Temporal Variations in the Short-Term Effects of Ambient Air Pollution on Cardiovascular and Respiratory Mortality in 380 Urban Areas during a 22-Year Period

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ONLINE SUPPLEMENT

SUPPLEMENTARY METHODS:

Additional information on data collection

In total, 21,605,272 deaths from cardiovascular causes and 7,782,766 deaths from respiratory causes were analyzed occurring in 380 individual cities from 24 countries from the Multi-Country Multi-City (MCC) Collaborative Research Network database (homepage: https://mccstudy.lshtm.ac.uk/). This international research collaboration aims to provide epidemiological evidence on associations between environmental stressors (e.g., air pollution, temperature) and health. The MCC network consists of several research teams that build and maintain city-/country-specific datasets, such as city-specific time-series data on mortality and air pollution, allowing standardized analyses of local data in a global context. This analysis includes data from the following regions:

Asia (China: 2 cities; Iran: 1 city; Japan: 44 cities; Kuwait: 1 city; South Korea: 7 cities; Taiwan: 3 cities; Thailand: 16 cities); Europe (Cyprus: 5 cities; Czech Republic: 1 city; Estonia: 4 cities; Finland: 1 city; France: 18 cities; Greece: 1 city; Norway: 1 city; Portugal: 6 cities; Spain: 48 cities; Sweden: 1 city; Switzerland: 8 cities; UK: 36 cites), South Africa (2 cities), South and Central America (Colombia: 1 city; Mexico: 4 cities); and North America (Canada: 25 cities; U.S.: 144 cities).

Because of differences in the availability of air pollutants in the total dataset, we decided to follow a general data management strategy but extract three individual datasets for the main air pollutants nitrogen dioxide (NO_2), particulate matter (PM) with diameters ≤10 µm (PM_{10}) or ≤2·5 µm ($PM_{2·5}$).

The following section reports details on country-specific data, such as data collection and instrumentation.

Canada: Daily mortality data was obtained from Statistics Canada through access to the Canadian Mortality Database. Mean daily temperature (in ℃), computed as the 24-hour average based on hourly measurements, was obtained from Environment Canada. A single weather station was selected for each city using the airport monitoring station located closest to the CMA center. Hourly measures of PM_{10}, $PM_{2·5}$, ozone (O_3), and NO_2 were collected from monitors located in urban areas of the National Air Pollution Surveillance (NAPS) network of Environment Canada, a government institution that operates ground monitoring stations across Canada. Daily PM_{10}, $PM_{2·5}$, and NO_2 levels were computed as the 24-h average and O_3 as the daily maximum 8-hour running average from hourly measurements in different stations and then averaged across stations within the same CMA with no missing data, with an average of 4 stations per city.

China: Daily mortality data was obtained from the Municipal Center for Disease Control. Mean daily temperature (in ℃), computed as the 24-hour average from hourly measurements, was collected from the meteorological departments of each city. Measures of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were collected from urban monitoring stations run by China National Environmental Monitoring Center. Daily PM_{10}, $PM_{2.5}$, O_3, and NO_2 levels were computed as the 24-h average.

Colombia: Daily mortality data was obtained from Administrativo Nacional de Estadistica (DANE). Mean daily temperature (in ℃), computed as the 24-hour average based on hourly measurements, was obtained from the Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia (IDEAM). A single weather station was selected for each city. Measurements for PM_{10}, NO_2, and O_3 were available from the Environmental Secretary of Bogotá. Monitoring stations measured hourly air pollutants for each station, and 24-h averages were calculated. For each city, the average among monitoring stations was calculated.

Cyprus: Daily mortality used in this study was collected by the Health Monitoring Unit of the Ministry of Health of Cyprus. The ideas and opinions expressed herein are those of the author. Endorsement of these ideas and opinions by the Ministry of Health of Cyprus is not intended nor should it be inferred. Deaths refer to citizens of each city. Daily mean air temperature data are provided by the Department of Meteorology, Ministry of Agriculture, Rural Development, and the Environment. Air pollution daily concentrations are provided by the Air Quality and Strategic Planning Section, Department of Labour Inspection, Ministry of Labour, Welfare and Social Insurance. These come from one traffic station in each city, PM concentrations are gravimetric, and all concentrations are expressed in $\mu g/m^3$.

Czech Republic: Daily mortality data was obtained from the Czech Statistical Office and the Institute of Health Information and Statistics. Mean daily temperature (in ℃), computed as the average of observations in standard climatic terms (7:00, 14:00, and 21:00 local time), was collected by the Czech Hydrometeorological Institute. The average value was calculated according to the formula (T07 + T14 + 2*T21)/4. Information about daily PM_{10} and NO_2 levels, computed as 24-hour averages and the maximum 8-hour running average for O_3, were provided by the Czech Hydrometeorological Institute. The daily values were calculated from 4 stations (2 urban + 2 suburban).

Estonia: Daily mortality data was obtained from the Estonian Causes of Death Registry. Mean daily temperature (in ℃) was computed as the 24-h average of hourly measurements collected from the Estonian Environment Agency. A single weather station located nearby the urban area was selected for each city. Hourly measurements of PM_{10}, $PM_{2.5}$, NO_2, and O_3 were collected from urban background stations run by the Estonian Environmental Research Centre. Daily PM_{10}, $PM_{2.5}$ and NO_2 levels were computed as 24-hour

averages and O_3 as the daily maximum 8-hour running average from hourly measurements; for each pollutant, the city average among monitoring stations was calculated.

Finland: The daily number of deaths was obtained from Statistics Finland. A dataset containing weather variables was obtained from Helsinki Region Environmental Services Authority. Measures of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were extracted, from a nationwide dataset compiled by the Finnish Meteorological Institute, for a single coordinate at Helsinki city center using Geographic Information System (GIS).

France: Daily mortality data was obtained from the French National Institute of Health and Medical Research (CepiDC). Mean daily temperature (in ℃), computed as the mean of the minimum and maximum temperature, and relative humidity (%) was obtained from Meteo France. Hourly measurements of PM_{10} and O_3 were collected through the French local air quality monitoring network (Associations Agréées de Surveillance de la Qualité de l'Air AASQA). For PM_{10}, we used only urban stations, and for O_3, urban and peri-urban stations. Daily PM_{10} levels were computed as 24-h averages and O_3 as the daily maximum 8-hour running average from hourly measurements. Measurements were obtained from multiple stations (with different numbers for each city).

Greece: Daily mortality data was collected by Hellenic Statistical Authority. Mean daily temperature (in ℃) and relative humidity (%) were computed as the 24-h average based on hourly measurements collected from the National Observatory of Athens from site "Thisio", located in the city of Athens. Hourly measurements of PM_{10}, $PM_{2.5}$, NO_2, and O_3 were obtained from the Ministry of Environment and Energy fixed-site monitoring network. Urban or suburban fixed monitoring background or traffic sites were selected. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Iran: Daily mortality of all causes was provided by the Ferdows organization of Mashhad Municipality. Mean, maximum, and minimum daily temperature (in ℃) and relative humidity (in %), computed as the 24-hour average based on hourly measurements collected from IRAN Meteorological Organization (IRIMO) (http://www.irimo.ir). Twenty four-hour averages are used as daily values for PM_{10} and NO_2.

Japan: Daily mortality data was obtained from computerized death certificate data from the Ministry of Health, Labour and Welfare, Japan. Mean daily temperature (in ℃), computed as the 24-h average based on hourly measurements, was obtained from the Japan Meteorological Agency. A single weather station located within the urban area of the city was selected. Hourly measurements of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were collected from the urban monitors within the capital cities maintained by the Ministry of the

Environment of Japan. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Kuwait: Hourly measurements of PM_{10} and O_3 were obtained from measurement stations of the Environmental Public Authority, Kuwait (KEPA). Daily PM_{10} levels were computed as the 24-hour mean and the daily maximum 8-hour running average for O_3 from hourly measurements.

Mexico: Daily mortality data was obtained from the National Institute of Statistics, Geography and Informatics. Mean daily temperature (in ℃) 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). Hourly measurements of PM_{10}, $PM_{2.5}$, and O_3 were obtained from urban monitors of the local monitoring network. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Norway: Aggregated daily mortality data was obtained from the Cause of Death Registry of Norway. Daily mean air temperatures on a 1 km grid across Norway were obtained from the observationally gridded se-norge 2 datasets of the Norwegian Meteorological Institute (MET Norway). The dataset is continuously updated based on measurement data from stations. Daily values for Norway of PM_{10}, $PM_{2.5}$, O_3, and NO_2 at a 1 km resolution were sourced from the Nordic DEHM-UBM (Danish Eulerian Hemispheric Model-Urban Background Model) setup (insert reference). Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Portugal: Daily mortality was obtained from Statistics Portugal. Mean daily temperature (in ℃) was computed as the 24-h average based on hourly measurements collected from the National Oceanic and Atmospheric Administration (NOAA). Hourly measurements of pollutants were gathered from the "online database of air quality" through the Portuguese Environment Agency from urban monitors. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements. The year 2016 was removed from the analysis due to anomalies in the mortality data.

South Africa: Daily mortality data was obtained from Statistics South Africa. Mean daily temperature (in ℃) was computed as the average between daily minimum and maximum temperature collected from the Agricultural Research Council of South Africa and the National Oceanic and Atmospheric Administration (NOAA). Hourly measurements of PM_{10}, $PM_{2.5}$, NO_2, and O_3 were collected at sites managed by the Department of Environmental Affairs (DEA). Daily PM_{10} levels were computed as the 24-hour mean, and O_3 as the daily maximum 8-hour running average from the respective provided hourly measurements. The

average 24-hour mean or daily maximum 8-hour running average values per district municipality (DM) were then calculated from all sites within each DM. Except for the ESKOM run stations, all air quality data were accessed through SAAQIS (http://www.saaqis.org.za/), which is run and hosted by the South African Weather Service.

South Korea: Daily mortality was obtained from the Korea National Statistics Office. Mean daily temperature (in ℃) was computed as the 24-h average based on hourly measurements. Measures of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were available from monitors of the National Institute of Environmental Research. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Spain: Daily mortality was obtained from the Spain National Institute of Statistics. Mean daily temperature (in ℃), computed as the 24-h average based on hourly measurements, 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. Hourly measurements of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were collected from the free national repository (Magrama) from urban and suburban monitors. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Sweden: Daily mortality data was obtained from the Swedish Cause of Death Register at the Swedish National Board of Health and Welfare. Mean daily temperature (in °C), computed as the 24-hour average based on hourly measurements, was obtained from the Environment and Health Administration. A single weather station, located at Torkel Knutssongatan in Central Stockholm, was selected. Hourly measurements of PM_{10}, $PM_{2.5}$, and NO_2 were collected from the main urban background (roof-top level) monitor run by the local monitoring network. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements.

Switzerland: Daily mortality data was provided by the Federal Office of Statistics (Switzerland). Mean daily temperature (in °C), computed as the 24-h average based on hourly measurements, was 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. Hourly measurements of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were provided by the Immissionsdatenbank Luft (IDB, Federal Office of the Environment, Bern, Switzerland). Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements from urban monitoring stations.

Taiwan: Daily mortality data was obtained from the Department of Health in Taiwan. Mean daily temperature (in ℃) was computed as the 24-h average based on hourly measurements. Hourly measurements of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were obtained from urban monitors of the local monitoring network. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average from hourly measurements. Measurements were obtained from multiple stations (with different numbers for each city).

Thailand: Daily mortality data was obtained from the Ministry of Public Health, Thailand. Mean daily temperature (in ℃), computed as the average between the daily minimum and maximum temperature, was obtained from the Meteorological Department, Ministry of Information and Communication Technology, Thailand. Daily data on PM_{10}, $PM_{2.5}$, O_3, and NO_2 were obtained from the Pollution Control Department, Ministry of Natural Resources and Environment. For each city and air pollutant, daily concentrations were averaged by fixed air quality monitoring stations within the city. If monitored data for a particular pollutant were insufficient to calculate a daily average, all measurements from that day were excluded for that pollutant and monitor.

United Kingdom: Daily mortality data was gathered from the Office for National Statistics. Mean daily temperature (in ℃) was obtained from the British Atmospheric Data Centre. Daily PM_{10}, $PM_{2.5}$, O_3, and NO_2 levels were obtained from the Automatic Urban and Rural Network (AURN) repository, the Welsh Air Quality Network (WAQN) archive and the King's College London (KCL) dataset. The urban and sub-urban monitoring stations within the selected boundaries were considered. Those classified as “Roadside/Trac”, “Industrial”, “Portable/ Mobile”, and “Indoor” were excluded due to the unrepresentative nature of the average exposure.

United States: Daily mortality data was obtained from the National Center for Health Statistics (NCHS). Mean daily temperature (in ℃), computed as the 24-h average based on hourly measurements, was obtained from the National Climatic Data Center (NCDC) of the National Oceanic and Atmospheric Administration (NOAA). Hourly measurements of PM_{10}, $PM_{2.5}$, O_3, and NO_2 were gathered from the US Environmental Protection Agency (EPA) Air Quality System (AQS), from urban and sub-urban monitoring stations. Daily PM_{10}, $PM_{2.5}$, and NO_2 levels were computed as 24-hour averages and O_3 as the daily maximum 8-hour running average, from urban monitoring stations from monitors located in the county or set of contiguous counties in which the city is located.

Further data management:

In general, the linkage of the exposure data and each mortality case was conducted at the city level. Due to data protection reasons, the home addresses of each individual case were unavailable, thus, no distant metric or modeling technique was employed to assign exposure concentrations on an individual level. However, each monitoring station was selected according to international standards to accurately represent the exposure situation of the cities. The start of the overall study period was set to 1995 and ended in 2016 because of limited data quality before and after these years (e.g., data of only one country). However, city- and country-specific periods could vary among the datasets. In addition, we set one single individual year to NA, if less than 2/3 of the main air pollution data of that year was available. Outliers in the mortality and temperature data were set to NA, but most cities were not affected. For the main analysis, outliers in the air pollution data were not excluded, as the objective was to examine the effects of these air pollution levels, given that the population in the cities was exposed to these concentrations. However, we conducted a sensitivity analysis to check for any differences in the model results when outliers in air pollution were not included. Furthermore, there was no significant difference in air pollution levels on days with missing data for cardio-respiratory mortality endpoints compared to days without missing mortality numbers. Furthermore, we restricted the analyses to cities with at least 5+ years of valid air pollution data, to better display changes in risk over time. This five-year data restriction did not have to be consecutive, but could be discontinuous. Last, we excluded cities with more than 50% NA for mortality endpoints. The resulting air pollution-specific datasets comprised 338 cities (9,969,409 cardiovascular and 3,454,824 respiratory deaths) for the NO_2 analysis, 249 cities (7,082,163 cardiovascular and 2,660,833 respiratory deaths) for PM_{10}, and 194 cities (4,553,700 cardiovascular and 1,667,109 respiratory deaths) contributed to the analysis of $PM_{2·5}$ association. The final datasets comprised 380 cities or urban areas in 24 countries.

Additional information on the statistical analyses:

Basic descriptive statistics of mortality counts, and air pollution concentrations were expressed as mean (5^{th}-95^{th} percentile of air pollution range) concentrations. In addition, we calculated the Spearman correlation coefficient r_S between the main air pollutants of the analyses, and among the individual variables of the main regression models. We considered values $r_S \geq 0{·}7$ as high correlations since previous studies used 0·7 as a reasonable trade-off value between investigating temporal variations among model variables/cities and considering potential multicollinearity. The correlation thresholds were defined according to the US Environmental Protection Agency (EPA) definitions of low correlation, $r_S < 0{·}40$; moderate correlation, $r_S \geq 0{·}40$ and $r_S < 0{·}70$; and high correlation, $r_S \geq 0{·}70$.[1] Furthermore, we calculated

the Theil-Sen trend estimator for each city-specific air pollution concentration as further exploratory analysis. In brief, this method provides a yearly estimate of how city-specific air pollution levels have changed over time.

The main analysis was based on a two-stage modeling design to analyze the associations between air pollution concentrations and cause-specific mortality and was further extended to examine temporal variations. This advanced statistical design has recently been used in other multicity studies.[2-4] Because of differences in the availability of primary air pollutants, we analyzed each pollutant in separate analyses.

First stage model:

In the first stage, we applied linear city-specific confounder-adjusted generalized additive models (GAM) following a quasi-Poisson distribution and allowing for overdispersion. We selected the confounder variables based on the published analyses by Liu and colleagues[2] and Meng and colleagues[3], who analyzed associations between PM fractions and NO_2.with (cause-specific) mortality in initial MCC analyses. PM and NO_2 were assumed to have linear associations.

$$Y_t \sim quasi\_Poisson(E(Y_t))$$

$$\log\big(E(Y_t)\big) = \beta_0 + \beta_1 AP_l + ns(date, df = 7 \times years) + factor(day\_of\_week) + ns(tmean_{l03}, df = 6) + ns(rhum, df = 3)$$

where Y_t corresponds to the observed (cause-specific) death counts on a specific day t. $E(Y_t)$ denotes the expected (cause-specific) death counts on day t. β_0 is the intercept and $\beta_1$represents the log-relative risk (RR) for a one-unit increase (µg/m^3) in air pollution (AP) concentration at a specific lag day l. $ns()$ denotes a natural smooth spline term including seven degrees of freedom (df) per year to control for long-term time trends and seasonal variations, six df for air temperature at lag 0-3, and three df for relative humidity (where applicable). Day of the week was entered to the models as an indicator term.

Second stage model:

In the second stage, we used a novel multilevel random-effects meta-analytical model to pool the city-specific results.[5,6] This method accounted for different nested hierarchical structures of the risks between countries and cities (as random terms in the multilevel model). We applied the (restricted) maximum likelihood (REML/ML) estimator in the multilevel meta-analysis to estimate the variance components of

the random effects (e.g., the between-city/country variability) more effectively in the light of model convergence. We then extracted the best linear unbiased prediction (BLUP) for the global estimates (without any analysis of temporal variation) between air pollutants and mortality as well as the period-specific analysis. The BLUP borrows information within and/or between hierarchical levels, resulting in more precise and stable estimates while accounting for heterogeneity as it calculates estimates of the random effects (e.g., for each city and country) based on the observed data and the estimates variance components.[6,7] We also obtained country-specific estimates using the same approach for country-level data without the country term in the meta-analysis model. Finally, we extracted the corresponding I^2 statistic and p-value (Cochran's Q test) as a measure of heterogeneity, where $I^2 > 50\%$ and p-value < 0·05 were considered as substantial heterogeneity following the suggested threshold of Higgins and Thompson (mild, $I^2 = 30\%$ < moderate < severe, $I^2 = 50\%$).[8]

Assessment of temporal variation:

We assessed the temporal variation in associations between air pollutants and mortality in two different ways by making some changes to the aforementioned two-stage design. First, we extracted yearly effect estimates for each city in stage one and pooled the resulting yearly and city-specific results using a longitudinal multilevel meta-regression in stage two, where we modeled time as a linear fixed term to the model. The results of the second stage were used to predict the overall yearly estimates over the entire study period. In addition, we tested for a temporal trend by comparing the model to a model without the linear time term using a Wald test. Second, we divided the overall study period into three subperiods of approximately seven years. The three periods are: 1995-2001, 2002-2008, 2009-2016. The choice of these periods was based on a reasonable individual length of the period itself as well as the possibility to consider the onset of the global economic crisis and its consequences around 2008. We compared the mortality risks separately between the periods by calculating interactions between the air pollution concentrations and the related periods in the first stage. In the second stage, we pooled the city- and period-specific estimates without the longitudinal meta-regression to obtain an overall estimate for each period. As a result, the number of cities used in the different analyses varied from 338 cities (NO_2, longitudinal analysis) to 53 cities ($PM_{2.5}$, period-specific analysis). The numbers are shown in the description of Table 2 and in Figure SX.

Further, secondary analyses:

On an exploratory basis, we conducted three secondary analyses based on our main (longitudinal) approach: 1) We conducted the main longitudinal analysis but modeled the term of time nonlinearly. 2)

We assessed interdependencies between the main air pollutants in two pollutant models, where we included the second pollutant as additional linear term into the first stage (e.g., PM+NO_2/NO_2+PM). Consequently, we further restricted our dataset only using cities that included both air pollutants simultaneously and performed the single- and two-pollutant model on that dataset. 3) We applied a multivariable meta-regression to further investigate sources of heterogeneity that affected the results of the longitudinal meta-regression. We therefore used a set of nine meta-predictors, which were either calculated from variables in the MCC dataset (e.g., climate variables such as total temperature range) or derived from the Organization for Economic Co-operation and Development (OECD) Regional and Metropolitan Database. The following variables were included on city-level:

- World Health Organization (WHO) region
  (AFRO = African Region, AMRO = Region of the Americas, SEAR = South-East Asian Region, EURO = European Region, EMRO = Eastern Mediterranean Region, WPRO = Western Pacific Region)
- Gross domestic product (GDP) per capita in USD
  (Derived from the OECD database: http://stats.oecd.org/)
- Köppen climate zone
  (Main climates; A = tropical/equatorial zone, B = arid/dry zone, C = warm/mild temperate zone, D = continental/cold zone, E = polar zone)
- Average temperature
  (Average of all daily mean temperatures across the city-specific study period)
- Average temperature range
  (Average of all daily temperature ranges (calculated as difference between daily maximum and minimum temperature) across the city-specific study period)
- Average (main) air pollution concentration
  (Average of all daily mean air pollution concentrations across the city-specific study period)
- Total population
  (Derived from the OECD database: http://stats.oecd.org/)
- Population density
  (Derived from the OECD database: http://stats.oecd.org/)
- Proportion of old population (65+ years)
  (Derived from the OECD database: http://stats.oecd.org/)

We applied a stepwise forward selection on an empty model of the second-stage longitudinal multilevel meta-regression (without any meta-predictors and fitting the models by Maximum Likelihood estimation (ML)) to identify further potential influential variables based on the Akaike information criterion (final model). We then used a likelihood ratio test to evaluate whether the identified meta-predictors of the final model improved the model fit significantly. Significant categorical meta-predictors were added directly into the model and continuous variables were categorized before into terciles to have a sufficient number of cities in each stratum.

Sensitivity analyses:

To test the robustness of our results, we conducted a series of sensitivity analyses:

- We excluded cities where the Spearman correlation coefficient r_S indicated high correlations (r_S > 0·7) between the model variables (mostly between temperature, relative humidity, and the air pollutant). The rationale was to account for any potential effects of multicollinearity that might have affected the standard errors or coefficients of the models, leading to less precise and less reliable model results. We considered values above 0·7 as high correlations, as this is a commonly used value[1] although there is no universally agreed threshold.
- We excluded relative humidity from the main model (first stage). The reason for this was that not every city provided (sufficient) data on relative humidity, and therefore we examined any differences in the results when using a similar set of co-variables.
- We modeled time trend with four df per year and ten df per year. This approach was used to examine the potential effect of unmeasured confounding by time-varying factors, to account for flexibility in the nonlinear trend (e.g., seasonality, long-term time trends), and to check for potential overfitting. We chose four and ten degrees of freedom (df) per year as a reasonable trade-off by fitting a simpler (4 df's /year) and a more complex model (10 df's /year).
- We adjusted for air temperature by using a distributed lag nonlinear model (DLNM) according to O'Brien and colleagues[4] to capture more complex non-linear relationships between temperature and mortality while incorporating lagged effects more effectively.
- We adjusted for high and low temperature separately according to Chen and colleagues.[9] The choice of this approach was to account for different effects of heat- and cold-related morality.[9] We therefore included two spline terms for high (lag 0-1, for values higher than the city-specific median temperatures) and low temperatures (lag 1-6, for values lower than the city-specific median concentrations) into the model.
- We excluded the US cities from the dataset. The rationale for this approach was the large proportion of US cities included in the analyses, with the objective of determining whether the results were influenced by these data. In addition, the US dataset ends in the year 2006, thus contributing only 55% of the overall study period (1995-2016).
- We excluded outliers of NO_2, PM_{10}, and $PM_{2.5}$ concentrations within the data handling procedure (1. /3. Quartile ± 1·5 * Interquartile range). The objective was to examine whether extreme levels of air pollution would influence the results.

SUPPLEMENTARY RESULTS:

Supplementary tables:

Table S1: Basic descriptive statistics of NO_2 data, stratified by country.

Country	Cities (N)	Period	Years (mean)	CVD (N)	RESP (N)	Mean NO_2 (5^{th}-95^{th} percentile) (µg/m³)	% of days above WHO limit
Canada	25	1995-2015	20·2	826,003	224,702	23·4 (7·6-47·0)	38·3%
China	2	1996-2008	6	76,689	44,549	40·5 (21·1-65·0)	65·2%
Colombia	1	1998-2013	16	123,780	46,328	31·5 (15·5-49·6)	71·4%
Cyprus	4	2010-2016	7	12,607	2,879	28·9 (13·4-47·6)	58·4%
Czech Republic	1	1995-2009	15	102,835	9,094	32·1 (16·6-52·7)	71·1%
Estonia	4	2003-2016	10·5	42,485	2,824	13·0 (4·0-27·8)	12·5%
Finland	1	1995-2014	20	54,366	9,226	8·7 (2·4-21·6)	2·7%
France	18	2000-2015	10·3	255,222	66,657	26·3 (9·8-49·8)	47·1%
Greece	1	2001-2010	10	136,194	28,771	51·5 (28·6-80·6)	97·8%
Iran	1	2002-2015	14	316,976	52,649	88·5 (37·7-179·4)	99·4%
Japan	44	1995-2016	8·3	1,176,249	625,020	18·9 (7·6-36·2)	23·6%
South Korea	7	1999-2015	17	389,590	106,209	46·5 (22·4-79·9)	88·1%
Portugal	6	1995-2016	14·7	297,057	87,784	15·8 (5·2-31·6)	19·8%
Spain	48	2001-2014	12·4	516,250	191,989	27·7 (13·3-46·5)	54·9%
Switzerland	8	1995-2013	19	90,744	16,015	33·9 (15·1-58·3)	65·7%
Sweden	1	1995-2010	16	66,455	11,697	28·4 (11·9-48·5)	57·6%
Thailand	16	1999-2008	9·4	150,329	99,509	25·3 (10·8-47·9)	40·6%
Taiwan	3	1995-2014	20	257,553	113,269	43·6 (20·8-73·1)	86·8%
UK	33	1995-2016	18·1	1,309,605	580,669	27·3 (10·4-52·0)	49·8%
USA	114	1995-2006	11·6	3,768,420	1,134,984	30·4 (12·2-54·6)	56·5%
Overall	338	1995-2016	13·8	9,969,409	3,454,824	27·5 (11·4-50·0)	49·0%

N: Number of cities and mortality cases over the respective period; CVD: cardiovascular disease mortality; RESP: respiratory disease mortality; NO_2: Nitrogen dioxide; WHO: World Health Organization; 24-hour limit according to WHO air quality guideline[10]: 25 µg/m³; Air pollutants measured in µg/m³.

Table S2: Basic descriptive statistics of PM_{10} data, stratified by country.

Country	Cities (N)	Period	Years (mean)	CVD (N)	RESP (N)	Mean PM_{10} (5^{th}-95^{th} percentile) (µg/m³)	% of days above WHO limit
Canada	7	2000-2011	11·7	153,068	40,410	17·6 (6·2-37·8)	3·7%
China	2	1996-2008	6	76,689	44,549	91·9 (33·8-174·8)	73·0%
Colombia	1	2002-2013	12	95,588	36,514	62·7 (34·1-97·6)	81·2%
Cyprus	5	2005-2016	10·8	22,263	4,666	44·2 (21·5-78·0)	33·2%
Czech Republic	1	1995-2009	15	102,835	9,094	34·3 (12·0-77·2)	21·2%
Estonia	4	2003-2016	10·5	42,485	2,824	17·0 (4·8-38·7)	3·3%
Finland	1	1995-2014	20	54,366	9,226	19·8 (4·7-52·0)	7·6%

France	18	2007-2015	9	234,413	62,250	23·7 (9·8-47·9)	6·6%
Greece	1	2001-2010	10	136,194	28,771	43·9 (18·5-83·3)	38·5%
Iran	1	2002-2015	14	316,976	52,649	87·5 (30·1-164·2)	86·1%
Japan	40	1995-2016	8·5	1,114,447	588,611	29·0 (10·0-59·5)	15·0%
South Korea	7	1999-2015	17	389,590	106,209	52·2 (20·8-101·7)	51·3%
Kuwait	1	2010-2016	7	15,962	3,170	191·0 (60·7-539·5)	98·3%
Mexico	6	2000-2012	11·7	492,867	185,735	57·5 (24·5-104·9)	60·8%
Norway	1	2000-2016	17	23,503	7,152	22·1 (8·3-45·9)	5·6%
Portugal	5	1999-2016	14·8	238,172	73,264	23·1 (7·7-51·5)	9·1%
South Africa	2	2004-2013	8·5	62,203	48,086	61·6 (24·8-116·9)	63·7%
Spain	34	2001-2014	11·1	376,387	146,017	27·9 (13·6-49·1)	10·3%
Switzerland	8	1995-2013	17·9	86,906	15,382	25·1 (7·8-56·0)	10·6%
Sweden	1	1995-2010	16	66,434	11,695	14·9 (6·0-32·1)	1·0%
Thailand	16	1999-2008	9·5	151,824	100,179	51·1 (22·6-104·3)	45·8%
Taiwan	3	1995-2014	20	257,553	113,269	62·8 (25·3-118·4)	62·2%
UK	30	1995-2016	17	1,235,377	547,036	21·2 (8·6-43·0)	4·3%
USA	54	1995-2006	8·6	1,336,061	424,075	25·6 (9·0-50·4)	9·4%
Overall	249	1995-2016	12·7	7,082,163	2,660,833	31·3 (12·3-62·2)	17·3%

N: Number of cities and mortality cases over the respective period; CVD: cardiovascular disease mortality; RESP: respiratory disease mortality; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; WHO: World Health Organization; 24-hour limit according to WHO air quality guideline[10]: 45 µg/m³; Air pollutants measured in µg/m³.

Table S3: Basic descriptive statistics of $PM_{2·5}$ data, stratified by country.

Country	Cities (N)	Period	Years (mean)	CVD (N)	RESP (N)	Mean $PM_{2·5}$ (5^{th}-95^{th} percentile) (µg/m³)	% of days above WHO limit
Canada	25	1997-2015	16·1	673,436	187,688	8·1 (2·2-18·8)	10·8%
Cyprus	2	2010-2016	6·5	4,804	1,139	20·1 (9·0-34·5)	66·0%
Estonia	3	2009-2016	7·3	10,917	718	7·7 (1·2-18·8)	10·3%
Finland	1	1995-2014	20	54,366	9,226	16·8 (3·9-43·5)	41·5%
France	15	2007-2015	8·3	200,895	53,136	16·3 (5·2-38·2)	41·0%
Japan	26	2001-2016	6·2	610,505	346,247	14·7 (4·8-29·9)	39·9%
Mexico	2	2004-2012	9	269,157	96,373	26·9 (12·0-46·5)	87·4%
Norway	1	2000-2016	17	23,503	7,152	10·8 (4·6-21·8)	16·5%
Portugal	3	2004-2016	12·3	106,124	30,614	10·1 (3·2-22·5)	18·4%
South Africa	1	2007-2013	7	14,721	13,713	36·0 (14·6-71·0)	94·2%
Spain	2	2004-2014	8	87,540	38,337	16·3 (7·0-30·9)	43·3%
Switzerland	4	1998-2009	11·2	39,568	6,394	19·7 (5·9-45·0)	56·0%
Sweden	1	2001-2010	10	37,873	6,707	8·2 (3·1-19·4)	9·2%
Taiwan	3	2007-2014	8	117,402	58,942	34·4 (12·7-65·1)	89·4%
UK	28	1998-2016	8	577,277	277,262	12·1 (4·1-30·2)	24·0%
USA	77	1999-2006	7·3	1,725,612	533,461	13·2 (4·5-28·0)	32·0%

Overall	194	1995-2016	10·1	4,553,700	1,667,109	13·5 (4·5-29·4)	31·9%

N: Number of cities and mortality cases over the respective period; CVD: cardiovascular disease mortality; RESP: respiratory disease mortality; $PM_{2.5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm; WHO: World Health Organization; 24-hour limit according to WHO air quality guideline[10]: 15 µg/m³; Air pollutants measured in µg/m³.

Table S4: Basic descriptive statistics of NO_2, PM_{10}, and $PM_{2.5}$ data per city.

Country	City	Period	Years (N)	Mean concentration of air pollutant (5^{th}-95^{th} percentile) (µg/m³)	% of days above WHO limit	Yearly change in air pollution concentration[a]	NA days (% of all days)
				NO_2			
Canada	Abbotsford	1995-2015	21	21·3 (9·1-36·5)	30·9%	-0·74 (-0·83,-0·66)	9 (0·12 %)
Canada	Calgary	1995-2015	21	37·3 (11·2-69·9)	73·1%	-1·27 (-1·51,-1·01)	0 (0·00 %)
Canada	Edmonton	1995-2015	21	34·2 (11·5-69·0)	63·8%	-1·03 (-1·26,-0·80)	0 (0·00 %)
Canada	Halifax	1995-2015	21	27·1 (9·9-48·0)	52·8%	-0·98 (-1·12,-0·85)	2,518 (32·83 %)
Canada	Hamilton	1995-2015	21	29·8 (9·9-56·0)	57·9%	-1·09 (-1·22,-1·00)	60 (0·78 %)
Canada	Kingston	2007-2013	7	8·7 (3·7-18·1)	1·4%	-0·58 (-0·83,-0·36)	394 (15·41 %)
Canada	Kitchener-Waterloo	1995-2015	21	21·0 (5·6-46·0)	30·6%	-0·80 (-0·93,-0·65)	1,233 (16·08 %)
Canada	London Ontario	1995-2014	20	24·7 (6·9-53·3)	41·2%	-1·42 (-1·57,-1·28)	566 (7·75 %)
Canada	Montreal	1995-2015	21	27·9 (10·5-52·8)	51·6%	-0·98 (-1·10,-0·86)	0 (0·00 %)
Canada	Oakville	1995-2015	21	25·3 (6·5-51·3)	45·4%	-1·13 (-1·25,-1·02)	626 (8·16 %)
Canada	Oshawa	1995-2015	21	24·6 (5·0-57·3)	40·4%	-1·66 (-1·78,-1·54)	473 (6·17 %)
Canada	Ottawa	1995-2015	21	23·8 (4·8-55·6)	39·8%	-1·44 (-1·61,-1·28)	41 (0·53 %)
Canada	Regina	1995-2013	19	22·9 (8·9-44·7)	35·4%	-0·65 (-0·80,-0·51)	937 (13·50 %)
Canada	Sarnia	1995-2015	21	23·7 (6·4-50·2)	38·3%	-1·02 (-1·12,-0·94)	242 (3·16 %)
Canada	Sudbury	1995-2015	21	15·1 (4·2-34·7)	14·1%	-0·22 (-0·39,-0·05)	3,897 (50·83 %)
Canada	Saint John NB	1995-2015	21	12·0 (2·3-28·8)	8·2%	-0·56 (-0·64,-0·49)	83 (1·08 %)
Canada	St· John's NFL	1998-2015	18	13·0 (3·1-29·5)	9·0%	-0·19 (-0·32,-0·06)	938 (14·27 %)
Canada	Sault Ste· Marie	1995-2015	21	13·7 (3·3-34·2)	12·6%	-0·69 (-0·80,-0·57)	1,464 (19·20 %)
Canada	Saskatoon	1995-2015	21	21·0 (7·4-42·4)	29·7%	-0·37 (-0·50,-0·24)	1,262 (16·46 %)
Canada	Thunder Bay	1995-2015	21	18·8 (5·6-41·0)	24·1%	-0·59 (-0·71,-0·48)	1,112 (14·50 %)
Canada	Toronto	1995-2015	21	37·0 (15·2-65·2)	75·8%	-1·42 (-1·55,-1·32)	0 (0·00 %)
Canada	Victoria	1995-2015	21	17·6 (5·9-35·9)	18·4%	-0·61 (-0·76,-0·46)	1,084 (14·13 %)
Canada	Vancouver	1995-2015	21	29·3 (15·0-46·8)	64·3%	-0·72 (-0·82,-0·62)	1 (0·01 %)
Canada	Windsor	1995-2015	21	33·4 (13·5-61·3)	66·6%	-1·27 (-1·40,-1·16)	166 (2·16 %)
Canada	Winnipeg	1995-2015	21	21·2 (5·7-45·1)	31·6%	-0·86 (-1·00,-0·73)	52 (0·68 %)
China	Hong Kong	1996-2002	7	58·2 (30·4-93·8)	98·5%	0·60 (-0·55,1·79)	0 (0·00 %)
China	Taiyuan	2004-2008	5	22·7 (11·8-36·3)	31·9%	-0·04 (-0·89,1·06)	0 (0·00 %)
Colombia	Bogota	1998-2013	16	31·5 (15·5-49·6)	71·4%	0·41 (0·24,0·58)	436 (7·46 %)
Cyprus	Larnaka	2010-2016	7	28·4 (14·0-47·6)	56·8%	-1·03 (-1·83,-0·08)	34 (1·33 %)
Cyprus	Limassol	2010-2016	7	32·7 (16·4-51·3)	74·4%	-0·67 (-1·62,0·14)	33 (1·29 %)
Cyprus	Nicosia	2010-2016	7	32·3 (14·4-54·2)	70·0%	-0·50 (-1·50,0·54)	47 (1·84 %)

Cyprus	Pafos	2010-2016	7	22·2 (8·6-37·3)	32·4%	-1·11 (-1·79,-0·57)	121 (4·73 %)
Czech Republic	Prague	1995-2009	15	32·1 (16·6-52·7)	71·1%	-0·45 (-0·67,-0·23)	6 (0·11 %)
Estonia	Kohtla-Jarve linn	2003-2016	14	6·4 (1·3-15·7)	1·1%	-0·26 (-0·34,-0·17)	171 (3·34 %)
Estonia	Narva linn	2009-2016	8	10·6 (3·4-23·8)	4·4%	-0·53 (-0·84,-0·23)	404 (13·89 %)
Estonia	Tallinn	2005-2016	12	22·6 (7·2-44·0)	37·5%	-1·30 (-1·59,-1·05)	65 (1·51 %)
Estonia	Tartu linn	2009-2016	8	12·4 (4·0-27·7)	7·0%	-0·23 (-0·65,0·11)	47 (1·61 %)
Finland	Helsinki	1995-2014	20	8·7 (2·4-21·6)	2·7%	-0·08 (-0·13,-0·03)	0 (0·00 %)
France	Bordeaux	2007-2015	9	20·0 (5·9-40·9)	28·8%	-0·59 (-1·14,-0·14)	0 (0·00 %)
France	Clermont-Ferrand	2000-2015	16	26·3 (8·0-56·5)	43·6%	-0·46 (-0·71,-0·21)	9 (0·15 %)
France	Dijon	2000-2015	16	26·9 (9·3-49·4)	50·9%	-0·92 (-1·16,-0·71)	0 (0·00 %)
France	Grenoble	2007-2015	9	24·7 (8·2-50·4)	40·5%	-0·40 (-1·10,0·21)	0 (0·00 %)
France	Le Havre	2007-2015	9	22·8 (7·0-47·0)	35·2%	-0·76 (-1·23,-0·25)	59 (1·79 %)
France	Lille	2004-2015	12	27·4 (10·6-50·5)	50·3%	-0·91 (-1·25,-0·56)	1 (0·02 %)
France	Lens-Douai	2007-2015	9	23·6 (7·0-47·5)	38·6%	-1·25 (-1·98,-0·48)	279 (8·49 %)
France	Lyon	2007-2015	9	32·0 (11·7-62·9)	60·2%	-0·63 (-1·22,-0·08)	0 (0·00 %)
France	Montpellier	2007-2015	9	28·1 (10·0-52·3)	54·7%	-1·08 (-1·59,-0·47)	3 (0·09 %)
France	Marseille	2007-2015	9	34·4 (13·0-60·0)	69·3%	-0·25 (-0·84,0·32)	9 (0·27 %)
France	Nice	2007-2015	9	27·3 (14·0-43·0)	54·6%	0·38 (-0·08,0·85)	49 (1·49 %)
France	Nancy	2007-2015	9	28·6 (13·0-50·2)	55·8%	-0·68 (-1·23,-0·19)	1 (0·03 %)
France	Nantes	2007-2015	9	18·0 (5·5-38·5)	22·5%	-0·90 (-1·50,-0·49)	114 (3·47 %)
France	Paris	2007-2015	9	35·5 (15·6-60·0)	74·6%	-0·32 (-0·98,0·22)	0 (0·00 %)
France	Rennes	2007-2015	9	19·3 (5·8-39·7)	26·0%	-0·12 (-0·56,0·27)	30 (0·91 %)
France	Rouen	2007-2015	9	26·3 (11·3-48·0)	46·4%	-0·91 (-1·44,-0·48)	0 (0·00 %)
France	Strasbourg	2000-2015	16	30·9 (13·2-53·5)	63·2%	-0·80 (-0·99,-0·62)	3 (0·05 %)
France	Toulouse	2007-2015	9	21·6 (6·7-45·4)	32·6%	-0·47 (-1·09,-0·00)	0 (0·00 %)
Greece	Athens	2001-2010	10	51·5 (28·6-80·6)	97·8%	-1·07 (-1·51,-0·60)	0 (0·00 %)
Iran	Tehran	2002-2015	14	88·5 (37·7-179·4)	99·4%	-1·74 (-3·05,-0·54)	0 (0·00 %)
Japan	Akita	2012-2016	5	11·4 (4·5-23·7)	3·6%	-0·70 (-1·36,-0·16)	0 (0·00 %)
Japan	Chiba	2011-2016	6	25·6 (10·0-52·9)	42·4%	-1·08 (-2·15,-0·09)	0 (0·00 %)
Japan	Fukushima	2011-2016	6	16·7 (5·2-35·5)	17·1%	-1·11 (-1·75,-0·52)	0 (0·00 %)
Japan	Fukuoka	1995-2016	22	20·0 (7·8-36·7)	27·3%	-0·10 (-0·21,0·02)	735 (9·15 %)
Japan	Fukui	2011-2016	6	14·0 (5·2-28·3)	7·9%	-0·37 (-1·11,0·30)	366 (16·70 %)
Japan	Gifu	2011-2016	6	15·6 (6·1-28·6)	10·0%	-1·05 (-1·54,-0·64)	0 (0·00 %)
Japan	Hiroshima	2012-2016	5	20·9 (8·7-36·8)	28·6%	-1·06 (-1·91,-0·20)	0 (0·00 %)
Japan	Kagoshima	2011-2016	6	20·1 (7·5-37·9)	26·8%	0·37 (-0·43,1·10)	2 (0·09 %)
Japan	Kumamoto	2011-2016	6	18·1 (6·7-36·7)	22·0%	-0·79 (-1·80,0·10)	15 (0·68 %)
Japan	Kanazawa	2011-2016	6	13·6 (6·2-25·6)	5·9%	-0·57 (-1·16,-0·10)	0 (0·00 %)
Japan	Kobe	2011-2016	6	33·4 (13·1-60·9)	66·9%	-0·11 (-1·15,0·88)	0 (0·00 %)
Japan	Kochi	2011-2016	6	10·7 (4·0-23·1)	3·2%	-0·26 (-0·78,0·23)	5 (0·23 %)
Japan	Kofu	2011-2016	6	21·9 (9·1-46·3)	30·9%	-0·79 (-1·64,-0·13)	5 (0·23 %)
Japan	Kitakyushu	1995-2008	14	20·6 (9·3-33·9)	28·4%	-0·24 (-0·35,-0·13)	0 (0·00 %)
Japan	Kyoto	2011-2016	6	23·7 (10·3-45·0)	36·9%	-1·27 (-2·12,-0·61)	0 (0·00 %)
Japan	Matsue	2011-2016	6	5·1 (1·9-10·5)	0·1%	-0·16 (-0·37,-0·01)	10 (0·46 %)
Japan	Maebashi	2011-2016	6	14·4 (4·5-28·8)	9·3%	-0·80 (-1·29,-0·33)	27 (1·23 %)

Japan	Mito	2011-2016	6	14·6 (6·7-26·4)	6·4%	-0·07 (-0·63,0·45)	7 (0·32 %)
Japan	Morioka	2011-2016	6	16·3 (5·1-38·6)	17·6%	-0·70 (-1·59,-0·03)	6 (0·27 %)
Japan	Matsuyama	2011-2016	6	23·0 (11·2-41·7)	34·0%	-0·43 (-1·07,0·20)	0 (0·00 %)
Japan	Nagano	2011-2016	6	15·2 (5·9-33·7)	14·5%	-0·80 (-1·64,-0·23)	0 (0·00 %)
Japan	Nagoya	1995-2016	22	28·3 (12·7-47·7)	57·4%	-0·12 (-0·24,0·00)	730 (9·08 %)
Japan	Nara	2011-2016	6	17·3 (6·0-35·7)	18·2%	-0·95 (-1·73,-0·27)	0 (0·00 %)
Japan	Nagasaki	2011-2016	6	14·0 (6·0-24·4)	4·2%	-0·14 (-0·78,0·36)	0 (0·00 %)
Japan	Niigata	2011-2016	6	14·4 (6·0-28·8)	8·9%	-0·37 (-0·97,0·05)	0 (0·00 %)
Japan	Oita	2011-2016	6	14·4 (6·7-26·1)	6·2%	-0·86 (-1·20,-0·51)	0 (0·00 %)
Japan	Okayama	2011-2016	6	22·1 (9·5-40·1)	33·2%	-1·33 (-2·08,-0·66)	0 (0·00 %)
Japan	Osaka	1995-2016	22	33·1 (14·7-58·2)	69·1%	0·10 (-0·07,0·27)	730 (9·08 %)
Japan	Otsu	2011-2016	6	19·2 (6·7-38·9)	24·1%	-0·87 (-1·64,-0·27)	0 (0·00 %)
Japan	Saga	2011-2016	6	14·9 (5·8-30·9)	11·7%	0·50 (-0·27,1·18)	0 (0·00 %)
Japan	Saitama	2011-2016	6	29·8 (11·8-56·6)	57·8%	-1·21 (-2·19,-0·34)	0 (0·00 %)
Japan	Sendai	1995-2016	22	14·0 (5·3-26·5)	6·8%	-0·16 (-0·23,-0·09)	733 (9·12 %)
Japan	Shimonoseki	2012-2016	5	6·9 (1·3-15·7)	0·6%	-0·42 (-0·69,-0·11)	2 (0·11 %)
Japan	Shizuoka	2011-2016	6	19·5 (9·4-32·7)	19·8%	-0·62 (-1·07,-0·16)	0 (0·00 %)
Japan	Sapporo	1995-2016	22	21·3 (8·1-44·0)	28·1%	-0·07 (-0·20,0·08)	730 (9·08 %)
Japan	Takamatsu	2011-2016	6	23·5 (8·6-47·3)	36·3%	-1·54 (-2·40,-0·80)	1 (0·05 %)
Japan	Tokushima	2011-2016	6	12·3 (5·6-22·7)	3·2%	-0·78 (-1·25,-0·45)	0 (0·00 %)
Japan	Tokyo	1995-2016	22	31·9 (14·4-55·9)	67·5%	0·04 (-0·10,0·21)	730 (9·08 %)
Japan	Toyama	2011-2016	6	13·0 (5·3-25·7)	5·7%	-0·73 (-1·17,-0·26)	0 (0·00 %)
Japan	Tsu	2011-2016	6	16·0 (6·6-32·3)	12·8%	-0·72 (-1·18,-0·19)	0 (0·00 %)
Japan	Utsunomiya	2011-2016	6	22·7 (11·0-41·2)	33·3%	-0·87 (-1·57,-0·04)	0 (0·00 %)
Japan	Wakayama	2011-2016	6	16·4 (7·8-29·1)	10·2%	-0·67 (-1·13,-0·25)	0 (0·00 %)
Japan	Yokohama	2011-2016	6	31·2 (10·6-59·2)	61·2%	-0·67 (-2·01,0·60)	0 (0·00 %)
Japan	Yamagata	2011-2016	6	18·7 (7·3-41·0)	20·6%	-0·80 (-1·70,-0·06)	3 (0·14 %)
South Korea	Busan	1999-2015	17	42·3 (20·8-70·8)	88·1%	-0·74 (-1·02,-0·47)	59 (0·95 %)
South Korea	Daegu	1999-2015	17	45·6 (20·6-80·6)	88·9%	-0·57 (-0·90,-0·24)	69 (1·11 %)
South Korea	Daejeon	1999-2015	17	39·6 (17·9-72·5)	79·3%	-0·24 (-0·60,0·10)	70 (1·13 %)
South Korea	Gwangju	1999-2015	17	38·9 (17·4-68·7)	81·0%	-0·35 (-0·66,-0·06)	61 (0·98 %)
South Korea	Incheon	1999-2015	17	53·1 (25·0-93·4)	94·9%	0·27 (0·01,0·51)	55 (0·89 %)
South Korea	Seoul	1999-2015	17	67·5 (34·7-109·9)	99·6%	-0·04 (-0·36,0·23)	25 (0·40 %)
South Korea	Ulsan	1999-2015	17	38·8 (20·3-63·4)	85·1%	0·03 (-0·15,0·21)	59 (0·95 %)
Portugal	Beja	2005-2014	10	5·1 (1·9-10·4)	0·0%	-0·14 (-0·27,-0·03)	1,259 (34·92 %)
Portugal	Coimbra	2003-2016	14	16·4 (4·7-33·0)	16·0%	-0·68 (-0·88,-0·51)	453 (8·90 %)
Portugal	Castelo Branco	2005-2016	12	5·9 (2·0-10·2)	0·0%	0·03 (-0·05,0·13)	229 (5·22 %)
Portugal	Faro	2005-2016	12	11·1 (3·8-22·0)	2·4%	-0·04 (-0·24,0·13)	1,561 (35·61 %)
Portugal	Lisboa	1995-2016	22	30·5 (10·0-63·0)	54·1%	-0·06 (-0·26,0·13)	28 (0·35 %)
Portugal	Porto	1999-2016	18	26·0 (9·0-50·8)	45·9%	-0·23 (-0·42,-0·05)	43 (0·65 %)
Spain	A Coruna	2006-2014	9	28·2 (9·9-51·9)	54·4%	-1·44 (-2·01,-0·82)	115 (3·50 %)
Spain	Albacete	2001-2013	13	15·2 (4·1-32·0)	12·2%	-0·28 (-0·52,-0·06)	226 (4·79 %)
Spain	Alicante	2001-2014	14	31·0 (17·5-48·0)	72·4%	-0·02 (-0·19,0·17)	278 (5·44 %)
Spain	Almeria	2006-2014	9	22·4 (10·8-37·2)	34·1%	-0·84 (-1·30,-0·55)	11 (0·33 %)

Spain	Avila	2001-2014	14	23·0 (11·4-36·4)	35·4%	-0·18 (-0·43,-0·01)	1,606 (31·41 %)
Spain	Badajoz	2002-2014	13	10·1 (2·5-24·5)	4·7%	-0·49 (-0·63,-0·34)	527 (11·10 %)
Spain	Bilbao	2001-2014	14	37·1 (20·0-58·8)	84·8%	-0·02 (-0·27,0·24)	21 (0·41 %)
Spain	Barcelona	2001-2014	14	45·5 (22·6-72·1)	92·5%	-0·75 (-1·07,-0·47)	1 (0·02 %)
Spain	Burgos	2001-2014	14	25·1 (11·7-45·0)	42·9%	-0·42 (-0·65,-0·19)	78 (1·53 %)
Spain	Cadiz	2007-2014	8	19·2 (5·4-38·5)	25·2%	-0·90 (-1·26,-0·47)	495 (16·94 %)
Spain	Caceres	2002-2014	13	12·2 (2·8-28·4)	8·0%	0·07 (-0·22,0·43)	305 (6·42 %)
Spain	Ciudad Real	2008-2014	7	10·7 (2·2-28·3)	8·0%	-1·06 (-1·66,-0·48)	214 (8·37 %)
Spain	Cordoba	2001-2014	14	30·2 (20·1-42·3)	77·0%	-0·27 (-0·38,-0·12)	166 (3·25 %)
Spain	Castellon	2002-2014	13	40·9 (25·8-57·7)	95·8%	-0·52 (-0·76,-0·24)	861 (18·13 %)
Spain	Cuenca	2008-2014	7	17·8 (3·3-40·2)	22·4%	-2·27 (-3·15,-1·35)	143 (5·59 %)
Spain	Guadalajara	2001-2014	14	26·4 (6·3-53·4)	48·1%	-0·56 (-0·99,-0·18)	211 (4·13 %)
Spain	Girona	2005-2014	10	32·4 (23·5-42·7)	90·5%	-0·10 (-0·35,0·15)	1,260 (34·50 %)
Spain	Granada	2001-2014	14	39·9 (21·4-63·4)	89·1%	0·05 (-0·18,0·30)	33 (0·65 %)
Spain	Huesca	2004-2014	11	19·9 (4·6-38·2)	27·1%	0·16 (-0·44,0·74)	748 (18·62 %)
Spain	Jaen	2004-2014	11	20·1 (8·6-38·7)	24·7%	-0·78 (-1·07,-0·52)	51 (1·27 %)
Spain	Leon	2001-2014	14	30·8 (14·6-53·2)	61·8%	-0·76 (-1·15,-0·34)	88 (1·72 %)
Spain	Logrono	2002-2014	13	15·7 (2·4-37·8)	21·6%	-1·72 (-2·00,-1·45)	857 (18·05 %)
Spain	Lleida	2001-2014	14	25·9 (8·0-47·7)	49·1%	-0·01 (-0·43,0·41)	406 (7·94 %)
Spain	Lugo	2006-2014	9	22·9 (13·6-33·9)	32·8%	-0·46 (-0·77,-0·09)	471 (14·33 %)
Spain	Malaga	2001-2014	14	32·6 (20·7-46·5)	82·6%	-0·23 (-0·36,-0·10)	118 (2·31 %)
Spain	Madrid	2001-2014	14	47·2 (23·8-76·9)	93·6%	-1·16 (-1·52,-0·84)	1 (0·02 %)
Spain	Murcia	2005-2014	10	43·1 (31·4-57·0)	100·0%	1·04 (0·62,1·45)	272 (7·45 %)
Spain	Ourense	2007-2014	8	30·7 (9·3-57·5)	61·4%	-1·56 (-2·83,-0·45)	179 (6·22 %)
Spain	Oviedo	2001-2014	14	31·7 (15·1-56·3)	65·1%	-0·73 (-1·04,-0·43)	97 (1·90 %)
Spain	Palmas G· Canaria	2001-2014	14	24·7 (9·2-42·7)	45·8%	-0·98 (-1·27,-0·68)	671 (13·12 %)
Spain	Palma Mallorca	2002-2014	13	27·3 (12·7-44·6)	55·9%	-0·59 (-0·76,-0·39)	283 (5·96 %)
Spain	Palencia	2001-2014	14	29·2 (16·9-43·9)	67·8%	-0·08 (-0·23,0·08)	886 (17·33 %)
Spain	Pontevedra	2006-2014	9	22·3 (6·0-44·0)	34·5%	0·04 (-0·81,0·68)	262 (7·97 %)
Spain	Segovia	2002-2014	13	30·4 (19·0-42·9)	77·5%	-0·20 (-0·36,-0·05)	487 (10·26 %)
Spain	Salamanca	2001-2014	14	32·5 (20·1-48·9)	79·4%	-0·17 (-0·36,0·01)	27 (0·53 %)
Spain	San Sebastian	2001-2014	14	30·1 (13·1-51·9)	62·5%	-0·56 (-0·83,-0·35)	53 (1·04 %)
Spain	Santander	2001-2014	14	27·7 (14·1-45·5)	58·4%	-0·28 (-0·47,-0·06)	53 (1·04 %)
Spain	Soria	2004-2014	11	25·8 (9·5-46·7)	48·9%	-0·40 (-0·76,-0·06)	107 (2·66 %)
Spain	Sevilla	2001-2014	14	33·5 (15·7-52·2)	75·8%	-1·07 (-1·27,-0·85)	37 (0·72 %)
Spain	Teruel	2004-2014	11	15·4 (4·1-31·4)	13·5%	-0·04 (-0·44,0·40)	1,363 (33·92 %)
Spain	Tenerife	2004-2014	11	20·5 (7·7-40·4)	26·6%	-0·15 (-0·46,0·19)	1,016 (25·29 %)
Spain	Toledo	2001-2014	14	25·2 (15·7-37·4)	46·0%	-0·04 (-0·17,0·09)	357 (6·98 %)
Spain	Tarragona	2001-2014	14	25·7 (10·5-45·4)	47·3%	-0·03 (-0·31,0·24)	210 (4·11 %)
Spain	Vitoria	2001-2014	14	29·6 (12·8-52·5)	59·7%	-0·79 (-1·02,-0·57)	41 (0·80 %)
Spain	Valladolid	2001-2014	14	29·5 (13·6-48·5)	63·6%	-0·39 (-0·62,-0·19)	74 (1·45 %)
Spain	Valencia	2001-2014	14	40·7 (21·4-64·4)	88·7%	-0·85 (-1·11,-0·59)	74 (1·45 %)
Spain	Zamora	2001-2014	14	29·1 (18·8-40·7)	72·3%	-0·16 (-0·31,-0·01)	570 (11·15 %)
Spain	Zaragoza	2001-2014	14	42·8 (24·6-64·7)	94·2%	-1·36 (-1·63,-1·11)	64 (1·25 %)

Switzerland	Basel	1995-2013	19	25·9 (6·5-51·9)	46·8%	-0·58 (-0·77,-0·38)	20 (0·29 %)
Switzerland	Bern	1995-2013	19	48·9 (28·6-72·4)	97·8%	-0·73 (-0·92,-0·53)	25 (0·36 %)
Switzerland	Geneve	1995-2013	19	38·0 (17·1-64·6)	80·9%	-0·54 (-0·72,-0·35)	199 (2·87 %)
Switzerland	Lausanne	1995-2013	19	44·6 (22·1-67·2)	92·4%	-0·58 (-0·72,-0·43)	13 (0·19 %)
Switzerland	Lugano	1995-2013	19	37·5 (14·2-67·0)	72·9%	-0·80 (-1·08,-0·53)	21 (0·30 %)
Switzerland	Luzern	1995-2013	19	26·3 (11·6-48·0)	46·9%	-0·45 (-0·63,-0·29)	22 (0·32 %)
Switzerland	St· Gallen	1995-2013	19	15·0 (5·0-33·7)	13·4%	-0·21 (-0·33,-0·09)	11 (0·16 %)
Switzerland	Zürich	1995-2013	19	35·2 (15·7-61·7)	74·2%	-0·58 (-0·76,-0·37)	7 (0·10 %)
Sweden	Stockholm	1995-2010	16	28·4 (11·9-48·5)	57·6%	0·57 (0·38,0·74)	0 (0·00 %)
Thailand	Bangkok	1999-2008	10	48·1 (27·5-83·4)	98·1%	-0·23 (-0·99,0·46)	0 (0·00 %)
Thailand	Chon Buri	1999-2008	10	24·6 (12·8-42·9)	39·1%	-0·03 (-0·40,0·31)	23 (0·64 %)
Thailand	Chiang Mai	1999-2008	10	20·7 (6·4-44·0)	27·6%	1·12 (0·63,1·64)	145 (4·00 %)
Thailand	Khon Kaen	1999-2008	10	38·3 (16·9-71·8)	76·0%	-0·55 (-1·45,0·37)	271 (7·52 %)
Thailand	Lampang	1999-2008	10	11·3 (4·1-24·3)	4·3%	-0·02 (-0·28,0·25)	2 (0·05 %)
Thailand	Nakhon Ratchasima	2001-2008	8	20·5 (7·1-41·7)	26·8%	-0·49 (-1·20,0·13)	371 (12·70 %)
Thailand	Nakhon Sawan	2001-2008	8	20·2 (10·3-38·6)	20·2%	-0·39 (-0·94,0·20)	246 (8·59 %)
Thailand	Nonthaburi	2000-2008	9	35·9 (17·4-62·9)	75·7%	-0·61 (-1·44,0·21)	138 (4·22 %)
Thailand	Pathum Thani	1999-2008	10	29·8 (4·2-55·7)	62·5%	1·49 (0·82,2·20)	276 (7·56 %)
Thailand	Ratchaburi	1999-2008	10	14·7 (4·0-33·4)	15·0%	-0·01 (-0·39,0·43)	315 (8·70 %)
Thailand	Rayong	1999-2008	10	17·9 (7·7-33·3)	16·8%	0·41 (0·00,0·78)	105 (2·87 %)
Thailand	Samutprakan	1999-2008	10	34·9 (16·1-70·9)	59·2%	0·14 (-0·55,0·91)	7 (0·19 %)
Thailand	Samut Sakhon	1999-2008	10	33·9 (16·3-63·4)	66·6%	-0·56 (-1·13,0·08)	48 (1·32 %)
Thailand	Songkhla	2001-2008	8	16·0 (4·9-27·4)	9·5%	-0·82 (-1·27,-0·38)	302 (10·34 %)
Thailand	Saraburi	2000-2008	9	27·9 (14·0-51·5)	50·6%	1·03 (0·57,1·58)	32 (0·97 %)
Thailand	Surat Thani	2000-2008	9	10·6 (2·5-20·6)	1·0%	-0·16 (-0·62,0·31)	1,047 (32·13 %)
Taiwan	Kaohsiung	1995-2014	20	43·2 (18·3-74·9)	81·8%	-0·97 (-1·26,-0·65)	0 (0·00 %)
Taiwan	Taipei	1995-2014	20	48·0 (24·4-76·8)	94·6%	-1·09 (-1·26,-0·93)	0 (0·00 %)
Taiwan	Taichung	1995-2014	20	39·5 (19·5-67·5)	83·9%	-1·07 (-1·25,-0·89)	0 (0·00 %)
UK	Blackpool	2001-2016	16	18·3 (5·4-44·2)	22·6%	-0·36 (-0·59,-0·13)	999 (17·09 %)
UK	Brighton and Hove	2005-2016	12	18·5 (5·6-39·5)	24·0%	-0·62 (-0·89,-0·38)	442 (10·08 %)
UK	Barnsley/Dearne Valley	1999-2016	18	21·8 (7·0-45·8)	32·1%	-0·45 (-0·60,-0·29)	297 (4·55 %)
UK	Birkenhead	2001-2016	16	21·2 (7·4-46·6)	29·8%	-0·14 (-0·48,0·17)	3,135 (53·64 %)
UK	Bournemouth/Poole	2001-2016	16	16·2 (4·6-37·4)	18·5%	-0·37 (-0·55,-0·20)	133 (2·30 %)
UK	Bristol	1995-2016	22	34·8 (13·3-68·4)	66·0%	-0·92 (-1·09,-0·76)	650 (8·09 %)
UK	Chesterfield	2008-2016	9	17·8 (4·9-39·3)	21·8%	-0·04 (-0·51,0·39)	455 (14·15 %)
UK	Cardiff	1995-2016	22	32·7 (14·4-57·5)	67·7%	-0·72 (-0·87,-0·57)	579 (7·21 %)
UK	Crawley	2001-2016	16	30·5 (15·8-51·2)	64·7%	-0·78 (-0·94,-0·63)	2 (0·03 %)
UK	Eastbourne	2004-2016	13	14·9 (3·3-35·9)	16·1%	-0·52 (-0·72,-0·33)	136 (2·91 %)
UK	Kingston upon Hull	1995-2016	22	30·8 (9·7-57·0)	61·5%	-0·92 (-1·06,-0·78)	660 (8·21 %)
UK	Leicester	1995-2016	22	34·5 (13·8-60·8)	71·2%	-0·74 (-0·87,-0·61)	687 (8·55 %)
UK	London	1995-2016	22	40·1 (19·8-67·3)	84·8%	-0·68 (-0·82,-0·54)	0 (0·00 %)
UK	Liverpool	1995-2016	22	37·2 (11·7-69·9)	70·3%	-1·21 (-1·48,-0·98)	4,572 (56·89 %)
UK	Medway Towns	1997-2009	13	25·6 (7·9-52·1)	44·6%	-0·40 (-0·73,-0·11)	410 (8·66 %)

UK	Manchester	1995-2016	22	36·9 (16·4-64·9)	77·8%	-0·55 (-0·68,-0·38)	34 (0·42 %)
UK	Northampton	2002-2016	15	18·4 (5·6-40·9)	23·1%	-0·41 (-0·62,-0·22)	526 (9·60 %)
UK	Norwich	1998-2016	19	20·0 (6·3-42·2)	27·5%	-0·88 (-1·02,-0·73)	924 (13·32 %)
UK	Nottingham	1998-2016	19	36·2 (17·1-60·0)	78·2%	-0·48 (-0·67,-0·28)	282 (4·06 %)
UK	Newport	2002-2016	15	20·8 (6·8-42·5)	29·7%	-0·43 (-0·66,-0·21)	26 (0·47 %)
UK	Plymouth	1999-2016	18	25·0 (9·1-46·0)	44·5%	-0·27 (-0·52,-0·00)	3,410 (52·03 %)
UK	Preston	2001-2016	16	24·6 (9·8-48·2)	41·2%	-0·43 (-0·77,-0·09)	3,025 (51·76 %)
UK	Reading	1998-2016	19	28·0 (9·5-54·2)	51·5%	-0·71 (-0·90,-0·50)	960 (13·83 %)
UK	Sheffield	1995-2016	22	35·7 (14·4-62·2)	74·7%	-0·84 (-0·98,-0·70)	108 (1·34 %)
UK	South Hampshire	1995-2016	22	31·7 (14·9-55·4)	64·6%	-0·62 (-0·74,-0·47)	122 (1·52 %)
UK	Southend-on-Sea	2001-2016	16	22·2 (7·8-45·9)	32·8%	-0·42 (-0·60,-0·25)	806 (13·79 %)
UK	Stoke-on-Trent	1998-2016	19	30·4 (12·9-55·1)	61·1%	-0·24 (-0·38,-0·10)	236 (3·40 %)
UK	Swansea	1995-2016	22	28·1 (10·3-51·2)	54·4%	-0·55 (-0·69,-0·39)	1,505 (18·73 %)
UK	Thanet	2003-2009	7	22·4 (7·4-47·6)	35·1%	-0·83 (-1·49,-0·20)	27 (1·06 %)
UK	Teesside	1998-2016	19	21·8 (6·1-44·3)	33·6%	-0·34 (-0·58,-0·06)	3,428 (49·39 %)
UK	Tyneside	1995-2016	22	32·8 (14·7-56·7)	69·2%	-0·64 (-0·85,-0·44)	3,998 (49·75 %)
UK	West Midlands	1995-2016	22	32·6 (12·5-59·3)	64·5%	-0·66 (-0·80,-0·50)	0 (0·00 %)
UK	West Yorkshire	1995-2016	22	39·6 (18·4-66·0)	84·1%	-0·73 (-0·89,-0·56)	76 (0·95 %)
USA	Albuquerque (NM)	1995-2006	12	31·9 (12·7-57·1)	63·9%	-0·78 (-1·31,-0·31)	220 (5·02 %)
USA	Allentown (PA)	1995-2006	12	29·7 (11·0-56·9)	56·9%	-1·24 (-1·54,-0·92)	13 (0·30 %)
USA	Anaheim (CA)	1995-2006	12	47·2 (17·3-90·9)	83·8%	-2·12 (-2·74,-1·51)	0 (0·00 %)
USA	Annandale (VA)	1995-2006	12	31·4 (14·0-53·9)	65·5%	-1·05 (-1·37,-0·76)	1 (0·02 %)
USA	Austin (TX)	1995-2006	12	13·0 (2·0-44·1)	14·6%	-1·16 (-1·84,-0·66)	694 (15·83 %)
USA	Atlanta (GA)	1995-2006	12	33·3 (12·0-61·8)	67·2%	-0·70 (-1·05,-0·40)	11 (0·25 %)
USA	Aztec (NM)	1997-2006	10	19·9 (8·0-39·2)	22·9%	0·66 (0·37,0·95)	10 (0·28 %)
USA	Buffalo (NY)	1995-2006	12	32·3 (13·9-57·2)	67·3%	-0·88 (-1·17,-0·61)	1 (0·02 %)
USA	Bakersfield (CA)	1995-2006	12	28·6 (14·2-47·9)	59·4%	-0·21 (-0·56,0·10)	0 (0·00 %)
USA	Baltimore (MD)	1995-2006	12	39·1 (19·3-63·4)	85·2%	-0·89 (-1·16,-0·64)	2 (0·05 %)
USA	Paterson (NJ)	1995-2006	12	43·6 (16·3-77·4)	82·5%	-1·66 (-1·99,-1·34)	1,507 (34·41 %)
USA	Burlington (VT)	1995-2006	12	27·7 (11·8-47·7)	55·9%	-1·00 (-1·25,-0·77)	897 (20·47 %)
USA	Boston (MA)	1995-2006	12	38·7 (17·0-65·0)	81·8%	-2·31 (-2·62,-2·06)	1 (0·02 %)
USA	Baton rouge (LA)	1995-2006	12	23·4 (11·9-41·2)	34·9%	-0·32 (-0·51,-0·14)	0 (0·00 %)
USA	Chicago (IL)	1995-2006	12	42·8 (21·3-67·0)	90·8%	-0·35 (-0·56,-0·14)	0 (0·00 %)
USA	Charlotte (NC)	1995-2006	12	30·9 (12·9-53·5)	63·9%	-0·58 (-0·95,-0·28)	209 (4·77 %)
USA	Charleston (SC)	1995-2006	12	12·9 (3·0-27·6)	8·1%	0·45 (0·17,0·69)	137 (3·13 %)
USA	Colorado springs (CO)	1995-2001	7	30·0 (11·6-53·1)	63·0%	0·32 (-0·59,1·18)	9 (0·37 %)
USA	Cleveland (OH)	1995-2006	12	39·0 (18·1-65·8)	83·9%	-1·09 (-1·28,-0·93)	2 (0·05 %)
USA	Cincinnati (OH)	1995-2006	12	42·2 (21·5-66·8)	90·4%	-1·59 (-1·86,-1·32)	22 (0·50 %)
USA	Columbia (SC)	1995-2006	12	13·4 (4·2-27·4)	7·9%	-0·00 (-0·24,0·21)	118 (2·69 %)
USA	Layton (UT)	1995-2006	12	37·0 (13·1-78·0)	67·3%	-0·05 (-0·56,0·45)	251 (5·73 %)
USA	Dallas (TX)	1995-2006	12	29·5 (12·1-53·7)	57·2%	-0·74 (-1·00,-0·49)	0 (0·00 %)
USA	Denver (CO)	1995-2006	12	37·4 (14·0-70·1)	72·7%	2·44 (1·95,2·92)	57 (1·30 %)
USA	Detroit (MI)	1995-2006	12	35·4 (14·0-62·3)	73·6%	-0·19 (-0·57,0·20)	48 (1·10 %)

USA	Davenport (IA)	2001-2006	6	11·3 (3·8-23·7)	4·2%	0·38 (-0·22,1·12)	106 (5·05 %)
USA	El centro (CA)	1995-2006	12	25·1 (5·8-54·7)	41·9%	-0·08 (-0·54,0·35)	109 (2·49 %)
USA	El paso (TX)	1995-2006	12	35·2 (13·9-65·2)	69·6%	-2·14 (-2·52,-1·72)	41 (0·94 %)
USA	Elizabeth (NJ)	1995-2006	12	67·4 (33·3-105·6)	98·9%	-1·05 (-1·68,-0·62)	70 (1·60 %)
USA	Erie (PA)	1995-2006	12	24·6 (8·7-44·9)	43·4%	-0·75 (-0·95,-0·52)	222 (5·07 %)
USA	Essex (MA)	1995-2006	12	17·5 (4·4-38·3)	20·2%	-0·62 (-0·82,-0·44)	241 (5·50 %)
USA	Evansville (IN)	2000-2006	7	21·8 (9·6-39·2)	30·7%	-1·24 (-1·77,-0·73)	89 (3·48 %)
USA	Fargo (ND)	1996-2006	11	12·2 (2·8-26·9)	7·0%	-0·39 (-0·60,-0·21)	193 (4·80 %)
USA	Fresno (CA)	1995-2006	12	31·3 (13·8-55·3)	65·6%	-0·56 (-1·00,-0·19)	0 (0·00 %)
USA	Fort lauderdale (FL)	1995-2006	12	16·6 (3·5-34·0)	17·3%	-0·31 (-0·51,-0·12)	74 (1·69 %)
USA	Fort pierce (FL)	1999-2004	6	18·3 (7·0-33·9)	18·9%	-0·21 (-0·90,0·45)	263 (12·00 %)
USA	Fort worth (TX)	1995-2006	12	25·9 (8·8-49·5)	46·4%	-1·19 (-1·44,-0·94)	39 (0·89 %)
USA	Gary (IN)	1995-2006	12	35·3 (13·5-60·5)	75·4%	-0·47 (-0·71,-0·16)	334 (7·62 %)
USA	Greensburg (PA)	1998-2006	9	28·8 (12·5-49·0)	60·3%	-1·56 (-1·89,-1·27)	83 (2·53 %)
USA	Greenville (SC)	1995-2006	12	27·8 (9·8-52·6)	52·0%	-0·90 (-1·26,-0·61)	262 (6·01 %)
USA	Honolulu (HI)	1995-2006	12	7·0 (1·8-13·5)	0·0%	0·22 (0·11,0·33)	54 (1·23 %)
USA	Harrisburg (PA)	1995-2006	12	32·5 (12·5-60·3)	65·3%	-1·12 (-1·43,-0·78)	26 (0·59 %)
USA	Hartford (CT)	1995-2006	12	31·8 (10·7-62·4)	60·6%	-0·86 (-1·27,-0·42)	483 (11·02 %)
USA	Houston (TX)	1995-2006	12	29·6 (12·4-54·0)	59·0%	-1·51 (-1·78,-1·21)	4 (0·09 %)
USA	Indianapolis (IN)	1995-2006	12	31·9 (14·4-53·5)	68·2%	-0·63 (-0·89,-0·35)	261 (5·95 %)
USA	Jacksonville (FL)	1995-2006	12	27·1 (11·7-47·8)	52·0%	-0·55 (-0·75,-0·30)	365 (8·33 %)
USA	Jersey city (NJ)	1995-2006	12	47·0 (19·6-79·1)	89·4%	-0·82 (-1·20,-0·50)	79 (1·80 %)
USA	Kansas city (KS)	1995-2006	12	26·2 (12·2-45·6)	49·3%	-0·43 (-0·62,-0·24)	0 (0·00 %)
USA	Lake charles (LA)	1995-2006	12	11·1 (3·7-22·2)	3·0%	0·50 (0·32,0·66)	96 (2·19 %)
USA	Lancaster (PA)	1995-2006	12	27·5 (10·9-50·0)	52·1%	-0·54 (-0·92,-0·22)	47 (1·07 %)
USA	Louisville (KY)	1995-2006	12	32·0 (16·1-51·3)	72·2%	-0·17 (-0·38,0·07)	116 (2·65 %)
USA	Los angeles (CA)	1995-2006	12	57·0 (28·0-93·9)	97·2%	-2·28 (-2·76,-1·74)	0 (0·00 %)
USA	Las vegas (NV)	1995-2006	12	26·6 (7·9-63·0)	40·7%	-1·61 (-2·27,-1·05)	399 (9·10 %)
USA	Little rock (AR)	1995-2006	12	22·5 (9·2-42·2)	34·7%	0·46 (0·28,0·68)	121 (2·76 %)
USA	Middlesex (NJ)	1995-2006	12	33·8 (12·8-64·3)	66·0%	-0·71 (-1·08,-0·38)	54 (1·23 %)
USA	Modesto (CA)	1995-2006	12	31·5 (14·5-54·4)	65·6%	-0·79 (-1·20,-0·43)	5 (0·11 %)
USA	Miami (FL)	1995-2006	12	19·7 (7·6-40·9)	25·4%	-0·42 (-0·61,-0·21)	23 (0·52 %)
USA	Milwaukee (WI)	1995-2006	12	33·6 (13·7-59·1)	70·7%	-0·84 (-1·07,-0·56)	778 (17·75 %)
USA	Memphis (TN)	1995-2006	12	41·7 (5·5-75·4)	81·5%	-2·68 (-3·40,-1·90)	748 (17·34 %)
USA	Minneapolis (MN)	1995-2002	8	38·0 (17·0-65·9)	80·7%	-1·44 (-2·01,-0·99)	18 (0·62 %)
USA	Nashua (NH)	1995-2006	12	23·4 (4·7-50·1)	38·4%	-1·70 (-2·03,-1·34)	398 (9·08 %)
USA	Melville (NY)	1995-2006	12	38·9 (15·9-68·5)	78·3%	-1·84 (-2·13,-1·60)	116 (2·65 %)
USA	Norfolk (VA)	1995-2004	10	32·8 (13·8-55·9)	70·7%	-0·47 (-0·80,-0·11)	27 (0·74 %)
USA	Nashville (TN)	1995-2006	12	28·3 (4·7-55·7)	55·8%	0·60 (0·07,1·07)	138 (3·15 %)
USA	New haven (CT)	1995-2006	12	41·4 (16·2-71·8)	82·3%	-1·04 (-1·35,-0·75)	59 (1·35 %)
USA	New orleans (LA)	1995-2006	12	26·5 (10·7-47·1)	50·6%	-0·90 (-1·10,-0·70)	28 (0·64 %)
USA	Newark (NJ)	1995-2006	12	40·9 (17·8-72·4)	81·7%	-1·32 (-1·67,-1·04)	14 (0·32 %)
USA	New york (NY)	1995-2006	12	59·3 (34·1-90·8)	99·3%	-1·58 (-1·86,-1·31)	1 (0·02 %)
USA	Oklahoma city (OK)	1995-2006	12	21·2 (8·3-41·6)	29·8%	-0·59 (-0·82,-0·37)	17 (0·39 %)

USA	Oakland (CA)	1995-2006	12	27·9 (11·2-50·0)	54·0%	-0·81 (-1·18,-0·52)	0 (0·00 %)
USA	Orlando (FL)	1995-2006	12	20·7 (7·2-40·6)	28·6%	-0·64 (-0·86,-0·36)	115 (2·62 %)
USA	Philadelphia (PA)	1995-2006	12	42·3 (21·4-69·4)	89·6%	-1·28 (-1·62,-0·98)	0 (0·00 %)
USA	Phoenix (AZ)	1995-2006	12	47·8 (21·0-79·8)	89·8%	-1·56 (-2·15,-1·08)	4 (0·09 %)
USA	Palm beach (FL)	1995-2006	12	24·6 (9·9-40·9)	46·2%	-0·38 (-0·81,-0·02)	418 (9·54 %)
USA	Pensacola (FL)	1999-2006	8	14·3 (4·2-29·8)	10·2%	-1·20 (-1·58,-0·91)	33 (1·17 %)
USA	Provo (UT)	1995-2006	12	43·2 (20·5-71·6)	88·5%	-0·51 (-1·10,0·04)	263 (6·00 %)
USA	Port arthur (TX)	1995-2006	12	15·1 (2·8-31·5)	13·7%	-0·37 (-0·59,-0·16)	210 (4·79 %)
USA	Portland (ME)	1995-2006	12	27·8 (5·5-53·8)	55·2%	-0·32 (-2·00,1·06)	2,349 (53·59 %)
USA	Providence (RI)	1995-2006	12	22·4 (6·3-43·8)	35·6%	-0·88 (-1·15,-0·65)	144 (3·29 %)
USA	Pittsburgh (PA)	1995-2006	12	40·0 (16·2-67·6)	81·4%	-2·42 (-2·68,-2·20)	7 (0·16 %)
USA	Richmond (VA)	1995-2006	12	35·8 (14·1-62·2)	75·3%	-1·24 (-1·58,-0·88)	233 (5·32 %)
USA	Reading (PA)	1995-2005	11	37·1 (18·3-60·4)	83·6%	-0·74 (-1·10,-0·38)	20 (0·50 %)
USA	Riverside (CA)	1995-2006	12	40·3 (19·6-64·2)	85·9%	-0·25 (-0·65,0·13)	0 (0·00 %)
USA	Sacramento (CA)	1995-2006	12	24·8 (10·6-45·3)	42·8%	-0·17 (-0·51,0·17)	0 (0·00 %)
USA	Scranton (PA)	1995-2006	12	26·8 (9·6-51·3)	49·2%	-0·96 (-1·22,-0·73)	1 (0·02 %)
USA	San diego (CA)	1995-2006	12	35·5 (15·9-64·9)	72·7%	-0·55 (-0·96,-0·09)	6 (0·14 %)
USA	San francisco (CA)	1995-2006	12	33·5 (11·9-63·6)	62·4%	-1·03 (-1·55,-0·56)	2 (0·05 %)
USA	Salt lake city (UT)	1996-2006	11	45·9 (19·6-83·6)	87·8%	-0·76 (-1·45,-0·08)	21 (0·52 %)
USA	San jose (CA)	1995-2006	12	42·8 (17·2-78·2)	82·7%	-1·22 (-1·76,-0·73)	417 (9·51 %)
USA	San antonio (TX)	1997-2006	10	18·7 (7·4-37·2)	22·1%	-1·35 (-1·76,-0·93)	30 (0·82 %)
USA	Springfield (MA)	1995-2006	12	28·4 (11·2-54·0)	53·4%	-0·66 (-0·92,-0·37)	3 (0·07 %)
USA	Springfield (MO)	1995-2006	12	21·9 (7·0-41·6)	33·6%	-0·24 (-0·43,-0·05)	57 (1·30 %)
USA	Sarasota (FL)	1999-2006	8	10·0 (2·3-22·6)	3·4%	-0·53 (-0·84,-0·26)	87 (2·98 %)
USA	St· charles (MO)	1995-2006	12	17·0 (4·5-35·8)	19·3%	-0·04 (-0·23,0·14)	140 (3·19 %)
USA	Stockton (CA)	1995-2006	12	31·6 (13·8-54·4)	66·8%	-0·42 (-0·75,-0·11)	10 (0·23 %)
USA	East st· louis (IL)	1995-2006	12	33·6 (18·3-51·2)	79·9%	-1·01 (-1·18,-0·86)	108 (2·46 %)
USA	South bend (IN)	1995-2006	12	25·3 (9·9-44·6)	46·4%	-0·54 (-0·83,-0·25)	503 (11·48 %)
USA	St· louis (MO)	1995-2006	12	33·3 (15·8-54·2)	74·1%	-1·14 (-1·38,-0·94)	0 (0·00 %)
USA	Stamford (CT)	1995-2006	12	34·1 (12·0-64·0)	67·5%	-1·34 (-1·64,-1·05)	105 (2·40 %)
USA	St· petersburg (FL)	1995-2006	12	20·7 (4·2-44·8)	31·7%	-0·62 (-0·91,-0·31)	134 (3·06 %)
USA	Seattle (WA)	1995-2005	11	32·7 (12·3-56·3)	68·6%	0·31 (-0·16,0·75)	214 (5·37 %)
USA	Tampa (FL)	1995-2006	12	15·9 (5·3-32·9)	13·3%	-0·46 (-0·65,-0·28)	1 (0·02 %)
USA	Tucson (AZ)	1995-2006	12	30·8 (14·0-52·1)	62·5%	-0·12 (-0·45,0·20)	15 (0·34 %)
USA	Trenton (NJ)	1995-2006	12	29·5 (11·4-56·9)	56·2%	-0·44 (-0·83,-0·10)	38 (0·87 %)
USA	Tulsa (OK)	1995-2006	12	20·4 (4·6-40·0)	30·3%	-0·35 (-0·65,-0·12)	33 (0·75 %)
USA	Visalia (CA)	1995-2006	12	33·8 (16·8-57·0)	75·5%	-0·70 (-1·10,-0·29)	72 (1·64 %)
USA	Ventura (CA)	1995-2006	12	22·4 (9·9-39·9)	33·0%	-0·22 (-0·47,-0·00)	0 (0·00 %)
USA	Ogden (UT)	1995-2006	12	46·7 (20·7-78·9)	89·4%	-0·40 (-1·06,0·18)	955 (21·79 %)
USA	Wilmington (DE)	1995-2006	12	32·1 (9·1-59·6)	63·7%	0·46 (-0·05,0·89)	812 (18·53 %)
USA	Winston-salem (NC)	1995-2006	12	27·9 (9·6-52·2)	53·0%	-1·06 (-1·46,-0·63)	592 (13·51 %)
USA	Worcester (MA)	1995-2006	12	33·7 (13·2-60·5)	68·6%	-1·03 (-1·28,-0·80)	312 (7·12 %)
USA	Washington (DC)	1995-2006	12	41·5 (21·3-67·8)	88·7%	-0·54 (-0·94,-0·22)	0 (0·00 %)
USA	Washington (PA)	1995-2006	12	24·7 (10·9-43·8)	42·7%	-1·36 (-1·62,-1·13)	0 (0·00 %)

USA	York (PA)	1995-2006	12	34·6 (13·8-60·4)	72·1%	-0·86 (-1·24,-0·53)	42 (0·96 %)
				PM_{10}			
Canada	Abbotsford	2000-2011	12	13·0 (5·6-25·1)	0·0%	-0·22 (-0·35,-0·08)	731 (16·68 %)
Canada	Calgary	2000-2011	12	23·4 (8·1-47·2)	6·1%	-0·26 (-0·53,0·03)	1,112 (25·37 %)
Canada	Edmonton	2000-2011	12	21·0 (5·6-47·9)	6·1%	-0·79 (-1·12,-0·45)	1,138 (25·96 %)
Canada	Regina	2001-2011	11	23·6 (7·0-54·5)	9·2%	-0·94 (-1·73,-0·16)	1,223 (30·99 %)
Canada	Victoria	2001-2011	11	14·0 (6·2-28·2)	1·3%	-0·00 (-0·14,0·14)	1,571 (39·13 %)
Canada	Vancouver	2000-2011	12	12·5 (6·1-22·1)	0·0%	-0·21 (-0·33,-0·10)	731 (16·68 %)
Canada	Winnipeg	2000-2011	12	15·9 (4·5-39·4)	3·2%	-1·35 (-1·61,-1·08)	435 (9·93 %)
China	Hong Kong	1996-2002	7	51·6 (21·5-98·4)	50·7%	-0·19 (-1·86,1·47)	0 (0·00 %)
China	Taiyuan	2004-2008	5	132·1 (46·1-251·2)	95·3%	-14·92 (-21·20,-7·79)	0 (0·00 %)
Colombia	Bogota	2002-2013	12	62·7 (34·1-97·6)	81·2%	-2·09 (-2·73,-1·56)	6 (0·14 %)
Cyprus	Famagusta	2011-2016	6	37·0 (17·8-63·1)	14·4%	-1·16 (-1·93,-0·47)	93 (4·24 %)
Cyprus	Larnaka	2005-2016	12	49·1 (25·1-82·2)	45·6%	-1·07 (-1·53,-0·72)	55 (1·25 %)
Cyprus	Limassol	2005-2016	12	47·3 (23·5-82·4)	41·4%	-1·35 (-1·84,-0·82)	217 (4·95 %)
Cyprus	Nicosia	2005-2016	12	48·7 (23·6-90·5)	43·2%	-0·97 (-1·45,-0·55)	158 (3·60 %)
Cyprus	Pafos	2005-2016	12	38·7 (17·7-72·0)	21·4%	-1·59 (-1·93,-1·31)	168 (3·83 %)
Czech Republic	Prague	1995-2009	15	34·3 (12·0-77·2)	21·2%	-1·05 (-1·50,-0·58)	7 (0·13 %)
Estonia	Kohtla-Jarve linn	2003-2016	14	15·3 (4·1-36·7)	2·7%	-0·37 (-0·51,-0·24)	194 (3·79 %)
Estonia	Narva linn	2009-2016	8	14·2 (4·6-30·1)	0·8%	-0·70 (-1·02,-0·34)	57 (1·96 %)
Estonia	Tallinn	2005-2016	12	21·0 (5·0-50·0)	6·9%	-1·75 (-2·11,-1·44)	94 (2·18 %)
Estonia	Tartu linn	2009-2016	8	17·5 (5·8-38·1)	2·9%	-0·06 (-0·50,0·38)	79 (2·70 %)
Finland	Helsinki	1995-2014	20	19·8 (4·7-52·0)	7·6%	-0·06 (-0·19,0·05)	0 (0·00 %)
France	Bordeaux	2007-2015	9	21·8 (10·3-42·8)	4·0%	-0·26 (-0·61,0·09)	0 (0·00 %)
France	Clermont-Ferrand	2007-2015	9	19·6 (7·2-42·6)	4·2%	-0·29 (-0·64,0·08)	7 (0·21 %)
France	Dijon	2007-2015	9	19·0 (7·1-40·2)	3·5%	-0·31 (-0·71,0·06)	159 (4·90 %)
France	Grenoble	2007-2015	9	25·2 (9·7-52·3)	8·7%	-1·00 (-1·61,-0·35)	3 (0·09 %)
France	Le Havre	2007-2015	9	23·2 (9·0-50·7)	6·5%	-1·08 (-1·46,-0·72)	140 (4·26 %)
France	Lille	2007-2015	9	27·6 (11·2-58·1)	12·0%	-1·34 (-1·83,-0·90)	4 (0·12 %)
France	Lens-Douai	2007-2015	9	24·6 (9·5-54·5)	8·7%	-1·21 (-1·65,-0·69)	28 (0·85 %)
France	Lyon	2007-2015	9	26·8 (10·7-55·9)	10·6%	-0·89 (-1·51,-0·27)	2 (0·06 %)
France	Montpellier	2007-2015	9	21·4 (7·4-42·9)	3·8%	-0·74 (-1·12,-0·35)	166 (5·05 %)
France	Marseille	2007-2015	9	31·0 (14·0-54·5)	13·3%	-0·89 (-1·22,-0·58)	22 (0·67 %)
France	Nice	2007-2015	9	27·4 (14·0-43·0)	3·5%	-0·77 (-1·03,-0·50)	124 (3·77 %)
France	Nancy	2007-2015	9	24·2 (8·9-48·1)	6·9%	-0·03 (-0·52,0·39)	28 (0·85 %)
France	Nantes	2007-2015	9	20·2 (9·0-41·2)	3·6%	-0·51 (-0·96,-0·14)	16 (0·49 %)
France	Paris	2007-2015	9	25·3 (11·1-51·1)	8·0%	-0·88 (-1·34,-0·50)	0 (0·00 %)
France	Rennes	2007-2015	9	19·8 (7·8-43·2)	4·3%	-0·64 (-1·01,-0·27)	77 (2·35 %)
France	Rouen	2007-2015	9	24·5 (11·0-50·5)	7·4%	-0·95 (-1·47,-0·52)	5 (0·15 %)
France	Strasbourg	2007-2015	9	24·2 (9·0-50·0)	7·3%	-0·67 (-1·22,-0·18)	145 (4·41 %)
France	Toulouse	2007-2015	9	21·0 (9·0-39·9)	2·8%	-0·48 (-0·82,-0·13)	1 (0·03 %)
Greece	Athens	2001-2010	10	43·9 (18·5-83·3)	38·5%	-2·27 (-2·72,-1·71)	55 (1·51 %)
Iran	Tehran	2002-2015	14	87·5 (30·1-164·2)	86·1%	1·89 (1·13,2·63)	0 (0·00 %)
Japan	Akita	2012-2016	5	24·0 (10·5-51·8)	7·3%	-0·74 (-2·09,0·37)	0 (0·00 %)

Japan	Chiba	2011-2016	6	29·5 (11·0-60·2)	15·0%	1·69 (0·90,2·37)	0 (0·00 %)
Japan	Fukushima	2011-2016	6	24·2 (9·1-47·5)	6·2%	-0·11 (-1·22,1·03)	2 (0·09 %)
Japan	Fukuoka	1995-2016	22	33·4 (13·3-65·5)	20·2%	0·10 (0·00,0·23)	747 (9·30 %)
Japan	Fukui	2011-2016	6	29·3 (8·6-61·7)	15·2%	1·36 (0·14,2·50)	4 (0·18 %)
Japan	Gifu	2011-2016	6	21·8 (5·5-47·5)	6·1%	0·64 (-0·54,1·73)	0 (0·00 %)
Japan	Hiroshima	2012-2016	5	38·0 (15·8-71·6)	27·7%	-1·88 (-3·50,-0·08)	0 (0·00 %)
Japan	Kagoshima	2011-2016	6	36·8 (15·1-69·9)	26·6%	-0·13 (-1·90,1·85)	0 (0·00 %)
Japan	Kumamoto	2011-2016	6	36·2 (11·4-72·3)	26·7%	0·76 (-0·96,2·26)	6 (0·27 %)
Japan	Kanazawa	2011-2016	6	23·8 (7·1-53·0)	8·4%	0·65 (-0·82,1·92)	0 (0·00 %)
Japan	Kochi	2011-2016	6	24·7 (7·7-54·4)	9·5%	0·75 (-0·43,1·81)	29 (1·32 %)
Japan	Kofu	2011-2016	6	30·3 (10·3-60·2)	15·2%	2·08 (0·80,3·68)	32 (1·46 %)
Japan	Kitakyushu	1995-2008	14	31·0 (11·5-62·0)	17·6%	-0·59 (-0·80,-0·35)	0 (0·00 %)
Japan	Matsue	2011-2016	6	20·8 (5·1-46·9)	5·8%	-0·03 (-1·09,0·99)	22 (1·00 %)
Japan	Maebashi	2011-2016	6	24·7 (5·7-55·1)	10·2%	0·40 (-0·87,1·43)	5 (0·24 %)
Japan	Mito	2011-2016	6	25·2 (7·7-52·7)	9·1%	0·34 (-0·58,1·33)	7 (0·32 %)
Japan	Morioka	2011-2016	6	18·7 (3·8-42·6)	4·3%	1·01 (0·37,1·97)	16 (0·73 %)
Japan	Matsuyama	2011-2016	6	33·6 (12·0-67·5)	20·8%	0·83 (-0·61,2·28)	0 (0·00 %)
Japan	Nagano	2011-2016	6	22·6 (6·9-46·3)	5·6%	0·38 (-0·36,1·27)	0 (0·00 %)
Japan	Nagoya	1995-2016	22	38·5 (12·8-76·8)	30·8%	-0·95 (-1·10,-0·78)	730 (9·08 %)
Japan	Nara	2011-2016	6	25·3 (8·7-52·0)	8·0%	0·46 (-0·54,1·48)	0 (0·00 %)
Japan	Nagasaki	2011-2016	6	31·3 (11·8-59·4)	16·8%	0·79 (-0·43,1·83)	0 (0·00 %)
Japan	Niigata	2011-2016	6	24·7 (10·7-49·7)	7·1%	0·08 (-0·97,1·27)	0 (0·00 %)
Japan	Oita	2011-2016	6	28·0 (10·5-57·0)	12·0%	1·62 (0·50,2·61)	0 (0·00 %)
Japan	Okayama	2011-2016	6	32·4 (10·3-67·2)	20·6%	0·32 (-1·17,1·90)	0 (0·00 %)
Japan	Osaka	1995-2016	22	36·1 (12·8-72·6)	26·1%	-0·63 (-0·76,-0·48)	730 (9·08 %)
Japan	Saga	2011-2016	6	32·3 (10·2-62·9)	18·7%	1·65 (0·11,2·90)	0 (0·00 %)
Japan	Saitama	2011-2016	6	30·9 (11·2-61·2)	16·2%	1·16 (0·25,2·05)	0 (0·00 %)
Japan	Sendai	1995-2016	22	24·2 (8·5-52·0)	8·8%	-0·21 (-0·36,-0·07)	733 (9·12 %)
Japan	Shimonoseki	2012-2016	5	35·1 (11·5-70·2)	24·2%	-1·12 (-2·76,0·27)	0 (0·00 %)
Japan	Sapporo	1995-2016	22	15·9 (6·3-33·2)	1·5%	0·04 (-0·05,0·13)	730 (9·08 %)
Japan	Takamatsu	2011-2016	6	35·3 (11·1-74·3)	25·7%	1·23 (-0·20,2·54)	0 (0·00 %)
Japan	Tokushima	2011-2016	6	29·2 (9·3-64·3)	13·5%	0·98 (-0·18,2·26)	0 (0·00 %)
Japan	Tokyo	1995-2016	22	36·8 (12·4-78·1)	26·1%	-1·05 (-1·21,-0·88)	730 (9·08 %)
Japan	Toyama	2011-2016	6	22·0 (5·5-51·5)	7·4%	1·44 (0·30,2·69)	0 (0·00 %)
Japan	Tsu	2011-2016	6	33·6 (11·9-66·8)	19·2%	1·36 (-0·40,2·65)	0 (0·00 %)
Japan	Utsunomiya	2011-2016	6	28·8 (11·0-59·0)	12·9%	0·45 (-0·46,1·52)	3 (0·14 %)
Japan	Wakayama	2011-2016	6	31·9 (13·0-62·8)	15·9%	0·71 (-0·85,1·99)	0 (0·00 %)
Japan	Yokohama	2011-2016	6	35·1 (14·6-66·6)	21·4%	1·29 (-0·04,2·44)	0 (0·00 %)
Japan	Yamagata	2011-2016	6	25·4 (9·0-52·2)	8·9%	0·89 (0·08,1·67)	3 (0·14 %)
South Korea	Busan	1999-2015	17	54·2 (25·7-99·2)	55·7%	-1·22 (-1·51,-0·92)	90 (1·45 %)
South Korea	Daegu	1999-2015	17	53·8 (22·4-100·9)	55·5%	-1·55 (-1·91,-1·16)	100 (1·61 %)
South Korea	Daejeon	1999-2015	17	46·4 (16·4-92·5)	42·3%	-0·62 (-1·01,-0·25)	101 (1·63 %)
South Korea	Gwangju	1999-2015	17	47·4 (17·6-97·1)	42·6%	-0·88 (-1·21,-0·56)	92 (1·48 %)
South Korea	Incheon	1999-2015	17	56·6 (22·2-111·0)	58·3%	-0·49 (-0·89,-0·06)	86 (1·39 %)

South Korea	Seoul	1999-2015	17	57·9 (18·1-121·6)	57·8%	-1·94 (-2·36,-1·52)	56 (0·90 %)
South Korea	Ulsan	1999-2015	17	49·2 (23·4-89·8)	47·1%	-0·32 (-0·61,-0·05)	89 (1·43 %)
Kuwait	Kuwait	2010-2016	7	191·0 (60·7-539·5)	98·3%	-17·28 (-26·98,-9·13)	6 (0·23 %)
Mexico	Guadalajara	2000-2012	13	49·1 (20·9-84·7)	53·6%	-1·08 (-1·86,-0·34)	27 (0·57 %)
Mexico	Leon	2006-2012	7	59·5 (23·9-110·8)	66·3%	-3·50 (-5·90,-1·15)	23 (0·90 %)
Mexico	Monterrey	2000-2012	13	78·2 (38·0-130·9)	90·1%	-0·18 (-1·32,0·95)	833 (17·55 %)
Mexico	Puebla-Tlaxcala	2001-2011	11	40·1 (18·1-82·5)	30·0%	-2·82 (-3·78,-2·10)	139 (3·46 %)
Mexico	Toluca de Lerdo	2000-2012	13	66·7 (22·4-132·1)	67·3%	1·53 (0·38,2·63)	206 (4·34 %)
Mexico	Valley of Mexico	2000-2012	13	51·7 (23·7-88·2)	57·3%	-0·24 (-0·85,0·29)	0 (0·00 %)
Norway	Oslo	2000-2016	17	22·1 (8·3-45·9)	5·6%	-0·58 (-0·79,-0·42)	66 (1·06 %)
Portugal	Beja	2005-2016	12	20·7 (8·2-45·2)	5·1%	-0·28 (-0·82,0·25)	1,674 (38·59 %)
Portugal	Coimbra	2003-2016	14	22·2 (7·1-48·6)	6·5%	-0·77 (-1·06,-0·50)	398 (7·82 %)
Portugal	Castelo Branco	2004-2016	13	14·1 (4·0-32·4)	2·0%	-0·47 (-0·72,-0·24)	194 (4·09 %)
Portugal	Lisboa	2000-2016	17	26·3 (9·8-56·0)	10·5%	-0·68 (-0·87,-0·51)	540 (8·70 %)
Portugal	Porto	1999-2016	18	32·2 (9·5-75·1)	21·4%	-1·49 (-1·73,-1·27)	54 (0·82 %)
South Africa	City of Johannesburg	2004-2013	10	56·8 (23·4-106·5)	58·9%	-0·19 (-1·58,1·24)	160 (4·38 %)
South Africa	Sedibeng	2007-2013	7	66·5 (26·2-127·4)	68·5%	-0·72 (-3·10,1·48)	209 (8·27 %)
Spain	A Coruna	2008-2014	7	26·7 (13·7-45·6)	5·6%	-0·34 (-0·92,0·42)	38 (1·49 %)
Spain	Albacete	2001-2013	13	41·8 (19·2-73·3)	36·8%	-2·07 (-2·45,-1·72)	269 (5·77 %)
Spain	Avila	2001-2014	14	23·5 (14·4-35·1)	0·6%	-0·30 (-0·58,-0·09)	2,148 (42·01 %)
Spain	Bilbao	2003-2014	12	36·6 (24·2-52·3)	15·5%	-0·66 (-0·86,-0·44)	227 (5·26 %)
Spain	Barcelona	2004-2014	11	32·8 (12·8-65·0)	19·2%	-2·19 (-2·59,-1·81)	204 (5·08 %)
Spain	Burgos	2001-2014	14	27·0 (15·2-42·2)	2·9%	-0·64 (-0·85,-0·46)	72 (1·41 %)
Spain	Ciudad Real	2008-2013	6	21·2 (7·2-43·2)	4·0%	-0·66 (-1·59,0·20)	88 (4·04 %)
Spain	Cordoba	2001-2008	8	44·8 (28·9-64·5)	45·5%	-0·49 (-1·03,0·08)	58 (1·98 %)
Spain	Guadalajara	2001-2013	13	26·8 (8·5-58·0)	11·3%	-1·22 (-1·51,-0·91)	243 (5·12 %)
Spain	Granada	2001-2008	8	37·8 (17·1-68·0)	27·0%	0·37 (-0·48,1·30)	14 (0·48 %)
Spain	Leon	2001-2014	14	26·4 (11·8-48·6)	6·9%	-1·50 (-1·70,-1·30)	102 (1·99 %)
Spain	Logrono	2002-2014	13	27·0 (11·3-51·7)	9·4%	-1·18 (-1·41,-0·94)	225 (4·74 %)
Spain	Lugo	2009-2014	6	20·5 (8·5-33·4)	1·5%	-0·34 (-1·14,0·80)	85 (3·88 %)
Spain	Malaga	2001-2008	8	27·3 (16·5-42·4)	3·2%	-0·54 (-0·90,-0·09)	137 (4·69 %)
Spain	Madrid	2001-2014	14	29·3 (11·5-59·6)	14·1%	-1·44 (-1·71,-1·22)	4 (0·08 %)
Spain	Murcia	2003-2014	12	21·3 (11·7-33·1)	0·5%	0·34 (0·16,0·50)	774 (17·66 %)
Spain	Ourense	2008-2014	7	16·8 (6·7-34·8)	1·9%	-1·05 (-1·80,-0·38)	93 (3·64 %)
Spain	Oviedo	2003-2014	12	35·0 (15·4-78·2)	20·2%	-2·42 (-3·12,-1·80)	66 (1·51 %)
Spain	Palmas G· Canaria	2001-2014	14	28·8 (12·6-54·5)	10·3%	-1·24 (-1·54,-0·98)	617 (12·07 %)
Spain	Palma Mallorca	2002-2014	13	23·2 (11·5-40·4)	3·0%	-0·68 (-0·89,-0·48)	256 (5·39 %)
Spain	Palencia	2004-2014	11	27·2 (18·8-38·2)	1·4%	-0·08 (-0·28,0·11)	952 (23·69 %)
Spain	Pontevedra	2009-2014	6	20·3 (8·5-38·0)	1·8%	0·02 (-0·93,0·84)	84 (3·83 %)
Spain	Segovia	2002-2014	13	23·1 (11·8-37·0)	1·2%	-0·36 (-0·64,-0·00)	579 (12·20 %)
Spain	Salamanca	2004-2014	11	21·9 (10·6-38·8)	2·0%	-0·45 (-0·66,-0·23)	15 (0·37 %)
Spain	San Sebastian	2001-2014	14	25·7 (12·3-45·6)	5·6%	-0·93 (-1·11,-0·75)	439 (8·63 %)
Spain	Santander	2001-2014	14	29·1 (14·4-52·3)	10·6%	-0·94 (-1·17,-0·73)	439 (8·63 %)

Spain	Soria	2004-2014	11	23·9 (7·3-45·3)	5·2%	-1·52 (-1·84,-1·20)	180 (4·48 %)
Spain	Sevilla	2001-2008	8	40·7 (22·0-62·8)	33·4%	0·06 (-0·61,0·73)	388 (13·29 %)
Spain	Tenerife	2006-2014	9	21·5 (8·4-44·8)	4·9%	-1·34 (-1·78,-0·88)	128 (3·90 %)
Spain	Toledo	2001-2014	14	35·5 (23·0-52·1)	12·8%	-0·27 (-0·46,-0·11)	1,092 (21·37 %)
Spain	Vitoria	2001-2014	14	24·4 (9·0-51·2)	8·6%	-0·96 (-1·20,-0·71)	431 (8·55 %)
Spain	Valencia	2009-2013	5	25·8 (11·3-44·0)	4·1%	-1·78 (-2·83,-0·68)	0 (0·00 %)
Spain	Zamora	2001-2014	14	23·6 (16·2-34·0)	0·3%	-0·05 (-0·19,0·09)	639 (12·50 %)
Spain	Zaragoza	2001-2014	14	30·8 (11·5-61·6)	17·4%	-1·10 (-1·52,-0·76)	70 (1·37 %)
Switzerland	Basel	1995-2013	19	22·1 (6·0-50·0)	7·1%	-0·57 (-0·74,-0·43)	87 (1·25 %)
Switzerland	Bern	1995-2013	19	33·5 (13·1-68·9)	19·3%	-0·84 (-1·05,-0·66)	36 (0·52 %)
Switzerland	Geneve	1998-2013	16	23·5 (7·6-51·7)	8·1%	-0·11 (-0·33,0·07)	113 (1·93 %)
Switzerland	Lausanne	1995-2013	19	27·5 (9·4-60·9)	13·1%	-0·90 (-1·08,-0·71)	94 (1·35 %)
Switzerland	Lugano	1995-2013	19	29·4 (7·2-68·5)	16·6%	-0·91 (-1·13,-0·69)	105 (1·51 %)
Switzerland	Luzern	2001-2013	13	22·0 (6·3-48·8)	6·7%	-0·21 (-0·47,0·05)	11 (0·23 %)
Switzerland	St· Gallen	1995-2013	19	19·3 (5·1-46·4)	5·4%	-0·45 (-0·60,-0·31)	55 (0·79 %)
Switzerland	Zürich	1995-2013	19	23·7 (7·2-52·6)	8·2%	-0·51 (-0·69,-0·34)	47 (0·68 %)
Sweden	Stockholm	1995-2010	16	14·9 (6·0-32·1)	1·0%	-0·10 (-0·20,0·03)	274 (4·69 %)
Thailand	Bangkok	1999-2008	10	58·8 (35·7-100·6)	73·8%	-1·05 (-1·75,-0·37)	0 (0·00 %)
Thailand	Chon Buri	1999-2008	10	43·9 (19·6-81·6)	38·3%	-1·90 (-2·62,-1·05)	11 (0·30 %)
Thailand	Chiang Mai	1999-2008	10	53·3 (19·7-128·5)	45·0%	-1·40 (-2·47,-0·13)	94 (2·59 %)
Thailand	Khon Kaen	1999-2008	10	39·7 (13·4-87·0)	31·2%	-4·28 (-5·48,-3·37)	226 (6·19 %)
Thailand	Lampang	1999-2008	10	53·0 (19·8-139·4)	40·7%	-1·72 (-3·05,-0·88)	3 (0·08 %)
Thailand	Nakhon Ratchasima	2001-2008	8	58·3 (21·5-127·4)	56·3%	2·29 (-0·24,5·05)	591 (20·23 %)
Thailand	Nakhon Sawan	2001-2008	8	50·5 (22·9-98·5)	46·9%	0·57 (-0·73,1·76)	253 (8·71 %)
Thailand	Nonthaburi	1999-2008	10	48·7 (24·4-95·5)	43·1%	0·22 (-0·66,1·06)	190 (5·20 %)
Thailand	Pathum Thani	2001-2008	8	47·8 (21·7-95·6)	43·9%	-0·00 (-1·50,1·69)	292 (9·99 %)
Thailand	Ratchaburi	1999-2008	10	48·4 (18·9-108·3)	40·1%	-1·21 (-2·45,-0·11)	270 (7·39 %)
Thailand	Rayong	1999-2008	10	42·4 (18·3-85·0)	35·3%	-0·52 (-1·54,0·47)	142 (3·89 %)
Thailand	Samutprakan	1999-2008	10	94·9 (43·2-183·3)	94·1%	-2·61 (-4·95,-0·29)	18 (0·49 %)
Thailand	Samut Sakhon	1999-2008	10	48·5 (22·3-95·4)	44·0%	-1·73 (-2·79,-0·55)	19 (0·52 %)
Thailand	Songkhla	2000-2008	9	37·2 (19·1-63·2)	21·9%	0·08 (-0·40,0·79)	1,020 (31·15 %)
Thailand	Saraburi	1999-2008	10	62·6 (25·7-125·8)	66·3%	1·72 (0·38,3·14)	38 (1·04 %)
Thailand	Surat Thani	2000-2008	9	30·2 (15·4-54·5)	11·7%	-0·53 (-1·25,0·03)	1,029 (31·82 %)
Taiwan	Kaohsiung	1995-2014	20	78·6 (28·6-145·4)	73·9%	-0·90 (-1·52,-0·19)	1 (0·01 %)
Taiwan	Taipei	1995-2014	20	50·0 (21·8-94·8)	50·1%	-0·53 (-0·77,-0·30)	1 (0·01 %)
Taiwan	Taichung	1995-2014	20	60·0 (25·4-115·0)	62·8%	-0·56 (-0·90,-0·22)	2 (0·03 %)
UK	Blackpool	2001-2008	8	23·6 (9·4-43·6)	4·1%	-0·58 (-1·22,0·06)	471 (16·12 %)
UK	Birkenhead	2001-2008	8	19·2 (7·2-37·9)	2·3%	-0·62 (-1·04,-0·18)	763 (26·11 %)
UK	Bristol	1995-2016	22	23·2 (9·0-48·4)	6·7%	-0·73 (-0·82,-0·64)	751 (9·35 %)
UK	Chesterfield	2008-2016	9	17·8 (7·5-39·1)	3·0%	-0·55 (-0·91,-0·24)	82 (2·55 %)
UK	Cardiff	1995-2015	21	25·8 (10·5-50·2)	7·7%	-0·86 (-0·96,-0·77)	1,435 (18·71 %)
UK	Crawley	2001-2016	16	20·4 (9·9-40·1)	2·9%	-0·28 (-0·40,-0·19)	235 (4·02 %)
UK	Eastbourne	2001-2016	16	21·9 (9·4-42·1)	4·0%	-0·24 (-0·38,-0·11)	237 (4·06 %)
UK	Kingston upon Hull	1995-2014	20	23·3 (7·4-47·7)	6·1%	-1·01 (-1·11,-0·89)	642 (8·79 %)

UK	Leicester	1995-2013	19	21·2 (9·1-42·4)	3·9%	-0·49 (-0·61,-0·36)	652 (9·53 %)
UK	London	1995-2016	22	23·8 (11·1-48·2)	6·5%	-0·62 (-0·71,-0·54)	0 (0·00 %)
UK	Liverpool	1995-2016	22	21·4 (6·3-48·8)	6·6%	-0·93 (-1·04,-0·83)	1,894 (23·57 %)
UK	Medway Towns	1997-2009	13	20·0 (8·2-41·9)	3·8%	-0·21 (-0·40,0·03)	718 (15·13 %)
UK	Manchester	1996-2016	21	21·7 (9·0-43·8)	4·4%	-0·55 (-0·66,-0·45)	89 (1·16 %)
UK	Norwich	1998-2016	19	18·8 (7·8-37·4)	2·0%	-0·44 (-0·53,-0·35)	1,294 (18·66 %)
UK	Nottingham	1997-2016	20	23·2 (10·4-45·5)	5·2%	-0·49 (-0·59,-0·38)	999 (13·68 %)
UK	Newport	2002-2016	15	18·2 (6·6-35·7)	2·0%	-0·56 (-0·70,-0·42)	931 (16·99 %)
UK	Plymouth	1998-2016	19	19·3 (7·7-38·4)	2·4%	-0·29 (-0·37,-0·18)	1,416 (20·40 %)
UK	Preston	2001-2008	8	19·6 (8·9-37·0)	2·3%	0·01 (-0·47,0·46)	438 (14·99 %)
UK	Reading	1998-2016	19	18·9 (6·6-39·3)	2·6%	-0·58 (-0·68,-0·47)	1,002 (14·44 %)
UK	Sheffield	1996-2016	21	22·5 (8·5-48·2)	6·4%	-0·49 (-0·64,-0·34)	849 (11·07 %)
UK	South Hampshire	1995-2016	22	23·4 (11·0-44·2)	4·7%	-0·53 (-0·61,-0·45)	225 (2·80 %)
UK	Southend-on-Sea	2001-2008	8	20·6 (9·3-41·0)	3·5%	0·30 (-0·14,0·75)	159 (5·44 %)
UK	Stoke-on-Trent	1998-2014	17	21·9 (9·6-42·3)	3·9%	-0·26 (-0·39,-0·10)	577 (9·29 %)
UK	Swansea	1995-2016	22	24·8 (9·6-49·7)	7·5%	-0·80 (-0·90,-0·69)	441 (5·49 %)
UK	Teesside	1998-2016	19	20·9 (7·5-42·8)	3·9%	-0·59 (-0·70,-0·47)	1,220 (17·58 %)
UK	Tyneside	1995-2016	22	18·8 (6·5-41·3)	3·7%	-0·65 (-0·75,-0·57)	1,373 (17·09 %)
UK	Warrington	2009-2016	8	17·8 (7·9-39·0)	2·9%	-0·81 (-1·38,-0·34)	511 (17·49 %)
UK	West Midlands	1995-2016	22	21·2 (7·2-44·7)	4·8%	-0·68 (-0·77,-0·57)	275 (3·42 %)
UK	West Yorkshire	1995-2016	22	25·4 (10·4-52·6)	8·3%	-0·73 (-0·84,-0·63)	38 (0·47 %)
UK	York	2008-2016	9	16·4 (7·0-36·0)	2·0%	-0·38 (-0·65,-0·10)	55 (1·67 %)
USA	Akron (OH)	2000-2004	5	21·1 (8·2-41·2)	3·3%	-0·28 (-1·06,0·54)	0 (0·00 %)
USA	Albuquerque (NM)	1995-2006	12	28·7 (9·4-55·4)	12·4%	0·53 (0·13,0·88)	851 (19·42 %)
USA	Allentown (PA)	2001-2006	6	23·1 (7·2-50·1)	7·9%	-0·19 (-0·85,0·64)	6 (0·27 %)
USA	Atlanta (GA)	2000-2006	7	25·8 (10·1-47·0)	6·2%	0·06 (-0·71,0·73)	25 (0·98 %)
USA	Birmingham (AL)	2000-2006	7	30·7 (8·8-63·5)	18·5%	-0·51 (-1·36,0·34)	4 (0·16 %)
USA	Brownsville (TX)	2001-2006	6	26·2 (7·3-53·4)	9·9%	-0·51 (-1·57,0·47)	141 (6·44 %)
USA	Chicago (IL)	1995-2006	12	28·8 (10·1-57·3)	12·8%	-0·47 (-0·69,-0·23)	1 (0·02 %)
USA	Charleston (SC)	2000-2006	7	18·8 (8·4-31·7)	0·7%	0·04 (-0·33,0·41)	242 (9·46 %)
USA	Columbus (OH)	2000-2006	7	27·9 (11·3-57·0)	11·9%	0·09 (-0·57,0·88)	177 (6·92 %)
USA	Cleveland (OH)	1995-2006	12	28·6 (8·7-58·3)	15·1%	-0·36 (-0·63,-0·08)	3 (0·07 %)
USA	Cincinnati (OH)	1995-2006	12	27·3 (11·4-53·3)	9·5%	-0·97 (-1·36,-0·58)	2,089 (47·67 %)
USA	Columbia (SC)	2000-2006	7	25·2 (4·7-53·1)	10·1%	-0·22 (-0·85,0·40)	55 (2·15 %)
USA	Denver (CO)	1995-2006	12	24·9 (7·1-48·4)	7·0%	0·99 (0·77,1·18)	15 (0·34 %)
USA	Des moines (IA)	2000-2005	6	26·6 (9·7-54·3)	10·5%	-0·48 (-1·66,0·55)	192 (8·76 %)
USA	Detroit (MI)	1995-2006	12	31·9 (8·6-67·4)	20·1%	-0·02 (-0·28,0·30)	177 (4·04 %)
USA	Davenport (IA)	1996-2006	11	29·3 (6·6-64·0)	17·4%	-0·60 (-1·06,-0·11)	45 (1·12 %)
USA	Daytona beach (FL)	2000-2006	7	20·3 (9·8-35·4)	1·9%	0·22 (-0·08,0·56)	71 (2·78 %)
USA	El paso (TX)	1995-2006	12	34·7 (9·5-74·7)	23·5%	0·76 (0·23,1·31)	303 (6·91 %)
USA	Erie (PA)	2001-2006	6	17·0 (6·3-36·9)	2·3%	-0·55 (-1·08,-0·06)	102 (4·66 %)
USA	Fort myers (FL)	2001-2006	6	19·4 (11·0-30·9)	0·6%	-0·03 (-0·53,0·47)	136 (6·21 %)
USA	Gary (IN)	1995-2006	12	23·3 (7·1-51·2)	7·5%	0·10 (-0·14,0·41)	1,174 (26·79 %)
USA	Greensburg (PA)	2001-2006	6	25·2 (11·0-48·0)	7·1%	-0·68 (-1·22,0·11)	38 (1·73 %)

USA	Grand junction (CO)	2000-2006	7	25·3 (10·8-47·2)	5·7%	1·61 (1·19,2·01)	492 (19·24 %)
USA	Greenville (SC)	2001-2006	6	22·6 (8·0-41·1)	2·6%	0·11 (-0·60,0·80)	237 (10·82 %)
USA	Harrisburg (PA)	2001-2006	6	20·9 (7·7-42·2)	3·4%	0·03 (-0·68,0·79)	9 (0·41 %)
USA	Lakeland (FL)	2000-2006	7	21·3 (11·2-35·6)	1·7%	-0·53 (-0·93,-0·09)	44 (1·72 %)
USA	Lancaster (PA)	2001-2006	6	20·8 (7·2-41·5)	3·1%	-0·48 (-1·10,0·22)	7 (0·32 %)
USA	Los angeles (CA)	2000-2006	7	32·7 (13·3-53·2)	13·7%	-0·60 (-1·44,0·13)	50 (1·96 %)
USA	Las vegas (NV)	1995-2006	12	32·8 (13·0-58·5)	15·5%	-1·19 (-1·54,-0·85)	53 (1·21 %)
USA	Madison (IL)	1995-2006	12	35·1 (10·2-71·9)	28·5%	0·21 (-0·08,0·59)	105 (2·40 %)
USA	Minneapolis (MN)	1995-2006	12	24·9 (10·0-47·8)	6·7%	0·15 (-0·08,0·41)	967 (22·07 %)
USA	New haven (CT)	1995-2004	10	24·4 (6·7-51·1)	7·8%	0·34 (0·06,0·62)	140 (3·83 %)
USA	Orlando (FL)	2001-2006	6	19·2 (10·6-30·5)	1·1%	-0·36 (-0·77,0·04)	96 (4·38 %)
USA	Ottawa (IL)	1995-2006	12	26·4 (9·0-58·7)	11·7%	-0·44 (-0·72,-0·18)	26 (0·59 %)
USA	Philadelphia (PA)	2001-2006	6	24·3 (11·5-45·6)	5·4%	0·69 (0·10,1·35)	2 (0·09 %)
USA	Phoenix (AZ)	2000-2006	7	44·0 (14·0-84·2)	42·4%	-0·74 (-1·96,0·71)	46 (1·80 %)
USA	Provo (UT)	1995-2006	12	28·0 (6·9-60·2)	13·2%	-0·64 (-0·95,-0·29)	86 (1·96 %)
USA	Portage (IN)	1995-2006	12	18·7 (6·0-39·4)	2·9%	-0·32 (-0·62,0·07)	1,685 (38·44 %)
USA	Pittsburgh (PA)	1995-2006	12	26·0 (7·6-57·8)	12·9%	-0·35 (-0·66,0·00)	11 (0·25 %)
USA	Raleigh (NC)	2000-2006	7	20·7 (8·1-37·9)	1·8%	-0·28 (-0·85,0·21)	328 (12·83 %)
USA	Riverside (CA)	2000-2006	7	34·8 (13·4-55·5)	17·9%	0·15 (-0·72,1·09)	88 (3·44 %)
USA	Sacramento (CA)	2000-2006	7	23·2 (9·6-42·6)	3·6%	0·29 (-0·39,0·91)	0 (0·00 %)
USA	Scranton (PA)	2001-2006	6	18·6 (6·5-39·0)	2·6%	-0·12 (-0·61,0·42)	4 (0·18 %)
USA	Salt lake city (UT)	1995-2006	12	30·2 (8·7-64·0)	17·1%	-0·21 (-0·52,0·19)	18 (0·41 %)
USA	Spokane (WA)	1995-2006	12	23·0 (5·4-50·2)	8·0%	-0·31 (-0·61,-0·00)	56 (1·28 %)
USA	St· louis (MO)	2000-2006	7	31·1 (4·1-76·4)	22·0%	-0·55 (-1·05,0·04)	122 (4·77 %)
USA	Tampa (FL)	2000-2006	7	24·6 (12·8-40·1)	2·5%	-0·08 (-0·49,0·33)	1 (0·04 %)
USA	Tucson (AZ)	1995-2006	12	25·5 (10·0-46·9)	6·2%	0·09 (-0·25,0·42)	440 (10·04 %)
USA	Toledo (OH)	2000-2006	7	22·3 (8·7-46·3)	6·1%	0·01 (-0·50,0·56)	34 (1·33 %)
USA	Wichita (KS)	2000-2006	7	22·8 (9·5-41·9)	2·7%	0·08 (-0·55,0·64)	0 (0·00 %)
USA	Ogden (UT)	1995-2006	12	26·2 (7·0-53·0)	9·9%	0·16 (-0·18,0·48)	933 (21·29 %)
USA	Winston-salem (NC)	2000-2006	7	22·1 (9·1-39·6)	1·7%	-0·11 (-0·75,0·55)	2 (0·08 %)
USA	Washington (PA)	2001-2006	6	20·6 (6·7-44·4)	4·6%	-0·34 (-1·08,0·50)	8 (0·37 %)
USA	York (PA)	2001-2006	6	23·2 (8·4-46·1)	5·6%	0·33 (-0·48,1·15)	20 (0·91 %)
				$PM_{2·5}$			
Canada	Abbotsford	1997-2015	19	5·8 (1·8-12·3)	2·2%	-0·01 (-0·04,0·03)	70 (1·01 %)
Canada	Calgary	1998-2015	18	9·8 (3·0-20·6)	14·8%	0·06 (-0·05,0·15)	4 (0·06 %)
Canada	Edmonton	1998-2015	18	10·0 (2·8-23·3)	16·3%	-0·02 (-0·13,0·10)	1 (0·02 %)
Canada	Halifax	2006-2015	10	6·2 (1·8-13·2)	2·9%	-0·26 (-0·37,-0·15)	592 (16·68 %)
Canada	Hamilton	1998-2015	18	10·8 (2·8-25·1)	21·0%	-0·27 (-0·34,-0·20)	59 (0·90 %)
Canada	Kingston	2003-2013	11	8·4 (2·2-20·9)	12·4%	-0·28 (-0·44,-0·11)	755 (19·12 %)
Canada	Kitchener-Waterloo	1998-2015	18	9·2 (1·9-23·4)	16·6%	-0·27 (-0·38,-0·18)	353 (5·37 %)
Canada	London Ontario	2001-2015	15	9·6 (2·4-22·3)	15·8%	-0·39 (-0·50,-0·30)	472 (8·62 %)
Canada	Montreal	1998-2015	18	10·8 (2·9-25·6)	19·7%	-0·07 (-0·15,0·02)	1 (0·02 %)
Canada	Oakville	2004-2015	12	8·5 (2·1-20·1)	12·0%	-0·18 (-0·29,-0·07)	23 (0·52 %)
Canada	Oshawa	1997-2015	19	8·9 (2·0-22·6)	14·8%	-0·29 (-0·34,-0·23)	52 (0·76 %)

Canada	Ottawa	1998-2015	18	7·6 (1·6-18·9)	10·2%	-0·20 (-0·27,-0·14)	189 (2·87 %)
Canada	Regina	2001-2013	13	7·2 (2·2-15·4)	5·5%	-0·22 (-0·32,-0·12)	95 (2·00 %)
Canada	Sarnia	2000-2015	16	12·6 (3·7-28·2)	29·0%	-0·30 (-0·43,-0·18)	195 (3·36 %)
Canada	Sudbury	2005-2015	11	5·3 (1·2-12·9)	3·2%	-0·06 (-0·13,0·01)	14 (0·35 %)
Canada	Saint John NB	1997-2015	19	6·9 (1·9-15·7)	5·7%	-0·12 (-0·17,-0·08)	609 (8·78 %)
Canada	St· John's NFL	1998-2015	18	5·3 (1·5-11·1)	1·0%	0·02 (-0·03,0·08)	443 (6·74 %)
Canada	Sault Ste· Marie	2000-2015	16	6·9 (1·2-18·9)	8·0%	-0·23 (-0·36,-0·12)	878 (15·02 %)
Canada	Saskatoon	2004-2015	12	6·7 (1·7-14·6)	4·4%	0·27 (0·18,0·38)	112 (2·56 %)
Canada	Thunder Bay	2002-2015	14	6·1 (1·4-14·1)	4·0%	-0·04 (-0·10,0·03)	176 (3·44 %)
Canada	Toronto	1997-2015	19	9·7 (2·7-23·3)	16·8%	-0·22 (-0·27,-0·16)	0 (0·00 %)
Canada	Victoria	1998-2015	18	7·0 (2·3-14·9)	5·0%	0·04 (-0·01,0·11)	62 (0·96 %)
Canada	Vancouver	1999-2015	17	6·1 (2·3-12·7)	2·6%	-0·07 (-0·12,-0·03)	5 (0·08 %)
Canada	Windsor	1999-2015	17	10·9 (3·0-24·9)	21·1%	-0·22 (-0·29,-0·13)	77 (1·26 %)
Canada	Winnipeg	1998-2015	18	7·0 (2·0-14·8)	4·7%	-0·12 (-0·18,-0·06)	31 (0·47 %)
Cyprus	Famagusta	2010-2016	7	18·4 (8·0-30·6)	58·4%	-1·12 (-1·55,-0·78)	105 (4·29 %)
Cyprus	Nicosia	2011-2016	6	21·7 (10·0-38·3)	73·7%	-2·15 (-2·71,-1·53)	55 (2·51 %)
Estonia	Kohtla-Jarve linn	2011-2016	6	6·1 (0·7-15·0)	5·0%	-0·44 (-0·69,-0·19)	60 (2·75 %)
Estonia	Narva linn	2009-2016	8	8·0 (1·6-18·2)	9·9%	-0·66 (-0·89,-0·43)	80 (2·75 %)
Estonia	Tartu linn	2009-2016	8	9·0 (1·2-23·1)	15·9%	-0·60 (-0·99,-0·29)	66 (2·26 %)
Finland	Helsinki	1995-2014	20	16·8 (3·9-43·5)	41·5%	-0·09 (-0·20,0·01)	0 (0·00 %)
France	Bordeaux	2007-2015	9	15·5 (5·7-37·0)	35·7%	-0·30 (-0·69,0·05)	235 (7·17 %)
France	Clermont-Ferrand	2007-2015	9	13·5 (3·5-36·1)	29·4%	-0·68 (-1·04,-0·38)	116 (3·53 %)
France	Dijon	2009-2015	7	13·5 (4·6-31·2)	29·7%	-0·15 (-0·68,0·30)	143 (5·65 %)
France	Grenoble	2007-2015	9	18·8 (5·9-44·4)	50·7%	-1·08 (-1·67,-0·49)	249 (7·58 %)
France	Le Havre	2007-2015	9	15·1 (4·0-39·0)	33·2%	-0·87 (-1·24,-0·51)	250 (7·61 %)
France	Lille	2009-2015	7	18·0 (5·5-45·3)	44·4%	-0·82 (-1·69,-0·13)	594 (23·24 %)
France	Lyon	2007-2015	9	19·7 (6·0-46·0)	54·3%	-1·28 (-1·85,-0·69)	23 (0·70 %)
France	Montpellier	2008-2015	8	14·9 (4·6-30·1)	42·4%	-0·13 (-0·55,0·31)	200 (6·88 %)
France	Marseille	2008-2015	8	16·4 (5·0-34·0)	45·7%	-0·79 (-1·20,-0·39)	270 (9·24 %)
France	Nancy	2009-2015	7	16·0 (4·2-39·1)	40·3%	-0·97 (-1·67,-0·34)	140 (5·48 %)
France	Nantes	2009-2015	7	14·9 (5·8-35·0)	33·7%	-0·79 (-1·32,-0·28)	185 (7·25 %)
France	Paris	2007-2015	9	16·7 (5·5-40·3)	41·9%	-0·76 (-1·18,-0·39)	8 (0·24 %)
France	Rouen	2007-2015	9	17·3 (6·0-40·5)	43·2%	-0·76 (-1·21,-0·38)	56 (1·70 %)
France	Strasbourg	2007-2015	9	18·7 (5·8-42·0)	50·9%	-0·54 (-1·00,-0·14)	208 (6·33 %)
France	Toulouse	2007-2015	9	15·2 (5·5-32·6)	39·1%	-0·69 (-1·05,-0·31)	63 (1·92 %)
Japan	Chiba	2011-2016	6	12·5 (3·8-27·3)	28·6%	-0·84 (-1·16,-0·46)	0 (0·00 %)
Japan	Fukuoka	2011-2016	6	18·1 (6·5-36·1)	54·8%	-0·88 (-1·33,-0·32)	0 (0·00 %)
Japan	Fukui	2011-2016	6	14·6 (4·6-30·6)	39·0%	-0·36 (-0·86,0·25)	46 (2·10 %)
Japan	Gifu	2011-2016	6	14·1 (4·4-29·1)	37·7%	-0·48 (-0·89,-0·03)	4 (0·18 %)
Japan	Hiroshima	2012-2016	5	16·6 (6·3-32·9)	50·4%	-0·88 (-1·59,-0·31)	0 (0·00 %)
Japan	Kagoshima	2011-2016	6	18·6 (8·3-34·2)	58·9%	-0·64 (-1·25,0·03)	7 (0·33 %)
Japan	Kobe	2012-2016	5	14·7 (5·7-29·9)	39·0%	-0·55 (-1·17,0·03)	0 (0·00 %)
Japan	Kofu	2011-2016	6	12·6 (3·5-26·0)	30·7%	-0·02 (-0·34,0·31)	12 (0·55 %)
Japan	Kyoto	2012-2016	5	13·6 (4·8-27·6)	34·4%	-0·86 (-1·46,-0·38)	0 (0·00 %)

Japan	Matsue	2011-2016	6	13·6 (4·1-27·2)	35·8%	-0·38 (-0·94,0·21)	23 (1·05 %)
Japan	Maebashi	2011-2016	6	14·3 (2·5-30·7)	41·3%	-1·38 (-1·88,-0·87)	6 (0·29 %)
Japan	Morioka	2011-2016	6	12·9 (4·3-25·2)	31·7%	0·18 (-0·14,0·57)	3 (0·14 %)
Japan	Matsuyama	2011-2016	6	17·1 (6·4-32·5)	53·1%	-0·77 (-1·30,-0·28)	5 (0·24 %)
Japan	Nagano	2011-2016	6	11·4 (3·0-23·5)	25·3%	-0·14 (-0·53,0·22)	68 (3·10 %)
Japan	Nagoya	2011-2016	6	15·5 (4·9-31·7)	44·3%	-0·92 (-1·34,-0·43)	17 (0·78 %)
Japan	Oita	2011-2016	6	16·2 (5·1-33·0)	47·1%	-0·91 (-1·43,-0·43)	58 (2·65 %)
Japan	Osaka	2011-2016	6	16·7 (5·8-33·5)	50·8%	-0·59 (-1·06,-0·07)	5 (0·23 %)
Japan	Saitama	2012-2016	5	12·9 (3·4-26·2)	32·6%	-0·65 (-1·09,-0·19)	6 (0·33 %)
Japan	Sendai	2011-2016	6	12·3 (3·3-26·1)	29·0%	-0·27 (-0·81,0·25)	17 (0·81 %)
Japan	Shizuoka	2011-2016	6	11·8 (3·9-25·2)	24·7%	-0·46 (-0·91,0·02)	10 (0·48 %)
Japan	Sapporo	2011-2016	6	10·0 (2·7-21·4)	16·9%	-1·17 (-1·49,-0·77)	5 (0·24 %)
Japan	Tokushima	2011-2016	6	14·0 (4·3-29·2)	35·1%	-0·43 (-0·95,-0·01)	44 (2·01 %)
Japan	Tokyo	2001-2016	16	18·8 (7·0-39·0)	54·8%	-0·65 (-0·77,-0·54)	444 (7·68 %)
Japan	Tsu	2011-2016	6	15·2 (5·1-31·8)	42·1%	-0·61 (-1·10,-0·07)	1 (0·05 %)
Japan	Wakayama	2011-2016	6	16·7 (5·3-34·2)	50·1%	-0·26 (-0·71,0·27)	10 (0·46 %)
Japan	Yokohama	2011-2016	6	16·3 (5·3-32·3)	48·3%	-0·24 (-0·73,0·17)	1 (0·05 %)
Mexico	Monterrey	2004-2012	9	28·0 (13·4-48·5)	90·8%	-1·40 (-1·79,-1·03)	177 (5·38 %)
Mexico	Valley of Mexico	2004-2012	9	25·8 (10·5-44·6)	84·0%	-0·61 (-1·11,-0·14)	0 (0·00 %)
Norway	Oslo	2000-2016	17	10·8 (4·6-21·8)	16·5%	-0·29 (-0·37,-0·22)	94 (1·51 %)
Portugal	Beja	2005-2016	12	10·8 (4·3-21·5)	18·6%	0·27 (0·11,0·42)	1,355 (31·70 %)
Portugal	Castelo Branco	2005-2016	12	6·8 (1·3-16·8)	7·2%	-0·42 (-0·54,-0·31)	182 (4·25 %)
Portugal	Lisboa	2004-2016	13	12·8 (4·0-29·2)	29·3%	-0·35 (-0·49,-0·19)	573 (12·11 %)
South Africa	Sedibeng	2007-2013	7	36·0 (14·6-71·0)	94·2%	-0·71 (-2·46,0·67)	601 (23·77 %)
Spain	Barcelona	2004-2014	11	20·8 (7·8-41·4)	66·5%	-1·21 (-1·54,-0·97)	204 (5·08 %)
Spain	Madrid	2009-2013	5	11·7 (6·1-20·5)	20·1%	-0·29 (-0·57,-0·03)	0 (0·00 %)
Switzerland	Basel	1998-2009	12	16·9 (4·2-40·7)	45·2%	-0·39 (-0·68,-0·13)	12 (0·27 %)
Switzerland	Bern	1998-2009	12	20·7 (8·5-41·5)	66·0%	-0·33 (-0·64,-0·06)	60 (1·37 %)
Switzerland	Lugano	1999-2007	9	24·1 (5·3-58·7)	66·5%	-0·49 (-1·02,0·08)	49 (1·50 %)
Switzerland	Zürich	1998-2009	12	17·2 (5·7-39·0)	46·3%	-0·38 (-0·64,-0·02)	1,841 (42·00 %)
Sweden	Stockholm	2001-2010	10	8·2 (3·1-19·4)	9·2%	-0·28 (-0·42,-0·16)	247 (6·94 %)
Taiwan	Kaohsiung	2007-2014	8	42·3 (14·8-77·5)	94·6%	-1·60 (-2·95,-0·32)	0 (0·00 %)
Taiwan	Taipei	2007-2014	8	27·3 (10·2-52·7)	82·9%	-0·47 (-1·11,0·08)	0 (0·00 %)
Taiwan	Taichung	2007-2014	8	33·6 (13·0-65·2)	90·6%	-0·88 (-1·70,-0·13)	4 (0·14 %)
UK	Birkenhead	2010-2016	7	9·1 (2·0-27·6)	16·6%	-0·33 (-0·76,0·08)	171 (6·69 %)
UK	Bristol	2010-2016	7	12·9 (3·9-33·1)	27·0%	-0·69 (-1·22,-0·29)	521 (20·38 %)
UK	Chesterfield	2009-2016	8	12·2 (4·1-31·4)	23·7%	-0·52 (-0·89,-0·19)	57 (1·95 %)
UK	Cardiff	2009-2016	8	11·9 (4·3-29·1)	23·0%	-0·56 (-0·89,-0·24)	316 (10·81 %)
UK	Eastbourne	2010-2016	7	14·0 (5·1-34·1)	30·1%	-0·64 (-1·10,-0·26)	325 (12·71 %)
UK	Kingston upon Hull	2010-2016	7	11·4 (3·8-29·0)	20·3%	0·06 (-0·37,0·40)	129 (5·04 %)
UK	Leicester	2010-2016	7	13·2 (5·4-31·2)	27·5%	-0·47 (-0·88,-0·11)	327 (12·79 %)
UK	London	1998-2016	19	13·6 (6·1-29·0)	28·6%	-0·11 (-0·19,-0·04)	162 (2·36 %)
UK	Liverpool	2010-2016	7	10·8 (3·6-29·4)	19·8%	-0·30 (-0·68,0·07)	136 (5·32 %)
UK	Manchester	2009-2016	8	12·9 (4·4-31·2)	27·5%	-0·55 (-0·90,-0·21)	27 (0·92 %)

UK	Norwich	2010-2016	7	12·8 (4·6-31·1)	25·4%	-0·39 (-0·85,0·02)	210 (8·21 %)
UK	Nottingham	2009-2016	8	12·8 (4·0-32·0)	26·9%	-0·45 (-0·80,-0·11)	239 (8·18 %)
UK	Newport	2009-2016	8	11·5 (4·0-26·5)	22·4%	-0·51 (-0·86,-0·17)	465 (15·91 %)
UK	Plymouth	2010-2016	7	11·3 (3·6-26·6)	20·8%	-0·12 (-0·49,0·32)	408 (15·96 %)
UK	Preston	2010-2016	7	11·0 (3·9-28·5)	19·7%	-0·17 (-0·60,0·18)	240 (9·39 %)
UK	Reading	2009-2016	8	11·0 (2·2-30·4)	21·9%	-0·77 (-1·14,-0·46)	228 (7·86 %)
UK	Sheffield	2009-2016	8	12·9 (3·2-32·5)	26·2%	0·53 (0·23,0·92)	353 (12·08 %)
UK	Sunderland	2010-2016	7	10·0 (2·5-25·3)	16·2%	-0·79 (-1·19,-0·48)	250 (9·78 %)
UK	South Hampshire	2009-2016	8	13·2 (5·1-31·9)	27·4%	-0·28 (-0·61,0·07)	38 (1·30 %)
UK	Southend-on-Sea	2009-2016	8	11·9 (3·8-30·3)	23·2%	-0·39 (-0·71,-0·04)	635 (21·96 %)
UK	Stoke-on-Trent	2009-2016	8	14·1 (5·8-32·6)	31·5%	-0·65 (-0·98,-0·34)	105 (3·59 %)
UK	Swansea	2007-2016	10	12·3 (4·1-28·8)	23·6%	0·18 (-0·11,0·41)	1,336 (36·61 %)
UK	Teesside	2010-2016	7	10·7 (3·1-28·4)	18·8%	0·23 (-0·14,0·62)	308 (12·05 %)
UK	Tyneside	2010-2016	7	10·2 (3·6-25·7)	16·7%	-0·35 (-0·62,-0·07)	227 (8·88 %)
UK	Warrington	2010-2016	7	12·4 (4·5-31·6)	24·5%	-0·53 (-0·99,-0·09)	127 (4·97 %)
UK	West Midlands	2009-2016	8	13·1 (4·0-32·2)	28·6%	-0·70 (-1·10,-0·31)	124 (4·24 %)
UK	West Yorkshire	2009-2016	8	14·2 (5·2-34·1)	31·0%	-0·79 (-1·19,-0·42)	122 (4·18 %)
UK	York	2009-2016	8	12·5 (4·6-31·0)	24·3%	-0·55 (-0·86,-0·19)	122 (4·18 %)
USA	Akron (OH)	1999-2004	6	16·0 (5·5-33·1)	47·0%	-0·51 (-0·92,-0·04)	54 (2·46 %)
USA	Albuquerque (NM)	2000-2006	7	6·8 (3·0-13·9)	3·7%	0·15 (-0·04,0·35)	44 (1·72 %)
USA	Allentown (PA)	2000-2006	7	14·0 (4·1-31·0)	37·2%	-0·15 (-0·54,0·26)	122 (4·78 %)
USA	Anaheim (CA)	2000-2006	7	14·8 (4·4-34·9)	35·3%	-0·49 (-1·04,-0·12)	613 (23·97 %)
USA	Annandale (VA)	2000-2006	7	13·8 (4·9-28·3)	35·0%	-0·23 (-0·58,0·17)	186 (7·27 %)
USA	Atlanta (GA)	1999-2006	8	17·3 (7·2-32·3)	55·8%	-0·71 (-0·99,-0·41)	73 (2·50 %)
USA	Bath (NY)	2000-2006	7	9·4 (2·6-22·6)	15·9%	-0·18 (-0·43,0·09)	303 (11·93 %)
USA	Bakersfield (CA)	1999-2006	8	17·3 (4·1-48·3)	40·0%	-0·22 (-0·73,0·24)	501 (17·16 %)
USA	Baltimore (MD)	2000-2006	7	15·4 (5·3-32·8)	42·0%	-0·20 (-0·56,0·23)	102 (3·99 %)
USA	Birmingham (AL)	1999-2006	8	16·4 (5·8-32·8)	47·2%	-0·50 (-0·91,-0·15)	3 (0·10 %)
USA	Boston (MA)	2000-2006	7	11·9 (4·4-25·3)	26·4%	-0·21 (-0·52,0·11)	365 (14·27 %)
USA	Baton rouge (LA)	1999-2006	8	13·4 (6·0-24·8)	31·8%	-0·12 (-0·32,0·09)	11 (0·38 %)
USA	Cedar rapids (IA)	2000-2005	6	11·0 (3·3-25·2)	23·2%	-0·07 (-0·54,0·26)	111 (5·06 %)
USA	Chicago (IL)	2000-2006	7	15·2 (5·4-31·4)	43·4%	-0·54 (-0·88,-0·22)	83 (3·25 %)
USA	Charlotte (NC)	1999-2006	8	15·2 (5·7-28·5)	45·2%	-0·32 (-0·63,-0·04)	140 (4·94 %)
USA	Charleston (SC)	1999-2006	8	12·1 (4·7-22·7)	25·9%	-0·06 (-0·23,0·12)	45 (1·54 %)
USA	Columbus (OH)	1999-2004	6	16·2 (5·8-32·4)	49·0%	-0·51 (-0·93,-0·04)	94 (4·29 %)
USA	Cleveland (OH)	1999-2004	6	15·5 (4·4-32·5)	44·4%	-0·79 (-1·12,-0·36)	34 (1·55 %)
USA	Cincinnati (OH)	1999-2004	6	17·1 (6·6-33·3)	52·4%	-0·69 (-1·07,-0·28)	76 (3·47 %)
USA	Carlisle (PA)	2000-2006	7	14·8 (4·0-32·3)	40·3%	-0·22 (-0·59,0·15)	183 (7·29 %)
USA	Dallas (TX)	2000-2006	7	12·5 (5·3-23·1)	28·0%	-0·31 (-0·50,-0·11)	33 (1·29 %)
USA	Denver (CO)	2000-2006	7	10·3 (4·7-20·0)	12·6%	-0·18 (-0·39,0·03)	123 (4·81 %)
USA	Durham (NC)	2000-2006	7	14·2 (5·5-26·5)	40·1%	-0·13 (-0·42,0·22)	647 (25·30 %)
USA	Des moines (IA)	2000-2006	7	10·3 (3·3-23·2)	18·8%	-0·22 (-0·54,0·06)	158 (6·19 %)
USA	Detroit (MI)	1999-2006	8	15·4 (4·8-32·2)	43·0%	-0·19 (-0·44,0·09)	143 (4·90 %)
USA	Davenport (IA)	2000-2006	7	12·2 (3·9-26·1)	28·6%	-0·27 (-0·61,0·07)	168 (6·57 %)

USA	Elizabeth (NJ)	2000-2006	7	14·4 (4·2-31·2)	38·5%	-0·26 (-0·59,0·10)	417 (16·31 %)
USA	Eugene (OR)	1999-2004	6	9·3 (1·3-26·9)	16·2%	-0·22 (-0·71,0·49)	15 (0·68 %)
USA	Fresno (CA)	1999-2006	8	19·2 (5·2-52·9)	42·8%	0·03 (-0·99,0·67)	698 (23·90 %)
USA	Fort lauderdale (FL)	1999-2006	8	8·4 (3·8-15·7)	6·2%	-0·19 (-0·34,-0·04)	91 (3·11 %)
USA	Fort worth (TX)	2000-2006	7	12·0 (5·0-23·0)	24·4%	-0·23 (-0·41,-0·05)	24 (0·94 %)
USA	Grand rapids (MI)	1999-2005	7	13·6 (4·0-30·0)	35·0%	-0·19 (-0·49,0·12)	87 (3·40 %)
USA	Greensboro (NC)	2000-2005	6	14·1 (5·2-27·3)	38·5%	-0·13 (-0·41,0·30)	185 (8·44 %)
USA	Greenville (SC)	2000-2006	7	15·0 (5·3-27·7)	44·8%	-0·25 (-0·50,0·09)	112 (4·38 %)
USA	Gettysburg (PA)	1999-2006	8	13·2 (3·7-29·5)	32·5%	-0·16 (-0·40,0·17)	287 (9·82 %)
USA	Harrisburg (PA)	1999-2006	8	15·3 (4·5-32·6)	43·0%	-0·06 (-0·35,0·30)	355 (12·15 %)
USA	Hartford (CT)	2000-2006	7	11·5 (3·6-26·0)	24·7%	-0·17 (-0·47,0·14)	471 (18·42 %)
USA	Houston (TX)	2000-2006	7	12·8 (5·7-23·0)	28·8%	0·09 (-0·06,0·29)	158 (6·18 %)
USA	Indianapolis (IN)	1999-2006	8	16·1 (5·9-31·6)	47·9%	-0·21 (-0·46,0·11)	289 (9·96 %)
USA	Jacksonville (FL)	2000-2006	7	10·4 (3·9-20·2)	16·2%	-0·22 (-0·43,0·01)	65 (2·54 %)
USA	Kansas city (KS)	1999-2006	8	12·0 (4·5-23·5)	25·7%	-0·27 (-0·47,-0·06)	195 (6·67 %)
USA	Knoxville (TN)	2001-2006	6	15·3 (5·7-28·2)	46·1%	-0·20 (-0·61,0·22)	228 (10·41 %)
USA	Louisville (KY)	1999-2006	8	15·6 (5·8-30·7)	44·7%	-0·25 (-0·55,0·01)	253 (8·70 %)
USA	Los angeles (CA)	2000-2006	7	17·8 (5·7-38·2)	53·0%	-0·58 (-1·05,-0·12)	13 (0·51 %)
USA	Las vegas (NV)	1999-2006	8	7·5 (2·0-17·1)	7·4%	-0·15 (-0·32,0·01)	175 (5·99 %)
USA	Little rock (AR)	2000-2006	7	13·9 (5·4-27·0)	35·7%	-0·27 (-0·57,0·05)	24 (0·94 %)
USA	Mercer (PA)	2001-2006	6	13·7 (4·4-28·7)	34·1%	-0·46 (-0·87,0·01)	288 (13·17 %)
USA	Norfolk (VA)	1999-2006	8	12·7 (4·5-25·5)	29·6%	-0·07 (-0·25,0·15)	314 (10·85 %)
USA	New haven (CT)	2000-2006	7	13·4 (4·3-29·9)	32·9%	-0·42 (-0·73,-0·04)	343 (13·41 %)
USA	New orleans (LA)	1999-2006	8	12·7 (5·7-24·2)	28·0%	-0·14 (-0·36,0·06)	56 (1·92 %)
USA	New york (NY)	2000-2006	7	14·5 (5·2-30·6)	37·4%	-0·40 (-0·69,-0·06)	41 (1·60 %)
USA	Omaha (NE)	2000-2006	7	10·3 (3·6-22·5)	17·8%	-0·37 (-0·68,-0·08)	73 (2·85 %)
USA	Orlando (FL)	1999-2006	8	10·0 (4·0-18·7)	13·5%	-0·34 (-0·50,-0·17)	45 (1·54 %)
USA	Philadelphia (PA)	1999-2006	8	14·1 (4·7-30·2)	36·4%	-0·19 (-0·44,0·06)	264 (9·05 %)
USA	Palm beach (FL)	1999-2006	8	8·0 (3·4-15·1)	5·2%	-0·31 (-0·48,-0·17)	136 (4·66 %)
USA	Provo (UT)	1999-2006	8	9·4 (3·0-25·9)	13·8%	0·06 (-0·13,0·27)	126 (4·31 %)
USA	Providence (RI)	1999-2006	8	11·0 (4·0-24·1)	21·5%	-0·21 (-0·42,-0·02)	52 (1·84 %)
USA	Pittsburgh (PA)	1999-2006	8	15·6 (3·9-35·7)	42·2%	-0·21 (-0·48,0·11)	201 (6·93 %)
USA	Richmond (VA)	1999-2006	8	13·8 (5·1-28·2)	35·5%	-0·19 (-0·43,0·10)	282 (9·74 %)
USA	Raleigh (NC)	2000-2006	7	14·1 (5·6-26·5)	38·6%	0·00 (-0·29,0·27)	171 (6·69 %)
USA	Riverside (CA)	2000-2006	7	17·5 (3·5-39·7)	49·9%	-0·87 (-1·25,-0·48)	261 (10·21 %)
USA	Sacramento (CA)	1999-2006	8	12·7 (3·4-36·1)	23·7%	0·01 (-0·44,0·44)	315 (10·79 %)
USA	Scranton (PA)	1999-2006	8	12·0 (3·1-26·8)	28·5%	-0·18 (-0·43,0·09)	161 (5·52 %)
USA	San diego (CA)	1999-2006	8	13·1 (4·1-27·7)	29·8%	-0·82 (-1·17,-0·54)	71 (2·43 %)
USA	Salt lake city (UT)	1999-2006	8	11·3 (3·4-35·3)	17·8%	0·03 (-0·24,0·31)	113 (3·87 %)
USA	Spartanburg (SC)	1999-2006	8	14·3 (5·2-27·8)	39·4%	-0·06 (-0·36,0·24)	294 (10·08 %)
USA	St· louis (MO)	1999-2006	8	14·2 (5·1-27·9)	37·7%	-0·36 (-0·58,-0·12)	9 (0·31 %)
USA	St· petersburg (FL)	1999-2006	8	10·3 (4·5-19·5)	14·6%	-0·37 (-0·52,-0·24)	112 (3·83 %)
USA	State college (PA)	2001-2006	6	12·9 (3·5-28·9)	30·3%	-0·23 (-0·66,0·28)	262 (11·97 %)
USA	Seattle (WA)	1999-2005	7	9·4 (3·2-20·8)	14·1%	-0·17 (-0·41,0·09)	20 (0·78 %)

USA	Tampa (FL)	1999-2006	8	11·6 (5·4-20·7)	21·1%	-0·43 (-0·56,-0·29)	770 (26·35 %)
USA	Tucson (AZ)	1999-2006	8	6·5 (3·3-12·0)	2·0%	-0·30 (-0·47,-0·13)	883 (30·27 %)
USA	Wilmington (DE)	2000-2006	7	14·9 (4·9-31·4)	40·3%	-0·29 (-0·61,0·11)	201 (7·86 %)
USA	Winston-salem (NC)	1999-2006	8	14·6 (4·8-29·0)	41·0%	-0·24 (-0·49,0·05)	297 (10·16 %)
USA	Washington (DC)	1999-2006	8	14·9 (5·2-31·6)	41·6%	-0·32 (-0·55,-0·04)	113 (3·89 %)
USA	Washington (PA)	1999-2006	8	14·6 (5·5-29·8)	38·0%	-0·21 (-0·50,0·10)	317 (10·87 %)
USA	Youngstown (OH)	1999-2004	6	15·4 (5·7-31·0)	42·1%	-0·56 (-0·93,-0·09)	63 (2·87 %)

N: Number of years included; NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2\text{-}5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm; WHO: World Health Organization; 24-hour limit according to WHO air quality guideline[10]: 25 µg/m³ (NO_2), 45 µg/m³ (PM_{10}), 15 µg/m³ ($PM_{2\text{-}5}$); Air pollutants measured in µg/m³; a: Yearly change in exposure concentration in µg/m³ based on a Theil-Sen trend analysis.

Table S5: Mean Spearman correlation coefficients (r_S) of air pollutants over the entire study period and stratified by individual periods.

Variable	+NO_2	+PM_{10}	+$PM_{2·5}$
NO_2			
Total period	-	0·39	0·44
1995-2001	-	0·44	0·49
2002-2008	-	0·42	0·48
2009-2016	-	0·38	0·44
PM_{10}			
Total period	0·41	-	**0·77**
1995-2001	0·48	-	0·69
2002-2008	0·45	-	**0·75**
2009-2016	0·37	-	**0·82**
$PM_{2·5}$			
Total period	0·47	**0·79**	-
1995-2001	0·49	**0·73**	-
2002-2008	0·48	**0·76**	-
2009-2016	0·48	**0·85**	-

Numbers in bold indicate high correlations ($r_S \geq 0·7$); NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm; Air pollutants measured in µg/m³. It should be noted that the number of cities included in the analyses of PM_{10} and $PM_{2·5}$ differs from that included in the analyses of $PM_{2·5}$ and PM_{10}.

Table S6: Results of the sensitivity analyses. Pooled percent change in daily cause-specific mortality (95% CI) per 10 µg/m^3 increase in air pollutants using the temporal variation analyses by longitudinal meta-regression analysis. Models were adjusted for main model covariates using multilevel random-effects meta-analysis. Rationale for each sensitivity analysis can be found in the supplementary methods section.

	Exclusion of cities with high correlations between model variables		
	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.34% [95% CI: 0.18%; 0.50%]	0.35% [95% CI: 0.21%; 0.49%]	0.37% [95% CI: 0.21%; 0.53%]
PM_{10}	0.33% [95% CI: 0.13%; 0.52%]	0.31% [95% CI: 0.18%; 0.44%]	0.30% [95% CI: 0.12%; 0.48%]
$PM_{2.5}$	0.36% [95% CI: -0.07%; 0.79%]	0.61% [95% CI: 0.33%; 0.89%]	0.86% [95% CI: 0.55%; 1.17%]
Respiratory mortality			
NO_2	0.37% [95% CI: 0.03%; 0.72%]	0.52% [95% CI: 0.27%; 0.77%]	0.66% [95% CI: 0.34%; 0.99%]
PM_{10}	0.50% [95% CI: 0.04%; 0.96%]	0.51% [95% CI: 0.30%; 0.72%]	0.51% [95% CI: 0.10%; 0.92%]
$PM_{2.5}$	0.76% [95% CI: 0.17%; 1.36%]	1.01% [95% CI: 0.74%; 1.29%]	1.26% [95% CI: 0.86%; 1.66%]
	Exclusion of relative humidity from the model		
	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.34% [95% CI: 0.18%; 0.50%]	0.36% [95% CI: 0.22%; 0.51%]	0.39% [95% CI: 0.23%; 0.55%]
PM_{10}	0.36% [95% CI: 0.18%; 0.54%]	0.34% [95% CI: 0.21%; 0.48%]	0.32% [95% CI: 0.15%; 0.49%]
$PM_{2.5}$	0.48% [95% CI: 0.07%; 0.89%]	0.67% [95% CI: 0.41%; 0.94%]	0.87% [95% CI: 0.58%; 1.17%]
Respiratory mortality			
NO_2	0.37% [95% CI: 0.04%; 0.70%]	0.53% [95% CI: 0.28%; 0.78%]	0.69% [95% CI: 0.38%; 1.01%]
PM_{10}	0.46% [95% CI: 0.04%; 0.89%]	0.50% [95% CI: 0.28%; 0.73%]	0.55% [95% CI: 0.17%; 0.92%]
$PM_{2.5}$	0.79% [95% CI: 0.14%; 1.44%]	1.06% [95% CI: 0.72%; 1.39%]	1.32% [95% CI: 0.84%; 1.80%]
	Increasing the degrees of freedom for time trend from seven per year to ten per year		
	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.36% [95% CI: 0.22%; 0.51%]	0.36% [95% CI: 0.23%; 0.49%]	0.36% [95% CI: 0.21%; 0.50%]
PM_{10}	0.33% [95% CI: 0.15%; 0.51%]	0.32% [95% CI: 0.18%; 0.46%]	0.30% [95% CI: 0.13%; 0.48%]
$PM_{2.5}$	0.34% [95% CI: -0.11%; 0.79%]	0.59% [95% CI: 0.29%; 0.88%]	0.83% [95% CI: 0.51%; 1.15%]
Respiratory mortality			

NO_2	0.50% [95% CI: 0.23%; 0.77%]	0.58% [95% CI: 0.39%; 0.78%]	0.67% [95% CI: 0.41%; 0.92%]
PM_{10}	0.48% [95% CI: 0.14%; 0.82%]	0.50% [95% CI: 0.32%; 0.67%]	0.52% [95% CI: 0.22%; 0.82%]
$PM_{2.5}$	0.82% [95% CI: 0.15%; 1.49%]	1.01% [95% CI: 0.66%; 1.36%]	1.20% [95% CI: 0.71%; 1.69%]

Reducing the degrees of freedom for time trend from seven per year to four per year

	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.26% [95% CI: 0.05%; 0.48%]	0.35% [95% CI: 0.19%; 0.51%]	0.44% [95% CI: 0.23%; 0.64%]
PM_{10}	0.28% [95% CI: 0.08%; 0.48%]	0.31% [95% CI: 0.16%; 0.45%]	0.33% [95% CI: 0.15%; 0.52%]
$PM_{2.5}$	0.34% [95% CI: -0.01%; 0.69%]	0.62% [95% CI: 0.39%; 0.84%]	0.90% [95% CI: 0.63%; 1.17%]
Respiratory mortality			
NO_2	0.09% [95% CI: -0.39%; 0.58%]	0.44% [95% CI: 0.13%; 0.75%]	0.78% [95% CI: 0.33%; 1.24%]
PM_{10}	0.36% [95% CI: -0.16%; 0.88%]	0.45% [95% CI: 0.19%; 0.71%]	0.54% [95% CI: 0.08%; 1.00%]
$PM_{2.5}$	0.48% [95% CI: -0.34%; 1.31%]	0.84% [95% CI: 0.42%; 1.27%]	1.21% [95% CI: 0.56%; 1.86%]

Using a distributed lag non-linear term to control for temperature

	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.06% [95% CI: -0.06%; 0.17%]	0.06% [95% CI: -0.04%; 0.16%]	0.07% [95% CI: -0.07%; 0.20%]
PM_{10}	0.16% [95% CI: 0.00%; 0.32%]	0.16% [95% CI: 0.04%; 0.28%]	0.15% [95% CI: 0.00%; 0.30%]
$PM_{2.5}$	-0.31% [95% CI: -0.67%; 0.05%]	0.08% [95% CI: -0.15%; 0.31%]	0.47% [95% CI: 0.19%; 0.75%]
Respiratory mortality			
NO_2	0.07% [95% CI: -0.21%; 0.35%]	0.19% [95% CI: 0.01%; 0.37%]	0.31% [95% CI: 0.05%; 0.58%]
PM_{10}	0.26% [95% CI: -0.14%; 0.67%]	0.31% [95% CI: 0.10%; 0.52%]	0.36% [95% CI: 0.00%; 0.71%]
$PM_{2.5}$	-0.13% [95% CI: -0.66%; 0.40%]	0.41% [95% CI: 0.11%; 0.72%]	0.95% [95% CI: 0.60%; 1.30%]

Separate adjustment for high and low temperatures

	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.11% [95% CI: -0.06%; 0.29%]	0.13% [95% CI: -0.02%; 0.29%]	0.16% [95% CI: -0.02%; 0.33%]
PM_{10}	0.16% [95% CI: 0.00%; 0.32%]	0.16% [95% CI: 0.03%; 0.29%]	0.16% [95% CI: 0.01%; 0.32%]
$PM_{2.5}$	0.07% [95% CI: -0.27%; 0.42%]	0.26% [95% CI: 0.04%; 0.47%]	0.44% [95% CI: 0.18%; 0.71%]
Respiratory mortality			
NO_2	0.21% [95% CI: -0.16%; 0.58%]	0.35% [95% CI: 0.06%; 0.64%]	0.49% [95% CI: 0.14%; 0.85%]

PM_{10}	0.35% [95% CI: -0.08%; 0.78%]	0.41% [95% CI: 0.18%; 0.65%]	0.48% [95% CI: 0.10%; 0.86%]
$PM_{2·5}$	0.33% [95% CI: -0.38%; 1.04%]	0.67% [95% CI: 0.31%; 1.04%]	1.02% [95% CI: 0.51%; 1.53%]

	Exclusion of US cities from the dataset		
	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.30% [95% CI: 0.11%; 0.48%]	0.32% [95% CI: 0.17%; 0.48%]	0.35% [95% CI: 0.17%; 0.52%]
PM_{10}	0.25% [95% CI: 0.08%; 0.42%]	0.28% [95% CI: 0.14%; 0.41%]	0.31% [95% CI: 0.15%; 0.46%]
$PM_{2·5}$	0.18% [95% CI: -0.35%; 0.72%]	0.47% [95% CI: 0.13%; 0.81%]	0.75% [95% CI: 0.43%; 1.08%]
Respiratory mortality			
NO_2	0.37% [95% CI: -0.03%; 0.77%]	0.50% [95% CI: 0.23%; 0.78%]	0.64% [95% CI: 0.28%; 1.00%]
PM_{10}	0.45% [95% CI: 0.01%; 0.90%]	0.50% [95% CI: 0.28%; 0.72%]	0.55% [95% CI: 0.16%; 0.93%]
$PM_{2·5}$	0.75% [95% CI: -0.04%; 1.55%]	0.99% [95% CI: 0.63%; 1.35%]	1.24% [95% CI: 0.80%; 1.67%]

	Exclusion of air pollution outliers		
	At midyear period 1: 1998	At midyear period 2: 2005	At midyear period 3: 2012
Cardiovascular mortality			
NO_2	0.32% [95% CI: 0.13%; 0.50%]	0.35% [95% CI: 0.19%; 0.51%]	0.38% [95% CI: 0.19%; 0.57%]
PM_{10}	0.32% [95% CI: 0.05%; 0.59%]	0.34% [95% CI: 0.17%; 0.50%]	0.35% [95% CI: 0.11%; 0.59%]
$PM_{2·5}$	-0.01% [95% CI: -0.66%; 0.64%]	0.55% [95% CI: 0.10%; 1.00%]	1.11% [95% CI: 0.64%; 1.59%]
Respiratory mortality			
NO_2	0.37% [95% CI: -0.01%; 0.74%]	0.50% [95% CI: 0.23%; 0.77%]	0.63% [95% CI: 0.29%; 0.98%]
PM_{10}	0.79% [95% CI: 0.10%; 1.48%]	0.69% [95% CI: 0.35%; 1.03%]	0.59% [95% CI: 0.00%; 1.19%]
$PM_{2·5}$	0.40% [95% CI: -0.38%; 1.19%]	1.19% [95% CI: 0.73%; 1.65%]	1.99% [95% CI: 1.43%; 2.55%]

Numbers printed in bold indicated a statistically significant presence of a temporal difference measured by comparing the model with and without a term for time using a Wald-Test; NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm; CI: confidence interval; US: United States of America.

a: $I^2 > 50\%$ & $p < 0·05$.

Supplementary figures:

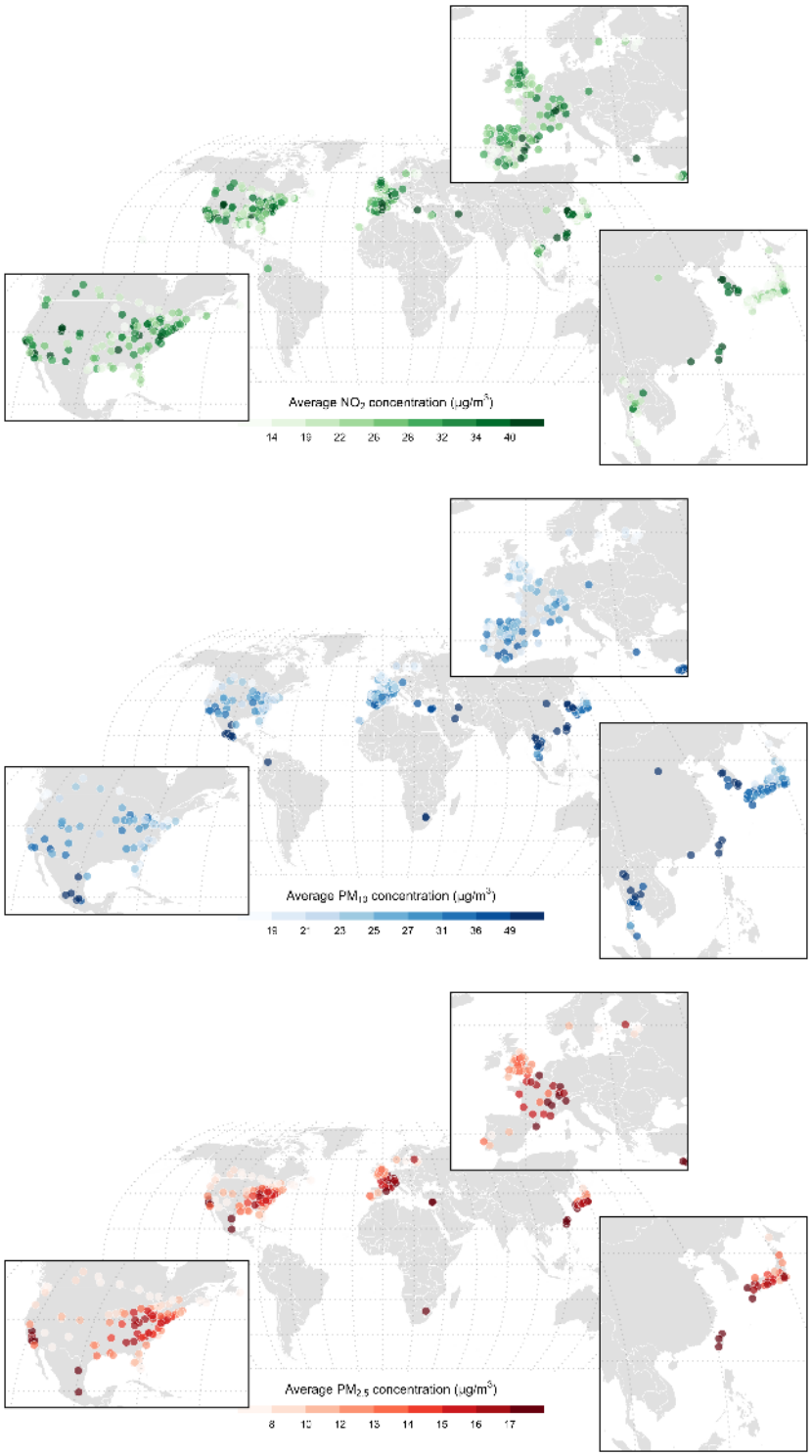

Figure S1: Geographical distribution and average concentrations (in µg/m^3) of NO_2 (top panel), PM_{10} (middle panel), and $PM_{2.5}$ (bottom panel).

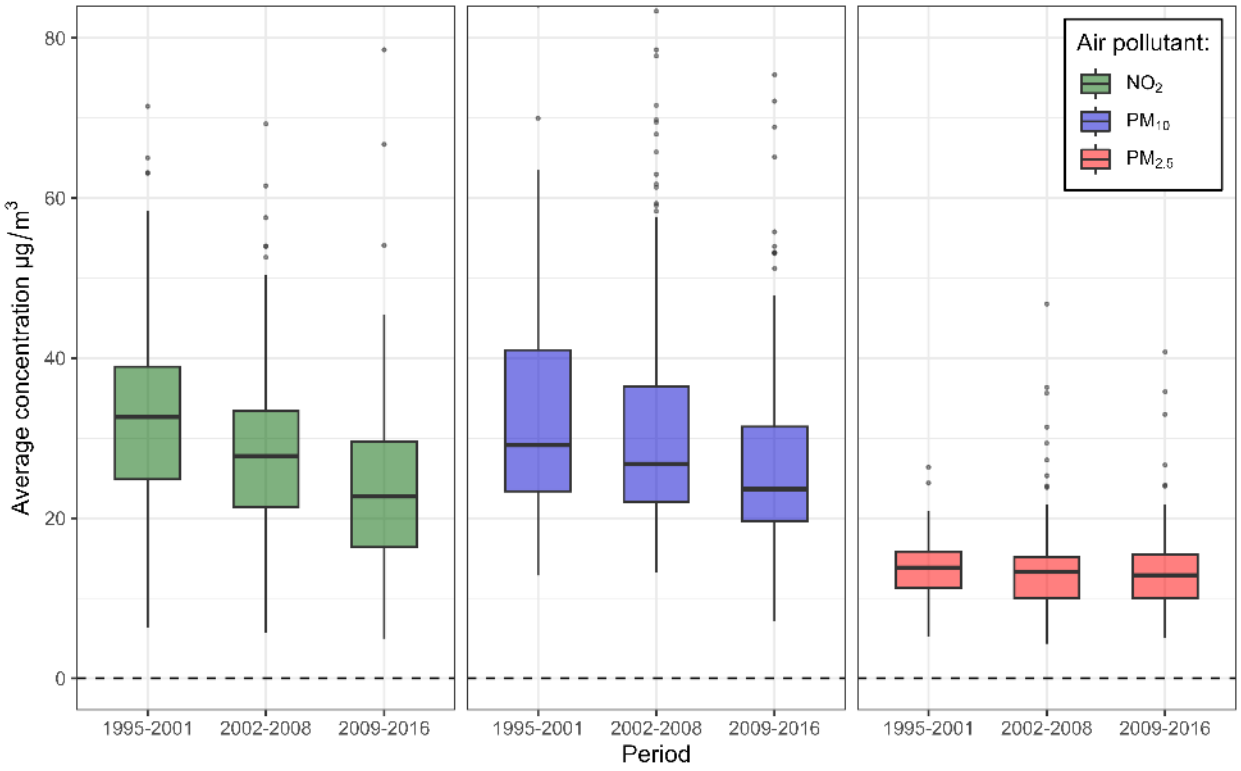

Figure S2: Boxplots of 24-hour average concentrations, in µg/m3, of NO2 (green, left panel), PM10 (blue, middle panel), and PM2·5 (red, right panel) stratified per study period.

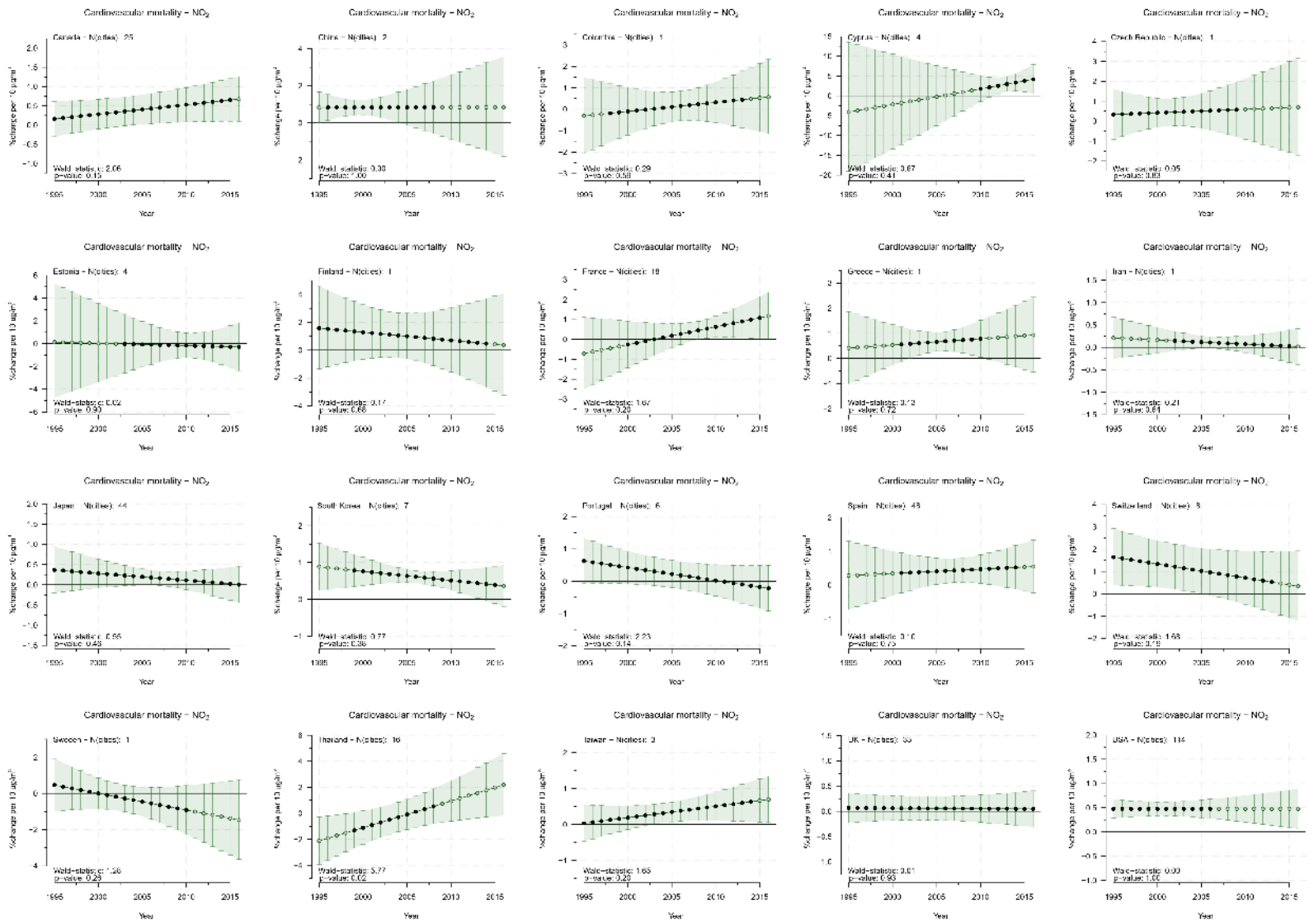

Figure S3: Percent change in daily cardiovascular mortality and 95% CI (shaded area) per 10 µg/m³ increase in NO_2 (at lag1) over the study period 1995-2016, stratified by country. The graph represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: NO_2: Nitrogen dioxide.

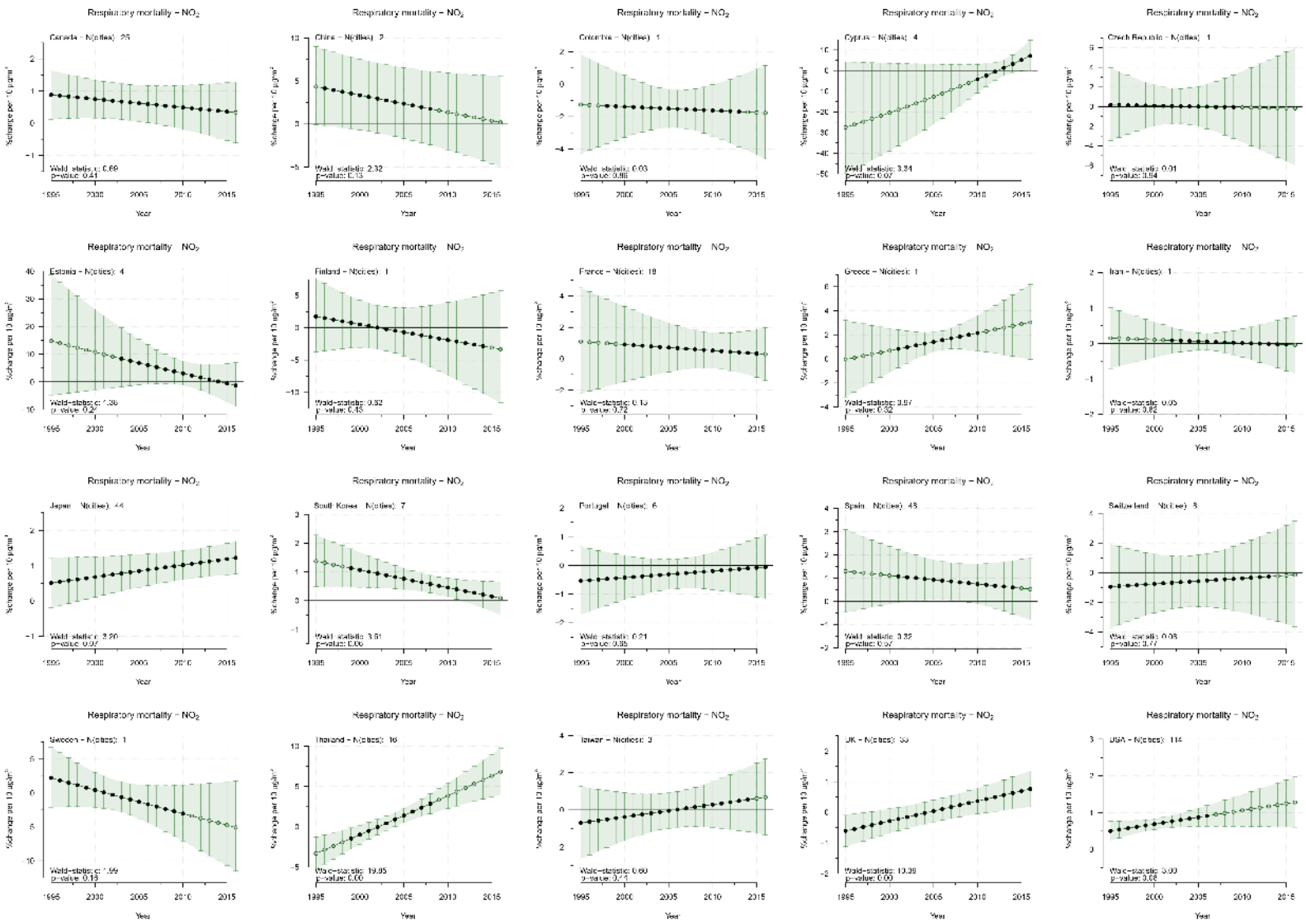

Figure S4: Percent change in daily respiratory mortality and 95% CI (shaded area) per 10 µg/m³ increase in NO_2 (at lag1) over the study period 1995-2016, stratified by country. The graph represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: NO_2: Nitrogen dioxide.

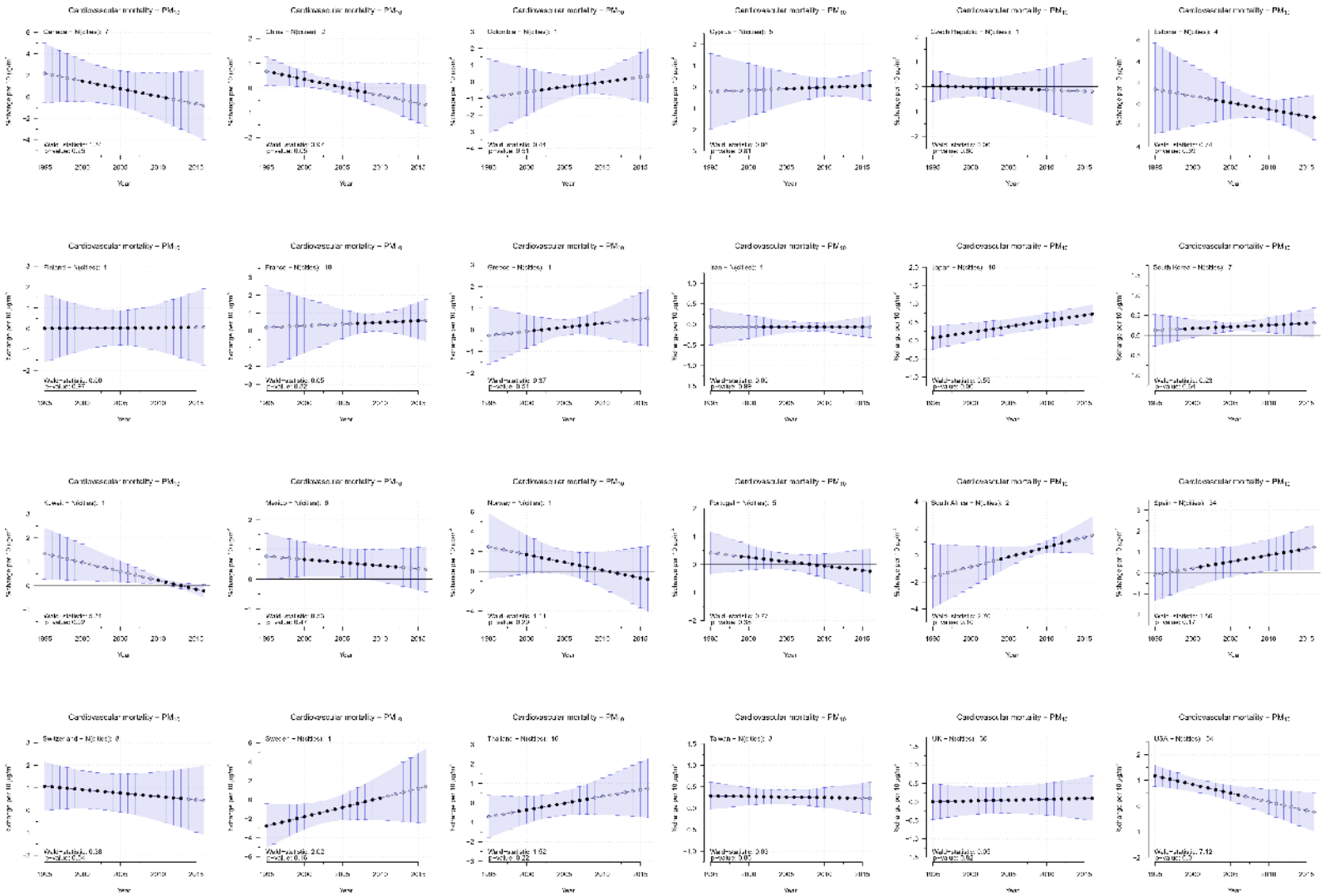

Figure S5: Percent change in daily cardiovascular mortality and 95% CI (shaded area) per 10 µg/m^3 increase in PM_{10} (at lag01) over the study period 1995-2016, stratified by country. The plot represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm.

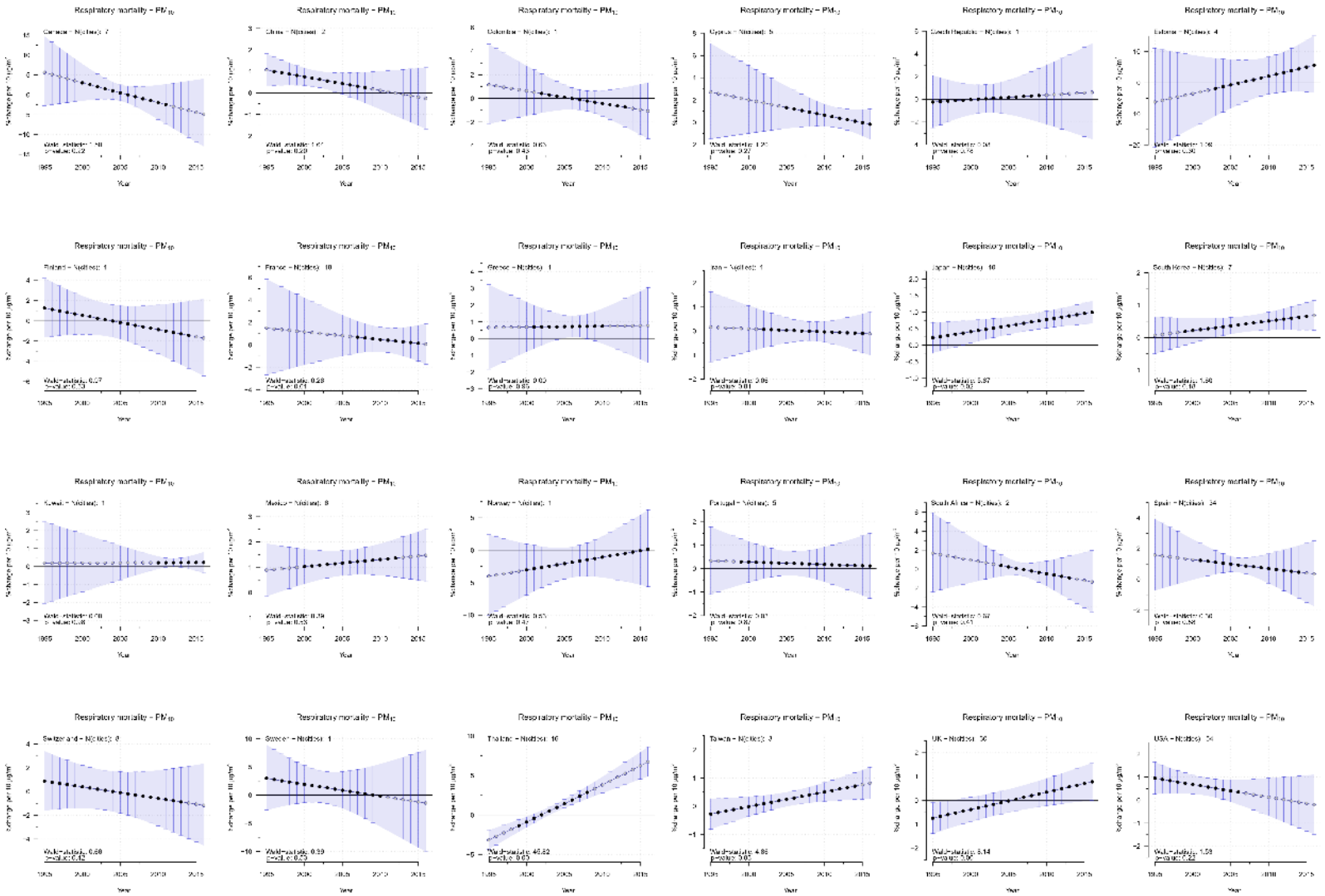

Figure S6: Percent change in daily respiratory mortality and 95% CI (shaded area) per 10 µg/m³ increase in PM_{10} (at lag01) over the study period 1995-2016, stratified by country. The plot represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm.

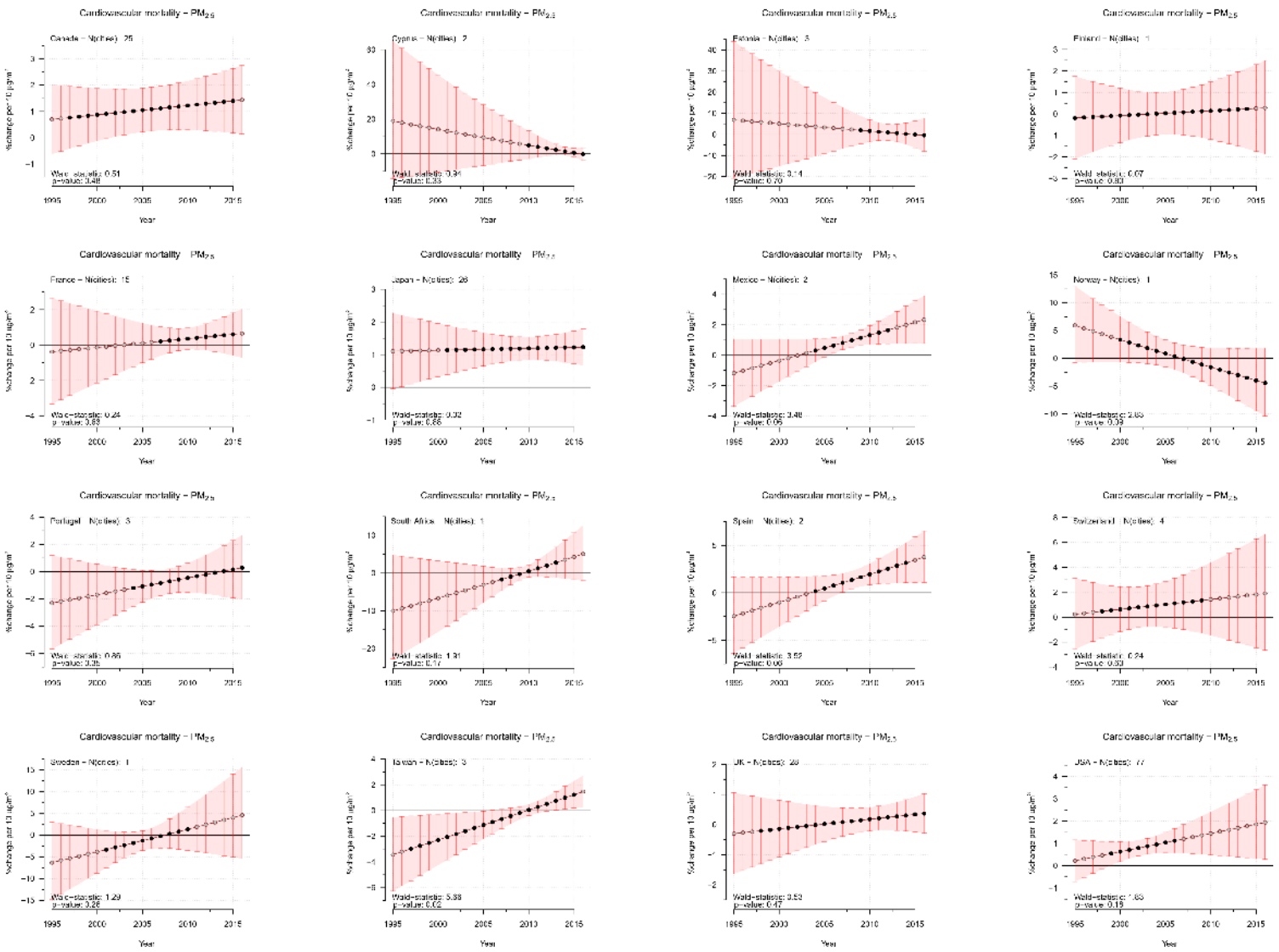

Figure S7: Percent change in cardiovascular mortality and 95% CI (shaded area) per 10 µg/m^3 increase in $PM_{2·5}$ (at lag01) over the study period 1995-2016, stratified by country. The plot represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm.

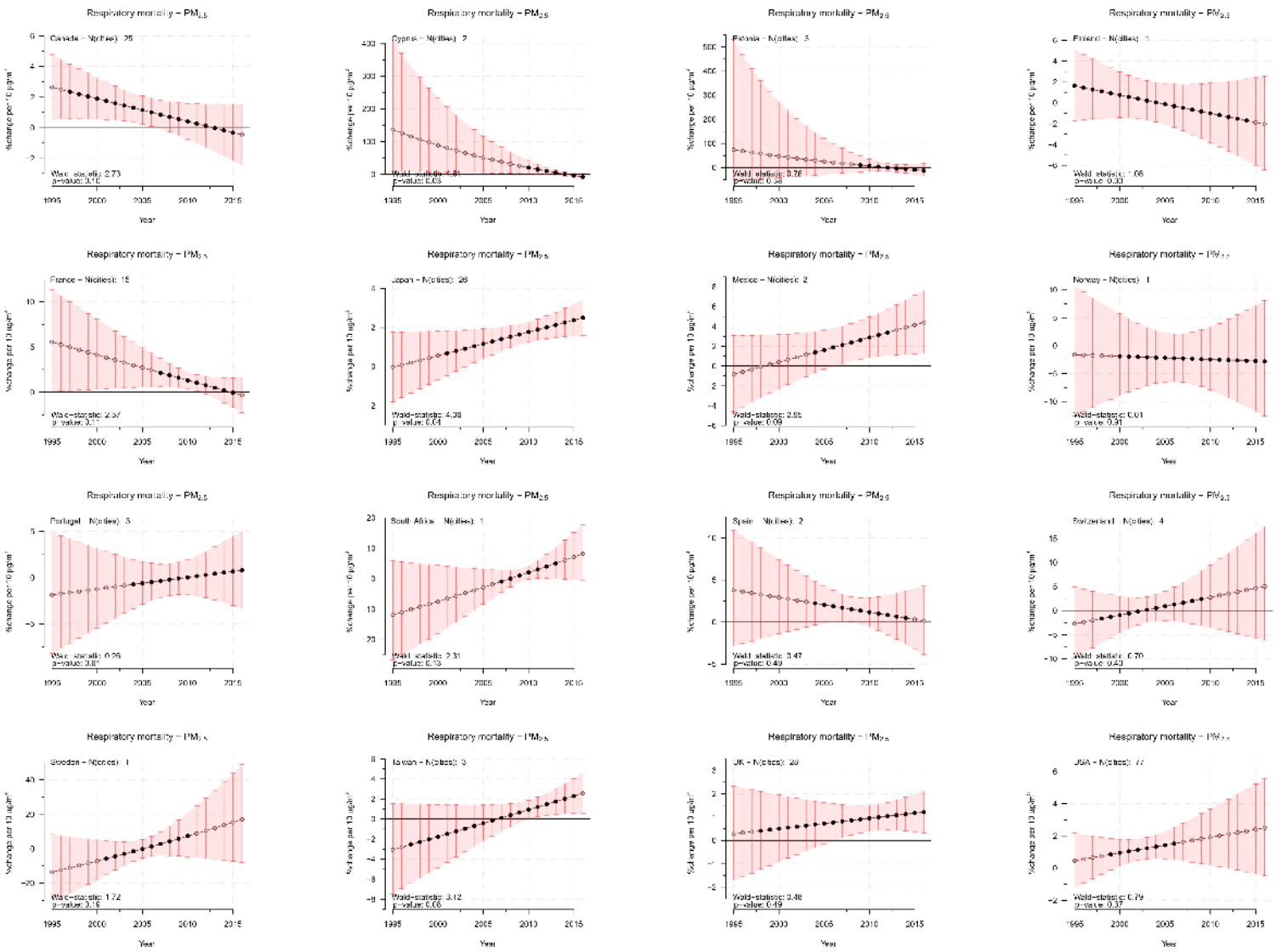

Figure S8: Percent change in daily respiratory mortality and 95% CI (shaded area) per 10 µg/m³ increase in $PM_{2·5}$ (at lag01) over the study period 1995-2016, stratified by country. The plot represents the result of the pooled longitudinal meta-regression using time as a linear term. Note: $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm.

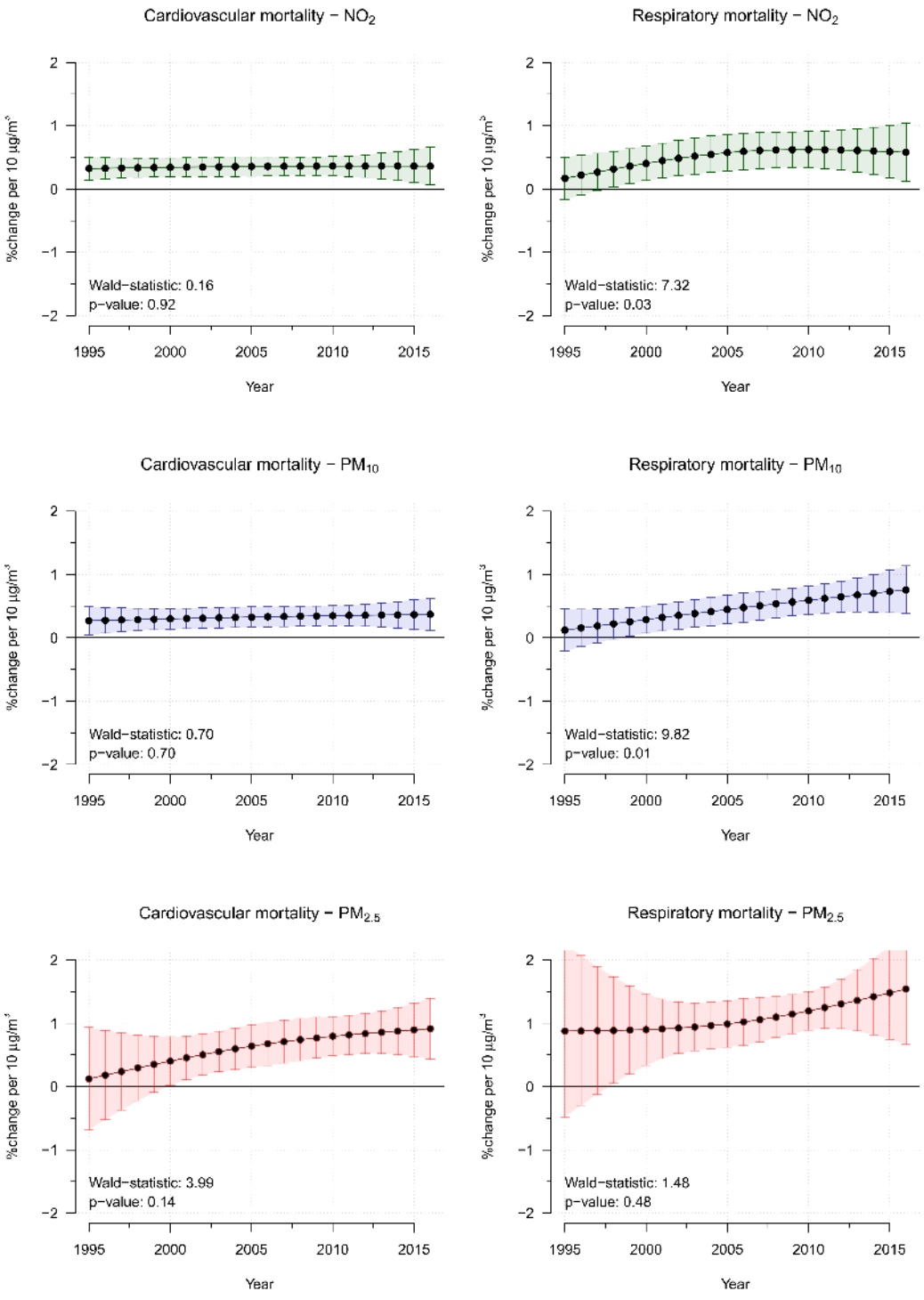

Figure S9: Percent change in daily cardiovascular (left column) and respiratory (right column) mortality and 95% CI (shaded area) per 10 µg/m³ increase in NO_2 (top panel, at lag1), PM_{10} (middle panel, at lag01), and $PM_{2.5}$ (bottom panel, at lag01) over the study period 1995-2016. The plot represents the result of the pooled longitudinal meta-regression using time as a nonlinear term. Note: NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2.5}$: Particulate matter with an aerodynamic diameter ≤

2·5µm; The p-value of the related Wald-Test indicate a significant difference of the model with the nonlinear term for time.

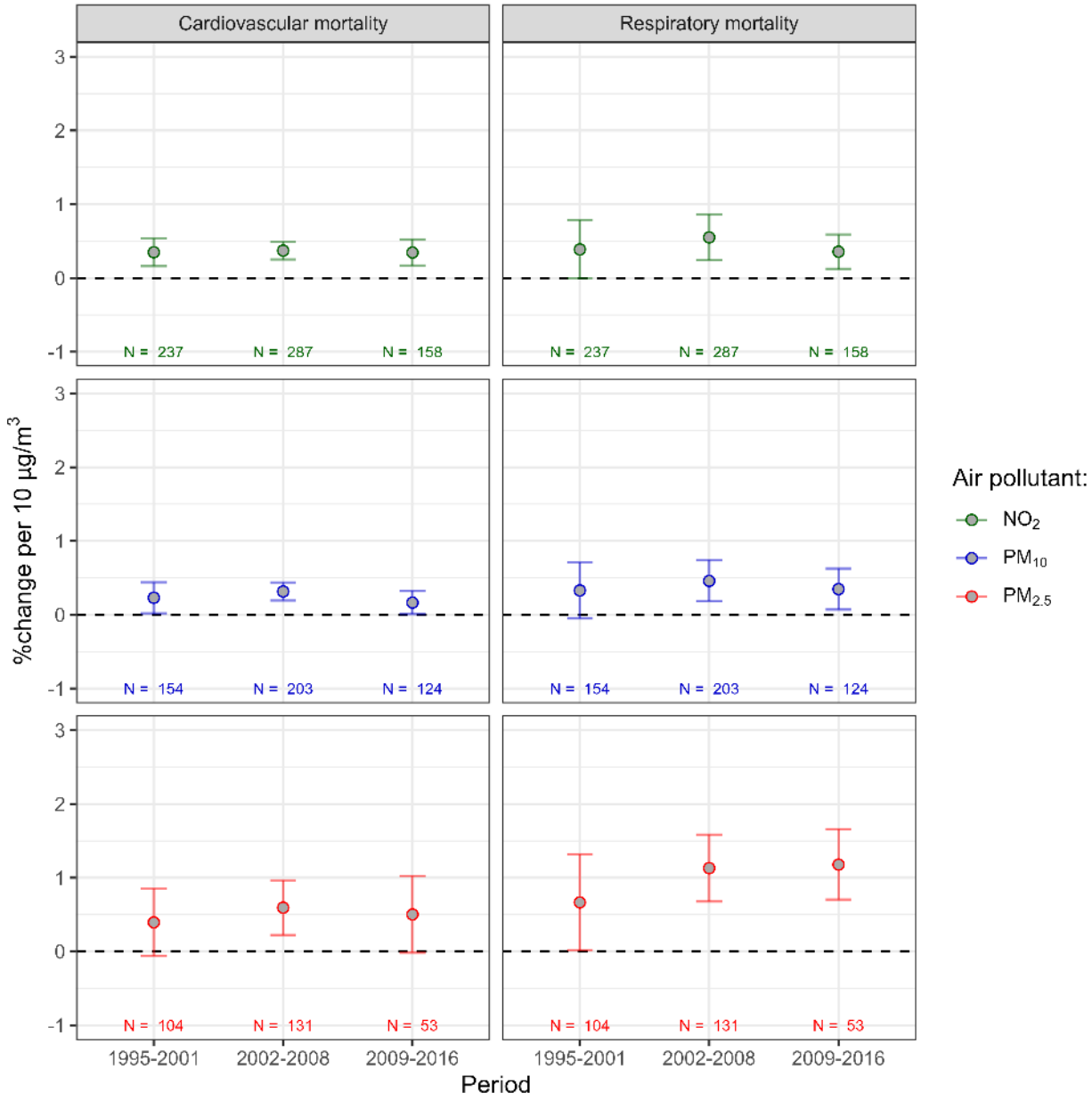

Figure S10: Percent change in daily cardiovascular (left column) and respiratory (right column) mortality and 95% CI (shaded area) per 10 µg/m³ increase in NO_2 (top panel, at lag1), PM_{10} (middle panel, at lag01), and $PM_{2·5}$ (bottom panel, at lag01) for each subperiod of the analysis. The plot represents the result of the pooled city-specific interactions between air pollution concentrations and time (defined as period). Note: NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm; N: number of cities that contributed to the respective period; Note: Using only cities that contributed to all three subperiods changed the results only slightly (results not shown).

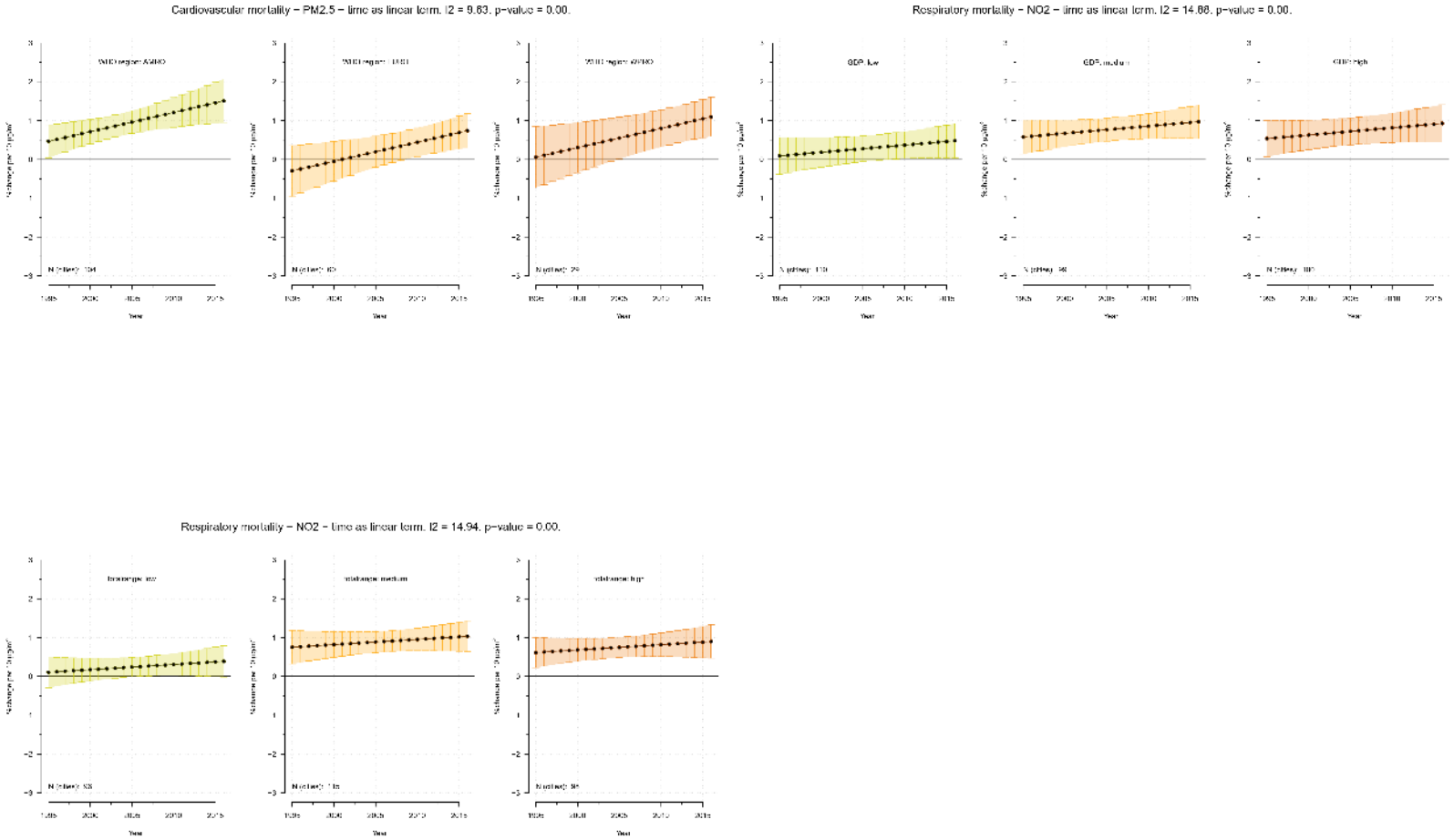

Figure S11: Percent change in daily cardiovascular (left column) and respiratory (right column) mortality and 95% CI (shaded area) per 10 µg/m^3 increase in NO_2 (bottom right, at lag1), PM_{10} (top, at lag01), and $PM_{2·5}$ (bottom left, at lag 01) over the study period 1995-2016. The plot represents the result of the pooled longitudinal meta-regression using time as a linear term, stratified by the levels of the significant meta-predictors (WHO region and gross

domestic product (GDP)). Note: NO_2: Nitrogen dioxide; PM_{10}: Particulate matter with an aerodynamic diameter ≤ 10µm; $PM_{2·5}$: Particulate matter with an aerodynamic diameter ≤ 2·5µm. AMRO: Region of the Americas; EURO: Europe; WPRO: Western Pacific Region. N: number of cities that contributed to the respective stratum.

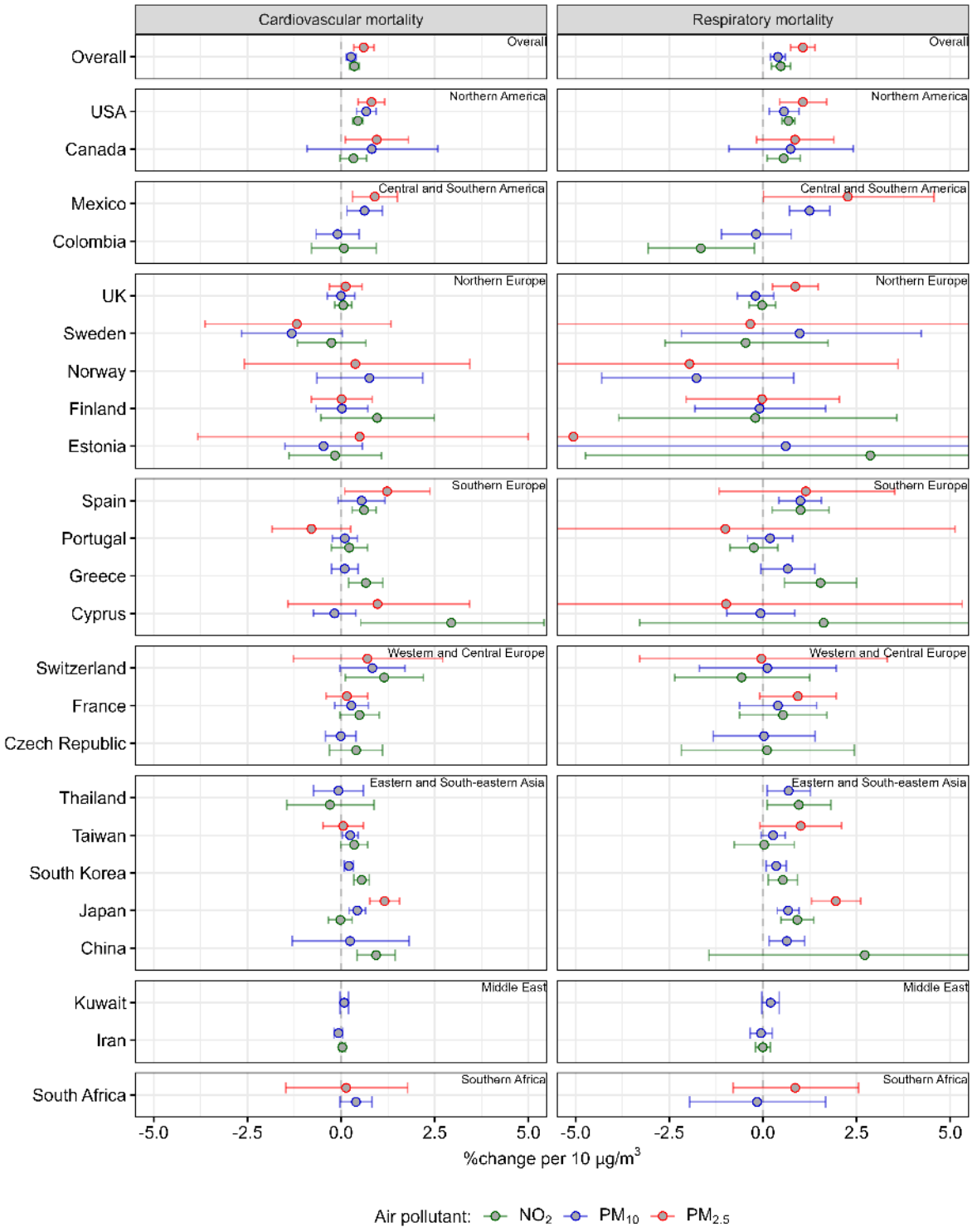

Figure S12: Percent change in daily mortality and 95% CI per 10 µg/m^3 increase in air pollutants. Estimates represent the global (top panel) and country-specific (lower panels) pooled analysis using multilevel random-effects models and were adjusted for main model covariates without assessment of temporal variation. NO_2 analyses were conducted using lag1, PM fractions lag01 of the respective pollutant.

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