SPAIN

2026 CITY DATA INSIGHTS

LANCET COUNTDOWN: HEALTH AND CLIMATE CHANGE IN EUROPE

The 2026 Europe Cities Report of the Lancet Countdown presents a systematic, policy-relevant set of climate change and health indicators for European cities. This document highlights key Spain-specific city-level findings.

As the world's fastest-warming continent, Europe faces an escalating public health crisis. Cities sit on the front line of this threat, with dense populations, heat-trapping infrastructure and limited cooling due to inadequate green space. All of this multiplies the dangers from climate-related heatwaves, floods, droughts and wildfires. These environmental hazards directly harm human health and disproportionately affect the most vulnerable, including children, older adults, outdoor workers and low-income communities. Cities also offer substantial opportunities for effective climate action.

In 2023, more than half of Spain's population (25.8 million out of 48.1 million people) lived in 98 cities. Around 40% of the urban population lived in Spain's three largest cities, Madrid, Barcelona and Valencia, while 27.5% lived in 16 large or extra-large cities. This high population density exacerbates the health risks of climate change for urban populations. Among Spain's urban population, 5.2 million (20%) were aged over 65 and 3.5 million (13%) were children under 15, meaning a third are at higher risk from climate change.

Heat and Health

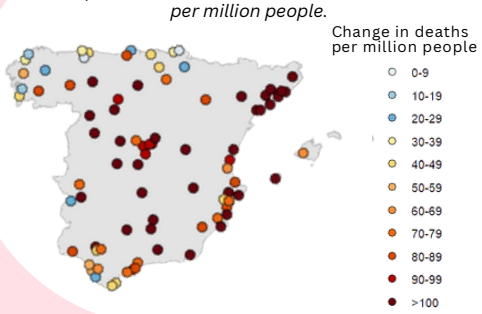
Urban populations are increasingly exposed to extreme heat, contributing to rising heat-related illness and mortality and undermining livelihoods and wellbeing.

Heat-related mortality

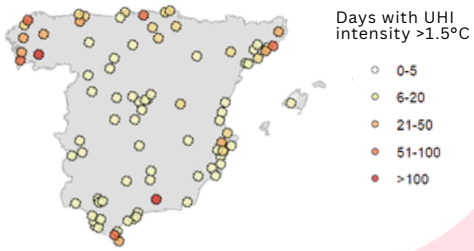
Across Spanish cities, average annual heat-related deaths increased by 95.4 per million between 2015 and 2024, compared with 1991 to 2000 (indicator 1.1.2).

Castellón de la Plana recorded the largest increase in average annual heat-related deaths per million people (553.5%), rising from 25.7 per million in 1991–2000 to 168.1 in 2015–2024 (indicator 1.1.2).

Change in heat-related mortality rate between 1991–2000 and 2015–24, expressed as the number of annual deaths per million people.



Average number of days with UHI>1.5°C between 2003-2020 across cities in Spain



Heat exposure in cities

Most cities trap heat, creating an "urban heat island" (UHI) effect that makes urban areas significantly hotter than nearby rural areas. As climate change raises global temperatures and intensifies heatwaves, the UHI effect worsens health risks, driving increases in a range of heat-related health impacts, including heat exhaustion, cardiovascular strain and mortality, particularly among vulnerable populations.

For example, between 2003 and 2020, Granada recorded more than 300 days on which urban temperatures exceeded those of surrounding rural areas by more than 1.5°C. This averaged 118 days per summer, roughly ten times the Spanish urban average of 12.3 days (indicator 1.1.1).

Sustainable urban cooling

To safeguard public health and prevent heat-related deaths, cities must adapt to extreme heat. Expanding tree cover offers a practical and effective means of cooling urban environments and building community resilience.

Urban tree cover

To support urban cooling, reduce air pollution and protect public health, the UN Economic Commission for Europe recommends that cities maintain at least 30% tree cover.

Spanish cities had an average tree cover of 3,454 hectares in 2020, equivalent to 13.2% of total urban land area. Only 12% of cities had tree cover of 30% or more in 2020 (indicator 2.2.4).

Cuenca had the largest tree cover by area (48,500 hectares, or 53.3% of total area), while Cádiz had the smallest (0 hectares). Torrejón de Ardoz recorded the largest percentage increase since 2000 (257%), from 4.9 to 17.4 hectares (indicator 2.2.4).

Heat-reflecting surfaces

Darker, heat-absorbing materials contribute to rising urban temperatures. Replacing them with lighter, reflective or natural materials can help to lower land surface temperatures, for example by replacing concrete with soil or vegetation. In Spain, however, the extent of such surfaces has declined, leaving considerable scope to expand their use for urban cooling (indicator 2.2.2).

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Sustainable and Healthy Transport

Active travel and public transport

Active and healthy transport, such as walking and cycling, and the use of public transport support urban decarbonisation and improve air quality by reducing vehicle emissions. It also builds daily physical activity into everyday journeys, significantly lowering the risk of chronic disease and improving mental health and wellbeing.

The Sustainable Transport Score measures how easily residents can walk, cycle or use public transport in a city, with 7 out of 10 considered a good score. In 2022, Spanish cities fell short, with an average score of 5.3 out of 10. On average, the cities had 32% of their total area within 250 metres of at least one public transport stop and 41.3% of roads supported walking, while dedicated cycling infrastructure covered only 11% of roads (indicator 3.3.1).

In 2022, Barcelona achieved the highest overall score (7.1/10). Across individual indicators, the top- and bottom-performing cities are (indicator 3.3.1).:

- Walking: Salamanca was the most walkable (68% of all roads were pedestrian-friendly), while Lorca was the least (20.3%).
- Cycling: Cadiz offered the best cycling access (19% of all roads had cycle lanes), whereas Alcala de Guadaira had the least (1%).
- Public Transport: Santa Coloma de Gramenet led, with 82% of its area within 250 metres of a public transport stop; Sanlúcar de Barrameda had just 0.3%.

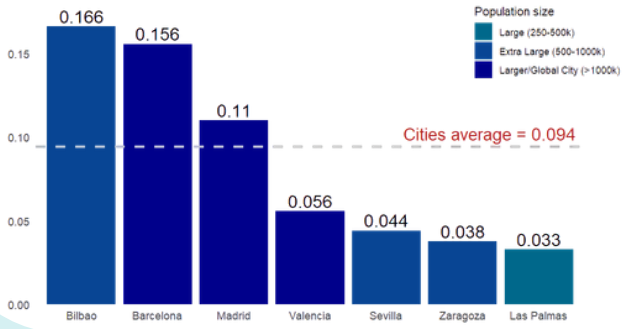
Heat-resilient cycling infrastructure

Climate change is bringing increasingly frequent and prolonged periods of extreme heat to cities, limiting when people can safely walk or cycle outdoors. Building heat-resilient pedestrian and cycling infrastructure, particularly through natural tree shading, is becoming vital to protect urban residents and keep communities moving safely.

In Spain, 9.4% of cycling and shared cycling-pedestrian paths were shaded with tree cover between 2018 and 2020 (indicator 2.2.5).

Of the Spanish cities exposed to moderate to high heat stress, Irún had the highest proportion of shaded infrastructure, at 47.1% (indicator 2.2.5).

Proportion of shaded cycling infrastructure in cities in Spain



Energy, Air Pollution and Health

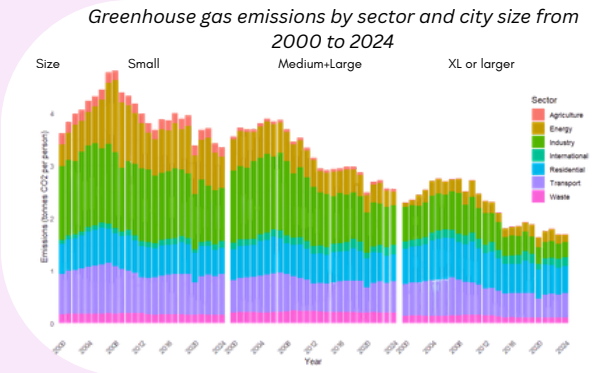
Fossil fuel combustion is a primary driver of rapid global heating and of fine particulate pollution ($PM_{2.5}$), both of which pose severe risks to human health. Decarbonising energy systems by switching to clean, renewable energy removes fossil fuel-related pollutants and greenhouse gas emissions at source, significantly reducing the risk of $PM_{2.5}$-attributable early deaths and chronic illness.

Sectoral sources of greenhouse gas emissions

Between 2000 and 2024, greenhouse gas emissions per person across Spanish cities declined by 17.2%, with the largest reduction in the industry sector (39.2%). Emissions from the energy sector, by contrast, rose by 17.2% across Spanish cities (indicator 3.1.1).

Within the energy sector, Vitoria-Gasteiz recorded the greatest reduction in average emissions per person between 2000 and 2024 (87%), possibly linked to the city joining the Covenant of Mayors and implementing its climate action plans from 2010 (indicator 3.1.1).

Greenhouse gas emissions by sector and city size from 2000 to 2024



$PM_{2.5}$ attributable mortality

Expanding renewable energy incentives has delivered major public health co-benefits across Spain. Between 2000 and 2023, $PM_{2.5}$ mortality attributable to power generation declined by 93.9% in Spanish cities, alongside an overall 62.6% decline in premature deaths attributable to $PM_{2.5}$ from dirty fuel use across sectors (indicator 3.2.1).

In 2023, Torrelavega recorded Spain's highest premature mortality rate attributable to $PM_{2.5}$ from dirty fuels, at 144.4 deaths per 100,000 population, with transport the leading sectoral contributor at 48% of these deaths (indicator 3.2.1).

Between 2000 and 2023, Pamplona achieved Spain's largest reduction in $PM_{2.5}$-attributable premature deaths, falling by 78% (156.2 fewer deaths per 100,000 people) (indicator 3.2.1).

Chen-Xu J, Kriit HK, Semenza J, et al. The 2026 Europe Cities report of the *Lancet* Countdown on health and climate change: cities at the forefront of climate change action. Lancet Public Health 2026; published online Sep 9. https://doi.org/10.1016/S2468-2667(26)00100-3

The Lancet Countdown Europe is a regional research collaboration providing an overview of the relationship between public health and climate change, the region's response to climate change, and the health benefits that emerge from this transition. The Lancet Countdown was established in partnership with Wellcome.

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