

Supplemental Material

Title: Traffic pollution and the incidence of cardio-respiratory outcomes in an adult cohort in London

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Figure S1 – Practice means, and 10th and 90th percentiles for NO_x and L_{night}

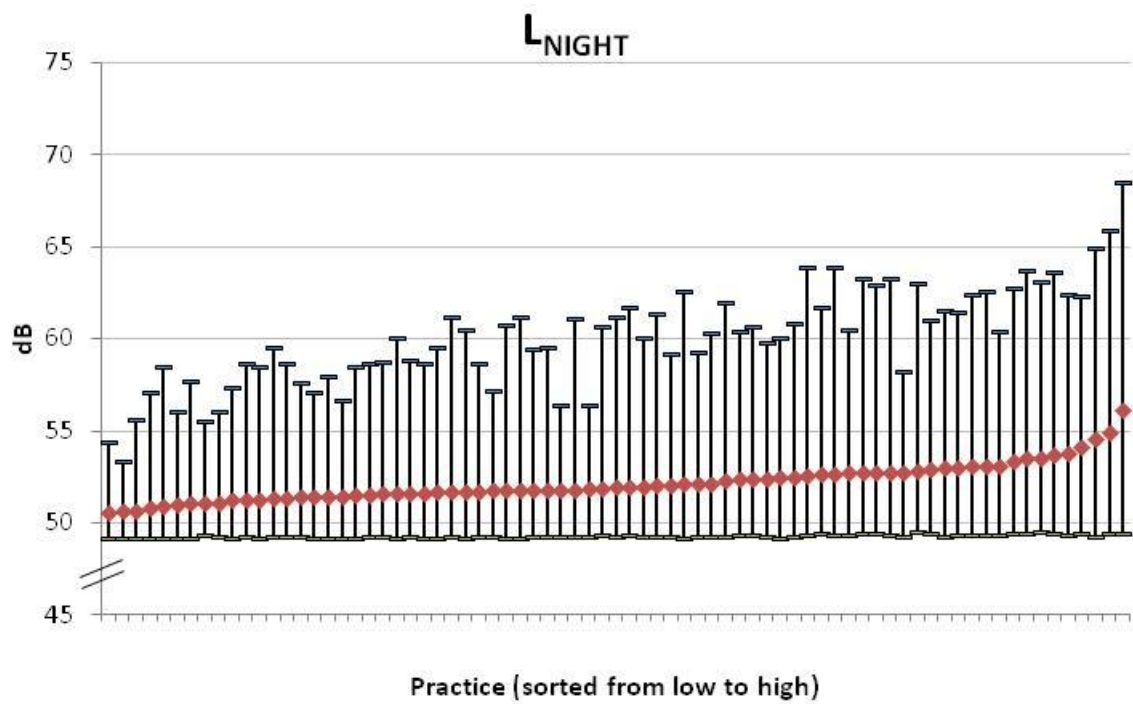
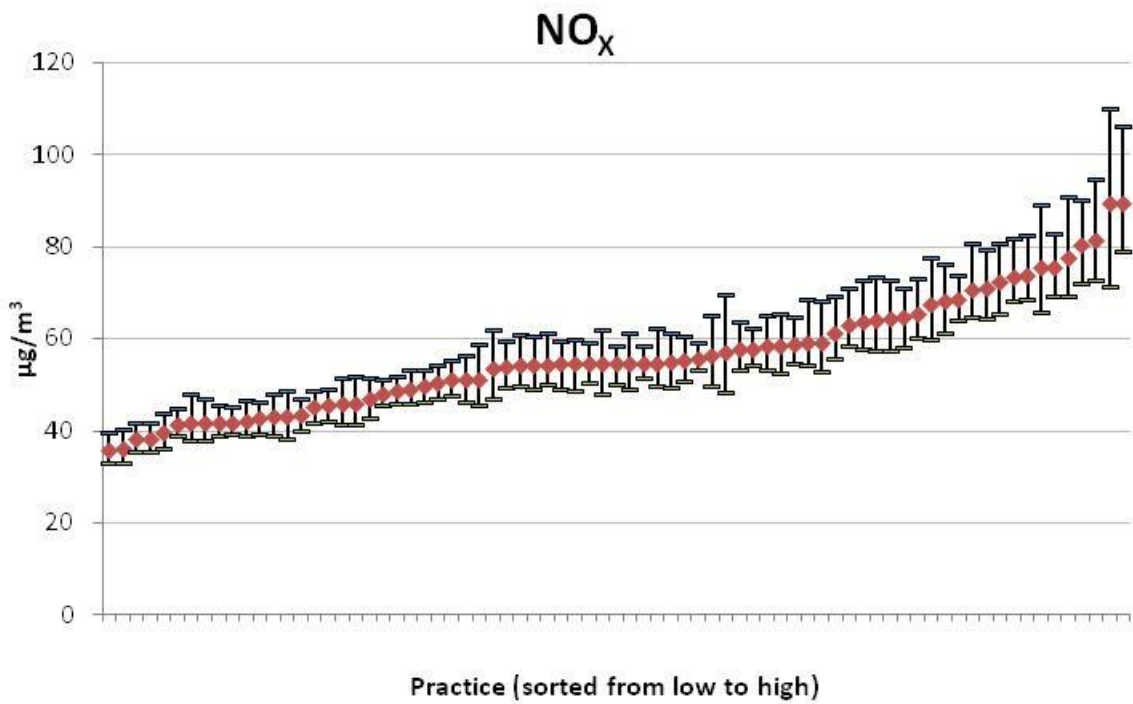


Table S1 – Mean and correlation summary for traffic air pollutants and night noise

Traffic Exposure	Mean	Std Dev	Inter Quartile Range	ICC†	Correlations between pollutants					
					NO ₂	NO _x	PM _{2.5} exhaust	PM _{2.5} non- exhaust	PM _{2.5} traffic sources	L _{night}
NO ₂	37.4	5.8	7.6	0.86	–	0.99	0.93	0.92	0.94	0.35
NO _x	63.0	15.1	18.6	0.80		–	0.95	0.94	0.96	0.40
PM _{2.5} exhaust	0.80	0.30	0.31	0.70			–	0.95	0.99	0.49
PM _{2.5} non-exhaust	0.65	0.23	0.28	0.61				–	0.99	0.56
Combined PM _{2.5} from traffic sources	1.45	0.52	0.60	0.67					–	0.52
Night Road Traffic Noise (L _{night})	52.1	4.6	2.6	0.05						–

Table S2 – Hazard ratios for incident CHD, heart failure, hypertension during 2005-11 by NO_x, PM_{2.5} (traffic sources only) and L_{night} restricted to patients based on registration length or aircraft/rail noise profiles

Traffic Exposure	Unit/category	CHD				Heart failure				Hypertension			
		Base model		Base + IMD		Base model		Base + IMD		Base model		Base + IMD	
		HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI
Patients registered in same practice for 10+ yrs (n=131,219)													
NO_x	20µg/m ³ change	0.99	0.93-1.04	0.96	0.91-1.01	1.18	1.07-1.30	1.11	1.01-1.23	1.08	1.00-1.17	1.04	0.96-1.13
PM_{2.5} Traffic	1µg/m ³ change	0.98	0.91-1.05	0.94	0.87-1.02	1.25	1.10-1.42	1.16	1.02-1.32	1.08	0.96-1.21	1.02	0.90-1.14
L_{night}	60-dB vs. <55dB	0.98	0.87-1.10	0.97	0.87-1.09	1.02	0.84-1.24	1.00	0.82-1.22	0.99	0.92-1.06	0.97	0.91-1.04
Patients resident in area of non Aircraft or Rail noise pollution (n=155,670)													
NO_x	20µg/m ³ change	1.00	0.96-1.04	0.97	0.93-1.02	1.22	1.11-1.33	1.15	1.03-1.28	1.11	1.01-1.23	1.06	0.97-1.16
PM_{2.5} Traffic	1µg/m ³ change	1.00	0.94-1.06	0.97	0.91-1.03	1.30	1.15-1.46	1.21	1.05-1.38	1.13	0.98-1.29	1.05	0.92-1.20
L_{night}	60-dB vs. <55dB	0.99	0.90-1.09	0.99	0.90-1.08	1.12	0.95-1.32	1.10	0.93-1.29	1.01	0.95-1.08	1.00	0.94-1.06

Base model: Age, gender, smoking & BMI.

Table S3 – Hazard ratios for all outcomes during 2005-2011 for NO_x, PM_{2.5} (traffic sources only) and L_{night} stratified by age

Exposure	Age (yrs)	Unit	CHD		MI		Stroke		Heart failure	
			HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI
NO_x	Age <65y	20µg/m ³ change	0.95	0.90-1.01	0.87	0.78-0.96	0.86	0.79-0.92	1.04	0.89-1.23
	Age ≥65y	20µg/m ³ change	1.00	0.93-1.06	0.94	0.86-1.04	0.94	0.86-1.02	1.13	1.03-1.24
PM_{2.5} Traffic	Age <65y	1µg/m ³ change	0.95	0.88-1.03	0.86	0.75-0.98	0.82	0.73-0.92	1.06	0.84-1.33
	Age ≥65y	1µg/m ³ change	0.97	0.88-1.07	0.90	0.78-1.04	0.94	0.83-1.06	1.20	1.07-1.34
L_{night}	Age <65y	60-dB vs. <55dB	1.01	0.90-1.13	1.03	0.86-1.24	0.88	0.78-1.17	0.99	0.75-1.32
	Age ≥65y	60-dB vs. <55dB	1.00	0.88-1.13	0.95	0.78-1.16	0.95	0.82-1.10	1.12	0.96-1.31
			Hypertension		Atrial fibrillation		COPD		Pneumonia	
NO_x	Age <65y	20µg/m ³ change	1.03	0.95-1.13	0.94	0.87-1.01	1.00	0.85-1.17	1.03	0.94-1.13
	Age ≥65y	20µg/m ³ change	1.10	1.01-1.19	1.01	0.95-1.07	0.98	0.86-1.11	1.08	1.00-1.17
PM_{2.5} Traffic	Age <65y	1µg/m ³ change	1.01	0.89-1.14	0.93	0.83-1.04	1.01	0.82-1.25	1.01	0.89-1.15
	Age ≥65y	1µg/m ³ change	1.10	0.98-1.24	1.02	0.93-1.11	0.95	0.80-1.13	1.08	0.98-1.20
L_{night}	Age <65y	60-dB vs. <55dB	0.95	0.89-1.01	0.92	0.78-1.09	1.03	0.89-1.19	0.97	0.81-1.15
	Age ≥65y	60-dB vs. <55dB	1.09	1.01-1.19	0.97	0.88-1.07	0.93	0.81-1.07	0.96	0.84-1.11

All Hazard Ratios adjusted for Age, gender, smoking, BMI & IMD.

Table S4 – Hazard ratios for all outcomes during 2005-2011 for NO_x, PM_{2.5} (traffic sources only) and L_{night} stratified by smoking

Exposure	Smoking	Unit	CHD		MI		Stroke		Heart failure	
			HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI
NO _x	Never	20µg/m ³ change	1.02	0.95-1.09	0.92	0.82-1.03	0.87	0.80-0.94	1.11	0.99-1.25
	Current	20µg/m ³ change	0.94	0.88-0.99	0.89	0.81-0.97	0.90	0.80-1.01	1.17	1.03-1.34
PM _{2.5} Traffic	Never	1µg/m ³ change	1.03	0.93-1.14	0.90	0.77-1.06	0.84	0.74-0.96	1.14	0.98-1.32
	Current	1µg/m ³ change	0.90	0.83-0.98	0.85	0.74-0.97	0.87	0.73-1.04	1.25	1.03-1.50
L _{night}	Never	60-dB vs. <55dB	1.16	1.03-1.32	1.06	0.84-1.33	0.83	0.69-1.01	1.14	0.92-1.41
	Current	60-dB vs. <55dB	0.84	0.72-1.00	0.87	0.70-1.07	0.99	0.81-1.22	0.98	0.69-1.41
			Hypertension		Atrial fibrillation		COPD		Pneumonia	
NO _x	Never	20µg/m ³ change	1.05	0.97-1.13	0.97	0.91-1.03	0.98	0.79-1.21	1.09	0.99-1.20
	Current	20µg/m ³ change	1.07	0.97-1.18	0.96	0.86-1.07	1.01	0.87-1.16	1.07	0.97-1.18
PM _{2.5} Traffic	Never	1µg/m ³ change	1.03	0.92-1.16	0.95	0.86-1.05	0.98	0.74-1.32	1.08	0.95-1.24
	Current	1µg/m ³ change	1.05	0.91-1.21	0.97	0.83-1.14	1.01	0.84-1.22	1.03	0.91-1.17
L _{night}	Never	60-dB vs. <55dB	0.99	0.92-1.06	0.94	0.82-1.08	0.94	0.72-1.22	1.09	0.91-1.31
	Current	60-dB vs. <55dB	0.98	0.90-1.08	0.92	0.74-1.14	1.04	0.91-1.17	0.90	0.73-1.11

All Hazard Ratios adjusted for Age, gender, smoking, BMI & IMD.

Table S5 – Hazard ratios for all outcomes during 2005-2011 for pollutants not in main paper - NO₂, PM_{2.5} (exhaust) and PM_{2.5} (traffic non-exhaust)

Exposure	Unit	CHD		MI		Stroke		Heart failure	
		HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI
NO₂	10µg/m ³ change	0.97	0.91-1.02	0.88	0.79-0.97	0.88	0.82-0.95	1.15	1.02-1.30
PM_{2.5} Traffic Exhaust	0.5µg/m ³ change	0.96	0.91-1.01	0.89	0.82-0.98	0.90	0.83-0.97	1.14	1.02-1.27
PM_{2.5} Traffic Non-Exhaust	0.5µg/m ³ change	0.97	0.91-1.04	0.87	0.77-0.98	0.87	0.79-0.97	1.16	1.02-1.31
		Hypertension		Atrial fibrillation		COPD		Pneumonia	
NO₂	10µg/m ³ change	1.07	0.96-1.20	0.98	0.91-1.05	0.98	0.82-1.18	1.08	0.98-1.20
PM_{2.5} Traffic Exhaust	0.5µg/m ³ change	1.04	0.93-1.15	0.99	0.92-1.06	0.99	0.84-1.18	1.04	0.95-1.14
PM_{2.5} Traffic Non-Exhaust	0.5µg/m ³ change	1.02	0.90-1.16	0.98	0.90-1.06	0.96	0.79-1.16	1.05	0.95-1.16

All Hazard Ratios adjusted for Age, gender, smoking, BMI & IMD.

Table S6 – Hazard ratios for between and within practice effects for all outcomes during 2005-2011 by NO_x, PM_{2.5} (traffic sources only) and L_{night}

Exposure	Unit	Within or Between practice	CHD		MI		Stroke		Heart failure	
			HR	95% CI	HR	95% CI	HR	95% CI	HR	95% CI
NO _x	20µg/m ³ change	Between	0.97	0.88-1.07	0.85	0.73-0.99	1.02	0.91-1.15	1.09	0.93-1.28
		Within	1.00	0.92-1.09	1.03	0.91-1.18	0.89	0.79-1.00	1.03	0.90-1.18
PM _{2.5} Traffic	1µg/m ³ change	Between	0.95	0.84-1.07	0.79	0.66-0.95	0.97	0.85-1.11	1.18	0.96-1.44
		Within	0.99	0.91-1.09	1.02	0.89-1.18	0.90	0.79-1.03	1.04	0.90-1.21
L _{night}	5 dB change	Between	0.99	0.82-1.19	0.84	0.63-1.13	1.06	0.83-1.35	1.48	1.07-2.05
		Within	0.99	0.96-1.01	1.00	0.96-1.05	0.97	0.93-1.01	1.01	0.96-1.06
			Hypertension		Atrial fibrillation		COPD		Pneumonia	
NO _x	20µg/m ³ change	Between	1.15	1.03-1.28	1.00	0.89-1.13	1.06	0.84-1.33	1.13	0.99-1.29
		Within	0.94	0.89-0.99	0.97	0.88-1.09	0.94	0.86-1.03	0.96	0.88-1.06
PM _{2.5} Traffic	1µg/m ³ change	Between	1.18	0.99-1.41	0.99	0.86-1.13	1.08	0.78-1.50	1.17	0.98-1.39
		Within	0.93	0.87-0.98	0.99	0.88-1.11	0.93	0.84-1.02	0.95	0.85-1.05
L _{night}	5 dB change	Between	1.20	0.83-1.74	1.13	0.92-1.39	1.15	0.71-1.87	1.22	0.92-1.62
		Within	0.99	0.97-1.00	0.98	0.96-1.01	0.98	0.95-1.01	0.98	0.94-1.01

All Hazard Ratios adjusted for Age, gender, smoking, BMI & IMD.