**SUPPLEMENTAL MATERIAL**

Associations between greenspace and mortality vary across contexts of community change: A

longitudinal ecological study

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This document contains a map showing the distribution of Swedish parishes according to their

classification in terms of population density change between 2000 and 2008 (> 1 decile increase;

stable; > 1 decile decrease; excluded from analyses because of change in boundaries during the

period of the study). This document also contains additional information on the creation of the land

use indicators used in analyses, and seven tables of supplemental results, the contents of which are

described in the article.

Distribution of Swedish Parishes According to Population Density Change 2000-2008

Change
unstable boundaries	(424)
decrease	(36)
increase	(83)
no change	(1313)
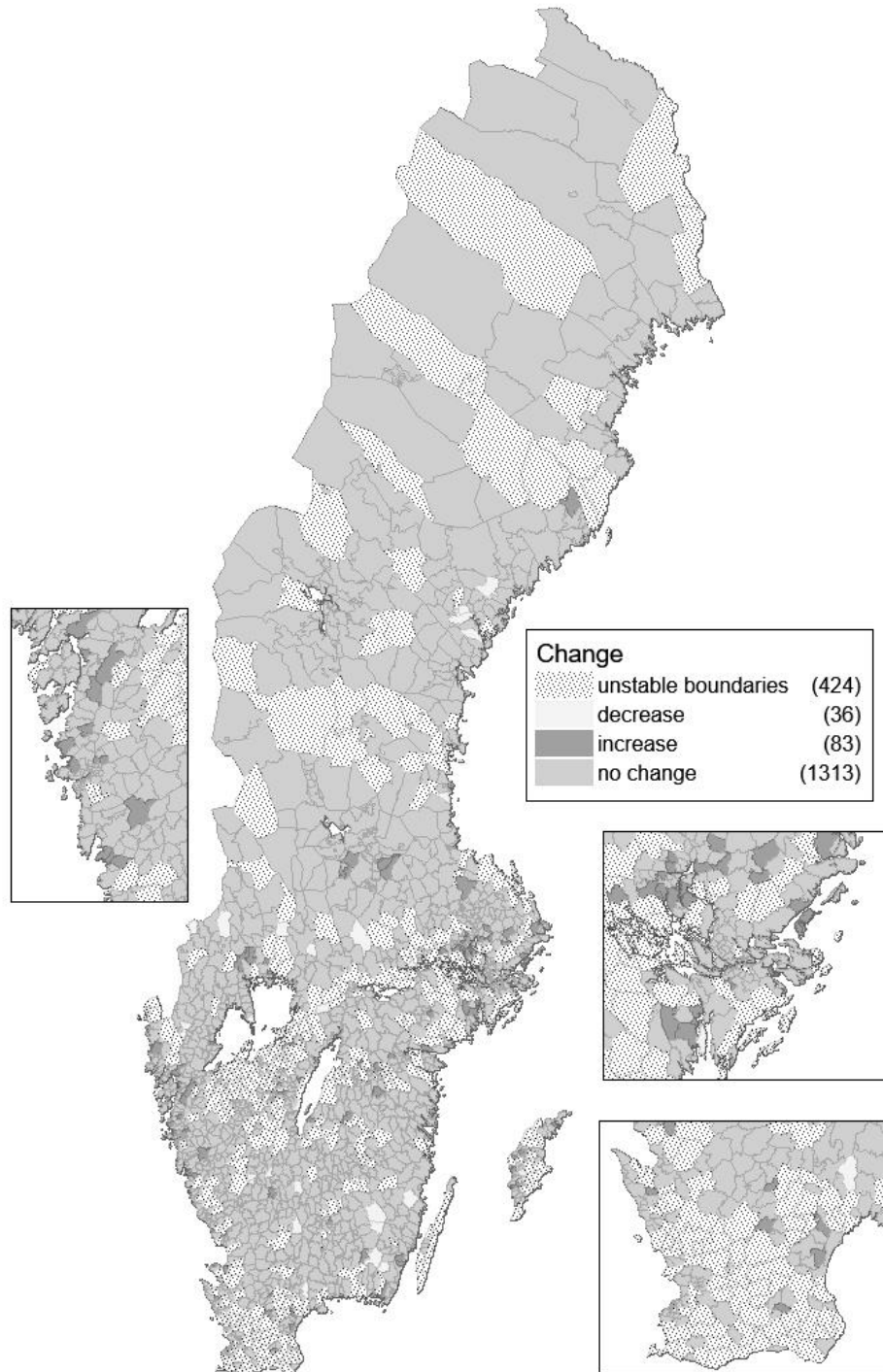
Creation of the Land Use Indicators

The following text complements the text given in the main document by giving the specific land use category or categories from Lantmäteriet's typology incorporated in each of our land use classes and by giving additional examples of the kinds of land use that fall within some categories.

We created four land-use indicators, based on Lantmäteriet's typology (26; reference given in the main text): (i) dense urban structure; (ii) less dense urban structure with greenspace; (iii) urban parks; and (iv) rural greenspace (each a percentage of total parish land area). Dense urban structure comprises several categories of land use, including centrally located blocks of housing and/or commercial buildings with more than 80% of the area covered by artificially hardened surface (category 111 in Lantmäteriet's typology) as well as industrial areas and transport infrastructure (categories 121-124).

Less dense urban structure with greenspace (hereinafter "green urban") was defined through aggregation of two categories of land use: less dense urban structure with smaller areas covered by gardens and greenspace (50-80% coverage by buildings and other hardened surfaces; category 11211), and less dense urban structure with larger areas in gardens and greenspace (30-50% coverage by buildings and other hardened surfaces; category 11212).

The urban park indicator comprises areas with 70% or more of the area covered by vegetation, and the remainder covered by buildings and other artificially hardened surface (category 141). It includes parks, grass fields, graveyards, allotment garden areas, zoos, botanical gardens, and amusement parks.

The fourth land use indicator (hereinafter "rural green") comprises various land uses of a predominantly "green" character with low levels of habitation. These include development characteristic of outlying village areas (categories 1122, 1123), agricultural land (fields, orchards, pastures; categories 211, 222, 231), forests, grasslands and other areas covered by rock and vegetation of varying kinds (3111-3113, 31211, 312121, 312122, 3122, 3123, 3131, 3131, 3133, 321, 3211, 3212, 3242, 3243, 331-334), wetlands (4121-4123, 421), and facilities with large green areas, such as gold courses, playing fields and camping areas (1421-1426).

Land use not comprised by these four indicators for the most part involved different forms of open water (e.g., waterways, lakes, sea; categories 511, 5121, 5122, 521, 522, 5231, 5232). We did not include such "bluespace" in analyses because in general it has not yet been built upon to any great extent and so has not accommodated substantial population increase. Our calculation of percentage parish area in each of the four land use classes was done on the basis of land alone, excluding area in bluespace.

Supplementary Table S1: Adjusted associations between all-cause mortality with measures of population density change and green space

All-Cause Mortality	Model 1	Model 2	Model 3	Model 4
		Incident Rate Ratio (95% Confidence Interval) p-value		
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.911 (0.871, 0.953) p<0.001	0.884 (0.840, 0.930) p<0.001	0.899 (0.855, 0.944) p<0.001	1.238 (0.885, 1.731) p=0.213
≥1 Decile Decrease	1.030 (0.961, 1.104) p=0.406	0.990 (0.910, 1.077) p=0.816	0.963 (0.882, 1.050) p=0.390	268.157 (0.943, 76,234.630) p=0.052
Green space indicators				
Green urban percentage	0.998 (0.996, 1.000) p=0.036	0.998 (0.996, 1.000) p=0.028	0.998 (0.996, 1.000) p=0.035	0.998 (0.996, 1.000) p=0.032
Urban park percentage	1.000 (0.997, 1.002) p=0.872	1.000 (0.997, 1.002) p=0.815	1.000 (0.997, 1.002) p=0.815	1.000 (0.997, 1.002) p=0.815
Rural green percentage	0.997 (0.996, 0.999) p<0.001	0.997 (0.996, 0.999) p<0.001	0.997 (0.996, 0.999) p<0.001	0.997 (0.996, 0.999) p<0.001
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.008 (1.002, 1.015) p=0.014		
≥1 Decile Decrease x Green urban percentage		1.092 (0.977, 1.220) p=0.121		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.006 (0.996, 1.017) p=0.217	
≥1 Decile Decrease x Urban park percentage			1.226 (1.042, 1.442) p=0.014	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.997 (0.993, 1.000) p=0.071
≥1 Decile Decrease x Rural green percentage				0.945 (0.893, 1.001) p=0.054
Year				
2000 (reference)				
2001	1.017 (1.006, 1.029) p=0.003	1.018 (1.006, 1.029) p=0.003	1.017 (1.006, 1.029) p=0.003	1.017 (1.006, 1.029) p=0.003
2002	1.039 (1.027, 1.052) p<0.001	1.040 (1.027, 1.052) p<0.001	1.039 (1.027, 1.052) p<0.001	1.040 (1.027, 1.052) p<0.001
2003	1.025 (1.012, 1.038) p<0.001	1.025 (1.013, 1.038) p<0.001	1.025 (1.012, 1.038) p<0.001	1.025 (1.013, 1.038) p<0.001
2004	0.998 (0.985, 1.011) p=0.710	0.998 (0.986, 1.011) p=0.800	0.998 (0.985, 1.011) p=0.740	0.998 (0.985, 1.011) p=0.774
2005	0.756 (0.746, 0.766) p<0.001	0.756 (0.747, 0.766) p<0.001	0.756 (0.746, 0.766) p<0.001	0.756 (0.747, 0.766) p<0.001
2006	1.017 (1.002, 1.033) p=0.027	1.018 (1.003, 1.034) p=0.018	1.018 (1.002, 1.033) p=0.023	1.018 (1.003, 1.034) p=0.020
2007	1.024 (1.007, 1.042) p=0.006	1.026 (1.008, 1.044) p=0.004	1.025 (1.007, 1.043) p=0.005	1.026 (1.008, 1.043) p=0.004
2008	1.021 (1.001, 1.040) p=0.035	1.023 (1.003, 1.042) p=0.021	1.021 (1.002, 1.041) p=0.029	1.022 (1.003, 1.042) p=0.024
Sex				
Male (reference)				
Female	0.867 (0.862, 0.872) p<0.001	0.867 (0.862, 0.872) p<0.001	0.867 (0.862, 0.872) p<0.001	0.867 (0.862, 0.872) p<0.001

Age group				
18-49 years (reference)				
50-64 years	9.677 (9.484, 9.874) p<0.001	9.677 (9.484, 9.874) p<0.001	9.677 (9.484, 9.874) p<0.001	9.677 (9.484, 9.874) p<0.001
65+ years	98.243 (96.449, 100.069) p<0.001	98.237 (96.444, 100.064) p<0.001	98.241 (96.448, 100.068) p<0.001	98.239 (96.446, 100.066) p<0.001
Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	1.000 (0.998, 1.001) p=0.677	0.999 (0.998, 1.001) p=0.482	1.000 (0.998, 1.001) p=0.510	1.000 (0.998, 1.001) p=0.490
Higher education percentage	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.031	1.000 (1.000, 1.000) p=0.023	1.000 (1.000, 1.000) p=0.028	1.000 (1.000, 1.000) p=0.025
Log-likelihood	-115978.07	-115973.80	-115974.19	-115974.51
Likelihood ratio test (p-value), compared to Model 1		8.55 (p=0.0139)	7.78 (p=0.0205)	7.12 (p=0.0284)

Supplementary Table S2: Adjusted associations between all-cause mortality with measures of population density change and green space (male)

All-Cause Mortality	Model 1	Model 2	Model 3	Model 4
		Incident Rate Ratio (95% Confidence Interval) p-value		
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.927 (0.888, 0.967) p=0.001	0.895 (0.851, 0.941) p<0.001	0.915 (0.871, 0.961) p<0.001	1.201 (0.903, 1.598) p=0.208
≥1 Decile Decrease	1.034 (0.965, 1.107) p=0.347	0.999 (0.916, 1.089) p=0.976	0.977 (0.894, 1.068) p=0.613	119.278 (0.664, 21,442.420) p=0.071
Green space indicators				
Green urban percentage	0.999 (0.997, 1.000) p=0.068	0.999 (0.997, 1.000) p=0.054	0.999 (0.997, 1.000) p=0.067	0.999 (0.997, 1.000) p=0.062
Urban park percentage	1.000 (0.998, 1.002) p=0.942	1.000 (0.998, 1.002) p=0.889	1.000 (0.998, 1.002) p=0.898	1.000 (0.998, 1.002) p=0.891
Rural green percentage	0.997 (0.996, 0.998) p<0.001	0.997 (0.996, 0.998) p<0.001	0.997 (0.996, 0.998) p<0.001	0.997 (0.996, 0.998) p<0.001
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.008 (1.002, 1.014) p=0.009		
≥1 Decile Decrease x Green urban percentage		1.068 (0.964, 1.184) p=0.210		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.005 (0.996, 1.014) p=0.288	
≥1 Decile Decrease x Urban park percentage			1.157 (0.998, 1.342) p=0.053	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.997 (0.994, 1.000) p=0.071
≥1 Decile Decrease x Rural green percentage				0.953 (0.904, 1.004) p=0.073
Year				
2000 (reference)				
2001	1.011 (0.995, 1.028) p=0.170	1.012 (0.995, 1.028) p=0.162	1.011 (0.995, 1.028) p=0.169	1.012 (0.995, 1.028) p=0.165
2002	1.030 (1.013, 1.047) p<0.001	1.030 (1.013, 1.047) p<0.001	1.030 (1.013, 1.047) p<0.001	1.030 (1.013, 1.047) p<0.001
2003	1.029 (1.012, 1.046) p=0.001	1.030 (1.012, 1.047) p=0.001	1.029 (1.012, 1.046) p=0.001	1.029 (1.012, 1.047) p=0.001
2004	0.995 (0.978, 1.012) p=0.532	0.995 (0.978, 1.012) p=0.584	0.995 (0.978, 1.012) p=0.540	0.995 (0.978, 1.012) p=0.562
2005	0.736 (0.723, 0.748) p<0.001	0.736 (0.723, 0.749) p<0.001	0.736 (0.723, 0.748) p<0.001	0.736 (0.723, 0.748) p<0.001
2006	1.017 (0.998, 1.036) p=0.083	1.018 (0.999, 1.037) p=0.065	1.017 (0.998, 1.036) p=0.079	1.017 (0.999, 1.037) p=0.071
2007	1.015 (0.994, 1.035) p=0.162	1.016 (0.996, 1.037) p=0.127	1.015 (0.994, 1.036) p=0.155	1.015 (0.995, 1.036) p=0.139
2008	1.016 (0.994, 1.038) p=0.157	1.017 (0.996, 1.040) p=0.118	1.016 (0.994, 1.038) p=0.149	1.017 (0.995, 1.039) p=0.132
Age group				
18-49 years (reference)				
50-64 years	10.351 (10.082, 10.627) p<0.001	10.351 (10.081, 10.627) p<0.001	10.351 (10.082, 10.627) p<0.001	10.351 (10.082, 10.627) p<0.001
65+ years	94.625 (92.356, 96.949) p<0.001	94.620 (92.351, 96.945) p<0.001	94.624 (92.355, 96.949) p<0.001	94.623 (92.354, 96.948) p<0.001

Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	0.999 (0.997, 1.000) p=0.031	0.998 (0.997, 1.000) p=0.013	0.998 (0.997, 1.000) p=0.019	0.998 (0.997, 1.000) p=0.015
Higher education percentage	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001	0.997 (0.995, 0.998) p<0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.010	1.000 (1.000, 1.000) p=0.007	1.000 (1.000, 1.000) p=0.009	1.000 (1.000, 1.000) p=0.008
Log-likelihood	-59445.982	-59441.73	-59443.53	-59442.72
Likelihood ratio test (p-value), compared to Model 1		8.50 (p=0.0143)	4.91 (p=0.0857)	6.52 (p=0.0383)

Supplementary Table S3: Adjusted associations between all-cause mortality with measures of population density change and green space (female)

All-Cause Mortality	Model 1	Model 2	Model 3	Model 4
		Incident Rate Ratio (95% Confidence Interval) p-value		
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.908 (0.859, 0.959) p=0.001	0.872 (0.818, 0.929) p<0.001	0.888 (0.835, 0.945) p<0.001	1.334 (0.903, 1.971) p=0.147
≥1 Decile Decrease	1.012 (0.928, 1.102) p=0.792	0.952 (0.855, 1.059) p=0.363	0.918 (0.821, 1.026) p=0.131	1043.852 (1.089, 1,000,272.000) p=0.047
Green space indicators				
Green urban percentage	0.998 (0.996, 1.000) p=0.040	0.998 (0.996, 1.000) p=0.031	0.998 (0.996, 1.000) p=0.039	0.998 (0.996, 1.000) p=0.036
Urban park percentage	1.001 (0.998, 1.004) p=0.633	1.001 (0.998, 1.004) p=0.684	1.001 (0.998, 1.004) p=0.695	1.001 (0.998, 1.004) p=0.689
Rural green percentage	0.998 (0.996, 0.999) p=0.001	0.998 (0.996, 0.999) p=0.001	0.998 (0.996, 0.999) p=0.001	0.998 (0.996, 0.999) p=0.001
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.010 (1.002, 1.018) p=0.015		
≥1 Decile Decrease x Green urban percentage		1.135 (0.991, 1.299) p=0.067		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.009 (0.997, 1.021) p=0.132	
≥1 Decile Decrease x Urban park percentage			1.306 (1.072, 1.592) p=0.008	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.996 (0.992, 1.000) p=0.051
≥1 Decile Decrease x Rural green percentage				0.932 (0.870, 0.999) p=0.047
Year				
2000 (reference)				
2001	1.029 (1.013, 1.045) p<0.001	1.029 (1.013, 1.046) p<0.001	1.029 (1.013, 1.045) p<0.001	1.029 (1.013, 1.046) p<0.001
2002	1.059 (1.042, 1.076) p<0.001	1.060 (1.043, 1.077) p<0.001	1.059 (1.042, 1.076) p<0.001	1.059 (1.042, 1.077) p<0.001
2003	1.035 (1.018, 1.052) p<0.001	1.036 (1.019, 1.053) p<0.001	1.035 (1.018, 1.053) p<0.001	1.035 (1.018, 1.053) p<0.001
2004	1.016 (0.999, 1.034) p=0.063	1.017 (1.000, 1.035) p=0.050	1.017 (0.999, 1.034) p=0.058	1.017 (1.000, 1.035) p=0.053
2005	0.787 (0.774, 0.801) p<0.001	0.788 (0.774, 0.801) p<0.001	0.787 (0.774, 0.801) p<0.001	0.788 (0.774, 0.801) p<0.001
2006	1.045 (1.024, 1.065) p<0.001	1.046 (1.026, 1.067) p<0.001	1.045 (1.025, 1.066) p<0.001	1.046 (1.025, 1.067) p<0.001
2007	1.068 (1.045, 1.092) p<0.001	1.070 (1.047, 1.094) p<0.001	1.069 (1.046, 1.093) p<0.001	1.070 (1.046, 1.094) p<0.001
2008	1.067 (1.042, 1.093) p<0.001	1.069 (1.044, 1.095) p<0.001	1.068 (1.042, 1.094) p<0.001	1.069 (1.043, 1.095) p<0.001
Age group				
18-49 years (reference)				
50-64 years	8.901 (8.635, 9.176) p<0.001	8.901 (8.634, 9.176) p<0.001	8.901 (8.635, 9.176) p<0.001	8.901 (8.635, 9.176) p<0.001
65+ years	103.129 (100.323, 106.013) p<0.001	103.121 (100.315, 106.006) p<0.001	103.128 (100.322, 106.012) p<0.001	103.124 (100.318, 106.009) p<0.001

Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	0.998 (0.996, 1.000) p=0.012	0.998 (0.996, 0.999) p=0.005	0.998 (0.996, 0.999) p=0.006	0.998 (0.996, 0.999) p=0.005
Higher education percentage	0.997 (0.995, 0.999) p=0.001	0.997 (0.995, 0.999) p<0.001	0.997 (0.995, 0.999) p=0.001	0.997 (0.995, 0.999) p=0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.004	1.000 (1.000, 1.000) p=0.003	1.000 (1.000, 1.000) p=0.003	1.000 (1.000, 1.000) p=0.003
Log-likelihood	-56349.08	-56344.32	-56344.28	-56345.11
Likelihood ratio test (p-value), compared to Model 1		9.52 (p=0.0086)	9.59 (p=0.0083)	7.93 (p=0.0190)

Supplementary Table S4: Adjusted associations between CVD mortality with measures of population density change and green space

Cardiovascular Disease Mortality	Model 1	Model 2	Model 3	Model 4
	Incident Rate Ratio (95% Confidence Interval) p-value			
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.889 (0.839, 0.941) p<0.001	0.844 (0.790, 0.902) p<0.001	0.867 (0.813, 0.924) p<0.001	1.443 (0.957, 2.175) p=0.080
≥1 Decile Decrease	1.056 (0.967, 1.153) p=0.226	1.001 (0.898, 1.114) p=0.993	0.971 (0.869, 1.086) p=0.610	863.851 (0.819, 910,956.600) p=0.057
Green space indicators				
Green urban percentage	0.998 (0.995, 1.000) p=0.021	0.997 (0.995, 0.999) p=0.014	0.998 (0.995, 1.000) p=0.020	0.997 (0.995, 1.000) p=0.018
Urban park percentage	1.001 (0.998, 1.004) p=0.631	1.001 (0.997, 1.004) p=0.686	1.001 (0.997, 1.004) p=0.695	1.001 (0.997, 1.004) p=0.692
Rural green percentage	0.998 (0.996, 0.999) p=0.006	0.998 (0.996, 0.999) p=0.004	0.998 (0.996, 0.999) p=0.005	0.998 (0.996, 0.999) p=0.005
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.013 (1.004, 1.021) p=0.003		
≥1 Decile Decrease x Green urban percentage		1.120 (0.976, 1.285) p=0.106		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.011 (0.998, 1.024) p=0.096	
≥1 Decile Decrease x Urban park percentage			1.268 (1.038, 1.549) p=0.020	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.995 (0.990, 0.999) p=0.019
≥1 Decile Decrease x Rural green percentage				0.934 (0.871, 1.003) p=0.059
Year				
2000 (reference)				
2001	1.008 (0.992, 1.025) p=0.328	1.009 (0.992, 1.026) p=0.304	1.008 (0.992, 1.025) p=0.323	1.009 (0.992, 1.026) p=0.313
2002	1.021 (1.004, 1.039) p=0.018	1.022 (1.004, 1.039) p=0.014	1.021 (1.004, 1.039) p=0.017	1.022 (1.004, 1.039) p=0.015
2003	1.002 (0.984, 1.020) p=0.861	1.003 (0.985, 1.021) p=0.776	1.002 (0.984, 1.020) p=0.835	1.002 (0.985, 1.020) p=0.803
2004	0.957 (0.940, 0.975) p<0.001	0.958 (0.941, 0.976) p<0.001	0.958 (0.940, 0.975) p<0.001	0.958 (0.940, 0.976) p<0.001
2005	0.702 (0.689, 0.715) p<0.001	0.703 (0.690, 0.716) p<0.001	0.702 (0.689, 0.715) p<0.001	0.703 (0.690, 0.716) p<0.001
2006	0.969 (0.949, 0.989) p=0.003	0.971 (0.950, 0.991) p=0.005	0.969 (0.949, 0.990) p=0.004	0.970 (0.950, 0.991) p=0.005
2007	0.972 (0.949, 0.995) p=0.017	0.974 (0.951, 0.997) p=0.028	0.972 (0.950, 0.996) p=0.020	0.973 (0.951, 0.996) p=0.024
2008	0.961 (0.937, 0.986) p=0.003	0.964 (0.940, 0.989) p=0.005	0.962 (0.938, 0.987) p=0.003	0.963 (0.939, 0.988) p=0.004
Sex				
Male (reference)				
Female	0.854 (0.848, 0.861) p<0.001	0.854 (0.848, 0.861) p<0.001	0.854 (0.848, 0.861) p<0.001	0.854 (0.848, 0.861) p<0.001

Age group				
18-49 years (reference)				
50-64 years	11.380 (10.933, 11.845) p<0.001	11.378 (10.931, 11.843) p<0.001	11.380 (10.932, 11.845) p<0.001	11.379 (10.932, 11.844) p<0.001
65+ years	191.047 (184.116, 198.240) p<0.001	191.006 (184.076, 198.197) p<0.001	191.041 (184.110, 198.233) p<0.001	191.023 (184.093, 198.215) p<0.001
Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	0.998 (0.996, 0.999) p=0.010	0.997 (0.996, 0.999) p=0.003	0.997 (0.996, 0.999) p=0.004	0.997 (0.996, 0.999) p=0.003
Higher education percentage	0.995 (0.993, 0.997) p<0.001	0.995 (0.993, 0.997) p<0.001	0.995 (0.993, 0.997) p<0.001	0.995 (0.993, 0.997) p<0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.009	1.000 (1.000, 1.000) p=0.006	1.000 (1.000, 1.000) p=0.008	1.000 (1.000, 1.000) p=0.007
Log-likelihood	-83046.70	-83040.70	-83042.48	-83042.07
Likelihood ratio test (p-value), compared to Model 1		11.97 (p=0.0025)	8.39 (p=0.0150)	9.22 (p=0.0099)

Supplementary Table S5: Adjusted associations between CVD mortality with measures of population density change and green space (male)

Cardiovascular Disease Mortality	Model 1	Model 2	Model 3	Model 4
		Incident Rate Ratio (95% Confidence Interval) p-value		
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.915 (0.865, 0.967) p=0.002	0.851 (0.795, 0.910) p<0.001	0.884 (0.828, 0.943) p<0.001	1.554 (1.091, 2.214) p=0.015
≥1 Decile Decrease	1.079 (0.988, 1.179) p=0.091	1.020 (0.912, 1.140) p=0.729	1.006 (0.896, 1.129) p=0.919	566.647 (0.899, 357,235.400) p=0.054
Green space indicators				
Green urban percentage	0.998 (0.997, 1.000) p=0.093	0.998 (0.997, 1.000) p=0.065	0.998 (0.997, 1.000) p=0.091	0.998 (0.997, 1.000) p=0.080
Urban park percentage	1.002 (0.999, 1.004) p=0.258	1.001 (0.999, 1.004) p=0.289	1.001 (0.999, 1.004) p=0.299	1.001 (0.999, 1.004) p=0.297
Rural green percentage	0.998 (0.997, 0.999) p=0.003	0.998 (0.997, 0.999) p=0.002	0.998 (0.997, 0.999) p=0.003	0.998 (0.997, 0.999) p=0.003
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.014 (1.007, 1.022) p<0.001		
≥1 Decile Decrease x Green urban percentage		1.108 (0.974, 1.260) p=0.118		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.012 (1.000, 1.023) p=0.043	
≥1 Decile Decrease x Urban park percentage			1.189 (0.989, 1.429) p=0.066	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.994 (0.990, 0.998) p=0.003
≥1 Decile Decrease x Rural green percentage				0.939 (0.879, 1.002) p=0.057
Year				
2000 (reference)				
2001	1.005 (0.982, 1.028) p=0.668	1.005 (0.983, 1.029) p=0.643	1.005 (0.982, 1.028) p=0.668	1.005 (0.982, 1.028) p=0.655
2002	1.010 (0.987, 1.034) p=0.403	1.011 (0.987, 1.035) p=0.368	1.010 (0.987, 1.034) p=0.399	1.010 (0.987, 1.034) p=0.383
2003	0.998 (0.974, 1.022) p=0.844	0.999 (0.975, 1.023) p=0.910	0.998 (0.974, 1.022) p=0.855	0.998 (0.975, 1.022) p=0.883
2004	0.945 (0.922, 0.968) p<0.001	0.946 (0.923, 0.969) p<0.001	0.945 (0.922, 0.969) p<0.001	0.946 (0.923, 0.969) p<0.001
2005	0.685 (0.669, 0.702) p<0.001	0.686 (0.670, 0.703) p<0.001	0.686 (0.669, 0.702) p<0.001	0.686 (0.669, 0.703) p<0.001
2006	0.960 (0.935, 0.985) p=0.002	0.961 (0.937, 0.987) p=0.003	0.960 (0.935, 0.985) p=0.002	0.961 (0.936, 0.986) p=0.003
2007	0.960 (0.933, 0.987) p=0.004	0.962 (0.936, 0.990) p=0.007	0.960 (0.934, 0.988) p=0.005	0.961 (0.935, 0.989) p=0.006
2008	0.949 (0.921, 0.977) p<0.001	0.951 (0.924, 0.980) p=0.001	0.949 (0.921, 0.978) p=0.001	0.950 (0.923, 0.979) p=0.001
Age group				
18-49 years (reference)				
50-64 years	11.864 (11.332, 12.421) p<0.001	11.862 (11.330, 12.419) p<0.001	11.863 (11.331, 12.420) p<0.001	11.863 (11.331, 12.420) p<0.001
65+ years	142.745 (136.799, 148.951) p<0.001	142.720 (136.775, 148.923) p<0.001	142.744 (136.798, 148.948) p<0.001	142.734 (136.788, 148.938) p<0.001

Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	0.996 (0.995, 0.998) p<0.001	0.996 (0.994, 0.997) p<0.001	0.996 (0.994, 0.997) p<0.001	0.996 (0.994, 0.997) p<0.001
Higher education percentage	0.996 (0.994, 0.997) p<0.001	0.995 (0.994, 0.997) p<0.001	0.996 (0.994, 0.997) p<0.001	0.995 (0.994, 0.997) p<0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.004	1.000 (1.000, 1.000) p=0.002	1.000 (1.000, 1.000) p=0.003	1.000 (1.000, 1.000) p=0.002
Log-likelihood	-44264.76	-44255.97	-44260.96	-44258.43
Likelihood ratio test (p-value), compared to Model 1		17.56 (p=0.0002)	7.59 (p=0.0225)	12.66 (p=0.0018)

Supplementary Table S6: Adjusted associations between CVD mortality with measures of population density change and green space (female)

Cardiovascular Disease Mortality	Model 1	Model 2	Model 3	Model 4
		Incident Rate Ratio (95% Confidence Interval) p-value		
Population density decile 2000 to 2008				
Stable (reference)				
≥1 Decile Increase	0.877 (0.815, 0.944) p<0.001	0.828 (0.759, 0.902) p<0.001	0.848 (0.780, 0.923) p<0.001	1.445 (0.872, 2.393) p=0.153
≥1 Decile Decrease	1.014 (0.905, 1.136) p=0.807	0.941 (0.816, 1.086) p=0.405	0.897 (0.773, 1.042) p=0.154	2841.109 (0.420, 19,200,000.000) p=0.077
Green space indicators				
Green urban percentage	0.997 (0.994, 0.999) p=0.016	0.997 (0.994, 0.999) p=0.012	0.997 (0.994, 0.999) p=0.015	0.997 (0.994, 0.999) p=0.014
Urban park percentage	1.002 (0.998, 1.006) p=0.400	1.002 (0.998, 1.005) p=0.439	1.001 (0.998, 1.005) p=0.451	1.001 (0.998, 1.005) p=0.444
Rural green percentage	0.998 (0.996, 0.999) p=0.013	0.997 (0.996, 0.999) p=0.011	0.998 (0.996, 0.999) p=0.011	0.998 (0.996, 0.999) p=0.011
Population density decile 2000 to 2008 x Green space indicators				
Stable (reference) x Green urban percentage				
≥1 Decile Increase x Green urban percentage		1.013 (1.003, 1.023) p=0.015		
≥1 Decile Decrease x Green urban percentage		1.160 (0.972, 1.383) p=0.099		
Stable (reference) x Urban park percentage				
≥1 Decile Increase x Urban park percentage			1.012 (0.997, 1.028) p=0.117	
≥1 Decile Decrease x Urban park percentage			1.376 (1.066, 1.776) p=0.014	
Stable (reference) x Rural green percentage				
≥1 Decile Increase x Rural green percentage				0.995 (0.989, 1.000) p=0.049
≥1 Decile Decrease x Rural green percentage				0.923 (0.844, 1.009) p=0.078
Year				
2000 (reference)				
2001	1.014 (0.992, 1.037) p=0.207	1.015 (0.993, 1.038) p=0.195	1.014 (0.992, 1.037) p=0.205	1.015 (0.992, 1.037) p=0.199
2002	1.036 (1.013, 1.060) p=0.002	1.037 (1.014, 1.061) p=0.002	1.036 (1.013, 1.060) p=0.002	1.037 (1.013, 1.061) p=0.002
2003	1.012 (0.988, 1.036) p=0.321	1.013 (0.989, 1.037) p=0.285	1.012 (0.989, 1.036) p=0.311	1.013 (0.989, 1.037) p=0.297
2004	0.977 (0.953, 1.001) p=0.060	0.978 (0.954, 1.002) p=0.073	0.977 (0.954, 1.001) p=0.064	0.978 (0.954, 1.002) p=0.069
2005	0.725 (0.707, 0.743) p<0.001	0.725 (0.708, 0.743) p<0.001	0.725 (0.707, 0.743) p<0.001	0.725 (0.707, 0.743) p<0.001
2006	0.991 (0.964, 1.018) p=0.508	0.993 (0.965, 1.020) p=0.593	0.991 (0.964, 1.019) p=0.535	0.992 (0.965, 1.020) p=0.566
2007	1.001 (0.971, 1.032) p=0.956	1.003 (0.973, 1.034) p=0.845	1.002 (0.971, 1.033) p=0.921	1.002 (0.972, 1.034) p=0.880
2008	0.995 (0.962, 1.028) p=0.756	0.997 (0.965, 1.031) p=0.879	0.996 (0.963, 1.029) p=0.793	0.997 (0.964, 1.030) p=0.839
Age group				
18-49 years (reference)				
50-64 years	10.921 (10.140, 11.762) p<0.001	10.921 (10.140, 11.762) p<0.001	10.922 (10.141, 11.763) p<0.001	10.921 (10.141, 11.763) p<0.001
65+ years	318.646 (297.662, 341.109) p<0.001	318.628 (297.644, 341.091) p<0.001	318.673 (297.688, 341.138) p<0.001	318.649 (297.664, 341.112) p<0.001

Mean disposable income	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001	1.000 (1.000, 1.000) p<0.001
Foreign born percentage	0.997 (0.995, 0.999) p=0.005	0.997 (0.994, 0.999) p=0.002	0.997 (0.994, 0.999) p=0.002	0.997 (0.994, 0.999) p=0.002
Higher education percentage	0.995 (0.993, 0.998) p<0.001	0.995 (0.993, 0.998) p<0.001	0.995 (0.993, 0.998) p<0.001	0.995 (0.993, 0.998) p<0.001
Parish population density mean	1.000 (1.000, 1.000) p=0.003	1.000 (1.000, 1.000) p=0.002	1.000 (1.000, 1.000) p=0.003	1.000 (1.000, 1.000) p=0.002
Log-likelihood	-37513.20	-37508.73	-37508.80	-37509.62
Likelihood ratio test (p-value), compared to Model 1		8.95 (p=0.0114)	8.81 (p=0.0122)	7.16 (p=0.0278)

Supplementary Table S7: Adjusted associations between all-cause and CVD mortality with indicators of green space, stratified by population density change, for males and females separately.

	All-Cause Mortality	Cardiovascular Disease Mortality
Male	Incident Rate Ratio (95% Confidence Interval)	
Green urban x Population density change 2000 to 2008		
Stable	0.998 (0.997, 1.000) p=0.033	0.998 (0.996, 1.000) p=0.040
≥1 Decile Increase	1.080 (1.035, 1.127) p<0.001	1.099 (1.038, 1.164) p=0.001
≥1 Decile Decrease	0.788 (0.554, 1.121) p=0.185	0.884 (0.543, 1.439) p=0.619
Urban park x Population density change 2000 to 2008		
Stable	1.000 (0.998, 1.002) p=0.975	1.002 (0.999, 1.004) p=0.228
≥1 Decile Increase	1.083 (1.001, 1.171) p=0.048	1.060 (0.950, 1.181) p=0.298
≥1 Decile Decrease	0.857 (0.572, 1.283) p=0.452	0.692 (0.395, 1.213) p=0.199
Rural green x Population density change 2000 to 2008		
Stable	0.997 (0.996, 0.998) p<0.001	0.998 (0.997, 0.999) p=0.003
≥1 Decile Increase	1.041 (1.004, 1.079) p=0.030	1.040 (0.991, 1.092) p=0.109
≥1 Decile Decrease	0.886 (0.735, 1.067) p=0.203	0.842 (0.655, 1.082) p=0.179
Female		
Green urban x Population density change 2000 to 2008		
Stable	0.998 (0.996, 1.000) p=0.022	0.997 (0.994, 0.999) p=0.007
≥1 Decile Increase	1.080 (1.029, 1.133) p=0.002	1.121 (1.052, 1.194) p<0.001
≥1 Decile Decrease	1.769 (1.170, 2.675) p=0.007	2.460 (1.256, 4.817) p=0.009
Urban park x Population density change 2000 to 2008		
Stable	1.001 (0.998, 1.004) p=0.672	1.001 (0.998, 1.005) p=0.455
≥1 Decile Increase	1.096 (1.005, 1.194) p=0.038	1.171 (1.042, 1.317) p=0.008
≥1 Decile Decrease	1.882 (1.201, 2.949) p=0.006	1.561 (0.722, 3.375) p=0.257
Rural green x Population density change 2000 to 2008		
Stable	0.998 (0.996, 0.999) p=0.002	0.998 (0.996, 1.000) p=0.015
≥1 Decile Increase	1.042 (1.001, 1.086) p=0.047	1.079 (1.023, 1.138) p=0.005
≥1 Decile Decrease	1.209 (0.947, 1.544) p=0.128	1.300 (0.854, 1.978) p=0.221

Note. The stratified results for the entire sample are given in Table 4 in the paper. All models adjusted for year, age group, mean disposable income, percentage foreign born, percentage with higher educational qualification(s), and population density (models containing all people also adjusted for sex)