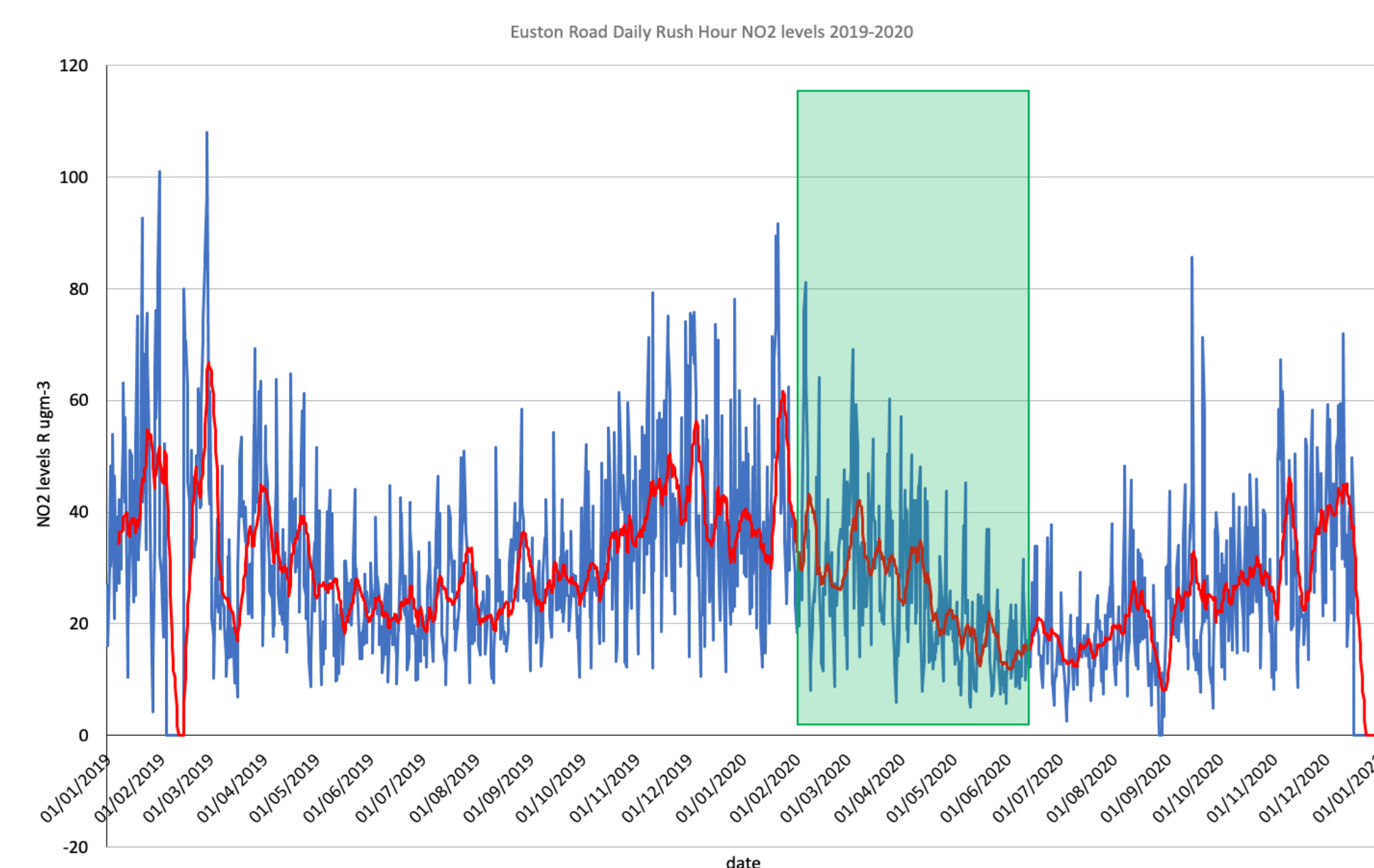


- Did Covid-19 have an impact on NO₂ levels?

Godolphin and Latymer School Chloe - - Annabel - - Freya - - Nadia - - Frida

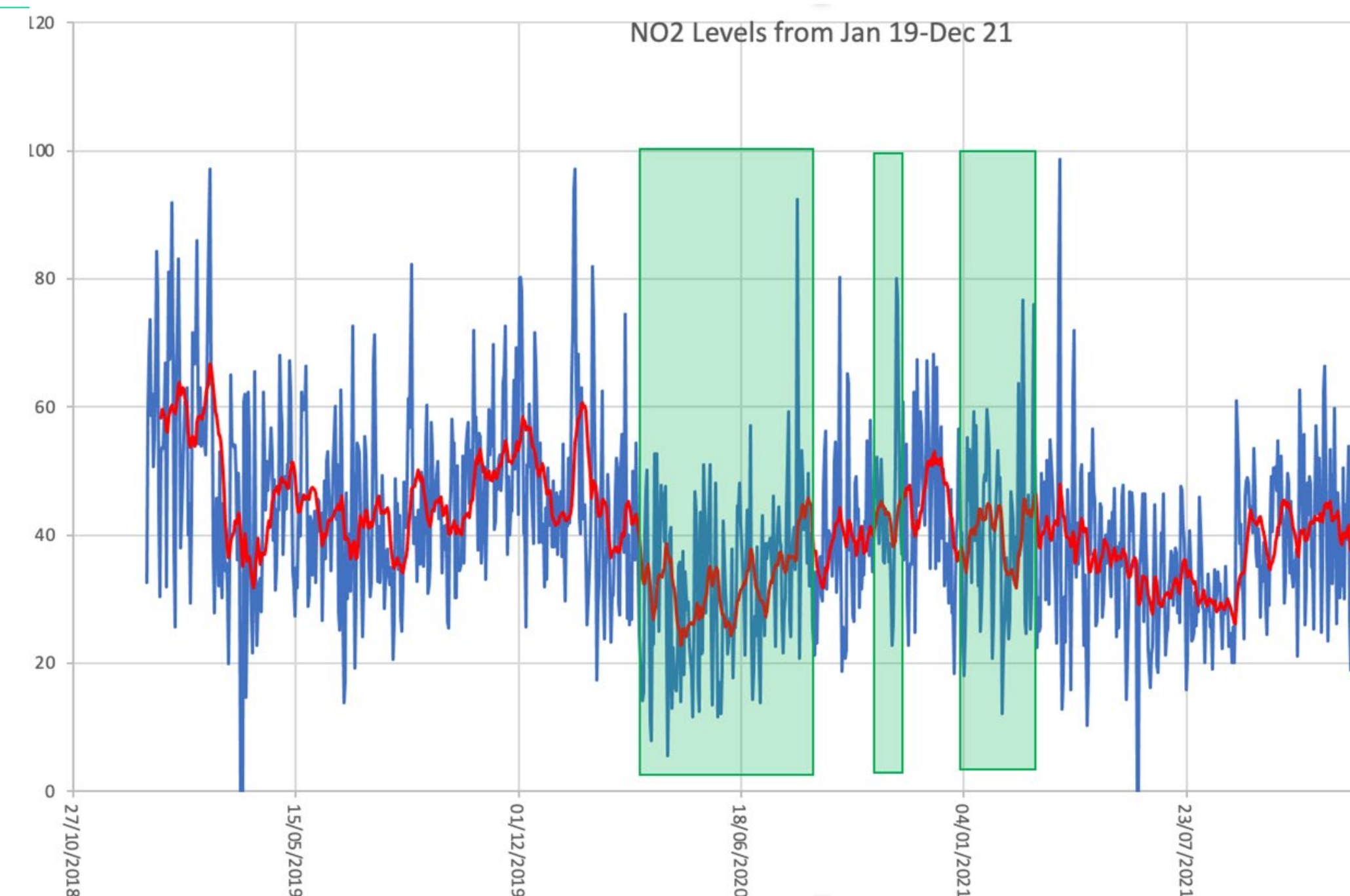
Summary

Overall, we can interpret that during the Covid lockdowns did have an effect on the air pollution levels in London. However this impact differed from lockdown to lockdown due to the severity of the rules enforced.



Our Research Aim

To try and find a quantitative answer to see if NO₂ levels were affected by the Covid-19 lockdowns, and to what extent these levels were affected, if there was a change. Before starting to collect data, our hypothesis was that NO₂ levels would have dropped, due to more people staying inside and not burning as much fuel (while using cars etc).



Background information

Nitrogen dioxide is a brown gas, with the chemical formula NO₂. It is chemically related to nitric oxide (nitrogen monoxide), a colourless gas with the chemical formula NO.

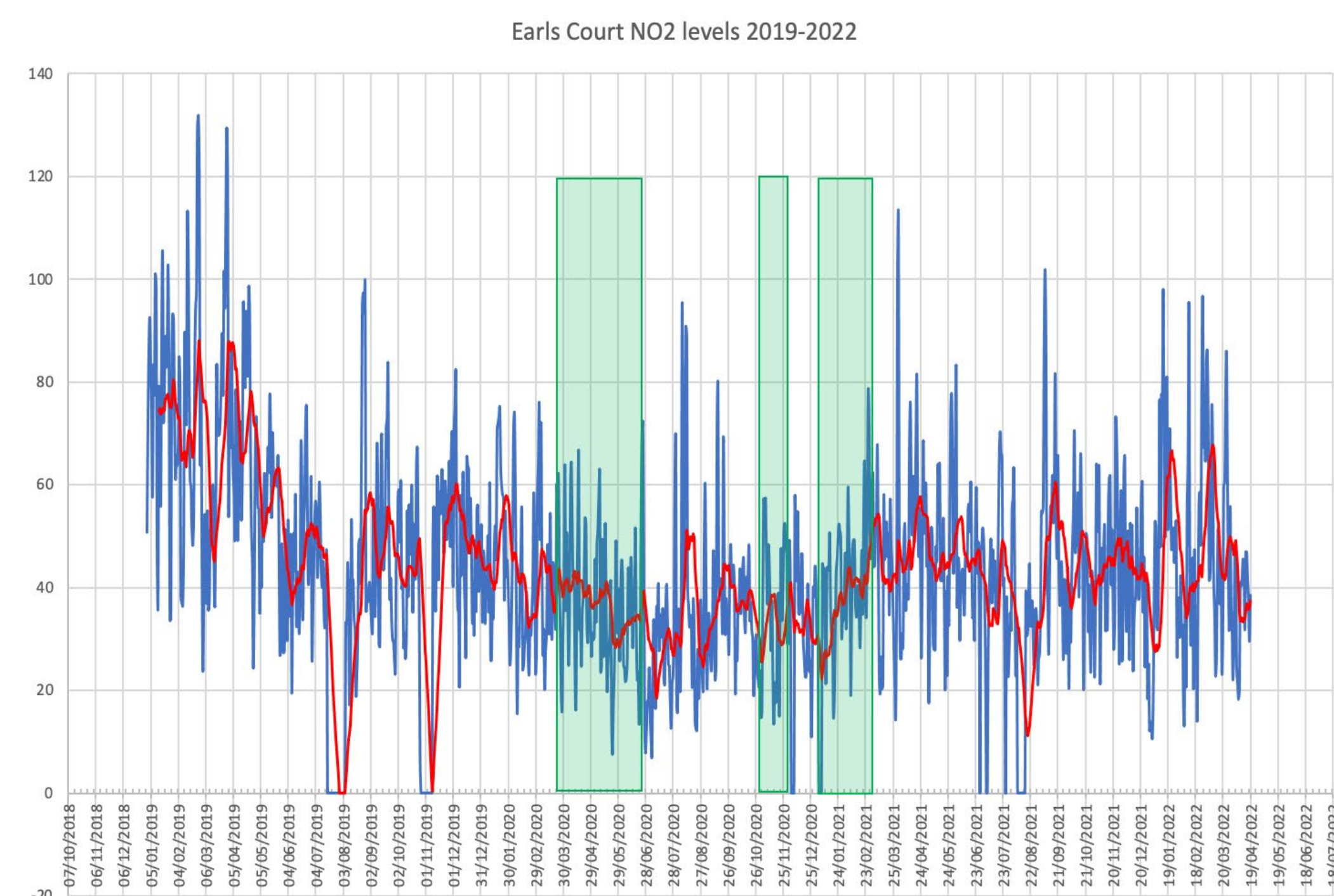
Together, NO and NO₂ are known as NO_x. NO_x is released into the atmosphere when fuels are burned (for example, petrol or diesel in a car engine, or natural gas in a domestic central-heating boiler or power station). NO₂ can affect our health. There is evidence that high levels of it can inflame the airways in our lungs and, over a long period of time, affect how well our lungs work. People with asthma are particularly affected. NO₂ can also affect vegetation.

The concentration of NO₂ is measured in micrograms in each cubic metre of air (µg m⁻³). A microgram (µg) is one millionth of a gram. A concentration of 1 µg m⁻³ means that one cubic metre of air contains one microgram of pollutant.

(Information from the Air Quality Expert Group - Nitrogen Dioxide in the United Kingdom Summary)

Experimental Method

Our idea to see the differences in NO₂ levels was to graph the levels of NO₂ in different areas. We downloaded data from the Air Quality England website (www.airqualityengland.co.uk/) from different London Boroughs and then used this to create graphs of daily air pollution averages. These, we then used to compare the levels of NO₂ in different areas of London.



Results

We have found that there was a significant drop in NO₂ air pollution levels during first and last lockdown. From our data, we also believe that the second lockdown had less of an impact on the levels of air pollution.

Analysis and Conclusion

First Lockdown (26.03.20 to 23.06.20)

- Greatest drop in NO₂ levels
- Longest Lockdown
- Strictest rules
- Less car and plane journeys so less pollution

Second Lockdown (05.11.20 to 02.12.20)

- Lowest drop in NO₂ levels
- Shortest lockdown
- Least strict rules
- Right before Christmas where there was a spike (most likely due to many people travelling to see family and many packages being delivered)

Third Lockdown (06.01.21 to 08.03.21)

- Middle drop in NO₂ levels
- Middle length lockdown
- Middling strict rules

Overall conclusion

Overall we were able to conclude that the Covid lockdowns did have an impact of NO₂ levels but with varying degrees of change due to factors such as the length and severity of the lockdown and other events occurring around that time.