

Supplementary material for

Air pollution and human health: Investigating the moderating effect of built environment.

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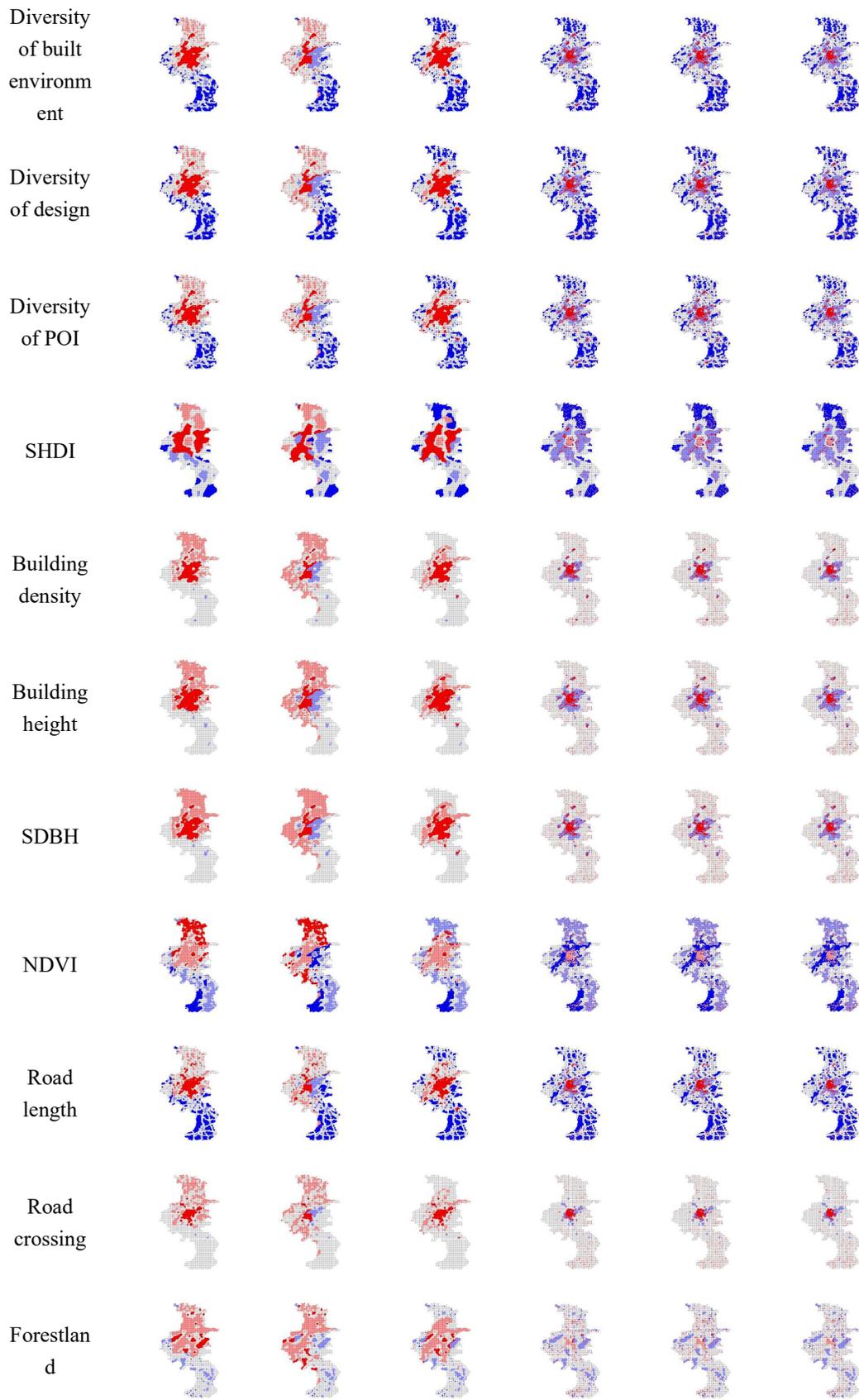
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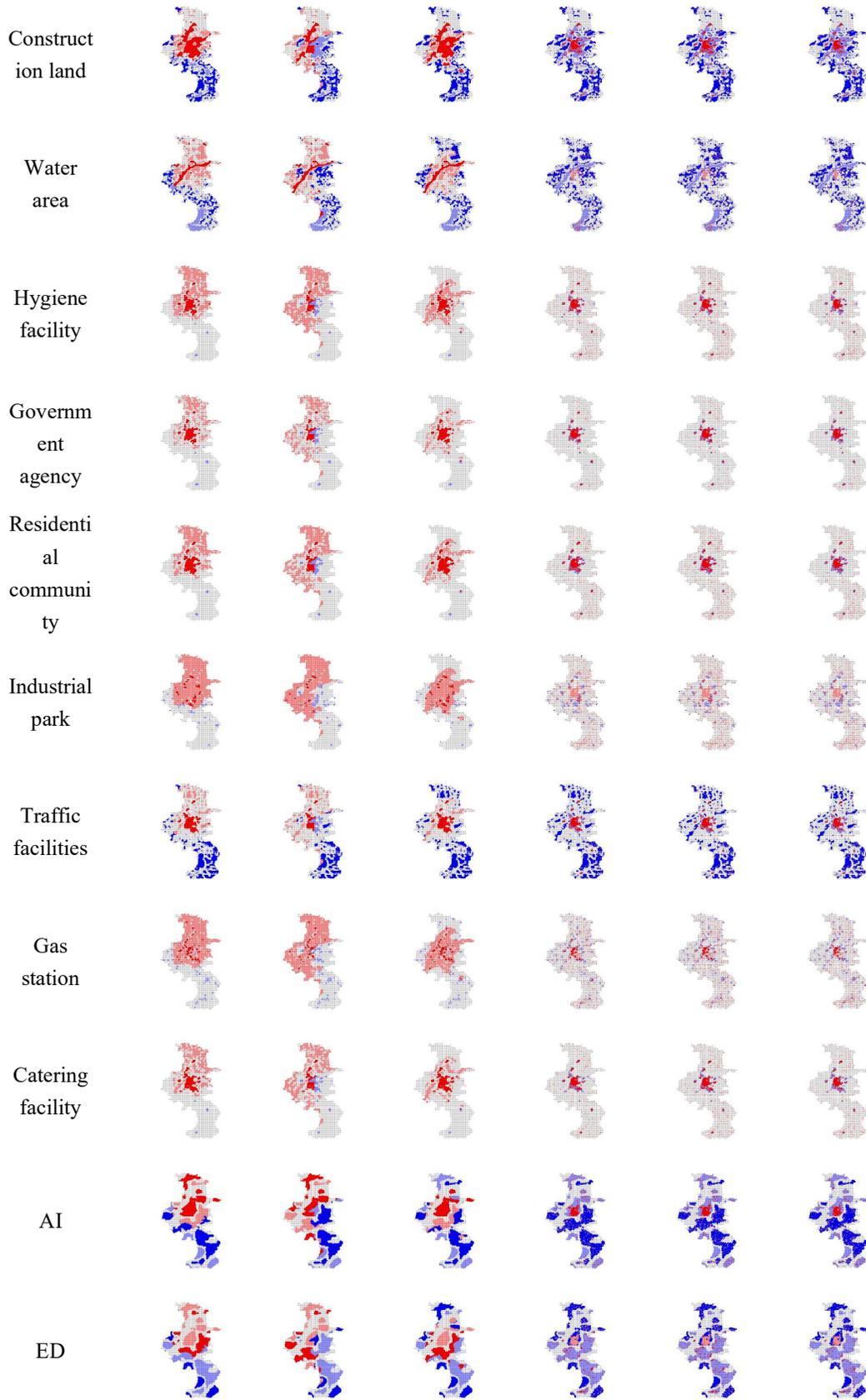
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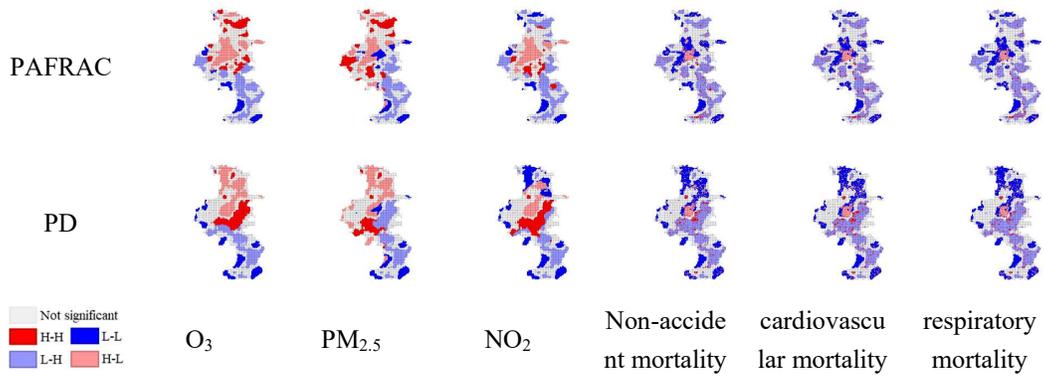
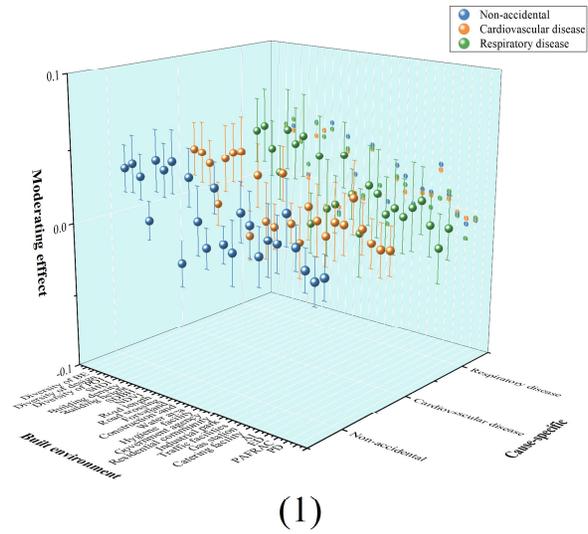
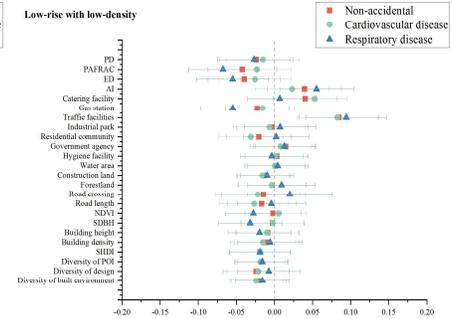
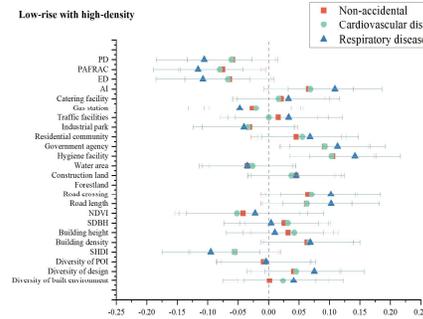
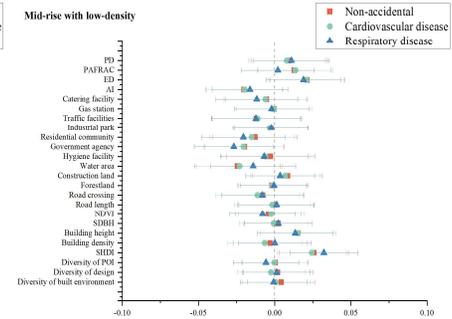
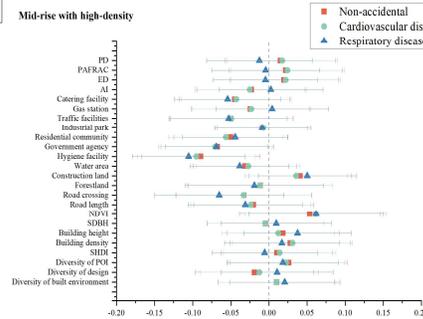
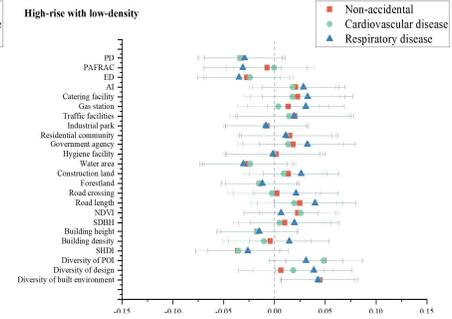
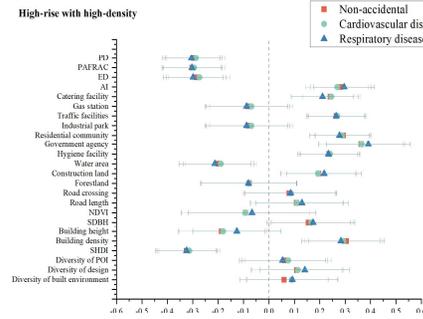


Figure S1. Spatial correlation of air pollution (O₃, PM_{2.5} and NO₂) and mortality with built environment respectively.

Moderating effect of built environment in the relationship between O_3 and mortality

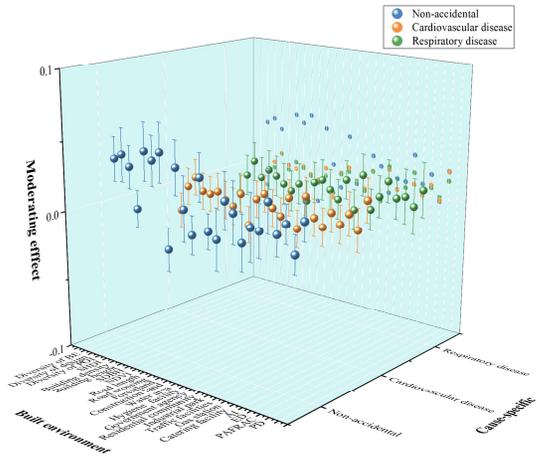


(a)



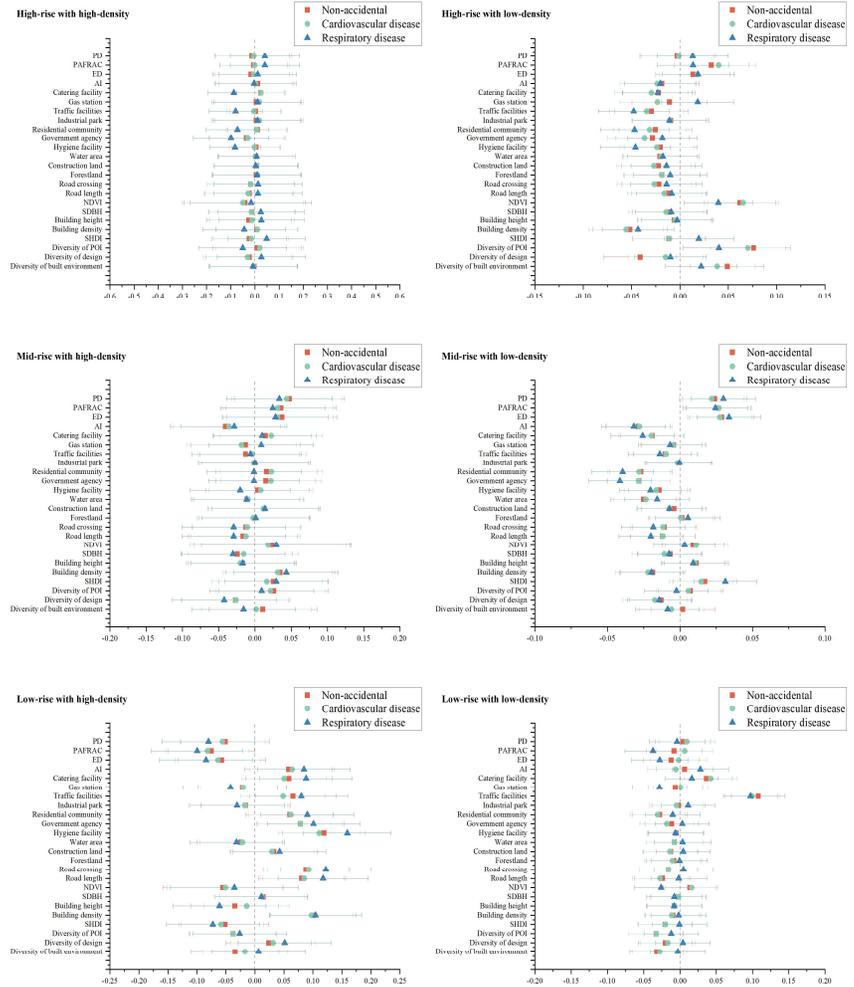
(2)

Moderating effect of built environment in the relationship between PM_{2.5} and mortality



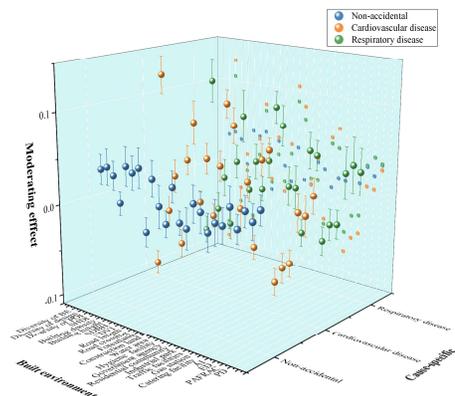
(1)

(b)



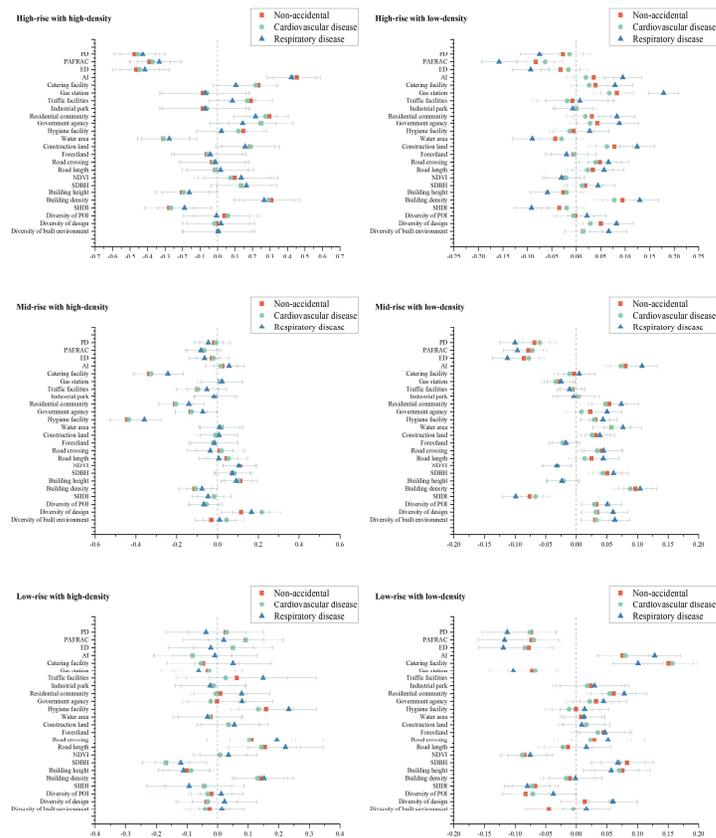
(2)

**Moderating effect of built environment
in the relationship between NO₂ and mortality**



(1)

(c)



(2)

Figure S2. Moderating effect of built environment in the relationship between air pollution and mortality in (1) unclassified area and (2) areas classified by building density and height. (a) Moderating effect of built environment in the relationship between O₃ and mortality; (b) Moderating effect of built

environment in the relationship between PM_{2.5} and mortality; (c) Moderating effect of built environment in the relationship between NO₂ and mortality.

Table S1. The percentage of H-H type grids corresponding to Figure S1.

	O3	PM2.5	NO2	Non-accident mortality	Cardiovascular mortality	Respiratory mortality
Diversity of built environment	14.85%	7.52%	15.63%	6.42%	6.60%	5.06%
Diversity of design	13.98%	7.03%	14.69%	5.94%	6.02%	4.73%
Diversity of POI	14.20%	7.84%	14.84%	6.81%	7.03%	5.41%
SHDI	20.26%	15.00%	21.51%	3.86%	4.25%	3.05%
Building density	11.10%	5.38%	11.44%	5.34%	5.42%	4.26%
Building height	15.45%	7.74%	15.77%	5.88%	5.97%	4.69%
SDBH	13.37%	6.62%	13.82%	5.71%	5.81%	4.55%
NDVI	15.53%	18.38%	3.91%	2.63%	3.18%	2.53%
Road length	10.83%	5.60%	11.72%	4.96%	5.10%	4.01%
Road crossing	6.31%	2.95%	6.43%	2.94%	3.07%	2.53%
Forestland	6.46%	5.13%	3.86%	0.87%	1.00%	0.74%
Construction land	14.46%	8.34%	16.01%	6.27%	6.42%	4.99%
Water area	5.53%	6.41%	5.56%	0.98%	1.04%	0.89%
Hygiene facility	6.02%	3.38%	6.08%	4.28%	4.35%	3.60%
Government agency	5.71%	3.22%	5.90%	4.13%	4.12%	3.55%
Residential community	7.00%	3.82%	7.14%	4.69%	4.74%	3.95%
Industrial park	3.11%	1.82%	3.45%	1.07%	1.20%	0.86%
Traffic facilities	6.58%	3.37%	6.53%	4.22%	4.17%	3.62%
Gas station	4.07%	2.70%	4.15%	2.22%	2.22%	1.88%
Catering facility	6.59%	3.38%	6.73%	4.34%	4.41%	3.60%
AI	15.29%	15.80%	10.01%	4.76%	4.98%	4.20%
ED	10.71%	10.39%	10.89%	3.67%	4.29%	3.32%

PAFRAC	10.07%	12.76%	5.01%	3.28%	3.81%	3.13%
PD	11.53%	7.67%	12.47%	3.78%	4.36%	3.32%

Table S2. The percentage of L-L type grids corresponding to Figure S1.

	O3	PM2.5	NO2	Non-accident mortality	Cardiovascular mortality	Respiratory mortality
Diversity of built environment	17.40%	14.64%	23.57%	25.22%	24.84%	25.04%
Diversity of design	19.62%	16.46%	25.28%	26.89%	26.37%	26.67%
Diversity of POI	13.59%	11.72%	17.51%	19.51%	19.23%	19.38%
SHDI	10.09%	8.51%	19.77%	19.45%	19.17%	19.68%
Building density	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Building height	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SDBH	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDVI	8.54%	12.30%	7.44%	17.87%	17.76%	18.81%
Road length	17.50%	15.63%	21.47%	24.20%	23.85%	24.01%
Road crossing	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Forestland	0.49%	0.45%	0.66%	1.05%	1.06%	1.07%
Construction land	17.27%	14.50%	20.38%	24.06%	23.86%	24.06%
Water area	10.04%	11.72%	14.40%	20.48%	20.05%	21.17%
Hygiene facility	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Government agency	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Residential community	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Industrial park	0.12%	0.06%	0.17%	0.20%	0.20%	0.20%
Traffic facilities	15.21%	13.44%	18.80%	21.33%	20.98%	21.04%
Gas station	0.00%	0.00%	0.02%	0.02%	0.02%	0.02%
Catering facility	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AI	19.87%	19.73%	20.64%	26.66%	26.08%	26.90%

ED	8.51%	7.75%	14.43%	17.94%	17.65%	18.40%
PAFRAC	6.58%	7.48%	8.37%	16.53%	16.35%	17.16%
PD	9.82%	7.61%	17.62%	21.05%	20.74%	21.45%

Table S3. The percentage of L-H type grids corresponding to Figure S1.

	O3	PM2.5	NO2	Non-accident mortality	Cardiovascular mortality	Respiratory mortality
Diversity of built environment	1.95%	9.29%	1.18%	10.39%	10.21%	11.75%
Diversity of design	1.23%	8.18%	0.52%	9.27%	9.20%	10.48%
Diversity of POI	2.98%	9.34%	2.33%	10.36%	10.15%	11.77%
SHDI	9.98%	15.25%	8.73%	26.38%	25.99%	27.19%
Building density	0.54%	6.25%	0.20%	6.30%	6.22%	7.37%
Building height	1.00%	8.71%	0.68%	10.57%	10.48%	11.76%
SDBH	0.81%	7.55%	0.36%	8.47%	8.36%	9.62%
NDVI	15.99%	13.03%	27.66%	28.95%	28.37%	29.03%
Road length	1.87%	7.10%	0.98%	7.74%	7.60%	8.68%
Road crossing	0.26%	3.63%	0.13%	3.66%	3.53%	4.07%
Forestland	6.65%	7.97%	9.24%	12.23%	12.10%	12.36%
Construction land	2.93%	9.05%	1.38%	11.13%	10.97%	12.40%
Water area	7.72%	6.84%	7.68%	12.27%	12.21%	12.35%
Hygiene facility	0.50%	3.20%	0.42%	2.31%	2.24%	3.03%
Government agency	0.69%	3.29%	0.51%	2.36%	2.39%	2.97%
Residential community	0.50%	3.69%	0.36%	2.85%	2.80%	3.72%
Industrial park	1.93%	3.32%	1.37%	4.41%	4.26%	5.25%
Traffic facilities	0.38%	3.59%	0.43%	2.74%	2.79%	3.34%
Gas station	2.91%	4.22%	3.09%	5.85%	5.81%	6.19%
Catering facility	0.50%	3.20%	0.36%	2.78%	2.70%	3.50%

AI	8.11%	7.61%	13.40%	18.64%	18.43%	19.20%
ED	20.30%	20.62%	20.13%	27.35%	26.72%	27.70%
PAFRAC	20.20%	17.51%	25.25%	26.99%	26.46%	27.14%
PD	15.38%	19.24%	14.44%	23.13%	22.55%	23.57%

Table S4. The percentage of H-L type grids corresponding to Figure S1.

	O3	PM2.5	NO2	Non-accident mortality	Cardiovascular mortality	Respiratory mortality
Diversity of built environment	9.27%	12.03%	3.10%	1.45%	1.83%	1.63%
Diversity of design	9.43%	12.72%	3.69%	2.08%	2.61%	2.28%
Diversity of POI	8.70%	11.26%	3.82%	1.32%	1.69%	1.39%
SHDI	13.70%	15.28%	4.01%	4.34%	4.62%	4.11%
Building density	21.97%	30.90%	9.23%	4.84%	5.82%	4.79%
Building height	22.18%	31.26%	9.37%	4.87%	5.90%	4.79%
SDBH	28.55%	38.48%	13.81%	6.61%	7.72%	6.37%
NDVI	15.25%	11.46%	16.35%	5.90%	5.99%	4.93%
Road length	8.51%	10.55%	4.48%	1.72%	2.08%	1.88%
Road crossing	18.90%	22.45%	8.95%	4.16%	4.96%	4.29%
Forestland	26.55%	29.37%	21.64%	7.62%	8.00%	6.43%
Construction land	8.16%	10.94%	5.05%	1.37%	1.57%	1.37%
Water area	15.80%	14.44%	11.04%	4.88%	5.32%	4.18%
Hygiene facility	27.37%	34.38%	16.37%	5.00%	5.99%	4.86%
Government agency	14.63%	19.85%	7.84%	1.93%	2.39%	1.93%
Residential community	23.82%	30.04%	11.49%	4.43%	5.31%	4.38%
Industrial park	43.48%	46.68%	29.95%	11.91%	13.10%	10.83%
Traffic facilities	8.98%	11.49%	4.37%	1.48%	1.92%	1.75%
Gas station	38.02%	42.14%	25.61%	8.77%	9.96%	7.89%

Catering facility	18.70%	34.38%	9.03%	3.49%	4.30%	3.38%
AI	10.20%	10.34%	9.42%	3.41%	3.99%	3.17%
ED	14.13%	14.88%	8.20%	4.69%	4.98%	4.23%
PAFRAC	14.53%	13.63%	12.73%	4.57%	4.75%	3.94%
PD	16.20%	18.40%	8.37%	4.93%	5.24%	4.53%

Table S5. The percentage of not significant type grids corresponding to Figure S1.

	O3	PM2.5	NO2	Non-accident mortality	Cardiovascular mortality	Respiratory mortality
Diversity of built environment	56.52%	56.52%	56.52%	56.52%	56.52%	56.52%
Diversity of design	55.74%	55.60%	55.82%	55.82%	55.81%	55.84%
Diversity of POI	60.54%	59.85%	61.49%	61.99%	61.91%	62.05%
SHDI	45.97%	45.97%	45.97%	45.97%	45.97%	45.97%
Building density	66.40%	57.46%	79.13%	83.53%	82.54%	83.57%
Building height	61.37%	52.29%	74.18%	78.68%	77.65%	78.76%
SDBH	57.27%	47.35%	72.02%	79.21%	78.11%	79.45%
NDVI	44.69%	44.82%	44.63%	44.66%	44.69%	44.71%
Road length	61.30%	61.12%	61.36%	61.38%	61.37%	61.41%
Road crossing	74.52%	70.96%	84.49%	89.24%	88.45%	89.11%
Forestland	59.86%	57.07%	64.60%	78.23%	77.83%	79.39%
Construction land	57.18%	57.18%	57.18%	57.18%	57.18%	57.18%
Water area	60.92%	60.60%	61.31%	61.39%	61.38%	61.41%
Hygiene facility	66.11%	59.04%	77.14%	88.41%	87.42%	88.52%
Government agency	78.98%	73.65%	85.75%	91.58%	91.09%	91.55%
Residential community	68.67%	62.44%	81.01%	88.03%	87.15%	87.95%
Industrial park	51.36%	48.11%	65.06%	82.41%	81.23%	82.86%
Traffic facilities	68.85%	68.11%	69.87%	70.23%	70.15%	70.26%

Gas station	55.00%	50.94%	67.14%	83.14%	81.99%	84.01%
Catering facility	74.21%	59.04%	83.88%	89.40%	88.59%	89.52%
AI	46.53%	46.53%	46.53%	46.53%	46.53%	46.53%
ED	46.36%	46.36%	46.36%	46.35%	46.36%	46.35%
PAFRAC	48.62%	48.62%	48.62%	48.62%	48.62%	48.62%
PD	47.08%	47.08%	47.10%	47.11%	47.11%	47.12%
