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Increasing Green Spaces in Cities Could Prevent Many Premature Deaths Every Year

A study in ‘The Lancet Planetary Health’ applies a novel methodology in Philadelphia, replicable to other cities, to estimate the health impact of increasing the city’s tree canopy

Barcelona, 28 April, 2020.- Increasing the tree canopy to 30% of land area in the city of Philadelphia (United States) could prevent over 400 premature deaths across the city every year and yield an estimated annual economic benefit of almost **four billion dollars**. This is the conclusion of a study published in the journal *The Lancet Planetary Health*, which has, for the first time, analysed the impact of increasing green spaces on premature mortality in an entire city. The project was led by the Barcelona Institute for Global Health ([ISGlobal](#)), a centre supported by “la Caixa” Foundation, and the United States Forest Service.

Research has shown that green spaces in urban settings are associated with [benefits](#) for the physical and mental health of the city’s residents. A [recent systematic review](#) and meta-analysis carried out by ISGlobal, the University of Colorado and the World Health Organization (WHO) concluded that residential green spaces can **protect against premature all-cause mortality**. The meta-analysis, which included nine longitudinal studies involving over eight million people in seven different countries, found a significant association between an increase in green space around homes and a reduction in premature mortality.

In the new study, researchers used the dose-response function from the meta-analysis to carry out a health impact assessment and **estimate the number of all-cause deaths that could be prevented if green spaces in a whole city were increased**. The team studied three different possible scenarios for the city of Philadelphia for 2025. The most ambitious was based on the current goal as set by the City Council of **an increase in tree coverage to 30% of land area in each of the city’s neighbourhoods** (current coverage is 20% for the city as a whole). The other two scenarios were less ambitious. Data on the existing canopy was obtained from **aerial and satellite imagery**, which allowed the researchers to measure the tree coverage by viewing the crown, leaves, branches and stems from above.

The results of the analysis showed that if Philadelphia achieves its goal of increasing tree coverage to 30% of the city by 2025, **403 premature adult deaths would be prevented each year, representing 3% of the city’s annual mortality**. The two more moderate scenarios were also associated with significant reductions in annual mortality: a 5% and 10% increase in tree canopy could result in an annual reduction of 271 and 376 deaths, respectively.

“Achieving this goal does not come without challenges. Large tree planting initiatives are faced with many problems, including losses from climate change, tree pests and invasive species, and urban development”, explains **Michelle Kondo**, first author of the study.

“Although every city has its own characteristics, this study provides an **example for all the cities in the world: many lives can be saved by increasing trees and greening urban environments**, even at modest levels” concludes **Mark Nieuwenhuijsen**, the study coordinator and director of ISGlobal’s [Urban Planning](#).

[Environment and Health Initiative](#). “What’s more,” he adds “green spaces increase biodiversity and reduce the impact of climate change, making our cities more sustainable and more liveable”.

Impact on Poor Neighbourhoods

The study also showed that **neighbourhoods with a low socioeconomic level would benefit most** from any increase in green spaces. “**Many of the deaths prevented would be in the poorest areas of the city**, even with a moderate increase in the number of trees,” comments **Kondo**.

Philadelphia is the poorest of the ten largest cities in the United States and its mortality rate is higher than the national average. “Urban reforestation programmes are not only essential for improving public health, they are also a way to **reduce health inequities and promote environmental justice**,” she adds.

Reference

Kondo MC, Mueller N, Locke DH, Roman LA, Rojas-Rueda D, Schinasi L, Gascon M, Nieuwenhuijsen M, Greening Cities Can Prevent Premature Deaths: Health Impact Assessment of Philadelphia’s 2015 Tree Canopy Cover Goals. *The Lancet Planetary Health*. April 2020.

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. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute’s Education and Policy and Global Development departments. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA programme of the Generalitat de Catalunya.

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