Title: The burden of heat-related mortality attributable to recent human-induced climate change

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Abstract:

Climate change affects human health, however, there have been no large-scale, systematic efforts to quantify the heat-related human health impacts that have already occurred due to climate change. Here we use empirical data from 732 locations in 43 countries to estimate the mortality burdens associated with the additional heat exposure that has resulted from recent human-induced warming, during the period 1991-2018. Across all study countries, we find that 37.0% (range 20.5-76.3%) of heat-related deaths can be attributed to anthropogenic climate change, and that increased mortality is evident on every continent. Burdens varied geographically, but were on the order of dozens to hundreds of deaths per year in many locations. Our findings support the urgent need for more ambitious mitigation and adaptation strategies to minimize the public health impacts of climate change.

Main Text:

Human activity has already changed the climate.[1] The world is now an average of ~1°C above the preindustrial era, though with substantial geographic heterogeneity; several high-population regions have warmed by >2°C, while others have experienced relatively little change.[1] An immediate and direct impact of climate change is through human exposure to high outdoor temperatures, which is associated with morbidity and an increased risk of premature death (mortality).[2–4] Although several studies have projected the impacts of heat exposure under different potential future climate scenarios,[5,6] there have been no systematic, large-scale studies quantifying the heat-related health burdens attributable to climate change that has already occurred.

Detection and attribution studies evaluate the contribution of different factors, including anthropogenic forcings, to observed changes in climate and weather.[7,8] These studies are often conducted in the climate science disciplines and rarely take the additional step of estimating associated human health impacts.[9–11] Here we take that step and quantify the contribution of human-induced warming to the heat-related mortality burden in 732 locations from 43 countries over the period 1991-2018. We do so by applying state-of-the-art methods from climate change epidemiology to the largest database ever assembled on weather and health and the latest climate simulations carried out in support of attribution and detection studies. To our knowledge, this is the largest attribution study to date on the health impacts of climate change.

Attributing heat-related mortality to climate change

Our analysis proceeded in two steps. In the first step, we applied cutting-edge time-series regression techniques to observed temperature and mortality data from all 732 locations (Tables 1, S1 and S2) to estimate location-specific exposure-response functions.[12–15] These functions characterize the complex relationship between daily mean temperature and mortality from all causes (or non-external causes) by simultaneously accounting for the non-linear and delayed dependencies typically found in this type of assessment.[2] The functions were estimated using a novel extension of the widely-applied two-stage design that employs a mixed model approach to properly account for the hierarchical structure of the data (see Methods).[12–14] As described in detail in the Methods, first-stage model estimate associations for each location, which are then pooled in a meta-analysis (the second stage). The observed temperature and mortality data were collected through the Multi-Country Multi-City Collaborative Research Network (MCC), the largest weather and health data consortium to date (https://mccstudy.lshtm.ac.uk). Supplementary Table 1 provides a brief description of the observed MCC temperature and mortality series, including the data sources and level of aggregation (i.e. city, metropolitan area or small region). The data used in the present study consisted of counts of daily mortality from all causes or non-external causes only (ICD-9: 0-799; ICD-10: A00-R99), and daily mean temperature (°C). The analysis was limited to the warm season, defined as the four warmest consecutive months in each location, to focus on heat-related mortality only (see Supplementary Table 2 for the selected months in each location). The analysis included a total of 29,936,896 deaths across all 732 locations from 43 countries in overlapping periods between 1991 and 2015 (Table 1). The study countries vary widely in terms of local climate, ranging from average warm-season temperatures of ~15 ºC in countries of North and Central Europe and Canada to much hotter weather above 25 ºC in South Asia, the Middle East and parts of Central and South America.

In the second step, we used the estimated exposure-response functions to compute the heat-related mortality burden between 1991 and 2018 for each location under two scenarios: a factual scenario consisting of simulations of historical climate (i.e. all climate forcings), and a counterfactual scenario where climate simulations are driven by natural forcings only, thus approximating the climate that would have occurred in a world without human-induced or anthropogenic climate change.[16] A more detailed description of the scenarios and how the impacts were quantified is provided in the following paragraphs and the Methods section.

The factual and counterfactual scenarios

The two scenarios (factual and counterfactual) were based on simulation runs from The Detection and Attribution Model Intercomparison Project (DAMIP).[17,18] DAMIP is the component of the Coupled Model Intercomparison Project Phase 6 (CMIP6) that aims to assess the individual contributions of different external factors, including anthropogenic forcings, on past and future changes in global and regional climate. We used pairs of factual-counterfactual ensemble runs of daily mean temperature between 1991 and 2018 from 10 general circulation models (ACCESS-ESM1-5, CanESM5, CESM2, FGOALS-g3, GFDL-ESM4, HadGEM3-GC31-LL, IPSL-CM6A-LR, MIROC6, MRI-ESM2-0, NorESM2-LM - see Supplementary Table 3 for further information) for which suitable data were available at the time of the analysis. Specifically, for the factual scenario we used CMIP6 historical simulations merged with SSP2-4.5 runs of each model which accounts for anthropogenic and natural forcings. The corresponding counterfactual consists of simulations of the historical climate driven with natural forcings only (i.e. anthropogenic forcings are absent) derived from the hist-nat experiment. Location-specific temperature series were extracted from the gridded products based on the corresponding centroid, and bias-corrected following a method described elsewhere.[19] The burden attributable to recent human-induced climate change is defined as the difference in heat-related mortality between the two scenarios.

Figure 1 reports a summary description of the simulated warm-season mean temperatures in the factual (accounting for natural and anthropogenic forcings) and counterfactual (accounting for natural forcings only) scenarios. Across the 732 locations, the annual average temperature in the warm season in the factual scenario increased from nearly 21.5ºC at the end of the twentieth century to almost 23ºC in the 2010s, whereas in the counterfactual scenario, annual temperatures remained relatively stable at around 21.5ºC (Figure 1A, model-specific time series plots are shown in Supplementary Data Figure 1). Similar patterns of warming over time can be observed across countries, although with variable magnitude (Supplementary Data Figure 2). Warming is also reflected in the overall temperature difference between scenarios over the study period (1991-2018), with ~0.8ºC increase on average and strong differences across regions of the world (Figure 1B, Supplementary Data Figure 3). For example, the country-specific average temperature increase ranged from ~0.5ºC in Argentina to above 1ºC in Iran, Kuwait, some countries in South and Central America and North of Europe (Figure 1B). Figure 1C shows the temperature differences for each of the 732 study locations, with some of the largest effects seen in Brazil and Western locations in South America, Southern Europe and Thailand.

Location-specific temperature-mortality relationships

Exposure-response associations were estimated for all 732 locations. The curves for sixteen representative locations – including at least one from each (inhabited) continent – are presented in Figure 2. The functions represent the cumulative relative risk of death over a 10-day lag period for each temperature value in the observed range. Prior research has demonstrated that heat risks tend to occur quickly after exposure and then disappear within 10 days.[20] Relative risk is a measure of association which represents the change in mortality risk at any given temperature compared with a reference temperature, which in this case corresponds to the point of minimum mortality (i.e. the temperature value for which the risk of death is lowest), often referred as the 'optimum'. In Chicago, for example, a 31 ºC day (corresponding to the 99th percentile temperature) was associated with a 36% (95% confidence interval (CI): 28 to 47%) increase in mortality risk from all causes, whereas in Johannesburg the 99^{th} percentile temperature (24 ºC) was associated with a 9% (95% CI: 0.5 to 17%) increase and in Berlin (28 ºC) a 57% (95% CI: 47 to 67%) increase.

The displayed curves indicate potential geographical patterns in the heat-mortality relationship across and between regions, a finding particularly evident in Figure 3, which summarizes the exposure-response functions for all 732 locations, again as the relative risk of death at the 99^{th} percentile temperature versus the optimum. Heat-related mortality risks ranged from 0.97 to 2.47, but with only 28 of the 732 locations below 1. Larger risks are observed in the European region, in particular the Western and Central area of the continent, while smaller estimates below 1.5 were found in most locations in Asia and the Americas. All risks should be interpreted as an approximation of the average heat-mortality association in each location across the study period.

Heat-mortality impacts attributed to climate change

The estimated heat-related mortality burden by country for each scenario is derived by applying the location-specific exposure-response functions to the corresponding modelled location-specific daily mean warm-season temperature series and average baseline mortality between 1991 and 2018 (see Methods section for further details on the estimation of mortality burden). Results are reported as heat-related mortality fractions estimated as the number of deaths attributed to heat (days above the optimum) divided by the total number of deaths during the warm season in each location. The level of uncertainty of the impact estimates is expressed in terms of 95% confidence intervals, which account for both the statistical uncertainty when estimating the exposure-response function and the variability in the temperature series across model-specific simulations (see Methods section for further details on the quantification of uncertainty). Across all locations, heat-related mortality in the factual scenario amounted to an average of 1.56% (95% CI, 0.62 to 2.41) of all warm-season deaths (Figure 4A). The country-specific estimates ranged from below 1% (e.g. USA, Colombia, Sweden, Norway, UK, Japan, South Korea) to over 5% in countries of Southern Europe (also see Supplementary Table 4). As expected, there was less heat-related mortality in all countries under the counterfactual scenario, with an average estimate of 0.98% (95% CI, 0.26 to 1.80) across all locations.

The difference between the factual and counterfactual scenarios is interpretable as the proportion of total deaths during warm season attributable to human-induced climate change. The overall estimate that 0.58% (95% CI: 0.24 to 1.14) of all deaths are attributable to climate change translates to an average of 9,702 (95% CI, 4,005 to 19,135) deaths per warm season across the 732 locations (see Supplementary Table 5 for location-specific estimates). Country-specific estimates (Figure 4B) show a clear North-South pattern within regions; human-induced climate change attributable deaths are <1% of total deaths for countries in Northern sub-regions of America, Europe and Asia, while larger contributions were observed in Southern Europe, Southern and Western Asia and some countries in South-East Asia and South America. This geographical gradient can be also observed in Supplementary Data Figure 4 that displays the location-specific estimates.

To further contextualize the results, Figure 4C displays the percent of heat-related mortality (as opposed to total mortality) that is attributable to human-induced climate change. The overall estimate is 37.0%, but this percentage varied widely across sub-regions and countries. The largest climate change-induced contributions (more than 50%) were in Southern and Western

Asia (Iran and Kuwait), South-East Asia (Philippines and Thailand) and several countries in Central and South America (see Supplementary Tables 4-5 and Supplementary Data Figure 5 for location-specific estimates).

Taken together, our findings demonstrate that a substantial proportion of total and heat-related deaths during our study period can be attributed to human-induced climate change, which is in line with the small number of existing attribution studies on this topic, mainly from Europe [10,21]. Unlike those studies however, the wide and heterogeneous geographical scope of our dataset allowed us to assess spatial patterns in the estimated impacts and to identify areas that have already been disproportionately affected. Impacts were evident in all of our study countries, which included locations on every inhabited continent (Figure 4, Supplementary Data Figure 4 and 5). As locations differ in size, Figure 5 displays the heat-related deaths attributable to human-induced climate change as a mortality rate, indicating a relatively heavy population-level burden in Southern and Eastern Europe, where rates in several countries are above 6 per 100,000 population over the 1991-2018 period compared to the study average of 2.2 per 100,000.

Some limitations of this study should be acknowledged. Despite the extensive spatial extent of our study, we were not able to include locations in all world regions – for example large parts of Africa and South Asia – due to a lack of the empirical data needed to estimate the exposure-response functions. For reference, our overall estimate that heat exposure from human-induced climate change is responsible for ~0.6% of total deaths in warm season would translate to more than a hundred thousand deaths per year if applied globally. However, we caution against this sort of crude extrapolation considering the variation we observed in location-specific estimates of attributable fractions (Figures 4 and Supplementary DAtaFigure 4, Supplementary Table 5). Whether the excluded regions would have high or low heat-related mortality burdens is difficult to predict and may depend on factors including the level of warming, the built environment, and the age structure and underlying health status of the population (amongst other factors).[11,22,23] Additionally, estimates should not necessarily be considered representative of country-specific average effects, as the study included a sample of locations which, in some cases, were restricted to one or two cities (i.e. Finland, Iran). Another limitation is the use of a single, time-invariant exposure-response function in each location. This approach can be interpreted as an approximation of the average effect across the study period in each location, but would not capture the precise dynamics of any potential attenuation in heat-related risks, which has been reported in some locations.[24,25]

We have conducted this large attribution study on the health impacts of climate change by applying cutting-edge epidemiological modelling techniques to the most expansive database ever assembled on weather and health (i.e. the MCC database) and the latest temperature simulations developed for climate change attribution and detection studies (i.e. DAMIP data). The methodology allowed us to properly account for the uncertainty that arose from estimating the exposure-response functions and the variability across climate models (see Supplementary Data Figure 6 for the model-specific estimates for heat-related mortality). We have demonstrated that health burdens from anthropogenic climate change are occurring, are geographically widespread, and are non-trivial; in many locations, the attributable mortality is already on the order of dozens to hundreds of deaths each year (Supplementary Table 5). This has occurred with average global temperature increase of only ~1°C, which is lower than even the strictest climate targets outlined in the Paris Agreement (1.5-2°C), and a fraction of what may occur if emissions are left unchecked.[26] As a result, our findings provide further evidence of the potential benefits of adopting strong mitigation policies to reduce future warming and of enacting adaptation interventions to protect populations from the adverse consequences of heat exposure.

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Methods

Observed temperature and mortality data: the MCC database

We extracted observed daily temperature and mortality data for the 732 locations from the Multi-Country Multi-City (MCC) Collaborative Research Network database (http://mccstudy.lshtm.ac.uk/). Supplementary Table 1 provides information on data collection for each country, while descriptive statistics for each location are reported in Supplementary Table 2. Data used in the present study consisted of counts of daily mortality from all causes or non-external causes (ICD-9: 0-799; ICD-10: A00-R99), and daily mean temperature (°C). The length of the observed data varied by location but included part or all of our study period (1st of January 1991 to 31st of December 2018). As we were interested in heat-related mortality, we restricted the data series to the warmest four consecutive months in each location (Supplementary Table 2).

Description of the factual and counterfactual climate datasets

We defined two scenarios, one representing the historical (factual) climate and an alternative (counterfactual) that approximates a hypothetical world without anthropogenic climate change. The temperature series for these scenarios were extracted from the Detection and Attribution Model Intercomparison Project (DAMIP - http://damip.lbl.gov) climate database. DAMIP is part of the Coupled Model Intercomparison Project Phase 6 (CMIP6), and was specifically designed to allow for the assessment of the individual contributions of various external factors to past and future changes in global and regional climate.[17,18] This study included the ensemble member simulations of 10 general circulation models included in CMIP6 from two different experiments for which relevant data were available at the time of the analysis. Information about the models and selected simulations are shown in Supplementary Table 3. For the factual scenario, we used historical climate simulations ("hist") of mean daily temperature available up to 2014 merged with simulations of ssp2rcp45 for the remaining years until 2018. These simulations are driven by all types of natural and anthropogenic forcings, which mimics the actual historical climate. The corresponding counterfactual climate data consisted of the simulations of the "hist-nat" experiment, for which only natural forcings are considered (solar irradiance and stratospheric aerosols). The counterfactual climate dataset approximates a hypothetical climate with no human influences (i.e. an absence of anthropogenic climate change) since the beginning of the 20th century where only natural forcings were present. This approach allows for a formal distinction between natural and anthropogenic climate change. Location-specific series of daily mean temperature (near surface air temperature - *tas*) were extracted from the globally-gridded datasets (https://esgf-node.llnl.gov/search/cmip6/), and bias-corrected using local weather station data (MCC database) following a method described elsewhere.[15,27,28] In brief, observed temperature series was used to bias-correct the temperature series in the factual scenario, and apply the same correcting factors to the series of the counterfactual scenario.

Description of the epidemiological analysis

We estimated the association between heat and mortality using observed data in each location through a two-stage approach widely applied in multi-location time-series studies.

First stage

To estimate location-specific heat-mortality associations, we performed separate time-series analyses with generalized linear models using observed temperature and mortality data over the 4 warmest consecutive months in each location (see Supplementary Table 2 for the selected months in each location). We applied a quasi-Poisson regression in which a quasi-likelihood was used to scale the standard deviation of the coefficients proportionally to the potential overdispersion. We modelled the non-linear and delayed association using distributed-lag non-linear models (DLNMs), a class of models that can describe the complex non-linear and lagged dependencies typically found in temperature-mortality studies.[12] DLNMs account for delayed effects of time-varying exposures and quantify net effects over a pre-defined lag period. Following the DLNM methodology, we modelled the bi-dimensional exposure-lag-response association through the combination of two functions defined within a cross-basis term. Specifically, we selected a natural spline function with two internal knots at the 50th and 90th percentile of the warm season temperature distribution to model the exposure-response curve, and a natural spline function with 2 internal knots at equally-spaced values in the log scale over 10 days of lag for the lag-response dimension. Seasonality was modelled with a natural spline with 4 degrees of freedom (df) of day of the year. We introduced an interaction between this spline term and year to allow different seasonal trends across the study period. The model also included a natural spline function of time with one knot per year to control for long-term trends, and an indicator for day of the week. These choices that specify the cross-basis and model terms used to control for long-term and seasonal trends were based on related studies from the MCC consortium.[20,24] The resulting bi-dimensional set of coefficients from each location were then reduced across the lag dimension into the overall cumulative exposure-response curve representing the association between heat and mortality across the 10 days of lag.[13]

<u>Second stage</u>

The location-specific set of reduced coefficients estimated in the first stage were then pooled in a multivariate meta-regression model.[14] This approach provides improved estimates of heat-mortality associations at the location level, defined as best linear unbiased predictions (BLUPs). BLUPs borrow information across units within the same hierarchical level and can offer more accurate estimates, especially in locations with small daily mortality counts or short series. We also included, as meta-predictors, country-level gross domestic product, location-specific average temperature and interquartile range, and indicators of climatic classification.[29] We tested the presence of heterogeneity using multilevel extensions of the Cochran *Q* test and I^2 statistic.[30] The location-specific associations defined by the BLUPs were used in the quantification of the heat-related mortality impacts. All the analyses were performed in the R software environment (version 3.5.2) using the packages *dlnm* and *mixmeta*, which were developed by the authors.[14,31]

<u>Quantification of heat-related mortality</u>

Finally, we quantified the heat-related mortality in each location during the warm season in each location during the study period of 1991-2018 under both scenarios, following a method we describe in previous work.[15] For each location-scenario-model-day combination, we computed the number of heat-related deaths based on the corresponding modelled temperature series, daily baseline mortality and the estimated heat-mortality association represented by the location-specific BLUPs.[16] The daily baseline mortality corresponds to the annual series of total mortality counts derived as the average number of deaths per day of the year in each location. The annual series was then replicated along the study period of 1991-2018. We then estimated the total number of heat-related deaths in each location/scenario for each model and ensemble across the study period by summing the daily mortality contributions when the temperature on a specific day was higher than the location-specific reference temperature. This reference value corresponds to the minimum point of the BLUP curve and represents the optimal temperature value with the lowest mortality risk, often referred to as the minimum mortality temperature (MMT). We quantified the uncertainty of the estimates by generating 1000 samples of the coefficients of the BLUPs (representing the association) through Monte Carlo simulations, assuming a multivariate normal distribution for the estimated spline model coefficients, and then generating results for each of the 10 models.[4] We obtained empirical confidence intervals corresponding to the 2.5th and 97.5th percentiles of the empirical distribution of the heat-related mortality impacts across coefficients and models. In this way, the derived empirical confidence intervals account for both the imprecision of the exposure-response function and the inherent variability of the temperature simulations across models in each scenario.

To obtain the contribution of climate change, we subtracted the heat-related mortality estimates in the counterfactual scenario from those in the factual scenario. Finally, we computed the mortality fractions in both scenarios and the estimated difference using the related total number of deaths as the denominator. Climate change attributable heat-related mortality rates for each country were estimated by multiplying the attributable fraction(s) by the corresponding crude mortality rate for each country. These were computed as the average crude mortality rates in each country between 1991 and 2017 (https://datacatalog.worldbank.org/dataset/world-development-indicators), and multiplied by a factor corresponding to the warm season mortality divided by the total annual mortality in each country.

Data availability: A sample of data is made available in the open repository "BORIS" of the University of Bern under the following DOI: 10.48350/155666

Code availability: A sample of the code to reproduce the analysis is made available in the open repository "BORIS" of the University of Bern under the following DOI: 10.48350/155666

Methods-only references:

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31. Gasparrini, A. Distributed Lag Linear and Non-Linear Models in R: The Package dlnm. J. Stat. Softw. **43**, 1–20 (2011).

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Author contributions: Conceptualization: AMVC, AG, AT, CA, YG, DH, MM, VH Methodology: AMVC, AG, FS. Formal analysis: AMVC. Resources and data curation: AMVC, NG, NS, FS, DR, RSDS, AT, CA, YG, YH, RA, ST, MSZSC, PHNS, EL, PMC, MVO, HK, SO, JK, AU, HO, EI, JJJKJ, NR, MP, AS, KK, AA, FM, AE, PG, AZ, PM, FD, MH, BA, MHD, CDV, AO, DH, CA, SR, FDR, GCE, XS, SS, JM, IHH, SF, FA, HK, WL, CI, BF, MSR, YLLG, BYC, SL, BA, AA, AZ, JS, TND, DVD, MM. Visualization: AMVC, DR, NS. Writing - draft preparation: AMVC, AG, NS. Writing- revision: AH, AMVC, NS, FS, DR, RSDS, AT, CA, YG, YH, RA, ST, MSZSC, PHNS, EL, PMC, MVO, HK, SO, JK, AU, HO, EI, JJJKJ, NR, MP, AS, KK, AA, FM, AE, PG, AZ, PM, FD, MH, BA, MHD, CDV, AO, DH, CA, SR, FDR, GCE,

XS, SS, JM, IHH, SF, FA, HK, WL, CI, BF, MSR, YLLG, BYC, SL, BA, AA, AZ, JS, TND, DVD, MM, DH. Supervision: AG.

Competing interests: Authors declare no competing interests

Figure legends:

Figure 1. Temperature modelled under the factual (with both anthropogenic and natural forcings) and counterfactual (with only natural forcings) scenarios. Panel A: warm-season average temperature since 1900, including the 1991-2018 study period (shaded) across the 732 locations. Panels B: temperature differences between scenarios in the 43 study countries, respectively, during the study period (warm season only). Country results are based on included locations only. Panel C: average temperature difference between scenarios in the 732 study locations (warm season only).

Figure 2. Heat-mortality associations in 16 representative locations. Exposure-response associations are estimated as best linear unbiased predictions (BLUPs - see Method section for further details) and reported as relative risks (with 95% confidence intervals, shaded grey) for a cumulative 10-day lag of warm season temperature, versus the optimum temperature (corresponding to the temperature of minimum mortality). For comparison across locations, vertical red dotted lines indicate the 99^{th} percentile of location-specific warm-season temperature.

Figure 3. **Heat-related mortality associations in the 732 locations**. These are expressed as the estimated relative risk at the 99th percentile of the location-specific warm-season temperature distribution using the temperature of minimum mortality as reference. Estimates are represented

by the location-specific best linear unbiased predictions (BLUPs - see Method section for further details).

Figure 4. Heat-related mortality and the contribution of human-induced climate change (CC), 1991-2018. Panel A: heat-related mortality as a percentage of total mortality during warm season (mortality fraction, %) estimated in the 43 countries under the factual (all anthropogenic and natural forcings, shaded) and counterfactual (natural forcings only, unshaded) climate scenarios. Panel B: percentage of total deaths during warm season attributable to heat-related human-induced climate change, estimated as the difference in heat-related mortality in the factual compared to the counterfactual scenario, with the corresponding 95% confidence interval. Panel C: proportion of heat-related mortality attributable to human-induced climate change estimated as the fraction of heat-related mortality in the factual scenario that results from the contribution of anthropogenic forcings.

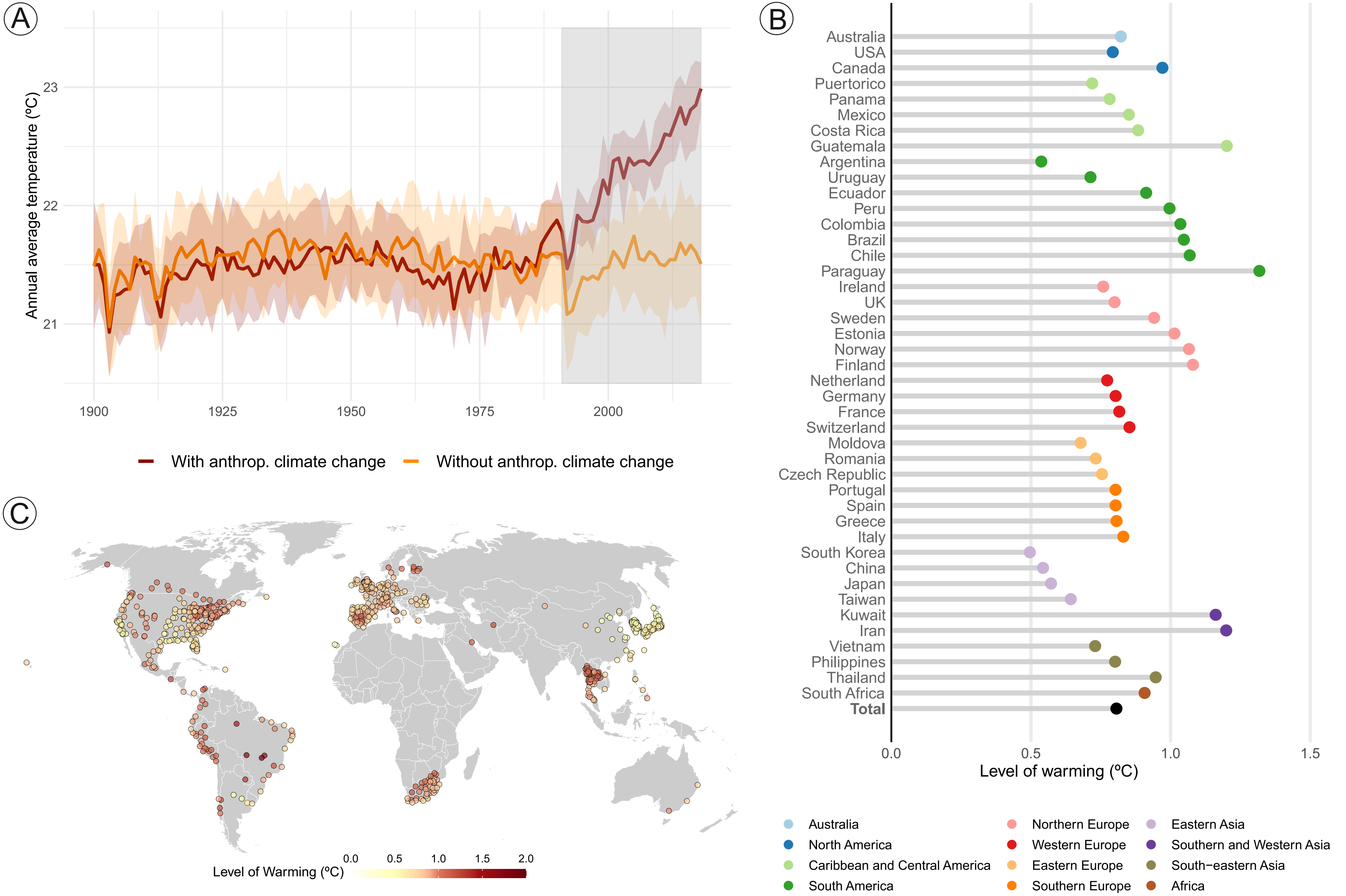
Figure 5. Heat-related mortality rate attributable to human-induced climate change, 1991-2018. The estimated rate in each country is based on the attributable fractions for the location(s) within the country. The rates indicate the total burden in the population and is thus a complementary measure of impact to that of Figure 4B, which reports the attributable fraction. For example, the rate shown here for Brazil is relatively modest whereas the fraction is high; the opposite is true in a country like Greece.

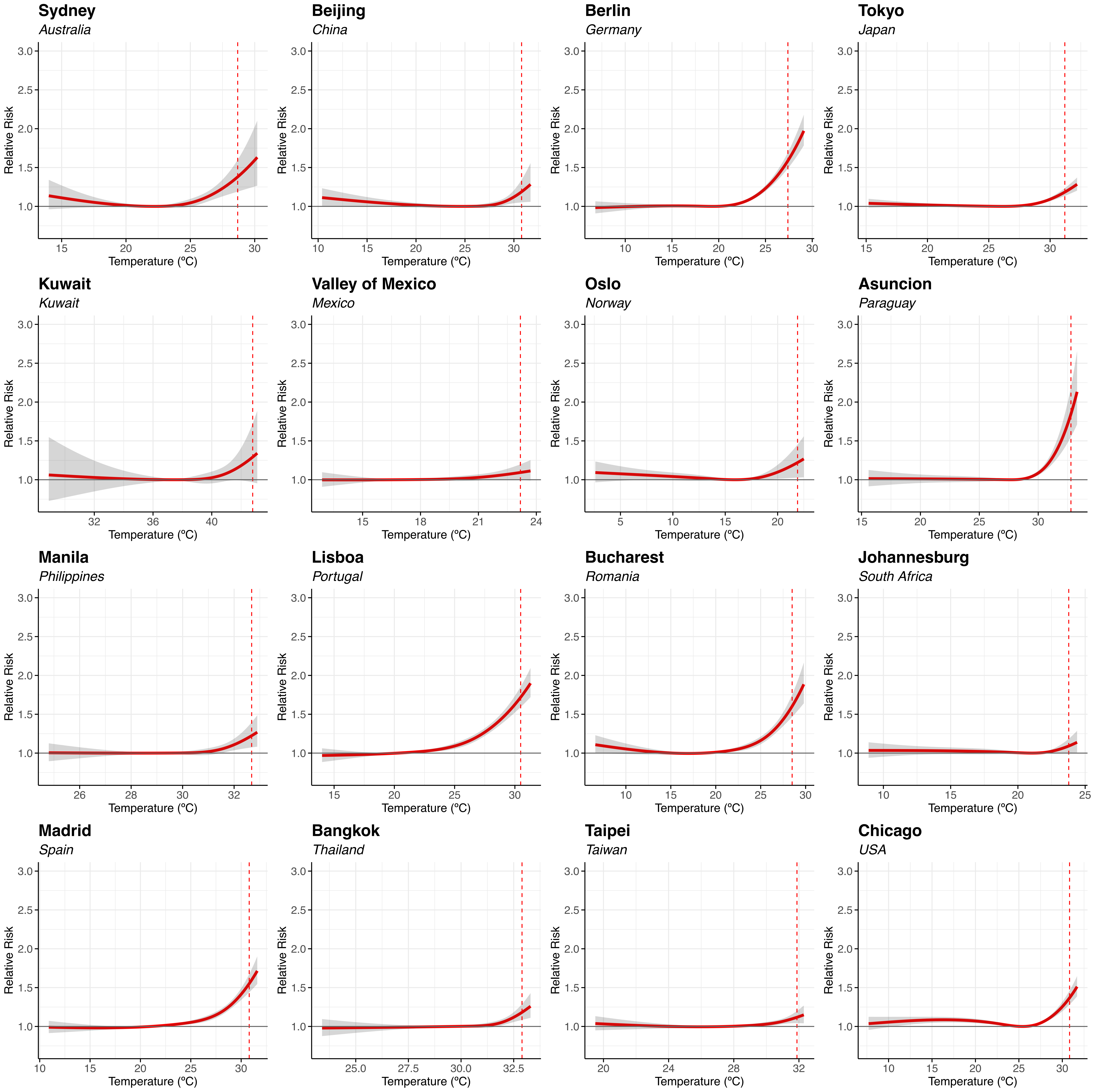
Table 1. Summary of the observed temperature and mortality data for the 732 locations during the warm season

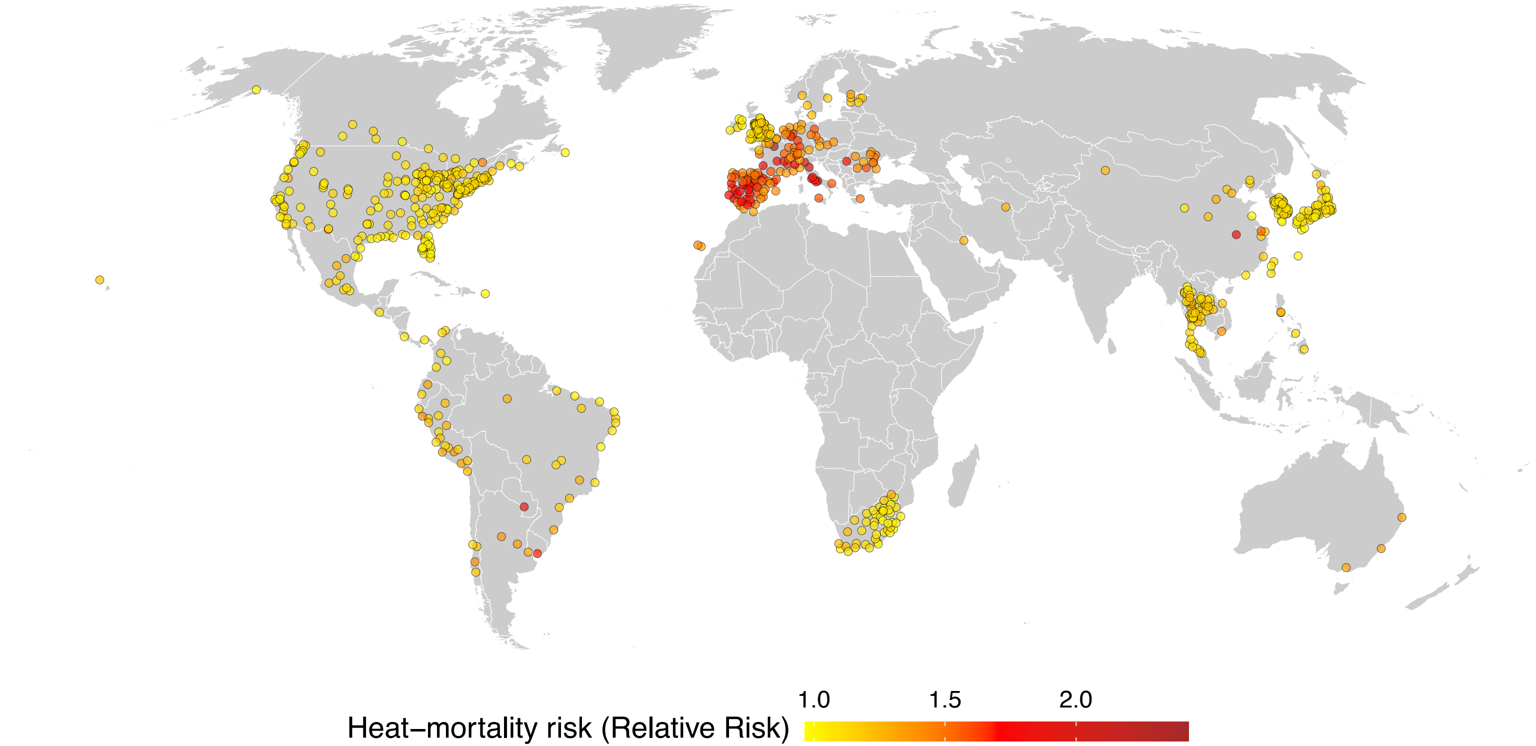
Region	Country	N locations	Data Period	Total N deaths	Daily N deaths (median [IQR])	Daily mean temperature (median [IQR])
Australia	Australia	3	1991-2009	311185	45.3 [40.0; 51.0]	21.8 [20.2; 23.9]
North America	Canada	26	1991-2015	999566	12.5 [10.1; 14.8]	17.8 [15.1; 20.2]
North America	USA	210	1991-2006	5978402	14.4 [12.2; 16.9]	23.2 [20.9; 25.3]
Caribbean and Central America	Costa Rica	1	2000-2016	9485	4.0 [3.0; 6.0]	23.3 [22.7; 24.0]
Caribbean and Central America	Guatemala	1	2009-2016	20826	21.0 [18.0; 25.0]	20.5 [19.7; 21.2]
Caribbean and Central America	Mexico	10	1998-2014	921711	43.8 [38.1; 50.2]	22.4 [20.9; 23.8]
Caribbean and Central America	Panama	1	2013-2016	3895	8.0 [6.0; 10.0]	28.7 [27.9; 29.4]
Caribbean and Central America	Puertorico	1	2009-2016	8823	9.0 [7.0; 11.0]	28.3 [27.5; 28.9]
South America	Argentina	3	2005-2015	205651	51.3 [46.1; 57.0]	23.8 [21.7; 26.0]
South America	Brazil	18	1997-2011	1091290	33.9 [29.8; 38.6]	26.1 [25.2; 27.0]
South America	Chile	4	2004-2014	98028	27.5 [24.2; 31.2]	18.3 [16.6; 19.7]
South America	Colombia	5	1998-2013	322750	32.8 [28.4; 37.0]	23.9 [23.1; 24.6]
South America	Ecuador	2	2014-2016	21729	30.0 [26.0; 34.5]	21.7 [21.0; 22.3]
South America	Paraguay	1	2004-2016	12665	8.0 [6.0; 10.0]	27.2 [25.6; 28.9]
South America	Peru	18	2008-2014	208060	13.4 [11.0; 16.0]	19.4 [18.6; 20.2]
South America	Uruguay	1	2012-2016	45487	75.0 [68.0; 81.0]	24.3 [21.6; 26.3]
Northern Europe	Estonia	5	1997-2015	46094	3.8 [2.6; 5.2]	15.4 [13.1; 17.8]
Northern Europe	Finland	1	1994-2014	48810	19.0 [16.0; 22.0]	15.7 [13.2; 18.1]
Northern Europe	Ireland	6	1991-2007	222228	17.5 [15.0; 20.7]	14.3 [12.9; 15.7]
Northern Europe	Norway	1	1991-2016	40054	13.0 [10.0; 15.0]	13.6 [11.4; 15.7]
Northern Europe	Sweden	3	1991-2016	215611	22.3 [19.3; 25.7]	16.3 [14.1; 18.4]
Northern Europe	UK	70	1991-2016	1781605	7.8 [6.2; 9.6]	15.8 [14.1; 17.5]
Western Europe	France	18	2000-2014	512911	15.3 [12.9; 17.8]	19.2 [17.1; 21.4]
Western Europe	Germany	12	1993-2015	975429	28.5 [24.8; 32.6]	17.2 [14.7; 20.0]
Western Europe	Netherlands	4	1995-2016	953106	88.2 [81.5; 95.6]	16.3 [14.5; 18.5]
Western Europe	Switzerland	8	1995-2013	75022	3.9 [2.5; 5.3]	18.0 [15.4; 20.6]
Eastern Europe	Czech Republic	4	1994-2015	226645	20.8 [17.5; 24.0]	17.4 [14.5; 20.3]
Eastern Europe	Moldova	4	2001-2010	18828	3.8 [2.8; 4.8]	21.0 [18.1; 23.3]
Eastern Europe	Romania	8	1994-2016	300031	13.1 [10.8; 15.6]	20.6 [18.0; 23.0]
Southern Europe	Greece	1	2001-2010	90845	73.0 [66.0; 82.0]	27.6 [24.6; 29.6]
Southern Europe	Italy	11	1991-2010	224176	11.9 [9.7; 14.0]	23.4 [20.9; 25.5]
Southern Europe	Portugal	5	1991-2016	351284	22.0 [18.6; 25.0]	21.1 [19.3; 23.2]
Southern Europe	Spain	52	1991-2014	884307	5.6 [4.2; 7.1]	22.4 [20.2; 24.5]
Eastern Asia	China	14	1996-2015	336900	38.4 [33.5; 44.6]	25.0 [22.7; 27.1]
Eastern Asia	Japan	47	1991-2015	7864627	53.8 [46.6; 62.5]	24.8 [22.3; 27.1]
Eastern Asia	South Korea	36	1997-2016	867142	9.6 [7.9; 11.6]	23.3 [21.2; 25.5]
Eastern Asia	Taiwan	3	1994-2014	385617	50.0 [44.0; 56.0]	28.7 [27.6; 29.7]
Southern and Western Asia	Iran	1	2004-2013	40824	32.0 [26.0; 40.0]	26.4 [24.0; 28.3]
Southern and Western Asia	Kuwait	1	2000-2016	22347	11.0 [8.0; 13.0]	38.1 [36.3; 39.6]

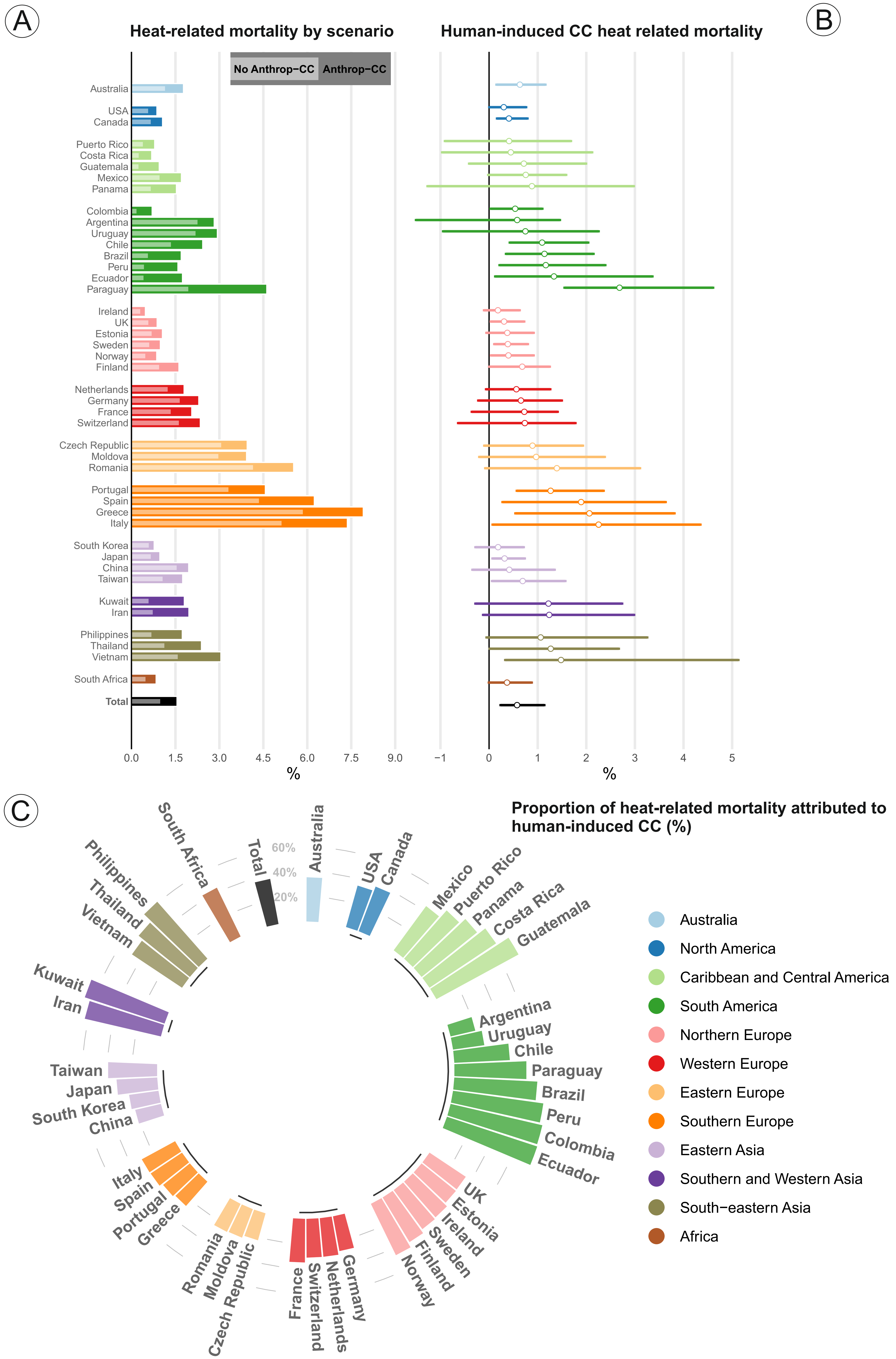
Table 1. Summary of the observed temperature and mortality data for the 732 locations during the warm season

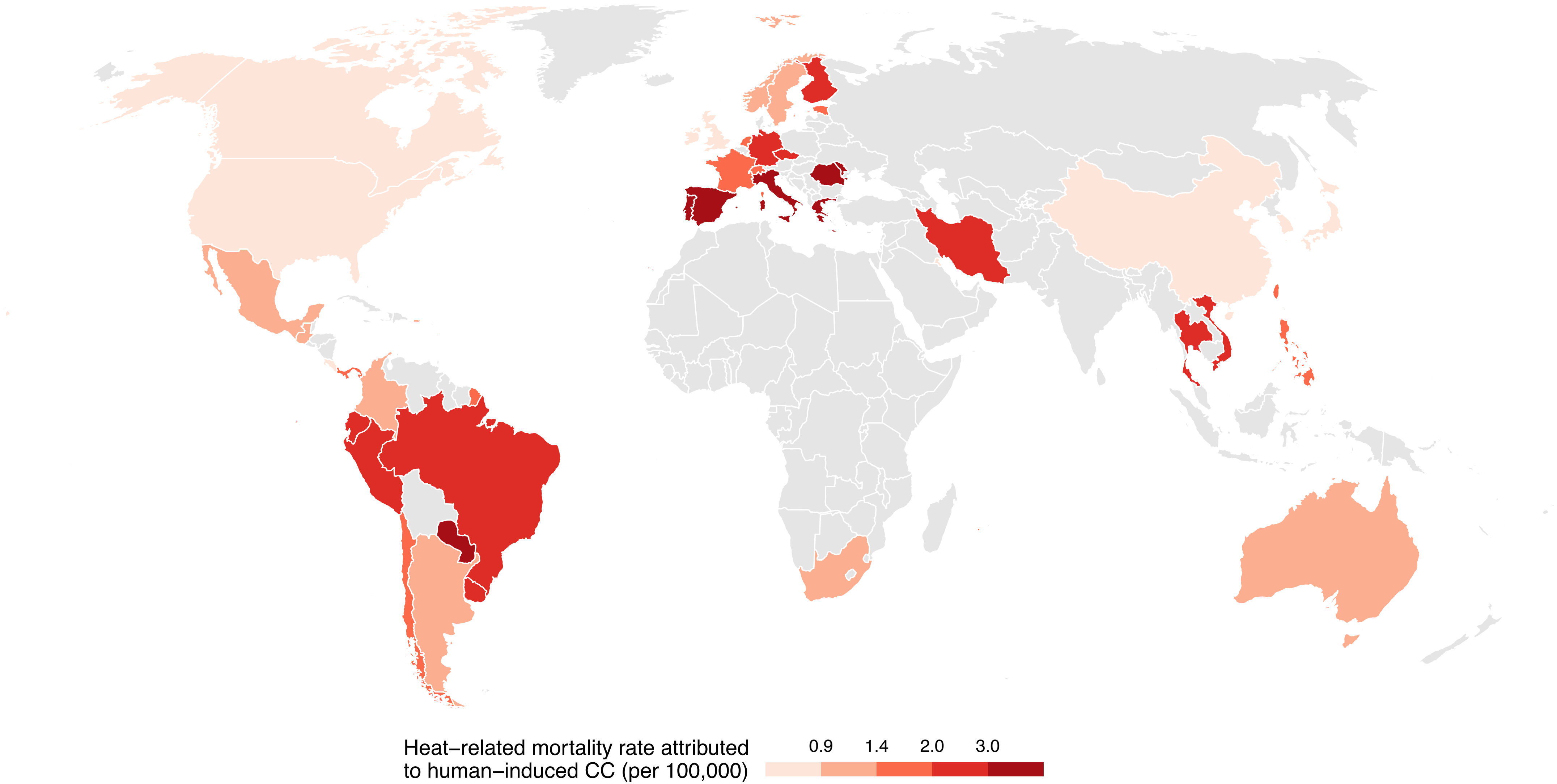
South-eastern Asia	Philippines	4	2006-2010	90034	36.5 [32.2; 41.2]	29.1 [28.4; 29.8]
South-eastern Asia	Thailand	61	1999-2008	610780	7.9 [6.1; 10.1]	29.1 [28.1; 30.0]
South-eastern Asia	Vietnam	2	2009-2013	37677	37.5 [33.5; 42.5]	29.5 [28.5; 30.4]
TOTAL*		732	1991 - 2016	29,936,896	9.0 [4.0; 22.0]	22.6 [18.9 - 25.6]


A
Annual average temperature (ºC)
23
22
21
1900
1925
1950
1975
2000
With anthrop. climate change
Without anthrop. climate change
B
Australia
USA
Canada
Puertorico
Panama
Mexico
Costa Rica
Guatemala
Argentina
Uruguay
Ecuador
Peru
Colombia
Brazil
Chile
Paraguay
Ireland
UK
Sweden
Estonia
Norway
Finland
Netherland
Germany
France
Switzerland
Moldova
Romania
Czech Republic
Portugal
Spain
Greece
Italy
South Korea
China
Japan
Taiwan
Kuwait
Iran
Vietnam
Philippines
Thailand
South Africa
Total
0.0
0.5
1.0
1.5
Level of warming (ºC)
Australia
North America
Caribbean and Central America
South America
Northern Europe
Western Europe
Eastern Europe
Southern Europe
Eastern Asia
Southern and Western Asia
South−eastern Asia
Africa
C
0.0
0.5
1.0
1.5
2.0
Level of Warming (ºC)


Sydney
Australia
Beijing
China
Berlin
Germany
Tokyo
Japan
Kuwait
Kuwait
Valley of Mexico
Mexico
Oslo
Norway
Asuncion
Paraguay
Manila
Philippines
Lisboa
Portugal
Bucharest
Romania
Johannesburg
South Africa
Madrid
Spain
Bangkok
Thailand
Taipei
Taiwan
Chicago
USA
Relative Risk
Temperature (°C)


1.0
1.5
2.0
Heat−mortality risk (Relative Risk)


A
B
Heat-related mortality by scenario
Human-induced CC heat related mortality
No Anthrop−CC
Anthrop−CC
Australia
USA
Canada
Puerto Rico
Costa Rica
Guatemala
Mexico
Panama
Colombia
Argentina
Uruguay
Chile
Brazil
Peru
Ecuador
Paraguay
Ireland
UK
Estonia
Sweden
Norway
Finland
Netherlands
Germany
France
Switzerland
Czech Republic
Moldova
Romania
Portugal
Spain
Greece
Italy
South Korea
Japan
China
Taiwan
Kuwait
Iran
Philippines
Thailand
Vietnam
South Africa
Total
0.0 1.5 3.0 4.5 6.0 7.5 9.0
%
−1 0 1 2 3 4 5
%
C
Proportion of heat-related mortality attributed to human-induced CC (%)
20%
40%
60%
Australia
North America
Caribbean and Central America
South America
Northern Europe
Western Europe
Eastern Europe
Southern Europe
Eastern Asia
Southern and Western Asia
South−eastern Asia
Africa


Heat−related mortality rate attributed
to human−induced CC (per 100,000)
0.9
1.4
2.0
3.0

SUPPLEMENTARY APPENDIX

Title: The burden of heat-related mortality attributable to recent human-induced climate change

A. M. Vicedo-Cabrera, N. Scovronick, F. Sera, D. Roye, R. Schneider, A. Tobias, C. Astrom, Y. Guo, Y. Honda, D. M. Hondula, R. Abrutzky, S. Tong, M. de Sousa Zanotti Stagliorio Coelho, P. H. Nascimento Saldiva, E. Lavigne, P. Matus Correa, N. Valdes Ortega, H. Kan, S. Osorio, J. Kysely, A. Urban, H. Orru, E. Indermitte, J. J. K. Jaakkola, N. Ryti, M. Pascal, A. Schneider, K. Katsouyanni, E. Samoli, F. Mayvaneh, A. Entezari, P. Goodman, A. Zeka, P. Michelozzi, F. de'Donato, M. Hashizume, B. Alahmad, M. Hurtado Diaz, C. De La Cruz Valencia, A. Overcenco, D. Houthuijs, C. Ameling, S. Rao, F. Di Ruscio, G. Carrasco-Escobar, X. Seposo, S. Silva, J. Madureira, I. H. Holobaca, S. Fratianni, F. Acquaotta, H. Kim, W. Lee, C. Iniguez, B. Forsberg, MS. Ragettli, Y. L. L. Guo, B. Y. Chen, S. Li, B. Armstrong, A. Aleman, A. Zanobetti, J. Schwartz, T. N. Dang , D. V. Dung, N. Gillett, A. Haines, M. Mengel, V. Huber, A. Gasparrini.

FIGURES

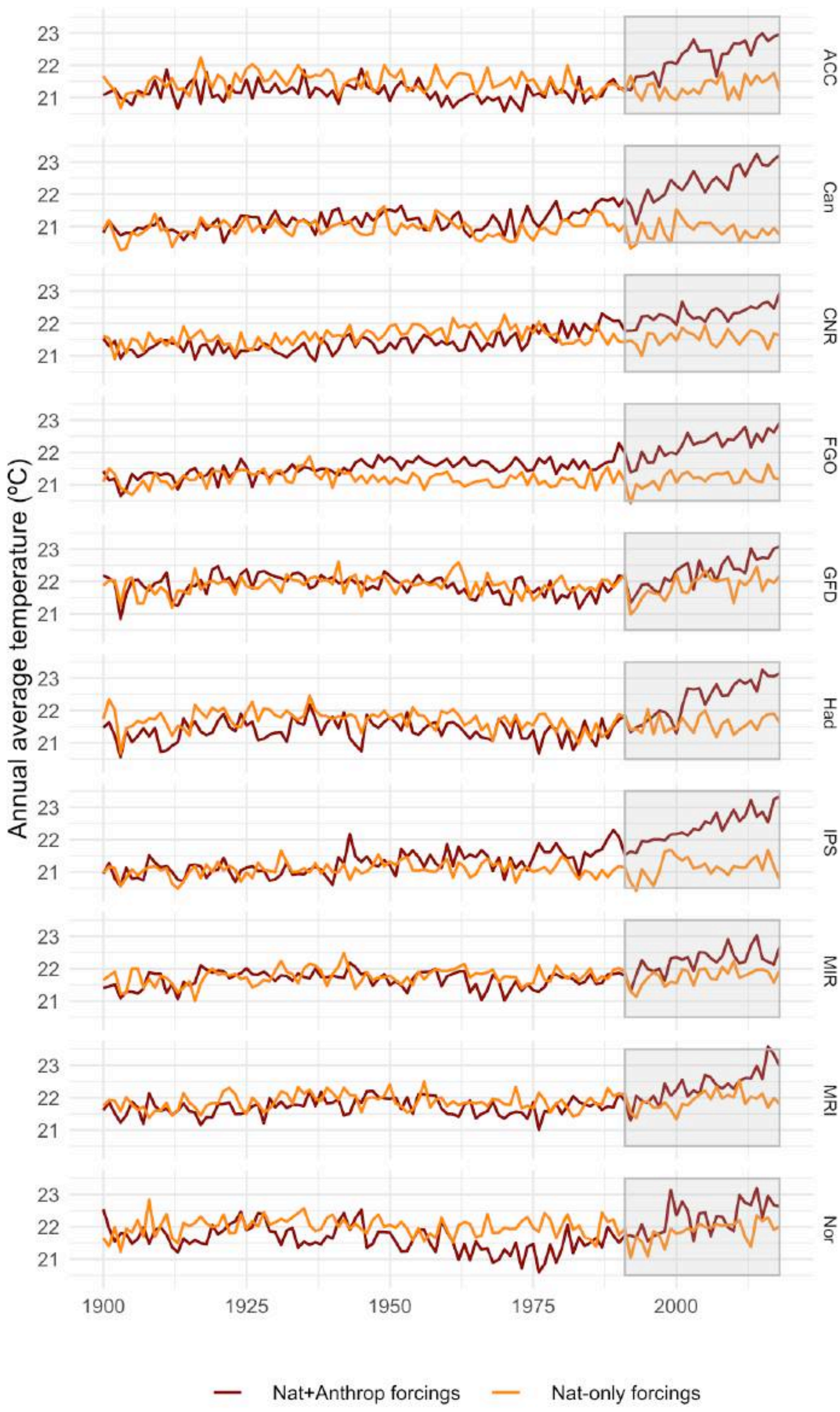


Figure S1. Time series plot of the warm-season mean daily temperatures by model (dark brown: factual scenario with natural and anthropogenic forcings, orange: counterfactual scenario with natural forcings only, grey dark area corresponds to the study period 1991-2018). (ACC: ACCESS-ESM1-5, CAN: CanESM5, CNR: CESM2, FGO: FGOALS-g3, GFD: GFDL-ESM4, HAD: HadGEM3-GC31-LL, IPS: IPSL-CM6A-LR, MIR: MIROC6, MRI: MRI-ESM2-0, Nor: NorESM2-LM).

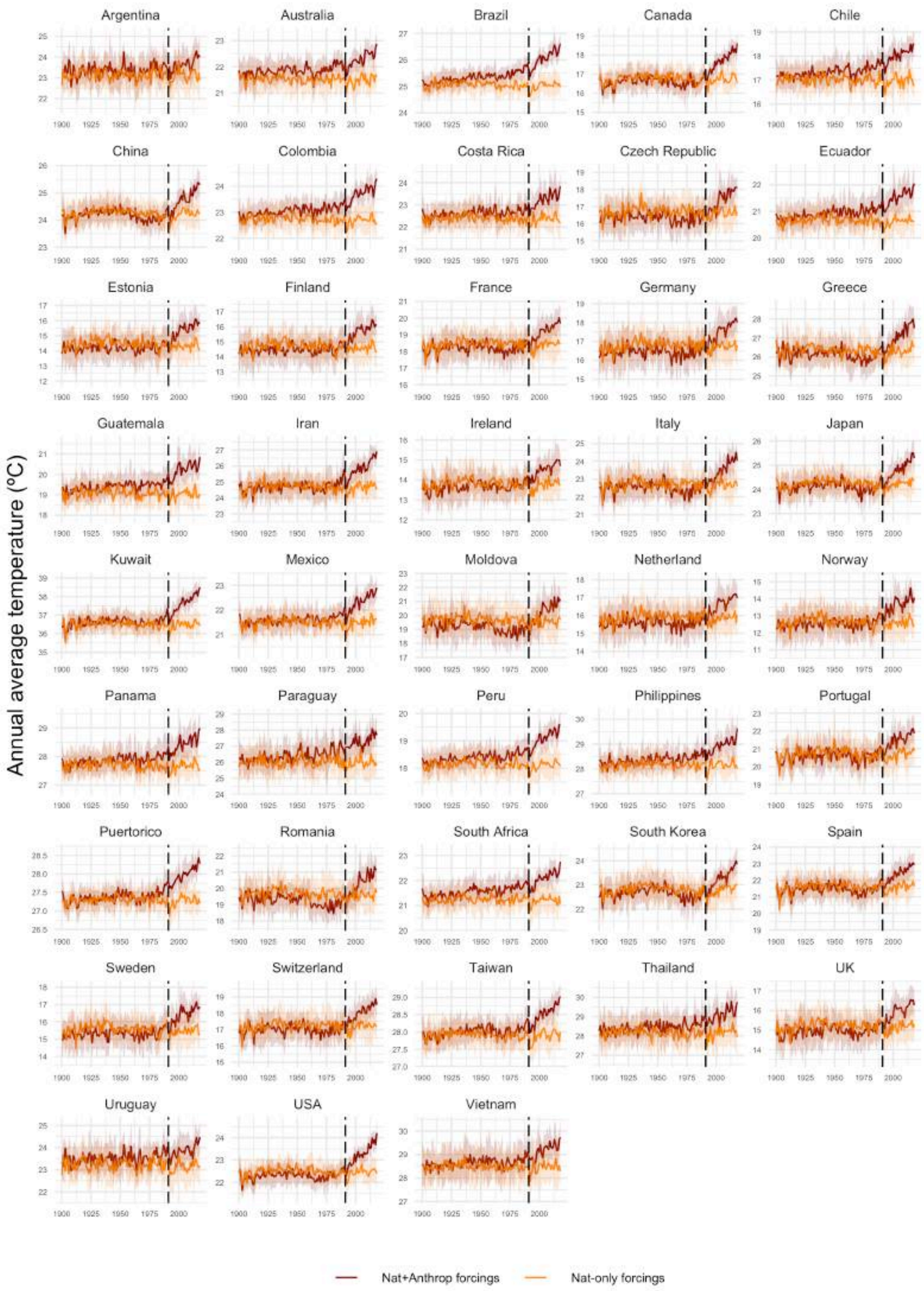


Figure S2. Time series plots of the warm-season mean daily temperatures by country (dark brown: factual scenario with natural and anthropogenic forcings, orange: counterfactual scenario with natural forcings only, shaded area corresponds to 1 standard deviation across model-specific average estimates. The area on the right of the dashed line depicts the study period.

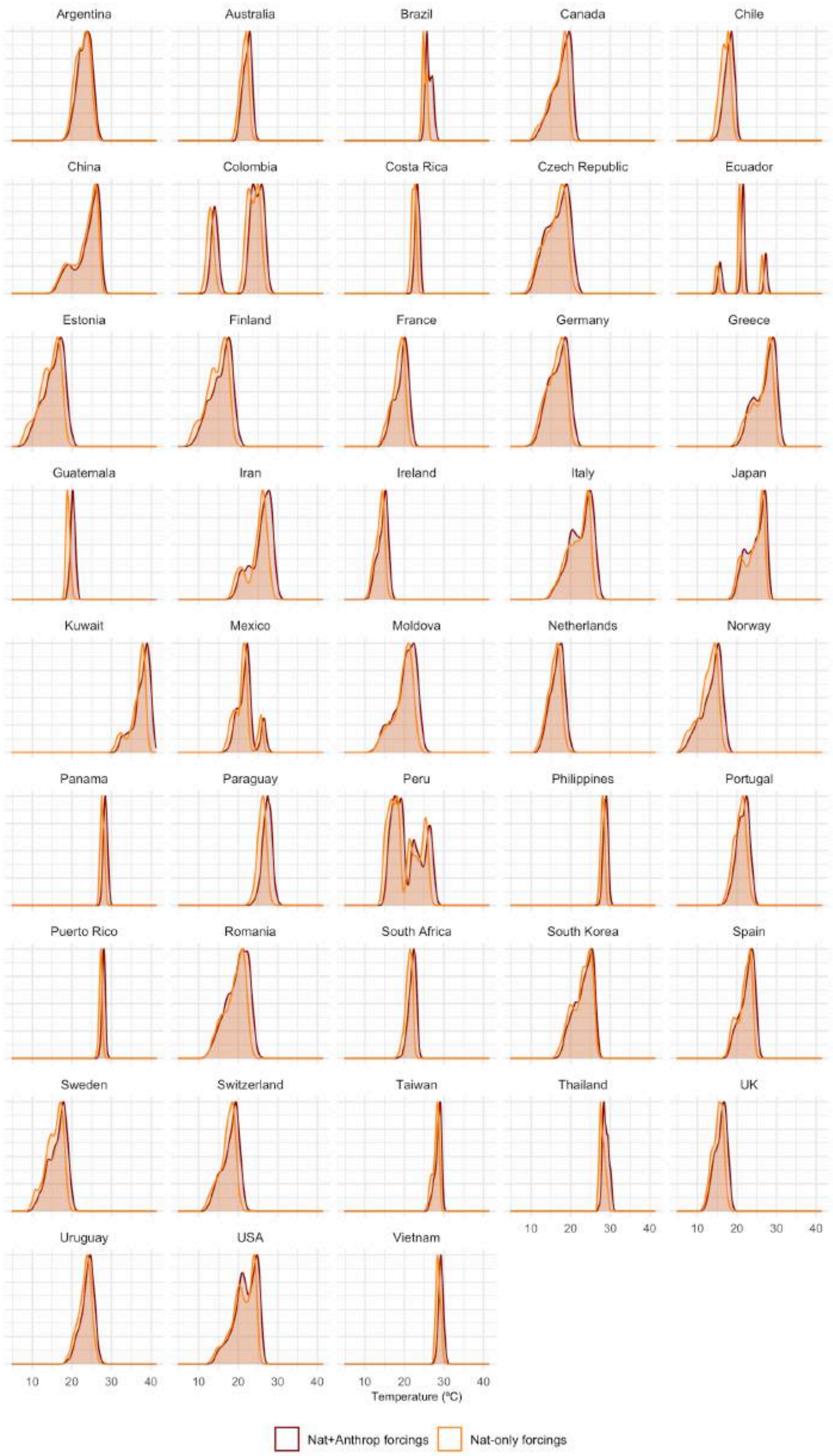


Figure S3. Country-averaged warm-season temperature distributions modelled in each scenario (dark brown: factual scenario with natural and anthropogenic forcings, orange: counterfactual scenario with natural forcings only).

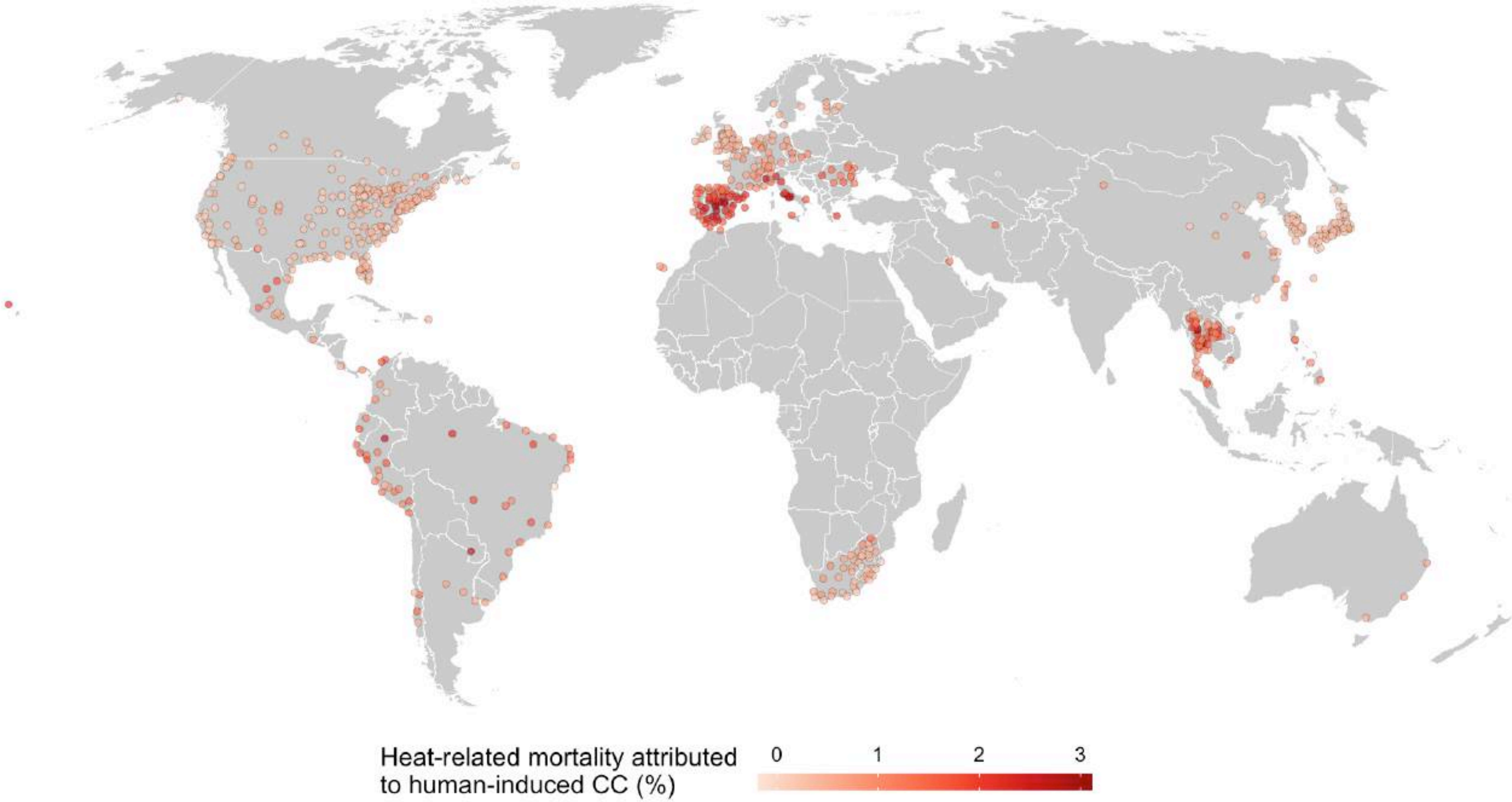


Figure S4. Location-specific historical heat-related mortality (1991 - 2018) attributed to human-induced climate change (CC), expressed as mortality fraction (%). Interquartile range: 0.2%, 0.8%. Maximum values up to 3.8%, and 23 locations with estimates below 0 (minimum value of -0.1%).

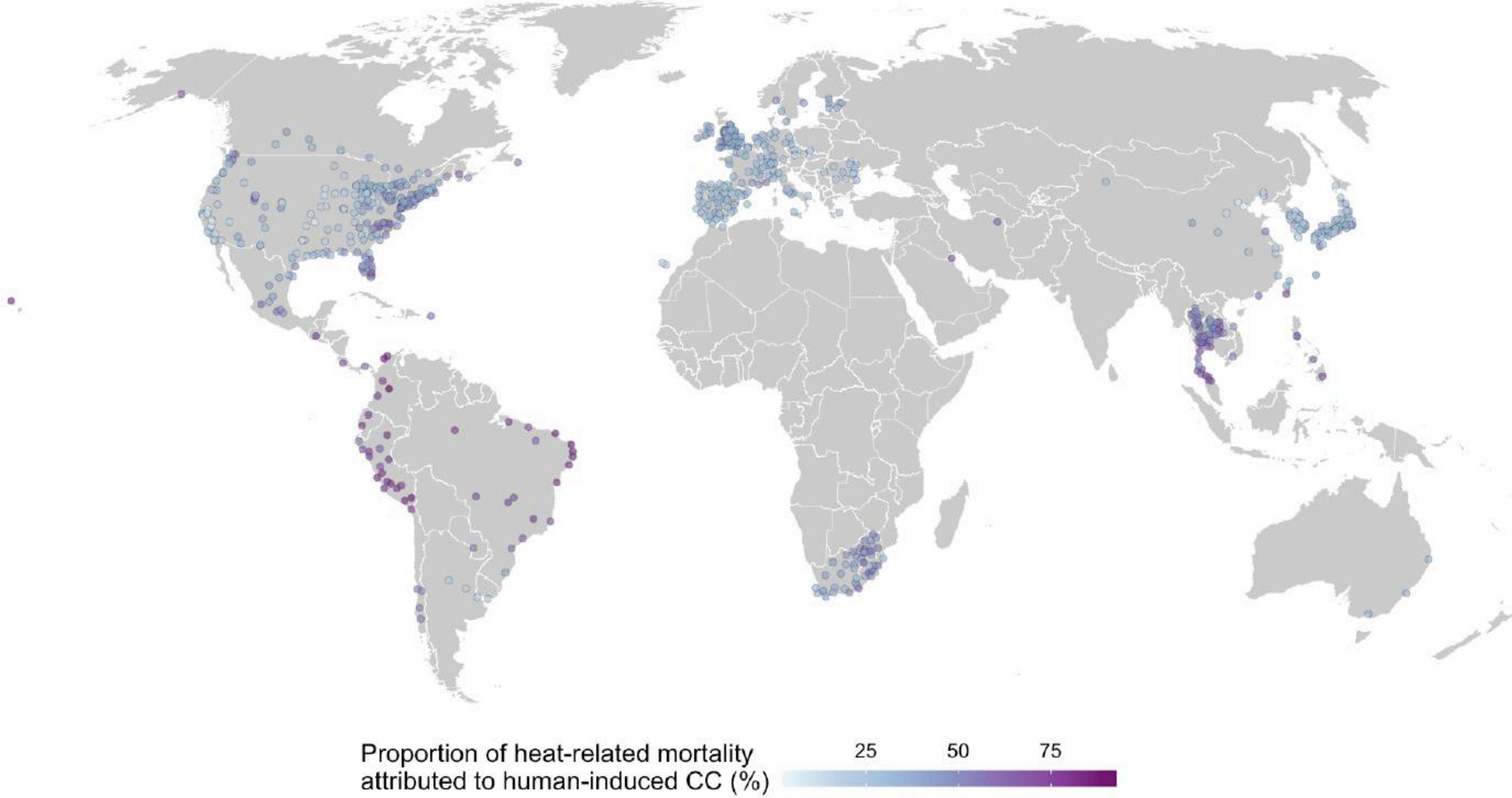


Figure S5. Proportion of historical (1991-2018) heat-related mortality attributed to human-induced climate change (CC). Interquartile range: 28.6%, 54.2%. Maximum values up to 92%, and 1 location with estimates below 0 (minimum value of -0.1%).

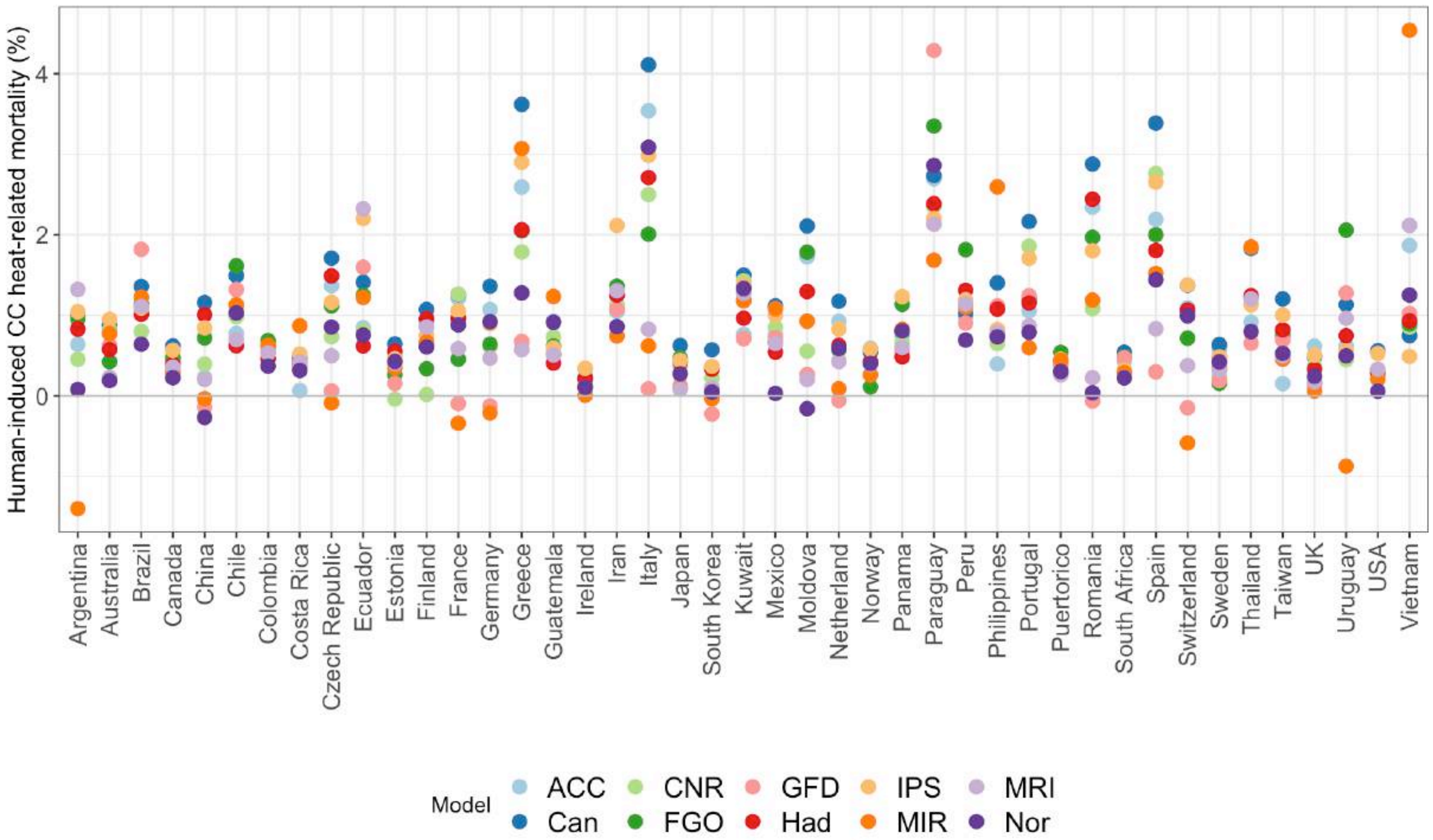


Figure S6. Model-specific estimates of the heat-related mortality attributed to human-induced climate change (CC) for each country, expressed as mortality fraction (%). (ACC: ACCESS-ESM1-5, CAN: CanESM5, CNR: CESM2, FGO: FGOALS-g3, GFD: GFDL-ESM4, HAD: HadGEM3-GC31-LL, IPS: IPSL-CM6A-LR, MIR: MIROC6, MRI: MRI-ESM2-0, Nor: NorESM2-LM)

TABLES

Table S1. Description of the observed temperature and mortality data in the MCC locations.

COUNTRY	N LOCATIONS	PERIOD	MORTALITY DATA	TEMPERATURE DATA	NOTES
Argentina	3 cities	2005-2015	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) from National Ministry of Health.	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements from one meteorological station in each city provided by the National Weather Service.	Missing data amount for 0.91% and 0.00% of the mortality and temperature series, respectively.
Australia	3 cities	1991-2009	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) from Australian Bureau of Statistics.	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements from meteorological stations located within ≤30 km of each city provided by Australian Bureau of Meteorology.	Missing data amount for 0.18% and 0.00% of the mortality and temperature series, respectively.
Brazil	18 cities	1997-2011	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) from the Ministry of Health.	Mean daily temperature (in ˚C) and relative humidity (in %), computed from the 24-h average of hourly measurements, from weather stations located within the urban area provided by National Institute of Meteorology of Brazil	Missing data amount for 1.85% and 3.21% of the mortality and temperature series, respectively.
Canada	25 census metropolitan areas (CMA) and 1 city (Hamilton)	1991-2015	All causes collected from Canadian Mortality Database.	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements, were obtained from Environment Canada collected from monitoring stations located closest to the CMA centre.	Missing data amount for 0.82% and 2.79% of the mortality and temperature series, respectively.
Chile	4 cities	2004-2014	All causes provided by the Departamento de Estadísticas e Información de Salud (Ministerio de Salud))	Mean daily temperature (in ˚C), computed as 24-hour average based on hourly measurements, were obtained from Sistema de Información Nacional de Calidad del Aire (SINCA), Ministerio del Medio Ambiente.	Missing data amount for 0.15% and 9.7% of the mortality and temperature series, respectively.

China	14 cities	1996-2015	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) from Municipal Center for Disease Control and Prevention in each city.	Mean daily temperature (in ˚C), computed as averaged hourly temperatures, were obtained from China Meteorological Data Sharing Service System (http:// data.cma.cn/).	Missing data amount for 6.98% and 7.35% of the mortality and temperature series, respectively. Data on 17 cities were originally collected, but we excluded 3 cities (Tangshan, Nanjing, Guangzhou) because of no data on non-external or suspected errors in data collection.
Colombia	5 cities	1998-2013	All causes provided by the National Administrative Department of Statistics DANE	Mean daily temperature (in ˚C), computed as 24-hour average based on hourly measurements, were obtained from Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia (IDEAM)	Missing data amount for 0.00% and 3.98% of the mortality and temperature series, respectively.
Costa Rica	1 city	2000-2017	All causes provided by the Instituto Nacional de Estadística y Censo. Open Access.	Meterological data were obtained from WMO-NOAA (Surface Data Hourly Global, DS3505)	Missing data amount for 0.00% and 0.97% of the mortality and temperature series, respectively.
Czech Republic	3 cities and 1 rural region	1994-2015	All causes provided by the Czech Statistical Office and the Institute of Health Information and Statistics	Meteorological data (temperature and relative humidity) were obtained from stations operated by the Czech Hydrometeorological Institute (measurements in standard climatic terms 7:00, 14:00 and 21:00 local time, and daily means)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively.
Ecuador	2 cities	2014-2016	All causes provided by the Instituto Nacional de Estadística y Censos	Meterological data were obtained from WMO-NOAA (Surface Data Hourly Global, DS3505)	Missing data amount for 0.00% and 4.33% of the mortality and temperature series, respectively.
Estonia	4 cites and 1 region	1997-2015	All causes provided by *Estonian Causes of Death Registry*	Mean daily temperature (in ˚C) and relative humidity (%) were computed as the 24-h average of hourly measurements collected from *Estonian Environment Agency*.	Missing data amount for 0.0% and 0.0% of the mortality and temperature series, respectively.
Finland	1 metropolitan area	1994-2014	All causes provided by Statistics Finland	Mean daily temperature (in ˚C), Finnish Meteorological Institute. The weather stations around the country were interpolated onto a 10×10 km grid covering the whole of Finland, using a Kriging model.	Missing data amount for 0.00% and 4.88% of the mortality and temperature series, respectively.
France	18 cities	2000-2014	All causes provided by French National Institute of Health and Medical Research (CepiDC),	Mean daily temperature (in ˚C), computed as the mean of the minimal and maximal temperature, were obtained from the Meteo France. A	Missing data amount for 0.25% and 0.04% of the mortality and temperature series, respectively.

				single weather station was selected for each city.	
Germany	12 cities	1993-2015	All causes provided by Research Data Centres of the Federation and the Federal States of Germany (Forschungsdatenzentrum der Statistischen Ämter des Bundes und der Länder),	Mean daily temperature (in ˚C), computed as the 24-h average based on hourly measurements, was obtained from the Climate Data Centre of the German National Meteorological Service (Deutscher Wetterdienst).	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively.
Greece	1 city	2001-2010	All causes provided by Hellenic Statistical Authority	Mean daily temperature (in ˚C) and relative humidity (%) were computed as the 24-h average based on hourly measurements collected from the National observatory of Athens (http://www.noa.gr/) from site "Thisio" located in the city of Athens.	Missing data amount for 0.00% and 7.05% of the mortality and temperature series, respectively.
Guatemala	1 city	2009-2016	All causes provided by the Instituto Nacional de Estadística, Unidad de Estadística de Salud.	Temperature data are provided by the Instituto Nacional de Sismología, Vulancología, Meteorología y Hidrología.	Missing data amount for 0.00% and 2.15% of the mortality and temperature series, respectively.
Island of Ireland	4 regions covering all Island population (ROI) and 2 in the Northern Ireland (NI))	1991-2007	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) provided by Irish Central Statistics Office Northern and Ireland Social Research Agency.	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements, were obtained from two weather stations for each ROI regions and NI regions from Met Eireann, and the United Kingdom Meteorological Office.	Missing data amount for 0.01% and 0.00% of the mortality and temperature series, respectively
Iran	1 city	2004-2013	All causes provided by the Ferdows organization of Mashhad Municipality	Mean, Max, Min daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements collected from IRAN Meteorological Organization (IRIMO) (http://www.irimo.ir)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Italy	11 cities	1991-2010	All causes provided by the obtained from local mortality registries and from the rapid mortality surveillance system	Mean daily temperature (in ˚C) was computed as the 24-h average based on 6-h measurements obtained from the Meteorological Service of the Italian Air Force. A single weather station was selected for each city,	Missing data amount for 1.26% and 2.34% of the mortality and temperature series, respectively. Data on 12 cities were initially collected, but 1 (Rieti) was excluded because of potential

				using the airport monitoring station located closest to the city center.	problems in data collection (strange temporal patterns).
Japan	47 prefectures	1991-2015	All causes provided by Ministry of Health, Labour and Welfare.	Weather station located within the urban area of the capital city (Japan Meteorology Agency)	Missing data amount for 0.00% and 0.04% of the mortality and temperature series, respectively
South Korea	36 cities	1997-2016	All causes provided by Korea Bureau of Statistics	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the 24-hour average based on hourly measurements, were obtained from weather stations located within the urban area managed by Korea Meteorological Administration.	Missing data amount for 0.00% and 0.01% of the mortality and temperature series, respectively
Kuwait	1 city	2000-2016	Non-external causes only (ICD-9: 0-799; ICD-10: A00-R99) provided by the National Center for Health Information, Ministry of Health, Kuwait	Mean daily temperature (in ºC) and relative humidity. (in %), computed as the 24-hour average based on hourly measurements from two sources: the Directorate General of Civil Aviation (Kuwait Airport) and Kuwait's Environmental Public Authority.	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Mexico	10 metropolitan areas	1998-2014	All causes provided by National Institute of Statistics, Geography and Informatics	Mean daily temperature (in ˚C) and relative humidity (%) were computed as the 24-hour average based on hourly measurements collected through the Servicio Meteorológico Nacional (SMN) and the Instituto Nacional de Ecología y Cambio Climático (INECC).	Missing data amount for 0.00% and 27.03% of the mortality and temperature series, respectively
Moldova	4 cities	2001-2010	All causes provided by National Centre for Health Management	Mean daily temperature (in ˚C) computed as the average between daily minimum and maximum, were obtained from State Hydrometeorological Service, Moldova. A single weather station was selected for each city	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
The Netherlands	4 regions	1995-2016	All causes provided by Statistics Netherlands	Mean daily temperature (in ˚C) and relative humidity (%) were obtained from the Royal Dutch Meteorological Institute (KNMI) as 24-hour average based on hourly measurements	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Norway	1 city	1991-2016	All causes provided by Norwegian Cause of Death registry	Mean daily temperature (in ˚C) based on an observational modeled dataset from the Norwegian Meteorological Institute.	Missing data amount for 2.02% and 3.85% of the mortality and temperature series, respectively

Panama	1 city	2013-2016	All causes provided by Instituto Nacional de Estadística y Censo, Centro de Información Estadística.	Temperature data are provided by the Empresa de Transmisión Eléctrica, S.A. (ETESA). Open Access.	Missing data amount for 0.00% and 10.66% of the mortality and temperature series, respectively
Paraguay	1 city	2004-2016	All causes provided by Ministerio de Salud Pública y Bienestar Social, Dirección General de Información Estratégica en Salud, Subsistema de Información de Estadísticas Vitales	Temperature data are obtained from the Global Historical Climatology Network (NOAA/WMO)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Peru	18 regions	2008-2014	All causes provided by the Peruvian Ministry of Health (MINSA in Spanish)	Mean daily temperature (in ˚C) was obtained from the National Meteorology and Hydrology Service of Peru (SENAMHI in Spanish). A total of 18 weather stations (one station per Region) contributed data to each department series.	Missing data amount for 2.73% and 12.12% of the mortality and temperature series, respectively
Philippines	4 cities	2006-2010	All causes provided by Philippine Statistics Agency	Mean daily temperature (in ˚C), computed as 24-hour average based on hourly measurements, were obtained from National Oceanic and Atmospheric Administration (NOAA).	Missing data amount for 0.04% and 0.00% of the mortality and temperature series, respectively
Portugal	5 districts	1991-2016	All causes provided by Statistics Portugal.	Mean daily temperature (in ˚C) was computed as the 24-hour average based on hourly measurements collected from the National Oceanic and Atmospheric Administration (NOAA)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Puerto Rico	1 city	2009-2016	All causes provided by Instituto de Estadísticas Vitales de Puerto Rico, Área de Estadísticas Vitales del Departamento de Salud	Temperature data are obtained from the Global Historical Climatology Network (NOAA/WMO)	Missing data amount for 0.00% and 5.02% of the mortality and temperature series, respectively
Romania	8 cities	1994-2016	All causes provided by Romanian National Institute of Statistics	Meteorological data (temperature and relative humidity) were obtained from stations operated by the National Meteorological Administration of Romania (NMA RO)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively

				(measurements in standard climatic terms, mean daily) by https://www.ecad.eu/	
South Africa	45 district municipalities	1997-2013	All causes provided by Statistics South Africa	Mean daily temperature (in ˚C) was computed as the average between daily minimum and maximum collected from the Agricultural Research Council of South Africa and the National Oceanic and Atmospheric Administration (NOAA).	Missing data amount for 0.00% and 12.27% of the mortality and temperature series, respectively 7 locations were excluded because of a high % of missing data or unstable temporal patterns in the mortality data, possibly due to problems with data collection.
Spain	50 cities	1991-2014	Non-external causes (ICD-9: 0-799; ICD-10: A00-R99) from the Spain National Institute of Statistics.	Mean daily temperature (in ˚C), computed as the 24-hour average based on hourly measurements, and was obtained from weather stations of the Spain National Meteorology Agency. A single weather station, located within the urban area or at the near airport, was selected for each city	Missing data amount for 0.00% and 0.84% of the mortality and temperature series, respectively
Sweden	3 cities	1991-2016	All causes provided by the Swedish Cause of Death Register at the Swedish National Board of Health and Welfare	Mean daily temperature (in ˚C) and relative humidity (%), computed as the 24-hour average based on hourly measurements, were obtained from the Environment and Health Administration.	Missing data amount for 0.00% and 2.06% of the mortality and temperature series, respectively
Switzerland	7 cities and 1 metropolitan area (Lugano)	1995-2013	Non-external causes only other than accidents (ICD-10codes A00-R99, V01-V99, W00-X59) provided from Federal Office of Statistics (Switzerland)	Mean daily temperature (in ˚C) and relative humidity (%), computed as the 24-hour average based on hourly measurements, were obtained from the IDAWEB database (a service provided by MeteoSwiss, the Swiss Federal Office of Meteorology and Climatology). A single weather station located within or near the urban area was selected for each city.	Missing data amount for 0.0% and 0.0% of the mortality and temperature series, respectively.
Thailand	61 regions	1999-2008	Non-external (ICD-9: 0-799; ICD-10: A00-R99) mortality, provided the Ministry of Public Health, Thailand.	Mean daily temperature (in ˚C) and relative humidity (in %), computed as the average between daily minimum and maximum, were	Missing data amount for 0.00% and 4.99% of the mortality and temperature series, respectively. The region of Phetchabun was excluded because of high percentage of missing data.

				obtained from the Meteorological Department, Ministry of Information and Communication Technology, Thailand.	
Taiwan	3 cities	1994-2014	All causes provided by the Department of Health in Taiwan	Mean daily temperature (in ˚C) and relative humidity (%) were computed as the 24-hour average based on hourly measurements provided by air quality monitoring stations by the Taiwan Environmental Protection Agency	Missing data amount for 0.03% and 0.00% of the mortality and temperature series, respectively.
UK	70 built-up areas	1991-2016	All causes provided by the Office of National Statistics.	Mean daily temperature (in ˚C) and relative humidity (%) were computed as the 24-hour average based on hourly measurements from UKCP09 5kmx5km product	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
Uruguay	1 city	2012-2016	Non-external causes are provided by the Ministerio de Salud Publica (MSP).	Temperature data are provided by the Instituto Uruguayo de Meteorología (INUMET)	Missing data amount for 0.00% and 0.00% of the mortality and temperature series, respectively
USA	210 cities	1991-2006	All causes provided by	Mean daily temperature (in ˚C) and relative humidity (%), computed as the 24-hour average based on hourly measurements, were obtained from the National Climatic Data Center (NCDC) of the National Oceanic and Atmospheric Administration (NOAA).	Missing data amount for 2.65% and 2.70% of the mortality and temperature series, respectively. 1 city was excluded (Nampa) because of high percentage of missing.
Vietnam	2 cities	2009-2013	All causes provided by Provincial Department of Health.	Mean daily temperature (in ˚C), and relative humidity (in %) computed as computed from the 24-h average of hourly measurements, were obtained from National Oceanic and Atmospheric Administration's (NOAA) National Climate Data Center (NCDC). A single weather station was selected for each city.	Missing data amount for 0.00% and 0.57% of the mortality and temperature series, respectively

Table S2. Description of the location-specific data included in the MCC database.

Location	Country	Study Period	Warm period (months)	Total N deaths	Median mean daily temperature [IQR]
Buenos Aires	Argentina	2005 - 2015	12 - 3	130575	23.8 [21.5 - 25.9]
Cordoba	Argentina	2005 - 2015	11 - 2	37189	23.9 [21.9 - 26.2]
Rosario	Argentina	2005 - 2015	11 - 2	37887	23.8 [21.7 - 25.8]
Brisbane	Australia	1991 - 2009	12 - 3	51863	24.1 [22.9 - 25.5]
Melbourne	Australia	1991 - 2009	12 - 3	121265	19.1 [17.1 - 22.4]
Sydney	Australia	1991 - 2009	12 - 3	138057	22.2 [20.6 - 23.8]
Belem	Brazil	1997 - 2011	8 - 11	42837	27.4 [26.9 - 27.8]
Belo Horizonte	Brazil	1997 - 2011	12 - 3	150216	23.6 [22.3 - 24.8]
Brasilia	Brazil	1997 - 2011	9 - 12	37960	22.0 [21.0 - 23.5]
Curitiba	Brazil	1997 - 2011	12 - 3	47278	21.1 [19.3 - 22.5]
Cuiaba	Brazil	1997 - 2011	9 - 12	16659	27.9 [26.6 - 29.2]
Fortaleza	Brazil	1997 - 2011	10 - 1	65341	27.7 [27.3 - 28.0]
Goiania	Brazil	1997 - 2011	8 - 11	44935	25.4 [24.2 - 26.8]
Joao Pessoa	Brazil	1997 - 2011	12 - 3	17525	28.1 [27.7 - 28.5]
Maceio	Brazil	1997 - 2011	12 - 3	30648	26.3 [25.6 - 26.9]
Manaus	Brazil	1997 - 2011	8 - 11	31989	28.2 [27.1 - 29.2]
Natal	Brazil	1997 - 2011	12 - 3	26323	27.6 [27.0 - 28.0]
Porto Alegre	Brazil	1997 - 2011	12 - 3	66822	24.2 [22.6 - 25.7]
Recife	Brazil	1997 - 2011	12 - 3	85922	27.3 [26.8 - 27.7]
Sao Luis	Brazil	1997 - 2011	9 - 12	26123	27.6 [27.3 - 27.9]
Salvador	Brazil	1997 - 2011	12 - 3	73998	27.1 [26.5 - 27.6]
Sao Paulo	Brazil	1997 - 2011	12 - 3	287993	23.0 [21.4 - 24.4]
Teresina	Brazil	1997 - 2011	9 - 12	21556	29.2 [28.3 - 30.0]
Vitoria	Brazil	1997 - 2011	12 - 3	17165	27.1 [25.9 - 28.0]
Abbotsford	Canada	1991 - 2015	6 - 9	14268	17.1 [15.2 - 19.0]
Calgary	Canada	1991 - 2015	6 - 9	44495	14.8 [11.7 - 17.3]
Edmonton	Canada	1991 - 2015	6 - 9	51453	14.9 [12.2 - 17.4]
Halifax	Canada	1991 - 2015	6 - 9	22054	17.6 [14.9 - 19.8]
Hamilton	Canada	1991 - 2015	6 - 9	33127	19.3 [16.6 - 21.8]
Kingston	Canada	1991 - 2015	6 - 9	14370	19.1 [16.6 - 21.5]
Kitchener-Waterloo	Canada	1991 - 2015	6 - 9	22131	18.1 [15.5 - 20.8]
London Ontario	Canada	1991 - 2015	6 - 9	27677	19.1 [16.5 - 21.6]
Montreal	Canada	1991 - 2015	6 - 9	117348	19.7 [16.9 - 22.2]
Niagara	Canada	1991 - 2015	6 - 9	31237	20.4 [17.9 - 23.1]
Oakville	Canada	1991 - 2015	6 - 9	19756	19.9 [17.3 - 22.4]
Oshawa	Canada	1991 - 2015	6 - 9	24593	19.0 [16.5 - 21.2]
Ottawa	Canada	1991 - 2015	6 - 9	48063	19.1 [16.4 - 21.6]
Regina	Canada	1991 - 2015	6 - 9	15399	16.5 [13.3 - 19.3]
Sarnia	Canada	1991 - 2015	6 - 9	9128	19.3 [16.6 - 22.0]
Sudbury	Canada	1991 - 2015	6 - 9	12728	17.1 [14.2 - 19.8]
Saint John NB	Canada	1991 - 2015	6 - 9	13408	15.8 [13.5 - 17.7]
St. John's NFL	Canada	1991 - 2015	6 - 9	16972	14.5 [11.2 - 17.4]

Sault Ste. Marie	Canada	1991 - 2015	6 - 9	9506	16.4 [13.6 - 19.1]
Saskatoon	Canada	1991 - 2015	6 - 9	17894	16.2 [13.1 - 19.0]
Thunder Bay	Canada	1991 - 2015	6 - 9	11033	15.7 [12.9 - 18.3]
Toronto	Canada	1991 - 2015	6 - 9	219328	19.8 [17.3 - 22.2]
Victoria	Canada	1991 - 2015	6 - 9	25798	15.8 [14.4 - 17.2]
Vancouver	Canada	1991 - 2015	6 - 9	102921	17.1 [15.3 - 18.8]
Windsor	Canada	1991 - 2015	6 - 9	22685	21.3 [18.5 - 23.8]
Winnipeg	Canada	1991 - 2015	6 - 9	52194	18.0 [14.7 - 20.8]
Anshan	China	2004 - 2006	6 - 9	9404	24.3 [22.1 - 26.1]
Beijing	China	2007 - 2015	5 - 8	52416	25.8 [23.1 - 27.5]
Fuzhou	China	2004 - 2006	6 - 9	5422	28.5 [26.2 - 30.1]
Hong Kong	China	1996 - 2002	6 - 9	67289	28.7 [27.4 - 29.5]
Hangzhou	China	2002 - 2004	6 - 9	6370	26.7 [24.1 - 29.5]
Lanzhou	China	2004 - 2008	5 - 8	10612	18.0 [16.0 - 20.0]
Shanghai	China	2001 - 2015	6 - 9	85669	26.5 [24.2 - 29.6]
Shenyang	China	2005 - 2008	6 - 9	30197	22.0 [20.0 - 24.0]
Suzhu	China	2005 - 2008	6 - 9	14563	27.4 [24.7 - 29.5]
Taiyuan	China	2004 - 2008	5 - 8	13879	22.5 [20.1 - 25.0]
Tianjin	China	2005 - 2008	6 - 9	4814	25.5 [23.1 - 27.2]
Wulumuqi	China	2006 - 2007	6 - 9	4048	22.4 [19.6 - 25.5]
Wuhan	China	2003 - 2005	6 - 9	17896	27.5 [24.9 - 30.5]
Xian	China	2004 - 2008	5 - 8	14321	24.0 [22.0 - 26.0]
Chillan	Chile	2008 - 2014	12 - 3	2629	18.8 [16.7 - 20.6]
Santiago	Chile	2008 - 2014	12 - 3	76168	21.3 [19.4 - 22.7]
Temuco	Chile	2004 - 2013	12 - 3	5001	15.5 [14.0 - 17.0]
Valparaiso	Chile	2004 - 2013	12 - 3	14230	17.5 [16.4 - 18.6]
Bogota	Colombia	1998 - 2013	3 - 6	143479	14.1 [13.4 - 14.8]
Barranquilla	Colombia	1998 - 2013	5 - 8	31965	28.4 [27.7 - 28.9]
Cali	Colombia	1998 - 2013	6 - 9	62269	24.9 [24.0 - 25.7]
Cartagena	Colombia	1998 - 2013	5 - 8	18437	28.8 [28.2 - 29.3]
Medellin	Colombia	1998 - 2013	5 - 8	66600	23.3 [22.1 - 24.5]
San José (CR)	Costa Rica	2000 - 2017	2 - 5	10093	23.3 [22.7 - 24.0]
Brno	Czech Republic	1994 - 2015	5 - 8	28506	18.7 [15.6 - 21.5]
Ostrava	Czech Republic	1994 - 2015	5 - 8	24826	17.6 [14.9 - 20.3]
Prague	Czech Republic	1994 - 2015	6 - 9	91436	16.9 [14.0 - 19.9]
South Bohemia	Czech Republic	1994 - 2015	5 - 8	81877	16.5 [13.6 - 19.4]
Guayaquil	Ecuador	2014 - 2016	2 - 5	13389	27.6 [26.9 - 28.2]
Quito	Ecuador	2014 - 2016	1 - 4	8340	15.8 [15.2 - 16.5]
Kohtla-Järve linn	Estonia	1997 - 2015	6 - 9	4871	14.9 [12.6 - 17.5]
Narva linn	Estonia	1997 - 2015	6 - 9	4853	14.9 [12.6 - 17.5]
Pärnu linn	Estonia	1997 - 2015	6 - 9	3943	16.0 [13.7 - 18.2]
Tallinn	Estonia	1997 - 2015	6 - 9	26435	15.4 [13.0 - 17.6]
Tartu linn	Estonia	1997 - 2015	6 - 9	5992	16.0 [13.7 - 18.2]
Helsinki	Finland	1994 - 2014	6 - 9	48810	15.7 [13.2 - 18.1]
Bordeaux	France	2000 - 2014	6 - 9	22891	20.0 [17.9 - 22.2]
Clermont-Ferrand	France	2000 - 2014	6 - 9	10306	18.8 [16.4 - 21.4]

Dijon	France	2000 - 2014	6 - 9	8204	18.6 [16.4 - 21.2]
Grenoble	France	2000 - 2014	6 - 9	14365	18.7 [16.2 - 21.3]
Le Havre	France	2000 - 2014	6 - 9	10258	16.7 [15.3 - 18.1]
Lille	France	2000 - 2014	6 - 9	38119	17.1 [15.2 - 19.0]
Lens-Douai	France	2000 - 2014	6 - 9	15323	17.1 [15.2 - 19.0]
Lyon	France	2000 - 2014	6 - 9	33066	20.4 [17.9 - 23.3]
Montpellier	France	2000 - 2014	6 - 9	11672	22.6 [20.7 - 24.6]
Marseille	France	2000 - 2014	6 - 9	39761	23.5 [21.1 - 25.3]
Nice	France	2000 - 2014	6 - 9	21727	23.0 [21.2 - 24.6]
Nancy	France	2000 - 2014	6 - 9	12472	18.0 [15.7 - 20.7]
Nantes	France	2000 - 2014	6 - 9	18815	18.1 [16.4 - 20.2]
Paris	France	2000 - 2014	6 - 9	194271	18.9 [16.7 - 21.2]
Rennes	France	2000 - 2014	6 - 9	7107	17.8 [16.0 - 19.7]
Rouen	France	2000 - 2014	6 - 9	17755	16.4 [14.6 - 18.4]
Strasbourg	France	2000 - 2014	6 - 9	15263	18.6 [16.3 - 21.2]
Toulouse	France	2000 - 2014	6 - 9	21536	21.1 [18.7 - 23.5]
Berlin	Germany	1993 - 2015	6 - 9	254786	17.9 [15.2 - 20.7]
Bremen	Germany	1993 - 2015	6 - 9	47405	16.2 [14.0 - 18.9]
Dresden	Germany	1993 - 2015	6 - 9	39458	17.2 [14.5 - 20.2]
Dortmund	Germany	1993 - 2015	6 - 9	48541	16.7 [14.3 - 19.4]
Duesseldorf	Germany	1993 - 2015	6 - 9	50585	17.1 [14.8 - 19.8]
Frankfurt	Germany	1993 - 2015	6 - 9	52555	18.3 [15.7 - 21.1]
Hamburg	Germany	1993 - 2015	6 - 9	139251	16.6 [14.3 - 19.2]
Hannover	Germany	1993 - 2015	6 - 9	87591	16.6 [14.2 - 19.3]
Koeln	Germany	1993 - 2015	6 - 9	71784	16.9 [14.5 - 19.6]
Leipzig	Germany	1993 - 2015	6 - 9	48227	17.5 [14.8 - 20.2]
Muenchen	Germany	1993 - 2015	5 - 8	92286	17.7 [14.7 - 20.7]
Stuttgart	Germany	1993 - 2015	6 - 9	42960	17.9 [15.2 - 20.9]
Athens	Greece	2001 - 2010	6 - 9	90845	27.6 [24.6 - 29.6]
Guatemala	Guatemala	2009 - 2016	4 - 7	20826	20.5 [19.7 - 21.2]
East of Northern Ireland	Ireland	1991 - 2007	6 - 9	46104	13.8 [12.4 - 15.2]
NorthEast of the Republic of Ireland	Ireland	1991 - 2007	6 - 9	23626	14.5 [12.9 - 16.0]
NorthWest of the Republic of Ireland	Ireland	1991 - 2007	6 - 9	15260	13.9 [12.7 - 15.2]
SouthEast of Republic of Ireland	Ireland	1991 - 2007	6 - 9	52489	14.2 [12.8 - 16.0]
SouthWest of the Republic of Ireland	Ireland	1991 - 2007	6 - 9	56832	14.8 [13.6 - 16.0]
West of Northern Ireland	Ireland	1991 - 2007	6 - 9	27917	14.4 [13.0 - 16.0]
Mashhad	Iran	2004 - 2013	6 - 9	40824	26.4 [24.0 - 28.3]
Bari	Italy	1996 - 2007	6 - 9	9487	23.6 [21.0 - 25.7]
Bologna	Italy	1996 - 2010	6 - 9	17787	24.4 [21.1 - 26.8]
Brescia	Italy	1993 - 2003	5 - 8	6813	22.8 [20.0 - 25.1]
Civitavecchia	Italy	1996 - 2006	6 - 9	1169	23.9 [22.3 - 25.5]
Frosinone	Italy	1995 - 2006	6 - 9	996	23.5 [20.9 - 25.9]

Genoa	Italy	1999 - 2007	6 - 9	21779	23.1 [21.6 - 25.0]
Latina	Italy	1995 - 2006	6 - 9	2532	23.7 [21.5 - 25.8]
Palermo	Italy	1997 - 2001	6 - 9	8009	25.3 [22.9 - 27.1]
Rome	Italy	1991 - 2010	6 - 9	133265	23.4 [21.1 - 25.6]
Turin	Italy	1991 - 1999	6 - 9	20441	21.0 [18.0 - 23.3]
Viterbo	Italy	1995 - 2006	6 - 9	1898	22.5 [19.7 - 25.1]
Aichi	Japan	1991 - 2015	6 - 9	376191	25.7 [23.2 - 28.1]
Akita	Japan	1991 - 2015	6 - 9	96586	22.2 [19.9 - 24.5]
Aomori	Japan	1991 - 2015	6 - 9	109936	20.6 [18.1 - 22.9]
Chiba	Japan	1991 - 2015	6 - 9	316010	24.7 [22.1 - 27.4]
Ehime	Japan	1991 - 2015	6 - 9	110585	25.9 [23.3 - 28.2]
Fukushima	Japan	1991 - 2015	6 - 9	148267	22.9 [20.1 - 25.7]
Fukuoka	Japan	1991 - 2015	6 - 9	312777	25.9 [23.4 - 28.5]
Fukui	Japan	1991 - 2015	6 - 9	55829	24.5 [22.0 - 27.3]
Gifu	Japan	1991 - 2015	6 - 9	132418	25.7 [23.3 - 28.2]
Gunma	Japan	1991 - 2015	6 - 9	131133	24.4 [21.6 - 27.2]
Hokkaido	Japan	1991 - 2015	6 - 9	378813	19.8 [17.4 - 22.1]
Hiroshima	Japan	1991 - 2015	6 - 9	186024	25.9 [23.6 - 28.4]
Hyogo	Japan	1991 - 2015	6 - 9	339847	26.1 [23.7 - 28.3]
Ibaraki	Japan	1991 - 2015	6 - 9	185070	22.9 [20.2 - 25.7]
Ishikawa	Japan	1991 - 2015	6 - 9	77434	24.4 [21.8 - 27.2]
Iwate	Japan	1991 - 2015	6 - 9	103352	20.9 [18.4 - 23.5]
Kagawa	Japan	1991 - 2015	6 - 9	73062	26.2 [23.7 - 28.5]
Kagoshima	Japan	1991 - 2015	6 - 9	138289	27.4 [24.8 - 28.9]
Kumamoto	Japan	1991 - 2015	6 - 9	128335	26.5 [24.1 - 28.4]
Kanagawa	Japan	1991 - 2015	6 - 9	432426	24.7 [22.0 - 27.3]
Kochi	Japan	1991 - 2015	6 - 9	66278	26.1 [23.8 - 27.8]
Kyoto	Japan	1991 - 2015	6 - 9	162390	25.9 [23.4 - 28.5]
Mie	Japan	1991 - 2015	6 - 9	121901	25.6 [23.1 - 27.8]
Miyagi	Japan	1991 - 2015	6 - 9	139393	21.7 [19.2 - 24.4]
Miyazaki	Japan	1991 - 2015	6 - 9	81520	26.3 [23.7 - 27.9]
Nagano	Japan	1991 - 2015	6 - 9	152729	22.8 [20.4 - 25.3]
Nara	Japan	1991 - 2015	6 - 9	85094	24.8 [22.3 - 27.2]
Nagasaki	Japan	1991 - 2015	6 - 9	109795	26.0 [23.6 - 27.9]
Niigata	Japan	1991 - 2015	6 - 9	176903	23.7 [21.3 - 26.2]
Oita	Japan	1991 - 2015	6 - 9	89202	25.5 [23.1 - 27.7]
Okinawa	Japan	1991 - 2015	6 - 9	69396	28.6 [27.6 - 29.3]
Okayama	Japan	1991 - 2015	6 - 9	134112	26.1 [23.6 - 28.6]
Osaka	Japan	1991 - 2015	6 - 9	509037	26.6 [24.0 - 29.0]
Saga	Japan	1991 - 2015	6 - 9	62229	25.9 [23.7 - 28.2]
Saitama	Japan	1991 - 2015	6 - 9	346364	24.7 [21.9 - 27.5]
Shiga	Japan	1991 - 2015	6 - 9	75148	24.8 [22.2 - 27.3]
Shimane	Japan	1991 - 2015	6 - 9	61427	24.2 [21.7 - 27.0]
Shizuoka	Japan	1991 - 2015	6 - 9	228861	25.3 [22.7 - 27.3]
Tochigi	Japan	1991 - 2015	6 - 9	126176	23.6 [21.0 - 26.3]
Tokushima	Japan	1991 - 2015	6 - 9	62859	25.9 [23.5 - 27.9]

Tokyo	Japan	1991 - 2015	6 - 9	690488	25.3 [22.6 - 28.1]
Toyama	Japan	1991 - 2015	6 - 9	80597	24.0 [21.5 - 26.8]
Tottori	Japan	1991 - 2015	6 - 9	46073	24.5 [21.9 - 27.4]
Wakayama	Japan	1991 - 2015	6 - 9	80813	26.3 [23.7 - 28.3]
Yamaguchi	Japan	1991 - 2015	6 - 9	118885	25.2 [22.9 - 27.5]
Yamagata	Japan	1991 - 2015	6 - 9	95419	22.4 [19.9 - 25.0]
Yamanashi	Japan	1991 - 2015	6 - 9	59154	24.8 [22.3 - 27.1]
Andong	South Korea	1997 - 2016	6 - 9	9162	23.0 [20.8 - 25.3]
Boryeong	South Korea	1997 - 2016	6 - 9	5935	23.3 [21.3 - 25.4]
Busan	South Korea	1997 - 2016	6 - 9	120380	23.4 [21.4 - 25.8]
Chuncheon	South Korea	1997 - 2016	6 - 9	9861	23.4 [21.1 - 25.3]
Chungju	South Korea	1997 - 2016	6 - 9	8962	23.3 [21.2 - 25.5]
Cheonan	South Korea	1997 - 2016	6 - 9	13520	23.3 [21.2 - 25.4]
Daegu	South Korea	1997 - 2016	6 - 9	74372	24.5 [22.2 - 27.1]
Daejeon	South Korea	1997 - 2016	6 - 9	37904	24.0 [22.0 - 25.9]
Donghae	South Korea	1997 - 2016	6 - 9	4133	21.5 [19.5 - 23.9]
Geojae	South Korea	1997 - 2016	6 - 9	6026	23.4 [21.3 - 25.6]
Gangneung	South Korea	1997 - 2016	6 - 9	9457	22.4 [20.1 - 25.5]
Gumi	South Korea	1997 - 2016	6 - 9	8917	23.7 [21.5 - 26.0]
Gwangju	South Korea	1997 - 2016	6 - 9	39458	24.3 [22.4 - 26.4]
Icheon	South Korea	1997 - 2016	6 - 9	6499	23.1 [20.9 - 24.9]
Incheon	South Korea	1997 - 2016	6 - 9	74369	23.4 [21.5 - 25.2]
Jecheon	South Korea	1997 - 2016	6 - 9	6235	22.0 [19.8 - 24.0]
Jeju	South Korea	1997 - 2016	6 - 9	10355	24.5 [22.3 - 27.2]
Jinju	South Korea	1997 - 2016	6 - 9	11878	23.7 [21.5 - 26.0]
Jeongeup	South Korea	1997 - 2016	6 - 9	7718	24.0 [22.0 - 26.2]
Milyang	South Korea	1997 - 2016	6 - 9	6986	23.9 [21.9 - 26.2]
Mungyeong	South Korea	1997 - 2016	6 - 9	5122	22.3 [20.1 - 24.5]
Mokpo	South Korea	1997 - 2016	6 - 9	8112	23.7 [21.7 - 25.8]
Namwon	South Korea	1997 - 2016	6 - 9	5331	23.5 [21.6 - 25.7]
Pohang	South Korea	1997 - 2016	6 - 9	17513	23.4 [21.1 - 26.4]
Seoul	South Korea	1997 - 2016	6 - 9	251336	24.2 [22.1 - 26.0]
Seosan	South Korea	1997 - 2016	6 - 9	6245	23.0 [21.1 - 24.9]
Seogyupo	South Korea	1997 - 2016	6 - 9	4697	24.9 [22.9 - 27.0]
Sokcho	South Korea	1997 - 2016	6 - 9	3471	21.5 [19.4 - 24.0]
Suwon	South Korea	1997 - 2016	6 - 9	23258	24.0 [21.9 - 25.8]
Taebaek	South Korea	1997 - 2016	6 - 9	2358	19.3 [16.9 - 22.2]
Tongyeong	South Korea	1997 - 2016	6 - 9	5858	23.5 [21.4 - 25.5]
Ulsan	South Korea	1997 - 2016	6 - 9	26946	23.5 [21.3 - 26.2]
Wonju	South Korea	1997 - 2016	6 - 9	10397	23.7 [21.5 - 25.6]
Yeosu	South Korea	1997 - 2016	6 - 9	11438	23.5 [21.6 - 25.6]
Yoengcheon	South Korea	1997 - 2016	6 - 9	6652	23.0 [20.7 - 25.7]
Yeongju	South Korea	1997 - 2016	6 - 9	6281	22.4 [20.3 - 24.6]
Kuwait	Kuwait	2000 - 2016	6 - 9	22347	38.1 [36.3 - 39.6]
Ciudad Juarez	Mexico	1998 - 2014	5 - 8	27546	28.0 [25.7 - 29.8]

Comarca Lagunera	Mexico	1998 - 2014	5 - 8	30863	29.2 [27.4 - 30.4]
Guadalajara	Mexico	1998 - 2014	4 - 7	111359	23.6 [22.1 - 25.1]
Leon	Mexico	1998 - 2014	4 - 7	34113	22.0 [21.0 - 23.0]
Monterrey	Mexico	1998 - 2014	5 - 8	88684	27.5 [25.8 - 28.7]
Puebla-Tlaxcala	Mexico	1998 - 2014	4 - 7	63772	18.3 [17.3 - 19.7]
San Luis Potosi	Mexico	1998 - 2014	4 - 7	23772	20.5 [19.2 - 21.9]
Tijuana	Mexico	1998 - 2014	7 - 10	30540	21.0 [19.0 - 23.0]
Toluca de Lerdo	Mexico	1998 - 2014	4 - 7	39976	15.5 [14.5 - 16.8]
Valley of Mexico	Mexico	1998 - 2014	4 - 7	471086	18.0 [16.8 - 19.6]
Anenii Noi	Moldova	2003 - 2010	5 - 8	240	20.8 [17.8 - 22.9]
Cahul	Moldova	2003 - 2010	5 - 8	834	21.5 [18.5 - 23.8]
Chisinau	Moldova	2001 - 2010	5 - 8	17309	21.1 [18.1 - 23.7]
Falesti	Moldova	2003 - 2010	5 - 8	445	20.5 [17.8 - 22.7]
Noord-Nederland	Netherland	1995 - 2016	6 - 9	108972	15.8 [14.1 - 17.9]
Oost-Nederland	Netherland	1995 - 2016	6 - 9	194605	16.3 [14.3 - 18.5]
West-Nederland	Netherland	1995 - 2016	6 - 9	442089	16.6 [14.9 - 18.4]
Zuid-Nederland	Netherland	1995 - 2016	6 - 9	207440	16.7 [14.6 - 19.0]
Oslo	Norway	1991 - 2016	6 - 9	40054	13.6 [11.4 - 15.7]
Panama	Panama	2013 - 2016	3 - 6	3895	28.7 [27.9 - 29.4]
Asuncion	Paraguay	2004 - 2016	12 - 3	12665	27.2 [25.6 - 28.9]
apurimac	Peru	2008 - 2014	10 - 1	3003	16.6 [15.9 - 17.5]
arequipa	Peru	2008 - 2014	12 - 3	10223	16.1 [15.3 - 17.0]
ayacucho	Peru	2008 - 2014	11 - 2	3926	11.5 [10.9 - 12.2]
cajamarca	Peru	2008 - 2014	12 - 3	7295	15.7 [14.9 - 16.4]
cusco	Peru	2008 - 2014	10 - 1	8517	14.2 [13.3 - 14.9]
huancavelica	Peru	2008 - 2014	11 - 2	3139	5.5 [4.8 - 6.0]
huanuco	Peru	2008 - 2014	10 - 1	5777	21.1 [20.2 - 21.8]
ica	Peru	2008 - 2014	1 - 4	7273	25.2 [24.2 - 26.1]
junin	Peru	2008 - 2014	10 - 1	11330	14.3 [13.5 - 15.1]
lima	Peru	2008 - 2014	1 - 4	80716	21.7 [21.1 - 22.3]
la libertad	Peru	2008 - 2014	1 - 4	15469	25.2 [24.4 - 26.0]
lambayeque	Peru	2008 - 2014	1 - 4	11624	23.8 [22.5 - 24.8]
loreto	Peru	2008 - 2014	9 - 12	1743	27.6 [26.9 - 28.2]
piura	Peru	2008 - 2014	1 - 4	14787	28.0 [27.2 - 28.8]
puno	Peru	2008 - 2014	10 - 1	13931	11.3 [10.5 - 12.1]
san martin	Peru	2008 - 2014	10 - 1	3530	23.5 [22.7 - 24.2]
tacna	Peru	2008 - 2014	12 - 3	2461	21.9 [21.1 - 22.8]
ucayali	Peru	2008 - 2014	8 - 11	3316	26.6 [25.7 - 27.5]
Cebu	Philippines	2006 - 2010	4 - 7	14571	28.9 [28.3 - 29.5]
Davao	Philippines	2006 - 2010	3 - 6	14437	28.5 [27.9 - 29.0]
Manila	Philippines	2006 - 2010	3 - 6	30590	29.9 [29.0 - 30.8]
Quezon	Philippines	2006 - 2010	4 - 7	30436	29.1 [28.4 - 29.9]
Beja	Portugal	1991 - 2016	6 - 9	18698	22.7 [20.5 - 25.2]
Coimbra	Portugal	1991 - 2016	6 - 9	38217	19.5 [18.1 - 21.1]
Castelo Branco	Portugal	1991 - 2016	6 - 9	22662	23.1 [20.2 - 26.1]
Lisboa	Portugal	1991 - 2016	6 - 9	163329	21.7 [20.3 - 23.4]

Porto	Portugal	1991 - 2016	6 - 9	108378	18.6 [17.4 - 20.1]
San Juan	Puertorico	2009 - 2016	6 - 9	8823	28.3 [27.5 - 28.9]
Bucharest	Romania	1994 - 2016	5 - 8	160073	21.2 [18.6 - 23.6]
Brasov	Romania	1994 - 2016	5 - 8	19082	17.7 [15.3 - 19.9]
Cluj-Napoca	Romania	1994 - 2016	5 - 8	20764	18.5 [16.1 - 20.8]
Constanta	Romania	1994 - 2016	6 - 9	22735	22.5 [20.2 - 24.4]
Craiova	Romania	1994 - 2016	6 - 9	17734	21.6 [18.7 - 24.2]
Galati	Romania	1994 - 2016	5 - 8	18332	22.0 [19.2 - 24.6]
Iasi	Romania	1994 - 2016	5 - 8	19239	20.6 [17.9 - 23.2]
Timisoara	Romania	1994 - 2016	5 - 8	22072	20.9 [18.1 - 23.3]
Alfred Nzo	South Africa	1997 - 2013	12 - 3	37618	19.0 [16.7 - 21.3]
Amathole	South Africa	1997 - 2013	12 - 3	77009	21.9 [19.8 - 23.9]
Buffalo City	South Africa	1997 - 2013	12 - 3	58760	14.9 [13.3 - 16.4]
Bojanala	South Africa	1997 - 2013	11 - 2	68129	23.0 [21.6 - 24.1]
Cacadu	South Africa	1997 - 2013	12 - 3	23419	22.8 [20.5 - 25.0]
Chris Hani	South Africa	1997 - 2013	12 - 3	45772	20.8 [18.8 - 22.7]
Central Karoo	South Africa	1997 - 2013	12 - 3	4406	23.3 [21.3 - 25.6]
City of Cape Town	South Africa	1997 - 2013	12 - 3	135535	21.9 [20.3 - 23.5]
Capricorn	South Africa	1997 - 2013	12 - 3	65101	22.9 [21.5 - 24.2]
Cape Winelands	South Africa	1997 - 2013	12 - 3	31722	21.2 [18.8 - 23.5]
City of Johannesburg	South Africa	1997 - 2013	12 - 3	166244	19.9 [18.7 - 21.1]
City of Tshwane	South Africa	1997 - 2013	11 - 2	113550	20.9 [19.6 - 22.0]
Dr Kenneth Kaunda	South Africa	1997 - 2013	11 - 2	48687	23.2 [21.7 - 24.5]
Dr Ruth Segomotsi Mompati	South Africa	1997 - 2013	11 - 2	27465	25.6 [23.9 - 26.9]
Eden	South Africa	1997 - 2013	12 - 3	25770	22.3 [20.2 - 24.4]
Ehlanzeni	South Africa	1997 - 2013	12 - 3	83236	24.0 [22.6 - 25.2]
Ekurhuleni	South Africa	1997 - 2013	11 - 2	134880	20.2 [18.9 - 21.3]
eThekwini	South Africa	1997 - 2013	12 - 3	188577	24.8 [23.6 - 26.0]
Frances Baard	South Africa	1997 - 2013	11 - 2	25641	24.5 [22.7 - 26.2]
Fezile Dabi	South Africa	1997 - 2013	11 - 2	33401	21.9 [20.4 - 23.1]
Gert Sibande	South Africa	1997 - 2013	12 - 3	63766	19.6 [18.0 - 20.9]
Greater Sekhukhune	South Africa	1997 - 2013	11 - 2	49965	24.9 [23.4 - 26.0]
Joe Gqabi	South Africa	1997 - 2013	12 - 3	22997	21.2 [19.3 - 22.6]
Lejweleputswa	South Africa	1997 - 2013	11 - 2	55044	22.5 [20.8 - 24.0]
Mangaung	South Africa	1997 - 2013	12 - 3	57255	22.2 [20.7 - 23.6]
Mopani	South Africa	1997 - 2013	12 - 3	49301	25.6 [24.1 - 27.1]
Ngaka Modiri Molema	South Africa	1997 - 2013	11 - 2	49919	24.1 [22.7 - 25.5]
Nkangala	South Africa	1997 - 2013	11 - 2	61254	20.5 [19.1 - 21.8]
Nelson Mandela Bay	South Africa	1997 - 2013	12 - 3	67588	21.1 [19.6 - 22.5]
Namakwa	South Africa	1997 - 2013	12 - 3	5018	23.5 [20.6 - 26.3]
O.R.Tambo	South Africa	1997 - 2013	12 - 3	64319	21.1 [18.9 - 23.2]
Overberg	South Africa	1997 - 2013	12 - 3	9494	21.2 [19.5 - 23.1]
Pixley ka Seme	South Africa	1997 - 2013	12 - 3	13287	24.0 [22.1 - 25.7]
Sisonke	South Africa	1997 - 2013	12 - 3	30003	18.0 [16.2 - 19.2]
Siyanda	South Africa	1997 - 2013	12 - 3	15134	27.0 [25.1 - 28.7]

Thabo Mofutsanyane	South Africa	1997 - 2013	12 - 3	62585	19.6 [18.3 - 20.8]
Ugu	South Africa	1997 - 2013	12 - 3	55168	23.9 [22.6 - 25.0]
uMgungundlovu	South Africa	1997 - 2013	12 - 3	73020	17.4 [15.2 - 19.2]
uMkhanyakude	South Africa	1997 - 2013	12 - 3	29772	25.6 [24.1 - 27.1]
uMzinyathi	South Africa	1997 - 2013	12 - 3	34448	19.8 [17.9 - 21.6]
uThukela	South Africa	1997 - 2013	11 - 2	45466	19.6 [18.0 - 20.8]
uThungulu	South Africa	1997 - 2013	12 - 3	59306	25.9 [24.1 - 27.8]
Vhembe	South Africa	1997 - 2013	11 - 2	43764	27.7 [26.0 - 29.4]
West Coast	South Africa	1997 - 2013	12 - 3	18117	24.2 [22.2 - 26.4]
Waterberg	South Africa	1997 - 2013	11 - 2	23497	26.0 [24.4 - 27.5]
A Coruna	Spain	1991 - 2014	6 - 9	15857	18.9 [17.7 - 20.1]
Albacete	Spain	1991 - 2014	6 - 9	7388	23.6 [20.9 - 25.8]
Alicante	Spain	1991 - 2014	6 - 9	16928	25.1 [23.2 - 26.4]
Almeria	Spain	1991 - 2014	6 - 9	9285	25.3 [23.3 - 27.0]
Avila	Spain	1991 - 2014	6 - 9	3178	19.4 [16.5 - 21.8]
Badajoz	Spain	1991 - 2014	6 - 9	7070	24.8 [22.5 - 26.9]
Bilbao	Spain	1991 - 2014	6 - 9	25003	19.6 [17.8 - 21.6]
Barcelona	Spain	1991 - 2014	6 - 9	114990	23.4 [21.3 - 25.1]
Burgos	Spain	1991 - 2014	6 - 9	10542	18.2 [15.5 - 20.8]
Cadiz	Spain	1991 - 2014	6 - 9	8819	23.5 [22.1 - 25.3]
Caceres	Spain	1991 - 2014	6 - 9	4438	24.6 [21.8 - 27.2]
Ciudad Real	Spain	1991 - 2014	6 - 9	3943	25.2 [22.2 - 27.5]
Ceuta	Spain	1991 - 2014	6 - 9	3530	23.2 [21.9 - 24.5]
Cordoba	Spain	1991 - 2014	6 - 9	17380	26.6 [24.3 - 28.6]
Castellon	Spain	1991 - 2014	6 - 9	8591	24.8 [22.9 - 26.2]
Cuenca	Spain	1991 - 2014	6 - 9	3295	22.2 [19.2 - 24.6]
Guadalajara	Spain	1991 - 2014	6 - 9	3669	22.0 [19.3 - 24.2]
Girona	Spain	1991 - 2014	6 - 9	4401	22.4 [20.0 - 24.3]
Granada	Spain	1991 - 2014	6 - 9	14701	24.0 [21.6 - 26.0]
Huelva	Spain	1991 - 2014	6 - 9	8022	24.5 [22.5 - 26.4]
Huesca	Spain	1991 - 2014	6 - 9	3419	22.4 [19.6 - 25.1]
Jaen	Spain	1991 - 2014	6 - 9	5918	25.6 [22.4 - 28.2]
Leon	Spain	1991 - 2014	6 - 9	9187	18.3 [15.6 - 20.8]
Logrono	Spain	1991 - 2014	6 - 9	7874	21.4 [18.9 - 24.0]
Lleida	Spain	1991 - 2014	6 - 9	7369	23.8 [21.1 - 26.2]
Lugo	Spain	1991 - 2014	6 - 9	5906	17.4 [15.4 - 19.5]
Malaga	Spain	1991 - 2014	6 - 9	30994	24.8 [23.2 - 26.5]
Madrid	Spain	1991 - 2014	6 - 9	187205	24.1 [21.0 - 26.6]
Melilla	Spain	1991 - 2014	6 - 9	2997	24.5 [23.0 - 25.9]
Murcia	Spain	1991 - 2014	6 - 9	18999	26.6 [24.3 - 28.0]
Ourense	Spain	1991 - 2014	6 - 9	6988	21.5 [19.3 - 23.7]
Oviedo	Spain	1991 - 2014	6 - 9	14425	18.2 [16.3 - 19.8]
Palmas G. Canaria	Spain	1991 - 2014	7 - 10	20161	24.0 [23.2 - 24.8]
Palma Mallorca	Spain	1991 - 2014	6 - 9	19972	24.0 [21.9 - 25.6]
Palencia	Spain	1991 - 2014	6 - 9	5487	19.5 [17.0 - 22.1]
Pamplona	Spain	1991 - 2014	6 - 9	11378	20.1 [17.5 - 22.9]

Pontevedra	Spain	1991 - 2014	6 - 9	4359	19.3 [17.6 - 21.2]
Segovia	Spain	1991 - 2014	6 - 9	3565	20.5 [17.4 - 23.3]
Salamanca	Spain	1991 - 2014	6 - 9	10478	20.0 [17.5 - 22.3]
San Sebastian	Spain	1991 - 2014	6 - 9	12261	18.3 [16.6 - 20.0]
Santander	Spain	1991 - 2014	6 - 9	12616	19.3 [17.8 - 20.8]
Soria	Spain	1991 - 2014	6 - 9	2309	19.0 [16.2 - 21.5]
Sevilla	Spain	1991 - 2014	6 - 9	40431	27.0 [24.8 - 29.1]
Teruel	Spain	1991 - 2014	6 - 9	2256	20.8 [18.1 - 23.2]
Tenerife	Spain	1991 - 2014	7 - 10	11653	24.7 [23.7 - 25.7]
Toledo	Spain	1991 - 2014	6 - 9	3799	25.2 [22.2 - 27.6]
Tarragona	Spain	1991 - 2014	6 - 9	6541	25.5 [23.3 - 27.2]
Vitoria	Spain	1991 - 2014	6 - 9	11521	17.8 [15.6 - 20.5]
Valladolid	Spain	1991 - 2014	6 - 9	18292	20.8 [18.2 - 23.4]
Valencia	Spain	1991 - 2014	6 - 9	49939	25.2 [23.2 - 26.5]
Zamora	Spain	1991 - 2014	6 - 9	4359	21.1 [18.5 - 23.7]
Zaragoza	Spain	1991 - 2014	6 - 9	40619	23.9 [21.2 - 26.6]
Basel	Switzerland	1995 - 2013	6 - 9	11742	18.1 [15.6 - 20.9]
Bern	Switzerland	1995 - 2013	6 - 9	8538	17.0 [14.5 - 19.7]
Geneve	Switzerland	1995 - 2013	6 - 9	8240	18.7 [16.1 - 21.3]
Lausanne	Switzerland	1995 - 2013	6 - 9	6488	18.8 [16.3 - 21.3]
Lugano	Switzerland	1995 - 2013	6 - 9	8670	20.9 [18.5 - 22.8]
Luzern	Switzerland	1995 - 2013	6 - 9	4612	17.6 [15.0 - 20.3]
St. Gallen	Switzerland	1995 - 2013	6 - 9	4084	15.7 [12.9 - 18.7]
Zürich	Switzerland	1995 - 2013	6 - 9	22648	17.0 [14.4 - 19.9]
Gothenburg	Sweden	1991 - 2016	6 - 9	55289	16.2 [14.3 - 18.3]
Malmo	Sweden	1991 - 2016	6 - 9	42724	16.3 [14.3 - 18.3]
Stockholm	Sweden	1991 - 2016	6 - 9	117598	16.3 [13.8 - 18.7]
Amnat Charoen	Thailand	1999 - 2008	3 - 6	3447	28.2 [27.5 - 28.9]
Ayutthaya	Thailand	1999 - 2008	3 - 6	8173	29.9 [29.0 - 30.8]
Bangkok	Thailand	1999 - 2008	3 - 6	81210	30.4 [29.6 - 31.3]
Buri Ram	Thailand	1999 - 2008	3 - 6	10646	28.8 [27.9 - 29.8]
Chachoengsao	Thailand	1999 - 2008	4 - 7	6948	28.3 [27.2 - 29.2]
Chumphon	Thailand	1999 - 2008	3 - 6	4209	30.0 [29.0 - 30.9]
Chon Buri	Thailand	1999 - 2008	4 - 7	16038	29.4 [28.6 - 30.0]
Chiang Mai	Thailand	1999 - 2008	4 - 7	26170	28.3 [27.6 - 29.2]
Chiang Rai	Thailand	1999 - 2008	4 - 7	18526	27.5 [26.5 - 28.2]
Chanthaburi	Thailand	1999 - 2008	3 - 6	7443	28.4 [27.6 - 29.1]
Chaiyaphum	Thailand	1999 - 2008	3 - 6	9470	29.5 [28.4 - 30.7]
Khon Kaen	Thailand	1999 - 2008	3 - 6	20322	29.1 [27.9 - 30.3]
Kalasin	Thailand	1999 - 2008	4 - 7	10235	29.5 [28.5 - 30.6]
Kamphaeng Phet	Thailand	1999 - 2008	4 - 7	4551	28.3 [27.2 - 29.5]
Kanchanaburi	Thailand	1999 - 2008	3 - 6	7249	30.1 [29.2 - 30.9]
Krabi	Thailand	1999 - 2008	3 - 6	2462	28.4 [27.5 - 29.2]
Lamphun	Thailand	1999 - 2008	4 - 7	5544	27.9 [26.9 - 29.2]
Lampang	Thailand	1999 - 2008	3 - 6	12937	29.4 [28.5 - 30.7]
Lop Buri	Thailand	1999 - 2008	4 - 7	9947	28.2 [27.7 - 28.8]

Maha Sarakham	Thailand	1999 - 2008	3 - 6	8452	30.1 [29.1 - 30.9]
Mukdahan	Thailand	1999 - 2008	2 - 5	2496	28.7 [27.9 - 29.5]
Nan	Thailand	1999 - 2008	4 - 7	6419	28.8 [27.9 - 29.8]
Nong Bua Lam Phu	Thailand	1999 - 2008	3 - 6	4236	29.9 [28.8 - 31.0]
Nakhon Ratchasima	Thailand	1999 - 2008	3 - 6	25182	28.8 [28.0 - 29.7]
Nakhon Sawan	Thailand	1999 - 2008	3 - 6	12885	30.1 [29.0 - 31.3]
Nakhon Phanom	Thailand	1999 - 2008	4 - 7	5367	28.7 [28.1 - 29.2]
Nakhon Pathom	Thailand	1999 - 2008	3 - 6	8492	29.7 [28.6 - 30.7]
Nakhon Si Thammarat	Thailand	1999 - 2008	4 - 7	13168	28.2 [27.6 - 28.7]
Nong Khai	Thailand	1999 - 2008	3 - 6	6945	29.6 [28.7 - 30.5]
Nonthaburi	Thailand	1999 - 2008	3 - 6	10489	29.5 [28.5 - 30.6]
Narathiwat	Thailand	1999 - 2008	3 - 6	5068	28.9 [28.0 - 29.8]
Phayao	Thailand	1999 - 2008	3 - 6	8185	29.2 [28.1 - 30.4]
Phetchaburi	Thailand	1999 - 2008	2 - 5	4743	28.7 [28.0 - 29.3]
Phichit	Thailand	1999 - 2008	3 - 6	5148	28.9 [28.1 - 29.7]
Phrae	Thailand	1999 - 2008	3 - 6	7548	29.6 [28.7 - 30.5]
Phitsanulok	Thailand	1999 - 2008	3 - 6	10489	29.6 [28.8 - 30.5]
Prachin Buri	Thailand	1999 - 2008	2 - 5	4935	29.1 [28.4 - 29.8]
Prachuap Khiri Khan	Thailand	1999 - 2008	3 - 6	4906	28.8 [28.0 - 29.4]
Pathum Thani	Thailand	1999 - 2008	4 - 7	7398	28.9 [27.7 - 30.1]
Pattani	Thailand	1999 - 2008	2 - 5	4006	28.6 [27.8 - 29.3]
Roi Et	Thailand	1999 - 2008	4 - 7	13239	29.0 [28.0 - 30.1]
Ratchaburi	Thailand	1999 - 2008	3 - 6	9918	28.8 [27.8 - 30.0]
Rayong	Thailand	1999 - 2008	3 - 6	6189	27.6 [26.5 - 28.9]
Sa Kaeo	Thailand	1999 - 2008	4 - 7	4684	28.9 [28.1 - 29.6]
Sukhothai	Thailand	1999 - 2008	3 - 6	6057	29.9 [28.8 - 30.8]
Sakon Nakhon	Thailand	1999 - 2008	4 - 7	10656	28.5 [27.5 - 29.6]
Samutprakan	Thailand	1999 - 2008	4 - 7	10063	29.4 [28.5 - 30.0]
Samut Sakhon	Thailand	1999 - 2008	4 - 7	5206	29.4 [28.8 - 30.0]
Songkhla	Thailand	1999 - 2008	4 - 7	11435	28.8 [28.1 - 29.3]
Suphanburi	Thailand	1999 - 2008	3 - 6	8073	29.5 [28.6 - 30.4]
Saraburi	Thailand	1999 - 2008	3 - 6	7652	29.5 [28.6 - 30.7]
Surat Thani	Thailand	1999 - 2008	4 - 7	7687	29.2 [28.2 - 30.3]
Si Sa Ket	Thailand	1999 - 2008	3 - 6	12043	29.3 [28.2 - 30.4]
Surin	Thailand	1999 - 2008	3 - 6	10238	29.4 [28.5 - 30.5]
Tak	Thailand	1999 - 2008	4 - 7	3893	28.8 [28.1 - 29.4]
Trang	Thailand	1999 - 2008	3 - 6	4495	29.9 [28.9 - 30.7]
Ubon Ratchathani	Thailand	1999 - 2008	3 - 6	16204	29.4 [28.1 - 30.6]
Udon Thani	Thailand	1999 - 2008	4 - 7	15321	29.2 [28.0 - 30.4]
Uttaradit	Thailand	1999 - 2008	3 - 6	6835	29.3 [28.0 - 30.9]
Yala	Thailand	1999 - 2008	2 - 5	3575	28.2 [27.7 - 28.6]
Yasothon	Thailand	1999 - 2008	4 - 7	5233	28.2 [27.2 - 29.0]
Kaohsiung	Taiwan	1994 - 2014	6 - 9	107675	28.9 [28.0 - 29.7]
Taipei	Taiwan	1994 - 2014	6 - 9	196940	28.9 [27.5 - 30.0]
Taichung	Taiwan	1994 - 2014	6 - 9	81002	28.4 [27.3 - 29.3]
Accrington/Rossendale	UK	1991 - 2016	6 - 9	4317	14.0 [12.4 - 15.6]

Bedford	UK	1991 - 2016	6 - 9	5694	16.1 [14.4 - 18.0]
Blackburn	UK	1991 - 2016	6 - 9	7900	14.6 [13.0 - 16.1]
Blackpool	UK	1991 - 2016	6 - 9	17655	15.2 [13.8 - 16.5]
Brighton and Hove	UK	1991 - 2016	6 - 9	32086	15.9 [14.4 - 17.4]
Barnsley/Dearne Valley	UK	1991 - 2016	6 - 9	7569	15.3 [13.7 - 17.1]
Birkenhead	UK	1991 - 2016	6 - 9	21040	15.6 [14.2 - 17.1]
Burnley	UK	1991 - 2016	6 - 9	8551	14.2 [12.6 - 15.8]
Bournemouth/Poole	UK	1991 - 2016	6 - 9	32753	16.2 [14.6 - 17.7]
Bristol	UK	1991 - 2016	6 - 9	33133	16.1 [14.6 - 17.8]
Burton upon Trent	UK	1991 - 2016	6 - 9	4595	15.4 [13.7 - 17.2]
Basildon	UK	1991 - 2016	6 - 9	5795	16.4 [14.7 - 18.3]
Basingstoke	UK	1991 - 2016	6 - 9	4078	15.7 [14.0 - 17.5]
Chelmsford	UK	1991 - 2016	6 - 9	4474	16.3 [14.5 - 18.2]
Cheltenham	UK	1991 - 2016	6 - 9	7236	16.2 [14.6 - 18.0]
Chesterfield	UK	1991 - 2016	6 - 9	5441	15.2 [13.5 - 17.0]
Colchester	UK	1991 - 2016	6 - 9	5110	16.4 [14.6 - 18.3]
Cambridge	UK	1991 - 2016	6 - 9	5885	16.4 [14.7 - 18.4]
Cardiff	UK	1991 - 2016	6 - 9	21853	16.0 [14.6 - 17.7]
Crawley	UK	1991 - 2016	6 - 9	7052	16.0 [14.3 - 17.8]
Coventry	UK	1991 - 2016	6 - 9	19561	15.7 [14.0 - 17.6]
Doncaster	UK	1991 - 2016	6 - 9	7148	15.8 [14.2 - 17.7]
Derby	UK	1991 - 2016	6 - 9	14051	15.7 [14.0 - 17.5]
Eastbourne	UK	1991 - 2016	6 - 9	6872	16.4 [14.9 - 17.8]
Exeter	UK	1991 - 2016	6 - 9	5594	15.9 [14.4 - 17.3]
Farnborough/Aldershot	UK	1991 - 2016	6 - 9	9765	16.1 [14.3 - 17.9]
Gloucester	UK	1991 - 2016	6 - 9	7857	16.4 [14.8 - 18.1]
Grimsby	UK	1991 - 2016	6 - 9	7115	15.6 [14.0 - 17.5]
High Wycombe	UK	1991 - 2016	6 - 9	3724	15.9 [14.3 - 17.8]
Hastings	UK	1991 - 2016	6 - 9	10903	16.1 [14.5 - 17.5]
Ipswich	UK	1991 - 2016	6 - 9	9128	16.3 [14.5 - 18.2]
Kingston upon Hull	UK	1991 - 2016	6 - 9	19823	15.9 [14.2 - 17.8]
Leicester	UK	1991 - 2016	6 - 9	24706	15.4 [13.7 - 17.3]
Lincoln	UK	1991 - 2016	6 - 9	5348	15.4 [13.6 - 17.3]
London	UK	1991 - 2016	6 - 9	470741	17.0 [15.2 - 18.8]
Luton	UK	1991 - 2016	6 - 9	13417	15.8 [14.1 - 17.7]
Liverpool	UK	1991 - 2016	6 - 9	61988	15.7 [14.2 - 17.2]
Maidstone	UK	1991 - 2016	6 - 9	4736	16.2 [14.5 - 18.0]
Medway Towns	UK	1991 - 2016	6 - 9	12285	16.8 [15.1 - 18.6]
Milton Keynes	UK	1991 - 2016	6 - 9	6755	15.8 [14.1 - 17.7]
Manchester	UK	1991 - 2016	6 - 9	147300	15.2 [13.6 - 16.8]
Mansfield	UK	1991 - 2016	6 - 9	8050	15.1 [13.4 - 17.0]
Northampton	UK	1991 - 2016	6 - 9	11117	15.8 [14.1 - 17.7]
Norwich	UK	1991 - 2016	6 - 9	10696	15.7 [13.9 - 17.8]
Nottingham	UK	1991 - 2016	6 - 9	39242	15.7 [14.1 - 17.6]
Newport	UK	1991 - 2016	6 - 9	11891	15.6 [14.1 - 17.2]
Oxford	UK	1991 - 2016	6 - 9	5537	16.4 [14.6 - 18.2]

Paignton/Torquay	UK	1991 - 2016	6 - 9	8887	16.0 [14.7 - 17.4]
Plymouth	UK	1991 - 2016	6 - 9	14724	15.7 [14.2 - 17.0]
Preston	UK	1991 - 2016	6 - 9	13016	15.1 [13.6 - 16.7]
Peterborough	UK	1991 - 2016	6 - 9	8118	16.1 [14.4 - 18.1]
Reading	UK	1991 - 2016	6 - 9	12455	16.3 [14.6 - 18.2]
Sheffield	UK	1991 - 2016	6 - 9	37088	15.3 [13.6 - 17.1]
Slough	UK	1991 - 2016	6 - 9	6370	16.6 [14.9 - 18.5]
Sunderland	UK	1991 - 2016	6 - 9	18216	14.6 [13.1 - 16.3]
South Hampshire	UK	1991 - 2016	6 - 9	42564	16.7 [15.2 - 18.3]
Southend-on-Sea	UK	1991 - 2016	6 - 9	18841	17.1 [15.3 - 18.8]
Stoke-on-Trent	UK	1991 - 2016	6 - 9	20589	14.6 [13.0 - 16.3]
Swindon	UK	1991 - 2016	6 - 9	8833	15.8 [14.1 - 17.5]
Swansea	UK	1991 - 2016	6 - 9	12810	16.0 [14.6 - 17.4]
Thanet	UK	1991 - 2016	6 - 9	7504	16.8 [15.0 - 18.5]
Telford	UK	1991 - 2016	6 - 9	4683	15.1 [13.4 - 16.8]
Teesside	UK	1991 - 2016	6 - 9	22824	14.9 [13.4 - 16.8]
Tyneside	UK	1991 - 2016	6 - 9	50842	14.7 [13.1 - 16.4]
Wigan	UK	1991 - 2016	6 - 9	7704	15.2 [13.6 - 16.7]
Worcester	UK	1991 - 2016	6 - 9	4547	16.2 [14.5 - 18.0]
Warrington	UK	1991 - 2016	6 - 9	8337	15.7 [14.1 - 17.3]
West Midlands	UK	1991 - 2016	6 - 9	157450	15.5 [13.8 - 17.3]
West Yorkshire	UK	1991 - 2016	6 - 9	90319	15.1 [13.4 - 16.7]
York	UK	1991 - 2016	6 - 9	7317	15.6 [13.9 - 17.4]
Montevideo	Uruguay	2012 - 2016	12 - 3	45487	24.3 [21.6 - 26.3]
Augusta	USA	1991 - 2006	6 - 9	8520	25.6 [24.2 - 27.3]
Akron	USA	1991 - 2006	6 - 9	24362	20.8 [18.2 - 23.1]
Albany	USA	1991 - 2006	6 - 9	13125	20.4 [17.7 - 22.8]
Albuquerque	USA	1991 - 2006	6 - 9	17150	24.1 [21.7 - 26.2]
Allentown	USA	1991 - 2006	6 - 9	13876	21.8 [19.1 - 24.0]
Anchorage	USA	1991 - 2006	5 - 8	4393	14.1 [11.8 - 16.1]
Anaheim	USA	1991 - 2006	6 - 9	74617	22.5 [20.8 - 24.4]
AnnArbor	USA	1991 - 2006	6 - 9	7912	20.6 [17.9 - 23.1]
Annandale	USA	1991 - 2006	6 - 9	17480	24.4 [21.8 - 26.4]
Austin	USA	1991 - 2006	6 - 9	16947	28.2 [26.3 - 29.6]
Atlantic City	USA	1991 - 2006	6 - 9	11226	22.4 [19.8 - 24.6]
Atlanta	USA	1991 - 2006	6 - 9	73589	24.7 [23.1 - 26.3]
Atzec	USA	1991 - 2006	6 - 9	1604	22.6 [19.7 - 24.6]
Bath	USA	1991 - 2006	6 - 9	2579	20.0 [17.3 - 22.2]
Buffalo	USA	1991 - 2006	6 - 9	47329	20.1 [17.5 - 22.4]
Bakersfield	USA	1991 - 2006	6 - 9	21287	27.1 [24.6 - 29.5]
Boulder	USA	1991 - 2006	6 - 9	5955	22.7 [19.3 - 25.7]
Baltimore	USA	1991 - 2006	6 - 9	71940	24.1 [21.7 - 26.2]
Bangor	USA	1991 - 2006	6 - 9	5982	18.7 [16.1 - 20.9]
Boise	USA	1991 - 2006	6 - 9	4362	21.7 [17.7 - 25.1]
bergen	USA	1991 - 2006	6 - 9	52236	22.7 [19.8 - 25.2]
Burlington	USA	1991 - 2006	6 - 9	4062	19.7 [17.0 - 22.3]

Birmingham	USA	1991 - 2006	6 - 9	38487	25.6 [23.9 - 27.1]
Barnstable	USA	1991 - 2006	6 - 9	12274	20.2 [17.9 - 22.4]
Brownsville	USA	1991 - 2006	6 - 9	8455	28.7 [27.7 - 29.4]
Boston	USA	1991 - 2006	6 - 9	103958	20.9 [18.2 - 23.5]
Baton Rouge	USA	1991 - 2006	6 - 9	14810	26.6 [25.3 - 27.9]
Cedar Rapids	USA	1991 - 2006	6 - 9	6422	21.2 [18.3 - 23.6]
Chicago	USA	1991 - 2006	6 - 9	251668	22.7 [19.6 - 25.1]
Charlotte	USA	1991 - 2006	6 - 9	19452	24.6 [22.7 - 26.2]
Charleston SC	USA	1991 - 2006	6 - 9	11715	26.1 [24.7 - 27.5]
Chattanooga	USA	1991 - 2006	6 - 9	14169	24.9 [22.9 - 26.5]
Charleston WV	USA	1991 - 2006	6 - 9	11311	22.2 [19.8 - 24.2]
Columbus	USA	1991 - 2006	6 - 9	37149	22.5 [19.9 - 24.7]
Colorado Springs	USA	1991 - 2006	6 - 9	12338	19.4 [16.6 - 21.9]
Cleveland	USA	1991 - 2006	6 - 9	91317	22.1 [19.7 - 24.5]
Cincinnati	USA	1991 - 2006	6 - 9	38280	22.8 [20.3 - 24.8]
Canton	USA	1991 - 2006	6 - 9	17561	20.7 [18.0 - 23.0]
Columbia	USA	1991 - 2006	6 - 9	18031	25.8 [24.3 - 27.5]
Carlisle	USA	1991 - 2006	6 - 9	8818	23.4 [20.5 - 25.7]
Corpus Christ	USA	1991 - 2006	6 - 9	11006	28.3 [27.2 - 29.1]
Davis	USA	1991 - 2006	6 - 9	4445	22.6 [18.5 - 24.9]
Dallas	USA	1991 - 2006	6 - 9	61401	28.9 [26.5 - 30.9]
Denver	USA	1991 - 2006	6 - 9	42836	20.9 [17.9 - 23.4]
Dodge	USA	1991 - 2006	6 - 9	2143	20.1 [17.2 - 22.7]
Dover	USA	1991 - 2006	6 - 9	4643	22.9 [20.6 - 25.0]
Durham	USA	1991 - 2006	6 - 9	7505	24.4 [22.3 - 26.2]
Des Moines	USA	1991 - 2006	6 - 9	12537	22.4 [19.5 - 24.8]
Detroit	USA	1991 - 2006	6 - 9	166450	21.9 [19.1 - 24.3]
Davenport	USA	1991 - 2006	6 - 9	12341	21.5 [18.6 - 24.1]
Daytona Beach	USA	1991 - 2006	6 - 9	25829	26.5 [25.6 - 27.3]
Dayton	USA	1991 - 2006	6 - 9	24777	22.0 [19.3 - 24.2]
El Centro	USA	1991 - 2006	6 - 9	3786	32.5 [30.4 - 34.2]
Elkhart	USA	1991 - 2006	6 - 9	6248	23.0 [19.9 - 25.6]
El Paso	USA	1991 - 2006	5 - 8	17654	27.5 [25.2 - 29.5]
Elizabeth	USA	1991 - 2006	6 - 9	21154	23.6 [21.0 - 25.7]
Erie	USA	1991 - 2006	6 - 9	12368	20.7 [18.2 - 23.1]
Essex	USA	1991 - 2006	6 - 9	29264	20.2 [17.6 - 23.0]
Eugene	USA	1991 - 2006	6 - 9	12540	17.7 [15.7 - 19.9]
Evansville	USA	1991 - 2006	6 - 9	8300	24.1 [21.6 - 26.2]
Everett	USA	1991 - 2006	6 - 9	16792	16.7 [14.7 - 19.1]
Fargo	USA	1991 - 2006	6 - 9	3336	19.7 [16.4 - 22.4]
Flint	USA	1991 - 2006	6 - 9	17699	20.1 [17.3 - 22.5]
Fresno	USA	1991 - 2006	6 - 9	24309	26.4 [23.9 - 28.8]
Fort Lauderdale	USA	1991 - 2006	6 - 9	73356	28.5 [27.6 - 29.3]
Fort Myers	USA	1991 - 2006	6 - 9	21571	27.3 [26.3 - 28.2]
Fort Pierce	USA	1991 - 2006	6 - 9	16391	26.9 [25.9 - 27.8]
Fort Worth	USA	1991 - 2006	6 - 9	41101	28.2 [25.8 - 30.3]

Fort Wayne	USA	1991 - 2006	6 - 9	11587	21.2 [18.6 - 23.6]
Fayetville	USA	1991 - 2006	6 - 9	8339	25.6 [23.6 - 27.4]
Gary	USA	1991 - 2006	6 - 9	20739	22.9 [19.8 - 25.4]
Green bay	USA	1991 - 2006	6 - 9	6916	19.3 [16.4 - 21.8]
Greensburg	USA	1991 - 2006	6 - 9	19728	23.0 [20.1 - 25.1]
Grand Heaven	USA	1991 - 2006	6 - 9	6429	19.9 [17.2 - 22.3]
Grand Junction	USA	1991 - 2006	6 - 9	2780	23.7 [20.4 - 26.3]
Grand Rapids	USA	1991 - 2006	6 - 9	18244	20.3 [17.4 - 22.7]
Greensburg	USA	1991 - 2006	6 - 9	15243	23.8 [21.7 - 25.6]
Greenv	USA	1991 - 2006	6 - 9	13757	25.3 [23.2 - 27.3]
Gasinesville	USA	1991 - 2006	6 - 9	6620	25.9 [24.9 - 26.9]
Gettysburg	USA	1991 - 2006	6 - 9	2082	22.6 [19.6 - 25.3]
Hicory	USA	1991 - 2006	6 - 9	5435	23.7 [21.7 - 25.3]
Holland	USA	1991 - 2006	6 - 9	2025	20.1 [17.3 - 22.6]
honolulu	USA	1991 - 2006	7 - 10	16299	26.9 [26.3 - 27.6]
Harrisburg	USA	1991 - 2006	6 - 9	11375	23.4 [20.5 - 25.7]
Hartford	USA	1991 - 2006	6 - 9	35697	21.9 [19.2 - 24.2]
Houston	USA	1991 - 2006	6 - 9	88298	27.9 [26.7 - 28.8]
Indianapolis	USA	1991 - 2006	6 - 9	34537	22.8 [20.2 - 24.7]
Iowa city	USA	1991 - 2006	6 - 9	1301	21.9 [18.8 - 24.3]
Jacksonville	USA	1991 - 2006	6 - 9	29462	27.3 [26.2 - 28.4]
Jersy city	USA	1991 - 2006	6 - 9	21935	19.8 [17.5 - 21.9]
Klamath	USA	1991 - 2006	6 - 9	1734	17.4 [14.2 - 20.1]
Kalamazoo	USA	1991 - 2006	6 - 9	8217	21.5 [18.6 - 24.0]
Kenosha	USA	1991 - 2006	6 - 9	5289	20.4 [17.4 - 23.0]
Kansas	USA	1991 - 2006	6 - 9	50468	24.9 [22.1 - 27.6]
Knoxville	USA	1991 - 2006	6 - 9	18138	24.1 [22.2 - 25.7]
Lafayette IN	USA	1991 - 2006	6 - 9	4482	22.3 [19.4 - 24.5]
Lafayette LA	USA	1991 - 2006	6 - 9	5993	26.9 [25.7 - 28.2]
Lake Charles	USA	1991 - 2006	6 - 9	7423	28.5 [26.8 - 30.1]
Lakeland	USA	1991 - 2006	6 - 9	22689	28.0 [26.9 - 29.0]
Lancaster	USA	1991 - 2006	6 - 9	18565	22.7 [20.0 - 24.9]
Lansing	USA	1991 - 2006	6 - 9	8568	19.9 [16.9 - 22.4]
Logan	USA	1991 - 2006	6 - 9	962	20.1 [16.7 - 22.9]
Louisville	USA	1991 - 2006	6 - 9	31310	24.7 [22.3 - 26.7]
La Porte	USA	1991 - 2006	6 - 9	4716	21.1 [18.2 - 23.6]
Los Angeles	USA	1991 - 2006	6 - 9	275046	20.7 [19.1 - 22.3]
Las Vegas	USA	1991 - 2006	6 - 9	47174	31.8 [29.1 - 33.9]
Little Rock	USA	1991 - 2006	6 - 9	14885	26.3 [24.1 - 28.3]
Macon	USA	1991 - 2006	6 - 9	7594	25.7 [24.2 - 27.1]
Mcallen	USA	1991 - 2006	6 - 9	11946	29.4 [28.2 - 30.4]
Middles	USA	1991 - 2006	6 - 9	25024	22.9 [20.1 - 25.4]
Middletown	USA	1991 - 2006	6 - 9	11749	22.4 [20.0 - 24.6]
Medford	USA	1991 - 2006	6 - 9	8148	21.1 [18.2 - 24.0]
Madison IL	USA	1991 - 2006	6 - 9	10953	24.8 [21.9 - 27.3]
Modesto	USA	1991 - 2006	6 - 9	14941	25.7 [22.9 - 28.3]

Madison WI	USA	1991 - 2006	6 - 9	11424	20.4 [17.3 - 23.0]
Miami	USA	1991 - 2006	6 - 9	88324	28.3 [27.3 - 29.1]
Melbourn	USA	1991 - 2006	6 - 9	22127	27.0 [26.1 - 27.9]
Milwauke	USA	1991 - 2006	6 - 9	52205	20.8 [17.6 - 23.4]
Memphis	USA	1991 - 2006	6 - 9	35089	26.6 [24.5 - 28.5]
Monmouth	USA	1991 - 2006	6 - 9	54759	23.5 [20.4 - 26.3]
Minneapolis	USA	1991 - 2006	6 - 9	54080	21.1 [18.0 - 23.4]
Montgomery	USA	1991 - 2006	6 - 9	9375	27.7 [26.1 - 29.3]
Mobile	USA	1991 - 2006	6 - 9	17079	27.1 [25.8 - 28.3]
Monroe	USA	1991 - 2006	6 - 9	6043	26.7 [24.9 - 28.2]
Mercer	USA	1991 - 2006	6 - 9	6415	19.3 [16.6 - 21.7]
Marlboro	USA	1991 - 2006	6 - 9	19121	23.3 [20.8 - 25.5]
Muskegon	USA	1991 - 2006	6 - 9	7165	19.9 [17.2 - 22.3]
Muncie	USA	1991 - 2006	6 - 9	5331	22.3 [19.6 - 24.8]
Myrtle Beach	USA	1991 - 2006	6 - 9	7844	25.6 [24.1 - 26.9]
Nashua	USA	1991 - 2006	6 - 9	11618	22.4 [19.3 - 25.3]
Nassau	USA	1991 - 2006	6 - 9	104321	22.6 [20.1 - 24.4]
Niles	USA	1991 - 2006	6 - 9	6944	21.1 [18.2 - 23.6]
Norfolk	USA	1991 - 2006	6 - 9	43738	24.8 [22.9 - 26.6]
Nashville	USA	1991 - 2006	6 - 9	22369	25.0 [23.0 - 26.8]
Newburgh	USA	1991 - 2006	6 - 9	11402	21.1 [18.3 - 23.4]
Newhaven	USA	1991 - 2006	6 - 9	35123	22.1 [19.6 - 24.2]
Newlond	USA	1991 - 2006	6 - 9	9196	20.5 [18.4 - 22.4]
NewOrleans	USA	1991 - 2006	6 - 9	41329	28.6 [27.3 - 29.6]
Newark	USA	1991 - 2006	6 - 9	48816	23.6 [21.0 - 25.7]
New York	USA	1991 - 2006	6 - 9	294415	19.8 [17.4 - 21.9]
Ocala	USA	1991 - 2006	6 - 9	14547	25.9 [24.9 - 26.9]
Oklahoma	USA	1991 - 2006	6 - 9	27906	26.3 [23.3 - 28.8]
Oakland	USA	1991 - 2006	6 - 9	74071	16.6 [15.6 - 17.9]
Omaha	USA	1991 - 2006	6 - 9	16132	22.7 [19.7 - 25.3]
Orlando	USA	1991 - 2006	6 - 9	38319	27.1 [26.1 - 28.1]
Ottawa	USA	1991 - 2006	6 - 9	5564	21.6 [18.5 - 24.2]
Philadelphia	USA	1991 - 2006	6 - 9	202375	23.2 [20.5 - 25.5]
Phoenix	USA	1991 - 2006	6 - 9	93475	33.7 [31.5 - 35.6]
Palmbeach	USA	1991 - 2006	6 - 9	57008	27.7 [26.7 - 28.5]
Plymouth	USA	1991 - 2006	6 - 9	17676	20.1 [17.3 - 22.7]
Pensacola	USA	1991 - 2006	6 - 9	12556	27.1 [25.9 - 28.2]
Portland OR	USA	1991 - 2006	6 - 9	49341	18.8 [16.7 - 21.0]
Provo	USA	1991 - 2006	6 - 9	6553	21.7 [18.0 - 24.1]
Port Arthur	USA	1991 - 2006	6 - 9	11861	27.5 [26.3 - 28.3]
Portage	USA	1991 - 2006	6 - 9	4807	22.9 [19.8 - 25.4]
Portlme	USA	1991 - 2006	6 - 9	10442	18.8 [16.4 - 21.1]
Providence	USA	1991 - 2006	6 - 9	56690	21.1 [18.6 - 23.3]
Pittsburg	USA	1991 - 2006	6 - 9	69903	21.6 [18.9 - 23.7]
Richmond	USA	1991 - 2006	6 - 9	26848	24.1 [21.9 - 26.2]
Rochester	USA	1991 - 2006	6 - 9	29348	20.0 [17.3 - 22.3]

Rockville	USA	1991 - 2006	6 - 9	21511	24.5 [22.1 - 26.6]
Reading	USA	1991 - 2006	6 - 9	16274	22.6 [19.8 - 25.0]
Reno	USA	1991 - 2006	6 - 9	11090	21.9 [18.9 - 24.4]
Raleigh	USA	1991 - 2006	6 - 9	14131	24.5 [22.3 - 26.2]
Riverside	USA	1991 - 2006	6 - 9	105000	23.4 [21.1 - 26.0]
Sacramento	USA	1991 - 2006	6 - 9	40822	22.1 [19.9 - 24.4]
Scranton	USA	1991 - 2006	6 - 9	33425	20.4 [17.8 - 22.8]
San Diego	USA	1991 - 2006	7 - 10	88688	20.7 [19.3 - 22.5]
San Francisco	USA	1991 - 2006	7 - 10	54781	16.6 [15.5 - 18.1]
Salt Lake	USA	1991 - 2006	6 - 9	21309	23.9 [19.7 - 26.6]
San Jose	USA	1991 - 2006	6 - 9	40235	21.9 [20.2 - 24.1]
Santa Barbara	USA	1991 - 2006	6 - 9	13176	18.0 [16.9 - 19.2]
San Antonio	USA	1991 - 2006	6 - 9	44330	28.8 [27.2 - 30.2]
Spokane	USA	1991 - 2006	6 - 9	16021	19.0 [15.7 - 22.2]
Springfield MA	USA	1991 - 2006	6 - 9	21071	21.2 [18.4 - 23.6]
Springfied MO	USA	1991 - 2006	6 - 9	10185	23.9 [21.2 - 26.1]
Spartanburg	USA	1991 - 2006	6 - 9	10875	24.2 [22.4 - 25.9]
Sarasota	USA	1991 - 2006	6 - 9	35278	27.7 [26.6 - 28.8]
Steubenville	USA	1991 - 2006	6 - 9	3882	21.7 [19.1 - 24.1]
Saint Charles	USA	1991 - 2006	6 - 9	7107	24.9 [22.2 - 27.3]
Stockton	USA	1991 - 2006	6 - 9	19046	23.4 [21.1 - 25.8]
Saint Clair	USA	1991 - 2006	6 - 9	10879	24.8 [21.9 - 27.3]
South bend	USA	1991 - 2006	6 - 9	10996	21.1 [18.2 - 23.6]
St Louis	USA	1991 - 2006	6 - 9	70190	24.8 [21.9 - 27.3]
Stamford	USA	1991 - 2006	6 - 9	31606	21.2 [18.6 - 23.4]
St. Petersbur	USA	1991 - 2006	6 - 9	38081	28.6 [27.6 - 29.6]
State College	USA	1991 - 2006	6 - 9	3698	20.7 [18.2 - 22.9]
Seattle	USA	1991 - 2006	6 - 9	51974	15.1 [14.0 - 16.2]
Sioux City	USA	1991 - 2006	6 - 9	2386	21.8 [18.6 - 24.3]
Tacoma	USA	1991 - 2006	6 - 9	22649	17.4 [15.5 - 19.5]
Tampa	USA	1991 - 2006	6 - 9	38081	27.4 [26.6 - 28.3]
Tucson	USA	1991 - 2006	6 - 9	30943	29.6 [27.6 - 31.6]
Tallahassee	USA	1991 - 2006	6 - 9	6363	26.3 [25.3 - 27.4]
Toledo	USA	1991 - 2006	6 - 9	20727	21.2 [18.5 - 23.6]
Topeka	USA	1991 - 2006	6 - 9	7419	24.1 [21.1 - 26.8]
Trenton	USA	1991 - 2006	6 - 9	12877	22.9 [20.2 - 25.1]
Terra Haute	USA	1991 - 2006	6 - 9	5316	22.6 [19.8 - 24.8]
Tulsa	USA	1991 - 2006	6 - 9	22588	26.4 [23.6 - 29.1]
Visalia	USA	1991 - 2006	6 - 9	11854	24.7 [22.6 - 26.8]
Vancouver	USA	1991 - 2006	6 - 9	9533	18.6 [16.6 - 20.8]
Ventura	USA	1991 - 2006	6 - 9	20645	18.8 [17.4 - 20.1]
Wichita	USA	1991 - 2006	6 - 9	16053	25.2 [22.1 - 27.8]
Weber	USA	1991 - 2006	6 - 9	5805	23.9 [19.9 - 26.6]
Wilmington	USA	1991 - 2006	6 - 9	17491	23.2 [20.6 - 25.1]
Winston	USA	1991 - 2006	6 - 9	12024	24.6 [22.2 - 26.5]
Worcester	USA	1991 - 2006	6 - 9	30362	19.3 [16.6 - 21.7]

WDC	USA	1991 - 2006	6 - 9	30295	24.5 [22.1 - 26.6]
Washington	USA	1991 - 2006	6 - 9	10971	20.3 [17.3 - 22.6]
Youngstown	USA	1991 - 2006	6 - 9	19480	20.1 [17.2 - 22.4]
York	USA	1991 - 2006	6 - 9	14433	22.3 [19.3 - 24.6]
Ho Chi Minh City	Vietnam	2010 - 2013	3 - 6	35600	29.5 [28.7 - 30.3]
Hue	Vietnam	2009 - 2013	5 - 8	2077	29.5 [28.3 - 30.6]

Table S3. Information about the climate data simulations used in both scenarios.

Model	Member	Reference
ACCESS-ESM1-5	r1i1p1f1	Ziehn, T. et al. The Australian Earth System Model: ACCESS-ESM1.5. J. South. Hemisph. Earth Syst. Sci. (2020) doi:10.1071/es19035.
CanESM5	r1i1p1f1	Swart, N. C. et al. The Canadian Earth System Model version 5 (CanESM5.0.3). Geosci. Model Dev. Discuss. (2019) doi:10.5194/gmd-2019-177
CNRM-CM6-1	r1i1p1f1	Voldoire, A. et al. Evaluation of CMIP6 DECK Experiments With CNRM-CM6-1. J. Adv. 443 Model. Earth Syst. (2019) doi:10.1029/2019MS001683.
FGOALS-g3	r1i1p1f1	Li, L. J. et al. The Flexible Global Ocean–Atmosphere–Land System Model Grid-Point Version 3 (FGOALS-g3): Description and Evaluation. J. Adv. Model. Earth Syst. (2020) doi:10.1029/2019MS002012.
GFDL-ESM4	r1i1p1f1	Dunne, J. P. et al. The GFDL Earth System Model version 4.1 (GFDL-ESM4.1): Overall coupled model description and simulation characteristics. J. Adv. Model. Earth Syst. (2020) doi:10.1029/2019MS002015.
HadGEM3-GC31-LL	r1i1p1f3	Williams, K. D. et al. The Met Office Global Coupled Model 3.0 and 3.1 (GC3.0 and GC3.1) Configurations. J. Adv. Model. Earth Syst. (2018) doi:10.1002/2017MS001115.
IPSL-CM6A-LR	r1i1p1f1	Boucher, O., Servonnat, J., Albright, A. L., Aumont, O. & Balkanski, Y. Presentation and evaluation of the IPSL-CM6A-LR climate model. J. Adv. Model. Earth Syst. (2020) doi:10.1029/2019MS002010.
MIROC6	r1i1p1f1	Tatebe, H. et al. Description and basic evaluation of simulated mean state, internal variability, and climate sensitivity in MIROC6. Geosci. Model Dev. (2019) doi:10.5194/gmd-12-2727-2019
MRI-ESM2-0	r1i1p1f1	Yukimoto, S. et al. The Meteorological Research Institute Earth system model version 2.0, MRI-ESM2.0: Description and basic evaluation of the physical component. J. Meteorol. Soc. Japan 97, 931–965 (2019).
NorESM2-LM	r1i1p1f1	Seland, Ø. et al. The Norwegian Earth System Model, NorESM2 – Evaluation of theCMIP6 DECK and historical simulations. Geosci. Model Dev. Discuss. (2020) doi:10.5194/gmd-2019-378.

Table S4. Summary of the country-specific heat-related mortality impacts (95% confidence interval (CI)) estimated under the two scenarios (mortality fractions, %), the estimated difference interpreted as the historical heat-mortality fraction attributed human-induced climate change, and its corresponding proportion over the estimated fraction under the factual scenario.

Region	Country	Heat-related mortality in "Natural forcings only" scenario (% - 95% CI)	Heat-related mortality "With natural and anthropogenic forcings" scenario (% - 95% CI)	Heat-related mortality attributed to human-induced climate change (% - 95% CI)	Proportion of heat-related mortality attributed to human-induced climate change (%)
Australia	Australia	1.14 [0.36, 2.00]	1.78 [0.79, 2.66]	0.63 [0.15, 1.16]	35.7
North America	Canada	0.65 [0.11, 1.26]	1.06 [0.34, 1.74]	0.41 [0.16, 0.79]	38.5
North America	USA	0.57 [-0.03, 1.22]	0.87 [0.08, 1.62]	0.30 [0.01, 0.76]	34.7
Caribbean and Central America	Costa Rica	0.25 [-0.61, 1.30]	0.69 [-1.38, 2.72]	0.45 [-0.96, 2.12]	64.5
Caribbean and Central America	Guatemala	0.23 [-0.25, 1.01]	0.95 [-0.63, 2.65]	0.72 [-0.41, 1.99]	75.4
Caribbean and Central America	Mexico	0.95 [-0.09, 2.14]	1.71 [0.13, 3.19]	0.75 [-0.02, 1.59]	44.2
Caribbean and Central America	Panama	0.65 [-0.26, 1.72]	1.54 [-1.10, 4.06]	0.88 [-1.27, 2.98]	57.4
Caribbean and Central America	Puerto Rico	0.38 [-0.55, 1.37]	0.79 [-1.34, 2.82]	0.41 [-0.91, 1.68]	51.9
South America	Argentina	2.25 [0.82, 5.20]	2.83 [1.52, 4.10]	0.58 [-1.50, 1.46]	20.5
South America	Brazil	0.56 [-0.04, 1.27]	1.70 [0.45, 2.96]	1.14 [0.35, 2.15]	67.1
South America	Chile	1.34 [0.32, 2.61]	2.43 [0.95, 4.03]	1.09 [0.43, 2.04]	44.9
South America	Colombia	0.17 [-0.13, 0.58]	0.71 [-0.08, 1.40]	0.54 [0.03, 1.10]	76.0
South America	Ecuador	0.41 [-0.12, 1.21]	1.74 [0.10, 4.03]	1.33 [0.13, 3.36]	76.6
South America	Paraguay	1.94 [0.10, 6.10]	4.62 [2.37, 8.08]	2.68 [1.55, 4.61]	58.1
South America	Peru	0.42 [-0.04, 1.15]	1.59 [0.24, 3.04]	1.17 [0.22, 2.39]	73.5
South America	Uruguay	2.19 [0.46, 4.86]	2.93 [1.14, 4.76]	0.75 [-0.95, 2.25]	25.5
Northern Europe	Estonia	0.68 [-0.04, 1.73]	1.06 [0.08, 2.01]	0.38 [-0.05, 0.92]	35.4
Northern Europe	Finland	0.94 [0.30, 1.90]	1.62 [0.95, 2.24]	0.68 [0.00, 1.25]	42.0
Northern Europe	Ireland	0.29 [-0.17, 0.96]	0.48 [-0.25, 1.22]	0.18 [-0.10, 0.63]	38.3
Northern Europe	Norway	0.47 [0.03, 1.23]	0.86 [0.11, 1.66]	0.40 [0.04, 0.92]	46.1
Northern Europe	Sweden	0.60 [0.13, 1.27]	0.99 [0.38, 1.59]	0.39 [0.11, 0.80]	39.1
Northern Europe	UK	0.57 [0.16, 1.08]	0.88 [0.41, 1.37]	0.31 [0.03, 0.72]	35.1
Western Europe	France	1.33 [0.30, 2.50]	2.06 [1.24, 2.91]	0.73 [-0.35, 1.41]	35.2
Western Europe	Germany	1.64 [0.56, 2.87]	2.30 [1.37, 3.17]	0.66 [-0.22, 1.50]	28.5
Western Europe	Netherlands	1.24 [0.50, 1.94]	1.80 [1.29, 2.34]	0.56 [-0.06, 1.26]	31.3
Western Europe	Switzerland	1.62 [-0.09, 3.83]	2.35 [0.46, 4.10]	0.74 [-0.64, 1.78]	31.3
Eastern Europe	Czech Rep.	3.06 [1.42, 4.87]	3.95 [2.32, 5.45]	0.89 [-0.10, 1.93]	22.6
Eastern Europe	Moldova	2.96 [1.03, 5.52]	3.93 [1.92, 5.98]	0.97 [-0.20, 2.38]	24.6
Eastern Europe	Romania	4.14 [2.04, 6.61]	5.54 [3.77, 7.23]	1.39 [-0.08, 3.10]	25.2
Southern Europe	Greece	5.85 [3.59, 8.54]	7.91 [5.64, 10.53]	2.06 [0.54, 3.81]	26.1
Southern Europe	Italy	5.12 [2.87, 7.94]	7.37 [5.36, 9.32]	2.25 [0.07, 4.35]	30.6
Southern Europe	Portugal	3.30 [2.01, 4.69]	4.57 [3.32, 5.72]	1.27 [0.57, 2.36]	27.7
Southern Europe	Spain	4.35 [2.32, 6.78]	6.24 [4.54, 7.77]	1.89 [0.28, 3.63]	30.3
Eastern Asia	China	1.54 [0.45, 2.82]	1.95 [0.81, 3.05]	0.42 [-0.34, 1.35]	21.3
Eastern Asia	Japan	0.65 [0.05, 1.37]	0.97 [0.27, 1.66]	0.32 [0.07, 0.73]	32.8
Eastern Asia	South Korea	0.59 [-0.05, 1.46]	0.78 [0.02, 1.50]	0.19 [-0.28, 0.71]	23.9
Eastern Asia	Taiwan	1.06 [0.11, 2.27]	1.75 [0.43, 3.00]	0.69 [0.06, 1.57]	39.5
Southern and Western Asia	Iran	0.72 [-0.17, 1.81]	1.96 [-0.15, 4.15]	1.24 [-0.12, 2.98]	63.1
Southern and Western Asia	Kuwait	0.58 [-0.94, 2.29]	1.81 [-0.94, 4.24]	1.22 [-0.28, 2.74]	67.7
South-eastern Asia	Philippines	0.67 [-0.31, 2.61]	1.74 [-0.32, 5.07]	1.06 [-0.05, 3.25]	61.2
South-eastern Asia	Thailand	1.12 [-0.14, 4.04]	2.39 [0.02, 5.59]	1.27 [0.01, 2.67]	53.0
South-eastern Asia	Vietnam	1.57 [0.02, 12.36]	3.05 [0.37, 17.51]	1.48 [0.33, 5.13]	48.5
Africa	South Africa	0.47 [-0.27, 1.27]	0.84 [-0.26, 1.83]	0.37 [-0.00, 0.88]	43.8
Total		**0.98 [0.26, 1.80]**	**1.56 [0.62, 2.41]**	**0.58 [0.24, 1.14]**	**37.0**

Table S5. Summary of the location-specific historical heat-related mortality (95% confidence interval (CI)), expressed as fraction (%), annual number of deaths, and proportion of heat-related mortality attributed to human-induced climate change.

Location	Country	Heat-related mortality attributed to human-induced climate change (% - 95% CI)	Annual average heat-related number of deaths attributed to human-induced climate change (95% CI)	Proportion of heat-related mortality attributed to human-induced climate change (%)
Buenos Aires	Argentina	0.56 [-1.54, 1.48]	68 [-187, 180]	20.7
Cordoba	Argentina	0.61 [-1.44, 1.62]	21 [-50, 56]	21.6
Rosario	Argentina	0.60 [-1.62, 1.73]	21 [-57, 61]	18.8
Brisbane	Australia	0.73 [0.23, 1.86]	20 [7, 52]	35.5
Melbourne	Australia	0.50 [0.09, 1.08]	33 [6, 71]	35.2
Sydney	Australia	0.71 [0.07, 1.44]	53 [5, 108]	36.0
Belem	Brazil	1.54 [-0.54, 4.73]	44 [-16, 136]	79.5
Belo Horizonte	Brazil	1.67 [0.52, 4.72]	181 [57, 514]	73.7
Brasilia	Brazil	0.88 [-0.18, 2.17]	23 [-5, 55]	66.0
Curitiba	Brazil	0.90 [0.13, 2.03]	29 [4, 65]	56.8
Cuiaba	Brazil	1.74 [-0.10, 4.22]	19 [-1, 47]	67.3
Fortaleza	Brazil	1.00 [-0.37, 2.64]	44 [-16, 116]	84.9
Goiania	Brazil	1.24 [0.13, 2.87]	37 [4, 86]	70.4
Joao Pessoa	Brazil	1.48 [0.14, 2.99]	22 [2, 44]	84.0
Maceio	Brazil	0.47 [-0.37, 1.32]	10 [-8, 27]	78.1
Manaus	Brazil	2.20 [0.27, 7.19]	47 [6, 155]	73.9
Natal	Brazil	0.72 [-0.63, 2.07]	13 [-11, 37]	85.9
Porto Alegre	Brazil	1.03 [0.04, 2.21]	46 [2, 100]	41.6
Recife	Brazil	1.10 [0.10, 2.25]	64 [6, 131]	81.2
Sao Luis	Brazil	1.05 [-0.13, 2.15]	18 [-2, 38]	71.7
Salvador	Brazil	-0.15 [-1.12, 0.40]	-8 [-56, 20]	84.0
Sao Paulo	Brazil	1.14 [0.41, 2.57]	239 [86, 536]	61.4
Teresina	Brazil	1.92 [0.34, 4.00]	28 [5, 58]	62.3
Vitoria	Brazil	0.90 [-0.04, 2.51]	10 [-0, 29]	66.5
Abbotsford	Canada	0.40 [0.05, 1.02]	2 [0, 6]	52.4
Calgary	Canada	0.16 [-0.33, 0.71]	3 [-6, 13]	30.5
Edmonton	Canada	0.21 [-0.17, 0.71]	4 [-3, 15]	41.3
Halifax	Canada	0.17 [-0.13, 0.64]	1 [-1, 6]	44.1
Hamilton	Canada	0.33 [-0.03, 0.84]	4 [-0, 11]	39.8
Kingston	Canada	0.10 [-0.34, 0.59]	1 [-2, 3]	42.1
Kitchener-Waterloo	Canada	0.51 [-0.06, 1.08]	5 [-1, 10]	41.6
London Ontario	Canada	0.19 [-0.08, 0.64]	2 [-1, 7]	37.1
Montreal	Canada	1.06 [0.54, 1.59]	50 [25, 75]	46.3
Niagara	Canada	0.23 [-0.05, 0.72]	3 [-1, 9]	36.3
Oakville	Canada	0.24 [-0.14, 0.79]	2 [-1, 6]	40.4
Oshawa	Canada	0.24 [-0.17, 0.74]	2 [-2, 7]	38.9
Ottawa	Canada	0.36 [-0.07, 0.89]	7 [-1, 17]	30.6
Regina	Canada	0.27 [-0.56, 1.03]	2 [-4, 6]	32.1
Sarnia	Canada	0.17 [-0.21, 0.77]	1 [-1, 3]	31.6
Sudbury	Canada	0.17 [-0.29, 0.71]	1 [-2, 4]	39.6
Saint John NB	Canada	-0.00 [-0.06, 0.05]	-0 [-0, 0]	63.4
St. John's NFL	Canada	-0.00 [-0.10, 0.08]	-0 [-1, 1]	54.0
Sault Ste. Marie	Canada	0.36 [-0.12, 1.04]	1 [-0, 4]	36.6
Saskatoon	Canada	0.31 [-0.20, 0.92]	2 [-1, 7]	36.5
Thunder Bay	Canada	0.21 [-0.19, 0.82]	1 [-1, 4]	38.4
Toronto	Canada	0.49 [0.16, 1.01]	44 [14, 89]	30.2
Victoria	Canada	0.21 [-0.04, 0.61]	2 [-0, 6]	49.4
Vancouver	Canada	0.48 [0.03, 0.94]	20 [1, 39]	51.5
Windsor	Canada	0.33 [-0.09, 1.02]	3 [-1, 9]	36.9
Winnipeg	Canada	0.06 [-0.24, 0.41]	1 [-5, 9]	34.6
Anshan	China	0.14 [-0.31, 0.77]	4 [-10, 24]	17.7
Beijing	China	0.18 [-2.00, 2.19]	19 [-211, 231]	8.3
Fuzhou	China	0.77 [-0.76, 2.76]	14 [-14, 50]	31.0
Hong Kong	China	0.29 [-0.13, 0.77]	28 [-12, 75]	59.2
Hangzhou	China	0.30 [-0.13, 1.20]	6 [-3, 26]	24.9
Lanzhou	China	0.16 [-0.06, 0.50]	3 [-1, 11]	41.0
Shanghai	China	0.23 [-0.71, 1.08]	29 [-87, 134]	17.0
Shenyang	China	0.37 [-0.77, 1.97]	28 [-58, 150]	20.2
Suzhu	China	0.81 [-1.01, 2.76]	30 [-37, 101]	21.0
Taiyuan	China	0.50 [-2.48, 2.02]	14 [-69, 57]	16.6
Tianjin	China	0.08 [-2.72, 2.75]	1 [-33, 33]	2.5
Wulumuqi	China	0.70 [-0.32, 2.03]	14 [-6, 41]	32.0

Wuhan	China	1.28 [-0.76, 3.43]	77 [-46, 206]	27.8
Xian	China	0.51 [-0.41, 1.58]	15 [-12, 46]	29.7
Chillan	Chile	1.39 [0.28, 2.81]	5 [1, 11]	52.5
Santiago	Chile	1.22 [0.48, 2.30]	136 [54, 255]	44.3
Temuco	Chile	0.44 [0.02, 1.00]	2 [0, 6]	50.3
Valparaiso	Chile	0.34 [-0.06, 0.85]	6 [-1, 14]	51.4
Bogota	Colombia	-0.09 [-0.36, 0.08]	-8 [-33, 7]	92.6
Barranquilla	Colombia	1.63 [0.21, 3.34]	33 [4, 67]	85.2
Cali	Colombia	0.88 [-0.14, 1.98]	34 [-6, 78]	71.0
Cartagena	Colombia	1.58 [-0.17, 3.85]	18 [-2, 45]	85.2
Medellin	Colombia	0.75 [-0.05, 1.74]	32 [-2, 73]	72.1
San José (CR)	Costa Rica	0.45 [-0.96, 2.12]	3 [-5, 12]	64.5
Brno	Czech Republic	1.01 [-0.24, 2.22]	13 [-3, 29]	21.2
Ostrava	Czech Republic	1.02 [-0.21, 2.17]	12 [-2, 25]	22.4
Prague	Czech Republic	0.94 [-0.16, 1.97]	39 [-7, 83]	23.6
South Bohemia	Czech Republic	0.76 [-0.12, 1.73]	29 [-5, 65]	22.1
Guayaquil	Ecuador	1.54 [0.05, 4.05]	69 [2, 181]	77.7
Quito	Ecuador	1.01 [0.11, 2.43]	28 [3, 68]	74.0
Kohtla-Järve linn	Estonia	0.25 [-0.12, 0.74]	1 [-0, 2]	35.8
Narva linn	Estonia	0.34 [-0.15, 0.87]	1 [-0, 2]	36.8
Pärnu linn	Estonia	0.42 [-0.03, 1.06]	1 [-0, 2]	36.3
Tallinn	Estonia	0.41 [-0.01, 1.01]	6 [-0, 14]	35.6
Tartu linn	Estonia	0.30 [-0.16, 0.94]	1 [-1, 3]	32.6
Helsinki	Finland	0.68 [0.00, 1.25]	16 [0, 29]	42.0
Bordeaux	France	0.69 [-1.21, 1.91]	11 [-19, 29]	32.5
Clermont-Ferrand	France	0.63 [-1.30, 1.79]	4 [-9, 12]	30.3
Dijon	France	0.57 [-0.95, 1.42]	3 [-5, 8]	33.4
Grenoble	France	0.90 [-1.25, 1.86]	9 [-12, 18]	37.5
Le Havre	France	0.30 [-0.01, 0.69]	2 [-0, 5]	38.2
Lille	France	0.35 [-0.05, 0.70]	9 [-1, 18]	32.5
Lens-Douai	France	0.54 [-0.06, 1.27]	6 [-1, 13]	28.9
Lyon	France	0.80 [-1.60, 1.91]	18 [-36, 42]	31.1
Montpellier	France	0.97 [-1.19, 2.33]	8 [-9, 18]	44.4
Marseille	France	0.89 [0.01, 1.91]	24 [0, 51]	46.3
Nice	France	0.81 [-0.01, 1.71]	12 [-0, 25]	56.4
Nancy	France	0.54 [-0.50, 1.30]	5 [-4, 11]	31.7
Nantes	France	0.46 [-0.18, 0.94]	6 [-2, 12]	34.6
Paris	France	0.84 [-0.21, 1.58]	110 [-28, 206]	33.9
Rennes	France	0.30 [-0.14, 0.69]	1 [-1, 3]	33.6
Rouen	France	0.51 [-0.07, 1.30]	6 [-1, 15]	28.5
Strasbourg	France	0.70 [-0.42, 1.53]	7 [-4, 16]	36.1
Toulouse	France	0.70 [-0.77, 1.82]	10 [-11, 26]	34.5
Berlin	Germany	0.71 [-0.46, 1.65]	80 [-52, 185]	28.8
Bremen	Germany	0.50 [-0.16, 1.18]	10 [-3, 24]	26.9
Dresden	Germany	0.64 [-0.26, 1.39]	11 [-4, 24]	33.4
Dortmund	Germany	0.78 [-0.33, 2.14]	17 [-7, 46]	27.8
Duesseldorf	Germany	0.72 [-0.26, 1.71]	16 [-6, 38]	25.8
Frankfurt	Germany	0.68 [-0.51, 1.46]	16 [-12, 34]	29.6
Hamburg	Germany	0.45 [-0.14, 0.99]	28 [-9, 61]	30.6
Hannover	Germany	0.54 [-0.09, 1.50]	21 [-4, 58]	28.6
Koeln	Germany	0.75 [-0.54, 1.77]	24 [-17, 56]	28.1
Leipzig	Germany	0.74 [-0.27, 1.78]	16 [-6, 38]	30.0
Muenchen	Germany	0.69 [-0.22, 1.43]	28 [-9, 58]	23.9
Stuttgart	Germany	0.82 [-0.51, 1.67]	15 [-10, 32]	34.6
Athens	Greece	2.06 [0.54, 3.81]	189 [50, 349]	26.1
Guatemala	Guatemala	0.72 [-0.41, 1.99]	19 [-11, 52]	75.4
East of Northern Ireland	Ireland	0.13 [-0.21, 0.61]	4 [-6, 17]	38.0
North East of the Republic of Ireland	Ireland	0.29 [-0.13, 0.95]	4 [-2, 13]	38.2
North West of the Republic of Ireland	Ireland	-0.01 [-0.19, 0.12]	-0 [-2, 1]	40.5
South East of Republic of Ireland	Ireland	0.13 [-0.32, 0.67]	4 [-10, 21]	37.3
South West of the Republic of Ireland	Ireland	0.30 [-0.11, 1.00]	10 [-4, 34]	39.9
West of Northern Ireland	Ireland	0.15 [-0.26, 0.72]	3 [-4, 12]	34.5
Mashhad	Iran	1.24 [-0.12, 2.98]	51 [-5, 123]	63.1
Bari	Italy	1.55 [-0.04, 3.11]	12 [-0, 25]	24.4
Bologna	Italy	2.07 [-1.19, 4.51]	28 [-16, 62]	23.7
Brescia	Italy	2.33 [-0.20, 4.26]	15 [-1, 27]	30.9
Civitavecchia	Italy	3.11 [0.00, 5.96]	3 [0, 6]	36.2
Frosinone	Italy	2.73 [0.29, 6.10]	2 [0, 5]	30.9
Genoa	Italy	1.59 [-0.50, 2.96]	39 [-12, 72]	36.3

Latina	Italy	2.54 [0.19, 5.78]	5 [0, 12]	33.2
Palermo	Italy	1.68 [0.32, 3.11]	27 [5, 50]	28.5
Rome	Italy	2.56 [0.32, 5.03]	172 [21, 338]	32.0
Turin	Italy	2.74 [-0.36, 5.56]	63 [-8, 127]	30.2
Viterbo	Italy	1.80 [-0.11, 3.60]	3 [-0, 6]	25.6
Aichi	Japan	0.62 [0.13, 1.26]	93 [20, 191]	38.7
Akita	Japan	0.19 [-0.40, 0.55]	8 [-16, 21]	25.6
Aomori	Japan	0.18 [-0.66, 0.66]	8 [-29, 29]	17.5
Chiba	Japan	0.19 [0.01, 0.52]	24 [1, 67]	38.2
Ehime	Japan	0.55 [0.04, 1.31]	25 [2, 58]	31.6
Fukushima	Japan	0.15 [-0.09, 0.48]	9 [-5, 28]	31.6
Fukuoka	Japan	0.21 [-0.14, 0.61]	26 [-17, 77]	30.6
Fukui	Japan	-0.01 [-0.06, 0.02]	-0 [-1, 0]	46.5
Gifu	Japan	0.47 [0.08, 1.12]	25 [4, 60]	31.3
Gunma	Japan	0.28 [0.02, 0.64]	15 [1, 34]	32.4
Hokkaido	Japan	0.06 [-0.32, 0.32]	10 [-50, 49]	15.2
Hiroshima	Japan	0.27 [-0.00, 0.77]	21 [-0, 58]	34.9
Hyogo	Japan	0.36 [0.02, 0.86]	50 [3, 118]	35.8
Ibaraki	Japan	0.19 [-0.08, 0.57]	14 [-6, 42]	26.7
Ishikawa	Japan	0.24 [-0.07, 0.71]	7 [-2, 22]	26.6
Iwate	Japan	0.13 [-0.28, 0.48]	6 [-12, 20]	25.2
Kagawa	Japan	0.44 [0.04, 1.06]	13 [1, 31]	37.0
Kagoshima	Japan	0.43 [-0.13, 1.26]	24 [-7, 70]	28.5
Kumamoto	Japan	-0.03 [-0.13, 0.02]	-1 [-7, 1]	59.6
Kanagawa	Japan	0.46 [0.10, 1.02]	80 [17, 177]	36.9
Kochi	Japan	-0.01 [-0.10, 0.11]	-0 [-3, 3]	28.9
Kyoto	Japan	0.34 [0.03, 0.83]	22 [2, 55]	36.1
Mie	Japan	0.27 [0.03, 0.71]	13 [1, 35]	36.3
Miyagi	Japan	0.11 [-0.15, 0.40]	6 [-9, 23]	28.0
Miyazaki	Japan	0.22 [-0.17, 0.78]	7 [-5, 26]	27.1
Nagano	Japan	0.23 [-0.03, 0.63]	14 [-2, 39]	26.9
Nara	Japan	0.35 [0.00, 1.01]	12 [0, 35]	27.8
Nagasaki	Japan	0.12 [-0.30, 0.65]	5 [-13, 29]	20.3
Niigata	Japan	0.33 [-0.16, 0.77]	23 [-12, 55]	27.1
Oita	Japan	0.26 [-0.11, 0.84]	9 [-4, 30]	25.6
Okinawa	Japan	0.37 [-0.46, 1.30]	10 [-13, 36]	44.4
Okayama	Japan	0.26 [-0.02, 0.76]	14 [-1, 41]	31.9
Osaka	Japan	0.46 [0.06, 0.96]	94 [12, 197]	39.1
Saga	Japan	0.24 [-0.20, 0.99]	6 [-5, 25]	18.3
Saitama	Japan	0.41 [0.10, 0.87]	57 [14, 122]	36.1
Shiga	Japan	0.28 [-0.10, 0.88]	8 [-3, 27]	24.0
Shimane	Japan	0.14 [-0.09, 0.50]	3 [-2, 12]	37.5
Shizuoka	Japan	0.32 [0.05, 0.77]	29 [4, 71]	42.1
Tochigi	Japan	0.37 [0.05, 0.88]	19 [3, 45]	25.9
Tokushima	Japan	0.09 [-0.33, 0.61]	2 [-8, 16]	22.7
Tokyo	Japan	0.56 [0.15, 1.22]	156 [41, 339]	35.6
Toyama	Japan	0.31 [-0.03, 0.84]	10 [-1, 27]	28.8
Tottori	Japan	0.23 [-0.09, 0.73]	4 [-2, 14]	29.5
Wakayama	Japan	0.13 [-0.31, 0.66]	4 [-10, 22]	20.6
Yamaguchi	Japan	0.25 [-0.39, 0.94]	12 [-19, 45]	21.7
Yamagata	Japan	0.15 [-0.02, 0.46]	6 [-1, 18]	38.8
Yamanashi	Japan	0.29 [-0.10, 0.89]	7 [-2, 21]	36.2
Andong	South Korea	0.26 [-0.31, 1.12]	1 [-1, 5]	21.6
Boryeong	South Korea	0.20 [-0.93, 1.37]	1 [-3, 4]	16.4
Busan	South Korea	0.11 [-0.13, 0.50]	7 [-8, 31]	27.6
Chuncheon	South Korea	0.27 [-0.43, 1.25]	1 [-2, 6]	18.7
Chungju	South Korea	0.17 [-0.32, 1.00]	1 [-1, 5]	21.7
Cheonan	South Korea	0.31 [-0.99, 1.41]	2 [-7, 10]	22.3
Daegu	South Korea	0.29 [-0.10, 0.91]	11 [-4, 34]	27.2
Daejeon	South Korea	0.16 [-0.44, 0.79]	3 [-8, 15]	18.5
Donghae	South Korea	0.07 [-0.22, 0.51]	0 [-0, 1]	20.9
Geojae	South Korea	0.15 [-0.32, 0.86]	0 [-1, 3]	27.8
Gangneung	South Korea	0.20 [-0.29, 0.83]	1 [-1, 4]	20.9
Gumi	South Korea	0.16 [-0.42, 0.97]	1 [-2, 4]	18.7
Gwangju	South Korea	0.21 [-0.40, 0.90]	4 [-8, 18]	21.5
Icheon	South Korea	0.19 [-0.54, 1.07]	1 [-2, 4]	22.5
Incheon	South Korea	0.12 [-0.31, 0.61]	5 [-12, 23]	24.9
Jecheon	South Korea	0.24 [-0.47, 1.27]	1 [-1, 4]	19.5
Jeju	South Korea	0.03 [-0.45, 0.55]	0 [-2, 3]	10.5
Jinju	South Korea	0.38 [-0.15, 1.36]	2 [-1, 8]	28.2
Jeongeup	South Korea	0.15 [-0.40, 0.84]	1 [-2, 3]	16.2
Milyang	South Korea	0.17 [-0.27, 0.94]	1 [-1, 3]	25.4
Mungyeong	South Korea	0.33 [-0.37, 1.36]	1 [-1, 4]	25.3

Mokpo	South Korea	0.12 [-0.51, 0.90]	0 [-2, 4]	13.6
Namwon	South Korea	0.29 [-0.70, 1.39]	1 [-2, 4]	22.6
Pohang	South Korea	0.13 [-0.19, 0.61]	1 [-2, 5]	23.6
Seoul	South Korea	0.19 [-0.38, 0.78]	24 [-49, 99]	24.8
Seosan	South Korea	0.07 [-0.62, 0.86]	0 [-2, 3]	15.0
Seogyupo	South Korea	0.07 [-0.61, 0.84]	0 [-1, 2]	14.1
Sokcho	South Korea	0.11 [-0.22, 0.61]	0 [-0, 1]	20.6
Suwon	South Korea	0.20 [-0.49, 0.96]	2 [-6, 11]	23.7
Taebaek	South Korea	0.17 [-0.37, 0.97]	0 [-0, 1]	22.4
Tongyeong	South Korea	0.28 [-0.43, 1.32]	1 [-1, 4]	26.2
Ulsan	South Korea	0.21 [-0.14, 0.74]	3 [-2, 10]	28.7
Wonju	South Korea	0.15 [-0.38, 0.91]	1 [-2, 5]	17.8
Yeosu	South Korea	0.34 [-0.41, 1.39]	2 [-2, 8]	26.4
Yoengcheon	South Korea	0.14 [-0.29, 0.81]	0 [-1, 3]	20.6
Yeongju	South Korea	0.20 [-0.41, 1.17]	1 [-1, 4]	21.6
Kuwait	Kuwait	1.22 [-0.28, 2.74]	16 [-4, 36]	67.7
Ciudad Juarez	Mexico	1.36 [-0.02, 3.25]	22 [-0, 53]	38.6
Comarca Lagunera	Mexico	1.74 [0.17, 3.64]	32 [3, 67]	40.5
Guadalajara	Mexico	1.39 [0.38, 2.69]	92 [25, 178]	58.8
Leon	Mexico	0.41 [-1.27, 1.41]	8 [-26, 28]	38.0
Monterrey	Mexico	1.71 [0.63, 3.57]	90 [33, 188]	37.3
Puebla-Tlaxcala	Mexico	0.62 [-0.36, 1.63]	23 [-14, 62]	45.1
San Luis Potosi	Mexico	0.73 [-0.66, 1.70]	10 [-9, 24]	39.9
Tijuana	Mexico	0.26 [-0.27, 0.90]	5 [-5, 16]	17.1
Toluca de Lerdo	Mexico	0.65 [-0.81, 1.89]	15 [-19, 45]	51.7
Valley of Mexico	Mexico	0.41 [-0.45, 1.12]	115 [-125, 313]	47.1
Anenii Noi	Moldova	1.10 [-0.11, 2.56]	0 [-0, 1]	29.4
Cahul	Moldova	0.90 [-0.54, 2.55]	1 [-1, 3]	21.5
Chisinau	Moldova	0.97 [-0.21, 2.36]	17 [-4, 41]	24.6
Falesti	Moldova	1.08 [-0.17, 2.98]	1 [-0, 2]	27.8
Noord-Nederland	Netherland	0.51 [-0.09, 1.23]	25 [-5, 61]	30.6
Oost-Nederland	Netherland	0.56 [-0.18, 1.22]	50 [-16, 109]	32.0
West-Nederland	Netherland	0.49 [0.04, 1.10]	100 [8, 223]	36.7
Zuid-Nederland	Netherland	0.73 [-0.16, 1.72]	69 [-16, 163]	25.6
Oslo	Norway	0.40 [0.04, 0.92]	6 [1, 15]	46.1
Panama	Panama	0.88 [-1.27, 2.98]	9 [-12, 29]	57.4
Asuncion	Paraguay	2.68 [1.55, 4.61]	26 [15, 45]	58.1
apurimac	Peru	1.15 [-0.79, 4.20]	5 [-4, 19]	75.8
arequipa	Peru	0.90 [0.01, 1.95]	13 [0, 29]	80.2
ayacucho	Peru	0.55 [-0.09, 1.62]	3 [-1, 9]	78.5
cajamarca	Peru	1.15 [-0.02, 2.39]	12 [-0, 25]	71.6
cusco	Peru	0.96 [-0.13, 2.26]	12 [-2, 28]	73.7
huancavelica	Peru	0.32 [-0.58, 1.69]	1 [-3, 8]	79.1
huanuco	Peru	0.97 [-0.22, 2.20]	8 [-2, 18]	63.1
ica	Peru	0.95 [-0.02, 2.00]	10 [-0, 21]	73.3
junin	Peru	0.56 [-0.38, 2.17]	9 [-6, 35]	75.9
lima	Peru	1.11 [-0.16, 3.60]	129 [-19, 418]	81.4
la libertad	Peru	1.77 [0.55, 3.18]	39 [12, 71]	71.2
lambayeque	Peru	1.63 [0.59, 2.94]	27 [10, 49]	65.3
loreto	Peru	2.55 [-0.34, 7.16]	9 [-1, 25]	80.0
piura	Peru	1.23 [-0.56, 2.70]	26 [-12, 57]	49.7
puno	Peru	1.43 [-0.93, 4.45]	29 [-19, 89]	86.8
san martin	Peru	1.08 [-0.28, 3.02]	6 [-1, 16]	63.2
tacna	Peru	1.35 [0.19, 2.73]	5 [1, 11]	75.5
ucayali	Peru	1.57 [-0.05, 3.60]	8 [-0, 18]	75.8
Cebu	Philippines	0.92 [-0.54, 3.70]	27 [-16, 109]	65.0
Davao	Philippines	1.31 [-0.70, 5.26]	38 [-20, 153]	72.1
Manila	Philippines	1.03 [-0.00, 3.35]	64 [-0, 207]	58.2
Quezon	Philippines	1.05 [0.05, 2.80]	64 [3, 172]	57.4
Beja	Portugal	1.60 [0.60, 3.17]	12 [4, 23]	24.5
Coimbra	Portugal	1.38 [0.44, 2.69]	20 [7, 40]	29.1
Castelo Branco	Portugal	2.18 [1.29, 3.80]	19 [11, 33]	27.5
Lisboa	Portugal	1.08 [0.49, 2.10]	68 [31, 133]	24.7
Porto	Portugal	1.27 [-0.02, 2.58]	53 [-1, 109]	33.4
San Juan	Puertorico	0.41 [-0.91, 1.68]	5 [-10, 19]	51.9
Bucharest	Romania	1.47 [-0.35, 3.40]	103 [-25, 238]	24.3
Brasov	Romania	1.06 [0.18, 2.33]	9 [2, 19]	31.1
Cluj-Napoca	Romania	1.36 [0.37, 3.01]	12 [3, 27]	26.3
Constanta	Romania	1.20 [-0.29, 2.78]	12 [-3, 28]	26.9
Craiova	Romania	1.21 [0.01, 2.90]	9 [0, 23]	23.0
Galati	Romania	1.19 [-0.47, 2.79]	10 [-4, 22]	23.9
Iasi	Romania	1.18 [-0.39, 2.73]	10 [-3, 23]	25.8
Timisoara	Romania	1.86 [-0.12, 3.83]	18 [-1, 37]	28.5

Alfred Nzo	South Africa	0.30 [-0.19, 0.95]	7 [-4, 21]	37.1
Amathole	South Africa	0.28 [-0.08, 0.91]	13 [-4, 42]	27.3
Buffalo City	South Africa	-0.01 [-0.05, 0.02]	-0 [-2, 1]	58.1
Bojanala	South Africa	0.49 [-0.10, 1.37]	20 [-4, 55]	49.2
Cacadu	South Africa	0.32 [-0.09, 1.02]	4 [-1, 14]	32.6
Chris Hani	South Africa	0.28 [0.00, 0.77]	8 [0, 21]	43.8
Central Karoo	South Africa	0.56 [-0.00, 1.37]	1 [-0, 4]	35.5
City of Cape Town	South Africa	0.21 [-0.17, 0.62]	17 [-13, 50]	34.3
Capricorn	South Africa	0.41 [-0.48, 1.26]	16 [-19, 49]	37.7
Cape Winelands	South Africa	0.77 [0.24, 1.44]	15 [4, 27]	42.7
City of Johannesburg	South Africa	0.37 [0.01, 0.87]	37 [1, 86]	59.8
City of Tshwane	South Africa	0.17 [-0.53, 0.90]	11 [-36, 61]	59.7
Dr Kenneth Kaunda	South Africa	0.46 [-0.23, 1.41]	13 [-7, 41]	44.0
Dr Ruth Segomotsi Mompati	South Africa	0.57 [-0.14, 1.62]	9 [-2, 26]	44.5
Eden	South Africa	0.46 [0.08, 0.99]	7 [1, 15]	36.0
Ehlanzeni	South Africa	0.58 [-0.11, 1.46]	29 [-6, 72]	54.0
Ekurhuleni	South Africa	0.37 [-0.11, 1.10]	30 [-9, 88]	58.3
eThekwini	South Africa	0.33 [-0.21, 0.99]	37 [-23, 111]	34.8
Frances Baard	South Africa	0.62 [-0.12, 1.66]	9 [-2, 25]	36.0
Fezile Dabi	South Africa	0.38 [-0.44, 1.41]	8 [-9, 28]	41.8
Gert Sibande	South Africa	0.22 [-0.82, 1.26]	9 [-31, 48]	38.0
Greater Sekhukhune	South Africa	0.37 [-0.45, 1.38]	11 [-13, 41]	40.3
Joe Gqabi	South Africa	0.29 [-0.40, 1.14]	4 [-5, 16]	32.5
Lejweleputswa	South Africa	0.56 [-0.01, 1.44]	18 [-0, 47]	42.9
Mangaung	South Africa	0.35 [-0.22, 1.22]	12 [-8, 42]	34.6
Mopani	South Africa	0.80 [-0.09, 1.77]	23 [-3, 52]	41.6
Ngaka Modiri Molema	South Africa	0.50 [-0.22, 1.37]	15 [-7, 40]	50.0
Nkangala	South Africa	0.40 [-0.20, 1.34]	15 [-7, 49]	64.2
Nelson Mandela Bay	South Africa	0.25 [-0.01, 0.55]	10 [-0, 22]	50.1
Namakwa	South Africa	0.80 [0.17, 1.58]	2 [1, 5]	41.5
O.R.Tambo	South Africa	0.28 [-0.23, 0.95]	11 [-9, 36]	38.2
Overberg	South Africa	0.35 [-0.07, 0.86]	2 [-0, 5]	41.4
Pixley ka Seme	South Africa	0.48 [-0.20, 1.33]	4 [-2, 11]	41.2
Sisonke	South Africa	0.66 [-0.00, 1.42]	12 [-0, 25]	62.6
Siyanda	South Africa	0.91 [0.17, 1.84]	8 [2, 17]	42.8
Thabo Mofutsanyane	South Africa	-0.09 [-0.47, 0.07]	-3 [-17, 3]	63.4
Ugu	South Africa	0.22 [-0.45, 0.98]	7 [-15, 32]	47.2
uMgungundlovu	South Africa	0.49 [-0.09, 1.13]	21 [-4, 49]	56.6
uMkhanyakude	South Africa	0.05 [-0.70, 0.76]	1 [-12, 14]	31.8
uMzinyathi	South Africa	0.35 [-0.23, 1.08]	7 [-5, 22]	37.1
uThukela	South Africa	0.21 [-0.54, 1.07]	6 [-15, 29]	31.0
uThungulu	South Africa	0.07 [-0.26, 0.42]	3 [-9, 15]	53.3
Vhembe	South Africa	1.30 [0.31, 2.71]	34 [8, 70]	50.2
West Coast	South Africa	0.63 [0.06, 1.37]	7 [1, 15]	32.7
Waterberg	South Africa	0.89 [0.16, 1.94]	12 [2, 27]	46.2
A Coruna	Spain	1.22 [-0.35, 2.38]	8 [-2, 16]	32.1
Albacete	Spain	2.25 [-0.39, 4.61]	7 [-1, 14]	28.7
Alicante	Spain	1.96 [-0.50, 4.11]	14 [-4, 29]	30.6
Almeria	Spain	1.46 [-0.22, 3.50]	6 [-1, 14]	27.0
Avila	Spain	2.16 [0.71, 4.59]	3 [1, 6]	29.0
Badajoz	Spain	2.33 [1.13, 4.36]	7 [3, 13]	30.5
Bilbao	Spain	1.26 [0.15, 3.07]	13 [2, 32]	25.6
Barcelona	Spain	1.96 [0.27, 3.35]	94 [13, 162]	35.7
Burgos	Spain	1.22 [0.00, 2.93]	5 [0, 13]	23.0
Cadiz	Spain	1.69 [0.06, 4.58]	6 [0, 17]	27.2
Caceres	Spain	2.40 [1.16, 4.60]	4 [2, 9]	30.0
Ciudad Real	Spain	3.00 [1.36, 4.94]	5 [2, 8]	35.4
Ceuta	Spain	1.56 [0.22, 4.01]	2 [0, 6]	31.2
Cordoba	Spain	2.63 [0.47, 4.31]	19 [3, 31]	38.1
Castellon	Spain	2.27 [-0.36, 4.54]	8 [-1, 16]	34.4
Cuenca	Spain	2.78 [-0.05, 5.73]	4 [-0, 8]	32.1
Guadalajara	Spain	2.63 [0.45, 5.71]	4 [1, 9]	31.2
Girona	Spain	2.13 [0.03, 4.96]	4 [0, 9]	31.7
Granada	Spain	2.18 [0.08, 4.16]	13 [0, 26]	32.7
Huelva	Spain	1.41 [0.30, 3.44]	5 [1, 12]	25.9
Huesca	Spain	1.96 [-0.12, 5.18]	3 [-0, 7]	25.2
Jaen	Spain	2.36 [0.42, 4.27]	6 [1, 11]	29.0
Leon	Spain	1.17 [-0.17, 2.65]	5 [-1, 10]	20.6
Logrono	Spain	1.57 [0.08, 3.57]	5 [0, 12]	25.0
Lleida	Spain	2.15 [0.06, 4.25]	7 [0, 13]	28.0
Lugo	Spain	1.34 [-0.35, 2.46]	3 [-1, 6]	24.7
Malaga	Spain	1.96 [0.11, 4.21]	26 [1, 55]	31.4

Madrid	Spain	2.25 [0.33, 4.33]	177 [26, 341]	31.9
Melilla	Spain	1.28 [-0.04, 3.16]	2 [-0, 4]	28.6
Murcia	Spain	1.75 [-0.11, 3.42]	14 [-1, 27]	29.0
Ourense	Spain	1.47 [-0.32, 2.82]	4 [-1, 8]	24.5
Oviedo	Spain	1.27 [-0.16, 2.87]	8 [-1, 17]	27.9
Palmas G. Canaria	Spain	0.79 [-0.39, 2.20]	7 [-3, 19]	22.5
Palma Mallorca	Spain	1.68 [0.10, 3.34]	14 [1, 28]	27.8
Palencia	Spain	1.69 [0.47, 3.45]	4 [1, 8]	23.8
Pamplona	Spain	1.49 [0.15, 3.39]	7 [1, 16]	24.5
Pontevedra	Spain	1.35 [-0.31, 2.64]	2 [-1, 5]	26.9
Segovia	Spain	2.00 [0.75, 4.43]	3 [1, 7]	28.0
Salamanca	Spain	2.30 [0.72, 4.91]	10 [3, 22]	31.2
San Sebastian	Spain	1.31 [-0.15, 3.13]	7 [-1, 16]	26.5
Santander	Spain	1.49 [-0.16, 3.82]	8 [-1, 20]	28.7
Soria	Spain	2.12 [-0.20, 4.91]	2 [-0, 5]	29.6
Sevilla	Spain	2.28 [0.61, 4.31]	39 [10, 73]	31.8
Teruel	Spain	2.72 [-0.04, 5.66]	3 [-0, 5]	32.7
Tenerife	Spain	0.79 [-0.55, 2.20]	4 [-3, 11]	20.6
Toledo	Spain	2.96 [0.90, 5.52]	5 [1, 9]	34.0
Tarragona	Spain	2.10 [0.12, 4.40]	6 [0, 12]	30.4
Vitoria	Spain	1.23 [0.13, 2.99]	6 [1, 14]	22.7
Valladolid	Spain	1.67 [0.16, 4.14]	13 [1, 32]	25.4
Valencia	Spain	1.80 [-0.29, 3.71]	38 [-6, 78]	31.1
Zamora	Spain	1.88 [0.60, 4.42]	3 [1, 8]	26.1
Zaragoza	Spain	1.90 [-0.27, 3.81]	32 [-5, 65]	26.3
Basel	Switzerland	0.64 [-0.92, 1.62]	4 [-6, 10]	30.5
Bern	Switzerland	0.52 [-0.78, 1.51]	2 [-4, 7]	29.4
Geneve	Switzerland	0.82 [-1.12, 2.19]	4 [-5, 10]	30.2
Lausanne	Switzerland	0.76 [-1.01, 2.05]	3 [-3, 7]	31.9
Lugano	Switzerland	0.90 [-0.38, 2.22]	4 [-2, 10]	37.0
Luzern	Switzerland	0.89 [-0.80, 2.09]	2 [-2, 5]	36.6
St. Gallen	Switzerland	0.61 [-0.24, 1.98]	1 [-1, 4]	40.0
Zürich	Switzerland	0.75 [-0.51, 1.77]	9 [-6, 21]	28.4
Gothenburg	Sweden	0.45 [0.03, 0.96]	10 [1, 21]	36.9
Malmo	Sweden	0.45 [0.09, 1.08]	7 [1, 18]	39.5
Stockholm	Sweden	0.33 [0.10, 0.70]	15 [5, 32]	40.4
Amnat Charoen	Thailand	1.63 [-7.83, 8.23]	6 [-27, 29]	60.5
Ayutthaya	Thailand	0.82 [-2.09, 3.52]	7 [-17, 29]	45.4
Bangkok	Thailand	1.78 [0.35, 4.78]	146 [29, 391]	53.4
Buri Ram	Thailand	0.84 [-1.44, 2.62]	9 [-15, 28]	46.4
Chachoengsao	Thailand	0.69 [-0.55, 2.58]	5 [-4, 18]	54.3
Chumphon	Thailand	0.78 [-0.36, 2.26]	3 [-2, 10]	62.6
Chon Buri	Thailand	1.47 [-1.17, 6.27]	24 [-19, 101]	61.3
Chiang Mai	Thailand	0.83 [-0.79, 2.54]	22 [-21, 67]	50.6
Chiang Rai	Thailand	0.72 [-1.73, 2.82]	14 [-32, 53]	56.1
Chanthaburi	Thailand	0.96 [-0.24, 3.28]	7 [-2, 25]	69.0
Chaiyaphum	Thailand	0.76 [-0.70, 2.80]	7 [-7, 27]	37.1
Khon Kaen	Thailand	0.69 [-0.25, 2.14]	14 [-5, 44]	40.8
Kalasin	Thailand	0.68 [-0.46, 2.19]	7 [-5, 23]	47.3
Kamphaeng Phet	Thailand	0.72 [-0.37, 2.08]	3 [-2, 10]	43.4
Kanchanaburi	Thailand	1.59 [-0.28, 3.89]	12 [-2, 28]	52.1
Krabi	Thailand	0.95 [-0.47, 2.43]	2 [-1, 6]	67.9
Lamphun	Thailand	1.15 [-0.63, 2.85]	6 [-4, 16]	47.6
Lampang	Thailand	1.83 [0.25, 3.63]	24 [3, 47]	53.6
Lop Buri	Thailand	1.05 [-6.04, 5.36]	11 [-61, 54]	55.8
Maha Sarakham	Thailand	2.27 [-0.37, 5.53]	19 [-3, 47]	48.1
Mukdahan	Thailand	2.11 [-1.92, 7.30]	5 [-5, 18]	55.2
Nan	Thailand	0.76 [-1.00, 2.17]	5 [-6, 14]	45.1
Nong Bua Lam Phu	Thailand	0.54 [-2.38, 2.68]	2 [-10, 11]	42.7
Nakhon Ratchasima	Thailand	1.81 [0.33, 4.66]	46 [8, 118]	53.2
Nakhon Sawan	Thailand	1.93 [0.27, 5.16]	25 [4, 67]	48.4
Nakhon Phanom	Thailand	1.41 [-4.11, 6.44]	8 [-22, 35]	63.0
Nakhon Pathom	Thailand	-0.18 [-2.18, 0.63]	-2 [-19, 5]	70.5
Nakhon Si Thammarat	Thailand	1.44 [-0.60, 3.33]	19 [-8, 44]	64.9
Nong Khai	Thailand	0.58 [-3.24, 3.24]	4 [-23, 23]	46.3
Nonthaburi	Thailand	1.30 [-0.11, 3.91]	14 [-1, 41]	53.0
Narathiwat	Thailand	0.55 [-0.63, 1.88]	3 [-3, 10]	57.9
Phayao	Thailand	0.63 [-1.30, 2.21]	5 [-11, 18]	44.6
Phetchaburi	Thailand	1.92 [-0.56, 5.37]	9 [-3, 26]	68.7
Phichit	Thailand	3.08 [0.23, 8.10]	16 [1, 42]	50.2
Phrae	Thailand	1.42 [-2.53, 4.74]	11 [-19, 36]	52.2
Phitsanulok	Thailand	2.22 [-0.44, 6.14]	23 [-5, 65]	50.7
Prachin Buri	Thailand	3.09 [-2.21, 11.88]	15 [-11, 59]	51.8

Prachuap Khiri Khan	Thailand	0.87 [-0.73, 3.86]	4 [-4, 19]	70.7
Pathum Thani	Thailand	0.93 [-0.05, 2.73]	7 [-0, 20]	47.9
Pattani	Thailand	0.82 [-0.66, 3.76]	3 [-3, 15]	69.9
Roi Et	Thailand	1.02 [-0.38, 2.62]	14 [-5, 35]	46.5
Ratchaburi	Thailand	0.88 [-0.40, 2.59]	9 [-4, 26]	45.8
Rayong	Thailand	1.12 [0.01, 3.24]	7 [0, 20]	58.4
Sa Kaeo	Thailand	1.77 [-0.34, 4.08]	8 [-2, 19]	58.2
Sukhothai	Thailand	1.80 [-0.17, 4.62]	11 [-1, 28]	54.7
Sakon Nakhon	Thailand	0.74 [-0.34, 2.68]	8 [-4, 29]	54.8
Samutprakan	Thailand	1.69 [-0.54, 6.17]	17 [-5, 62]	61.9
Samut Sakhon	Thailand	1.07 [-1.02, 5.32]	6 [-5, 28]	60.0
Songkhla	Thailand	0.69 [-1.12, 2.41]	8 [-13, 28]	67.2
Suphanburi	Thailand	1.64 [-0.16, 4.84]	13 [-1, 40]	52.9
Saraburi	Thailand	0.95 [-0.39, 3.37]	7 [-3, 26]	51.7
Surat Thani	Thailand	0.42 [-0.35, 1.27]	3 [-3, 10]	46.5
Si Sa Ket	Thailand	1.65 [0.06, 3.62]	20 [1, 44]	57.8
Surin	Thailand	1.00 [-0.92, 2.78]	10 [-9, 29]	50.4
Tak	Thailand	1.97 [-3.60, 6.69]	8 [-14, 26]	53.3
Trang	Thailand	0.67 [-0.69, 2.06]	3 [-3, 9]	65.6
Ubon Ratchathani	Thailand	1.58 [0.14, 3.28]	26 [2, 54]	56.3
Udon Thani	Thailand	0.76 [-0.46, 2.22]	12 [-7, 34]	44.7
Uttaradit	Thailand	1.15 [-0.04, 3.32]	8 [-0, 23]	53.2
Yala	Thailand	1.62 [-1.54, 4.40]	6 [-6, 16]	69.8
Yasothon	Thailand	1.05 [-0.50, 3.83]	6 [-3, 20]	62.7
Kaohsiung	Taiwan	0.72 [-0.07, 1.65]	37 [-4, 85]	72.0
Taipei	Taiwan	0.65 [-0.25, 1.52]	61 [-24, 143]	33.6
Taichung	Taiwan	0.76 [-0.00, 1.96]	29 [-0, 76]	32.9
Accrington/Rossendale	UK	0.17 [-0.17, 0.73]	0 [-0, 1]	34.9
Bedford	UK	0.37 [-0.00, 1.12]	1 [-0, 2]	36.5
Blackburn	UK	0.17 [-0.14, 0.70]	1 [-0, 2]	34.8
Blackpool	UK	0.17 [-0.04, 0.55]	1 [-0, 4]	39.8
Brighton and Hove	UK	0.35 [0.04, 0.92]	4 [0, 11]	38.3
Barnsley/Dearne Valley	UK	0.37 [-0.03, 1.19]	1 [-0, 4]	35.1
Birkenhead	UK	0.15 [-0.16, 0.57]	1 [-1, 5]	36.6
Burnley	UK	0.21 [-0.13, 0.81]	1 [-0, 3]	35.2
Bournemouth/Poole	UK	0.19 [-0.07, 0.67]	2 [-1, 8]	41.0
Bristol	UK	0.31 [0.01, 0.84]	4 [0, 11]	38.6
Burton upon Trent	UK	0.27 [-0.19, 1.06]	0 [-0, 2]	35.8
Basildon	UK	0.29 [-0.02, 0.88]	1 [-0, 2]	33.7
Basingstoke	UK	0.25 [-0.12, 0.87]	0 [-0, 1]	37.2
Chelmsford	UK	0.31 [-0.06, 0.99]	1 [-0, 2]	32.7
Cheltenham	UK	0.41 [0.03, 1.21]	1 [0, 3]	37.4
Chesterfield	UK	0.37 [-0.04, 1.18]	1 [-0, 2]	34.1
Colchester	UK	0.32 [-0.04, 1.13]	1 [-0, 2]	35.1
Cambridge	UK	0.29 [-0.03, 1.01]	1 [-0, 2]	33.8
Cardiff	UK	0.34 [0.01, 0.96]	3 [0, 8]	39.7
Crawley	UK	0.18 [-0.14, 0.68]	0 [-0, 2]	33.7
Coventry	UK	0.11 [-0.27, 0.65]	1 [-2, 5]	35.6
Doncaster	UK	0.74 [0.11, 1.85]	2 [0, 5]	35.5
Derby	UK	0.34 [-0.03, 1.15]	2 [-0, 6]	37.1
Eastbourne	UK	0.14 [-0.24, 0.67]	0 [-1, 2]	39.5
Exeter	UK	0.27 [-0.19, 1.02]	1 [-0, 2]	42.9
Farnborough/Aldershot	UK	0.35 [0.02, 0.94]	1 [0, 4]	34.6
Gloucester	UK	0.34 [-0.04, 1.02]	1 [-0, 3]	36.4
Grimsby	UK	0.32 [-0.09, 1.00]	1 [-0, 3]	34.7
High Wycombe	UK	0.23 [-0.06, 0.74]	0 [-0, 1]	34.3
Hastings	UK	0.11 [-0.23, 0.57]	0 [-1, 2]	35.3
Ipswich	UK	0.30 [-0.04, 0.85]	1 [-0, 3]	36.2
Kingston upon Hull	UK	0.22 [-0.13, 0.74]	2 [-1, 6]	32.9
Leicester	UK	0.24 [-0.08, 0.87]	2 [-1, 8]	37.3
Lincoln	UK	0.24 [-0.15, 0.85]	1 [-0, 2]	32.3
London	UK	0.45 [0.07, 0.91]	82 [12, 167]	33.6
Luton	UK	0.41 [0.02, 1.22]	2 [0, 6]	35.3
Liverpool	UK	0.17 [-0.00, 0.50]	4 [-0, 12]	37.1
Maidstone	UK	0.22 [-0.05, 0.73]	0 [-0, 1]	32.7
Medway Towns	UK	0.27 [-0.01, 0.80]	1 [-0, 4]	34.5
Milton Keynes	UK	0.39 [-0.03, 1.23]	1 [-0, 3]	36.5
Manchester	UK	0.28 [0.00, 0.76]	16 [0, 43]	35.0
Mansfield	UK	0.15 [-0.29, 0.74]	0 [-1, 2]	33.6
Northampton	UK	0.39 [-0.01, 1.23]	2 [-0, 5]	34.8
Norwich	UK	0.20 [-0.17, 0.73]	1 [-1, 3]	32.0
Nottingham	UK	0.19 [-0.15, 0.74]	3 [-2, 11]	36.2
Newport	UK	0.19 [-0.17, 0.74]	1 [-1, 3]	39.4

Oxford	UK	0.31 [-0.06, 0.96]	1 [-0, 2]	36.3
Paignton/Torquay	UK	0.41 [0.00, 1.19]	1 [0, 4]	44.5
Plymouth	UK	0.22 [-0.06, 0.74]	1 [-0, 4]	43.1
Preston	UK	0.24 [-0.04, 0.82]	1 [-0, 4]	35.9
Peterborough	UK	0.31 [-0.08, 1.05]	1 [-0, 3]	35.8
Reading	UK	0.36 [0.03, 0.97]	2 [0, 5]	35.2
Sheffield	UK	0.33 [0.00, 0.94]	5 [0, 13]	33.3
Slough	UK	0.32 [-0.00, 0.90]	1 [-0, 2]	33.5
Sunderland	UK	0.33 [-0.06, 0.99]	2 [-0, 7]	37.4
South Hampshire	UK	0.35 [0.01, 0.96]	6 [0, 16]	38.3
Southend-on-Sea	UK	0.52 [0.07, 1.30]	4 [1, 10]	34.2
Stoke-on-Trent	UK	0.14 [-0.12, 0.66]	1 [-1, 5]	34.7
Swindon	UK	0.19 [-0.20, 0.78]	1 [-1, 3]	33.4
Swansea	UK	0.19 [-0.11, 0.70]	1 [-1, 3]	43.1
Thanet	UK	0.24 [-0.02, 0.67]	1 [-0, 2]	40.0
Telford	UK	0.30 [-0.05, 1.09]	1 [-0, 2]	36.6
Teesside	UK	0.38 [-0.03, 1.00]	3 [-0, 9]	33.5
Tyneside	UK	-0.03 [-0.25, 0.05]	-1 [-5, 1]	41.0
Wigan	UK	0.25 [-0.04, 0.85]	1 [-0, 3]	36.3
Worcester	UK	0.18 [-0.23, 0.86]	0 [-0, 2]	37.2
Warrington	UK	0.28 [-0.05, 0.92]	1 [-0, 3]	35.6
West Midlands	UK	0.32 [0.03, 0.91]	20 [2, 56]	37.2
West Yorkshire	UK	0.11 [-0.14, 0.48]	4 [-5, 17]	32.5
York	UK	0.42 [0.01, 1.25]	1 [0, 4]	36.3
Montevideo	Uruguay	0.75 [-0.95, 2.25]	69 [-87, 208]	25.5
Augusta	USA	0.35 [-0.53, 1.29]	2 [-3, 7]	35.7
Akron	USA	-0.04 [-0.34, 0.09]	-1 [-5, 1]	52.9
Albany	USA	0.40 [-0.15, 1.30]	3 [-1, 11]	40.2
Albuquerque	USA	0.31 [-0.42, 1.23]	3 [-5, 13]	30.8
Allentown	USA	0.11 [-0.47, 0.77]	1 [-4, 7]	33.5
Anchorage	USA	-0.06 [-0.90, 0.52]	-0 [-2, 1]	65.5
Anaheim	USA	0.08 [-0.15, 0.46]	4 [-7, 21]	26.8
AnnArbor	USA	0.21 [-0.22, 0.91]	1 [-1, 5]	34.5
Annandale	USA	0.20 [-0.36, 0.87]	2 [-4, 10]	31.2
Austin	USA	0.28 [-0.20, 0.96]	3 [-2, 10]	22.7
Atlantic City	USA	0.08 [-0.49, 0.66]	1 [-3, 5]	34.5
Atlanta	USA	0.41 [0.00, 1.17]	19 [0, 54]	24.3
Atzec	USA	0.33 [-0.50, 1.42]	1 [-1, 3]	35.0
Bath	USA	0.44 [-0.06, 1.30]	1 [-0, 4]	43.7
Buffalo	USA	0.46 [0.02, 1.24]	14 [1, 37]	41.7
Bakersfield	USA	0.10 [-0.54, 0.93]	1 [-7, 12]	7.3
Boulder	USA	0.27 [-0.32, 1.06]	1 [-1, 4]	24.9
Baltimore	USA	0.57 [0.04, 1.30]	26 [2, 59]	47.2
Bangor	USA	0.34 [-0.15, 1.00]	1 [-1, 4]	45.1
Boise	USA	0.07 [-1.34, 1.37]	0 [-6, 6]	24.6
bergen	USA	0.42 [-0.01, 0.98]	14 [-0, 32]	44.0
Burlington	USA	0.35 [-0.20, 1.01]	1 [-1, 3]	36.3
Birmingham	USA	0.29 [-0.23, 1.00]	7 [-5, 24]	23.0
Barnstable	USA	0.24 [-0.24, 0.89]	2 [-2, 7]	45.1
Brownsville	USA	0.31 [-1.45, 1.76]	2 [-8, 9]	33.7
Boston	USA	0.05 [-0.13, 0.27]	3 [-9, 18]	36.6
Baton Rouge	USA	0.41 [-0.95, 1.45]	4 [-9, 14]	35.3
Cedar Rapids	USA	0.19 [-2.57, 1.55]	1 [-10, 6]	17.6
Chicago	USA	0.55 [-0.56, 1.41]	87 [-88, 223]	36.4
Charlotte	USA	-0.03 [-0.28, 0.09]	-0 [-3, 1]	72.2
Charleston SC	USA	0.27 [-0.30, 0.95]	2 [-2, 7]	40.0
Chattanooga	USA	0.25 [-0.27, 0.96]	2 [-2, 9]	40.1
Charleston WV	USA	0.27 [-0.56, 1.30]	2 [-4, 9]	42.3
Columbus	USA	0.17 [-0.45, 0.86]	4 [-11, 20]	21.2
Colorado Springs	USA	0.58 [-0.28, 1.90]	4 [-2, 15]	42.4
Cleveland	USA	0.20 [-0.12, 0.74]	12 [-7, 42]	38.7
Cincinnati	USA	0.26 [-0.16, 0.99]	6 [-4, 24]	49.2
Canton	USA	0.37 [-0.22, 1.31]	4 [-2, 14]	41.3
Columbia	USA	0.22 [-0.31, 0.88]	2 [-4, 10]	33.9
Carlisle	USA	0.19 [-0.37, 0.87]	1 [-2, 5]	35.1
Corpus Christ	USA	0.30 [-0.44, 1.13]	2 [-3, 8]	47.9
Davis	USA	0.22 [-0.48, 1.09]	1 [-1, 3]	29.9
Dallas	USA	0.22 [-0.35, 1.23]	8 [-13, 48]	13.7
Denver	USA	0.35 [-0.25, 1.35]	10 [-7, 37]	18.6
Dodge	USA	0.36 [-2.79, 2.29]	1 [-7, 6]	26.0
Dover	USA	0.39 [-0.24, 1.33]	1 [-1, 4]	50.7
Durham	USA	0.40 [-0.42, 1.34]	2 [-2, 6]	49.7
Des Moines	USA	0.23 [-2.01, 1.67]	2 [-16, 13]	19.3

Detroit	USA	0.54 [-0.10, 1.32]	57 [-10, 139]	38.3
Davenport	USA	0.15 [-0.26, 0.66]	1 [-2, 5]	29.6
Daytona Beach	USA	-0.16 [-0.99, 0.15]	-3 [-16, 2]	72.8
Dayton	USA	0.14 [-0.63, 0.97]	2 [-10, 15]	23.5
El Centro	USA	0.41 [-0.43, 1.34]	1 [-1, 3]	18.6
Elkhart	USA	0.16 [-0.38, 1.00]	1 [-1, 4]	29.4
El Paso	USA	0.50 [-0.07, 1.59]	6 [-1, 18]	29.0
Elizabeth	USA	0.48 [-0.01, 1.11]	6 [-0, 15]	44.6
Erie	USA	0.66 [0.02, 1.69]	5 [0, 13]	41.2
Essex	USA	0.28 [-0.04, 0.77]	5 [-1, 14]	42.0
Eugene	USA	0.01 [-0.36, 0.36]	0 [-3, 3]	28.2
Evansville	USA	0.46 [-2.63, 2.19]	2 [-14, 12]	25.5
Everett	USA	0.03 [-0.20, 0.30]	0 [-2, 3]	45.1
Fargo	USA	0.20 [-0.78, 1.01]	0 [-2, 2]	25.7
Flint	USA	0.41 [-0.18, 1.41]	5 [-2, 16]	35.1
Fresno	USA	0.06 [-0.58, 0.66]	1 [-9, 10]	4.6
Fort Lauderdale	USA	0.02 [-0.60, 0.61]	1 [-28, 28]	71.1
Fort Myers	USA	0.29 [-0.69, 1.27]	4 [-9, 17]	51.4
Fort Pierce	USA	0.45 [-0.36, 1.32]	5 [-4, 14]	44.8
Fort Worth	USA	0.26 [-0.46, 1.40]	7 [-12, 36]	18.1
Fort Wayne	USA	0.11 [-0.34, 0.92]	1 [-3, 7]	15.0
Fayetville	USA	0.69 [-0.12, 1.74]	4 [-1, 9]	44.4
Gary	USA	0.18 [-1.51, 0.98]	2 [-20, 13]	23.3
Green bay	USA	0.21 [-0.28, 0.82]	1 [-1, 4]	31.5
Greensburg	USA	0.12 [-0.24, 0.62]	2 [-3, 8]	42.9
Grand Heaven	USA	0.31 [-0.38, 1.32]	1 [-2, 5]	37.2
Grand Junction	USA	0.54 [-0.60, 1.83]	2 [-2, 6]	34.0
Grand Rapids	USA	0.26 [-0.24, 0.96]	3 [-3, 11]	34.9
Greensburg	USA	0.32 [-0.43, 1.22]	3 [-4, 12]	51.6
Greenv	USA	0.26 [-0.24, 0.91]	2 [-2, 8]	30.6
Gasinesville	USA	0.63 [-0.57, 1.95]	3 [-2, 8]	45.4
Gettysburg	USA	0.26 [-0.22, 0.96]	1 [-1, 2]	40.7
Hicory	USA	0.24 [-0.47, 1.04]	1 [-2, 4]	53.1
Holland	USA	0.24 [-0.37, 1.12]	1 [-1, 3]	36.4
honolulu	USA	2.15 [-0.15, 5.67]	35 [-2, 93]	82.2
Harrisburg	USA	0.40 [-0.12, 1.20]	3 [-1, 9]	44.0
Hartford	USA	0.35 [0.05, 0.87]	8 [1, 20]	42.9
Houston	USA	0.18 [-0.25, 0.71]	10 [-14, 40]	26.3
Indianapolis	USA	0.70 [-0.03, 2.03]	15 [-1, 44]	46.9
Iowa city	USA	0.11 [-1.21, 0.93]	0 [-2, 1]	19.3
Jacksonville	USA	0.29 [-0.37, 1.07]	5 [-7, 20]	30.3
Jersy city	USA	0.46 [-0.03, 1.27]	6 [-0, 18]	43.9
Klamath	USA	0.54 [-0.13, 1.62]	1 [-0, 3]	35.0
Kalamazoo	USA	0.32 [-0.25, 1.08]	2 [-1, 6]	33.9
Kenosha	USA	0.19 [-0.28, 0.83]	1 [-1, 3]	31.6
Kansas	USA	0.21 [-0.44, 1.31]	7 [-14, 42]	16.5
Knoxville	USA	0.51 [-0.04, 1.50]	6 [-0, 17]	47.3
Lafayette IN	USA	0.12 [-1.19, 1.25]	0 [-3, 4]	24.9
Lafayette LA	USA	-0.03 [-0.50, 0.44]	-0 [-2, 2]	30.3
Lake Charles	USA	0.15 [-0.49, 0.76]	1 [-2, 4]	21.3
Lakeland	USA	0.60 [-0.22, 1.63]	9 [-3, 23]	37.0
Lancaster	USA	0.29 [-0.11, 0.95]	3 [-1, 11]	48.4
Lansing	USA	0.35 [-0.32, 1.34]	2 [-2, 7]	29.3
Logan	USA	0.12 [-0.16, 0.50]	0 [-0, 1]	38.2
Louisville	USA	0.42 [-0.09, 1.31]	8 [-2, 26]	38.2
La Porte	USA	0.06 [-0.54, 0.46]	0 [-2, 1]	20.2
Los Angeles	USA	0.12 [-0.16, 0.59]	21 [-28, 102]	29.6
Las Vegas	USA	0.28 [-0.10, 1.03]	8 [-3, 31]	16.9
Little Rock	USA	0.35 [-0.83, 1.54]	3 [-8, 14]	24.8
Macon	USA	0.25 [-0.97, 1.31]	1 [-5, 6]	29.9
Mcallen	USA	0.47 [-0.30, 1.33]	4 [-2, 10]	37.3
Middles	USA	0.15 [-0.23, 0.67]	2 [-4, 11]	35.6
Middletown	USA	-0.01 [-0.20, 0.13]	-0 [-1, 1]	63.6
Medford	USA	0.08 [-0.26, 0.46]	0 [-1, 2]	28.7
Madison IL	USA	0.01 [-0.34, 0.60]	0 [-2, 4]	-8.8
Modesto	USA	0.05 [-0.34, 0.53]	0 [-3, 5]	6.3
Madison WI	USA	0.10 [-1.32, 0.88]	1 [-10, 6]	20.1
Miami	USA	0.50 [-1.02, 2.10]	28 [-57, 117]	43.7
Melbourn	USA	0.69 [-0.25, 1.82]	10 [-3, 25]	45.2
Milwauke	USA	0.36 [-0.39, 1.06]	12 [-13, 35]	34.1
Memphis	USA	0.27 [-1.08, 1.47]	6 [-24, 33]	26.7
Monmouth	USA	0.11 [-0.19, 0.48]	4 [-6, 17]	37.3
Minneapolis	USA	0.08 [-0.79, 0.64]	3 [-27, 22]	21.1

Montgomery	USA	0.18 [-1.00, 0.98]	1 [-6, 6]	23.0
Mobile	USA	0.26 [-0.91, 0.94]	3 [-10, 10]	30.2
Monroe	USA	0.32 [-1.76, 2.08]	1 [-7, 8]	18.9
Mercer	USA	0.34 [-0.33, 1.19]	1 [-1, 5]	39.8
Marlboro	USA	0.29 [-0.18, 1.04]	3 [-2, 12]	46.6
Muskegon	USA	0.28 [-0.40, 1.29]	1 [-2, 6]	34.6
Muncie	USA	0.37 [-0.24, 1.31]	1 [-1, 4]	36.5
Myrtle Beach	USA	0.55 [-0.15, 1.81]	3 [-1, 9]	50.7
Nashua	USA	0.35 [-0.20, 1.16]	3 [-1, 8]	32.0
Nassau	USA	0.14 [-0.05, 0.43]	9 [-3, 28]	48.6
Niles	USA	0.21 [-0.46, 1.16]	1 [-2, 5]	30.2
Norfolk	USA	0.39 [-0.03, 1.06]	11 [-1, 29]	52.9
Nashville	USA	0.27 [-0.50, 1.19]	4 [-7, 17]	22.7
Newburgh	USA	0.15 [-0.37, 0.72]	1 [-3, 5]	28.8
Newhaven	USA	0.13 [-0.23, 0.55]	3 [-5, 12]	26.8
Newlond	USA	0.39 [-0.05, 1.12]	2 [-0, 7]	49.7
NewOrleans	USA	0.34 [-0.16, 1.10]	9 [-4, 29]	30.0
Newark	USA	0.47 [-0.01, 1.03]	15 [-0, 32]	43.5
New York	USA	0.76 [0.12, 1.52]	141 [23, 282]	44.2
Ocala	USA	0.28 [-0.30, 0.93]	3 [-3, 9]	34.3
Oklahoma	USA	0.19 [-0.40, 1.11]	3 [-7, 20]	16.5
Oakland	USA	0.08 [-0.13, 0.47]	4 [-6, 22]	35.0
Omaha	USA	0.07 [-0.98, 1.01]	1 [-10, 10]	14.5
Orlando	USA	0.13 [-0.50, 0.77]	3 [-12, 19]	47.1
Ottawa	USA	0.09 [-0.92, 0.61]	0 [-3, 2]	22.4
Philadelphia	USA	0.31 [-0.01, 0.75]	39 [-1, 96]	46.1
Phoenix	USA	0.38 [-0.04, 1.06]	23 [-3, 62]	37.0
Palmbeach	USA	0.13 [-1.53, 1.54]	5 [-55, 55]	66.9
Plymouth	USA	0.27 [-0.18, 0.99]	3 [-2, 11]	29.1
Pensacola	USA	0.21 [-0.44, 0.93]	2 [-3, 7]	42.9
Portland OR	USA	0.26 [-0.17, 0.64]	8 [-5, 20]	29.6
Provo	USA	0.25 [-0.18, 0.93]	1 [-1, 4]	42.7
Port Arthur	USA	0.35 [-0.60, 1.39]	3 [-4, 10]	34.9
Portage	USA	0.18 [-0.25, 0.63]	1 [-1, 2]	26.1
Portlme	USA	0.39 [-0.03, 1.02]	3 [-0, 7]	41.3
Providence	USA	0.63 [0.16, 1.33]	23 [6, 48]	40.7
Pittsburg	USA	0.32 [-0.25, 0.98]	14 [-11, 43]	43.4
Richmond	USA	0.38 [-0.14, 1.11]	6 [-2, 19]	49.2
Rochester	USA	0.35 [-0.04, 1.02]	7 [-1, 19]	39.0
Rockville	USA	-0.02 [-0.17, 0.09]	-0 [-2, 1]	75.0
Reading	USA	0.39 [-0.07, 1.18]	4 [-1, 12]	43.2
Reno	USA	0.10 [-0.46, 0.75]	1 [-3, 5]	24.0
Raleigh	USA	-0.07 [-0.58, 0.18]	-1 [-5, 2]	63.7
Riverside	USA	0.18 [-0.11, 0.78]	12 [-7, 52]	13.2
Sacramento	USA	0.05 [-0.33, 0.37]	1 [-8, 9]	9.4
Scranton	USA	0.29 [-0.05, 0.87]	6 [-1, 18]	47.9
San Diego	USA	0.08 [-0.16, 0.37]	4 [-9, 20]	20.6
San Francisco	USA	0.03 [-0.24, 0.32]	1 [-8, 11]	32.4
Salt Lake	USA	-0.01 [-0.13, 0.07]	-0 [-2, 1]	63.9
San Jose	USA	0.07 [-0.50, 0.54]	2 [-13, 14]	10.5
Santa Barbara	USA	-0.00 [-0.09, 0.06]	-0 [-1, 0]	51.5
San Antonio	USA	0.14 [-0.18, 0.55]	4 [-5, 15]	31.9
Spokane	USA	0.35 [-0.48, 1.13]	4 [-5, 11]	40.2
Springfield MA	USA	0.12 [-0.26, 0.62]	2 [-3, 8]	37.8
Springfied MO	USA	0.33 [-0.35, 1.22]	2 [-2, 8]	41.6
Spartanburg	USA	0.33 [-0.20, 1.17]	2 [-1, 8]	47.3
Sarasota	USA	-0.03 [-0.25, 0.10]	-1 [-6, 2]	54.4
Steubenville	USA	0.43 [-0.32, 1.40]	2 [-1, 6]	42.5
Saint Charles	USA	0.27 [-1.64, 1.79]	1 [-7, 8]	22.5
Stockton	USA	0.01 [-0.25, 0.28]	0 [-3, 3]	11.8
Saint Clair	USA	0.06 [-0.90, 0.90]	0 [-6, 6]	20.1
South bend	USA	0.11 [-1.11, 0.98]	1 [-8, 7]	20.7
St Louis	USA	0.04 [-0.56, 0.55]	2 [-25, 24]	20.1
Stamford	USA	0.31 [0.00, 0.79]	6 [0, 16]	45.1
St. Petersbur	USA	0.57 [-0.17, 1.39]	14 [-4, 33]	41.0
State College	USA	0.23 [-0.46, 1.05]	1 [-1, 2]	40.6
Seattle	USA	0.26 [-0.27, 1.10]	9 [-9, 36]	42.4
Sioux City	USA	0.19 [-1.79, 1.68]	0 [-5, 4]	15.7
Tacoma	USA	0.06 [-0.13, 0.26]	1 [-2, 4]	33.6
Tampa	USA	0.51 [-0.60, 1.59]	12 [-14, 38]	40.2
Tucson	USA	0.67 [0.02, 1.74]	13 [0, 34]	33.0
Tallahassee	USA	0.48 [-0.51, 1.38]	2 [-2, 6]	42.4
Toledo	USA	0.15 [-0.16, 0.68]	2 [-2, 9]	34.0

Topeka	USA	0.18 [-0.50, 1.35]	1 [-2, 6]	18.8
Trenton	USA	0.24 [-0.27, 0.94]	2 [-2, 8]	37.3
Terra Haute	USA	0.34 [-2.04, 1.83]	1 [-7, 6]	28.4
Tulsa	USA	0.07 [-0.55, 0.84]	1 [-8, 12]	8.4
Visalia	USA	0.12 [-0.30, 1.00]	1 [-2, 7]	11.3
Vancouver	USA	0.15 [-0.27, 0.63]	1 [-2, 4]	30.9
Ventura	USA	0.08 [-0.27, 0.66]	1 [-3, 9]	24.6
Wichita	USA	0.34 [-0.59, 1.62]	3 [-6, 16]	16.7
Weber	USA	0.25 [-0.59, 1.29]	1 [-2, 5]	29.5
Wilmington	USA	0.39 [-0.13, 1.23]	4 [-1, 14]	51.4
Winston	USA	0.68 [0.06, 1.65]	5 [0, 12]	47.2
Worcester	USA	0.45 [-0.16, 1.28]	9 [-3, 24]	27.6
WDC	USA	0.52 [0.02, 1.34]	10 [0, 26]	51.0
Washington	USA	0.13 [-0.30, 0.71]	1 [-2, 5]	42.8
Youngstown	USA	0.23 [-0.27, 0.87]	3 [-3, 11]	40.9
York	USA	0.19 [-0.34, 0.86]	2 [-3, 8]	33.8
Ho Chi Minh City	Vietnam	1.52 [0.34, 5.40]	137 [30, 485]	48.5
Hue	Vietnam	0.54 [-0.72, 1.76]	2 [-3, 7]	45.5