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Supplementary appendix

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Supplement to: Ji J S, Zhu A, Lv Y, et al. Interaction between residential greenness and air pollution mortality: analysis of the Chinese Longitudinal Healthy Longevity Survey. *Lancet Planet Health* 2020: **4:** e107–115.

Supplementary Table 1. Hazard ratios and 95% confidence intervals for each 0·1-unit decrease in contemporaneous NDVI, each 10 μg/m³ increase in 3-year average PM2.5, and mortality (adjusted for more informative covariates)

	HR (95% CI)
Model 1	
Contemporaneous NDVI	1·13 (1·12, 1·14)
Model 2	
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·13 (1·12, 1·14)
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·07 (1·13, 1·12)
3-year average $PM_{2.5}$	1·14 (1·09, 1·18)
Interaction	1·01 (1·00, 1·02)
p-value for interaction	0·015

Note: All models were adjusted for a number of covariates, including age, sex, ethnicity, marital status, urban/rural residence, education, main occupation before age 60, financial support, social and leisure activity, geographical region, smoking status (never/former/current smokers), alcohol consumption (never/former/current smokers), and physical activity at baseline. p-value indicated the significance test for the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ in Model 4.
Model 1 tested the main effect of each 0·1-unit decrease in contemporaneous NDVI on mortality.
Model 2 tested the main effect of each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 3 tested the main effects of each 0.1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 4 tested the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.

Supplementary Table 2. A comparison summary of the baseline characteristics between the included participants (n=12,873) and all participants (n=16,954) of 2008 wave

Characteristics	Included participants	All participants	p-value
	12,873	16,954	..
Age (years) (mean±SD)	87±11·34	87±11·97	0·24
Sex			
Males	5,488 (42·63)	7,252 (42·77)	0·81
Females	7,385 (57·37)	9,702 (57·23)	
Ethnicity			
Han Chinese	12,015 (93·33)	15,918 (93·89)	0·052
Ethnic minorities	858 (6·67)	1,036 (6·11)	
Marital status			
Married	3,987 (30·97)	5,251 (30·97)	1·00
Not married	8,886 (69·03)	11,703 (69·03)	
Residence			
Urban area	1,980 (15·38)	3,351 (19·77)	<0·001
Rural area	10,893 (84·62)	13,603 (80·23)	
Main occupation before age 60			
Professional work	820 (6·37)	1,183 (6·98)	0·038
Non-professional work	12,053 (93·63)	15,771 (93·02)	
Education			
Formal education	4,664 (36·23)	6,371 (37·58)	0·017
No formal education	8,209 (63·77)	10,583 (62·42)	
Financial support			
Financial independence	3,022 (23·48)	4,395 (25·92)	<0·001
Financial dependence	9,851 (76·52)	12,559 (74·08)	

Social and leisure activity index (mean±SD)	2·03±1·53	2·06±1·56	0·12
Smoking status			
Yes	2,309 (17·94)	13,988 (82·51)	0·32
No	10,564 (82·06)	2,966 (17·49)	
Alcohol consumption			
Yes	2,307 (17·92)	14,021 (82·70)	0·16
No	10,566 (82·08)	2,933 (17·30)	
Physical activity			
Yes	3,425 (26·61)	12,309 (72·60)	0·13
No	9,448 (73·39)	4,645 (27·40)	
Geographic regions			
Central China	2,192 (17·03)	2,831 (16·70)	0·043
Eastern China	4,896 (38·03)	6,424 (37·89)	
Northeastern China	858 (6·67)	1,257 (7·41)	
Northern China	515 (4·00)	738 (4·35)	
Northwestern China	111 (0·86)	169 (1·00)	
Southern China	2,569 (19·96)	3,381 (19·94)	
Southwestern China	1,732 (13·45)	2,154 (12·70)	

Supplementary Table 3. Hazard ratios and 95% confidence intervals for each 0·1-unit decrease in cumulative NDVI, each 10 μg/m³ increase in 3-year average PM2.5, and mortality

	HR (95% CI)
Model 1	
cumulative NDVI	0·97 (0·95, 0·99)
Model 2	
3-year average $PM_{2.5}$	1·10 (1·04, 1·16)
Model 3	
cumulative NDVI	0·97 (0·95, 0·99)
3-year average $PM_{2.5}$	1·10 (1·07, 1·12)
Model 3	
cumulative NDVI	0·91 (0·85, 0·97)
3-year average $PM_{2.5}$	1·16 (1·09, 1·23)
Interaction	1·01 (1·00, 1·03)
p-value for interaction	0·042

Note: All models were adjusted for a number of covariates, including age, sex, ethnicity, marital status, urban/rural residence, education, main occupation before age 60, financial support, social and leisure activity, geographical region, smoking status, alcohol consumption, and physical activity at baseline. p-value indicated the significance test for the interaction between each 0·1-unit decrease in cumulative NDVI and each 10 μg/m³ increase in 3-year average PM2.5 in Model 4.
Model 1 tested the main effect of each 0·1-unit decrease in cumulative NDVI on mortality.
Model 2 tested the main effect of each 10 μg/m³ increase in 3-year average PM2.5 on mortality.
Model 3 tested the main effects of each 0.1-unit decrease in cumulative NDVI and each 10 μg/m³ increase in 3-year average PM2.5 on mortality.
Model 4 tested the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average PM2.5 on mortality.

Supplementary Table 4. Hazard ratios and 95% confidence intervals for each 0·1-unit decrease in contemporaneous NDVI, each 10 μg/m³ increase in 3-year average PM2.5, and mortality (weighted analysis)

	HR (95% CI)
Model 1	
Contemporaneous NDVI	1·23 (1·20, 1·27)
Model 2	
3-year average $PM_{2.5}$	1·10 (1·04, 1·16)
Model 3	
Contemporaneous NDVI	1·23 (1·20, 1·27)
3-year average $PM_{2.5}$	1·10 (1·04, 1·16)
Model 3	
Contemporaneous NDVI	1·10 (0·99, 1·23)
3-year average $PM_{2.5}$	1·20 (1·09, 1·32)
Interaction	1·02 (1·00, 1·05)
p-value for interaction	0·031

Note: All models were adjusted for a number of covariates, including age, sex, ethnicity, marital status, urban/rural residence, education, main occupation before age 60, financial support, social and leisure activity, geographical region, smoking status (never/former/current smokers), alcohol consumption (never/former/current smokers), and physical activity at baseline. p-value indicated the significance test for the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ in Model 4.
Model 1 tested the main effect of each 0·1-unit decrease in contemporaneous NDVI on mortality.
Model 2 tested the main effect of each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 3 tested the main effects of each 0.1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 4 tested the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.

Supplementary Table 5. Hazard ratios and 95% confidence intervals for each 0·1-unit decrease in contemporaneous NDVI, each 10 μg/m³ increase in 3-year average PM2.5, and mortality (excluding the participants with negative NDVI values, n=12,803)

	HR (95% CI)
Model 1	
Contemporaneous NDVI	1·13 (1·12, 1·14)
Model 2	
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·13 (1·12, 1·14)
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·08 (1·03, 1·13)
3-year average $PM_{2.5}$	1·13 (1·09, 1·18)
Interaction	1·01 (1·00, 1·02)
p-value for interaction	0·028

Note: All models were adjusted for a number of covariates, including age, sex, ethnicity, marital status, urban/rural residence, education, main occupation before age 60, financial support, social and leisure activity, geographical region, smoking status (never/former/current smokers), alcohol consumption (never/former/current smokers), and physical activity at baseline. p-value indicated the significance test for the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ in Model 4.
Model 1 tested the main effect of each 0·1-unit decrease in contemporaneous NDVI on mortality.
Model 2 tested the main effect of each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 3 tested the main effects of each 0.1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 4 tested the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.

Supplementary Table 6. Hazard ratios and 95% confidence intervals for each 0·1-unit decrease in contemporaneous NDVI, each 10 μg/m³ increase in 3-year average PM2.5, and mortality (excluding the participants with missing covariates, n=12,837)

	HR (95% CI)
Model 1	
Contemporaneous NDVI	1·13 (1·12, 1·15)
Model 2	
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·13 (1·12, 1·14)
3-year average $PM_{2.5}$	1·09 (1·07, 1·12)
Model 3	
Contemporaneous NDVI	1·08 (1·03, 1·13)
3-year average $PM_{2.5}$	1·13 (1·09, 1·18)
Interaction	1·01 (1·00, 1·02)
p-value for interaction	0·030

Note: All models were adjusted for a number of covariates, including age, sex, ethnicity, marital status, urban/rural residence, education, main occupation before age 60, financial support, social and leisure activity, geographical region, smoking status (never/former/current smokers), alcohol consumption (never/former/current smokers), and physical activity at baseline. p-value indicated the significance test for the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ in Model 4.
Model 1 tested the main effect of each 0·1-unit decrease in contemporaneous NDVI on mortality.
Model 2 tested the main effect of each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 3 tested the main effects of each 0.1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.
Model 4 tested the interaction between each 0·1-unit decrease in contemporaneous NDVI and each 10 μg/m³ increase in 3-year average $PM_{2.5}$ on mortality.

Supplementary Figure 1. Geographic distribution of the number of included participants by provinces