

Planting Trees Can Save Lives, Study Shows

A 30-year tree planting campaign in Portland, Oregon, allowed researchers to show that the number of trees planted in the street is associated with reductions in mortality, and that the association grows stronger as the trees age and grow

Barcelona, November 17, 2022 -. In the past 30 years, the non-profit organization Friends of Trees planted trees along the streets of Portland, Oregon. Now, a new study shows that **each tree planted** was associated with **significant reductions** in non-accidental and cardiovascular **mortality** (of 20% and 6%, respectively, for trees planted in the preceding 15-30 years). The researchers also estimate that the annual **economic benefits of planting trees greatly exceed the cost** of maintaining them. The study, co-led by the Barcelona Institute for Global Health (ISGlobal), an institution supported by the "la Caixa" Foundation, together with the USDA Forest Service, was published in *Environment International*.

Evidence pointing to an association between exposure to nature and lower mortality is accumulating. "However, most studies use satellite imaging to estimate the vegetation index, which does not distinguish different types of vegetation and cannot be directly translated into tangible interventions," says **Payam Dadvand**, ISGlobal researcher and senior author of the study.

Thus, the authors took advantage of a **natural experiment that took place in the city of Portland**: between 1990 and 2019, Friends of Trees planted 49,246 street trees (and kept records of where the trees were planted, and when). So, the research team looked at the **number of trees planted** in a given area (specifically, a census tract, where approximately 4,000 people live) in the preceding **5, 10 or 15 years**. They associated this information with **mortality due to cardiovascular, respiratory or non-accidental causes** in that same area, using data from the Oregon Health Authority.

The results show that in neighbourhoods in which more trees had been planted, mortality rates (deaths per 100,000 persons) were lower. This **negative association** was **significant for cardiovascular and non-accidental mortality** (that is, all causes excluding accidents), particularly for males and people over the age of 65.

Furthermore, the association got **stronger as trees aged and grew**: the reduction in mortality rate associated with trees planted 11-15 years before (30%) was double that observed with trees planted in the preceding 1-5 years (15%). This means that older trees are associated with larger decreases in mortality, and that **preserving existing mature trees may be particularly important** for public health.

This study doesn't provide a direct insight into how trees improve health. However, the finding that large trees have a greater health impact than smaller ones is telling, because larger trees are better at absorbing air pollution, moderating temperatures, and reducing noise (three factors linked to increased mortality).

"We observed the effect both in green and less green neighbourhoods, which suggests that **street tree planting benefits both**," says **Geoffrey H. Donovan**, from the USDA Forest Service and first author of the study. The analysis took into account other factors that may influence mortality, such as income, education and racial composition of the neighbourhoods.

Finally, according to the authors' estimates, the **benefits of tree planting greatly outweigh the cost**: the annual cost of planting and maintaining one urban tree in each of Portland's 140 census tract areas would range somewhere between 3,000 and 13,000 USD, while it would generate around 14.2 million USD annually in lives saved.

"Our results provide an important evidence-base for tangible interventions (e.g., planting trees) to increase the longevity of urban residents," concludes Dadvand.

Reference

Donovan, GH, Prestemon JP, Gatzolis D, Michael YL, Kaminski AR, Dadvand P. [The association between tree planting and mortality: A natural experiment and cost-benefit analysis](#). Environment International. 2022. doi.org/10.1016/j.envint.2022.107609

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. Its working model is based on the generation of scientific knowledge through Research Programmes and Groups, and its translation through the areas of Training and Analysis and Global Development. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA system of the Generalitat de Catalunya.

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