Supplementary Material

Additional Information on Land Use Regression Methods

Nitrogen oxides, PM2.5 and particle absorbance (black carbon) were measured for two 14-day measurement periods during the spring and fall. $PM_{2.5}$ and particle absorbance (black carbon) were measured once at a subset of these sites (25 and 39 respectively). Fifty-five geographic information system (GIS) variables were available for predictive modeling, including road density, population density, elevation, and type of land use. To incorporate seasonal trends in each LUR model, the corresponding monitoring network data for each pollutant were fit with monthly dummy variables and a covariate for linear trend (Times Series Forecasting System, version 9; SAS Institute Inc., Cary, NC, USA). The resulting models are high-resolution (10 meters) maps of NO, NO_2, $PM_{2.5}$ and black carbon.

Additional Information on Modeling Spatial Distribution of Wood Smoke

Measurements of $PM_{2.5}$ and levoglucosan (a marker for wood smoke) were collected over two weeks at seven fixed-site monitors and particle light scattering was measured on 19 cold, clear winter evenings, during which a vehicle equipped with GPS receiver and a nephelometer travelled a pre-determined route in the region. Sampling locations and route were selected to maximize variability in woodsmoke levels (as predicted by survey, census and property assessment data).

Supplementary Material, Table 1 Pearson Correlations between in utero and first year exposures.

Pollutant	Pearson Correlations Between In Utero and First Year Exposure	
	Nearest Monitor Measurements (Inverse Distance Weighed)	Land Use Regression Model
NO	0.81255	0.64705
NO_2	0.88341	0.52541
CO	0.76089	--
O_3	0.73983	--
PM_{10}	0.47645	--
$PM_{2.5}$	0.40176	0.75866
Absorbance	--	0.41137
SO_2	0.85902	--

Supplementary Material, Table 2 Unadjusted and adjusted odds ratios for asthma risk due to average exposures during pregnancy and the first year of life for land use regression and IDW exposure metrics.

		In utero Exposure		First year exposure	
Pollutant - Method	Exposure Interval	Unadjusted (95% CI[b])	Adjusted[a] (95% CI[b])	Unadjusted (95% CI[b])	Adjusted[a] (95% CI[b])
NO - IDW[b]	10 µg/m^3	1·05 (1·01-1·10)	1·07 (1·03-1·12)	1·07 (1·03-1·10)	1·08 (1·04-1·12)
NO – LUR[c]	10 µg/m^3	1·04 (1·01-1·08)	1·05 (1·02-1·09)	1·03 (1·00-1·06)	1·03 (1·00-1·07)
NO_2 – IDW[b]	10 µg/m^3	1·09 (1·04-1·13)	1·10 (1·05-1·15)	1·11 (1·07-1·16)	1·12 (1·07-1·17)
NO_2 – LUR[c]	10 µg/m^3	1·01 (0·96-1·06)	1·02 (0·97-1·07)	1·12 (1·04-1·21)	1·13 (1·04-1·23)
CO – IDW[b]	100 µg/m^3	1·04 (1·01-1·07)	1·07 (1·04-1·10)	1·07 (1·04-1·10)	1·10 (1·06-1·13)
O_3 – IDW[b]	10 µg/m^3	0·86 (0·80-0·92)	0·83 (0·77-0·89)	0·83 (0·77-0·90)	0·81 (0·74-0·87)
PM_{10} – IDW[b]	1 µg/m^3	1·09 (1·05-1·13)	1·09 (1·05-1·13)	1·07 (1·03-1·12)	1·07 (1·03-1·12)
$PM_{2.5}$ – IDW[b]	1 µg/m^3	0·95 (0·90-1·00)	0·95 (0·91-1·00)	1·02 (0·95-1·11)	1·05 (0·97-1·14)
$PM_{2.5}$ – LUR[c]	1 µg/m^3	1·02 (1·00-1·03)	1·02 (1·00-1·03)	1·01 (1·00-1·03)	1·01 (0·99-1·03)
Black carbon[e]-LUR[c]	10^{-5}/m increase in filter absorbance	1·06 (1·00-1·13)	1·08 (1·02-1·15)	1·21 (1·08-1·36)	1·14 (1·01-1·29)
SO_2 – IDW[b]	1 µg/m^3	1·02 (1·01-1·04)	1·03 (1·02-1·05)	1·02 (1·01-1·04)	1·03 (1·02-1·05)
Point source index (r=10km)	30 points	1.14 (1.07-1.21)	1.11 (1.04-1.18)	1.13 (1.07-1.20)	1.10 (1.04-1.17)
Wood smoke	10 burn days	1.01 (0.99-1.02)	1.00 (0.98-1.01)	1.01 (1.00-1.02)	1.00 (0.99-1.01)
Road proximity	0/1	1.06 (0.90-1.25)	0.97 (0.82-1.15)	1.03 (0.85-1.24)	1.01 (0.84-1.22)

a Adjusted for parity, breastfeeding, income quintile and maternal education status (neighbourhood level), birth weight and gestational length

b 95% Confidence Interval

c Inverse Distance Weighted

d Land Use Regression

e Odds ratio for a 10^{-5}/m increase in filter absorbance

Supplementary Material, Table 3 Sex stratified and adjusted odds ratios for asthma risk due to average exposures during pregnancy and the first year of life.

Pollutant (exposure interval)	In utero Exposure Adjusted[a] OR (95% CI[b])		First year exposure Adjusted OR[a] (95% CI[b])	
	Girls	Boys	Girls	Boys
NO - IDW[c] (10 µg/m^3)	1·11 (1·04-1·19)	1·06 (1·00-1·11)	1·13 (1·06-1·20)	1·05 (1·00-1·10)
NO – LUR[d] (10 µg/m^3)	1·06 (1·00 -1·12)	1·05 (1·01-1·09)	1·07 (1·02-1·14)	1·01 (0·97-1·05)
NO_2 – IDW[c] (10 µg/m^3)	1·13 (1·05-1·22)	1·08 (1·02-1·15)	1·17 (1·09-1·26)	1·09 (1·03-1·16)
NO_2 – LUR[d] (10 µg/m^3)	1·04 (0·96-1·14)	1·00 (0·94-1·06)	1·24 (1·08-1·42)	1·07 (0·96-1·19)
CO – IDW[c] (100 µg/m^3)	1·11 (1·05-1·17)	1·04 (1·00-1·09)	1·12 (1·07-1·18)	1·08 (1·04-1·12)
O_3 – IDW[c] (10 µg/m^3)	0·79 (0·70-0·89)	0·86 (0·78-0·94)	0·74 (0·64-0·84)	0·84 (0·76-0·94)
PM_{10} – IDW[c] (1 µg/m^3)	1·08 (1·02-1·15)	1·10 (1·05-1·15)	1·10 (1·02-1·18)	1·05 (1·00-1·11)
$PM_{2.5}$ – IDW[c] (1 µg/m^3)	0·98 (0·91-1·05)	0·94 (0·88-1·00)	1·10 (0·96-1·26)	1·02 (0·92-1·13)
$PM_{2.5}$ – LUR[d] (1 µg/m^3)	1·03 (1·00-1·06)	1·01 (0·99-1·03)	1·03 (1·00-1·06)	1·00 (0·98-1·02)
Black carbon[e] – LUR[d]	1·14 (1·03-1·26)	1·05 (0·97-1·14)	1·28 (1·05-1·56)	1·07 (0·92-1·24)
SO_2 – IDW[c] (1 µg/m^3)	1·05 (1·02-1·08)	1·03 (1·01-1·05)	1·05 (1·03-1·08)	1·02 (1·00-1·04)
Point source index (r=10km) (30 points – Interquartile range)	1.15 (1.04-1.27)	1.09 (1.01-1.17)	1.15 (1.04-1.27)	1.07 (1.00-1.16)
Wood smoke (10 burn days)	1.00 (0.97-1.02)	1.00 (0.98-1.01)	1.00 (0.98-1.01)	1.01 (0.99-1.02)
Road proximity (0/1)	0.83 (0.641.08)	1.07 (0.87-1.33)	0.94 (0.69-1.27)	1.06 (0.83-1.35)

a Adjusted for parity, breastfeeding, income quintile and maternal education quartile (neighbourhood level), birth weight and gestational length

b 95% Confidence Interval

c Inverse Distance Weighted

d Land Use Regression

e Odds ratio for a 10^{-5}/m increase in filter absorbance