

Supplemental Material

Proximity to Traffic, Ambient Air Pollution, and Community Noise in Relation to Incident Rheumatoid Arthritis

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Table S1. Air pollution and noise exposure distributions by residential proximity to traffic in the at-risk cohort during the cohort definition period (1994-1998).^a

Exposure	NO-LUR ($\mu\text{g}/\text{m}^3$)	NO₂-LUR ($\mu\text{g}/\text{m}^3$)	Black carbon- LUR ($\mu\text{g}/\text{m}^3$)	PM_{2.5}-LUR ($\mu\text{g}/\text{m}^3$)	PM₁₀-IDW ($\mu\text{g}/\text{m}^3$)	O₃-IDW ($\mu\text{g}/\text{m}^3$)	CO-IDW ($\mu\text{g}/\text{m}^3$)	SO₂-IDW ($\mu\text{g}/\text{m}^3$)	Noise (dB(A))
No. observations	640,041	640,041	616,672	620,535	499,015	586,777	501,888	590,348	445,887
Highway									
Never lived near highway	29.75 ± 10.50	28.69 ± 4.97	1.24 ± 0.60	4.65 ± 2.32	13.90 ± 0.57	27.10 ± 4.91	739.4 ± 152.7	6.39 ± 2.73	62.99 ± 4.77
>50m to 150m from highway	36.43 ± 14.30	31.69 ± 5.77	1.63 ± 0.64	5.46 ± 2.51	13.78 ± 0.51	26.30 ± 5.39	765.2 ± 160.7	7.26 ± 3.03	67.36 ± 5.07
≤50m from highway	44.95 ± 17.74	33.51 ± 5.91	1.60 ± 0.61	5.41 ± 2.78	13.71 ± 0.50	28.26 ± 5.62	725.7 ± 171.8	6.31 ± 3.06	71.33 ± 5.17
Major road									
Never lived near major road	26.73 ± 7.12	27.37 ± 4.38	1.17 ± 0.56	4.39 ± 2.22	13.91 ± 0.56	27.72 ± 4.78	719.9 ± 146.7	6.10 ± 2.60	62.29 ± 4.71
>50m to 150m from major road	33.64 ± 11.71	31.78 ± 5.30	1.41 ± 0.65	5.40 ± 2.46	13.82 ± 0.56	25.64 ± 5.04	782.5 ± 158.5	7.19 ± 2.94	64.00 ± 4.59
≤50m from major road	44.18 ± 15.91	31.60 ± 5.15	1.53 ± 0.65	4.98 ± 2.45	13.91 ± 0.60	27.14 ± 5.08	739.9 ± 155.5	6.51 ± 2.85	67.98 ± 5.20

Abbreviations: LUR=land-use regression; IDW=inverse-distance weighting

^aMembers of the study population who lived within 150m from a highway/major road during the 5-year exposure period were categorized according to proximity at which they lived the longest.

Table S2. Risk of incident RA in relation to NO and NO₂, assessed using inverse distance weighting (IDW) (odds ratios [OR] and 95% confidence intervals [CI] for interquartile range [IQR] increase).^a

Exposure	RA-ICD9: Case N	RA-ICD9: Control N	RA-ICD9: OR (95% CI) [IQR]	RA- prescription: Case N	RA- prescription: Control N	RA-prescription: OR (95% CI) [IQR]	RA- specialist: Case N	RA- specialist: Control N	RA-specialist: OR (95% CI) [IQR]
NO-IDW (µg/m ³)	2554	25677	0.82 (0.78, 0.87) [13.9]	1992	20659	0.81 (0.76, 0.87) [13.7]	1535	14816	0.81 (0.75, 0.87) [13.9]
NO ₂ -IDW (µg/m ³)	2560	25739	0.83 (0.78, 0.87) [9.1]	1994	20692	0.81 (0.76, 0.86) [8.9]	1536	14840	0.82 (0.76, 0.88) [9.1]

Abbreviations: RA-ICD9=case definition based on 3 ICD9 codes; RA-prescription=case definition based on 2 ICD9 codes plus prescription; RA-specialist=case definition based on 2 ICD9 codes plus visit to specialist; IQR=interquartile range; IDW=inverse-distance weighting

^aOdds ratios are adjusted for age, sex, and neighborhood socioeconomic status

Table S3. Risk of incident RA in relation to ambient air pollution and community noise (odds ratios [OR] and 95% confidence intervals [CI] for quintiles of exposure).^a

Exposure	RA-ICD9: Case N	RA-ICD9: Control N	RA-ICD9: OR (95% CI)	RA- prescription: Case N	RA- prescription: Control N	RA- prescription: OR (95% CI)	RA- specialist: Case N	RA- specialist: Control N	RA-specialist: OR (95% CI)
NO-LUR	3280	33234		2659	26846		1883	19059	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.97 (0.86, 1.08)			1.05 (0.93, 1.19)			0.95 (0.82, 1.10)
3 rd quintile			0.94 (0.84, 1.06)			0.98 (0.86, 1.11)			0.94 (0.81, 1.09)
4 th quintile			0.92 (0.82, 1.03)			0.90 (0.79, 1.03)			0.82 (0.71, 0.96)
5 th quintile			0.96 (0.85, 1.08)			0.92 (0.80, 1.05)			0.86 (0.74, 1.00)
NO-IDW	2554	25677		1992	20659		1535	14816	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.87 (0.77, 0.99)			0.88 (0.76, 1.01)			0.90 (0.76, 1.06)
3 rd quintile			0.86 (0.76, 0.98)			0.87 (0.76, 1.01)			0.99 (0.84, 1.16)
4 th quintile			0.78 (0.69, 0.89)			0.83 (0.72, 0.96)			0.80 (0.67, 0.94)
5 th quintile			0.67 (0.58, 0.76)			0.64 (0.55, 0.75)			0.65 (0.54, 0.77)
NO₂-LUR	3278	33229		2657	26842		1881	19059	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.92 (0.82, 1.03)			0.93 (0.82, 1.05)			0.85 (0.73, 0.98)
3 rd quintile			0.84 (0.75, 0.95)			0.94 (0.83, 1.06)			0.87 (0.75, 1.00)
4 th quintile			0.90 (0.80, 1.01)			0.82 (0.72, 0.93)			0.82 (0.71, 0.95)
5 th quintile			0.97 (0.86, 1.08)			0.76 (0.67, 0.87)			0.77 (0.66, 0.90)
NO₂-IDW	2560	25739		1994	20692		1536	14840	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.87 (0.77, 0.98)			0.96 (0.83, 1.10)			1.03 (0.87, 1.20)
3 rd quintile			0.80 (0.70, 0.90)			0.90 (0.78, 1.04)			0.97 (0.82, 1.14)
4 th quintile			0.76 (0.67, 0.86)			0.74 (0.63, 0.85)			0.76 (0.64, 0.90)
5 th quintile			0.64 (0.56, 0.73)			0.60 (0.51, 0.70)			0.63 (0.53, 0.76)

Exposure	RA-ICD9: Case N	RA-ICD9: Control N	RA-ICD9: OR (95% CI)	RA- prescription: Case N	RA- prescription: Control N	RA- prescription: OR (95% CI)	RA- specialist: Case N	RA- specialist: Control N	RA-specialist: OR (95% CI)
Black carbon-LUR	3138	32159		2553	25935		1818	18420	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			1.13 (1.01, 1.27)			1.13 (0.99, 1.28)			1.08 (0.93, 1.25)
3 rd quintile			1.00 (0.88, 1.12)			1.02 (0.90, 1.16)			0.99 (0.85, 1.16)
4 th quintile			1.02 (0.91, 1.15)			0.93 (0.81, 1.06)			0.91 (0.78, 1.06)
5 th quintile			0.94 (0.83, 1.06)			0.91 (0.80, 1.05)			0.86 (0.73, 1.01)
PM_{2.5}-LUR	3175	32304		2567	26144		1819	18518	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.98 (0.87, 1.10)			0.95 (0.83, 1.07)			0.90 (0.78, 1.05)
3 rd quintile			0.90 (0.80, 1.01)			0.88 (0.77, 1.00)			0.86 (0.74, 1.00)
4 th quintile			0.93 (0.83, 1.05)			0.91 (0.80, 1.04)			0.86 (0.74, 1.00)
5 th quintile			0.91 (0.80, 1.02)			0.83 (0.72, 0.95)			0.80 (0.68, 0.94)
PM₁₀-IDW	2712	27208		2135	21850		1653	15709	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.84 (0.74, 0.94)			0.87 (0.75, 0.99)			0.92 (0.79, 1.08)
3 rd quintile			0.80 (0.71, 0.91)			0.78 (0.67, 0.90)			0.83 (0.71, 0.98)
4 th quintile			0.75 (0.66, 0.85)			0.73 (0.63, 0.84)			0.77 (0.65, 0.91)
5 th quintile			0.66 (0.57, 0.76)			0.69 (0.59, 0.81)			0.74 (0.62, 0.89)
O₃-IDW	3055	30698		2454	24791		1724	17636	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			1.15 (1.02, 1.30)			1.33 (1.16, 1.53)			1.37 (1.16, 1.62)
3 rd quintile			1.10 (0.97, 1.24)			1.31 (1.14, 1.51)			1.39 (1.18, 1.64)
4 th quintile			1.29 (1.14, 1.45)			1.54 (1.34, 1.77)			1.55 (1.32, 1.83)
5 th quintile			1.29 (1.14, 1.45)			1.56 (1.35, 1.79)			1.08 (0.91, 1.28)
CO-IDW	2826	28269		2249	22807		1633	16274	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.95 (0.84, 1.07)			1.00 (0.88, 1.14)			0.93 (0.79, 1.09)
3 rd quintile			0.81 (0.71, 0.91)			0.86 (0.75, 0.99)			0.90 (0.77, 1.05)
4 th quintile			0.82 (0.73, 0.93)			0.80 (0.69, 0.92)			0.86 (0.73, 1.02)
5 th quintile			0.75 (0.66, 0.85)			0.68 (0.59, 0.78)			0.70 (0.59, 0.82)

Exposure	RA-ICD9: Case N	RA-ICD9: Control N	RA-ICD9: OR (95% CI)	RA- prescription: Case N	RA- prescription: Control N	RA- prescription: OR (95% CI)	RA- specialist: Case N	RA- specialist: Control N	RA-specialist: OR (95% CI)
SO₂-IDW	3082	30963		2477	25011		1733	17761	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			1.11 (0.98, 1.25)			1.16 (1.02, 1.33)			0.98 (0.83, 1.15)
3 rd quintile			1.11 (0.98, 1.24)			1.10 (0.97, 1.26)			1.24 (1.06, 1.44)
4 th quintile			0.93 (0.83, 1.05)			0.91 (0.79, 1.04)			0.93 (0.79, 1.09)
5 th quintile			0.85 (0.75, 0.96)			0.74 (0.64, 0.85)			0.82 (0.70, 0.97)
Noise	2188	22734		1711	18346		1315	13173	
1 st quintile			<i>Referent</i>			<i>Referent</i>			<i>Referent</i>
2 nd quintile			0.99 (0.86, 1.14)			0.85 (0.72, 1.00)			0.91 (0.76, 1.09)
3 rd quintile			0.91 (0.79, 1.05)			0.94 (0.80, 1.10)			0.78 (0.65, 0.93)
4 th quintile			1.02 (0.88, 1.17)			0.94 (0.81, 1.11)			0.95 (0.79, 1.13)
5 th quintile			1.06 (0.92, 1.22)			0.94 (0.80, 1.10)			0.88 (0.74, 1.06)

Abbreviations: RA-ICD9=case definition based on 3 ICD9 codes; RA-prescription=case definition based on 2 ICD9 codes plus prescription; RA-specialist=case definition based on 2 ICD9 codes plus visit to specialist; LUR=land-use regression; IDW=inverse-distance weighting

^aOdds ratios are adjusted for age, sex, and neighborhood socioeconomic status.