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*and improving*

# Measuring Ventilation Rates in Hospitality Venues

Dr Abigail Hathway



**PROTECT**  
A COVID-19 National Core Study



# Background

- Aim to assess technical and behavioral barriers to good ventilation in small and medium scale hospitality.
- Support Environmental Health Officers in:
  - Assessing ventilation in small businesses
  - Advising businesses

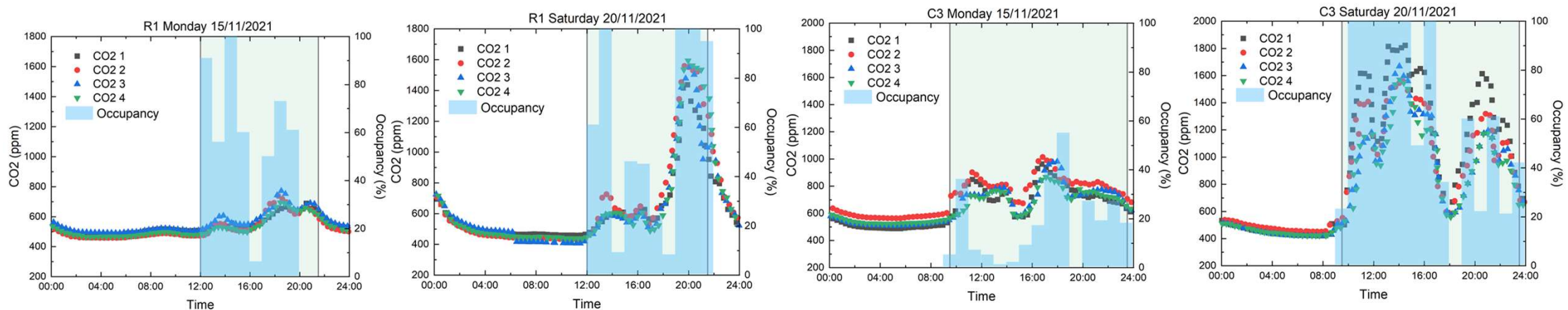
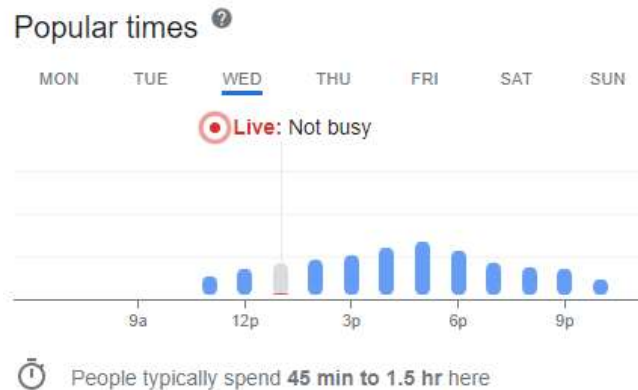


# Methods

- Walk around surveys
  - current ventilation provision, how it is being used, opportunities for technical improvements
- CO<sub>2</sub> monitoring
  - provision of outdoor air to person
  - Is CO<sub>2</sub> monitoring appropriate in these venues
- Interviews
  - Challenges and opportunities for behavioral change: Capability, Opportunity Motivation

	Approx Venue Area (m <sup>2</sup> )	Max Capacity (People)
Cafes	100-200	50-100
Restaurants	50-225	25-100
Bar	100-500	50-300
Nightclub	1000	1300 - 1800
Gym	200	50

# Google Live Occupancy data



Typical time in venue: 5-45 mins

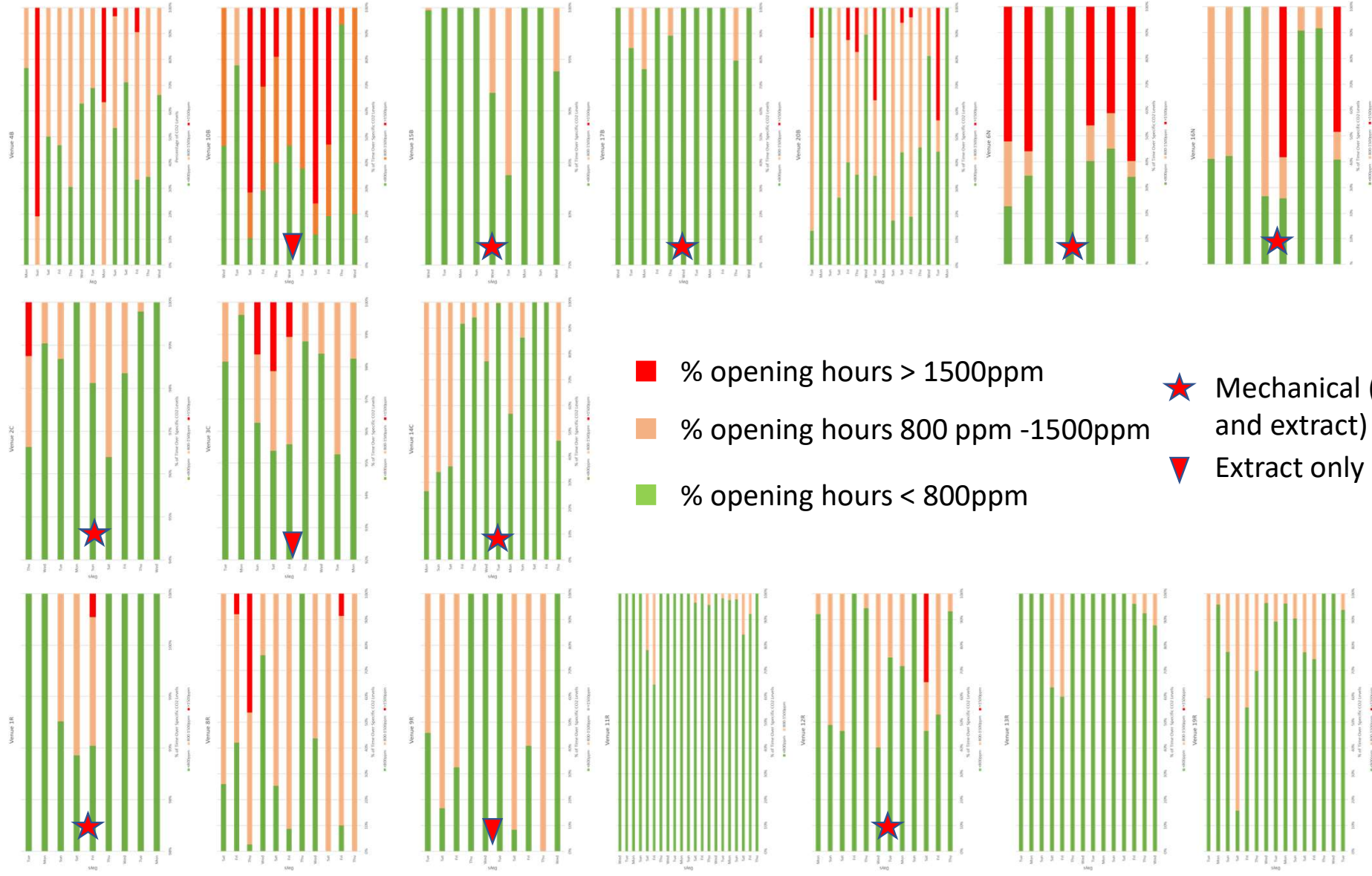
Typical time in venue: 90-150 mins



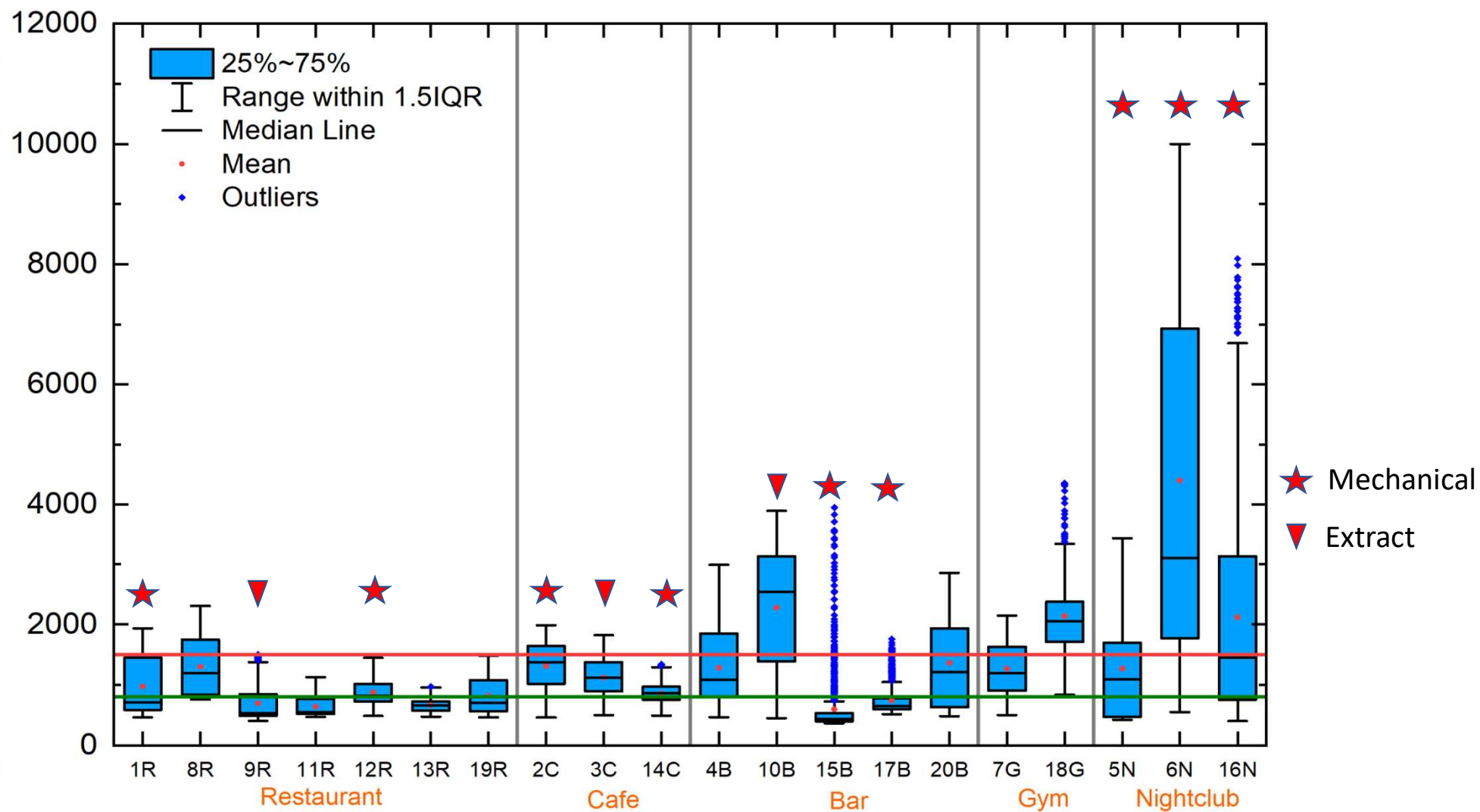
## Restaurants

## Cafes

## Bars & Nightclubs



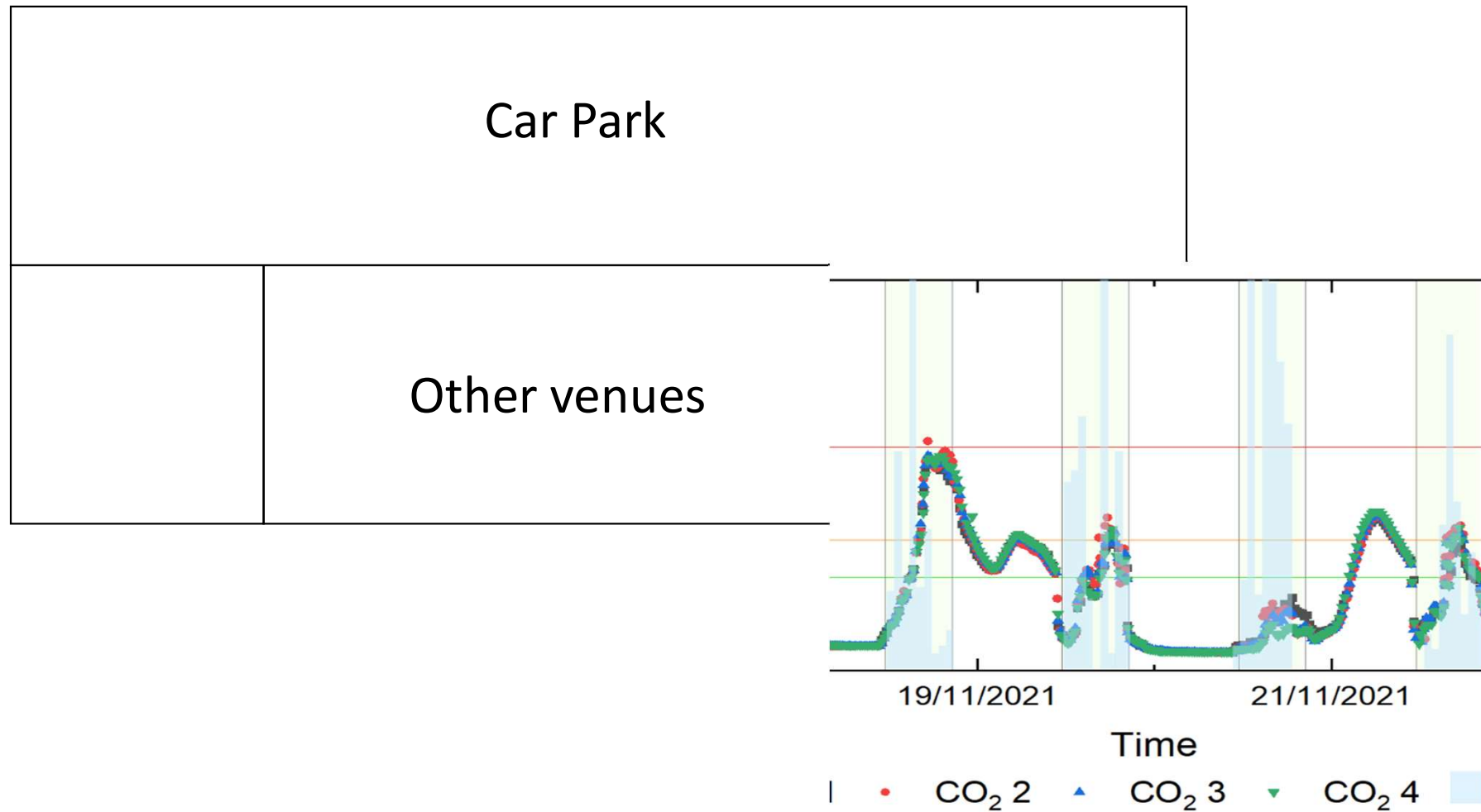
CO<sub>2</sub> in Opening Hours on the Highest CO<sub>2</sub> Day (ppm)



# Other air quality implications

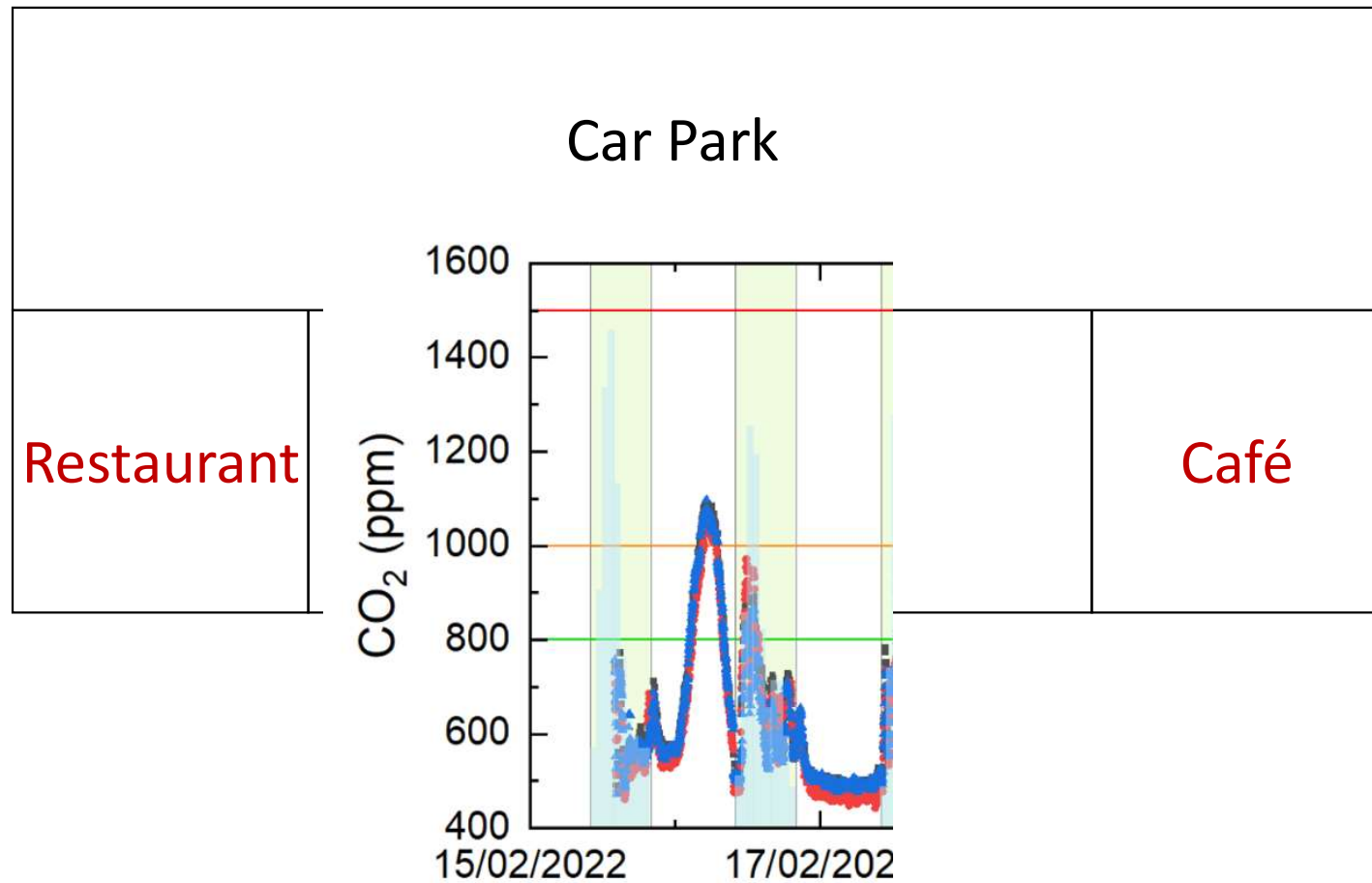
Car Park		
	Other venues	Café

# Other air quality implications

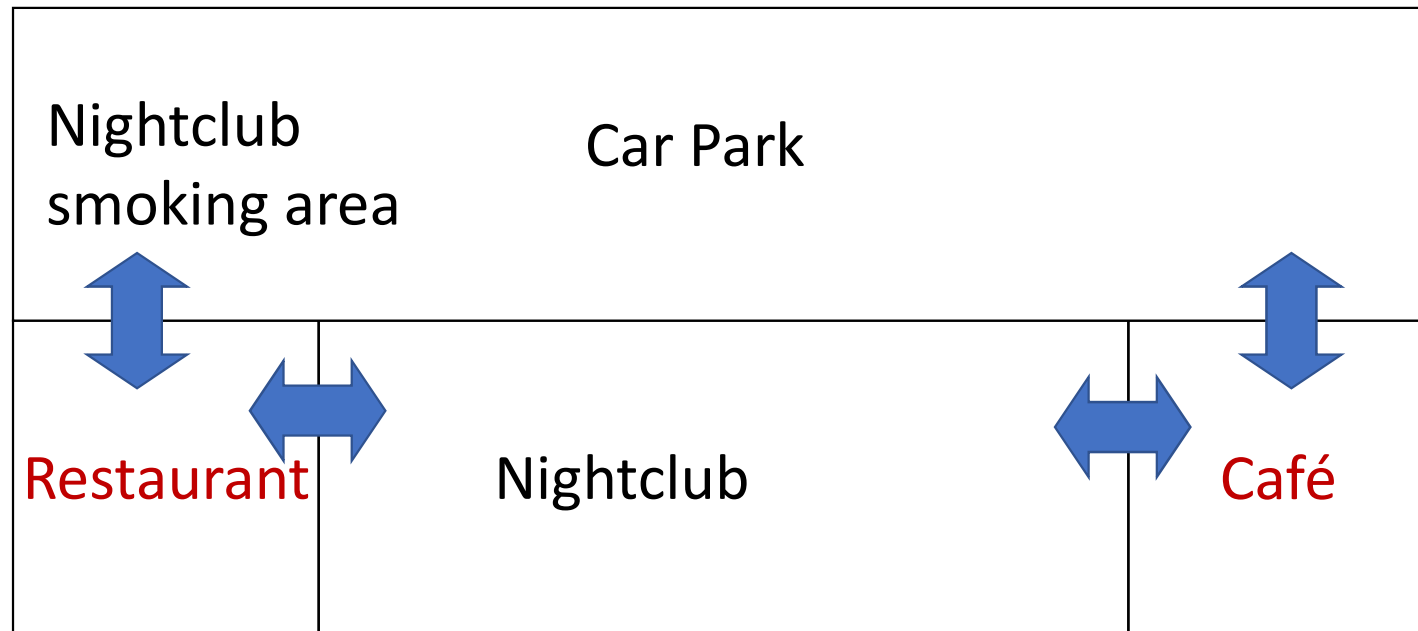




# Other air quality implications



## Other air quality implications



# Typical recommendations

- Engineer review of current system and upgrade
- Implement clear maintenance regime
- Implement clear plan of operation
- CO<sub>2</sub> monitors could assist managing thermal comfort
- Natural ventilation could be managed better with improved knowledge

# Barriers

- Limited opportunities to improve
  - Lack of useful guidance
  - Unable to make changes (responsibility / money)
- Ventilation not a priority
  - Customer needs are key
    - Venues with perceived vulnerable / cautious customer base prioritised ventilation. Others venues “sweatiness” is a key part of the atmosphere.
  - Noise legislation is a higher priority (as it will result in them being shut down)

# Summary

- Walk around surveys provide good over- view of ventilation provision
- Ventilation often requires upgrading but is not a priority for owners.
- Ventilation is higher priority in venues with vulnerable / older clientele.
- Current guidance is not seen as useful

