

Short-Term Associations between Air Pollution Concentrations and Respiratory Health—Comparing Primary Health Care Visits, Hospital Admissions, and Emergency Department Visits in a Multi-Municipality Study

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Supplementary Material, Table 1: Spearman correlation coefficients between air pollutants within and between the five municipalities in Scania, Sweden, 2005-2010

Municipality		Malmö			Lund			Helsingborg			Landskrona		Trelleborg		
		O ₃	NO ₂	PM ₁₀	O ₃	NO ₂	PM ₁₀	O ₃	NO ₂	PM ₁₀	O ₃	NO ₂	PM ₁₀	NO ₂	PM ₁₀
Malmö	O₃	1													
	NO₂	-0.53	1												
	PM₁₀	0.06	0.26	1											
Lund	O₃	0.84	-0.43	0.06	1										
	NO₂	-0.35	0.65	0.19	-0.54	1									
	PM₁₀	0.17	0.16	0.74	0.04	0.19	1								
Helsingborg	O₃	0.84	-0.24	0.01	0.84	0.16	0.02	1							
	NO₂	-0.37	0.65	0.31	-0.44	0.24	0.33	-0.37	1						
	PM₁₀	0.07	0.33	0.59	0.06	0.42	0.63	0.00	0.37	1					
Landskrona	O₃	0.91	-0.04	0.02	0.90	0.00	-0.02	0.93	-0.11	-0.10	1				
	NO₂	-0.49	0.08	0.14	-0.63	0.12	0.26	-0.46	0.24	0.35	-0.55	1			
	PM₁₀	-0.09	0.54	0.69	-0.05	0.49	0.84	-0.06	0.36	0.62	-0.10	0.41	1		
Trelleborg	NO₂	---	0.30	0.22	---	0.48	0.30	---	0.43	0.25	---	0.44	0.44	1	
	PM₁₀	---	0.18	0.61	---	0.20	0.67	---	0.23	0.48	---	0.28	0.80	0.40	1

Supplementary Material, Table 2: Pooled estimates of percent change in the number of visits to Primary Health Care Clinics (PHCs), Inpatient admissions, and Emergency Department visits with 95% Confidence Intervals (CIs) associated with a 10 µg/m³ increase in NO₂, O₃, and PM₁₀ lag 0-2 in five municipalities during 2005–2010.

	PHC % Change (95% CI)	Inpatient % Change (95%	Emergency Department
NO₂	-1.09 (-3.81 to 1.69)	-3.08 (-6.07 to 0.01)	-0.31 (-2.47 to 1.91)
O₃	0.28 (-0.20 to 0.76)	0.29 (-0.19 to 0.77)	-0.05 (-0.43 to 0.33)
PM₁₀	0.25 (-0.61 to 1.13)	-0.17 (-2.08 to 1.77)	-0.10 (-1.17 to 0.99)

Supplementary Material, Table 3: Percent change in the number of visits to Primary Health Care Clinics (PHCs), Inpatient admissions, and Emergency Department visits with 95% Confidence Intervals (CIs) associated with a 10 $\mu\text{g}/\text{m}^3$ increase in PM_{10} single-pollutant model over lag 0-2 in five municipalities during 2005–2010.

Municipality	PHC % Change (95% CI)	Inpatient % Change (95% CI)	Emergency Department % Change (95% CI)
Malmö	0.36 (-0.62 to 1.34)	0.08 (-1.27 to 1.45)	-0.04 (-1.26 to 1.21)
Lund	0.39 (-1.02 to 1.83)	-1.63 (-4.93 to 1.81)	1.13 (-1.84 to 4.21)
Helsingborg	1.05 (0.01 to 2.11)	-0.22 (-1.69 to 1.28)	0.76 (-0.58 to 2.12)
Landskrona	0.09 (-1.56 to 1.76)	-2.01 (-5.30 to 1.42)	-0.44 (-2.61 to 1.79)
Trelleborg	1.95 (0.10 to 3.84)	-0.21 (-4.03 to 3.78)	-1.11 (-3.23 to 1.07)

Supplementary Material, Table 4: Percent change in the number of visits to Primary Health Care Clinics (PHCs), Inpatient admissions, and Emergency Department visits with 95% Confidence Intervals (CIs) associated with a 10 $\mu\text{g}/\text{m}^3$ increase in O_3 single-pollutant model over lag 0-2 in five municipalities during 2005–2010.

Municipality	PHC % Change (95% CI)	Inpatient % Change (95% CI)	Emergency Department % Change (95% CI)
Malmö	-0.08 (-0.72 to 0.56)	0.60 (-0.03 to 1.51)	0.63 (-0.19 to 1.47)
Lund	-0.40 (-1.36 to 0.58)	1.39 (-0.80 to 3.63)	0.31 (-1.46 to 2.10)
Helsingborg	0.19 (-0.68 to 1.06)	0.91 (-0.30 to 2.14)	0.47 (-0.64 to 1.60)
Landskrona	-0.10 (-1.51 to 1.34)	2.51 (-0.32 to 5.42)	1.35 (-0.60 to 3.35)
Trelleborg*	---	---	---

*Trelleborg O_3 data was missing

Supplementary Material, Table 5: Percent change in the number of visits to Primary Health Care Clinics (PHCs), Inpatient admissions, and Emergency Department visits with 95% Confidence Intervals (CIs) associated with a 10 $\mu\text{g}/\text{m}^3$ increase in NO_2 single-pollutant model over lag 0-2 in five municipalities during 2005–2010.

Municipality	PHC % Change (95% CI)	Inpatient % Change (95% CI)	Emergency Department % Change (95% CI)
Malmö	1.26 (0.15 to 2.39)	0.21 (-1.34 to 1.78)	0.23 (-1.18 to 1.67)
Lund	1.77 (0.21 to 3.35)	-2.24 (-5.61 to 1.26)	-0.19 (-3.01 to 2.71)
Helsingborg	0.56 (-0.53 to 1.67)	-1.29 (-2.79 to 0.25)	-0.77 (-2.16 to 0.64)
Landskrona	-0.83 (-2.81 to 1.18)	-4.12 (-7.92 to -0.14)	-1.06 (-3.78 to 1.75)
Trelleborg	0.93 (-1.40 to 3.31)	-0.99 (-5.39 to 3.64)	-0.53 (-3.09 to 2.12)

Supplement Material Table 6: Selected Municipalities social demographic characteristics for the year 2010.

Municipalities		Population	Age	Foreign born	Education				Income
		Total	Mean (Yrs)		Primary*	Secondary**	Post-Secondary†	Post-graduate††	SEK ^
Malmö	Men	1 46 750	37.8	4 5328 (31%)	21 719 (21%)	43 670 (41%)	38 671 (37%)	1 382 (1%)	25 100
	Women	1 52 213	40.2	4 5021 (30%)	21 126 (20%)	40 295 (38%)	44 653 (42%)	786 (1%)	24 000
	Total	2 98 963	39.0	90 349 (30%)	42 845 (20%)	83 965 (40%)	83 324 (40%)	2 168 (1%)	24 300
Lund	Men	55 084	36.7	9 289 (17%)	5 282 (12%)	11 440 (28%)	21 790 (52%)	3 006 (7%)	24 900
	Women	55 404	39.4	9 940 (18%)	4 554 (11%)	10 650 (26%)	24 267 (59%)	1 647 (4%)	23 900
	Total	1 10 488	38.1	19 229 (17%)	9 836 (12%)	22 090 (27%)	46 057 (56%)	4 653 (6%)	24 200
Landskrona	Men	20 769	40.2	5 013 (24%)	3 839 (26%)	7 770 (52%)	3 131 (21%)	78 (0.5%)	24 900
	Women	20 955	42.5	5 078 (24%)	3 637 (25%)	6 766 (47%)	4 084 (28%)	52 (0,4%)	23 500
	Total	41 724	41.4	10 091 (24%)	7 476 (26%)	14 536 (50%)	7 215 (25%)	130 (0,4%)	23 800
Helsingborg	Men	63 271	39.7	12 236 (19%)	11 027 (24%)	21 589 (47%)	13 223 (29%)	345 (0.7%)	26 700
	Women	65 906	42.3	13 017 (29%)	10 015 (21%)	20 454 (44%)	16 346 (35%)	164 (0.3%)	24 600
	Total	1 29 177	41.0	25 253 (20%)	21 042 (23%)	42 043 (45%)	29 569 (31%)	509 (0.5%)	25 100
Trelleborg	Men	21 049	40.9	3 027 (14%)	4 190 (28%)	7 899 (52%)	2 970 (20%)	49 (0.3%)	26 300
	Women	21 170	42.9	2 973 (14%)	3 453 (23%)	7 365 (49%)	4 122 (28%)	38 (0.3%)	24 000
	Total	42 219	41.9	6 000 (14%)	7 643 (25)	15 264 (51%)	7 092 (24%)	87 (0.3%)	24 500

* Primary and secondary education up to 10 years

**Upper secondary education, 2 years or less

†Upper secondary education 3 years

††Post-secondary education, less than 3 years

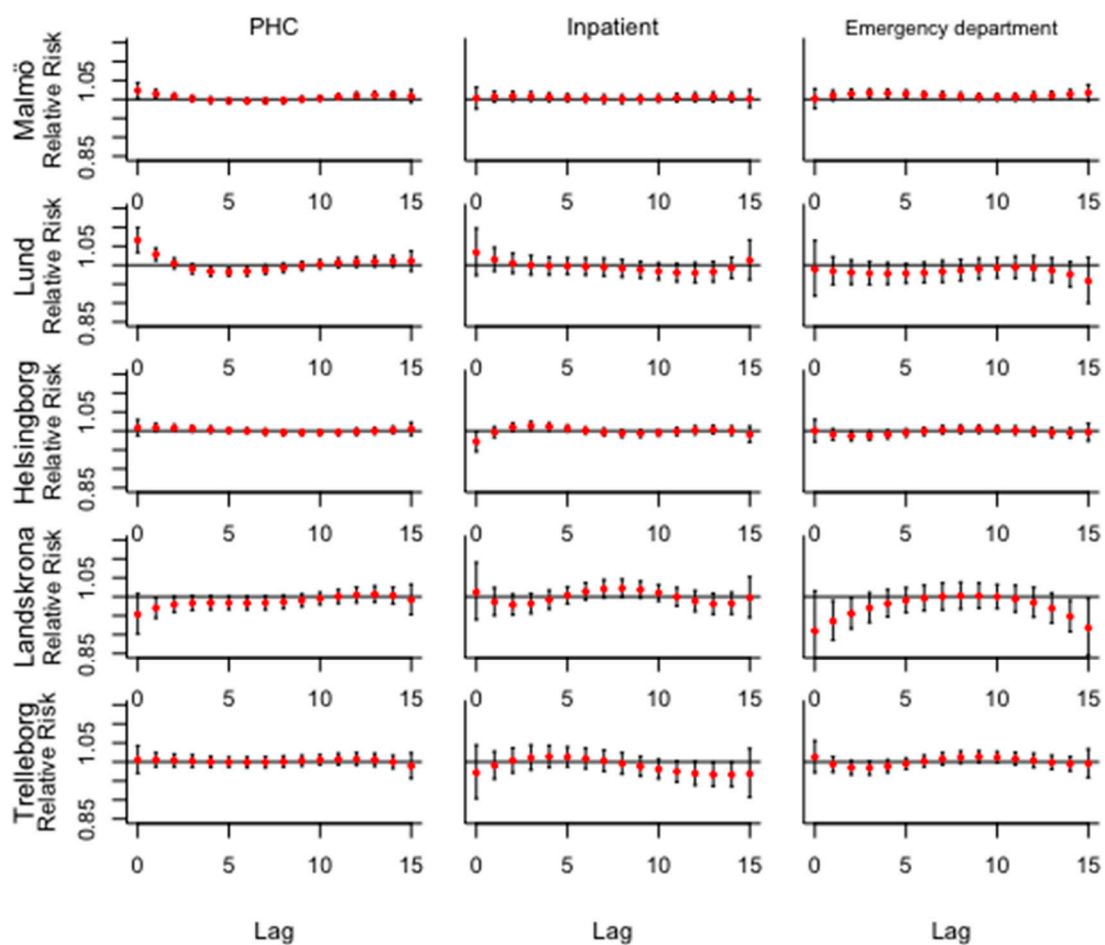
^^Average monthly salary in Swedish Krona 1 USD ≈ 9 SEK

Data obtained from Statistics Sweden [1]

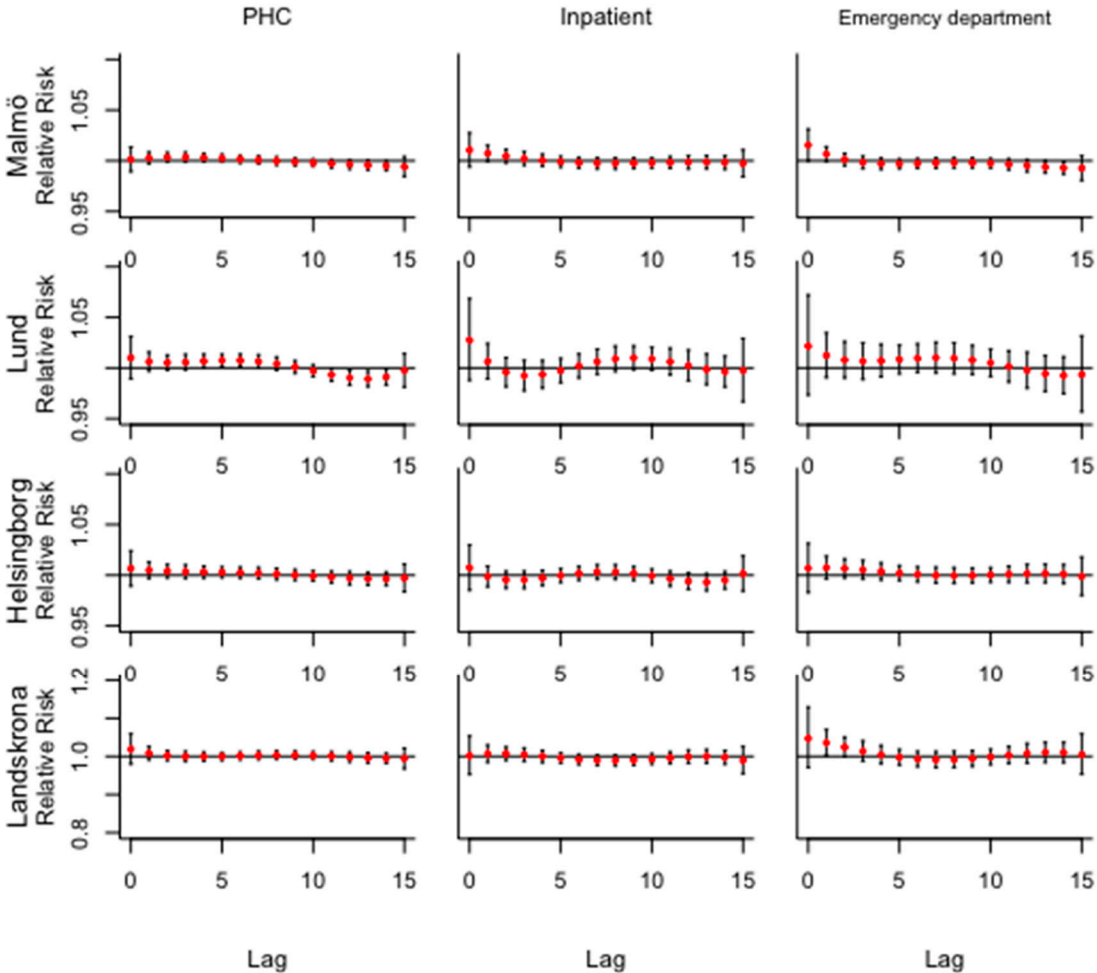
Supplement Table 7 Weather Condition in Malmö Municipality from year 2005 till 2010

	Min	1st quantile	Median	Mean (Sd)	3rd quantile	Max
Temperature °C	9.8	4.1	9.4	9.5 (7.1)	15.5	26.4
Humidity	37.4	67.3	76.2	74.6 (11.3)	83.2	95.9
Rain Fall	0.00	0.00	0.00	1.8 (4.4)	1.6	78.5

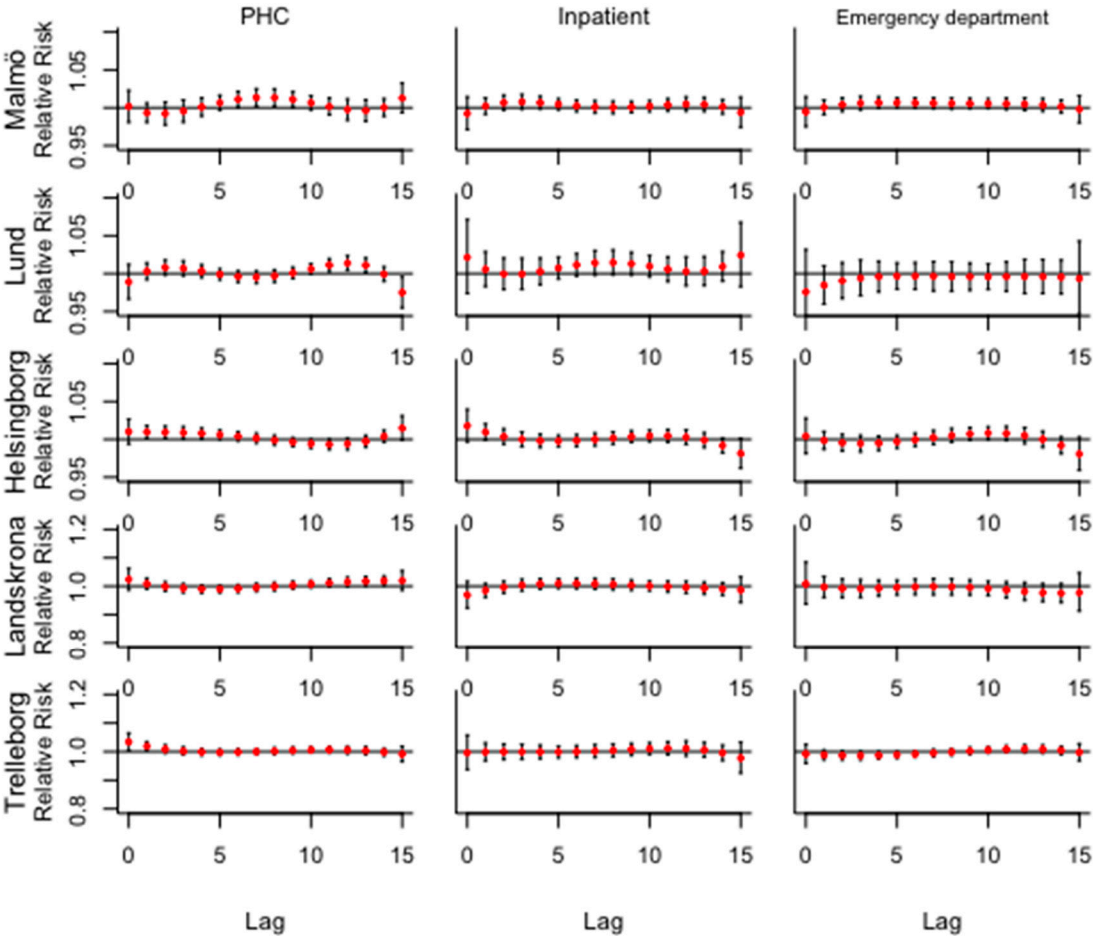
Supplementary Material, Figure 1: Lag response curve for 10 $\mu\text{g}/\text{m}^3$ s increase in NO_2 level with Respiratory health care visits (multi-pollutant models).



Supplementary Material, Figure 2: Lag response curve for 10 $\mu\text{g}/\text{m}^3$ s increase in O_3 level with Respiratory health care visits (multi-pollutant models).



Supplementary Material, Figure 3: Lag response curve for 10 $\mu\text{g}/\text{m}^3$ s increase in PM_{10} level with Respiratory health care visits (multi-pollutant models).



Reference:

1. Sweden, S. *Statistical database*. 2017 [12 May 2017]; Available from: <http://www.scb.se/en/>.