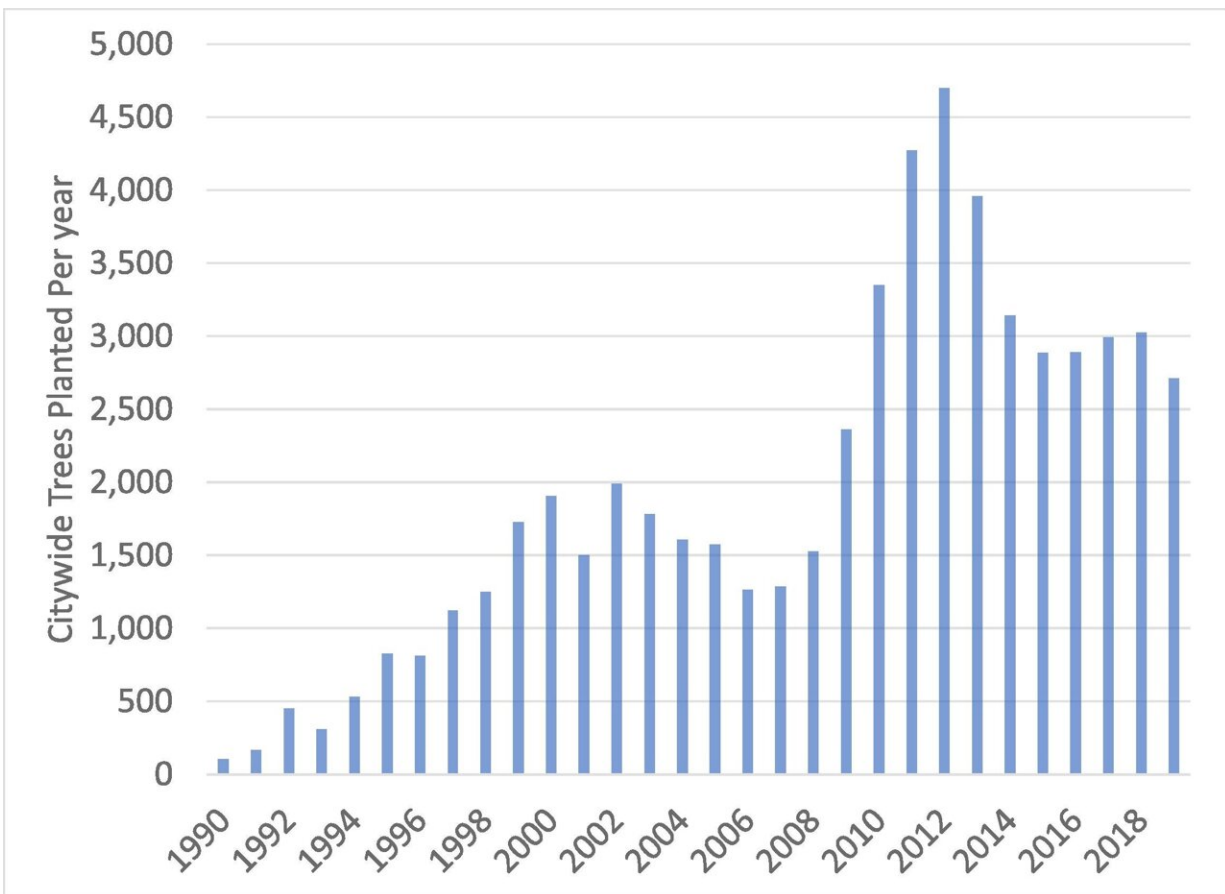


# Planting trees can save lives, study of 30-year tree planting campaign finds

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Number of street trees planted annually by Friends of Trees in Portland, Oregon. Credit: *Environment International* (2022). DOI: 10.1016/j.envint.2022.107609

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), 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 neighborhoods 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 neighborhoods, 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 neighborhoods.

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.

**More information:** Geoffrey H. Donovan et al, The association

between tree planting and mortality: A natural experiment and cost-benefit analysis, *Environment International* (2022). DOI: [10.1016/j.envint.2022.107609](https://doi.org/10.1016/j.envint.2022.107609)

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