

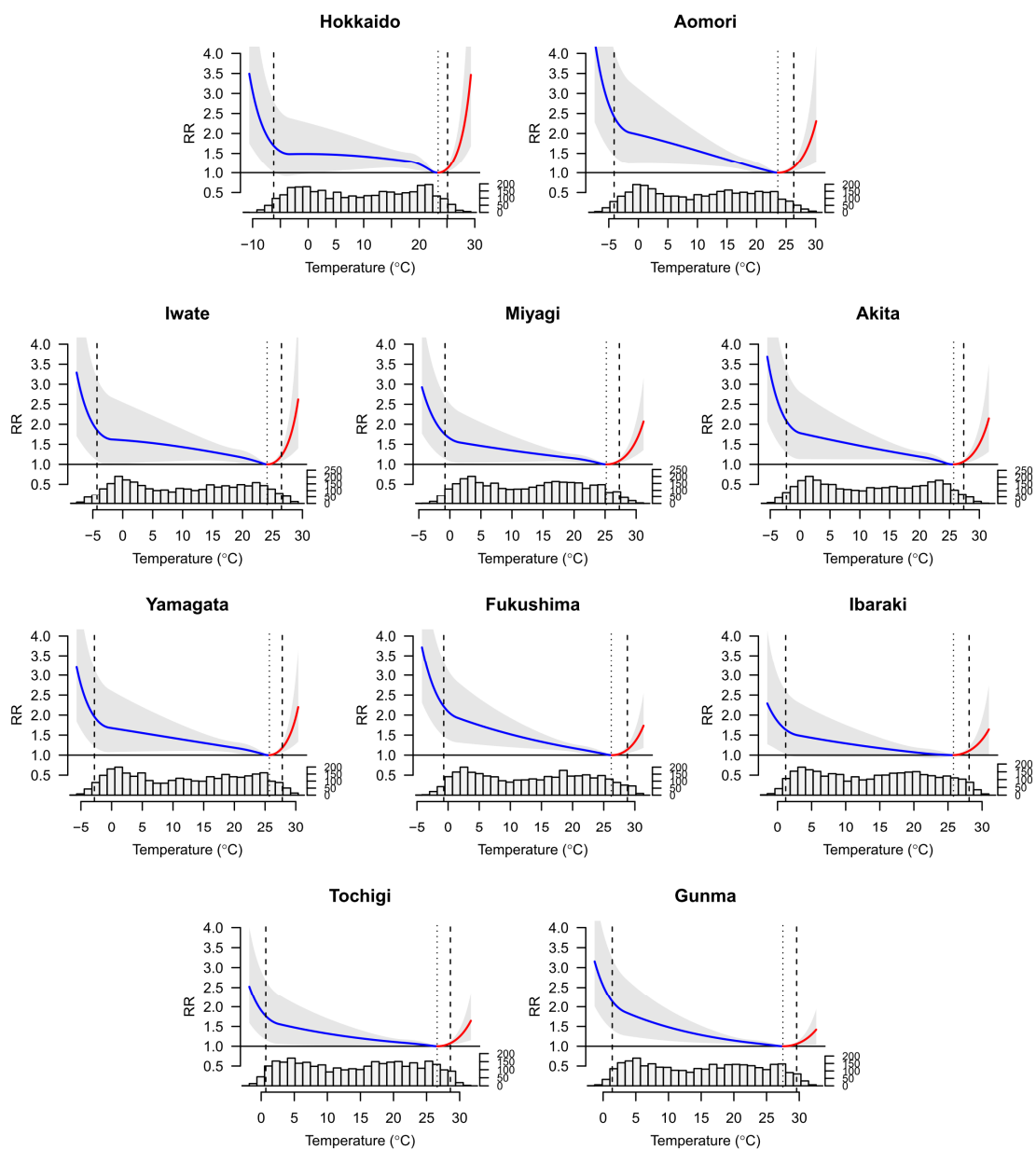
Supplementary information

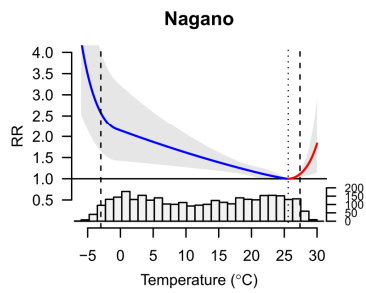
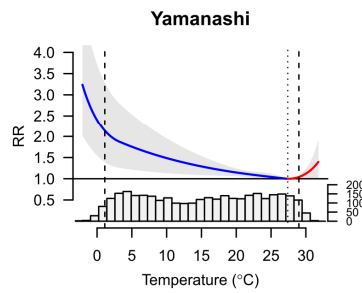
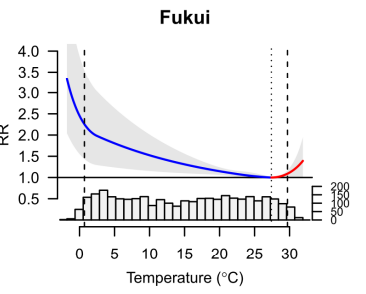
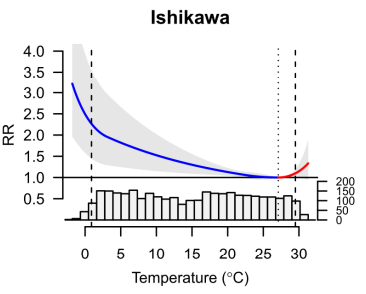
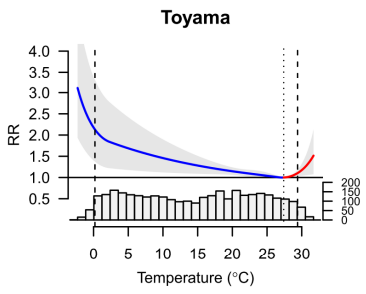
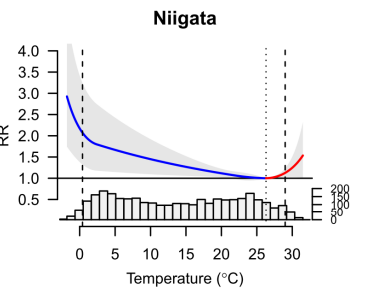
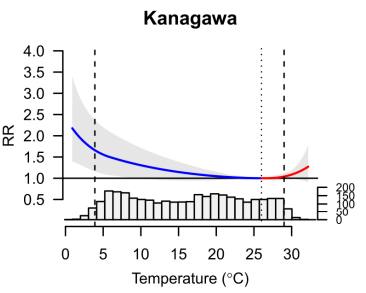
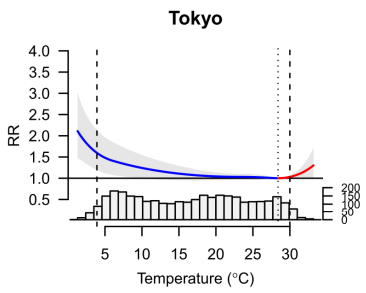
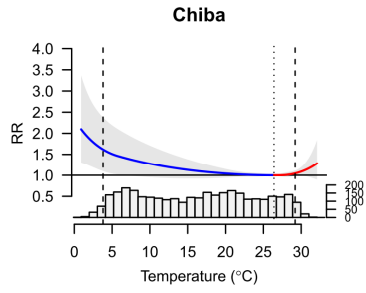
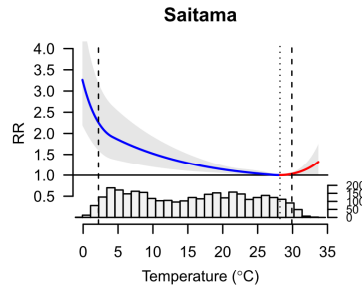
Out-of-hospital cardiac arrest risk attributable to temperature in Japan

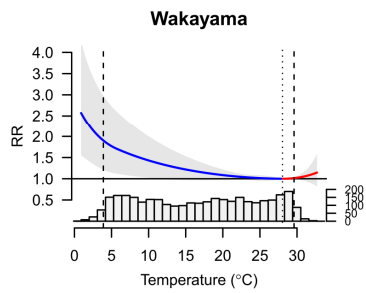
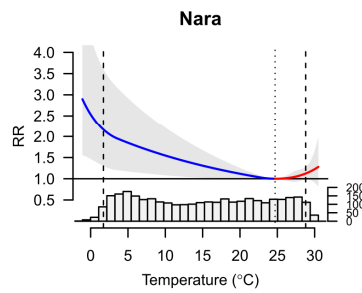
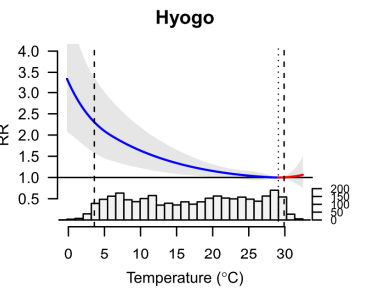
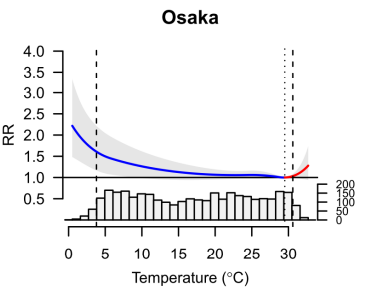
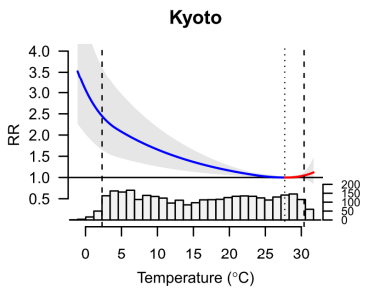
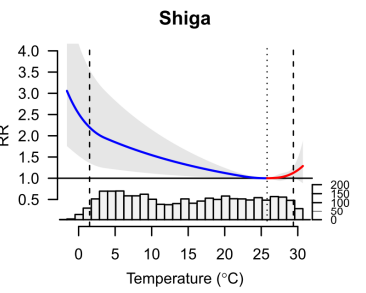
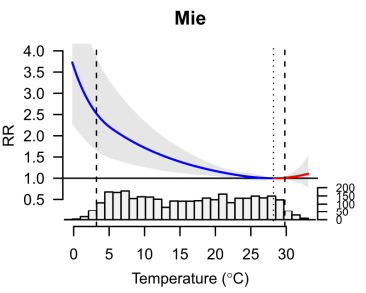
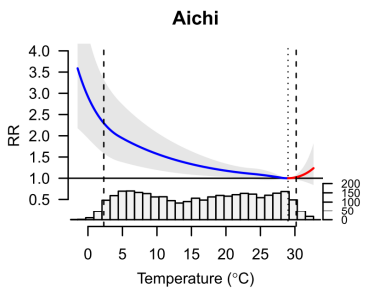
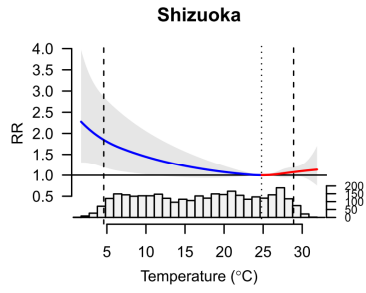
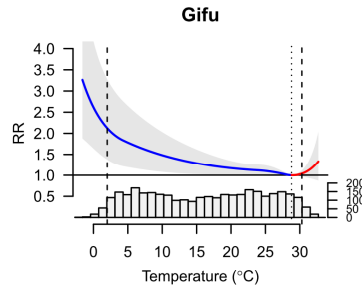
Daisuke Onozuka, PhD,¹ and Akihito Hagihara, DMSc, MPH¹

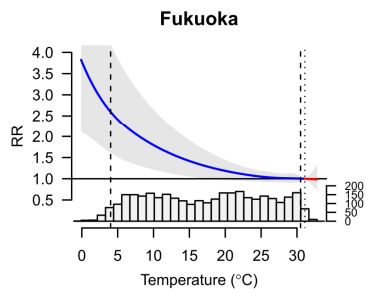
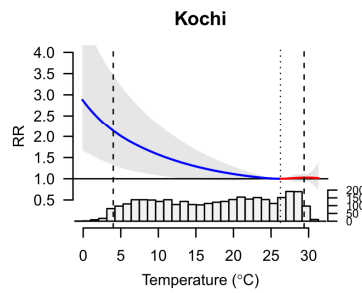
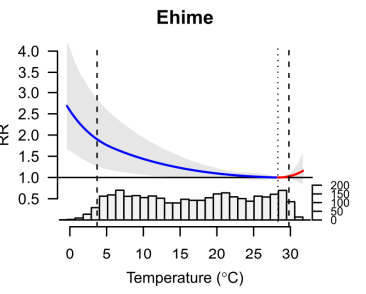
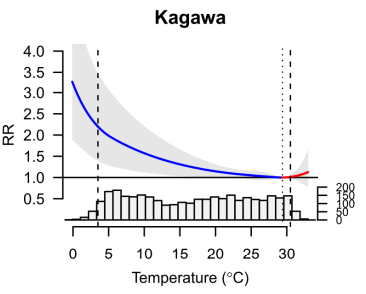
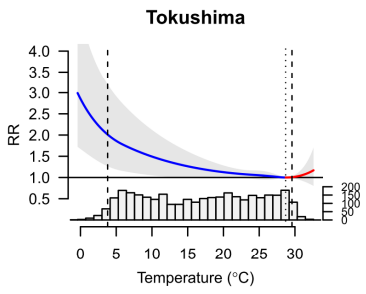
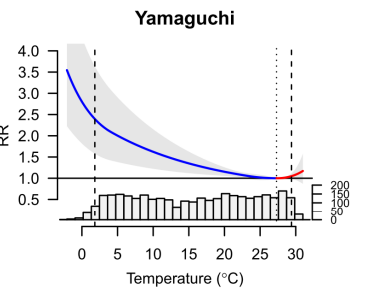
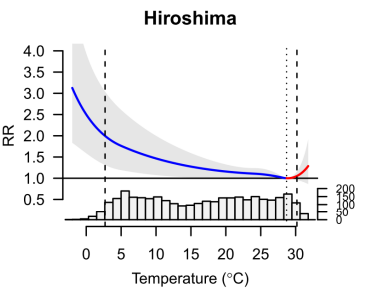
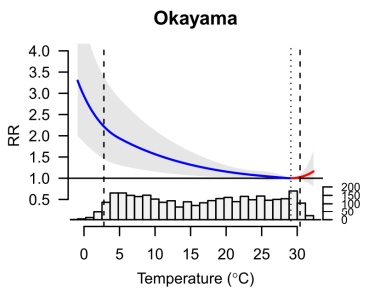
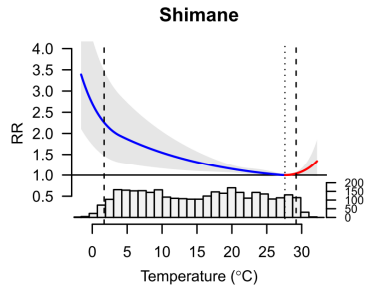
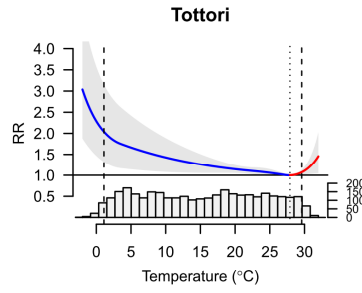
¹ Department of Health Communication, Kyushu University Graduate School of Medical Sciences, Fukuoka, Japan

Supplementary Figure S1. Overall cumulative exposure-response associations between the relative risks (with 95% eCI, shaded grey) of OHCA and temperatures in the 47 Japanese prefectures. Exposure-response associations are expressed as the best linear unbiased prediction with the related temperature distributions. Vertical lines represent the percentile of minimum morbidity temperature (dotted) and the 2.5th and 97.5th percentiles of the temperature distribution (dashed).

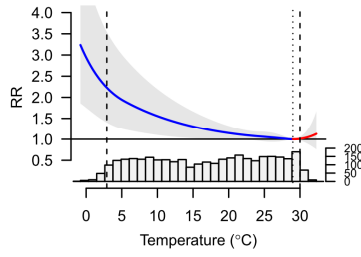




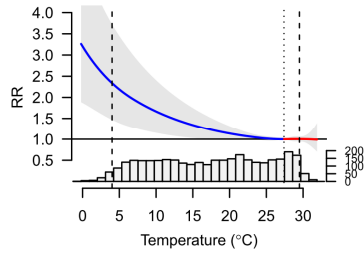




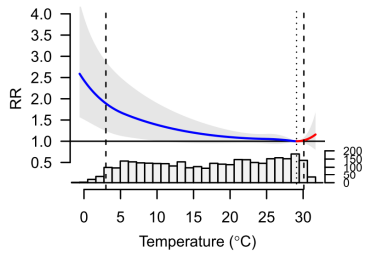
Saga



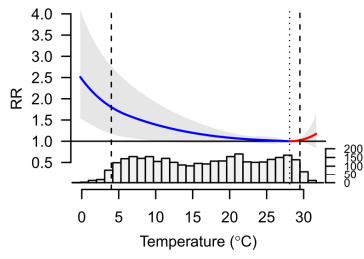
Nagasaki



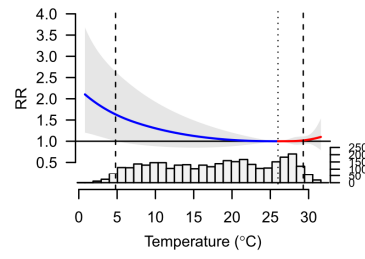
Kumamoto



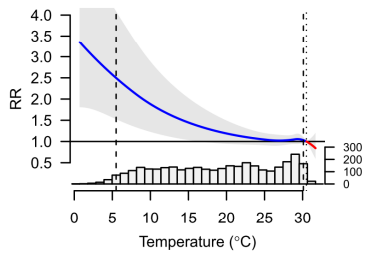
Oita



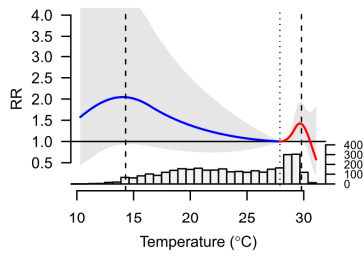
Miyazaki



Kagoshima



Okinawa



Supplementary Table S1. Attributable fraction (with 95% eCI) for OHCA according to prefecture expressed as the total (and as separate components) for moderate, extremely low, and high temperatures. The prefecture-specific fraction of OHCA attributable to temperature in each prefecture is expressed as separate components attributable to extreme or moderate low and high temperatures.

Prefecture	Extremely low temperature (%)		Moderately low temperature (%)		Moderately high temperature (%)		Extremely high temperature (%)	
Hokkaido	1.67	(0.36, 2.46)	25.18	(1.07, 40.88)	0.08	(0.00, 0.15)	0.45	(0.17, 0.65)
Aomori	2.24	(1.42, 2.75)	33.38	(16.32, 45.84)	0.16	(0.00, 0.33)	0.54	(0.19, 0.84)
Iwate	1.91	(0.78, 2.58)	27.85	(6.74, 43.68)	0.24	(0.06, 0.43)	0.61	(0.24, 0.90)
Miyagi	1.58	(0.48, 2.28)	20.27	(-0.02, 34.96)	0.10	(0.02, 0.17)	0.38	(0.18, 0.56)
Akita	1.87	(0.92, 2.46)	26.46	(7.06, 41.13)	0.07	(-0.02, 0.15)	0.32	(0.12, 0.49)
Yamagata	1.99	(0.91, 2.63)	28.57	(8.33, 41.87)	0.20	(0.04, 0.36)	0.53	(0.18, 0.80)
Fukushima	2.30	(1.41, 2.85)	30.43	(14.67, 41.55)	0.13	(0.01, 0.24)	0.35	(0.09, 0.55)
Ibaraki	2.10	(0.65, 2.90)	22.90	(2.77, 36.57)	0.21	(-0.14, 0.50)	0.34	(0.03, 0.60)
Tochigi	1.86	(0.71, 2.60)	19.18	(1.40, 34.01)	0.12	(0.02, 0.21)	0.28	(0.11, 0.43)
Gunma	2.15	(1.21, 2.68)	25.59	(9.27, 37.51)	0.08	(-0.03, 0.18)	0.25	(0.02, 0.44)
Saitama	2.01	(1.34, 2.47)	21.94	(6.68, 33.40)	0.06	(-0.04, 0.15)	0.18	(0.02, 0.33)
Chiba	1.67	(0.76, 2.36)	17.71	(2.16, 30.37)	0.04	(-0.04, 0.12)	0.12	(-0.06, 0.28)
Tokyo	1.48	(0.73, 1.97)	13.38	(-1.62, 24.96)	0.04	(-0.04, 0.11)	0.14	(-0.01, 0.28)
Kanagawa	1.58	(0.84, 2.12)	16.50	(1.91, 29.11)	0.07	(-0.09, 0.24)	0.13	(-0.02, 0.27)
Niigata	2.28	(1.33, 2.85)	28.28	(12.19, 40.19)	0.16	(0.01, 0.29)	0.32	(0.06, 0.54)
Toyama	2.29	(1.38, 2.90)	27.69	(10.11, 40.37)	0.14	(0.01, 0.28)	0.32	(0.05, 0.56)
Ishikawa	2.20	(1.26, 2.75)	26.68	(8.02, 39.06)	0.16	(0.00, 0.31)	0.24	(0.03, 0.43)
Fukui	2.33	(1.44, 2.95)	27.50	(9.37, 39.86)	0.16	(0.00, 0.29)	0.28	(0.03, 0.51)
Yamanashi	2.30	(1.34, 2.96)	23.72	(4.30, 36.20)	0.07	(-0.01, 0.16)	0.19	(0.04, 0.34)
Nagano	2.64	(1.86, 3.14)	34.56	(19.93, 45.34)	0.17	(0.01, 0.31)	0.38	(0.12, 0.62)
Gifu	1.99	(0.85, 2.73)	19.78	(-2.12, 34.77)	0.05	(-0.06, 0.16)	0.20	(-0.08, 0.43)
Shizuoka	1.74	(0.55, 2.44)	19.07	(-0.44, 34.06)	0.25	(-0.55, 1.01)	0.14	(-0.14, 0.40)
Aichi	2.15	(1.40, 2.64)	25.40	(8.13, 37.88)	0.02	(-0.05, 0.10)	0.14	(-0.13, 0.36)
Mie	2.11	(1.36, 2.62)	26.48	(9.43, 40.01)	0.02	(-0.06, 0.11)	0.11	(-0.10, 0.29)

Shiga	2.28	(1.33, 2.86)	26.11	(6.57, 39.46)	0.14	(-0.05, 0.33)	0.24	(0.05, 0.39)
Kyoto	2.24	(1.54, 2.67)	28.06	(14.02, 39.33)	0.08	(-0.05, 0.20)	0.16	(-0.10, 0.37)
Osaka	1.41	(0.59, 1.99)	12.01	(-5.41, 25.90)	0.04	(-0.04, 0.13)	0.16	(-0.04, 0.35)
Hyogo	2.49	(1.76, 2.99)	30.64	(12.89, 43.77)	0.00	(0.00, 0.00)	0.00	(-0.02, 0.02)
Nara	2.15	(1.08, 2.72)	29.28	(10.35, 42.45)	0.50	(-0.44, 1.29)	0.35	(-0.14, 0.73)
Wakayama	1.79	(0.86, 2.45)	19.95	(0.52, 34.31)	0.03	(-0.12, 0.18)	0.08	(-0.08, 0.22)
Tottori	1.98	(0.86, 2.64)	21.14	(0.43, 36.05)	0.12	(0.02, 0.23)	0.25	(0.05, 0.41)
Shimane	2.24	(1.40, 2.76)	28.39	(10.93, 41.10)	0.06	(-0.04, 0.15)	0.11	(-0.02, 0.22)
Okayama	2.27	(1.29, 2.88)	24.47	(6.43, 36.90)	0.05	(-0.05, 0.15)	0.13	(-0.12, 0.35)
Hiroshima	1.84	(0.79, 2.55)	20.45	(-0.52, 35.96)	0.06	(-0.07, 0.19)	0.21	(-0.12, 0.48)
Yamaguchi	2.40	(1.65, 2.88)	29.84	(14.91, 41.26)	0.09	(-0.09, 0.26)	0.14	(-0.11, 0.36)
Tokushima	1.94	(0.79, 2.65)	19.50	(-2.60, 35.06)	0.01	(-0.03, 0.05)	0.06	(-0.07, 0.18)
Kagawa	2.23	(1.09, 2.94)	22.85	(0.72, 36.83)	0.03	(-0.05, 0.10)	0.08	(-0.09, 0.25)
Ehime	2.08	(1.05, 2.73)	22.32	(3.40, 35.46)	0.03	(-0.09, 0.14)	0.09	(-0.15, 0.31)
Kochi	2.61	(1.29, 3.36)	23.39	(4.59, 37.84)	0.07	(-0.46, 0.55)	0.04	(-0.21, 0.26)
Fukuoka	2.26	(1.41, 2.74)	27.37	(8.15, 40.97)	0.00	(-0.00, 0.00)	0.00	(-0.13, 0.13)
Saga	2.54	(1.31, 3.26)	22.96	(2.84, 37.22)	0.02	(-0.06, 0.09)	0.06	(-0.12, 0.21)
Nagasaki	2.07	(1.20, 2.59)	23.93	(5.24, 37.03)	0.01	(-0.12, 0.14)	0.02	(-0.13, 0.15)
Kumamoto	2.16	(1.05, 2.97)	16.96	(-4.19, 31.29)	0.03	(-0.07, 0.13)	0.10	(-0.13, 0.30)
Oita	1.76	(0.64, 2.43)	18.27	(-2.33, 32.64)	0.05	(-0.06, 0.16)	0.13	(-0.09, 0.33)
Miyazaki	1.56	(0.42, 2.29)	14.51	(-8.71, 29.59)	0.02	(-0.13, 0.17)	0.06	(-0.21, 0.33)
Kagoshima	2.40	(1.45, 3.00)	25.29	(1.91, 42.77)	0.00	(0.00, 0.00)	0.00	(-0.01, 0.00)
Okinawa	1.80	(0.09, 2.55)	22.78	(-9.58, 42.32)	2.58	(-0.42, 4.91)	0.50	(-0.53, 1.19)
Total	1.92	(1.73, 2.01)	21.86	(18.10, 24.21)	0.10	(0.06, 0.14)	0.20	(0.15, 0.23)

Supplementary Table S2. Sensitivity analysis using the fraction (with 95% eCI) attributable to temperature (total, high and low temperature components) by varying the modelling choices and controlling for different degrees of freedom (df) for the seasonal and long-term trends (6 and 10 df per year) and relative humidity.

	Total (%)		Low temperature (%)		High temperature (%)	
Modelling choices (47 prefectures)						
Main model	23.93	(20.15, 26.19)	23.64	(19.76, 25.87)	0.29	(0.21, 0.35)
Df/year for seasonal control: 6	25.86	(22.89, 27.81)	25.38	(22.47, 27.26)	0.48	(0.33, 0.61)
Df/year for seasonal control: 10	22.96	(18.95, 25.11)	22.50	(18.71, 24.89)	0.46	(0.32, 0.58)
Control for relative humidity (47 prefectures)						
Main model	23.93	(20.15, 26.19)	23.64	(19.76, 25.87)	0.29	(0.21, 0.35)
With relative humidity	24.24	(20.35, 26.52)	23.97	(19.99, 26.36)	0.28	(0.20, 0.33)