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Supplementary Information

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Spatial analysis of the effect of the 2010 heat wave on stroke mortality in

3

Nanjing, China

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33 per 1000 people. Linear regression lines are also plotted. 11

34 **Supplementary Figure S5.** Spatial distribution of Adjusted Odds Ratios (AOR) for total
35 stroke mortality (I60-I64) using different modeling choices. (a) Using the default
36 convergence criteria and controlling gender, marriage, and occupation; (b) Using a more
37 stringently convergence criteria and controlling gender, marriage, and occupation; (c) Using
38 the default convergence criteria and controlling individual age, gender, marriage, and
39 occupation; (d) Using a more stringently convergence criteria and controlling individual age,
40 gender, marriage, and occupation. The contour lines show the areas with significantly
41 increased or decreased AOR (p-value < 0.05). Maps were generated using R software
42 (version 2.15.0; R Foundation for Statistical Computing, Vienna, Austria). 12

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44 **Supplementary Table S1.** Risk ratios (95% CI) of heat wave on stroke mortality in different
 45 districts of Nanjing City.

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Districts	Heat wave cases	Reference period cases^a	RR
Luhe	121	49.5	2.44(2.03,2.92)
Xuanwu	5	13	0.38(0.12,0.90)
Baixia	22	19	1.16(0.73,1.75)
Qinhuai	8	15	0.53(0.23,1.05)
Jianye	5	9.5	0.53(0.17,1.23)
Gulou	21	19.5	1.08(0.67,1.65)
Xiaguan	16	13	1.23(0.70,2.00)
Yuhuatai	19	13	1.46(0.88,2.28)
Pukou	34	33	1.03(0.71,1.44)
Qixia	21	16.5	1.27(0.79,1.95)
Jiangning	70	56	1.25(0.97,1.58)
Lishui	25	29.5	0.85(0.55,1.25)
Gaochun	51	25.5	2.00(1.49,2.63)
Urban districts	96	102	0.94(0.76,1.15)
Suburban districts	125	105.5	1.18(0.99,1.41)
Rural districts	197	104.5	1.89(1.63,2.17)
Whole Area	418	312	1.34(1.21,1.47)

47 ^a Using average cases of A2 period (July 29-August 16, 2009) and A3 period (July 27-August
 48 14, 2011).

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50 **Supplementary Table S2.** Risk ratios (95% CI) of heat wave on stroke mortality in Nanjing
51 using different reference periods ^a.

52

Region	RR ^b	RR ^c
Urban districts	0.82(0.66,1.01)	1.10(0.89,1.35)
Suburban districts	1.29(1.07,1.54)	1.10(0.91,1.31)
Rural districts	2.01(1.74,2.31)	1.77(1.54,2.04)
Nanjing	1.34(1.21,1.47)	1.34(1.21,1.47)

53 ^a RR was calculated as the ratio between stroke deaths in the heat wave and in the reference
54 period;

55 ^b Using A2 period (July 29-August 16, 2009) alone as the reference period;

56 ^c Using A3 period (July 27-August 14, 2011) alone as the reference period.

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59 **Supplementary Table S3.** Significance of differences (p-values) in characteristics of stroke
60 mortality cases between heat wave period (A1) and the reference period (A2 and A3) using
61 the Wilcoxon–Mann–Whitney test.

62

Characteristics	A1 vs. A2	A1 vs. A3
Age	0.299	0.785
Gender	0.886	0.004
Marital status	0.024	0.700
Education	0.096	0.076
Occupation	0.002	0.086
Death location	0.235	0.400

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65 **Supplementary Table S4.** Summary of average daily maximum temperature (°C) and
66 number of stroke mortality cases by urbanity in heat wave period (A1) and reference period
67 (A2 and A3).

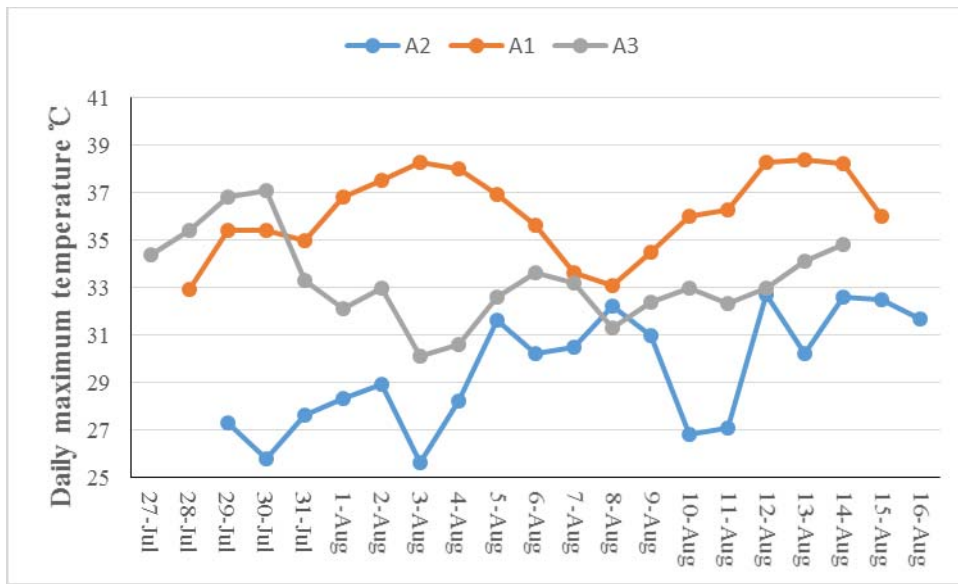
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Characteristics	A1, n (%)	A2, n (%)	A3, n (%)
Maximum temperature (°C)	36.12	29.52	33.32
Number of cases	418(100.0%)	312(100.0%)	312(100.0%)
urban	96(23.0%)	117(37.5%)	87(27.9%)
suburban	125(29.9%)	97(31.1%)	114(36.5%)
rural	197(47.1%)	98(31.4%)	111(35.6%)

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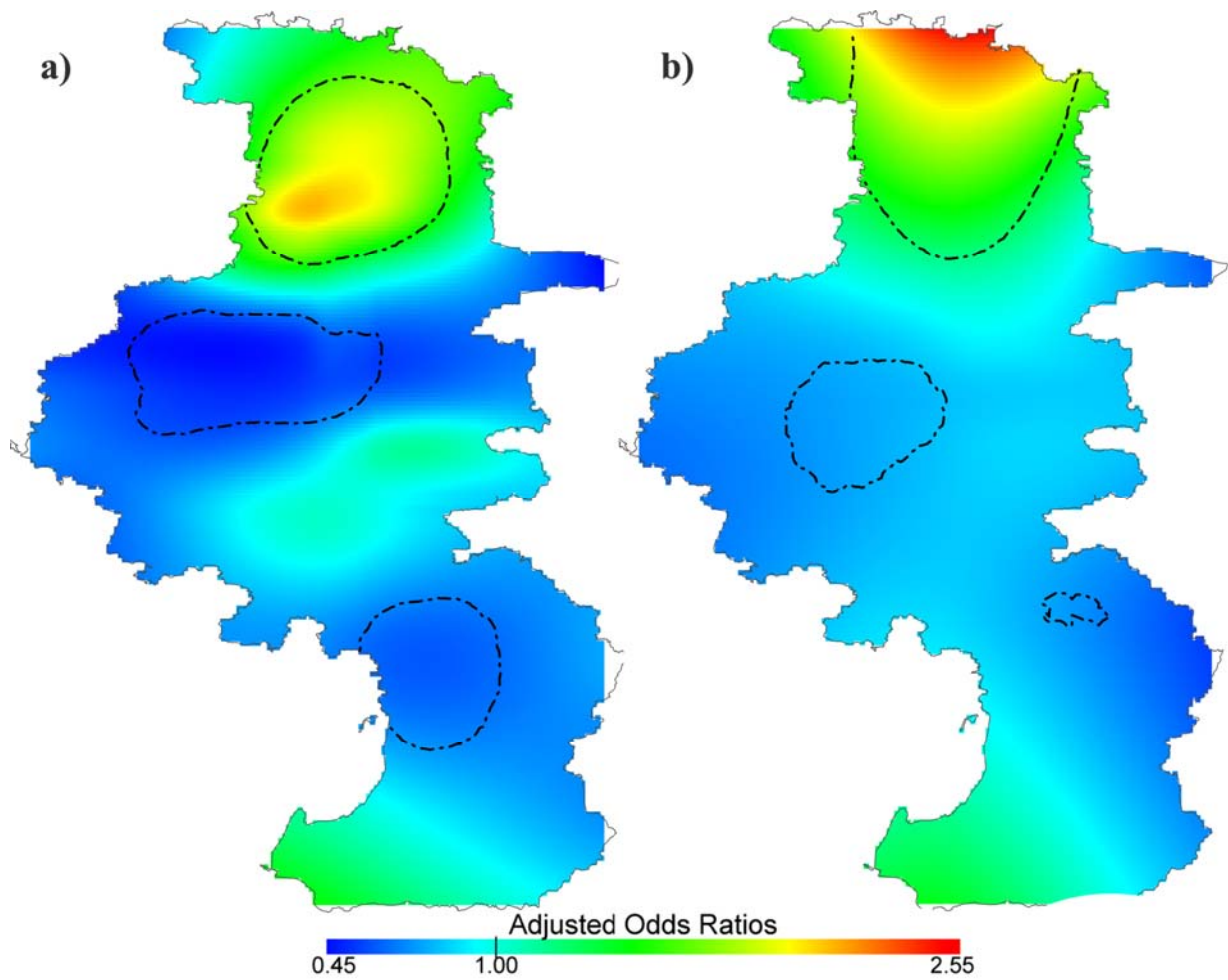
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73 **Supplementary Figure S1.** Daily maximum temperature during the 2010 heat wave (A1) and
74 two reference periods (A2 and A3).

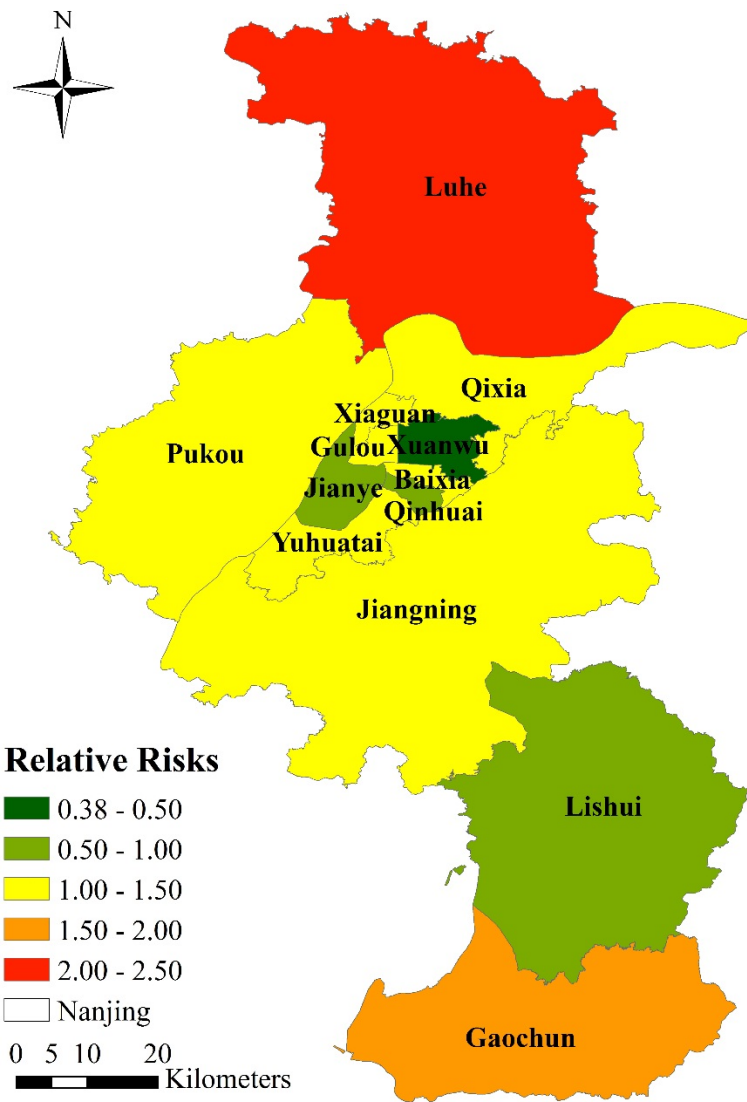
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78 **Supplementary Figure S2.** Spatial distribution of Adjusted Odds Ratios (AOR) for total
79 stroke mortality (I60-I64) using different reference periods. (a) Using A2 stroke as reference;
80 (b) Using A3 stroke as reference. The contour lines show the areas with significantly
81 increased or decreased AOR (p-value < 0.05). Maps were generated using R software (version
82 2.15.0; R Foundation for Statistical Computing, Vienna, Austria).

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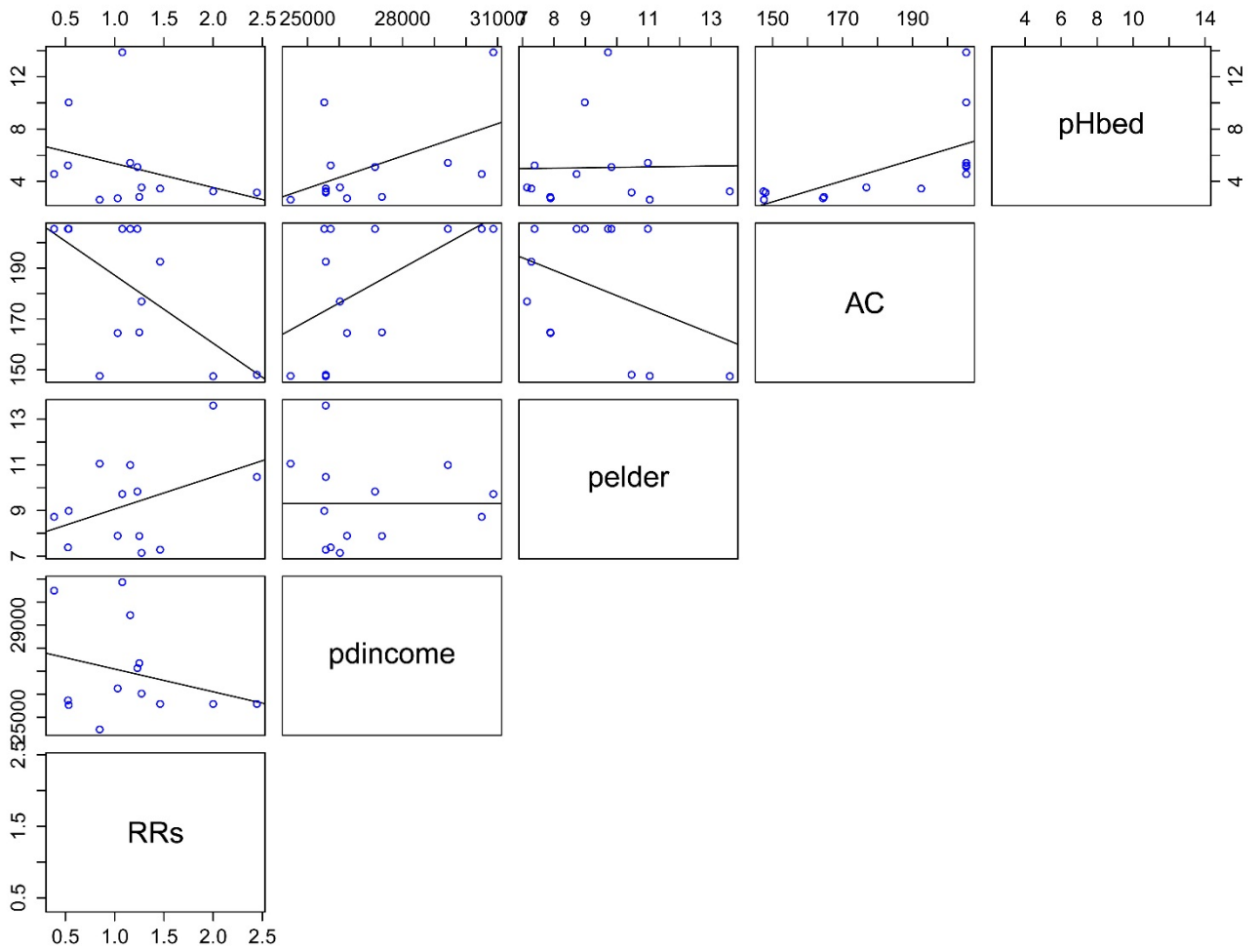


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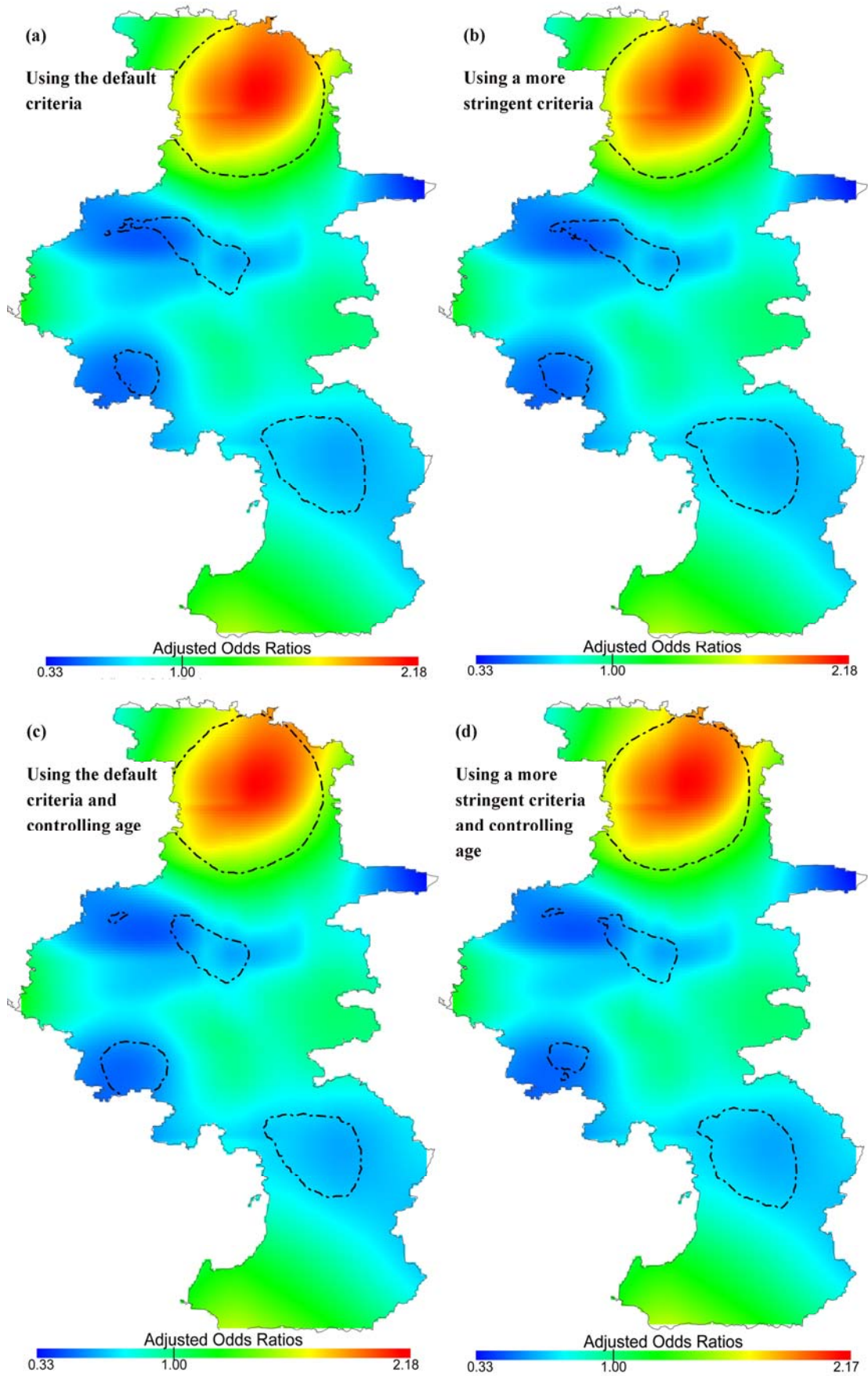
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92 **Supplementary Figure S4.** Scatter plot of heat wave risks and vulnerability factors in
93 different districts of Nanjing. RRs stands for relative risks, pdincome is the per capita
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95 number of air-conditioners per 100 households in 2010, and pHbed is the hospital beds per
96 1000 people. Linear regression lines are also plotted.

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99 **Supplementary Figure S5.** Spatial distribution of Adjusted Odds Ratios (AOR) for total
100 stroke mortality (I60-I64) using different modeling choices. (a) Using the default
101 convergence criteria and controlling gender, marriage, and occupation; (b) Using a more
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104 occupation; (d) Using a more stringently convergence criteria and controlling individual age,
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