

# Study links neighborhood greenness to reduction in chronic diseases

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A new study of a quarter-million Miami-Dade County Medicare beneficiaries showed that higher levels of neighborhood greenness, including trees, grass and other vegetation, were linked to a significant reduction in the rate of chronic illnesses, particularly in low-to-middle income neighborhoods. Led by researchers at the University of Miami Department of Public Health Sciences at the Miller School of Medicine, and the School of Architecture, the study showed that higher greenness was linked to significantly lower rates of diabetes, hypertension and high cholesterol, as well as fewer chronic health conditions.

The findings, published online April 6 by the *American Journal of Preventive Medicine*, are based on 2010 - 2011 [health](#) data reported for approximately 250,000 Miami-Dade Medicare beneficiaries over age 65, and a measure of vegetative presence based on NASA satellite imagery. The study was the first of its kind to examine block-level greenness and its relationship to health outcomes in older adults, and the first to measure the impact of greenness on specific cardio-metabolic diseases.

"This study builds on our research group's earlier analyses showing block level impacts of mixed-use and supportive building features on adults and children," said lead study author Scott Brown, Ph.D., research assistant professor of public health sciences. Brown was a co-principal investigator on the study with Elizabeth Plater-Zyberk, M.Arch., a Malcolm Matheson Distinguished Professor in Architecture. Plater-Zyberk, who was responsible for the rewrite of the City of Miami's zoning code in 2010, said the study results "give impetus to public

agencies and property owners to plant and maintain a verdant public landscape."

Study findings revealed that [higher levels](#) of greenness on the blocks where the study's Medicare recipients reside, is associated with a significantly lower chronic disease risk for the residents of high greenness blocks, including a 14 percent risk reduction for diabetes, a 13 percent reduction for hypertension and a 10 percent reduction for lipid disorders.

"Going from a low to a high level of greenness at the block level is associated with 49 fewer [chronic health conditions](#) per 1,000 residents, which is approximately equivalent to a reduction in the biomedical aging of the study population by three years," said Brown.

Jack Kardys, Director of the Miami-Dade County Department of Parks, Recreation and Open Spaces, participated in data interpretation along with Miami-Dade County Parks' Chief of Planning, Research, and Design Excellence, Maria Nardi. Kardys said the study findings "illuminate the vital role of parks and greens to health and well-being, and point to the critical need for a holistic approach in planning that draws on research."

The study findings suggest extensive potential for park, open space, and streetscape design in South Florida and the United States to consider health impacts in strategic planning. Funded by the U.S. Department of Housing and Urban Development (HUD) Office of Policy Development and Research and the Health Foundation of South Florida, the research adds to a growing body of evidence that exposure to higher levels of greenness is associated with better health outcomes, by reducing stress, air pollution, humidity and heat island impacts, and encouraging physical activity, social interaction and community cohesion.

From a design standpoint, study co-author Joanna Lombard, M.Arch., professor of architecture, noted that the goals of the County's Parks and Open Spaces Masterplan already call for residents to have access to greenspace from the minute they walk outside of their homes, through tree-lined streets, as well as greens, parks, and open spaces within a 5 to 10 minute walk of their home, all of which have been shown to be linked to better health outcomes. "There's so much suffering involved in the time, money and energy spent on disease burden in the U.S., which we realize that we can, to some extent, ameliorate through healthy community design," said Lombard. "We collectively need to be attentive to the health impacts of the built environment. The associated harms are evident, and most importantly going forward, the potential benefits are significant."

In examining the results by income level and by race, the research showed that the health benefits of greenness were proportionately stronger among all racial and ethnic groups in lower income neighborhoods. Brown said this aspect of the findings suggests that incorporating more green—trees, parks and open spaces—in low income neighborhoods could also address issues of health disparities, which have been recently highlighted in research journals and the national media.

José Szapocznik, Ph.D., professor and chair of public health sciences, and founder of the University of Miami Built Environment, Behavior, and Health Research Group, pointed out that augmenting greenness, particularly in warm climates, potentially contributes to the effectiveness of other aspects of walkability. "Providing a green feature," said Szapocznik, "has been associated with safety, increased time outdoors, physical activity, and social interaction, and may potentially reduce disease burdens at the population level and enhance residents' quality of life."

Provided by University of Miami Miller School of Medicine

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