green health

MDPI

Supplementary Materials

What Are the Key Built Environment Features Associated with Heat-Related Health Risks Among Older People in High Income Countries?

Detailed search terms

PubMed	(("hot temperature" OR "extreme heat" OR "extreme hot weather") OR (heat OR heat-wave OR "heat wave" OR heatwave OR "high-temperature" OR "hot weather" OR "heat related" OR heat-related) OR ("climate change" OR "global warming" OR weather OR "warm season")) AND (("health risks" OR "thermal stress" OR "heat stress" OR morbidity OR ("heat illness" OR "heat-related illness" OR "heat related illness") OR "heat cramps" OR ("heat exhaustion" OR "heat stroke" OR heatstroke) OR (overheating OR "over heating") OR dehydration)) AND (elderly OR senior OR "older people" OR "older adults" OR "over 65" OR ag*ing OR senior OR retire* OR "baby boomer" OR pensioner OR mature) AND ("built environment" OR "environment design" OR "residence characteristics" OR urban OR city OR cities OR building OR town OR metro OR home OR house OR housing OR townhouse OR apartment OR settlement OR "living place" OR traffic OR transport OR infrastructure OR construction OR pathway OR pavement OR "architecture physics" OR "urban heat" OR "extreme urban heat" OR "urban heat island" OR albedo OR "cool pavements" OR greenery OR "grass pavers" OR grass OR park OR "green space" OR "blue space" OR "water feature" OR lakes OR ponds OR shading OR "mitigation strategies" OR "projecting roof" OR insulation OR shade OR shading OR shaded)
Scopus	“hot temperature” OR “extreme heat” OR “extreme hot weather” OR heat OR heat-wave OR “heat wave” OR heatwave OR “high-temperature” OR “hot weather” OR “heat related” OR heat-related OR “climate change” OR “global warming” OR weather OR “warm season” AND “health risks” OR “thermal stress” OR “heat stress” OR morbidity OR “heat illness” OR “heat-related illness” OR “heat related illness” OR “heat cramps” OR “heat exhaustion” OR “heat stroke” OR heatstroke OR overheating OR “over heating” OR dehydration AND elderly OR senior OR “older people” OR “older adults” OR “over 65” OR aging OR ageing OR senior OR retire* OR “baby boomer” OR pensioner OR mature AND “built environment” OR “environment design” OR “residence characteristics” OR urban OR city OR cities OR building OR town OR metro OR home OR house OR housing OR townhouse OR apartment OR settlement OR “living place” OR traffic OR transport OR infrastructure OR construction OR path OR pathway OR pavement OR “architecture physics”

	OR "urban heat" OR "extreme urban heat" OR "urban heat island" OR albedo OR "cool pavements" OR greenery OR "grass pavers" OR grass OR park OR "green space" OR "blue space" OR "water feature" OR lakes OR ponds OR shading OR "mitigation strategies" OR "projecting roof" OR insulation OR shade OR shading OR shaded
Web of Science	(("hot temperature" OR "extreme heat" OR "extreme hot weather") OR (heat OR heat-wave OR "heat wave" OR heatwave OR "high-temperature" OR "hot weather" OR "heat related" OR heat-related) OR ("climate change" OR "global warming" OR weather OR "warm season")) AND (("health risks" OR "thermal stress" OR "heat stress" OR morbidity OR ("heat illness" OR "heat-related illness" OR "heat related illness") OR "heat cramps" OR ("heat exhaustion" OR "heat stroke" OR heatstroke) OR (overheating OR "over heating") OR dehydration)) AND (elderly OR senior OR "older people" OR "older adults" OR "over 65" OR ageing OR aging OR senior OR retire* OR "baby boomer" OR pensioner OR mature) AND ("built environment" OR "environment design" OR "residence characteristics" OR urban OR city OR cities OR building OR town OR metro OR home OR house OR housing OR townhouse OR apartment OR settlement OR "living place" OR traffic OR transport OR infrastructure OR construction OR path OR pathway OR pavement OR "architecture physics" OR "urban heat" OR "extreme urban heat" OR "urban heat island" OR albedo OR "cool pavements" OR greenery OR "grass pavers" OR grass OR park OR "green space" OR "blue space" OR "water feature" OR lakes OR ponds OR shading OR "mitigation strategies" OR "projecting roof" OR insulation OR shade OR shading OR shaded)

Inclusion and exclusion criteria

Inclusion criteria

Studies include:

- at least one built environment feature associated with the positive or negative effects of increasing heat/heatwaves on the health of older people
- population/s living independently in communities
- population/s located in urban settings
- heat impacts on direct and/or indirect physical health*
- older people (65 and over) as a specific group of interest
- populations located in Australia; Austria; Belgium; Canada; Chile; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Korea; Latvia; Luxembourg; Mexico; Netherlands; New Zealand; Norway; Poland; Portugal; Slovak Republic; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom; and United States
- primary studies

* For the purposes of this review examples of direct health impacts include heat stress, heat stroke, dehydration, and exacerbation of chronic/pre-existing health conditions (although they might be defined differently elsewhere). Examples of indirect health impacts include the negative impacts or indirect consequences of extreme outdoor heat such as reduced participation in outdoor exercise, shopping for fresh food, socialising, and attending medical appointments/treatments.

Exclusion criteria

Studies excluded:

- are not a primary study [shortened in full-text exclusion reason to "wrong study design"]
- only examine built environment features in non-urban settings (e.g., housing in a rural area) [shortened in full-text exclusion reason to "wrong setting"]
- focus on institutional, residential care or purpose-built retirement accommodation rather than population/s living independently amongst the urban community [shortened in full-text exclusion reason to "wrong setting"]
- examine non-human populations or subjects such as infrastructure, (e.g. bridges or railway tracks)
- examine clinical treatment for the effects of increasing heat or heatwaves on human health or which are more 'scientific' in nature, (e.g., examining the physics of increasing heat or heatwaves)
- only focus on mental illness
- focus on occupational heat stress
- have no association with heat-related health effects
- have no specific relevance to persons 65 years and over
- do not examine a specific built environment feature
- focus predominantly on populations located outside the 35 OECD Category 1 countries
- full text not available in English
- wrong article type (e.g., conference paper)

Glossary

AC	Air-conditioning
Albedo	The fraction of light a surface reflects. For example, a dark-coloured roof reflects less light so has a lower albedo than a light-coloured roof which reflects more light.
Building Fabric	The materials from which a building is constructed, including walls, floors, roofs, and windows.
Building orientation	The direction in which a building is placed on a site, for example, in relation to the path of the sun and winds in different seasons.
Covidence	An online software package to assist systematic reviews.
Carbon sequestration	The storage of carbon dioxide in vegetation.
Evapotranspiration	The transfer of water into the atmosphere by evaporation from the soil and transpiration from the leaves of plants.
LST	Land Surface Temperature.
LULC	Land use/land cover.
NDBI	Normalized Difference Built-Up Index. This is used to describe the density of an area.
NDVI	Normalized Difference Vegetation Index. This is used to describe the quantity and health of vegetation in an area.
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses.
PROSPERO	International prospective register of systematic reviews.

Solar gain	Increase in heat of a building or object from the absorption of solar radiation.
Thermal insulation	A material which is a poor conductor of energy that is used in buildings to prevent or reduce heat loss or gain between indoors and outdoors.
UHI	Urban Heat Island, also referred to as Urban Heat Anomaly, when built-up urban areas have higher temperatures than surrounding rural areas.

Table S1. Covidence customized spreadsheet, column headings including those used for quality assessment.

Study ID Number and DOI	First Author and Year of Publication	Study Title	Country/ies in which study conducted	Aim of study	Study Design	Study Period	Study funding source/s	Potential conflicts of interest for study authors	Population description	Total number of participants	Built Environment Features	Health Indicators	Key Findings

Table S2. Details for analysis extracted from Covidence customized spreadsheet.

Author, Year of Publication	Study Site/s	Study Design	Study Period	Built Environment Features	Health Indicators	Key Findings
Alberini et al., 2011 [32]	Canada: Winnipeg, Windsor, Fredericton, Regina and Sarnia	Observational - Cross-sectional	2-18 September 2010	Central or window Air-conditioning (AC)	Morbidity and Self-perceived Health including dizziness, nausea, difficulty breathing, dehydration, mild and severe heat exhaustion, heat stroke, other cardio- or cerebro-vascular symptoms.	No particular association was found between the presence of AC in the home and heat-related illness, with the proportion of respondents experiencing illness virtually the same across groups with/without AC and unchanged when controlled for demographics and existing chronic conditions.
Bélanger et al. 2016 [33]	Canada: Quebec	Observational - Cross-sectional	2010-2011	AC; thermal insulation of dwelling; walkability; greenspaces	Morbidity - Self-reporting of adverse physical health during very hot and very humid summer conditions.	Satisfaction with summer dwelling temperatures and a decrease in the prevalence of self-reported adverse health impacts, including satisfaction with the insulation quality of dwellings and reduced adoption of coping/adaptive behaviours highlighting building contributions to reducing heat exposure beyond individual sensitivities. The greater the walkability potential of an area, the more residents adopt adaptation behaviours for reducing the perception of heat.
Crank et al. 2024 [34]	USA: Houston, Phoenix, Los Angeles	Observational - Cross-sectional	2017	AC; White roof; weatherisation	Morbidity - Heat related health symptoms.	Lack of access to effective AC increased risk (OR=1.923-4.499) of heat related health symptoms. White roofs have a slight protective effect and are correlated with reduced heat-related health effects (OR = 0.574, 95% CI =[0.296-1.111]). Weatherisation is also a statistically significant protective factor (OR = 0.695, 95% CI = [0.499-0.968]).

Eisenman et al., 2016 [35]	USA: Maricopa country including Phoenix, Arizona	Observational - analytical	2005-2010	Walkable access (⩽ 0.89km) to publicly accessible cooled spaces; home AC; thermal protective properties of residential buildings and features contributing to thermal characteristics - wall materials (concrete block, wood frame), insulation thickness, windowpanes, attic insulation, roofing material and size of home.	Mortality - All cause and heat-related illness.	Census tracts with buildings that were slower to heat up showed a decrease in heat-related illness mortality (fixed effect IRR=0.92, 95% CI 0.85-1.00 p=0.052) and an increase in all internal causes of mortality (fixed effect IRR 1.01, 95% CI (1.00-1.02) p=0.002) but unexpectedly the interactions with maximum temperature were not significant. Mortality from heat-related illness increased less in census tracts with more publicly accessible cooled spaces, controlling for social vulnerability (IRR 0.98, 95% CI 0.980-0.999; p=0.027). However, access did not modify the effect of temperature on all internal causes of mortality (IRR 1.00, 95% CI 0.99-1.01; p=0.34).
Fujimoto et al. 2023 [36]	Japan	Observational - Cross-sectional	2018-2019	AC	Morbidity - Heatstroke	The odds ratio (OR) of developing heatstroke among the elderly in the absence of air conditioning was 1.6 (95% CI: 1.2–2.0).
Gronlund et al. 2015 [37]	USA: Michigan	Time-stratified case-crossover	May-September, 1990-2007	Percent of homes built before 1940, 1940-1959, 1960-1979 and after 1979; greenspace.	Mortality - Primary causes of death coded as all-cause, heat-related, cardiovascular and respiratory mortality.	Odds of cardiovascular diseases (CVD) mortality association during extreme heat (EH) at 99th percentile threshold vs. non-EH were higher in ZIP codes with high (91%) non-greenspace (1.17, 95% CI 1.06-1.29 vs. 0.98, 95% CI 0.89-1.07 in ZIP codes with low (39%) non-greenspace). Odds of respiratory mortality association during EH were inconsistent but largely insignificant. Results suggested that housing age may also be an effect modifier. In individual models the percentage of homes built before 1940 and between 1940-1959 significantly increased the association between EH (defined as 4-day lag apparent temperature which incorporates both temperature and humidity above the 97th and/or 99th percentile) and CVD mortality. This association was stronger for EH above the 99th percentile than above the 97th. Without non-greenspace, percentage of homes built between 1940-1959 also modified the EH-CVD mortality association (OR 1.06, 95% CI = 0.99-1.14) in ZIP codes with a high percent of homes built then compared to ZIP codes with an equal percent of homes built in each category (OR = 0.98, 95% CI = 0.88-1.09). No effect modification was found for this for respiratory mortality.
Gronlund et al. 2016 [38]	USA	Observational - case-crossover	May-Septembe	Pre-1940 housing; Land cover	Morbidity - Hospitalisation for respiratory and	Non-greenspace was not a modifier for EH mortality in any model at any lag in the study. (However, authors noted

			r, 1992-2006	classifications and percent of area non-greenspace (not classified as open water, developed open space (mostly lawn grasses), forest, shrubland, scrub, agricultural, grasses or wetlands).	renal/heat including any contributing causes coded as heat-related illness.	this could simply reflect exposure misclassification in the use of spatially coarse land cover information, which was a substantial limitation of the study.) A pronounced vulnerability to EH-associated renal/heat/respiratory hospitalisations among residents of ZIP codes with high percentage of pre-1940 housing (15% [95% CI 11%-19% for black people] and 9% [95% CI 6–12% for non-black people]). The authors noted may be related to an absence of central AC in older homes (they note that they only had city-level information on central AC).
Guirguis et al. 2018 [39]	USA: San Diego	Observational - Analytical	May-October 1999–2013	AC	Morbidity – Hospitalisation. Unscheduled at acute care facilities for all cardiovascular diseases and respiratory diseases, acute renal failure, mental health, dehydration, and heat illness.	14.6% increase (95% CI 4.5%-24.6%) in hospitalisations during hot weather compared to colder days in coastal locations where AC was less common, while no significant impact was observed in areas with higher AC saturation.
Hansen et al. 2022 [40]	Australia: Adelaide and suburbs, Iron Triangle; and Fleurieu Peninsula	Mixed methods - observational and simulation	May 2018; January to October 2019	House and roof materials; insulation, presence/usage of AC	Morbidity- Self-Perceived Health Coronary disease, fatigue or tiredness, shortness of breath, sleeplessness, and dizziness. Diseases or symptoms found to affect thermal sensation including asthma and other respiratory illnesses, renal diseases, dehydration, hypertension, and allergies.	Participants used AC sparingly to cool indoors. When external temperatures were 28ºC or above AC use was reported by 39% of participants in Adelaide, 36% in the Iron Triangle and 26%, in Fleurieu. When outdoor temperatures rose to≥38◦C, 63% of households reported AC use in the living room. Strong correlation between thermal sensation and self-rated health (p=0.000). Highest ratings for health and wellbeing occurred in conditions providing optimal thermal comfort and satisfaction but were perceived to worsen when indoor temperatures were above 28◦C which could easily be exceeded in poorly insulated and homes without mechanical cooling with some participants describing their health as being poorest at these high indoor temperatures.
Harlan et al. 2013 [41]	USA: Maricopa County, Arizona	Observational - analytical	2000-2008	Vegetation	Mortality - Exposure and effects of excessive natural heat; and underlying causes of death: heat exposure, exhaustion, sun, heat stress, heat stroke, hyperthermia.	Unvegetated areas had a weak but significant positive association with the odds of at least one heat death in a census block, indicating that vegetation may be a protective factor against human heat stress in all neighbourhoods in desert cities.
Heo et al. 2021 [42]	USA: Connecticut, Pennsylvania, New Hampshire, New Jersey, New York, and Massachusetts	Observational - analytical	2000-2016	Greenspace	Morbidity - Hospitalisations for all CVD and heatstroke	Risk of heatstroke hospitalisation from temperature decreased over time in counties with lowest Enhanced Vegetation Index (EVI) levels (from RR=2.7, 95% CI 2.0-3.4 in 2000–2004 to RR=0.88, 95% CI 0.31-2.53 in 2013-2016), but increased in counties with the highest EVI levels (from RR=0.4, 95% CI 0.7-1.4 in 2000-2004) to (RR=2.4, 95% CI 1.6-3.2 in 2013-

						2016). The authors speculated this might be due to areas with lower greenness, having higher exposure to heat and higher heat-related hospitalisation risks in earlier years, have population adaptation to the heat over time, resulting in lower associations in recent years, whereas the greener (higher EVI) counties have made less efforts to adapt to higher temperatures over time.
Jang et al. 2020 [43]	South Korea: Seoul	Observational - population-based time-series study	June to September 2011-2017	Eight district-level land use/land cover (LULC) indicators: woodland, crop-field, building, road, green coverage, wetland, impervious area, and urban forest, as percentages of total km2 area; detached houses or apartments.	Mortality - Heat related mortality	The regional higher urban heat anomaly significantly correlated with lower vegetation indices, whereas higher urban vegetation indices (green coverage, woodland, urban forest, and crop-field) were highly associated with a lower urban heat anomaly. No direct association was found between LULC and heat-related mortality risk so the only association was through the increase in the urban heat anomaly. Higher value in the urban heat anomaly (per 0.1°C) was associated with a higher heat-related mortality risk in the total population, particularly in individuals aged ⩾65 years (2.89% CI 95% -0.44-6, 33 $p<0.01$) and females 3.31% CI 95% -0.91, 7.7 $p<0.1$). No association was found between the LULC and the heat-related mortality risk, thus the only association between the LULC and the heat-related mortality risk was through increasing the urban heat anomaly.
Kim et al. 2020 [44]	South Korea	Observational - time-series study	June to September 2008-2017	Housing quality and density	Mortality - Heatwave-related mortality	Positive correlation between heatwave-related mortality risk for elderly one-person households in tenements (described as inferior blocks of 4 or fewer storeys) but a negative correlation with elderly one-person households in detached houses.
Rosenthal et al. 2014 [45]	USA: New York City	Observational - ecological	1997-2006	Housing conditions (dilapidated or deteriorating residential buildings, homes near structures rated good or excellent); AC ownership and usage; vegetation; impervious surfaces.	Mortality - Heat related mortality, hypertension diagnosis, diabetes, self-reported general health status of fair/poor, obese, current asthmatics.	Surface UHI is influenced by land cover, including the percent of tree coverage and impervious cover. The percentage of impervious cover was found to be a neighbourhood-level predictor of increased heat-mortality rates, significant at $p<0.10$. Residential AC access had negative associations with mortality rate ratios (-0.341 95% CI -0.584, -0.042 $p<0.027$). Housing quality such as deteriorating and dilapidated buildings were significantly correlated with mortality rate ratios (0.257 95% CI (-0.05, 0.52) $p<0.1$).
Larrieu et al. 2008 [46]	France: Gironde, Dordogne, Bordeaux, Dijon	Cross-sectional nested in two prospective cohorts	1-15 August 2003	Accommodation characteristics: number of rooms; floor level; possibility of ventilating; presence of AC and bedroom.	Morbidity - Hospitalisation and Mortality Felt morbidity: whether subjects felt a deterioration of their health during the heat wave; and	AC was only identified as a feature for the participants of the three-city (3C) study (comprising younger urban dwelling seniors) and had a protective association with felt higher morbidity for those using it in their homes (OR=0.7 95% CI 0.2-3.1) but not for

					Objective morbidity: (occurrence of a morbid outcome - dizzy spell, fall, loss of balance during the heatwave).	objective morbidity (OR=1.2 95% CI 0.4-3.4). Top-floor apartment associated with higher morbidity the 3C study (comprising younger urban-dwelling seniors) (OR=3.9 95% CI 2.0-7.5). [Authors noted a decreased risk was found in the other older, not consistently urban dwelling, group, PAQUID (OR=0.1 95% CI 0.0-1.0) and suggested this could be due to the characteristics of non-urban accommodation or because of older cohort's recollections (much more cognitively impaired than those from the 3C study)].
Lee et al. 2022 [13]	USA: Cincinnati	Observational - analytical	June to September 2016-2020	Vegetation; surfaces; water bodies; urban structure (density, spatial structure [volume of the built-up area], normalized difference built-up index [NDBI] to measure the distribution of urban structure within the block groups); and percentage of pre-1939 houses.	Morbidity - Ambulance Call-outs and Mortality - Heat-related call-outs for breathing problems, cardiac or respiratory arrest and death, chest pain, headache, heat exposure, stroke and cerebrovascular accident, and unconsciousness and fainting.	Green areas mitigated the effects of hot weather on heat-related health, heat vulnerability and heat-related incidents. Impervious surfaces, NDBI, and LST showed a negative effect on heat-related health. Urban centres and downtown areas showed higher heat vulnerability and more heat-related incidents.
López-Bueno et al. 2020 [47]	Spain: Madrid	Observational - Ecological, longitudinal retrospective time series	January 2010 to December 2013	AC, aggregations of green zones including gardens, and historic and forest parks.	Mortality - Heat related mortality.	Green zones mitigated the impact of heat waves, but their role was not more determinant than that of AC in homes. AC was found to be a determinant factor in modulating the impact of heat waves.
Madrigano et al. 2015 [48]	USA: New York City	Observational - Case-only analysis	2000-2011	Built space; proportion covered by trees, grass/shrubs.	Mortality - Underlying causes of death, particularly CVD, Myocardial infarction (MI), congestive heart failure (CHF), and Chronic obstructive pulmonary disease (COPD).	Deaths during heat waves were less likely among residents living in areas with more greenspace (grass and shrubs) (OR=0.96, 95% CI 0.94-0.99) and for those living in census tracts with a proportion of trees above the median value (OR=0.97, 95% CI 0.94-1.00). No significant difference in heat-related mortality where overnight air temperature was above the median versus below the median value (OR=1.02, 95% CI 0.98-1.06) for all heatwave days and (OR=1.02, 0.99-1.05) for all heatwave days plus the following 2 days. However, authors noted overnight air temperature was based on street-level monitors, which may not provide accurate assessment of personal exposure to temperature for the majority of individuals living in the inner-urban due to floor elevation. Residents in areas with a higher daytime, summer surface temperature were at increased risk (OR=1.05, 95% CI 1.01-1.09), although no evidence found for a greater increase in

						mortality among the elderly during heatwaves.
Naughton et al. 2002 [49]	USA: Chicago	Observational - Case-control study	July - August 1999	Top floor location of dwelling; AC	Mortality - Heart condition, heatstroke.	Using home AC was a major protective factor (OR=0.12, 95% CI 0.0-0.3), while fan use was not (OR = 0.71, 95% CI 0.2-2.3). Increased risk of heat-related death in persons who resided on the top floor of a building (OR=4.0, 95% CI 1.7-9.3).
Ostro et al. 2010 [15]	USA: California	Time-stratified case-crossover	May-September 1999-2005	AC ownership and usage	Morbidity - Hospitalisation Respiratory disease, Pneumonia, Asthma, COPD, CVD, Ischemic heart disease, Stroke, Ischemic stroke, MI, Heart failure, Dehydration, Heatstroke, Diabetes, Acute renal failure, Intestinal infection.	Use of central AC appeared to significantly reduce the risk of hospitalisations from higher temperatures.
Schuster et al. 2017 [50]	Germany: Berlin	Observational - Cross-sectional	August-September 2013	Building type; living and bedroom orientation; apartment level; perceived amount of urban green in neighbourhoods; accessibility of parks and open water.	Morbidity - Self-rated health, (medical) drug use, self-rated fitness.	Significant association with heat stress linked to personal living space (especially a south-westerly bedroom window orientation - the direction where solar radiation uptake is strong just before night time) but not to the neighbourhood environment.
Seong et al. 2022 [51]	USA: Austin	Observational - analytical	May to September 2020 and 2021	Impervious cover, and tree canopy, pre-1980 housing; no AC, road density, water areas, greenspace.	Morbidity - Heat-related ambulance call-outs.	Greenspace (IRR=0.916, 95% CI 0.891-0.941) has strong positive impacts on decreasing heat-related ambulance call-outs. Percentage of housing without an AC system was only significant in August and was expected to increase the heat-related ambulance call-outs in a block group by about 8.2%. Road density (IRR=0.911, 95% CI 0.882-0.942) has strong positive impacts on decreasing heat-related ambulance call-outs. The effects of heat vulnerability factors on the overall heat-related ambulance call-outs occurring from May to September 2020 and 2021 showed that a one percent increase in the impervious area in a block group would increase the rate of heat-related ambulance call-outs by 0.8%, holding all other variables constant. Modelling of individual months from May to August also showed that a block group with a higher percentage of impervious areas had an increase in heat-related ambulance call-outs resulting in an adverse impact on heat-related health.
Son et al. 2016 [52]	South Korea: Seoul	Observational - analytical	May to September 2000-2009	Urban vegetation	Mortality -All cause mortality.	The association between temperature and increase in total mortality risk was the highest for GUs (local areas) with low NDVI: 4.1% (95% CI 2.3-5.9%),

						3.0% (95% CI 0.2-5.9%), for medium, and 2.2% (95% CI 0.5-5.0%) for high NDVI group.[Authors noted they did not observe statistically different effect estimates for temperature and mortality by sex or age, but results were suggestive of higher temperature-mortality effects for older persons across all NDVI groups.]
Uejio et al. 2011 [53]	USA: Philadelphia and Phoenix	Ecological	Philadelphia: July - August 1999 Phoenix: June - September 2005	Vegetation health and density; impervious surface (%); housing density (houses/km2); single family detached homes (%); age of house.	Philadelphia: Mortality - extreme heat related mortality. Phoenix: Morbidity - Heat distress calls (ambulance call-out).	UHI measured by impervious surface (1.01, 95% CI 1.01-1.02) and maximum nighttime surface temperature (1.17, 95% CI 1.09-1.25) increased distress calls to ambulance. Neighbourhoods with newer housing stock were protective against heat related mortality (OR=0.93, 95% CI 0.89-0.98).
Vandentorren et al. 2006 [14]	France: Paris, some suburbs (Val de Marne), and two cities south of Paris (Tours and Orleans)	Observational - Case-control	8 -13 August 2003 (peak of the heat wave)	Housing conditions (related to building type, particular dwelling unit, and principal rooms, especially bedroom); Heat-island (calculated from mean of the surface temperature within 200m radius area around each home and vegetative cover); Lack of thermal insulation; bedroom on the top floor; cooling techniques including fan or AC.	Mortality - cardiovascular or heat related death (where the primary cause of death on certificates mentioned 'dehydration', 'hyperthermia' or 'heat stroke'); Other causes included cancer, respiratory, and neurological diseases.	The vegetation index (calculated for 200m radius around homes) was described as protective (OR=0.37, 95% CI 0.13-1.06). AC was not found to be significantly associated with death. [Authors suggested it could be probably because its use in France remains relatively rare.] The heat island effect (calculated as the mean of the surface temperatures for a 200m radius around homes) was a risk factor for heatwave mortality (OR=1.21, 95% CI 1.04-1.43). Living on the top floor (OR=2.33, 95% CI 1.33-4.09) was a principal risk factor for heatwave mortality. As was bedroom location and hours of sunlight it received: (OR=2.16, 95% CI 1.26-3.69) and (OR=1.07, 95% CI 1.01-1.13) respectively. The number of rooms in a dwelling decreased the risk for heatwave mortality (OR=0.85, 95% CI 0.72-0.99) while the number of windows/50m^2 increased it (OR=1.19, 95% CI 1.03-1.37). Pre-1975 dwellings were associated with a higher risk of heatwave mortality than more recent ones (OR=1.83, 95% CI 1.14-2.92). Lack of thermal insulation (assessed by building date and questions about insulation) was a principal risk factor for heatwave mortality.
Vaneckova et al. 2010 [54]	Australia: Sydney	Observational - analytical	1 October - 31 March for the period 1993–2004	Percentage of vegetation; percentage of non-residential (built-up areas); percentage of non-typical dwellings (caravan, cabin, houseboat, improvised home, tent,	Mortality - All cause mortality.	The study did not find that an increase in mortality rate during the warmer months that could be explained by the level of vegetation or highly built-up land. While the percentage of non-typical dwellings was significant both on extreme and non-extreme days, this was not a significant factor when the percentage of mortality on extreme days, over mortality on non-extreme

				sleeping out, house or flat attached to a shop or office).		days, was used as a dependent variable.
Wang C, et al. 2021 [55]	USA	Observational - analytical	2012-2016	Surface reflectance; NDVI	Morbidity - Heat-related hospitalisation.	NDVI is significant at the 0.05 level and negatively correlated with heat-related morbidity, which means that greater coverage of green, healthy vegetation lowers heat-related morbidity. LST ($p<0.1$) and reflectance ($p<0.01$) have positive relationships with morbidity, which indicates that higher surface temperature and reflectance contribute to higher heat-related morbidity.
Wang Y, et al. 2016 [56]	USA	Ecological	1999-2010	AC; NDVI	Morbidity - Heatstroke hospitalisation.	Neither NDVI nor urbanicity modified the association between heatstroke admissions and heatwave days. RR of heat stroke admissions decreased by 28 % (9 %-43 %) per 10 % increase in central AC prevalence.
Williams et al. 2019 [57]	USA	Observational - Cross-sectional	2015	AC	Morbidity - Sleep disruption, galvanic skin response, heart rate.	Non-central AC units (Tmean=25.6◦C) were significantly warmer than those with central AC (Tmean=23.2◦CI, $p<0.001$). With higher indoor temperatures, sleep was more disrupted and galvanic skin response and heart rate both increased.
Xu et al. 2013 [58]	Spain	Time stratified case-crossover	May - October 1999-2006	AC; old building; surrounding greenness/tree cover	Mortality - all cause mortality.	Effect of heat on mortality was higher in census tracts where residents perceived little surrounding greenness (RR=1.29, 95% CI 1.01-1.65), or with a large percentage of old buildings (RR=1.21, 95% CI 1.00-1.46). No higher mortality risks were found in census tracts with a high percentage of homes without AC.
Zanobetti et al. 2012 [59]	USA	Cohort	1985-2006	Green surface	Mortality - heat related mortality.	Associations lower in cities with a higher percentage of land with green surface. Green surface reduced mortality. For each 15% increase in green surface, the Hazard Ratio (HR) for the MI cohort was 0.98 (95% CI 0.97-1.00), and the HR for the COPD cohort was 0.98 (95% CI 0.97-0.99).
Zuurbier et al. 2021 [60]	Netherlands	Observational - Cross-sectional	2012	Type of dwelling; year built; surface area; height; floor location; green area	Morbidity - Self-perceived health.	Green in the vicinity was associated with lower temperatures in bedrooms. Living rooms and bedrooms on the ground floor were associated with a 1.6 and 2.2°C lower temperature compared to rooms located on the top floor. Window size facing east/south/west is associated with an increase of 0.13°C/m^2 in the bedroom, but not in the living room. Authors suggested this might be partly explained by living rooms having a larger volume and more often (34%) outdoor window covers than bedrooms (6%). Pre-1930 houses had 0.6°C lower living and

		bedroom temperatures compared to those built from 1985.	

Table S3. Summary of evidence grading.

Author, Year of Publication	Study Title	Comments (Strengths and weaknesses)	Overall Rating
Alberini et al. 2011 [32]	Individual and Public-Program Adaptation: Coping with Heat Waves in Five Cities in Canada	Strengths: Data collection undertaken in close proximity to heat events using a representative proportion of older people Weaknesses: The sample was drawn from a self-selected panel which received participation rewards. Participants completed an online survey which may have introduced potential inaccuracies.	Good
Bélanger et al. 2016 [33]	A multilevel analysis to explain self-reported adverse health effects and adaptation to urban heat: a cross-sectional survey in the deprived areas of 9 Canadian cities	Strengths: Examines how the most disadvantaged groups of older people (potentially those most likely to benefit from interventions) experience and address adverse health effects from urban heat. Weaknesses: A focus on participants as representing the most materially and socially disadvantaged areas may have reduced the transparency of associations and outcomes with built environment features. Participants were also paid a small participation reward for their time.	Good
Crank et al. 2024 [34]	Sociodemographic Determinants of Extreme Heat and Ozone Risk Among Older Adults in 3 Sun Belt Cities	Strengths: Considers a range of sociodemographic factors and built environmental features including AC and building characteristics. Weaknesses: Preexisting conditions were collected in the survey via self-reporting not from medical records. This could lead to some bias in the data around preexisting conditions. And there could be recall bias in survey analysis.	Good
Eisenman et al. 2016 [35]	Heat Death Associations with the built environment, social vulnerability and their interactions with rising temperature	Strengths: Demonstrates the potential benefits of publicly accessible cooling centres, within reasonable walking distance, for socially vulnerable older people. Weaknesses: A focus on the social vulnerability associations may reduce the transparency of associations and outcomes with built environment features.	Good
Fujimoto et al. 2023 [36]	Possible adaptation measures for climate change in preventing heatstroke among older adults in Japan	Strengths: In addition to measuring the current risks, the study also estimated the future number of heatstroke-related ambulance transports using climate change scenarios in Japan. Weaknesses: Using the survey and modelling method cannot exclude the presence of unmeasured confounders, and the sample size might be small.	Good
Gronlund et al. 2015 [37]	Vulnerability to extreme heat by socio-demographic characteristics and area green space among the elderly in Michigan, 1990-2007	Strengths: Useful findings on the associations between heat-related mortality and greenspaces and older housing. Weaknesses: The focus on socio-demographic characteristics could reduce the transparency of associations and outcomes with built environment features.	Good
Gronlund et al. 2016 [38]	Vulnerability to renal, heat and respiratory hospitalisations during extreme heat among U.S. elderly	Strengths: Demonstrates the increased vulnerability to extreme heat of older people with comorbidities. Weaknesses: Absence of granularity in AC data, and potential for exposure misclassification due to spatially coarse land cover information.	Good
Guirguis et al. 2018 [39]	Heat, Disparities, and Health Outcomes in San Diego County's Diverse Climate Zones	Strengths: Useful findings on the contribution of AC to reducing heat-related morbidity in milder climates experiencing elevated temperatures. Weaknesses: Differences in regional sample sizes which were also affected by the frequency at which temperature thresholds were exceeded.	Good
Hansen et al. 2022 [40]	The Thermal Environment of Housing and Its Implications for the Health of Older People in South Australia: A Mixed-Methods Study.	Strengths: The accurate monitoring of participants' living area temperature, humidity and air movement in conjunction with details of their housing. Weaknesses: The potential for inaccuracies in heat-related health outcomes due to self-reporting of heat-related health effects.	Fair
Harlan et al. 2013 [41]	Neighbourhood Effects on Heat Deaths: Social and Environmental Predictors of Vulnerability in Maricopa County, Arizona	Strengths: Contribution to findings on the role of vegetation in relation to heat-related mortality. Weaknesses: The focus on socioeconomic factors could reduce the transparency of built environment and heat-related health associations and outcomes. Lack of description or definition of the use of 'unvegetated'.	Good
Heo et al. 2021 [42]	Temporal changes in associations between high temperature and hospitalisations by greenspace: Analysis in the Medicare population in 40 U.S. northeast counties.	Strengths: The 17-year duration of the study which possibly demonstrated the impacts of adaptation to increasing heat over time. Weaknesses: Relative lack of information on potential reasons for the inverse findings on the relationship between heat-related hospitalisations and vegetation.	Good
Jang et al. 2020 [43]	Roles of urban heat anomaly and land-use/land-cover on the heat-related mortality in the national	Strengths: Contribution to findings on the impact of the UHI (or urban heat anomaly) on heat-related mortality risk.	Fair

	capital region of South Korea: A multi-districts time-series study.	Weaknesses: Mortality data were all-cause rather than heat related or excess and there was no indication whether all the mortality data for the study periods were used. Data for most LULC indicators were only available for one year (2017 or 2018) while the study used mortality data for seven years.	
Kim et al. 2020 [44]	Social isolation and vulnerability to heatwave-related mortality in the urban elderly population: A time-series multi-community study in Korea.	Strengths: Possible contribution to the role of housing type and quality in relation to vulnerability to heatwave-related mortality. Weaknesses: Social vulnerability associations may reduce the transparency of associations and outcomes with built environment features.	Fair
Rosenthal et al. 2014 [45]	Intra-urban vulnerability to heat-related mortality in New York City,1997–2006	Strengths: Contribution to findings on the impact of higher surface temperatures related to impervious surfaces and lack of vegetation. Weaknesses: Possible limitations in relation to the data on air temperatures, and the focus on socioeconomic factors could reduce the transparency of built environment and heat-related health associations and outcomes.	Good
Larrieu et al. 2008 [46]	Factors associated with morbidity during the 2003 heat wave in two population-based cohorts of elderly subjects: PAQUID and Three City.	Strengths: Contribution to findings on the association between living in a top floor apartment and heat-related morbidity. Weaknesses: Differences in the characteristics of the two cohorts investigated, and possible accuracy of recollections, particularly amongst the older more impaired cohort, some months after the heatwave.	Fair
Lee et al. 2022 [13]	Effects of Urban Landscape and Sociodemographic Characteristics on Heat-Related Health Using Emergency Medical Service Incidents	Strengths: Contribution to findings on the opposing associations between green areas and impervious surfaces and heat-related health outcomes. Weaknesses: Absence of detailed information on AC usage, and potential inaccuracies relating to green areas due to the use of spatially coarse land cover information.	Good
López-Bueno et al. 2020 [47]	The impact of heat waves on daily mortality in districts in Madrid: The effect of sociodemographic factors.	Strengths: Contribution to findings on the modulating effect of AC on heat-related mortality. Weaknesses: The lack of contemporary data on AC use (collected nine years before the starting date of the mortality data), the environmental differences in the location of the meteorological measuring stations to the exposed urban environments, and the focus on socio-demographic characteristics could introduce potential inaccuracies and reduce the transparency of built environment and heat-related health associations and outcomes.	Fair
Madrigano et al. 2015 [48]	A Case-Only Study of Vulnerability to Heat Wave–Related Mortality in New York City (2000–2011)	Strengths: Contribution to the findings that living in areas of the city with higher LST and less vegetation could increase heat stress, and potentially heat-related mortality through increases to indoor and outdoor temperatures, and by making travel to a public cooling space more difficult. Weaknesses: The lack of data about AC use and floor level of apartment could introduce potential inaccuracies.	Good
Naughton et al. 2002 [49]	Heat-Related Mortality During a 1999 Heat Wave in Chicago	Strengths: The findings that while AC had a protective role in relation to heat-related mortality, fan use did not. Weaknesses: The potential accuracy of the data provided by surrogates for the decedents.	Fair
Ostro et al. 2010 [15]	The Effects of Temperature and Use of AC on Hospitalisations	Strengths: Noting that despite the positive impact of AC in relation to heat-related hospitalisations, there were potential adverse impacts of broader AC use. Weaknesses: The data on AC was based on prevalence not AC use.	Good
Schuster et al. 2017 [50]	Urban heat stress: Novel survey suggests health and fitness as future avenue for research and adaptation strategies	Strengths: Data collection undertaken in close proximity to heat events. The novelty of the study in examining the role of health and fitness in reducing urban heat stress and suggesting a role for active travel as an adaptive heat-related health strategy. Weaknesses: The potential for inaccuracies in heat-related health outcomes due to self-reporting of heat-stress.	Good
Seong et al. 2022 [51]	Evaluating the effects of heat vulnerability on heat-related emergency medical service incidents: Lessons from Austin, Texas	Strengths: The contribution of the findings to the role of impervious surfaces in relation to heat-related morbidity. Weaknesses: The potential for the data to be incomplete due to socio-demographic and diagnostic factors.	Good
Son et al. 2016 [52]	Urban vegetation and heat-related mortality in Seoul, Korea	Strengths: The contribution of the findings to the role of vegetation and heat-related mortality. Weaknesses: Due to the existence of only one meteorological monitoring site in Seoul, all study data for ambient temperature and relative humidity came from the one site while the mortality records came from 25 Gus, which given they are spread across the city would likely have a diversity of meteorological measurements.	Good
Uejio et al. 2011 [53]	Intra-urban societal vulnerability to extreme heat: The role of heat exposure and the built	Strengths: Useful contributions to the findings on the role of housing age and UHI in relation to extreme heat vulnerability.	Fair

	environment, socioeconomics, and neighbourhood stability	Weaknesses: The focus on socioeconomic factors could reduce the transparency of built environment and heat-related health associations and outcomes.	
Vandentorren et al. 2006 [14]	August 2003 Heat Wave in France: Risk Factors for Death of Elderly People Living at Home	Strengths: The study provided useful contributions to findings on associations between a range of built environment features and heat-related mortality, including vegetation levels, UHI. housing age, thermal insulation, top floor locations, number of rooms and windows and orientation. Weaknesses: The possibility of inaccuracies in data provided by respondents in interviews regarding decedents.	Good
Vaneckova et al. 2010 [54]	Spatial analysis of heat-related mortality among the elderly between 1993 and 2004 in Sydney, Australia	Strengths: Contribution of localised information on areas of Sydney where older people are likely to be more vulnerable to heat related mortality. Weaknesses: Potential for focus on socioeconomic factors to reduce the transparency of built environment and heat-related health associations and outcomes.	Fair
Wang C, et al. 2021 [55]	Spatial Modeling and Analysis of Heat-Related Morbidity in Maricopa County, Arizona	Strengths: Useful contributions on the role of increased vegetation coverage in reducing heat-related morbidity, and higher surface temperatures and reflectance in increasing heat-related morbidity. Weaknesses: A focus on socio-demographic characteristics could reduce the transparency of associations and outcomes with built environment features.	Good
Wang Y, et al. 2016 [56]	Heat stroke admissions during heat waves in 1,916 US counties for the period from 1999 to 2010 and their effect modifiers	Strengths: The study was a large-scale attempt to consider the national impact of heatwaves on the health of older people which drew data from nearly two thirds of the counties across the USA. Weaknesses: Potential inconsistencies due to the differences in numbers of temperature monitoring sites between counties and because data on AC was based on prevalence not AC use.	Good
Williams et al. 2019 [57]	Building Vulnerability in a Changing Climate: Indoor Temperature Exposures and Health Outcomes in Older Adults Living in Public Housing during an Extreme Heat Event in Cambridge, MA	Strengths: The accurate monitoring of participants' bedrooms to measure temperature, relative humidity, carbon dioxide concentration, as well as having participants continuously wear personal activity and sleep trackers. Weaknesses: The small sample size (n=51) and the self-administration of daily surveys, including missing information in activity logs could introduce potential inaccuracies.	Fair
Xu et al. 2013 [58]	Differences on the effect of heat waves on mortality by sociodemographic and urban landscape characteristics	Strengths: The contribution to findings regarding the impact of older buildings on heat-related mortality, and the role of vegetation as measured by residents' perceptions. Weaknesses: The potential for a focus on socioeconomic factors to reduce the transparency of built environment and heat-related health associations and outcomes.	Fair
Zanobetti et al. 2012 [59]	Summer temperature variability and long-term survival among elderly people with chronic disease	Strengths: The contribution of a large-scale study, conducted over 20 years, to findings on heat-related mortality for people with specific comorbidities such as MI and COPD, which identified the role of higher levels of vegetation in reducing heat-related mortality. Weaknesses: A focus on socio-demographic characteristics could reduce the transparency of associations and outcomes with built environment features.	Fair
Zuurbier et al. 2021 [60]	Street temperature and building characteristics as determinants of indoor heat exposure	Strengths: The accurate monitoring of participants' internal living and bedroom temperatures, localised external temperature monitoring in conjunction with housing details. Weaknesses: The potential for inaccuracies in heat-related health outcomes due to diary self-reporting.	Good

References

1. Alberini, A.; Gans, W.; Alhassan, M. Individual and Public-Program Adaptation: Coping with Heat Waves in Five Cities in Canada. *Int. J. Environ. Res. Public Health* **2011**, *8*, 4679–4701. https://doi.org/10.3390/ijerph8124679.
2. Bélanger, D.; Abdous, B.; Valois, P.; Gosselin, P.; Sidi, E.A.L. A multilevel analysis to explain self-reported adverse health effects and adaptation to urban heat: A cross-sectional survey in the deprived areas of 9 Canadian cities. *BMC Public Health* **2016**, *16*, 144. https://doi.org/10.1186/s12889-016-2749-y.
3. Crank, P.J.; O'lenick, C.R.; Baniassadi, A.; Sailor, D.J.; Wilhelmi, O.; Hayden, M. Sociodemographic Determinants of Extreme Heat and Ozone Risk Among Older Adults in 3 Sun Belt Cities. *J. Gerontol. Ser. A Biol. Sci. Med. Sci.* **2024**, *79*, glae164. https://doi.org/10.1093/gerona/glae164.
4. Eisenman, D.P.; Wilhalme, H.; Tseng, C.-H.; Chester, M.; English, P.; Pincetl, S.; Fraser, A.; Vangala, S.; Dhaliwal, S.K. Heat Death Associations with the built environment, social vulnerability and their interactions with rising temperature. *Health Place* **2016**, *41*, 89–99. https://doi.org/10.1016/j.healthplace.2016.08.007.

5. Fujimoto, M.; Hayashi, K.; Nishiura, H. Possible adaptation measures for climate change in preventing heatstroke among older adults in Japan. *Front. Public Health* **2023**, *11*, 1184963. https://doi.org/10.3389/fpubh.2023.1184963.
6. Gronlund, C.J.; Berrocal, V.J.; White-Newsome, J.L.; Conlon, K.C.; O'neill, M.S. Vulnerability to extreme heat by socio-demographic characteristics and area green space among the elderly in Michigan, 1990–2007. *Environ. Res.* **2015**, *136*, 449–461. https://doi.org/10.1016/j.envres.2014.08.042.
7. Gronlund, C.J.; Zanobetti, A.; Wellenius, G.A.; Schwartz, J.D.; O'Neill, M.S. Vulnerability to renal, heat and respiratory hospitalizations during extreme heat among US elderly. *Clim. Change* **2016**, *136*, 631–645.
8. Guirguis, K.; Basu, R.; Al-Delaimy, W.K.; Benmarhnia, T.; Clemesha, R.E.S.; Corcos, I.; Guzman-Morales, J.; Hailey, B.; Small, I.; Tardy, A.; et al. Heat, disparities, and health outcomes in San Diego County's diverse climate zones. *GeoHealth* **2018**, *2*, 212–223. https://doi.org/10.1029/2017gh000127.
9. Hansen, A.; Williamson, T.; Pisaniello, D.; Bennetts, H.; van Hoof, J.; Martins, L.A.; Visvanathan, R.; Zuo, J.; Soebarto, V. The Thermal Environment of Housing and Its Implications for the Health of Older People in South Australia: A Mixed-Methods Study. *Atmosphere* **2022**, *13*, 96. https://doi.org/10.3390/atmos13010096.
10. Harlan, S.L.; Declet-Barreto, J.H.; Stefanov, W.L.; Petitti, D.B. Neighborhood effects on heat deaths: Social and environmental predictors of vulnerability in Maricopa County, Arizona. *Environ. Health Perspect.* **2013**, *121*, 197–204. https://doi.org/10.1289/ehp.1104625.
11. Heo, S.; Chen, C.; Kim, H.; Sabath, B.; Dominici, F.; Warren, J.L.; Di, Q.; Schwartz, J.; Bell, M.L. Temporal changes in associations between high temperature and hospitalizations by greenspace: Analysis in the Medicare population in 40 U.S. northeast counties. *Environ. Int.* **2021**, *156*, 106737. https://doi.org/10.1016/j.envint.2021.106737.
12. Jang, J.; Lee, W.; Choi, M.; Kang, C.; Kim, H. Roles of urban heat anomaly and land-use/land-cover on the heat-related mortality in the national capital region of South Korea: A multi-districts time-series study. *Environ. Int.* **2020**, *145*, 106127. https://doi.org/10.1016/j.envint.2020.106127.
13. Kim, Y.-O.; Lee, W.; Kim, H.; Cho, Y. Social isolation and vulnerability to heatwave-related mortality in the urban elderly population: A time-series multi-community study in Korea. *Environ. Int.* **2020**, *142*, 105868. https://doi.org/10.1016/j.envint.2020.105868.
14. Rosenthal, J.K.; Kinney, P.L.; Metzger, K.B. Intra-urban vulnerability to heat-related mortality in New York City, 1997–2006. *Health Place* **2014**, *30*, 45–60. https://doi.org/10.1016/j.healthplace.2014.07.014.
15. Larrieu, S.; Carcaillon, L.; Lefranc, A.; Helmer, C.; Dartigues, J.-F.; Tavernier, B.; Ledrans, M.; Filleul, L. Factors associated with morbidity during the 2003 heat wave in two population-based cohorts of elderly subjects: PAQUID and Three City. *Eur. J. Epidemiol.* **2008**, *23*, 295–302. https://doi.org/10.1007/s10654-008-9229-3.
16. Lee, K.; Brown, R.D. Effects of Urban Landscape and Sociodemographic Characteristics on Heat-Related Health Using Emergency Medical Service Incidents. *Int. J. Environ. Res. Public Health* **2022**, *19*, 1287. https://doi.org/10.3390/ijerph19031287.
17. López-Bueno, J.; Díaz, J.; Sánchez-Guevara, C.; Sánchez-Martínez, G.; Franco, M.; Gullón, P.; Peiró, M.N.; Valero, I.; Linares, C. The impact of heat waves on daily mortality in districts in Madrid: The effect of sociodemographic factors. *Environ. Res.* **2020**, *190*, 109993. https://doi.org/10.1016/j.envres.2020.109993.
18. Madrigano, J.; Ito, K.; Johnson, S.; Kinney, P.L.; Matte, T. A case-only study of vulnerability to heat wave–related mortality in New York City (2000–2011). *Environ. Health Perspect.* **2015**, *123*, 672–678.
19. Naughton, M.P.; Henderson, A.; Mirabelli, M.C.; Kaiser, R.; Wilhelm, J.L.; Kieszak, S.M.; Rubin, C.H.; McGeehin, M.A. Heat-related mortality during a 1999 heat wave in Chicago. *Am. J. Prev. Med.* **2002**, *22*, 221–227.
20. Ostro, B.; Rauch, S.; Green, R.; Malig, B.; Basu, R. The effects of temperature and use of air conditioning on hospitalizations. *Am. J. Epidemiol.* **2010**, *172*, 1053–1061. https://doi.org/10.1093/aje/kwq231.
21. Schuster, C.; Honold, J.; Lauf, S.; Lakes, T. Urban heat stress: Novel survey suggests health and fitness as future avenue for research and adaptation strategies. *Environ. Res. Lett.* **2017**, *12*, 044021. https://doi.org/10.1088/1748-9326/aa5f35.
22. Seong, K.; Jiao, J.; Mandalapu, A. Evaluating the effects of heat vulnerability on heat-related emergency medical service incidents: Lessons from Austin, Texas. *Environ. Plan. B Urban Anal. City Sci.* **2022**, *50*, 776–795. https://doi.org/10.1177/23998083221129618.
23. Son, J.-Y.; Lane, K.J.; Lee, J.-T.; Bell, M.L. Urban vegetation and heat-related mortality in Seoul, Korea. *Environ. Res.* **2016**, *151*, 728–733. https://doi.org/10.1016/j.envres.2016.09.001.
24. Uejio, C.K.; Wilhelmi, O.V.; Golden, J.S.; Mills, D.M.; Gulino, S.P.; Samenow, J.P. Intra-urban societal vulnerability to extreme heat: The role of heat exposure and the built environment, socioeconomics, and neighborhood stability. *Health Place* **2011**, *17*, 498–507. https://doi.org/10.1016/j.healthplace.2010.12.005.

25. Vandentorren, S.; Bretin, P.; Zeghnoun, A.; Mandereau-Bruno, L.; Croisier, A.; Cochet, C.; Ribéron, J.; Siberan, I.; Declercq, B.; Ledrans, M. August 2003 heat wave in France: Risk factors for death of elderly people living at home. *Eur. J. Public Health* **2006**, *16*, 583–591. https://doi.org/10.1093/eurpub/ckl063.
26. Vaneckova P, Beggs PJ, Jacobson CR. Spatial analysis of heat-related mortality among the elderly between 1993 and 2004 in Sydney, Australia. Soc Sci Med. 2010;70(2):293-304.
27. Vaneckova, P.; Beggs, P.J.; Jacobson, C.R. Spatial analysis of heat-related mortality among the elderly between 1993 and 2004 in Sydney, Australia. *Soc. Sci. Med.* **2010**, *70*, 293–304. https://doi.org/10.1016/j.socscimed.2009.09.058.
28. Wang, C.; Solís, P.; Villa, L.; Khare, N.; Wentz, E.A.; Gettel, A. Spatial Modeling and Analysis of Heat-Related Morbidity in Maricopa County, Arizona. *J. Urban Health-Bull. N. Y. Acad. Med.* **2021**, *98*, 344–361. https://doi.org/10.1007/s11524-021-00520-7.
29. Wang, Y.; Bobb, J.F.; Papi, B.; Wang, Y.; Kosheleva, A.; Di, Q.; Schwartz, J.D.; Dominici, F. Heat stroke admissions during heat waves in 1,916 US counties for the period from 1999 to 2010 and their effect modifiers. *Environ. Health* **2016**, *15*, 83. https://doi.org/10.1186/s12940-016-0167-3.
30. Williams, A.A.; Spengler, J.D.; Catalano, P.; Allen, J.G.; Cedeno-Laurent, J.G. Building vulnerability in a changing climate: Indoor temperature exposures and health outcomes in older adults living in public housing during an extreme heat event in Cambridge, MA. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2373. https://doi.org/10.3390/ijerph16132373.
31. Xu, Y.; Dadvand, P.; Barrera-Gómez, J.; Sartini, C.; Marí-Dell'Olmo, M.; Borrell, C.; Medina-Ramón, M.; Sunyer, J.; Basagaña, X. Differences on the effect of heat waves on mortality by sociodemographic and urban landscape characteristics. *J. Epidemiol. Community Health* **2013**, *67*, 519–525. https://doi.org/10.1136/jech-2012-201899.
32. Zanobetti, A.; O'Neill, M.S.; Gronlund, C.J.; Schwartz, J.D. Summer temperature variability and long-term survival among elderly people with chronic disease. *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 6608–6613. https://doi.org/10.1073/pnas.1113070109.
33. Zuurbier, M.; van Loenhout, J.A.F.; le Grand, A.; Greven, F.; Duijm, F.; Hoek, G. Street temperature and building characteristics as determinants of indoor heat exposure. *Sci. Total. Environ.* **2021**, *766*, 144376. https://doi.org/10.1016/j.scitotenv.2020.144376.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.