

RISK EFFECTS OF NEAR-ROADWAY POLLUTANTS AND ASTHMA STATUS ON BRONCHITIC SYMPTOMS IN CHILDREN

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Supplemental Digital Content

eTable 1: Distribution of demographic characteristics among CHS study participants and their association with bronchitic symptoms by asthma status

	Children without asthma		Children with asthma (by age 10)	
	N (%)	OR (95% CI) [#]	N (%)	OR (95% CI) [#]
Gender				
Female	2772(51.3)	Ref	550(40.7)	Ref
Male	2632(48.7)	0.95(0.89,1.01)	803(59.3)	0.98(0.89,1.07)
Ethnicity				
Non-Hispanic White	2237(41.4)	Ref	543(40.1)	Ref
Hispanic White	2486(46.0)	0.70(0.65,0.75)	595(44.0)	1.17(1.06,1.29)
Asian	201(3.7)	0.80(0.68,0.94)	51(3.8)	0.94(0.73,1.20)
Black	175(3.2)	0.90(0.75,1.10)	61(4.5)	1.34(1.05,1.70)
Other	305(5.6)	0.91(0.79,1.05)	103(7.6)	1.55(1.30,1.85)
Education				
Less than high school	1016(19.6)	Ref	174(13.2)	Ref
HS diploma/GED	1009(19.5)	1.22(1.09,1.37)	239(18.1)	1.07(0.90,1.27)
Some college	2019(39.0)	1.49(1.36,1.64)	627(47.4)	0.88(0.75,1.02)
College degree	582(11.2)	1.27(1.12,1.44)	151(11.4)	0.84(0.69,1.01)
Some graduate school or higher	548(10.6)	1.36(1.21,1.54)	132(10.0)	0.59(0.48,0.72)
Cohort				
C	1093(20.2)	Ref	194(14.3)	Ref
D	1121(20.7)	0.91(0.83,0.99)	225(16.6)	0.82(0.70,0.97)
E	3190(59.0)	0.52(0.48,0.57)	934(69.0)	0.92(0.81,1.05)

[#] Unadjusted odds ratio and corresponding 95% confidence intervals.

eTable 2: Co-adjusted effect of NRAP from freeway and non-freeway roads on bronchitic symptoms by asthma status

	All participants	Children without asthma	Children with asthma	Interaction p-value ¶
Sources of NRAP	OR (95% CI) #	OR (95% CI) #	OR (95% CI) #	
Freeway	1.03(0.92,1.15)	0.97(0.87,1.09)	1.23(0.99,1.53)	0.008
Non-freeway	1.17(1.04,1.33)	1.15(1.02,1.30)	1.33(1.07,1.66)	0.03

Exposure to NRAP from freeways and non-freeway roads entered simultaneously into models and adjusted for gender, ethnicity, age, community, and cohort. Odds ratios and corresponding 95% confidence intervals scaled to a 2 standard deviation increase in exposure across all 3 cohorts (37.1 ppb for freeway NRAP and 11.2 ppb for non-freeway NRAP, as reported in Table 2). ¶ Interaction p-value between asthma status and traffic exposure.

eTable 3: Effect of NRAP on bronchitic symptoms by asthma status and levels of regional ozone^a

Sources of NRAP	Regional pollutant stratum	All participants	P-value Comparing Lower vs higher	Children without asthma	P-value Comparing Lower vs higher	Children with asthma	P-value Comparing Lower vs higher	3-way Int. ¶ P-value
		OR (95% CI) #		OR (95% CI) #		OR (95% CI) #		
Freeway	Lower ozone	1.01(0.89,1.16)	0.53	0.94(0.82,1.09)	0.54	1.23(0.95,1.57)	0.41	0.59
	Higher ozone	1.09(0.90,1.32)		1.03(0.84,1.26)		1.52(1.06,2.19)		
Non-freeway	Lower ozone	1.22(1.05,1.43)	0.35	1.17(1.00,1.37)	0.63	1.55(1.19,2.02)	0.31	0.65
	Higher ozone	1.09(0.91,1.32)		1.10(0.91,1.34)		1.30(0.90,1.89)		
Total	Lower ozone	1.06(0.92,1.22)	0.64	0.96(0.83,1.12)	0.37	1.27(0.99,1.64)	0.57	0.71
	Higher ozone	1.12(0.92,1.37)		1.05(0.85,1.30)		1.53(1.05,2.21)		

^a The lower ozone communities were: AN, AT, GL, LB, LM, SA, SM, UP. The higher ozone communities were: AL, LA, LE, LN, ML, RV, SD, SE. # Models adjusted for gender, ethnicity, age, community, and cohort. Odd ratios and corresponding 95% confidence intervals scaled to a 2 standard deviation increase in exposure across all 3 cohorts (37.1 ppb for freeway NRAP, 11.2 ppb for non-

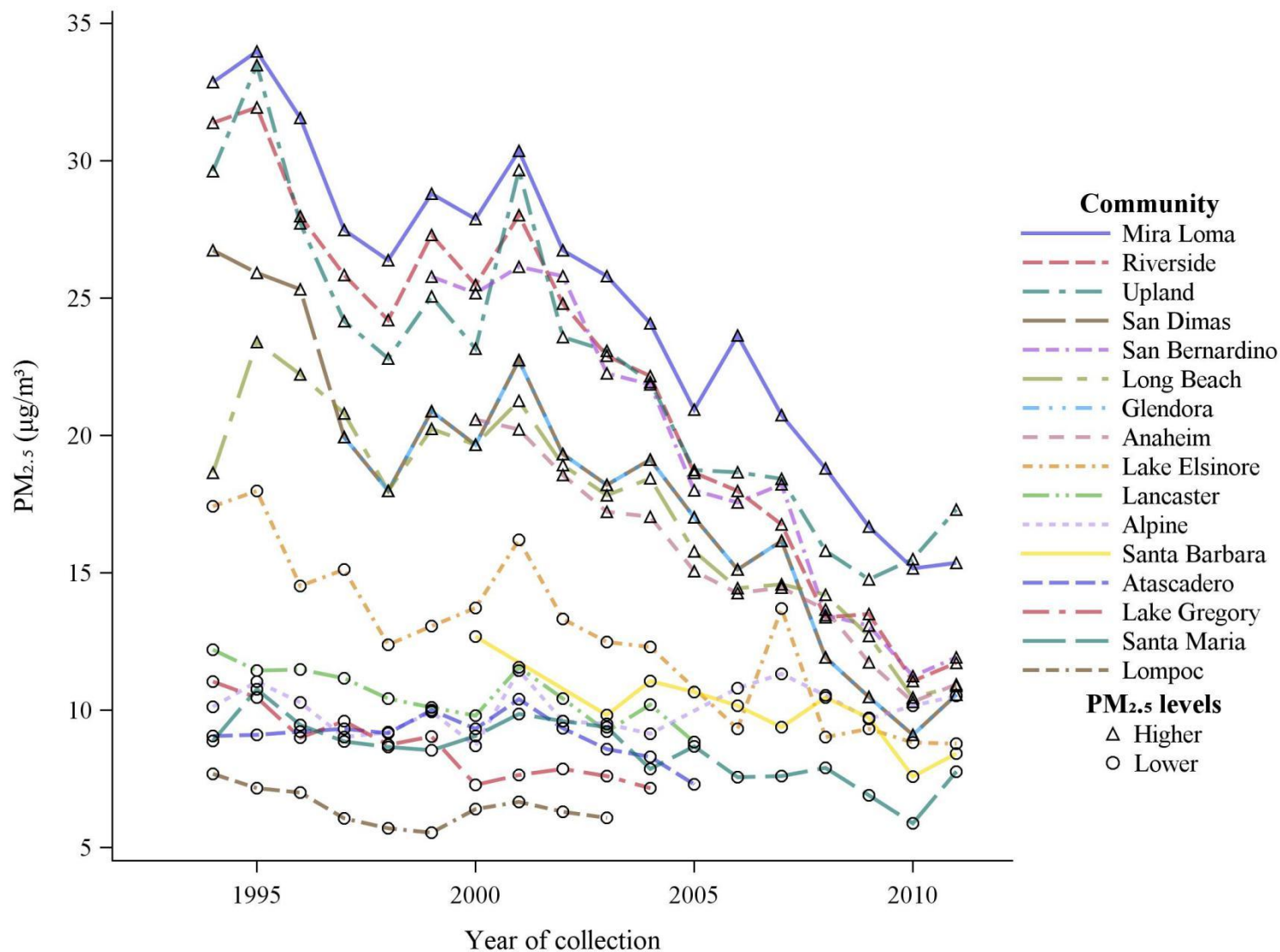
freeway NRAP, and 42.3 ppb for total NRAP, as reported in Table 2). ¶ 3-way interactions p-values are between asthma status, higher/lower regional ozone, and sources of NRAP.

eTable 4: Sensitivity analyses among all participants

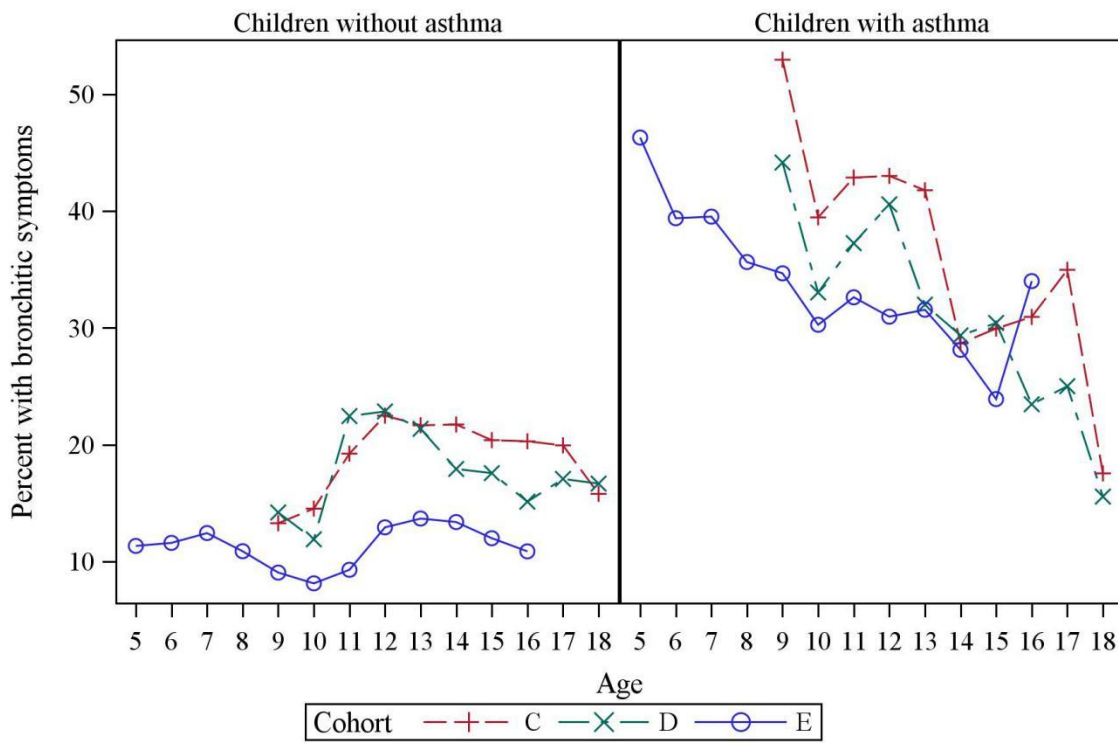
Model	Children without asthma	Children with asthma
	OR (95% CI) [#]	OR (95% CI) [#]
NRAP from freeways (M1-same as in Table 2)	0.97(0.87,1.09)	1.31(1.06,1.60)
M1 + adjustment for dog at home	0.98(0.87,1.09)	1.28(1.04,1.56)
M1 + adjustment for cat at home	0.98(0.87,1.10)	1.27(1.03,1.55)
M1 + adjustment for roaches at home	0.97(0.87,1.09)	1.31(1.07,1.61)
M1 + adjustment for gas stove at home	0.97(0.87,1.09)	1.31(1.07,1.61)
M1 + adjustment for obesity status	0.97(0.87,1.09)	1.30(1.06,1.60)
M1 + adjustment for overweight status	0.97(0.87,1.09)	1.31(1.07,1.61)
M1 + adjustment for second-hand smoke	0.98(0.87,1.09)	1.30(1.06,1.59)
M1 + adjustment for parental education	0.99(0.88,1.11)	1.26(1.03,1.55)
M1 + adjustment for medication use	0.99(0.89,1.11)	1.25(1.02,1.53)
M1 restricted to participants with last follow-up visit (N=4208)	0.99(0.87,1.14)	1.56(1.23,1.98)
M1 + subjects with single measurements and all subjects who developed asthma after age 10	0.96(0.86,1.07)	1.21(1.03,1.42)
NRAP from non-freeway roads (M2-same as in Table 2)	1.14(1.00,1.29)	1.44(1.17,1.78)
M2 + adjustment for dog at home	1.14(1.01,1.29)	1.42(1.15,1.75)
M2 + adjustment for cat at home	1.14(1.01,1.29)	1.41(1.14,1.74)
M2 + adjustment for roaches at home	1.13(1.00,1.28)	1.43(1.16,1.76)
M2 + adjustment for gas stove at home	1.14(1.00,1.29)	1.44(1.17,1.78)
M2 + adjustment for obesity status	1.14(1.00,1.29)	1.44(1.17,1.78)
M2 + adjustment for overweight status	1.14(1.01,1.29)	1.47(1.19,1.81)
M2 + adjustment for second-hand smoke	1.13(1.00,1.28)	1.45(1.18,1.79)
M2 + adjustment for parental education	1.15(1.02,1.31)	1.39(1.13,1.72)
M2 + adjustment for medication use	1.15(1.02,1.30)	1.36(1.10,1.67)
M2 restricted to participants with last follow-up visit (N=4208)	1.13(0.95,1.35)	1.66(1.27,2.16)
M2 + subjects with single measurements and all subjects who developed asthma after age 10	1.16(1.03,1.31)	1.21(1.03,1.42)

[#] Models adjusted for gender, ethnicity, age, community, and cohort. Odd ratios scaled and corresponding 95% confidence intervals are for the effect of NRAP and are scaled to a 2 standard deviation increase in exposure across all 3 cohorts (37.1 ppb for freeway NRAP, 11.2 ppb for non-freeway NRAP, and 42.3 ppb for total NRAP, as reported in Table 2). Additional adjustments included as a main effect along with a multiplicative interaction with asthma status.

eFigure 1: Annual mean concentrations of PM_{2.5} by community classified into lower and higher levels by dichotomizing the median observed concentrations across all available years



eFigure 2: Distribution of bronchitic symptoms by age, asthma status, and cohort[#]



[#] We restricted the age range in this plot to avoid unstable estimates due to small sample sizes.