

Long-term exposure to airborne metals and risk of cancer in the French cohort Gazel

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## Supplementary tables

**Table S1: Range of the Spearman correlation coefficients yielded by the 5-fold out validation performed to evaluate the robustness of our kriging models in the surveys of 1996, 2000, 2006, and 2011.**

Metal	Correlation coefficients
Al	0.59-0.93
As	0.80-0.91
Ca	0.90-0.98
Cd	0.67-0.91
Cr	0.74-0.94
Cu	0.88-0.97
Fe	0.49-0.84
Hg	0.72-0.96
Na	0.52-0.84
Ni	0.63-0.95
Pb	0.73-0.95
V	0.75-0.90
Zn	0.67-0.96

**Table S2: Principal component analysis: loadings of each PCA component after “oblimin” rotation.**

The two first contributors are highlighted in bold.

	PCA1 (“crustal”)	PCA2 (“anthropogenic”)	PCA3 (“marine”)
Al	<b>0.914</b>	-0.223	0.114
As	0.792	-0.222	0.162
Ca	0.76	<0.1	0.145
Cd	<0.1	<b>0.919</b>	<0.1
Cr	0.818	0.305	<b>-0.259</b>
Cu	0.264	0.467	0.388
Fe	<b>0.913</b>	<0.1	0.167
Na	-0.112	<0.1	<b>-0.864</b>
Ni	0.52	0.54	0.143
Pb	0.159	<b>0.896</b>	<0.1
V	0.867	0.234	-0.103
Zn	-0.379	0.787	0.169

**Table S3: Spearman correlation coefficients between airborne metals, and with PM<sub>2.5</sub>.**

	As	Cd	Cr	Ni	Pb	V	PCA1	PCA2	PCA3	PM <sub>2.5</sub>
As	1	0.07	0.55	0.43	0.14	0.55	0.81	0.01	-0.38	0.06
Cd		1	0.45	0.56	0.83	0.39	0.24	0.92	-0.12	0.46
Cr			1	0.62	0.58	0.70	0.80	0.48	0.30	0.50
Ni				1	0.67	0.74	0.67	-0.34	0.20	0.30
Pb					1	0.54	0.39	0.90	0.04	0.51
V						1	0.49	-0.19	0.16	0.16
PCA1							1	0.27	-0.30	0.20
PCA2								1	-0.09	0.46
PCA3									1	0.20
PM <sub>2.5</sub>										1

**Table S4: Interquartile range for each exposure.**

As	Cd	Cr	Ni	Pb	V	PM <sub>2.5</sub>
$\mu\text{g.g}^{-1}$ of dry moss						$\mu\text{g.m}^{-3}$
0.25	0.10	1.7	1.2	5.2	1.6	5.3

**Table S5: characteristics of the study population in 1996, in n (%) or median [first quartile, third quartile] for continuous and categorical variables, respectively, stratified by the quintile of baseline exposure to PM2.5 in 1996.**

<b>Quintiles of PM2.5 exposure (<math>\mu\text{g}\cdot\text{m}^{-3}</math>) in 1996</b>	<b>[5.89,22.9]</b>	<b>[22.90,25.3]</b>	<b>[25.28,27.3]</b>	<b>[27.26,29.9]</b>	<b>[29.92,40.9]</b>
	2374	2333	2346	2351	2351
<b>Follow-up time since 1996 (years)</b>	28.00 [27.25, 28.00]	28.00 [27.67, 28.00]	28.00 [27.83, 28.00]	28.00 [28.00, 28.00]	28.00 [28.00, 28.00]
<b>Age in 1996 (years)</b>	44.00 [41.50, 47.00]	43.50 [41.50, 46.50]	43.50 [41.50, 46.50]	43.50 [41.50, 46.50]	43.50 [41.50, 46.00]
<b>Sex (men)</b>	1881 (79.2)	1820 (78.0)	1863 (79.4)	1806 (76.8)	1772 (75.4)
<b>Smoking status</b>					
Never smoker	894 (37.7)	946 (40.5)	979 (41.7)	1029 (43.8)	1051 (44.7)
Former smoker	388 (16.3)	427 (18.3)	482 (20.5)	477 (20.3)	471 (20.0)
Current smoker	316 (13.3)	319 (13.7)	286 (12.2)	330 (14.0)	326 (13.9)
Missing	776 (32.7)	641 (27.5)	599 (25.5)	515 (21.9)	503 (21.4)
<b>Passive smoking</b>					
No	737 (31.0)	791 (33.9)	775 (33.0)	812 (34.5)	862 (36.7)
Yes	754 (31.8)	795 (34.1)	883 (37.6)	918 (39.0)	918 (39.0)
Missing	883 (37.2)	747 (32.0)	688 (29.3)	621 (26.4)	571 (24.3)
<b>Education</b>					
9-11 years	1930 (81.3)	1830 (78.4)	1822 (77.7)	1801 (76.6)	1783 (75.8)
12-13 years	160 (6.7)	167 (7.2)	180 (7.7)	140 (6.0)	149 (6.3)
14-15 years	99 (4.2)	115 (4.9)	118 (5.0)	133 (5.7)	141 (6.0)
Other secondary education	97 (4.1)	116 (5.0)	121 (5.2)	174 (7.4)	173 (7.4)
Other diploma	37 (1.6)	52 (2.2)	49 (2.1)	60 (2.6)	53 (2.3)
Missing	51 (2.1)	53 (2.3)	56 (2.4)	43 (1.8)	52 (2.2)
<b>Occupational exposure*</b>					
0	1074 (45.2)	1175 (50.4)	1139 (48.6)	1262 (53.7)	1283 (54.6)
1	306 (12.9)	233 (10.0)	217 (9.2)	219 (9.3)	233 (9.9)
2	323 (13.6)	289 (12.4)	357 (15.2)	332 (14.1)	364 (15.5)
3	671 (28.3)	636 (27.3)	633 (27.0)	538 (22.9)	471 (20.0)
<b>Alcohol use</b>					
Abstinent	664 (28.0)	773 (33.1)	812 (34.6)	875 (37.2)	865 (36.8)
Light drinker	193 (8.1)	203 (8.7)	191 (8.1)	205 (8.7)	194 (8.3)
Moderate drinker	381 (16.0)	369 (15.8)	397 (16.9)	405 (17.2)	412 (17.5)
Heavy drinker	239 (10.1)	231 (9.9)	228 (9.7)	222 (9.4)	239 (10.2)
Unclear pattern	140 (5.9)	135 (5.8)	141 (6.0)	157 (6.7)	162 (6.9)
Missing	757 (31.9)	622 (26.7)	577 (24.6)	487 (20.7)	479 (20.4)
<b>Marital status</b>					
Single	174 (7.3)	167 (7.2)	130 (5.5)	164 (7.0)	196 (8.3)
Not single	1444 (60.8)	1547 (66.3)	1639 (69.9)	1703 (72.4)	1677 (71.3)
Missing	756 (31.8)	619 (26.5)	577 (24.6)	484 (20.6)	478 (20.3)
<b>Socioeconomic status</b>					
Low	610 (25.7)	547 (23.4)	513 (21.9)	444 (18.9)	360 (15.3)
Middle	1414 (59.6)	1430 (61.3)	1413 (60.2)	1409 (59.9)	1450 (61.7)
High	346 (14.6)	354 (15.2)	415 (17.7)	497 (21.1)	541 (23.0)
Missing	4 (0.2)	2 (0.1)	5 (0.2)	1 (0.0)	0 (0.0)
<b>BMI</b>					
20-25	644 (27.1)	717 (30.7)	715 (30.5)	777 (33.0)	773 (32.9)
<20	56 (2.4)	58 (2.5)	48 (2.0)	65 (2.8)	54 (2.3)
25-30	762 (32.1)	765 (32.8)	815 (34.7)	834 (35.5)	844 (35.9)
30-35	111 (4.7)	129 (5.5)	150 (6.4)	154 (6.6)	157 (6.7)
>35	17 (0.7)	15 (0.6)	28 (1.2)	14 (0.6)	23 (1.0)
Missing	784 (33.0)	649 (27.8)	590 (25.1)	507 (21.6)	500 (21.3)
<b>Fruit-vegetable intake</b>					
Never or less than once a week	979 (41.2)	987 (42.3)	1029 (43.9)	1034 (44.0)	1064 (45.3)
Once or twice a week	15 (0.6)	16 (0.7)	8 (0.3)	17 (0.7)	22 (0.9)
More than twice a week, not everyday	153 (6.4)	184 (7.9)	205 (8.7)	190 (8.1)	202 (8.6)
Every day or almost	429 (18.1)	464 (19.9)	482 (20.5)	585 (24.9)	540 (23.0)
Missing	798 (33.6)	682 (29.2)	622 (26.5)	525 (22.3)	523 (22.2)

**Table S6: Numeric values of the sensitivity and stratified associations displayed in Figure 1, Figure 2, Figure S4, Figure S5, and Figure S6.**

**#all-site cancer**

<b>Analysis</b>	<b>Exposure</b>		<b>HR (95%CI)</b>	<b>cases</b>	<b>observations</b>
Main	Cd	per IQR	<b>1.08 (1.03, 1.13)</b>	2401	40271
Main	Cr	per IQR	<b>1.08 (1.03, 1.14)</b>	2401	40271
Main	Ni	per IQR	1.01 (0.95, 1.06)	2401	40271
Main	Pb	per IQR	<b>1.06 (1.02, 1.1)</b>	2401	40271
Main	PCA2	per IQR	<b>1.07 (1.02, 1.13)</b>	2401	40271
Main	PCA3	per IQR	<b>1.19 (1.12, 1.27)</b>	2401	40271
Main	PM	per IQR	<b>1.13 (1.07, 1.2)</b>	2401	40271
Main	As	Q2	<b>1.17 (1.04, 1.31)</b>	2401	40271
Main	As	Q3	<b>1.16 (1.03, 1.3)</b>	2401	40271
Main	As	Q4	1.11 (0.99, 1.25)	2401	40271
Main	V	Q2	1.09 (0.97, 1.22)	2401	40271
Main	V	Q3	1.02 (0.91, 1.15)	2401	40271
Main	V	Q4	0.98 (0.87, 1.1)	2401	40271
Main	PCA1	Q2	1.03 (0.91, 1.15)	2401	40271
Main	PCA1	Q3	<b>1.20 (1.07, 1.34)</b>	2401	40271
Main	PCA1	Q4	1.01 (0.90, 1.14)	2401	40271
Sensitivity-residuals	Cd	per IQR	1.03 (0.98, 1.09)	2401	40271
Sensitivity-residuals	Cr	per IQR	<b>1.07 (1.02, 1.13)</b>	2401	40271
Sensitivity-residuals	Ni	per IQR	0.96 (0.91, 1.02)	2401	40271
Sensitivity-residuals	Pb	per IQR	1.04 (0.99, 1.10)	2401	40271
Sensitivity-residuals	PCA2	per IQR	1.00 (0.95, 1.06)	2401	40271
Sensitivity-residuals	PCA3	per IQR	<b>1.19 (1.12, 1.26)</b>	2401	40271
Sensitivity-residuals	As	Q2	<b>1.17 (1.04, 1.31)</b>	2401	40271
Sensitivity-residuals	As	Q3	<b>1.16 (1.04, 1.31)</b>	2401	40271
Sensitivity-residuals	As	Q4	1.11 (0.99, 1.25)	2401	40271
Sensitivity-residuals	V	Q2	1.07 (0.95, 1.2)	2401	40271
Sensitivity-residuals	V	Q3	0.99 (0.88, 1.11)	2401	40271
Sensitivity-residuals	V	Q4	0.94 (0.83, 1.05)	2401	40271
Sensitivity-residuals	PCA1	Q2	1.05 (0.94, 1.18)	2401	40271
Sensitivity-residuals	PCA1	Q3	<b>1.15 (1.03, 1.29)</b>	2401	40271
Sensitivity-residuals	PCA1	Q4	0.97 (0.86, 1.09)	2401	40271
Sensitivity-address-level	Cd	per IQR	<b>1.1 (1.03, 1.18)</b>	1092	18723
Sensitivity-address-level	Cr	per IQR	1.03 (0.95, 1.1)	1092	18723
Sensitivity-address-level	Ni	per IQR	0.99 (0.92, 1.08)	1092	18723
Sensitivity-address-level	Pb	per IQR	<b>1.08 (1.02, 1.14)</b>	1092	18723
Sensitivity-address-level	PCA2	per IQR	<b>1.1 (1.02, 1.19)</b>	1092	18723
Sensitivity-address-level	PCA3	per IQR	<b>1.2 (1.09, 1.31)</b>	1092	18723
Sensitivity-address-level	PM	per IQR	<b>1.17 (1.07, 1.28)</b>	1092	18723
Sensitivity-address-level	As	Q2	<b>1.31 (1.05, 1.62)</b>	1092	18723
Sensitivity-address-level	As	Q3	1.07 (0.84, 1.36)	1092	18723
Sensitivity-address-level	As	Q4	1.08 (0.85, 1.37)	1092	18723
Sensitivity-address-level	V	Q2	1.12 (0.9, 1.39)	1092	18723
Sensitivity-address-level	V	Q3	0.96 (0.77, 1.19)	1092	18723
Sensitivity-address-level	V	Q4	0.86 (0.67, 1.1)	1092	18723
Sensitivity-address-level	PCA1	Q2	1.15 (0.93, 1.42)	1092	18723
Sensitivity-address-level	PCA1	Q3	0.99 (0.79, 1.24)	1092	18723
Sensitivity-address-level	PCA1	Q4	0.95 (0.75, 1.22)	1092	18723
Sensitivity-adjusted for fdep	Cd	per IQR	<b>1.08 (1.03, 1.13)</b>	2401	40271
Sensitivity-adjusted for fdep	Cr	per IQR	<b>1.08 (1.03, 1.14)</b>	2401	40271
Sensitivity-adjusted for fdep	Ni	per IQR	1 (0.95, 1.06)	2401	40271
Sensitivity-adjusted for fdep	Pb	per IQR	<b>1.06 (1.02, 1.1)</b>	2401	40271
Sensitivity-adjusted for fdep	PCA2	per IQR	<b>1.07 (1.02, 1.13)</b>	2401	40271
Sensitivity-adjusted for fdep	PCA3	per IQR	<b>1.19 (1.11, 1.26)</b>	2401	40271
Sensitivity-adjusted for fdep	PM	per IQR	<b>1.13 (1.07, 1.2)</b>	2401	40271
Sensitivity-adjusted for fdep	As	Q2	<b>1.16 (1.03, 1.3)</b>	2401	40271
Sensitivity-adjusted for fdep	As	Q3	<b>1.15 (1.02, 1.29)</b>	2401	40271
Sensitivity-adjusted for fdep	As	Q4	1.11 (0.99, 1.25)	2401	40271
Sensitivity-adjusted for fdep	V	Q2	1.09 (0.97, 1.22)	2401	40271
Sensitivity-adjusted for fdep	V	Q3	1.02 (0.91, 1.15)	2401	40271

Sensitivity-adjusted for fdep	V	Q4	0.98 (0.87, 1.1)	2401	40271
Sensitivity-adjusted for fdep	PCA1	Q2	1.03 (0.92, 1.15)	2401	40271
Sensitivity-adjusted for fdep	PCA1	Q3	<b>1.19 (1.06, 1.34)</b>	2401	40271
Sensitivity-adjusted for fdep	PCA1	Q4	1.01 (0.9, 1.13)	2401	40271
Sensitivity-complete-cases	Cd	per IQR	<b>1.13 (1.06, 1.2)</b>	1451	23428
Sensitivity-complete-cases	Cr	per IQR	<b>1.1 (1.03, 1.17)</b>	1451	23428
Sensitivity-complete-cases	Ni	per IQR	1.01 (0.94, 1.08)	1451	23428
Sensitivity-complete-cases	Pb	per IQR	<b>1.11 (1.05, 1.16)</b>	1451	23428
Sensitivity-complete-cases	PCA2	per IQR	<b>1.13 (1.05, 1.21)</b>	1451	23428
Sensitivity-complete-cases	PCA3	per IQR	<b>1.2 (1.11, 1.3)</b>	1451	23428
Sensitivity-complete-cases	PM	per IQR	<b>1.2 (1.12, 1.3)</b>	1451	23428
Sensitivity-missing as category	Cd	per IQR	<b>1.07 (1.02, 1.12)</b>	2401	40271
Sensitivity-missing as category	Cr	per IQR	<b>1.09 (1.03, 1.14)</b>	2401	40271
Sensitivity-missing as category	Ni	per IQR	1.01 (0.95, 1.06)	2401	40271
Sensitivity-missing as category	Pb	per IQR	<b>1.06 (1.02, 1.1)</b>	2401	40271
Sensitivity-missing as category	PCA2	per IQR	<b>1.07 (1.01, 1.13)</b>	2401	40271
Sensitivity-missing as category	PCA3	per IQR	<b>1.2 (1.12, 1.27)</b>	2401	40271
Sensitivity-missing as category	PM	per IQR	<b>1.14 (1.07, 1.2)</b>	2401	40271
Stratification-women	Cd	per IQR	1.08 (0.97, 1.2)	378	9112
Stratification-women	Cr	per IQR	1.03 (0.91, 1.17)	378	9112
Stratification-women	Ni	per IQR	0.98 (0.87, 1.12)	378	9112
Stratification-women	Pb	per IQR	1.05 (0.97, 1.14)	378	9112
Stratification-women	PCA2	per IQR	1.05 (0.93, 1.19)	378	9112
Stratification-women	PCA3	per IQR	<b>1.3 (1.12, 1.52)</b>	378	9112
Stratification-women	PM	per IQR	<b>1.19 (1.04, 1.36)</b>	378	9112
Stratification-women	As	Q2	1.1 (0.83, 1.45)	378	9112
Stratification-women	As	Q3	1.14 (0.86, 1.51)	378	9112
Stratification-women	As	Q4	0.93 (0.68, 1.28)	378	9112
Stratification-women	V	Q2	0.75 (0.56, 1.01)	378	9112
Stratification-women	V	Q3	0.92 (0.7, 1.21)	378	9112
Stratification-women	V	Q4	0.79 (0.58, 1.06)	378	9112
Stratification-women	PCA1	Q2	0.94 (0.71, 1.24)	378	9112
Stratification-women	PCA1	Q3	0.99 (0.75, 1.31)	378	9112
Stratification-women	PCA1	Q4	0.83 (0.61, 1.13)	378	9112
Stratification-men	Cd	per IQR	<b>1.07 (1.02, 1.13)</b>	2023	31159
Stratification-men	Cr	per IQR	<b>1.1 (1.04, 1.15)</b>	2023	31159
Stratification-men	Ni	per IQR	1.01 (0.95, 1.07)	2023	31159
Stratification-men	Pb	per IQR	<b>1.07 (1.02, 1.11)</b>	2023	31159
Stratification-men	PCA2	per IQR	<b>1.07 (1.01, 1.14)</b>	2023	31159
Stratification-men	PCA3	per IQR	<b>1.17 (1.09, 1.26)</b>	2023	31159
Stratification-men	PM	per IQR	<b>1.12 (1.05, 1.19)</b>	2023	31159
Stratification-men	As	Q2	<b>1.18 (1.04, 1.34)</b>	2023	31159
Stratification-men	As	Q3	<b>1.16 (1.02, 1.32)</b>	2023	31159
Stratification-men	As	Q4	<b>1.15 (1.01, 1.3)</b>	2023	31159
Stratification-men	V	Q2	<b>1.17 (1.03, 1.32)</b>	2023	31159
Stratification-men	V	Q3	1.04 (0.92, 1.18)	2023	31159
Stratification-men	V	Q4	1.03 (0.91, 1.17)	2023	31159
Stratification-men	PCA1	Q2	1.05 (0.92, 1.19)	2023	31159
Stratification-men	PCA1	Q3	<b>1.24 (1.1, 1.41)</b>	2023	31159
Stratification-men	PCA1	Q4	1.05 (0.93, 1.19)	2023	31159
Stratification-neversmoker	Cd	per IQR	<b>1.09 (1.02, 1.16)</b>	1233	19585
Stratification-neversmoker	Cr	per IQR	1.07 (1, 1.15)	1233	19585
Stratification-neversmoker	Ni	per IQR	1 (0.93, 1.08)	1233	19585
Stratification-neversmoker	Pb	per IQR	<b>1.08 (1.02, 1.14)</b>	1233	19585
Stratification-neversmoker	PCA2	per IQR	<b>1.09 (1.01, 1.18)</b>	1233	19585
Stratification-neversmoker	PCA3	per IQR	<b>1.21 (1.09, 1.35)</b>	1233	19585
Stratification-neversmoker	PM	per IQR	<b>1.14 (1.05, 1.24)</b>	1233	19585
Stratification-neversmoker	As	Q2	1.18 (0.99, 1.41)	1233	19585
Stratification-neversmoker	As	Q3	1.16 (0.96, 1.4)	1233	19585
Stratification-neversmoker	As	Q4	1.07 (0.89, 1.29)	1233	19585
Stratification-neversmoker	V	Q2	1.01 (0.85, 1.2)	1233	19585
Stratification-neversmoker	V	Q3	1.07 (0.91, 1.26)	1233	19585
Stratification-neversmoker	V	Q4	0.98 (0.82, 1.16)	1233	19585
Stratification-neversmoker	PCA1	Q2	0.96 (0.81, 1.15)	1233	19585
Stratification-neversmoker	PCA1	Q3	<b>1.21 (1.01, 1.44)</b>	1233	19585
Stratification-neversmoker	PCA1	Q4	0.98 (0.82, 1.17)	1233	19585

Stratification-eversmoker	Cd	per IQR	1.06 (0.99, 1.13)	1168	20686
Stratification-eversmoker	Cr	per IQR	<b>1.09 (1.01, 1.18)</b>	1168	20686
Stratification-eversmoker	Ni	per IQR	1.01 (0.93, 1.09)	1168	20686
Stratification-eversmoker	Pb	per IQR	1.04 (0.98, 1.1)	1168	20686
Stratification-eversmoker	PCA2	per IQR	1.05 (0.97, 1.14)	1168	20686
Stratification-eversmoker	PCA3	per IQR	<b>1.16 (1.04, 1.29)</b>	1168	20686
Stratification-eversmoker	PM	per IQR	<b>1.11 (1.02, 1.21)</b>	1168	20686
Stratification-eversmoker	As	Q2	1.16 (0.97, 1.4)	1168	20686
Stratification-eversmoker	As	Q3	1.15 (0.95, 1.4)	1168	20686
Stratification-eversmoker	As	Q4	1.16 (0.97, 1.39)	1168	20686
Stratification-eversmoker	V	Q2	1.18 (0.99, 1.39)	1168	20686
Stratification-eversmoker	V	Q3	0.97 (0.82, 1.15)	1168	20686
Stratification-eversmoker	V	Q4	0.99 (0.83, 1.18)	1168	20686
Stratification-eversmoker	PCA1	Q2	1.09 (0.91, 1.31)	1168	20686
Stratification-eversmoker	PCA1	Q3	1.19 (0.99, 1.44)	1168	20686
Stratification-eversmoker	PCA1	Q4	1.04 (0.87, 1.24)	1168	20686
Stratification- major road <1000m	Cd	per IQR	<b>1.13 (1.05, 1.2)</b>	1178	19765
Stratification- major road <1000m	Cr	per IQR	<b>1.11 (1.04, 1.2)</b>	1178	19765
Stratification- major road <1000m	Ni	per IQR	1.07 (0.99, 1.15)	1178	19765
Stratification- major road <1000m	Pb	per IQR	<b>1.08 (1.03, 1.14)</b>	1178	19765
Stratification- major road <1000m	PCA2	per IQR	<b>1.13 (1.05, 1.22)</b>	1178	19765
Stratification- major road <1000m	PCA3	per IQR	<b>1.19 (1.09, 1.3)</b>	1178	19765
Stratification- major road <1000m	PM	per IQR	<b>1.24 (1.14, 1.35)</b>	1178	19765
Stratification- major road <1000m	As	Q2	<b>1.29 (1.09, 1.53)</b>	1178	19765
Stratification- major road <1000m	As	Q3	<b>1.2 (1.01, 1.43)</b>	1178	19765
Stratification- major road <1000m	As	Q4	<b>1.25 (1.05, 1.48)</b>	1178	19765
Stratification- major road <1000m	V	Q2	1.1 (0.92, 1.31)	1178	19765
Stratification- major road <1000m	V	Q3	1.15 (0.97, 1.36)	1178	19765
Stratification- major road <1000m	V	Q4	1.02 (0.86, 1.22)	1178	19765
Stratification- major road <1000m	PCA1	Q2	1.05 (0.89, 1.25)	1178	19765
Stratification- major road <1000m	PCA1	Q3	<b>1.27 (1.07, 1.5)</b>	1178	19765
Stratification- major road <1000m	PCA1	Q4	1.11 (0.94, 1.32)	1178	19765
Stratification- major road >1000m	Cd	per IQR	1.03 (0.96, 1.1)	1199	20190
Stratification- major road >1000m	Cr	per IQR	1.05 (0.98, 1.13)	1199	20190
Stratification- major road >1000m	Ni	per IQR	0.95 (0.88, 1.03)	1199	20190
Stratification- major road >1000m	Pb	per IQR	1.04 (0.98, 1.1)	1199	20190
Stratification- major road >1000m	PCA2	per IQR	1.02 (0.94, 1.1)	1199	20190
Stratification- major road >1000m	PCA3	per IQR	<b>1.18 (1.08, 1.29)</b>	1199	20190
Stratification- major road >1000m	PM	per IQR	1.07 (0.99, 1.15)	1199	20190
Stratification- major road >1000m	As	Q2	1.06 (0.9, 1.25)	1199	20190
Stratification- major road >1000m	As	Q3	1.11 (0.95, 1.31)	1199	20190
Stratification- major road >1000m	As	Q4	1.01 (0.86, 1.18)	1199	20190
Stratification- major road >1000m	V	Q2	1.08 (0.92, 1.26)	1199	20190
Stratification- major road >1000m	V	Q3	0.91 (0.77, 1.07)	1199	20190
Stratification- major road >1000m	V	Q4	0.94 (0.8, 1.11)	1199	20190
Stratification- major road >1000m	PCA1	Q2	1.02 (0.87, 1.19)	1199	20190
Stratification- major road >1000m	PCA1	Q3	1.15 (0.98, 1.35)	1199	20190
Stratification- major road >1000m	PCA1	Q4	0.92 (0.78, 1.08)	1199	20190
Sensitivity-no occupational exposure	Cd	per IQR	<b>1.08 (1.02, 1.16)</b>	1143	20288
Sensitivity-no occupational exposure	Cr	per IQR	1.07 (0.99, 1.15)	1143	20288
Sensitivity-no occupational exposure	Ni	per IQR	1.01 (0.94, 1.09)	1143	20288
Sensitivity-no occupational exposure	Pb	per IQR	<b>1.07 (1.02, 1.12)</b>	1143	20288
Sensitivity-no occupational exposure	PCA2	per IQR	<b>1.08 (1.01, 1.17)</b>	1143	20288
Sensitivity-no occupational exposure	PCA3	per IQR	<b>1.19 (1.09, 1.31)</b>	1143	20288
Sensitivity-no occupational exposure	PM	per IQR	<b>1.13 (1.05, 1.23)</b>	1143	20288
Sensitivity-no occupational exposure	As	Q2	<b>1.19 (1.00, 1.40)</b>	1143	20288
Sensitivity-no occupational exposure	As	Q3	1.18 (1.00, 1.39)	1143	20288
Sensitivity-no occupational exposure	As	Q4	1.07 (0.90, 1.28)	1143	20288
Sensitivity-no occupational exposure	PCA1	Q2	0.99 (0.84, 1.17)	1143	20288
Sensitivity-no occupational exposure	PCA1	Q3	1.16 (0.98, 1.36)	1143	20288
Sensitivity-no occupational exposure	PCA1	Q4	0.93 (0.78, 1.11)	1143	20288
Sensitivity-no occupational exposure	V	Q2	1.01 (0.86, 1.20)	1143	20288
Sensitivity-no occupational exposure	V	Q3	1.01 (0.86, 1.19)	1143	20288
Sensitivity-no occupational exposure	V	Q4	0.90 (0.75, 1.07)	1143	20288



## #bladder cancer

Analysis	Exposure		HR (95%CI)	cases	observations
Main	Cd	per IQR	1.08 (0.92, 1.26)	220	43936
Main	Cr	per IQR	<b>1.2 (1.03, 1.4)</b>	220	43936
Main	Ni	per IQR	1.08 (0.91, 1.29)	220	43936
Main	Pb	per IQR	1.03 (0.9, 1.18)	220	43936
Main	PCA2	per IQR	1.08 (0.91, 1.29)	220	43936
Main	PCA3	per IQR	1.03 (0.84, 1.28)	220	43936
Main	PM	per IQR	0.97 (0.8, 1.16)	220	43936
Main	As	Q2	<b>1.64 (1.07, 2.51)</b>	220	43936
Main	As	Q3	<b>1.89 (1.26, 2.85)</b>	220	43936
Main	As	Q4	<b>1.69 (1.12, 2.55)</b>	220	43936
Main	V	Q2	<b>1.67 (1.11, 2.51)</b>	220	43936
Main	V	Q3	1.31 (0.85, 2)	220	43936
Main	V	Q4	<b>1.62 (1.09, 2.42)</b>	220	43936
Main	PCA1	Q2	1.18 (0.77, 1.79)	220	43936
Main	PCA1	Q3	<b>1.66 (1.11, 2.47)</b>	220	43936
Main	PCA1	Q4	<b>1.56 (1.06, 2.3)</b>	220	43936
Sensitivity-residuals	Cd	per IQR	1.13 (0.94, 1.35)	220	43936
Sensitivity-residuals	Cr	per IQR	<b>1.32 (1.12, 1.57)</b>	220	43936
Sensitivity-residuals	Ni	per IQR	1.09 (0.91, 1.3)	220	43936
Sensitivity-residuals	Pb	per IQR	1.13 (0.93, 1.36)	220	43936
Sensitivity-residuals	PCA2	per IQR	1.09 (0.92, 1.3)	220	43936
Sensitivity-residuals	PCA3	per IQR	1.1 (0.9, 1.34)	220	43936
Sensitivity-residuals	PM	per IQR	1.15 (0.98, 1.35)	220	43936
Sensitivity-residuals	As	Q2	<b>1.59 (1.04, 2.44)</b>	220	43936
Sensitivity-residuals	As	Q3	<b>1.85 (1.23, 2.79)</b>	220	43936
Sensitivity-residuals	As	Q4	<b>1.67 (1.11, 2.52)</b>	220	43936
Sensitivity-residuals	V	Q2	<b>1.74 (1.15, 2.63)</b>	220	43936
Sensitivity-residuals	V	Q3	1.28 (0.83, 1.96)	220	43936
Sensitivity-residuals	V	Q4	<b>1.61 (1.08, 2.42)</b>	220	43936
Sensitivity-residuals	PCA1	Q2	1.37 (0.9, 2.07)	220	43936
Sensitivity-residuals	PCA1	Q3	1.43 (0.95, 2.15)	220	43936
Sensitivity-residuals	PCA1	Q4	<b>1.66 (1.12, 2.44)</b>	220	43936
Sensitivity-address-level	Cd	per IQR	1.2 (0.96, 1.52)	94	20559
Sensitivity-address-level	Cr	per IQR	1 (0.77, 1.3)	94	20559
Sensitivity-address-level	Ni	per IQR	1.11 (0.84, 1.46)	94	20559
Sensitivity-address-level	Pb	per IQR	1.09 (0.89, 1.33)	94	20559
Sensitivity-address-level	PCA2	per IQR	1.19 (0.91, 1.56)	94	20559
Sensitivity-address-level	PCA3	per IQR	0.86 (0.6, 1.22)	94	20559
Sensitivity-address-level	PM	per IQR	1.28 (0.94, 1.74)	94	20559
Sensitivity-address-level	As	Q2	1.37 (0.67, 2.8)	94	20559
Sensitivity-address-level	As	Q3	1.56 (0.74, 3.27)	94	20559
Sensitivity-address-level	As	Q4	0.77 (0.34, 1.79)	94	20559
Sensitivity-address-level	V	Q2	1.29 (0.65, 2.59)	94	20559
Sensitivity-address-level	V	Q3	0.86 (0.41, 1.8)	94	20559
Sensitivity-address-level	V	Q4	0.89 (0.4, 2)	94	20559
Sensitivity-address-level	PCA1	Q2	1.37 (0.68, 2.76)	94	20559
Sensitivity-address-level	PCA1	Q3	1.1 (0.51, 2.38)	94	20559
Sensitivity-address-level	PCA1	Q4	1.02 (0.46, 2.27)	94	20559
Sensitivity-adjusted for fdep	Cd	per IQR	1.09 (0.93, 1.28)	220	43936
Sensitivity-adjusted for fdep	Cr	per IQR	<b>1.2 (1.03, 1.4)</b>	220	43936
Sensitivity-adjusted for fdep	Ni	per IQR	1.09 (0.91, 1.29)	220	43936
Sensitivity-adjusted for fdep	Pb	per IQR	1.04 (0.91, 1.19)	220	43936
Sensitivity-adjusted for fdep	PCA2	per IQR	1.09 (0.91, 1.31)	220	43936
Sensitivity-adjusted for fdep	PCA3	per IQR	1.03 (0.83, 1.27)	220	43936
Sensitivity-adjusted for fdep	PM	per IQR	0.97 (0.81, 1.17)	220	43936
Sensitivity-adjusted for fdep	As	Q2	<b>1.61 (1.05, 2.46)</b>	220	43936
Sensitivity-adjusted for fdep	As	Q3	<b>1.87 (1.24, 2.82)</b>	220	43936
Sensitivity-adjusted for fdep	As	Q4	<b>1.66 (1.1, 2.51)</b>	220	43936
Sensitivity-adjusted for fdep	V	Q2	<b>1.67 (1.11, 2.5)</b>	220	43936
Sensitivity-adjusted for fdep	V	Q3	1.29 (0.84, 1.96)	220	43936
Sensitivity-adjusted for fdep	V	Q4	<b>1.61 (1.08, 2.39)</b>	220	43936

Sensitivity-adjusted for fdep	PCA1	Q2	1.15 (0.76, 1.75)	220	43936
Sensitivity-adjusted for fdep	PCA1	Q3	<b>1.61 (1.09, 2.4)</b>	220	43936
Sensitivity-adjusted for fdep	PCA1	Q4	<b>1.51 (1.03, 2.23)</b>	220	43936
Sensitivity-complete-cases	Cd	per IQR	<b>1.26 (1.04, 1.54)</b>	128	25800
Sensitivity-complete-cases	Cr	per IQR	1.12 (0.91, 1.38)	128	25800
Sensitivity-complete-cases	Ni	per IQR	1.08 (0.86, 1.36)	128	25800
Sensitivity-complete-cases	Pb	per IQR	<b>1.19 (1.02, 1.4)</b>	128	25800
Sensitivity-complete-cases	PCA2	per IQR	<b>1.27 (1.01, 1.6)</b>	128	25800
Sensitivity-complete-cases	PCA3	per IQR	0.94 (0.71, 1.25)	128	25800
Sensitivity-complete-cases	PM	per IQR	0.98 (0.76, 1.26)	128	25800
Sensitivity-missing as category	Cd	per IQR	1.08 (0.92, 1.26)	220	43936
Sensitivity-missing as category	Cr	per IQR	<b>1.2 (1.03, 1.4)</b>	220	43936
Sensitivity-missing as category	Ni	per IQR	1.08 (0.91, 1.29)	220	43936
Sensitivity-missing as category	Pb	per IQR	1.03 (0.9, 1.18)	220	43936
Sensitivity-missing as category	PCA2	per IQR	1.09 (0.91, 1.3)	220	43936
Sensitivity-missing as category	PCA3	per IQR	1.03 (0.84, 1.28)	220	43936
Sensitivity-missing as category	PM	per IQR	0.97 (0.81, 1.17)	220	43936
Sensitivity-no occupational exposure	Cd	per IQR	1.2 (0.94, 1.52)	78	22219
Sensitivity-no occupational exposure	Cr	per IQR	1.22 (0.92, 1.61)	78	22219
Sensitivity-no occupational exposure	Ni	per IQR	1.29 (0.97, 1.7)	78	22219
Sensitivity-no occupational exposure	Pb	per IQR	1.2 (1, 1.43)	78	22219
Sensitivity-no occupational exposure	PCA2	per IQR	1.26 (0.95, 1.67)	78	22219
Sensitivity-no occupational exposure	PCA3	per IQR	1.28 (0.92, 1.79)	78	22219
Sensitivity-no occupational exposure	PM	per IQR	1.11 (0.81, 1.51)	78	22219
Sensitivity-no occupational exposure	As	Q2	1.74 (0.8, 3.77)	78	22219
Sensitivity-no occupational exposure	As	Q3	<b>3.07 (1.51, 6.23)</b>	78	22219
Sensitivity-no occupational exposure	As	Q4	1.54 (0.7, 3.41)	78	22219
Sensitivity-no occupational exposure	PCA1	Q2	1.02 (0.48, 2.16)	78	22219
Sensitivity-no occupational exposure	PCA1	Q3	<b>2.28 (1.19, 4.39)</b>	78	22219
Sensitivity-no occupational exposure	PCA1	Q4	1.44 (0.71, 2.94)	78	22219
Sensitivity-no occupational exposure	V	Q2	<b>2.22 (1.03, 4.76)</b>	78	22219
Sensitivity-no occupational exposure	V	Q3	1.89 (0.85, 4.17)	78	22219
Sensitivity-no occupational exposure	V	Q4	<b>2.35 (1.09, 5.07)</b>	78	22219

## #lung cancer

Analysis	Exposure		HR (95%CI)	cases	observations
Main	Cd	per IQR	1.02 (0.87, 1.19)	232	43685
Main	Cr	per IQR	1.04 (0.89, 1.23)	232	43685
Main	Ni	per IQR	1 (0.84, 1.19)	232	43685
Main	Pb	per IQR	0.97 (0.84, 1.11)	232	43685
Main	PCA2	per IQR	1.01 (0.84, 1.2)	232	43685
Main	PCA3	per IQR	1 (0.81, 1.23)	232	43685
Main	PM	per IQR	0.91 (0.76, 1.1)	236	44416
Main	As	Q2	0.98 (0.67, 1.44)	232	43685
Main	As	Q3	1.37 (0.95, 1.96)	232	43685
Main	As	Q4	1.13 (0.78, 1.62)	232	43685
Main	V	Q2	1.12 (0.77, 1.62)	232	43685
Main	V	Q3	1.03 (0.71, 1.49)	232	43685
Main	V	Q4	1.02 (0.71, 1.48)	232	43685
Main	PCA1	Q2	1.15 (0.78, 1.69)	232	43685
Main	PCA1	Q3	<b>1.61 (1.11, 2.34)</b>	232	43685
Main	PCA1	Q4	1.21 (0.83, 1.76)	232	43685
Sensitivity-residuals	Cd	per IQR	1.09 (0.92, 1.3)	232	43685
Sensitivity-residuals	Cr	per IQR	1.18 (0.99, 1.4)	232	43685
Sensitivity-residuals	Ni	per IQR	1 (0.84, 1.19)	232	43685
Sensitivity-residuals	Pb	per IQR	1.03 (0.86, 1.24)	232	43685
Sensitivity-residuals	PCA2	per IQR	1.03 (0.87, 1.23)	232	43685
Sensitivity-residuals	PCA3	per IQR	1.09 (0.91, 1.32)	232	43685
Sensitivity-residuals	As	Q2	1.02 (0.69, 1.5)	232	43685
Sensitivity-residuals	As	Q3	1.42 (0.99, 2.03)	232	43685
Sensitivity-residuals	As	Q4	1.11 (0.77, 1.6)	232	43685
Sensitivity-residuals	V	Q2	0.93 (0.63, 1.37)	232	43685
Sensitivity-residuals	V	Q3	1.04 (0.72, 1.5)	232	43685
Sensitivity-residuals	V	Q4	0.99 (0.68, 1.42)	232	43685
Sensitivity-residuals	PCA1	Q2	1.11 (0.75, 1.64)	232	43685
Sensitivity-residuals	PCA1	Q3	<b>1.57 (1.09, 2.27)</b>	232	43685
Sensitivity-residuals	PCA1	Q4	1.06 (0.73, 1.56)	232	43685
Sensitivity-address-level	Cd	per IQR	0.96 (0.72, 1.28)	83	20411
Sensitivity-address-level	Cr	per IQR	1.05 (0.81, 1.38)	83	20411
Sensitivity-address-level	Ni	per IQR	0.96 (0.71, 1.29)	83	20411
Sensitivity-address-level	Pb	per IQR	0.85 (0.65, 1.11)	83	20411
Sensitivity-address-level	PCA2	per IQR	0.96 (0.71, 1.3)	83	20411
Sensitivity-address-level	PCA3	per IQR	0.89 (0.61, 1.29)	83	20411
Sensitivity-address-level	PM	per IQR	1.1 (0.79, 1.54)	83	20411
Sensitivity-address-level	As	Q2	1.34 (0.58, 3.06)	83	20411
Sensitivity-address-level	As	Q3	1.13 (0.45, 2.8)	83	20411
Sensitivity-address-level	As	Q4	1.23 (0.52, 2.87)	83	20411
Sensitivity-address-level	V	Q2	0.97 (0.44, 2.14)	83	20411
Sensitivity-address-level	V	Q3	0.69 (0.3, 1.59)	83	20411
Sensitivity-address-level	V	Q4	0.64 (0.25, 1.63)	83	20411
Sensitivity-address-level	PCA1	Q2	1.14 (0.5, 2.61)	83	20411
Sensitivity-address-level	PCA1	Q3	1 (0.42, 2.4)	83	20411
Sensitivity-address-level	PCA1	Q4	0.95 (0.39, 2.33)	83	20411
Sensitivity-adjusted for fdep	Cd	per IQR	1.01 (0.86, 1.19)	232	43685
Sensitivity-adjusted for fdep	Cr	per IQR	1.05 (0.89, 1.23)	232	43685
Sensitivity-adjusted for fdep	Ni	per IQR	1.01 (0.85, 1.2)	232	43685
Sensitivity-adjusted for fdep	Pb	per IQR	0.97 (0.85, 1.12)	232	43685
Sensitivity-adjusted for fdep	PCA2	per IQR	1.01 (0.84, 1.21)	232	43685
Sensitivity-adjusted for fdep	PCA3	per IQR	0.99 (0.8, 1.22)	232	43685
Sensitivity-adjusted for fdep	PM	per IQR	0.91 (0.76, 1.09)	232	43685
Sensitivity-adjusted for fdep	As	Q2	1 (0.68, 1.48)	232	43685
Sensitivity-adjusted for fdep	As	Q3	1.39 (0.97, 1.99)	232	43685
Sensitivity-adjusted for fdep	As	Q4	1.15 (0.79, 1.65)	232	43685
Sensitivity-adjusted for fdep	V	Q2	1.13 (0.78, 1.64)	232	43685
Sensitivity-adjusted for fdep	V	Q3	1.05 (0.72, 1.52)	232	43685
Sensitivity-adjusted for fdep	V	Q4	1.05 (0.72, 1.52)	232	43685
Sensitivity-adjusted for fdep	PCA1	Q2	1.15 (0.78, 1.69)	232	43685
Sensitivity-adjusted for fdep	PCA1	Q3	<b>1.63 (1.12, 2.37)</b>	232	43685
Sensitivity-adjusted for fdep	PCA1	Q4	1.23 (0.84, 1.8)	232	43685

Sensitivity-complete-cases	Cd	per IQR	0.99 (0.79, 1.25)	121	25615
Sensitivity-complete-cases	Cr	per IQR	1.01 (0.8, 1.27)	121	25615
Sensitivity-complete-cases	Ni	per IQR	0.98 (0.77, 1.25)	121	25615
Sensitivity-complete-cases	Pb	per IQR	0.92 (0.75, 1.13)	121	25615
Sensitivity-complete-cases	PCA2	per IQR	0.96 (0.74, 1.23)	121	25615
Sensitivity-complete-cases	PCA3	per IQR	0.93 (0.69, 1.25)	121	25615
Sensitivity-complete-cases	PM	per IQR	0.96 (0.74, 1.25)	123	26042
Sensitivity-missing as category	Cd	per IQR	1.02 (0.87, 1.19)	232	43685
Sensitivity-missing as category	Cr	per IQR	1.05 (0.89, 1.24)	232	43685
Sensitivity-missing as category	Ni	per IQR	1 (0.84, 1.19)	232	43685
Sensitivity-missing as category	Pb	per IQR	0.97 (0.84, 1.11)	232	43685
Sensitivity-missing as category	PCA2	per IQR	1.01 (0.84, 1.2)	232	43685
Sensitivity-missing as category	PCA3	per IQR	1 (0.81, 1.23)	232	43685
Sensitivity-missing as category	PM	per IQR	0.94 (0.78, 1.13)	236	44416
Sensitivity-no occupational exposure	Cd	per IQR	1.02 (0.81, 1.28)	98	22044
Sensitivity-no occupational exposure	Cr	per IQR	1 (0.76, 1.32)	98	22044
Sensitivity-no occupational exposure	Ni	per IQR	1.01 (0.77, 1.32)	98	22044
Sensitivity-no occupational exposure	Pb	per IQR	0.94 (0.77, 1.16)	98	22044
Sensitivity-no occupational exposure	PCA2	per IQR	1 (0.77, 1.3)	98	22044
Sensitivity-no occupational exposure	PCA3	per IQR	0.84 (0.6, 1.18)	98	22044
Sensitivity-no occupational exposure	PM	per IQR	0.77 (0.58, 1.04)	98	22044
Sensitivity-no occupational exposure	As	Q2	1.08 (0.59, 1.99)	98	22044
Sensitivity-no occupational exposure	As	Q3	1.72 (0.99, 2.98)	98	22044
Sensitivity-no occupational exposure	As	Q4	1.06 (0.57, 1.97)	98	22044
Sensitivity-no occupational exposure	PCA1	Q2	1.13 (0.62, 2.08)	98	22044
Sensitivity-no occupational exposure	PCA1	Q3	<b>1.81 (1.03, 3.2)</b>	98	22044
Sensitivity-no occupational exposure	PCA1	Q4	1.22 (0.66, 2.27)	98	22044
Sensitivity-no occupational exposure	V	Q2	1.24 (0.7, 2.2)	98	22044
Sensitivity-no occupational exposure	V	Q3	1.14 (0.63, 2.05)	98	22044
Sensitivity-no occupational exposure	V	Q4	1.1 (0.6, 2.01)	98	22044

## #breast cancer

Analysis	Exposure		HR (95%CI)	cases	observations
Main	Cd	per IQR	1.03 (0.86, 1.23)	195	9493
Main	Cr	per IQR	1.05 (0.88, 1.24)	195	9493
Main	Ni	per IQR	1 (0.84, 1.19)	195	9493
Main	Pb	per IQR	0.99 (0.86, 1.15)	195	9493
Main	PCA2	per IQR	1.01 (0.82, 1.23)	195	9493
Main	PCA3	per IQR	1.2 (0.97, 1.49)	195	9493
Main	PM	per IQR	1.1 (0.91, 1.32)	195	9493
Main	As	Q2	1.27 (0.83, 1.94)	195	9493
Main	As	Q3	1.44 (0.95, 2.18)	195	9493
Main	As	Q4	1.35 (0.88, 2.07)	195	9493
Main	V	Q2	1.02 (0.68, 1.52)	195	9493
Main	V	Q3	1.01 (0.68, 1.5)	195	9493
Main	V	Q4	0.91 (0.6, 1.37)	195	9493
Main	PCA1	Q2	0.92 (0.61, 1.38)	195	9493
Main	PCA1	Q3	1.05 (0.71, 1.55)	195	9493
Main	PCA1	Q4	0.93 (0.62, 1.4)	195	9493
Sensitivity-residuals	Cd	per IQR	1 (0.82, 1.23)	195	9493
Sensitivity-residuals	Cr	per IQR	1.04 (0.87, 1.24)	195	9493
Sensitivity-residuals	Pb	per IQR	1.01 (0.81, 1.25)	195	9493
Sensitivity-residuals	PCA2	per IQR	0.94 (0.78, 1.15)	195	9493
Sensitivity-address-level	Cd	per IQR	1.09 (0.83, 1.43)	84	4106
Sensitivity-address-level	Cr	per IQR	1.01 (0.77, 1.33)	84	4106
Sensitivity-address-level	Ni	per IQR	0.98 (0.75, 1.27)	84	4106
Sensitivity-address-level	Pb	per IQR	0.99 (0.79, 1.24)	84	4106
Sensitivity-address-level	PCA2	per IQR	0.97 (0.72, 1.33)	84	4106
Sensitivity-address-level	PCA3	per IQR	1.21 (0.87, 1.68)	84	4106
Sensitivity-address-level	PM	per IQR	1.06 (0.79, 1.42)	84	4106
Sensitivity-address-level	As	Q2	1.69 (0.68, 4.23)	84	4106
Sensitivity-address-level	As	Q3	1.43 (0.54, 3.79)	84	4106
Sensitivity-address-level	As	Q4	2.28 (0.88, 5.91)	84	4106
Sensitivity-address-level	V	Q2	0.9 (0.37, 2.19)	84	4106
Sensitivity-address-level	V	Q3	1.08 (0.46, 2.55)	84	4106
Sensitivity-address-level	V	Q4	1.26 (0.53, 2.99)	84	4106
Sensitivity-address-level	PCA1	Q2	1.06 (0.46, 2.43)	84	4106
Sensitivity-address-level	PCA1	Q3	0.62 (0.25, 1.57)	84	4106
Sensitivity-address-level	PCA1	Q4	1.55 (0.67, 3.57)	84	4106
Sensitivity-adjusted for fdep	Cd	per IQR	1.04 (0.87, 1.24)	195	9493
Sensitivity-adjusted for fdep	Cr	per IQR	1.05 (0.88, 1.24)	195	9493
Sensitivity-adjusted for fdep	Ni	per IQR	1 (0.84, 1.2)	195	9493
Sensitivity-adjusted for fdep	Pb	per IQR	1 (0.86, 1.16)	195	9493
Sensitivity-adjusted for fdep	PCA2	per IQR	1.02 (0.83, 1.25)	195	9493
Sensitivity-adjusted for fdep	PCA3	per IQR	1.18 (0.96, 1.46)	195	9493
Sensitivity-adjusted for fdep	PM	per IQR	1.11 (0.92, 1.34)	195	9493
Sensitivity-adjusted for fdep	As	Q2	1.26 (0.83, 1.94)	195	9493
Sensitivity-adjusted for fdep	As	Q3	1.42 (0.94, 2.16)	195	9493
Sensitivity-adjusted for fdep	As	Q4	1.35 (0.88, 2.06)	195	9493
Sensitivity-adjusted for fdep	V	Q2	1.03 (0.69, 1.53)	195	9493
Sensitivity-adjusted for fdep	V	Q3	1.01 (0.68, 1.51)	195	9493
Sensitivity-adjusted for fdep	V	Q4	0.9 (0.6, 1.36)	195	9493
Sensitivity-adjusted for fdep	PCA1	Q2	0.93 (0.62, 1.39)	195	9493
Sensitivity-adjusted for fdep	PCA1	Q3	1.05 (0.71, 1.56)	195	9493
Sensitivity-adjusted for fdep	PCA1	Q4	0.92 (0.61, 1.38)	195	9493
Sensitivity-complete-cases	Cd	per IQR	1.14 (0.9, 1.45)	109	4916
Sensitivity-complete-cases	Cr	per IQR	1.12 (0.9, 1.4)	109	4916
Sensitivity-complete-cases	Ni	per IQR	1.06 (0.84, 1.34)	109	4916
Sensitivity-complete-cases	Pb	per IQR	1.05 (0.86, 1.29)	109	4916
Sensitivity-complete-cases	PCA2	per IQR	1.03 (0.78, 1.34)	109	4916
Sensitivity-complete-cases	PCA3	per IQR	1.03 (0.77, 1.38)	109	4916
Sensitivity-complete-cases	PM	per IQR	1.21 (0.93, 1.56)	109	4916
Sensitivity-missing as category	Cd	per IQR	1.03 (0.86, 1.23)	109	4916
Sensitivity-missing as category	Cr	per IQR	1.06 (0.89, 1.25)	109	4916
Sensitivity-missing as category	Ni	per IQR	1 (0.84, 1.2)	109	4916
Sensitivity-missing as category	Pb	per IQR	0.99 (0.85, 1.15)	109	4916

Sensitivity-missing as category	PCA2	per IQR	1 (0.82, 1.22)	109	4916
Sensitivity-missing as category	PCA3	per IQR	1.21 (0.98, 1.49)	109	4916
Sensitivity-missing as category	PM	per IQR	1.08 (0.9, 1.31)	109	4916
Sensitivity-no occupational exposure	Cd	per IQR	1.03 (0.86, 1.22)	191	9252
Sensitivity-no occupational exposure	Cr	per IQR	1.05 (0.89, 1.25)	191	9252
Sensitivity-no occupational exposure	Ni	per IQR	0.99 (0.82, 1.18)	191	9252
Sensitivity-no occupational exposure	Pb	per IQR	0.99 (0.85, 1.15)	191	9252
Sensitivity-no occupational exposure	PCA2	per IQR	1 (0.82, 1.22)	191	9252
Sensitivity-no occupational exposure	PCA3	per IQR	1.21 (0.98, 1.5)	191	9252
Sensitivity-no occupational exposure	PM	per IQR	1.08 (0.9, 1.31)	191	9252
Sensitivity-no occupational exposure	As	Q2	1.28 (0.83, 1.95)	191	9252
Sensitivity-no occupational exposure	As	Q3	1.39 (0.91, 2.11)	191	9252
Sensitivity-no occupational exposure	As	Q4	1.39 (0.91, 2.13)	191	9252
Sensitivity-no occupational exposure	PCA1	Q2	0.9 (0.6, 1.35)	191	9252
Sensitivity-no occupational exposure	PCA1	Q3	1.04 (0.7, 1.55)	191	9252
Sensitivity-no occupational exposure	PCA1	Q4	0.91 (0.6, 1.38)	191	9252
Sensitivity-no occupational exposure	V	Q2	1.01 (0.67, 1.52)	191	9252
Sensitivity-no occupational exposure	V	Q3	1.02 (0.68, 1.52)	191	9252
Sensitivity-no occupational exposure	V	Q4	0.89 (0.59, 1.35)	191	9252

## #prostate cancer

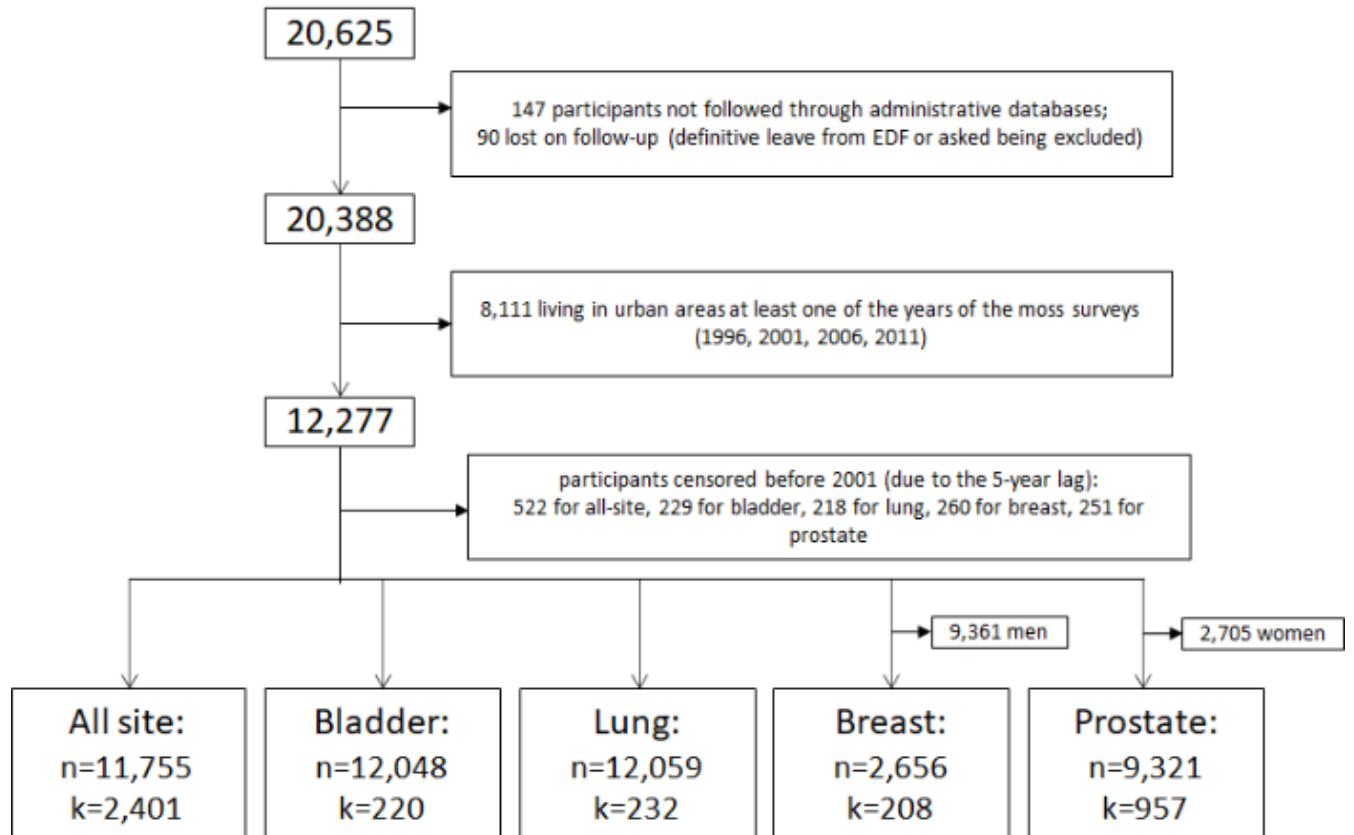
Analysis	Exposure		HR (95%CI)	cases	observations
Main	Cd	per IQR	1.07 (1, 1.15)	957	32857
Main	Cr	per IQR	1.06 (0.98, 1.15)	957	32857
Main	Ni	per IQR	0.99 (0.91, 1.07)	957	32857
Main	Pb	per IQR	1.06 (1, 1.12)	957	32857
Main	PCA2	per IQR	1.06 (0.98, 1.15)	957	32857
Main	PCA3	per IQR	<b>1.16 (1.05, 1.28)</b>	957	32857
Main	PM	per IQR	<b>1.17 (1.07, 1.28)</b>	957	32857
Main	As	Q2	1.13 (0.95, 1.36)	957	32857
Main	As	Q3	1.1 (0.91, 1.32)	957	32857
Main	As	Q4	1 (0.83, 1.2)	957	32857
Main	V	Q2	1.14 (0.95, 1.36)	957	32857
Main	V	Q3	0.98 (0.82, 1.17)	957	32857
Main	V	Q4	0.83 (0.69, 1.01)	957	32857
Main	PCA1	Q2	1.02 (0.85, 1.22)	957	32857
Main	PCA1	Q3	<b>1.23 (1.03, 1.46)</b>	957	32857
Main	PCA1	Q4	0.84 (0.69, 1.01)	957	32857
Sensitivity-residuals	Cd	per IQR	1.01 (0.92, 1.09)	957	32857
Sensitivity-residuals	Cr	per IQR	1.03 (0.94, 1.12)	957	32857
Sensitivity-residuals	Ni	per IQR	0.93 (0.86, 1.02)	957	32857
Sensitivity-residuals	Pb	per IQR	1 (0.91, 1.09)	957	32857
Sensitivity-residuals	PCA2	per IQR	0.99 (0.91, 1.07)	957	32857
Sensitivity-residuals	PCA3	per IQR	<b>1.16 (1.05, 1.27)</b>	957	32857
Sensitivity-residuals	As	Q2	1.11 (0.93, 1.33)	957	32857
Sensitivity-residuals	As	Q3	1.08 (0.9, 1.3)	957	32857
Sensitivity-residuals	As	Q4	0.97 (0.81, 1.17)	957	32857
Sensitivity-residuals	V	Q2	1.17 (0.98, 1.4)	957	32857
Sensitivity-residuals	V	Q3	0.96 (0.8, 1.16)	957	32857
Sensitivity-residuals	V	Q4	<b>0.82 (0.68, 1)</b>	957	32857
Sensitivity-residuals	PCA1	Q2	1.03 (0.86, 1.23)	957	32857
Sensitivity-residuals	PCA1	Q3	1.09 (0.92, 1.3)	957	32857
Sensitivity-residuals	PCA1	Q4	0.85 (0.7, 1.02)	957	32857
Sensitivity-address-level	Cd	per IQR	<b>1.12 (1.02, 1.24)</b>	486	15563
Sensitivity-address-level	Cr	per IQR	1.06 (0.95, 1.18)	486	15563
Sensitivity-address-level	Ni	per IQR	1.04 (0.92, 1.17)	486	15563
Sensitivity-address-level	Pb	per IQR	<b>1.09 (1.01, 1.18)</b>	486	15563
Sensitivity-address-level	PCA2	per IQR	<b>1.13 (1.01, 1.27)</b>	486	15563
Sensitivity-address-level	PCA3	per IQR	1.07 (0.93, 1.23)	486	15563
Sensitivity-address-level	PM	per IQR	<b>1.14 (1, 1.31)</b>	486	15563
Sensitivity-address-level	As	Q2	1.38 (1, 1.91)	486	15563
Sensitivity-address-level	As	Q3	1.36 (0.97, 1.92)	486	15563
Sensitivity-address-level	As	Q4	1.07 (0.75, 1.54)	486	15563
Sensitivity-address-level	V	Q2	<b>1.37 (1, 1.88)</b>	486	15563
Sensitivity-address-level	V	Q3	1.05 (0.76, 1.46)	486	15563
Sensitivity-address-level	V	Q4	0.73 (0.49, 1.08)	486	15563
Sensitivity-address-level	PCA1	Q2	<b>1.5 (1.09, 2.07)</b>	486	15563
Sensitivity-address-level	PCA1	Q3	1.38 (0.98, 1.93)	486	15563
Sensitivity-address-level	PCA1	Q4	0.93 (0.63, 1.37)	486	15563
Sensitivity-adjusted for fdep	Cd	per IQR	<b>1.08 (1, 1.16)</b>	957	32857
Sensitivity-adjusted for fdep	Cr	per IQR	1.06 (0.98, 1.15)	957	32857
Sensitivity-adjusted for fdep	Ni	per IQR	0.98 (0.9, 1.07)	957	32857
Sensitivity-adjusted for fdep	Pb	per IQR	1.06 (1, 1.12)	957	32857
Sensitivity-adjusted for fdep	PCA2	per IQR	1.07 (0.98, 1.16)	957	32857
Sensitivity-adjusted for fdep	PCA3	per IQR	<b>1.16 (1.05, 1.28)</b>	957	32857
Sensitivity-adjusted for fdep	PM	per IQR	<b>1.17 (1.07, 1.28)</b>	957	32857
Sensitivity-adjusted for fdep	As	Q2	1.12 (0.94, 1.34)	957	32857
Sensitivity-adjusted for fdep	As	Q3	1.08 (0.9, 1.3)	957	32857
Sensitivity-adjusted for fdep	As	Q4	0.99 (0.82, 1.19)	957	32857
Sensitivity-adjusted for fdep	V	Q2	1.13 (0.95, 1.35)	957	32857
Sensitivity-adjusted for fdep	V	Q3	0.97 (0.81, 1.17)	957	32857
Sensitivity-adjusted for fdep	V	Q4	0.83 (0.69, 1)	957	32857
Sensitivity-adjusted for fdep	PCA1	Q2	1.02 (0.85, 1.22)	957	32857
Sensitivity-adjusted for fdep	PCA1	Q3	<b>1.22 (1.02, 1.46)</b>	957	32857
Sensitivity-adjusted for fdep	PCA1	Q4	0.83 (0.69, 1)	957	32857

Sensitivity-complete-cases	Cd	per IQR	<b>1.13 (1.03, 1.23)</b>	622	19806
Sensitivity-complete-cases	Cr	per IQR	<b>1.11 (1.01, 1.22)</b>	622	19806
Sensitivity-complete-cases	Ni	per IQR	1.04 (0.94, 1.15)	622	19806
Sensitivity-complete-cases	Pb	per IQR	<b>1.12 (1.05, 1.2)</b>	622	19806
Sensitivity-complete-cases	PCA2	per IQR	<b>1.15 (1.04, 1.27)</b>	622	19806
Sensitivity-complete-cases	PCA3	per IQR	<b>1.15 (1.02, 1.3)</b>	622	19806
Sensitivity-complete-cases	PM	per IQR	<b>1.24 (1.1, 1.39)</b>	622	19806
Sensitivity-missing as category	Cd	per IQR	1.07 (1, 1.15)	957	32857
Sensitivity-missing as category	Cr	per IQR	1.07 (0.98, 1.15)	957	32857
Sensitivity-missing as category	Ni	per IQR	0.99 (0.91, 1.08)	957	32857
Sensitivity-missing as category	Pb	per IQR	1.06 (1, 1.12)	957	32857
Sensitivity-missing as category	PCA2	per IQR	1.06 (0.98, 1.16)	957	32857
Sensitivity-missing as category	PCA3	per IQR	1.17 (1.06, 1.29)	957	32857
Sensitivity-missing as category	PM	per IQR	1.18 (1.08, 1.29)	957	32857
Sensitivity-no occupational exposure	Cd	per IQR	1.09 (0.99, 1.22)	380	12046
Sensitivity-no occupational exposure	Cr	per IQR	1.07 (0.94, 1.23)	380	12046
Sensitivity-no occupational exposure	Ni	per IQR	1.05 (0.92, 1.2)	380	12046
Sensitivity-no occupational exposure	Pb	per IQR	1.09 (1, 1.18)	380	12046
Sensitivity-no occupational exposure	PCA2	per IQR	1.13 (1, 1.27)	380	12046
Sensitivity-no occupational exposure	PCA3	per IQR	1.09 (0.93, 1.27)	380	12046
Sensitivity-no occupational exposure	PM	per IQR	1.23 (1.07, 1.41)	380	12046
Sensitivity-no occupational exposure	As	Q2	1.23 (0.93, 1.64)	380	12046
Sensitivity-no occupational exposure	As	Q3	0.98 (0.73, 1.32)	380	12046
Sensitivity-no occupational exposure	As	Q4	1.14 (0.84, 1.54)	380	12046
Sensitivity-no occupational exposure	PCA1	Q2	1.02 (0.77, 1.35)	380	12046
Sensitivity-no occupational exposure	PCA1	Q3	1.11 (0.84, 1.47)	380	12046
Sensitivity-no occupational exposure	PCA1	Q4	0.81 (0.6, 1.11)	380	12046
Sensitivity-no occupational exposure	V	Q2	1.1 (0.83, 1.46)	380	12046
Sensitivity-no occupational exposure	V	Q3	0.94 (0.71, 1.26)	380	12046
Sensitivity-no occupational exposure	V	Q4	0.74 (0.54, 1.01)	380	12046

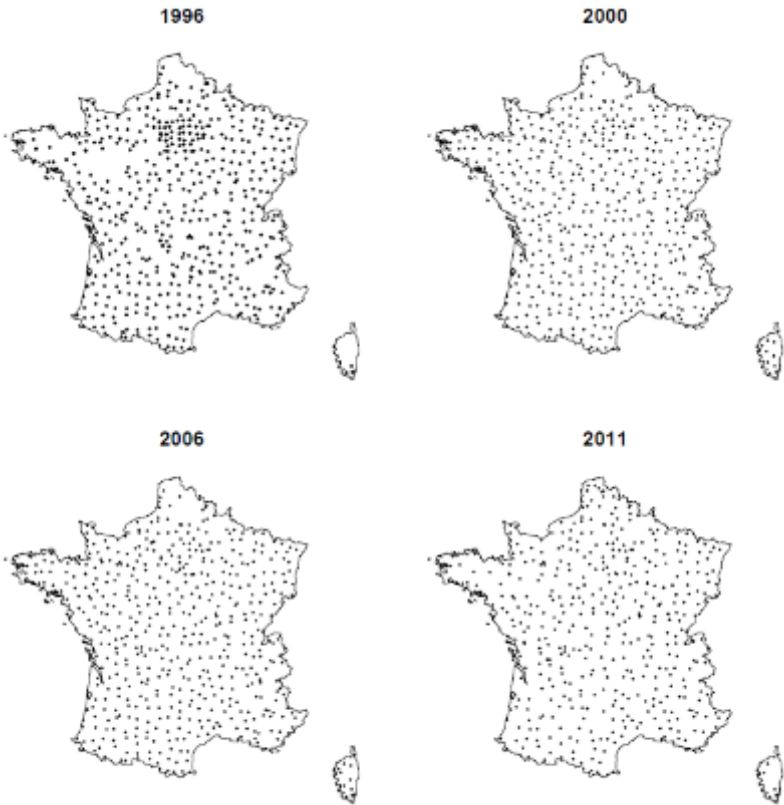


## Supplementary Figures

Figure S1: Study population selection flowchart.



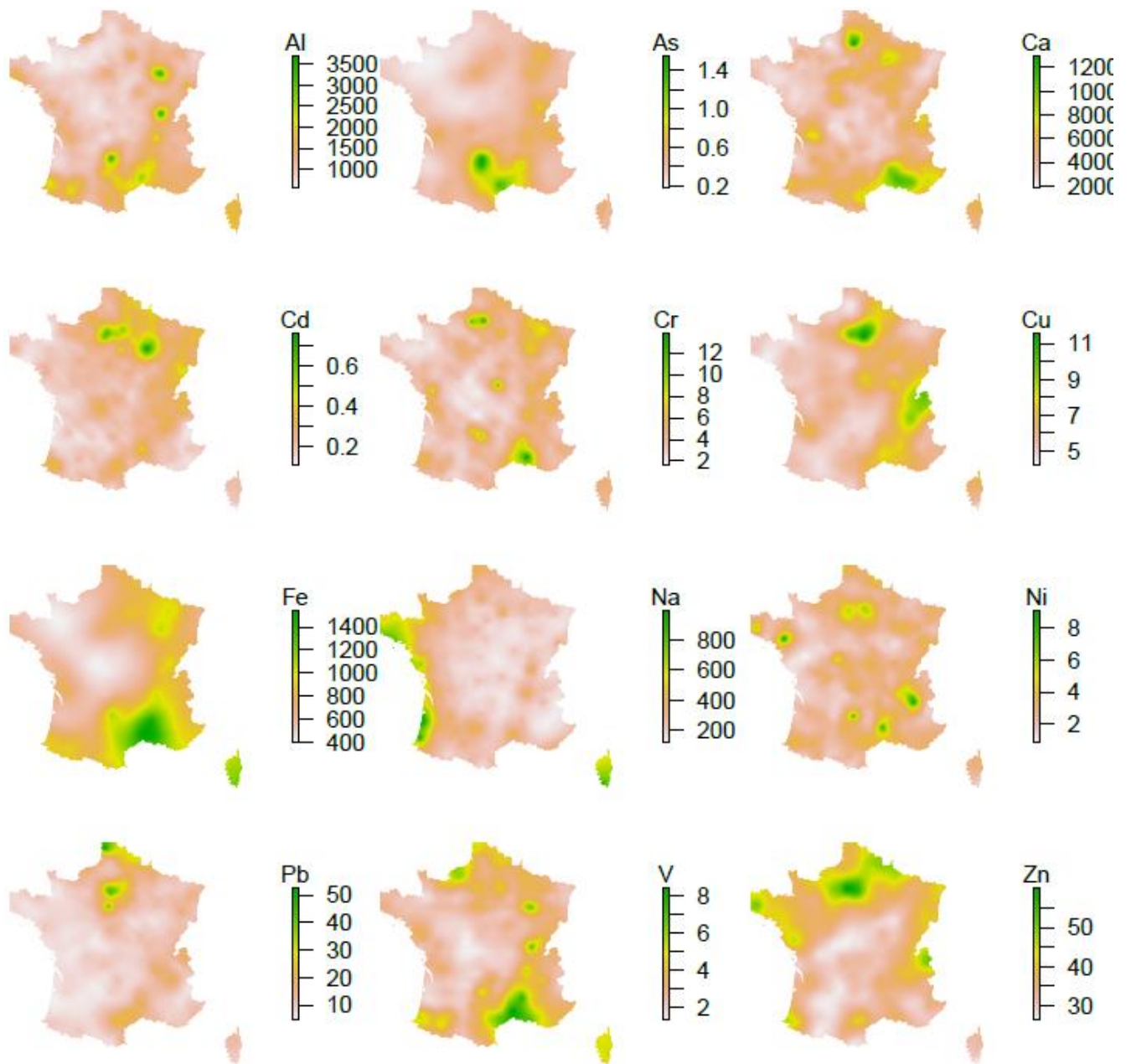
**Figure S2: Maps of the location of the BRAMM moss sampling sites between 1996 and 2011.**



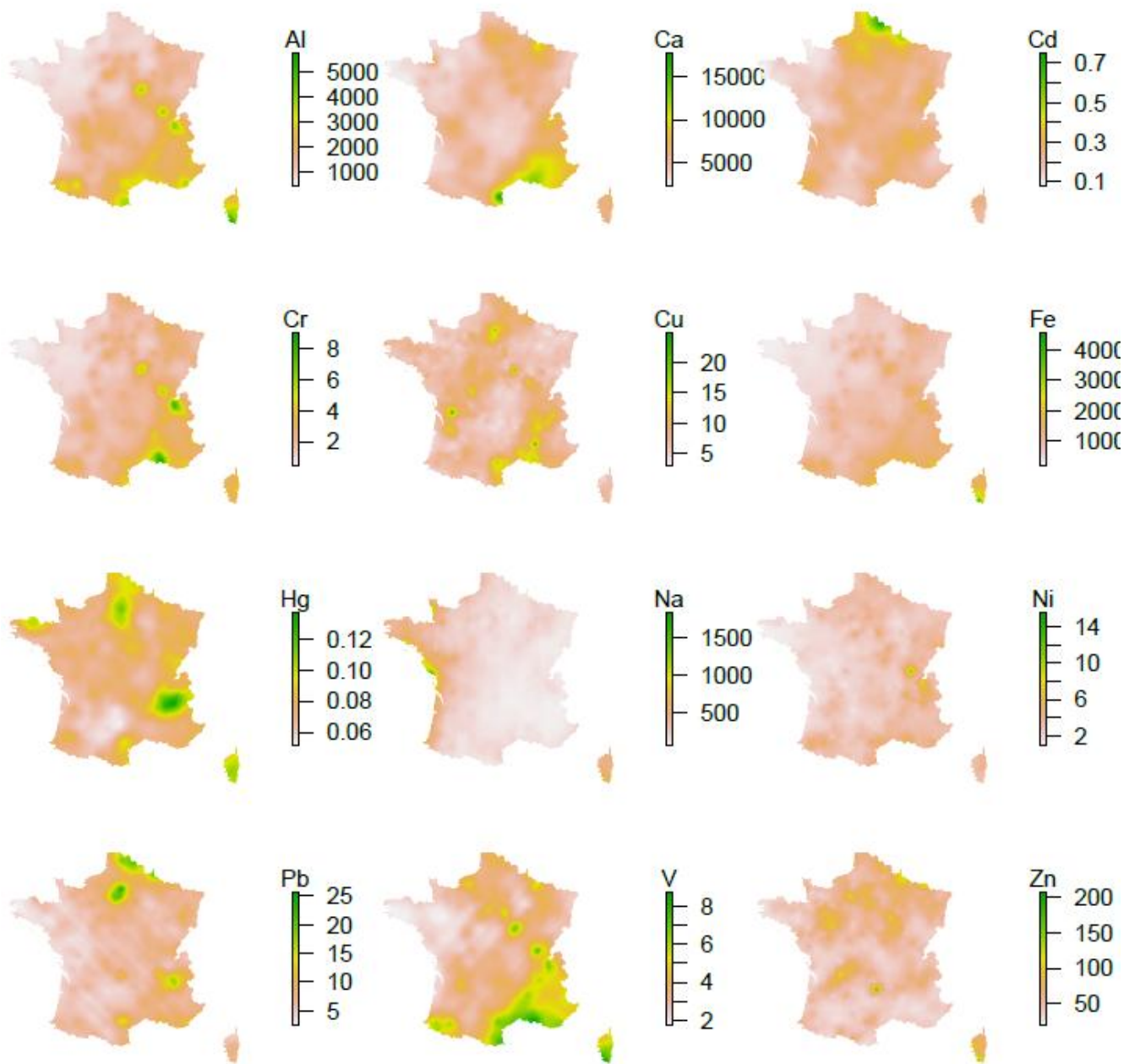
### Figure S3: Exposure maps used in this study

Detailed information on the variograms used to produce each map by ordinary kriging are available in Lequy et al. (2019). All metal concentrations are expressed in  $\mu\text{g}\cdot\text{g}^{-1}$  of dry moss.

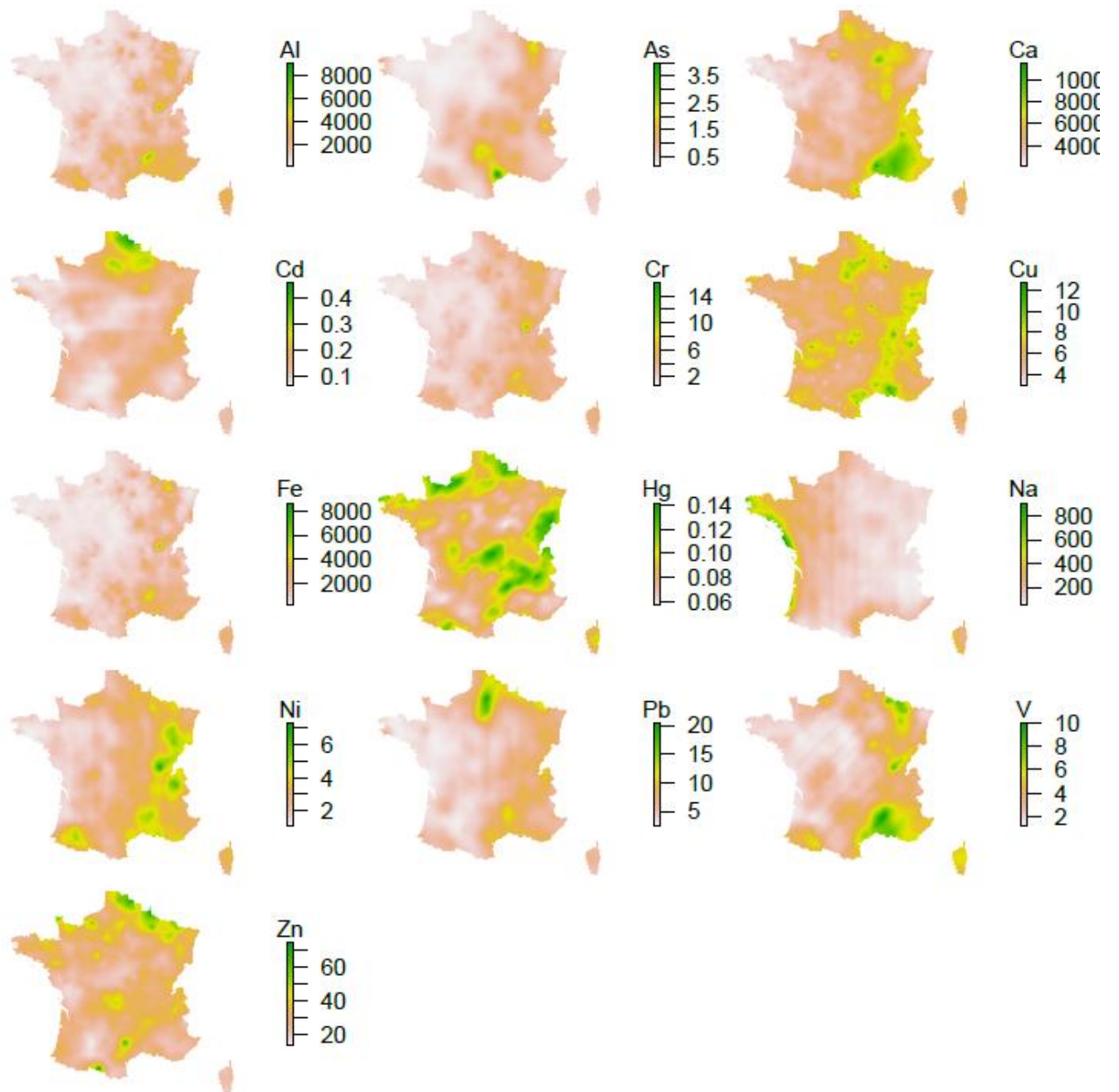
#1996



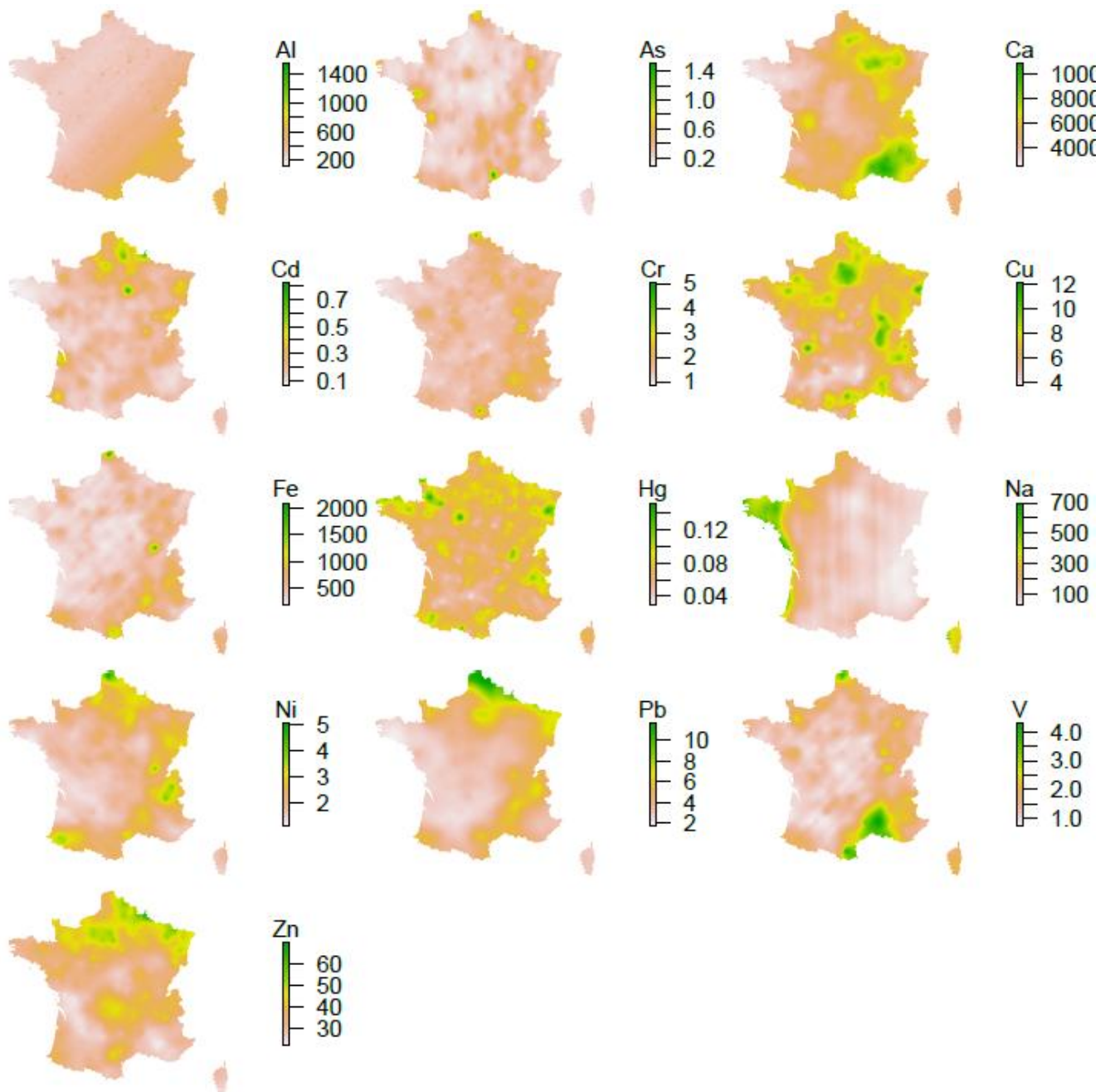
#2000



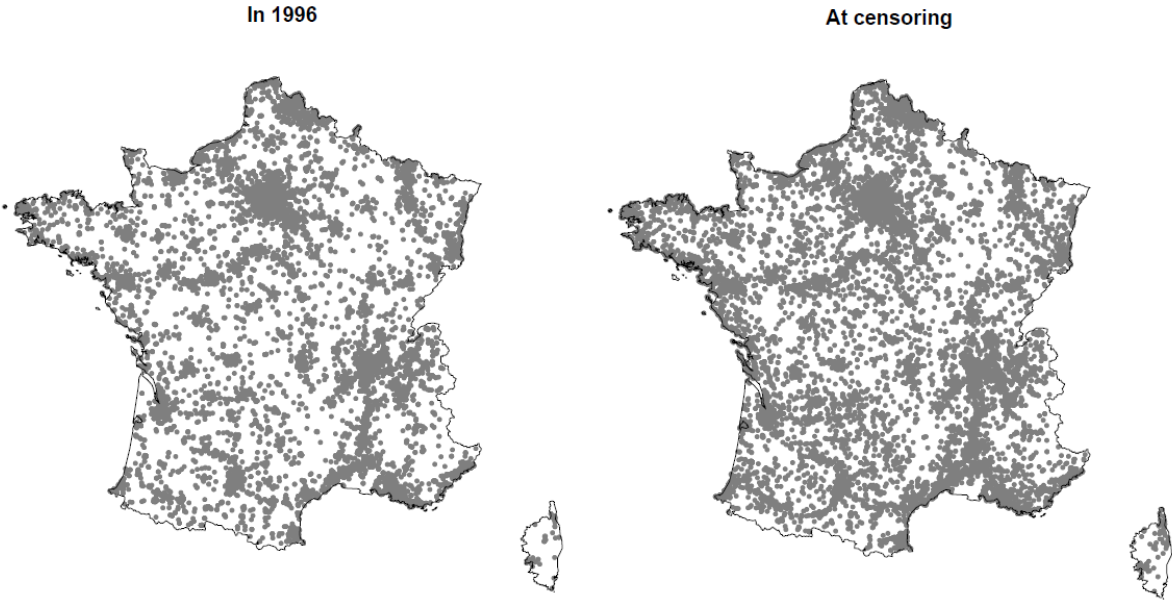
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#2011



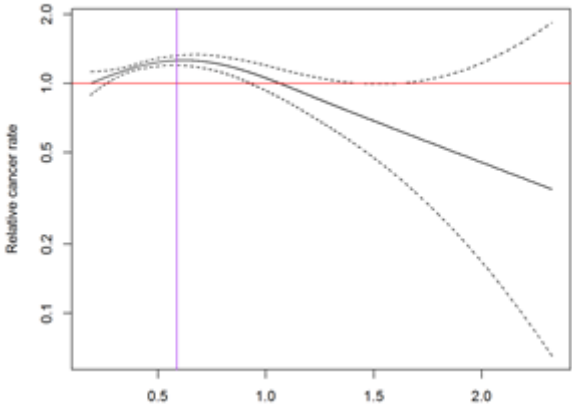
**Figure S4: Maps of the Gazel participants' residential addresses in 1996 and at censoring.**



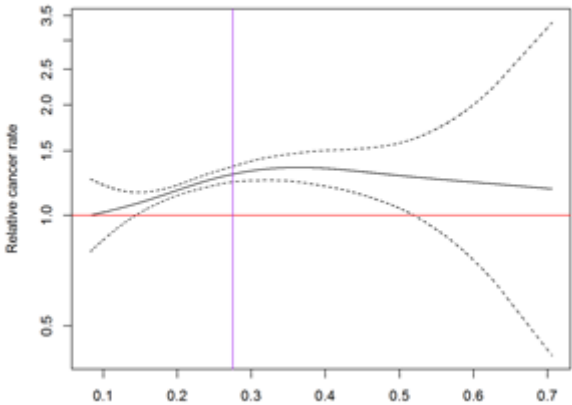
**Figure S5: Exposure-response relationship between all-site cancer incidence and time-varying cumulative average for each airborne metal and principal analysis component.**

The red horizontal line marks a hazard ratio of 1, and the vertical line marks the third quartile of exposure ( $\mu\text{g}\cdot\text{g}^{-1}$  of dry moss for metals).

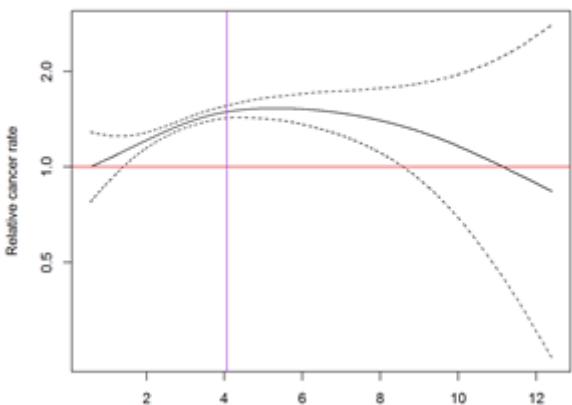
# As



# Cd

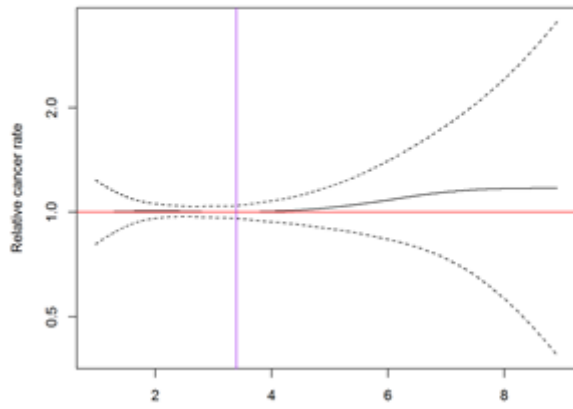


# Cr

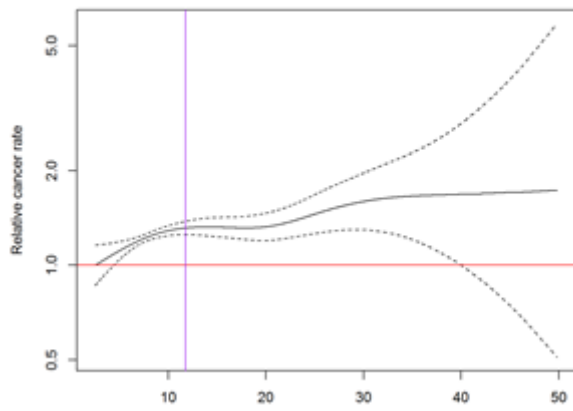




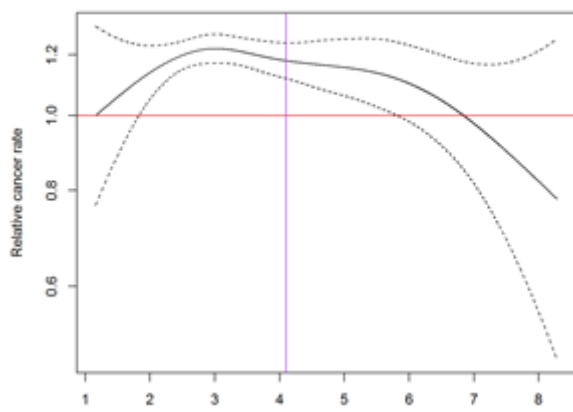
# Ni



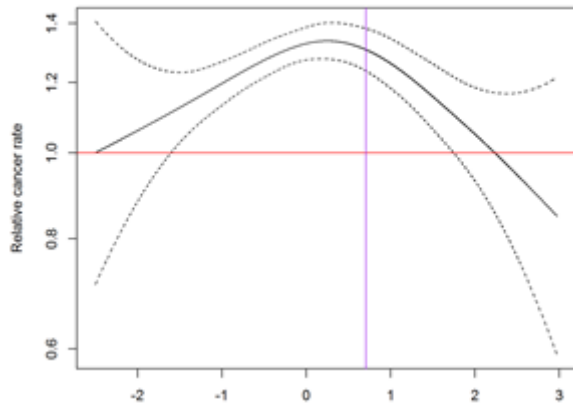
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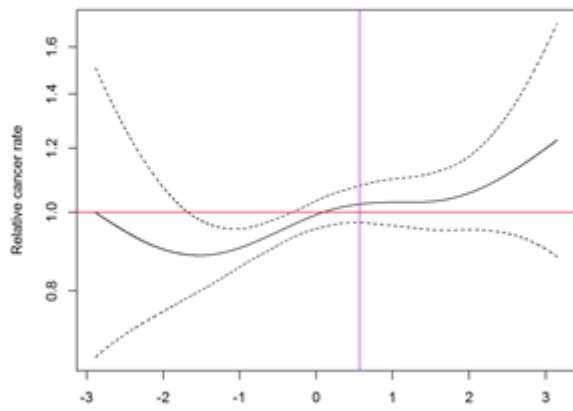
# V



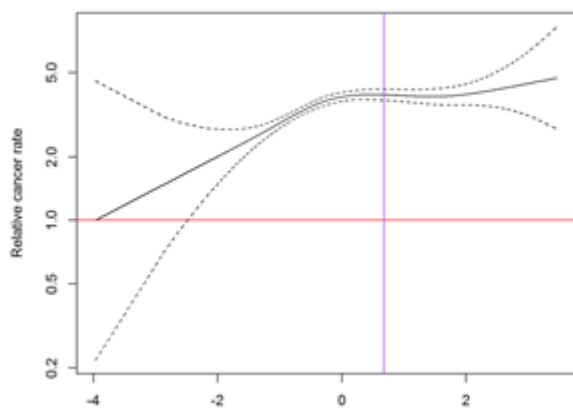
### # "crustal" PCA component



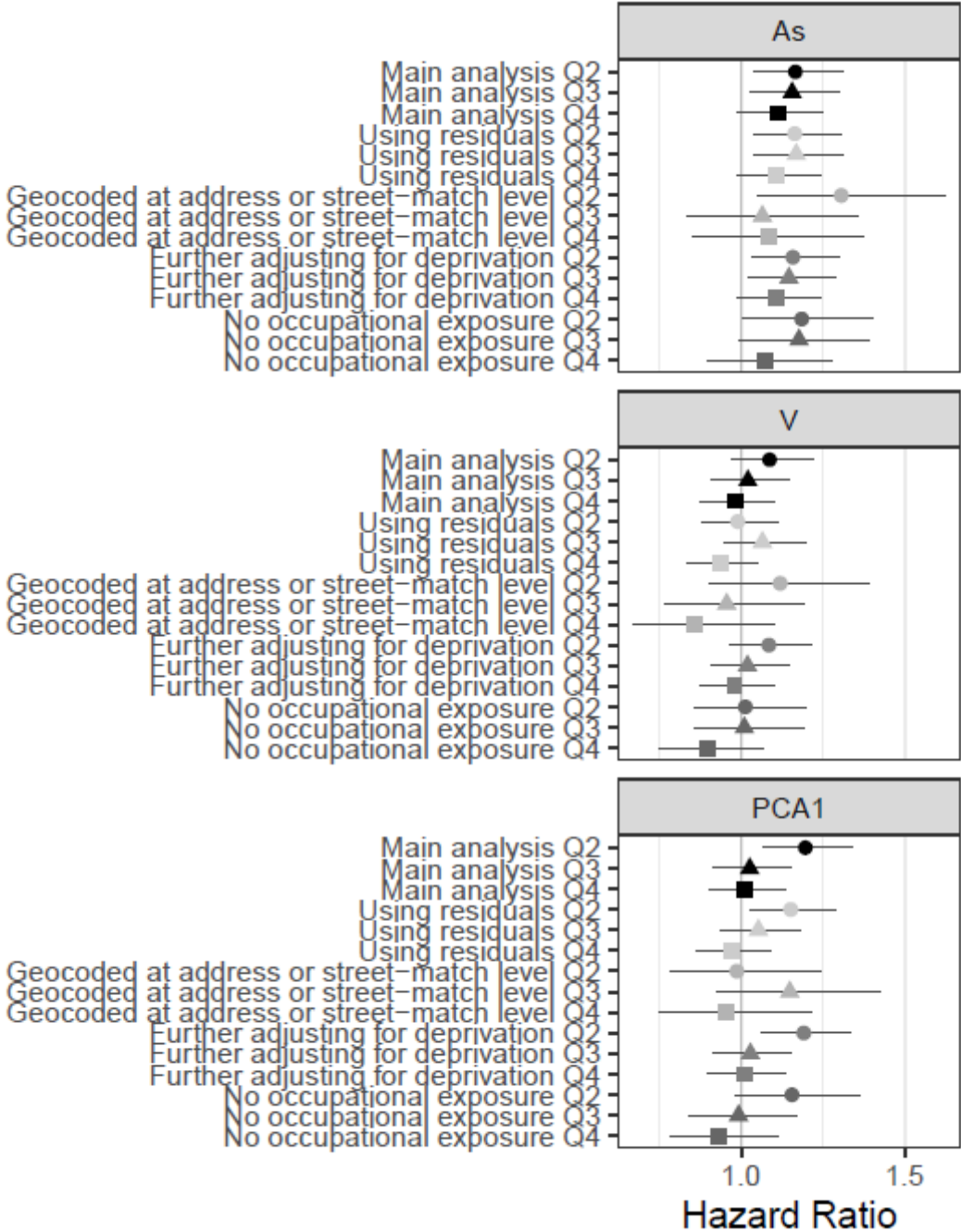
### # "anthropogenic" PCA component



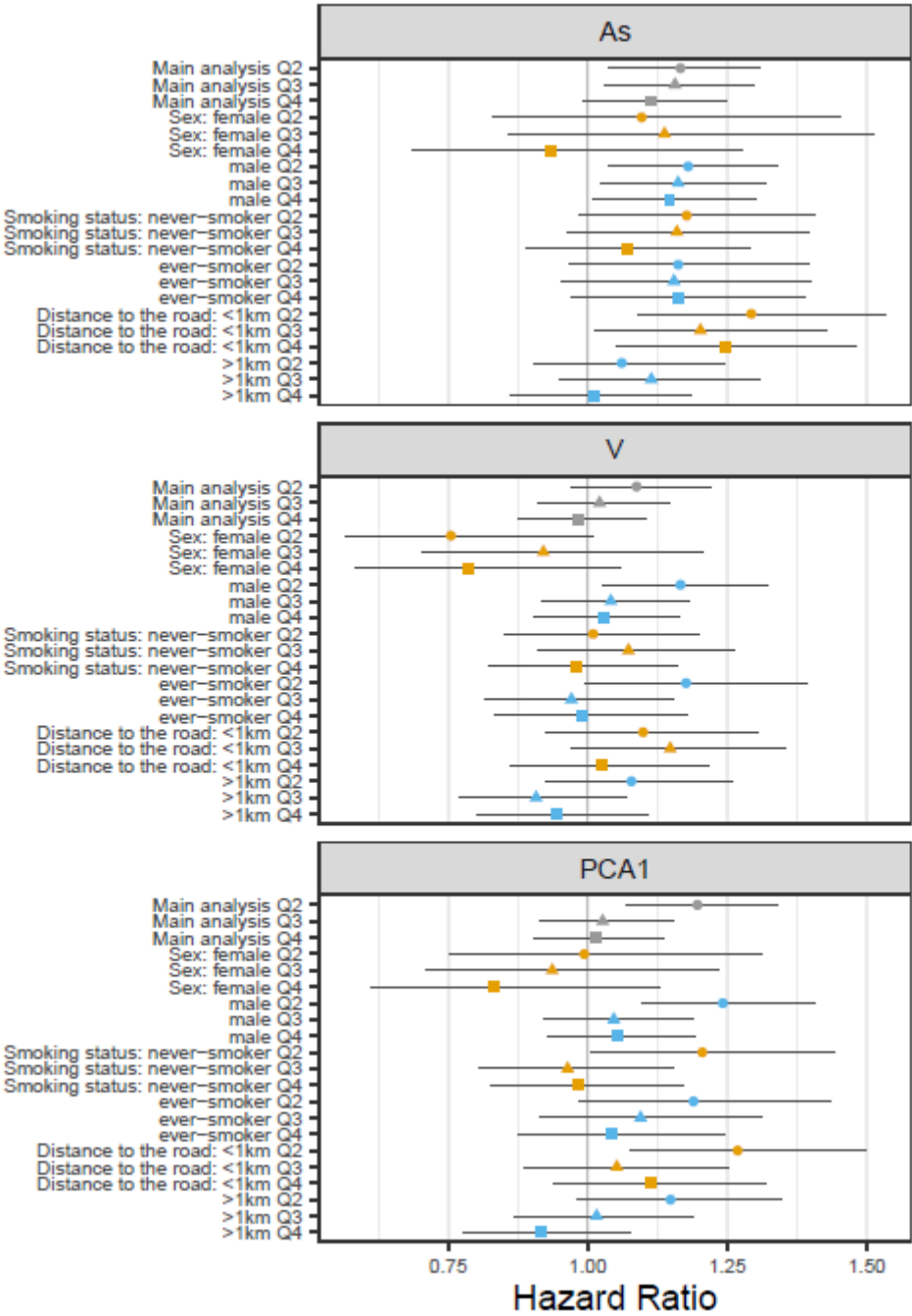
### # "marine" PCA component



**Figure S6: Associations between quartiles of airborne metals As, V, and “crustal” PCA component yielded by sensitivity analyses for all-site cancer incidence.**

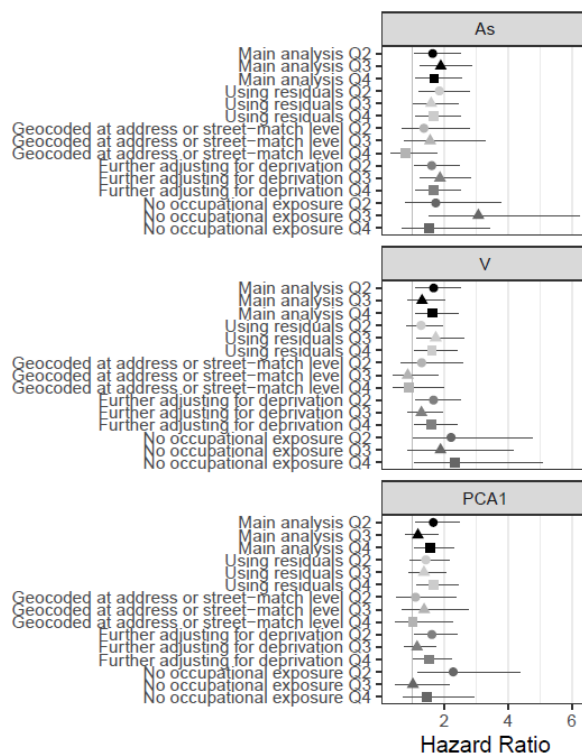
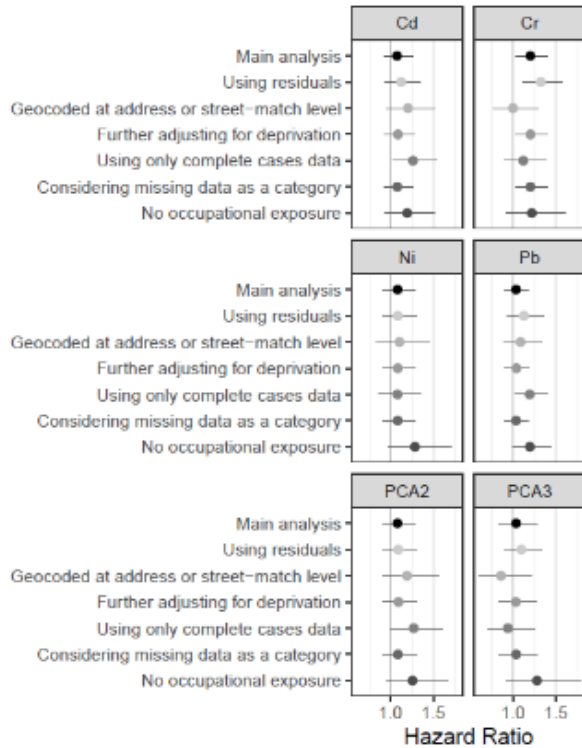


**Figure S7: Associations between quartiles of airborne metals As, V, and “crustal” PCA component yielded by the analyses by sub-groups for all-site cancer incidence.**

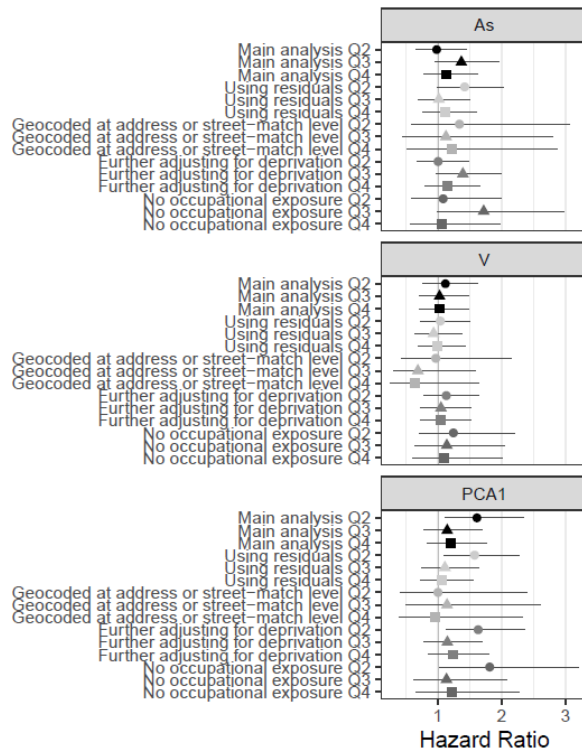
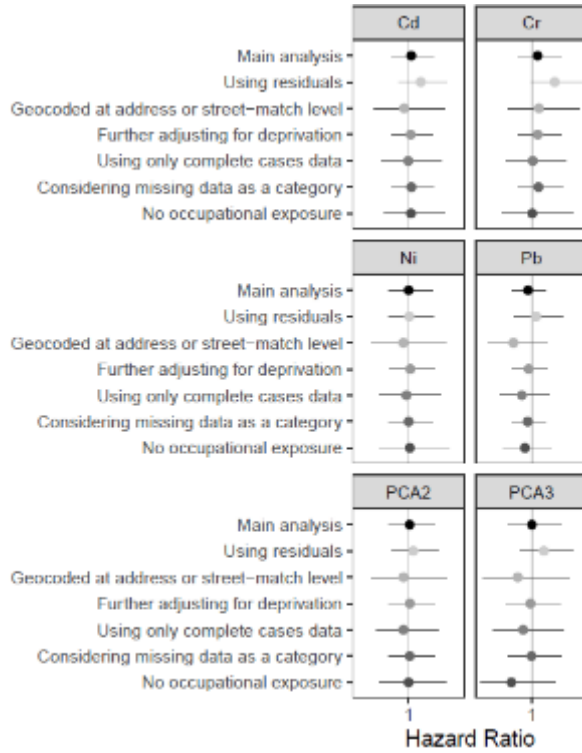


**Figure S8: Associations between all airborne metals and PCA components, yielded by sensitivity analyses for specific-site cancer incidence (bladder, lung, breast, and prostate).**

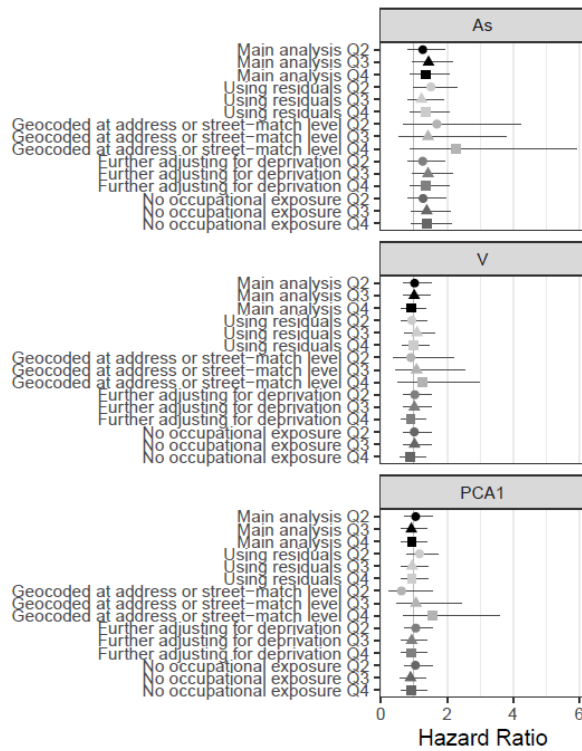
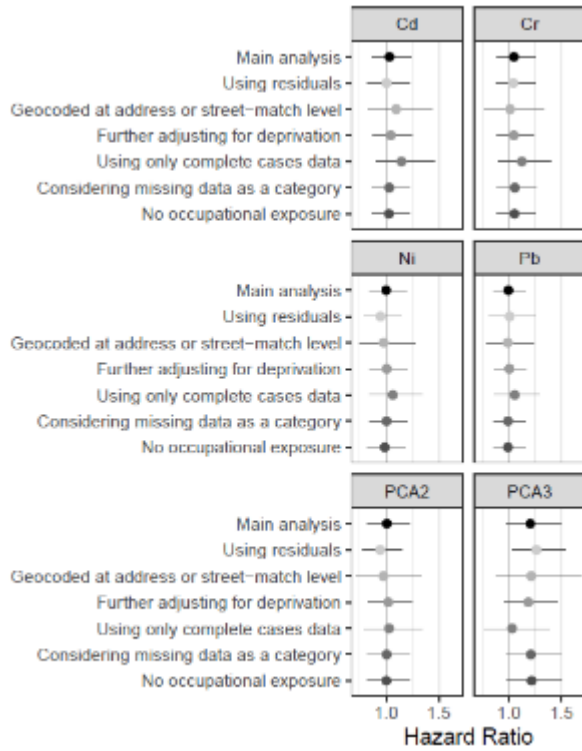
#bladder



# #lung



#breast



# #prostate

