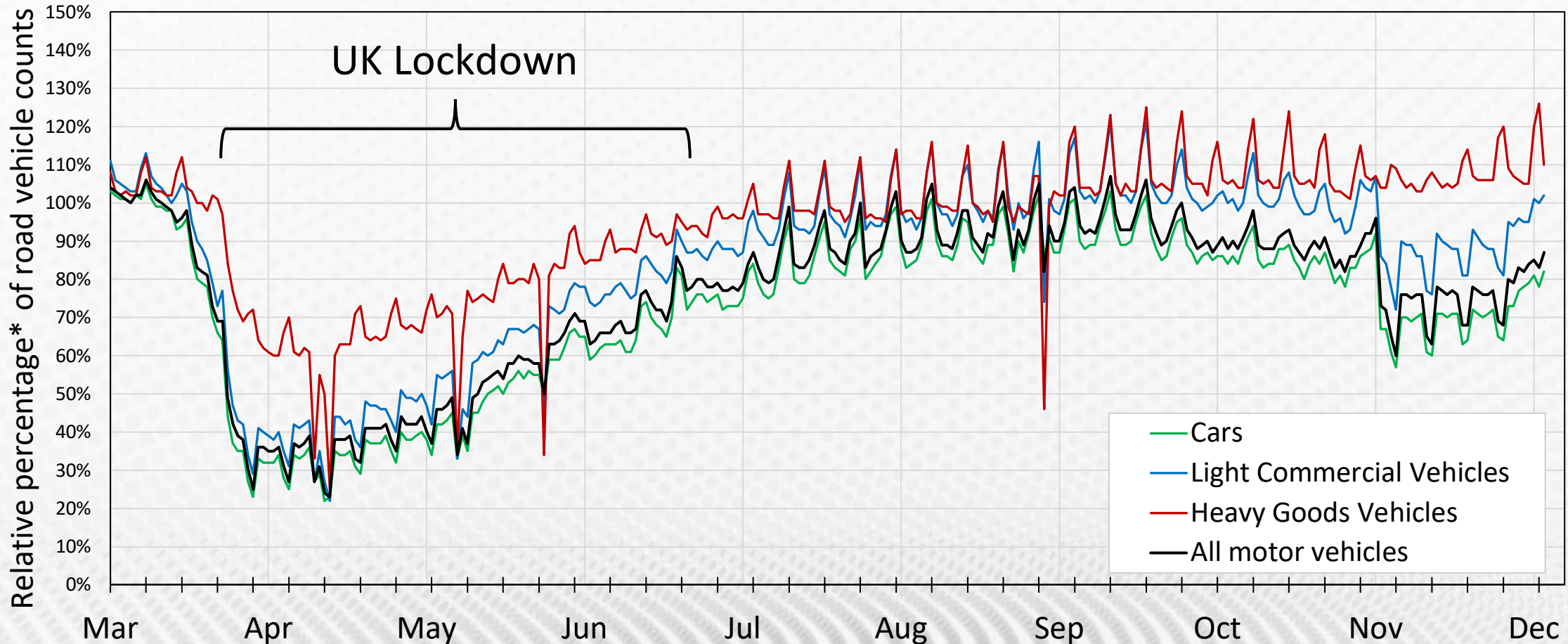


<sup>1</sup> Available at <https://www.airqualityengland.co.uk/>

<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



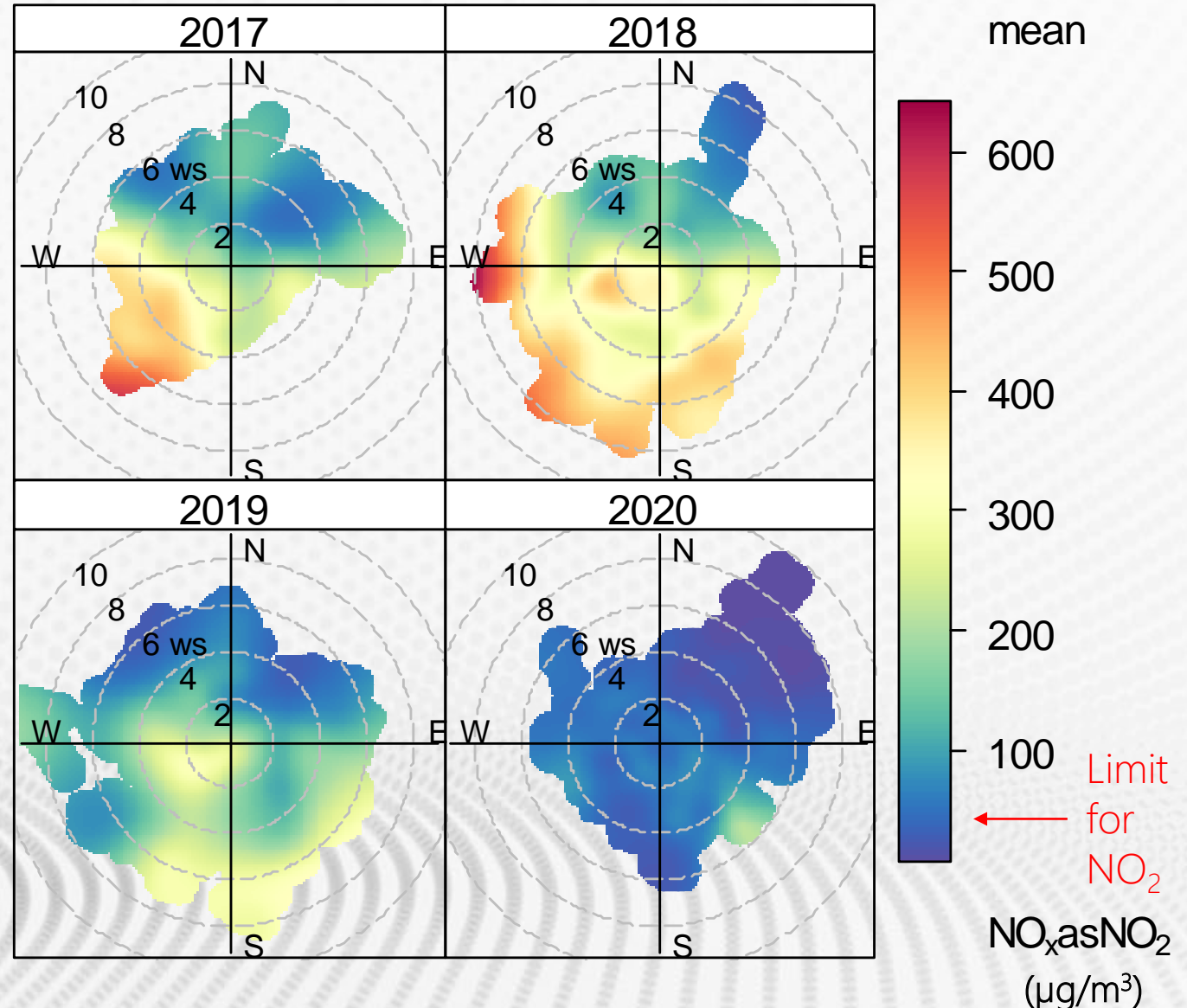
\*Compared to equivalent day of the week during the first week of February 2020



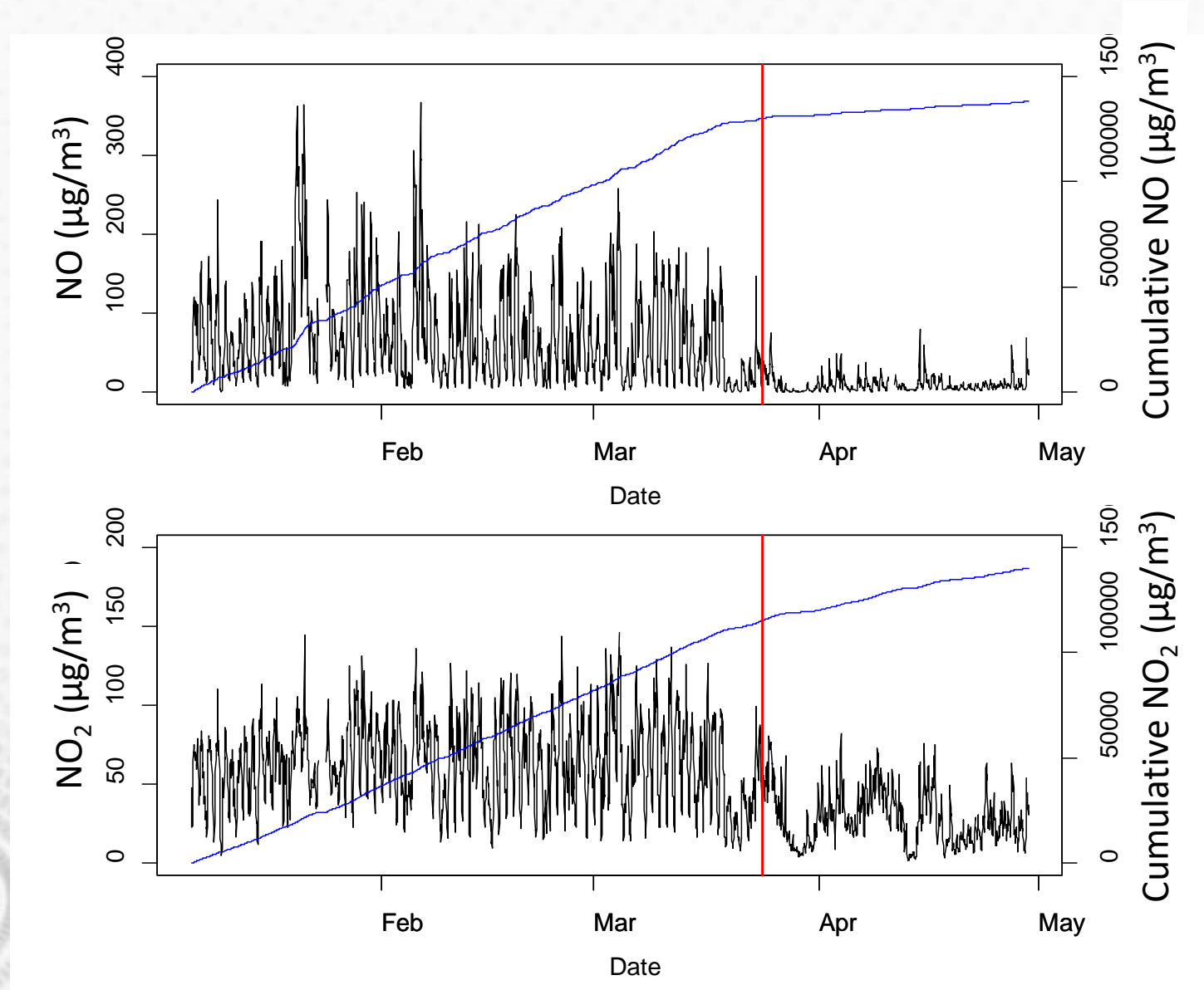


# NOx from 2017-2020

- Average NOx concentrations at Marylebone Road Air Quality monitoring site from 23rd March – 27th April for years 2017-2020.
- Concentrations of NOx are lower for the period in 2020 compared to previous years.

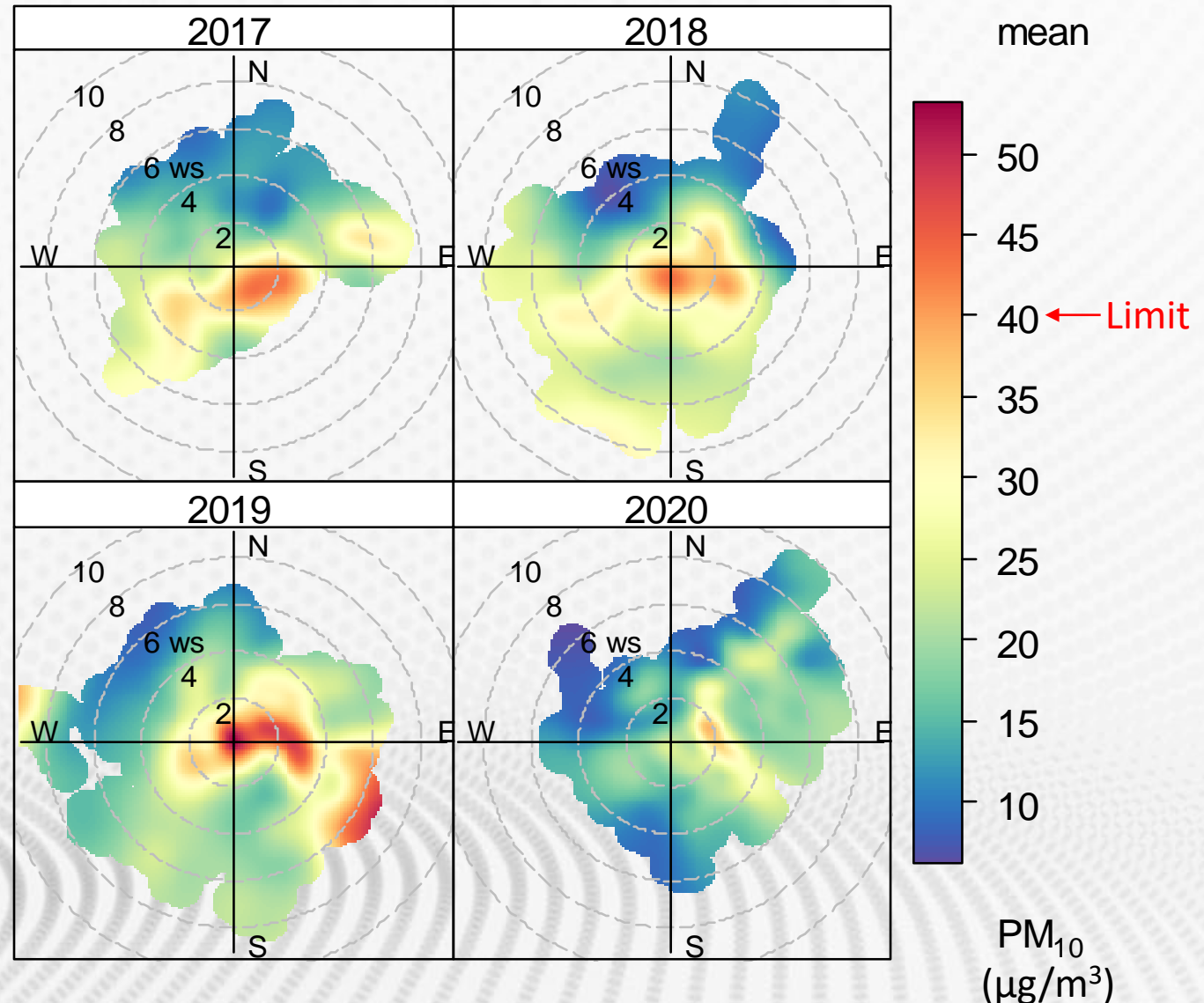


- NO and NO<sub>2</sub> concentrations at Marylebone Road for January – May 2020.
- Significant decrease in NO and small decrease in NO<sub>2</sub> during the lockdown.
- NO<sub>2</sub> decreased less than NO because HDV use did not decrease as much as LDV use.



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

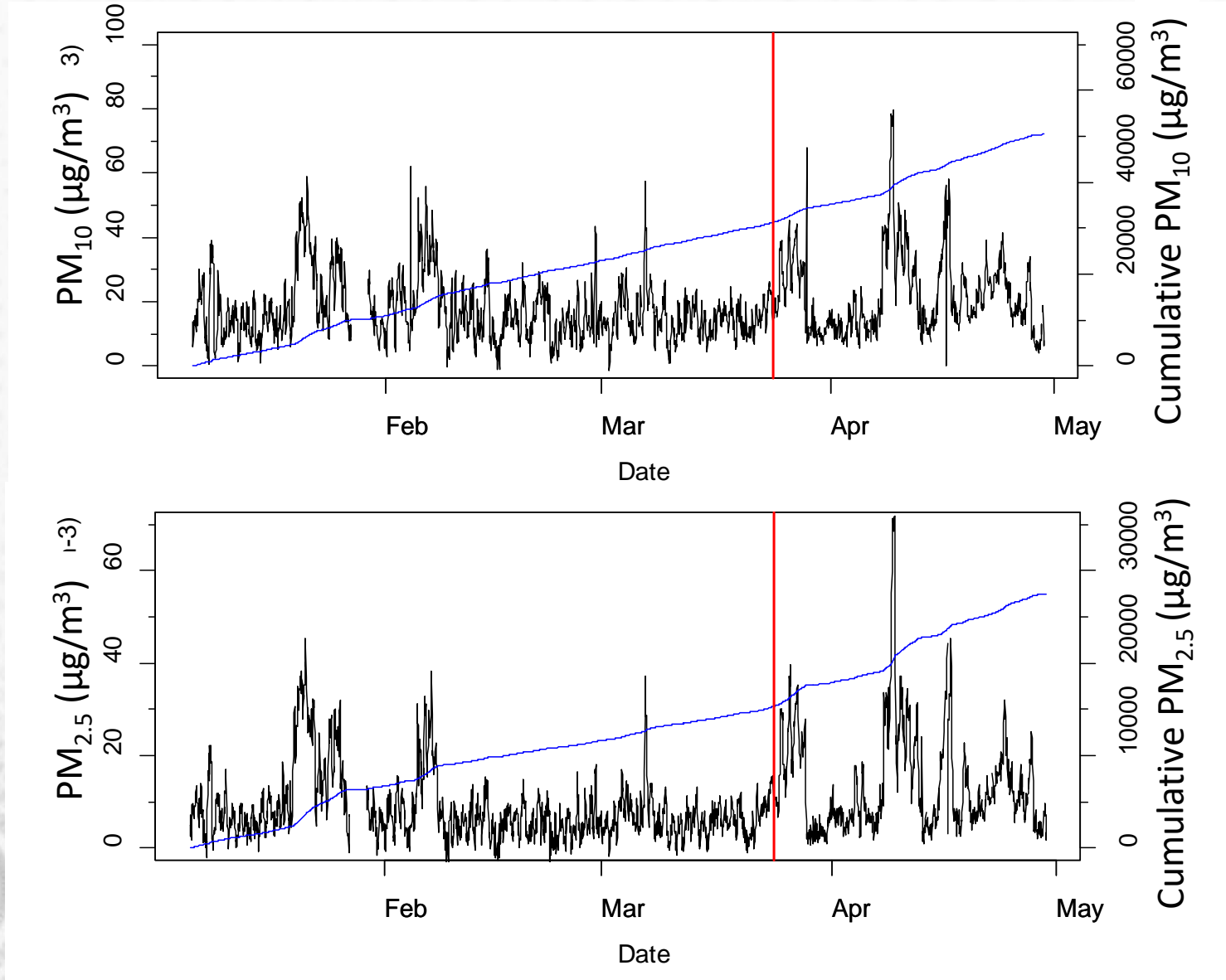
- Average PM<sub>10</sub> concentrations at Marylebone Road Air Quality monitoring site from 23rd March – 27th April for years 2017-2020.
- Concentrations of PM<sub>10</sub> appear only slightly lower for the period in 2020 compared to previous years.





# 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.
- No decrease in PM<sub>10</sub> or PM<sub>2.5</sub> seen during the lockdown.





- 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/>

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