

# Science for Environment Policy

## Greening urban areas can reduce mortality rates in the elderly during heat waves

**Greening urban areas** can reduce the number of people dying from heat-related health problems, according to a recent study. The researchers found that doubling vegetation cover in central Melbourne could reduce heat-related mortality of the elderly by up to 28% during heat waves.

**The number of individuals at risk** of heat-related [health](#) problems is rising for several reasons. The greater frequency and severity of heat waves under [climate change](#) has been combined with mass migration into cities, which are often hotter than surrounding areas, as a result of the urban heat island effect. Furthermore, the number of elderly people, who are especially susceptible to heat stress, is increasing. The European heatwave in 2003, for example, is estimated to have caused an extra 70 000 deaths over what would normally be expected for that summer period.

One solution is to increase the area covered by [vegetation](#) in [urban](#) spaces. Urban greening has previously been shown to mitigate the impact of heat waves and moderate the urban heat island effect. In this study, the researchers investigated how changes in vegetation coverage of the central business district in Melbourne, Australia, would affect temperatures inside residential buildings. They then examined how this would affect the death rate of elderly people living in the area.

Using an urban climate model, the researchers evaluated the impact of ten urban vegetation options on local climate for three years: 2009, 2030 and 2050. The ten options included a range of vegetation cover including 15% cover (currently the state of the area) and 5% cover.

The researchers included five types of residential buildings typical of the area: three types of detached houses, a semi-detached house and an apartment. They assumed there was no insulation, air conditioning or central heating in any of the buildings, which would be typical of low-income housing.

The results showed that vegetation provided a cooling effect. For example, a doubling of the current vegetation coverage could reduce the average summer daily maximum temperature by 0.5°C.

Using 20 years of historical mortality data for the Melbourne area, the researchers evaluated the relationship between mortality in people over 75 and the average daily indoor temperature for the five building types. They found that an increase in vegetation cover reduced the excess heat-related mortality rate (the extra number of deaths over what would normally be expected) for people over 75 years of age, across all building types and years. For example, increasing vegetation cover from 15% to 33% resulted in long term average reductions (centred at 2030 and 2050) of the heat-related mortality rate in the range 5% to 28%. This range covers the cooling effect that could be expected in mild summers with few heat wave days as well as hot summers with a greater number of heat wave days.

This study is one of the first to demonstrate the importance of urban greening in helping reduce mortality rates during heat waves.



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