

CONGESTION PRICING



COLUMBIA|CBIPS

Center for Buildings, Infrastructure and Public Space

CIVIL ENGINEERING &
ENGINEERING MECHANICS

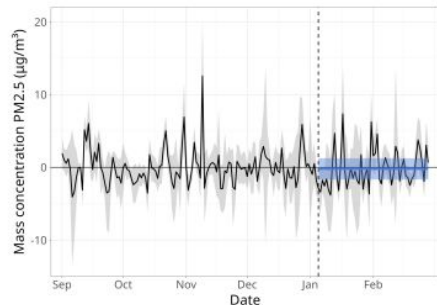
Instructor: Rick Bell

Weiyi Wang & Zhiyu Yang

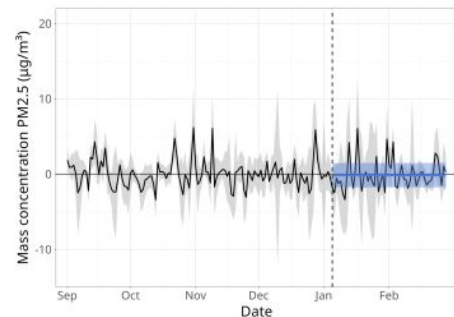
04/24/2025

Impact on pm2.5
not statistically significant

(c) Measured PM_{2.5} pollution within CBD



(d) Measured PM_{2.5} pollution outside of CBD



Short Run Effect

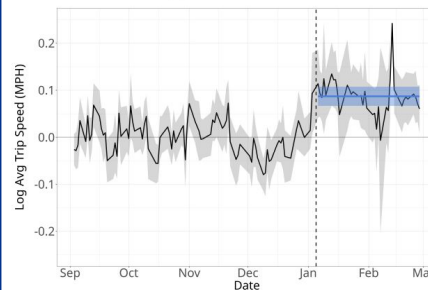
Policy Implemented

Car speed increase

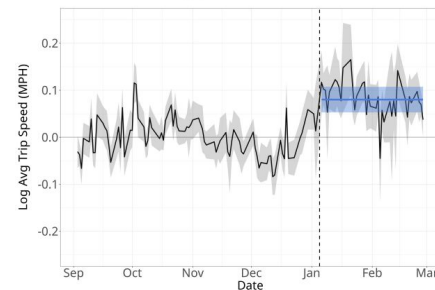
Vehicle emission decrease



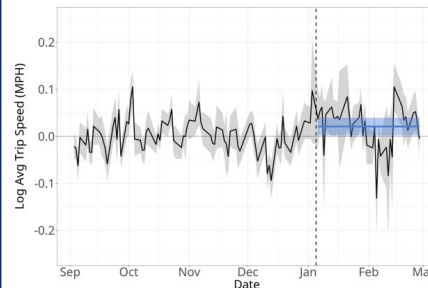
(a) Within CBD



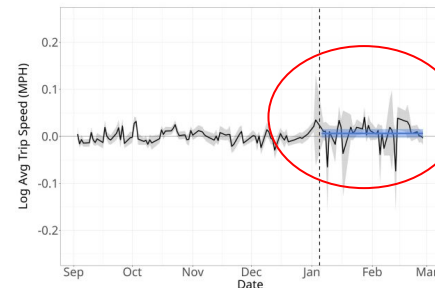
(b) To CBD



(c) From CBD

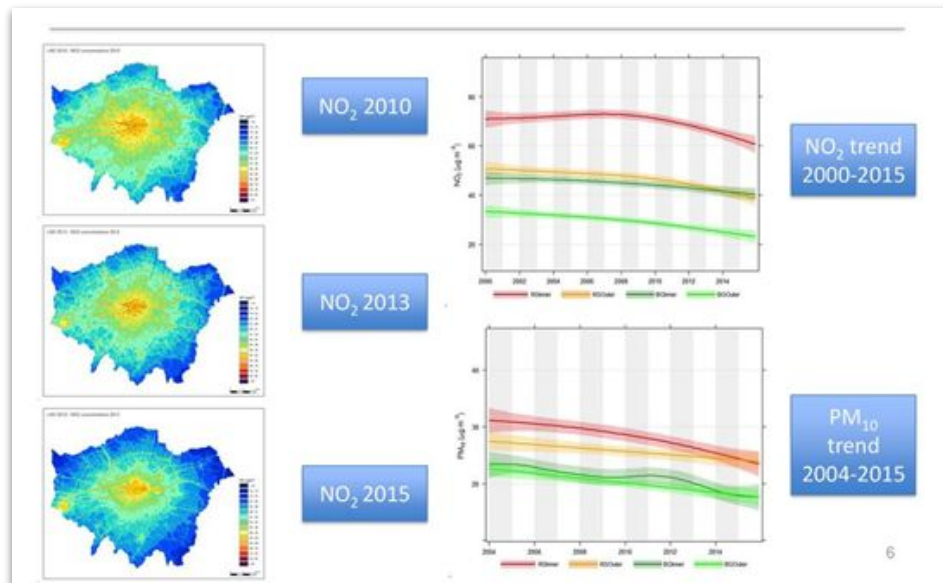
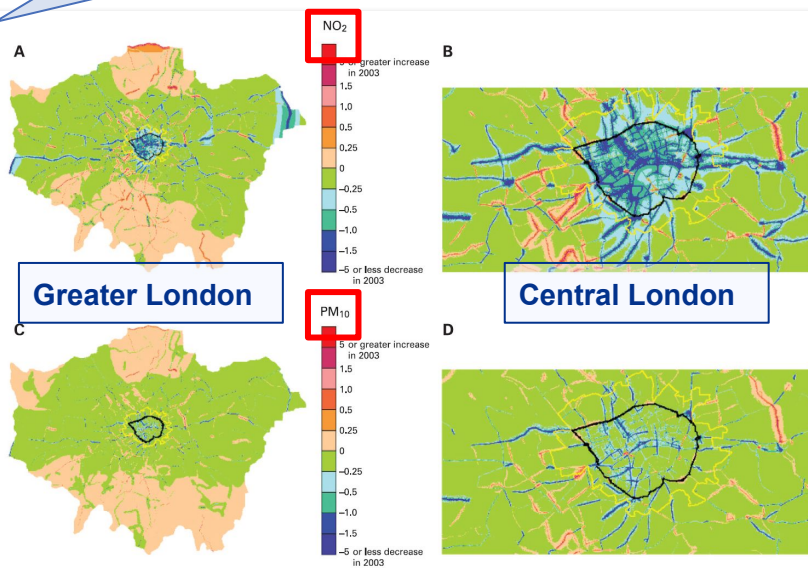


(d) Outside CBD



- Difference: From, within, to and outside CBD

- Difference: Post minus Pre of CCS
- Red: Increase
- Blue: Decrease
- CCS impacts air pollution spatially



LEZ:2008



Low Emission Zone



Direct Vision Standard



Cover 1579 Km²

LEZ Fine

Air-Quality
Sensors

Reinvest
Surcharge
Revenue

Recommendation 02

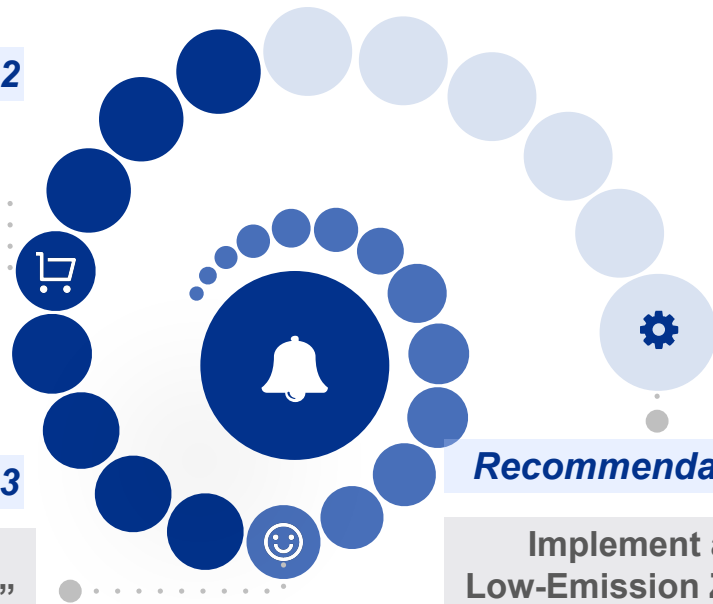
Expand Real-Time
Air Monitoring

Recommendation 03

“reduction →
subsidy → upgrade”

Recommendation 01

Implement a
Low-Emission Zone
(LEZ)



References



1. **The Impact of Congestion Charging on Vehicle Emissions in London.**
 - Beevers, Sean D., and David C. Carslaw. "The Impact of Congestion Charging on Vehicle Emissions in London." *Atmospheric Environment*, vol. 39, no. 1, 2005, pp. 1-5, doi:10.1016/j.atmosenv.2004.10.001.
2. **Air Pollution and Mortality Benefits of the London Congestion Charge: Spatial and Socioeconomic Inequalities.**
 - Tonne, C., et al. "Air Pollution and Mortality Benefits of the London Congestion Charge: Spatial and Socioeconomic Inequalities." *Occupational and Environmental Medicine*, vol. 65, no. 9, 2008, pp. 620-627, doi:10.1136/oem.2007.036533.
3. **Major air pollution and climate policies in NYC and trends in NYC air quality 1998–2021**
 - Lau et al. (2024). Major air pollution and climate policies in NYC and trends in NYC air quality 1998–2021. *Frontiers in Public Health*, 12. <https://doi.org/10.3389/fpubh.2024.1474534>
4. **The Short-Run Effects of congestion pricing in New York City**
 - Cook et al. (2025). The Short-Run Effects of congestion pricing in New York City. <https://doi.org/10.3386/w33584>
5. **Beyond Congestion Pricing**
 - Shill, G. (2025). Beyond Congestion Pricing. *Journal of Law and Mobility*, Volume 2025
6. **The impact of the air pollution on health in New York City**
 - Mananga et al. (2023). The impact of the air pollution on health in New York City. *Deleted Journal*, 12(4). <https://doi.org/10.1177/22799036231205870>