Supplementary Information

Traffic-Induced Air Pollution at Traffic Intersections in Dhaka: Seasonal Patterns and Associated Health Implications

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Sampling site	Traffic intersection	Specification of sampling site	Geographical coordinates
S1	Mirpur-10	Hospital area and shopping complex	23°48'24.9"N 90°22'06.6"E
S2	Mirpur-1	Hospital and residential area	23°46'54.4"N 90°21'06.4"E
S3	Gulistan	Mosque and market place area	23°43'40.2"N 90°24'37.8"E
S4	Banani	Residential area and school	23°47'49.1"N 90°24'06.0"E
S5	Bijoy Sarani	Administrative and corporate area	23°45'52.1"N 90°23'19.4"E

Table S1 The table displays each location's situation in relation to its geographic coordination

Table S2 Pearson's correlation of air pollutant concentration at different traffic intersections of Dhaka City, Bangladesh

Winter					
Pollutants	$PM_{1.0}$	$PM_{2.5}$	PM_{10}	CO_2	NO_2
$PM_{1.0}$	1				
$PM_{2.5}$	0.530	1			
PM_{10}	-0.053	**0.785**	1		
CO_2	0.453	0.127	-0.303	1	
NO_2	0.306	-0.009	-0.414	**0.962**	1
Pre-monsoon					
	$PM_{1.0}$	$PM_{2.5}$	PM_{10}	CO_2	NO_2
$PM_{1.0}$	1				
$PM_{2.5}$	**0.577**	1			
PM_{10}	0.348	**0.954**	1		
CO_2	-0.363	0.380	**0.639**	1	
NO_2	0.392	0.016	-0.248	-0.848	1

Table S3 P-values of air pollutant concentrations at different traffic intersections of Dhaka City, Bangladesh

Pollutants	P-values	
	Winter	Pre-monsoon
$PM_{1.0}$ and $PM_{2.5}$	2.17E-05	7.5E-05
$PM_{1.0}$ and PM_{10}	2.28E-06	2.53E-05
$PM_{2.5}$ and PM_{10}	0.005	0.003
$PM_{1.0}$ and CO_2	1.47E-13	1.1E-15
$PM_{2.5}$ and CO_2	6.49E-13	1.6E-13
PM_{10} and CO_2	1.63E-12	3.58E-11
$PM_{1.0}$ and NO_2	0.002818	2.47E-07
$PM_{2.5}$ and NO_2	1.13E-06	5E-07
PM_{10} and NO_2	2.84E-07	1.96E-06
NO_2 and CO_2	6.19E-14	9.12E-17

Table S4 Principal Component Analysis (PCA) of winter data: eigenvalues and explained variance

	Eigenvalue	Percentage of Variance	Cumulative
1	2.61355	52.27%	52.27%
2	2.2553	45.11%	97.38%
3	0.08489	1.70%	99.07%
4	0.02982	0.60%	99.67%
5	0.01645	0.33%	100.00%

Table S5 Principal Component Analysis loadings for particulate matter and gaseous pollutants during winter season

	Coefficients of PC1	Coefficients of PC2	Coefficients of PC3	Coefficients of PC4	Coefficients of PC5
NO_2	0.17052	0.62511	-0.68016	0.33811	0.05684
CO_2	0.15223	0.62943	0.72401	0.19259	0.13914
$PM_{1.0}$	0.5833	0.20392	-0.0464	-0.70731	-0.34021
$PM_{2.5}$	0.56183	-0.27039	-0.03636	0.01215	0.78088
PM_{10}	0.54025	-0.31363	0.09856	0.59005	-0.50189

Table S6 Principal Component Analysis (PCA) of pre-monsoon data: eigenvalues and explained variance

	Eigenvalue	Percentage of Variance	Cumulative
1	3.19319	63.86%	63.86%
2	0.86473	17.29%	81.16%
3	0.67936	13.59%	94.75%
4	0.23923	4.78%	99.53%
5	0.0235	0.47%	100.00%

Table S7 Principal Component Analysis loadings for particulate matter and gaseous pollutants during pre-monsoon season

	Coefficients of PC1	Coefficients of PC2	Coefficients of PC3	Coefficients of PC4	Coefficients of PC5
NO_2	0.35619	0.78428	0.06496	0.50105	0.05256
CO_2	0.35584	-0.1996	0.9083	-0.05015	-0.07755
$PM_{1.0}$	0.48974	0.28075	-0.15728	-0.78732	0.19165
$PM_{2.5}$	0.52132	-0.23749	-0.31362	0.12025	-0.74767
PM_{10}	0.48465	-0.45808	-0.21835	0.33483	0.62888

Sampling Sites	Winter			Pre-monsoon		
	Infant	Children	Adult	Infant	Children	Adult
Mirpur-10	2.7302	1.3821	0.9074	1.1959	0.6054	0.3975
Gulistan	3.3153	1.6783	1.1018	0.8928	0.4520	0.2967
Mirpur-1	4.7799	2.4198	1.5886	1.4541	0.7378	0.4844
Banani	4.6178	2.3377	1.5348	1.2572	0.6364	0.4178

Table S8 Hazard Quotient (HQ) data of NO_2 for different age

Table S9 Hazard Quotient (HQ) data of $PM_{2.5}$ for different ages

Sampling Sites	Winter			Pre-monsoon		
	Infant	Children	Adult	Infant	Children	Adult
Mirpur-10	1.4957	0.7572	0.4971	1.0645	0.5389	0.3538
Gulistan	1.5788	0.7992	0.5247	1.0554	0.5343	0.3508
Mirpur-1	1.3139	0.6652	0.4367	1.0613	0.5373	0.3527
Banani	1.4389	0.7284	0.4782	1.1458	0.5801	0.3808
Bijoy Sarani	1.3630	0.6900	0.4530	1.1677	0.5911	0.3881

Bijoy Sarani	1.8358	0.9293	0.6101	1.0390	0.5260	0.3453

Sampling Sites	Winter			Pre-monsoon		
	Infant	Children	Adult	Infant	Children	Adult
Mirpur-10	3.0340	1.5359	1.0083	1.0616	0.5374	0.3498
Gulistan	3.8544	1.9512	1.2810	0.8217	0.4160	0.2731
Mirpur-1	5.3072	2.6867	1.7639	1.2753	0.6456	0.4238
Banani	5.2558	2.6606	1.7468	1.1543	0.5844	0.3836
Bijoy Sarani	1.9420	0.9831	0.6454	1.0582	0.5357	0.3517

Table S10 Hazard Quotient (HQ) data of PM_{10} for different ages

Table S11 Hazard Ratio (HR) data for Health Risk Assessment of CO_2

Sampling Sites	Hazard Ratio (HR)	
	Pre-monsoon	Winter
Mirpur-10	0.7705	0.8069
Gulistan	0.7781	0.8086
Mirpur-1	0.7856	0.7694
Banani	0.8074	0.7928
Bijoy Sarani	0.7666	0.7832

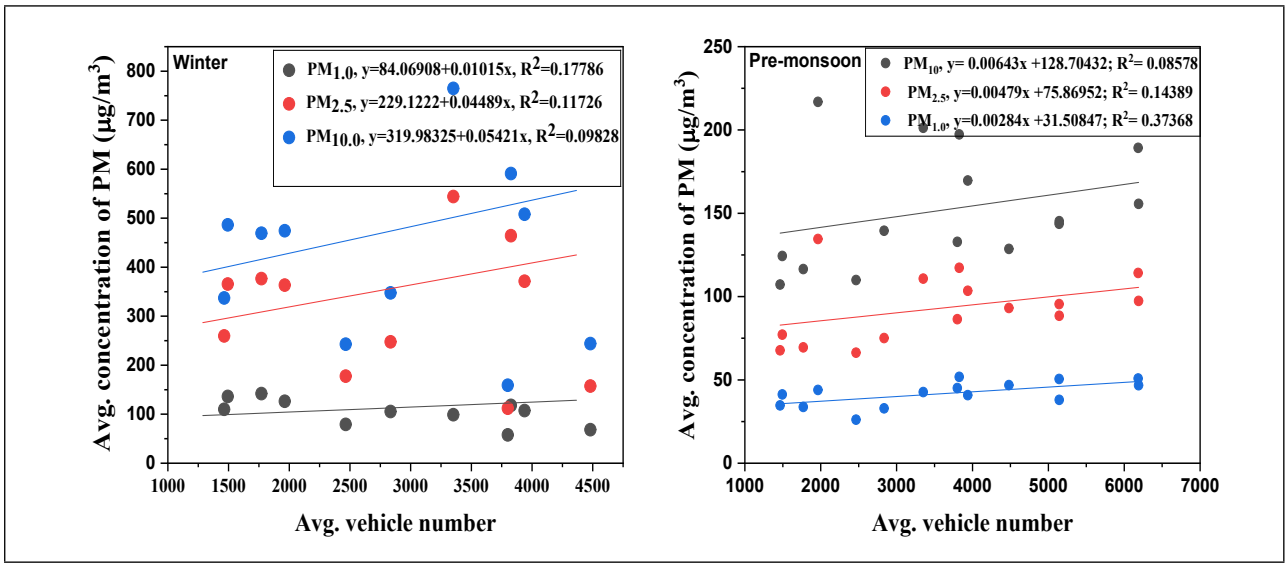


Fig. S1 Correlation coefficient between the average concentration of PM and average vehicle number at five different traffic intersections in Dhaka city, Bangladesh.

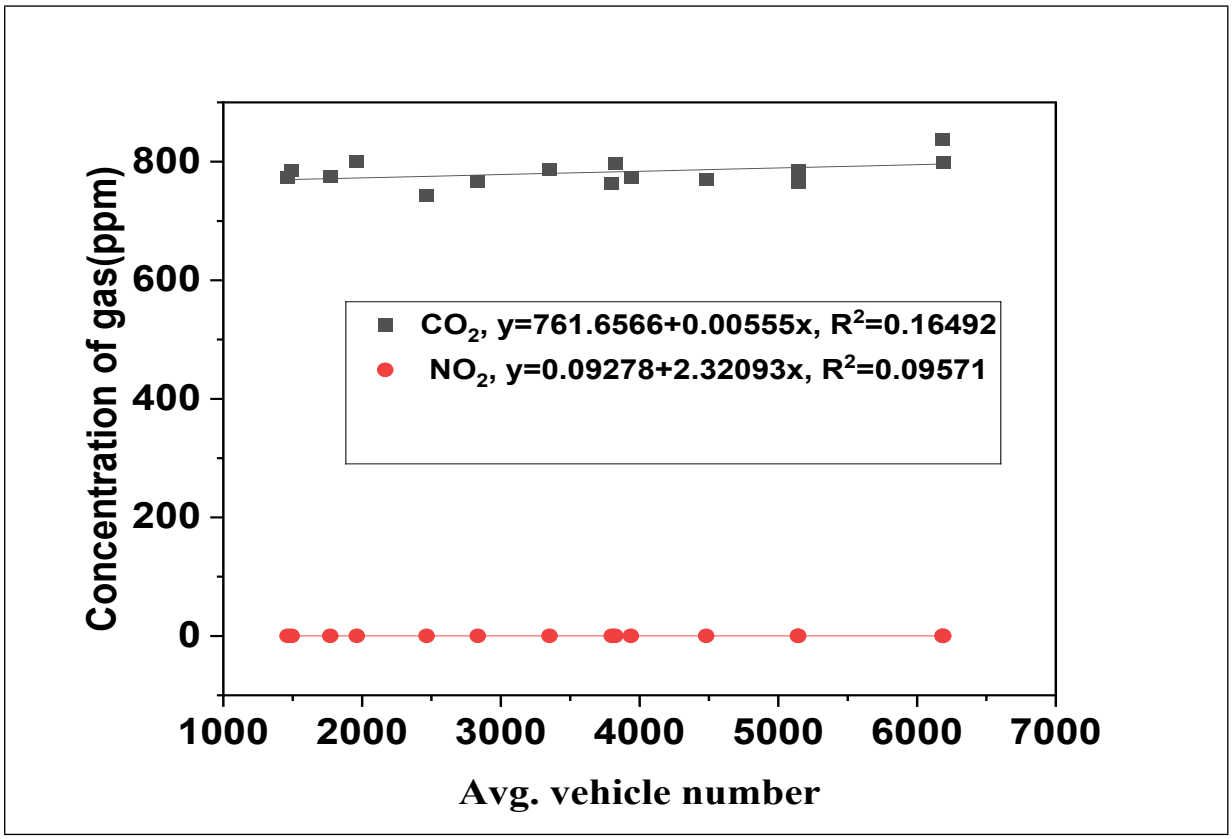
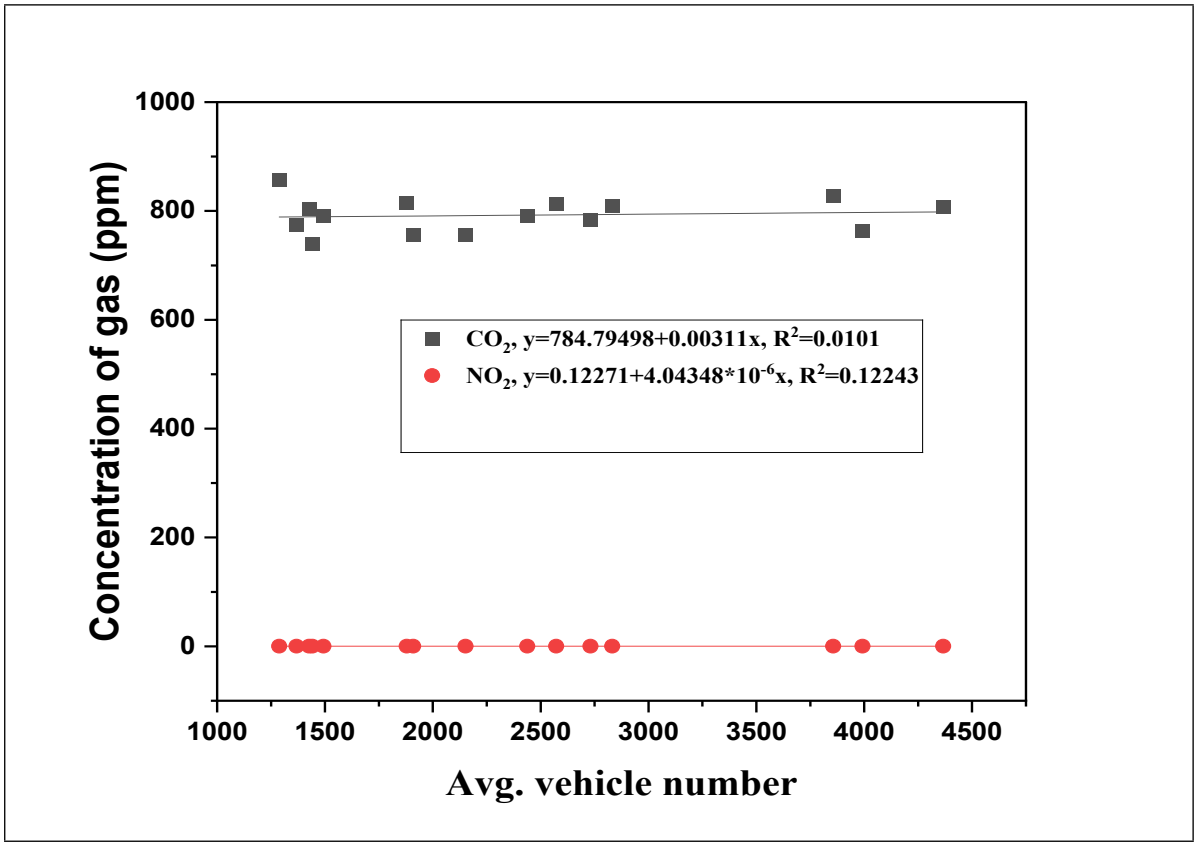


Fig. S2 Correlation coefficient between average concentration of CO_2, NO_2, and average vehicle number during pre-monsoon at five different traffic intersections in Dhaka city, Bangladesh.



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91 Fig. S3 Correlation coefficient between average concentration of CO_2, $NO_{2,}$ and average
92 vehicle number during winter at five different traffic intersections in Dhaka city, Bangladesh.

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