Greener neighborhoods lead to better birth outcomes, new study shows

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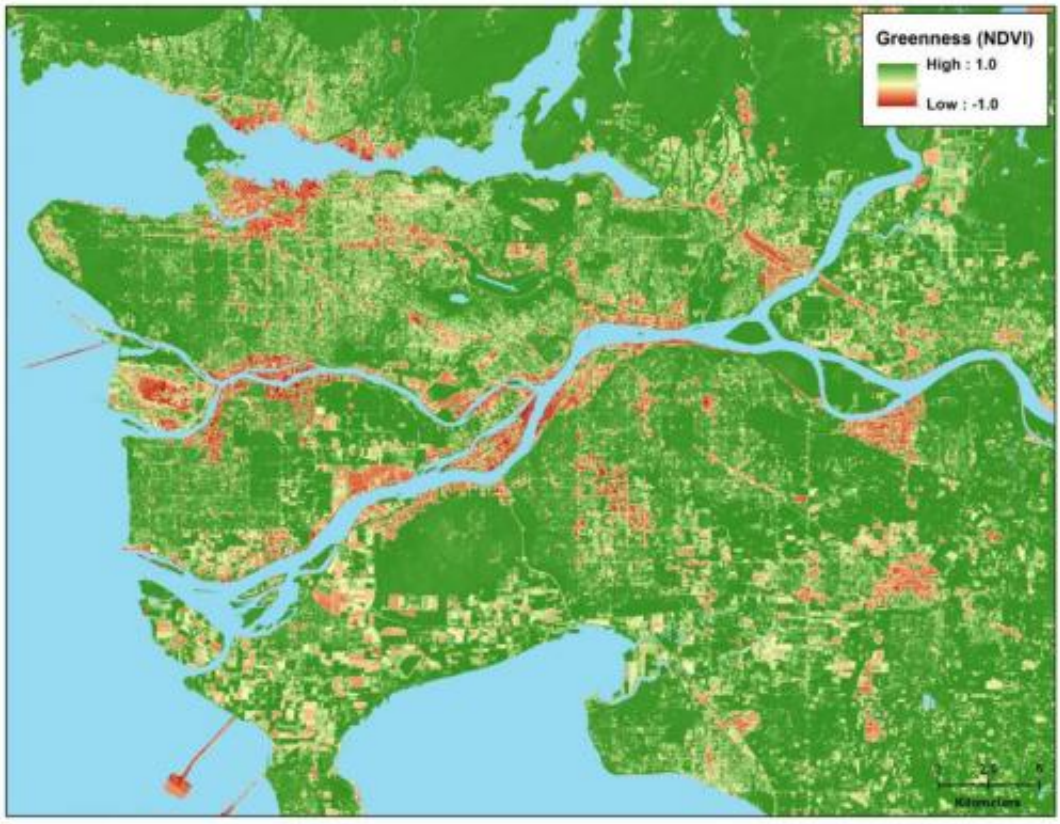

The map shows variations in greenness in the Vancouver, British Columbia, Canada, area. Researchers from Oregon State University and the University of British Columbia found better birth outcomes for babies whose mothers lived in the greenest parts of the city. Credit: Oregon State University

Mothers who live in neighborhoods with plenty of grass, trees or other

green vegetation are more likely to deliver at full term and their babies are born at higher weights, compared to mothers who live in urban areas that aren't as green, a new study shows.

The findings held up even when results were adjusted for factors such as neighborhood income, exposure to air pollution, noise, and neighborhood walkability, according to researchers at Oregon State University and the University of British Columbia.

"This was a surprise," said Perry Hystad, an environmental epidemiologist in the College of Public Health and Human Sciences at Oregon State and lead author of the study. "We expected the association between greenness and birth outcomes to disappear once we accounted for other environmental exposures such as air pollution and noise. The research really suggests that greenness affects birth outcomes in other ways, such as psychologically or socially."

Researchers aren't sure yet where the link between greenness and birth outcome is. More study is needed to determine if additional green space provides more social opportunities and enhances a person's sense of belonging in the community, or if it has a psychological effect, reducing stress and depression, Hystad said.

In a study of more than 64,000 births, researchers found that very pre-term births were 20 percent lower and moderate pre-term births were 13 percent lower for infants whose mothers lived in greener neighborhoods.

They also found that fewer infants from greener neighborhoods were considered small for their gestational age. Babies from the greener neighborhoods weighed 45 grams more at birth than infants from less green neighborhoods, Hystad said.

The study establishes an important link between residential "greenness"

and birth outcomes that could have significant implications for public health, said Hystad, an assistant professor of environmental and occupational health and safety.

"From a medical standpoint, those are small changes in birth weight, but across a large population, those are substantial differences that would have a significant impact on the health of infants in a community," Hystad said.

Babies born early or underweight often have more health and developmental problems, not just at birth but also as they continue to grow up, and the cost to care for pre-term and underweight infants also can be much higher, Hystad said.

Results of the study were published recently in the journal "*Environmental Health Perspectives*." Co-authors were Hugh W. Davies, Lawrence Frank, Josh Van Loon, Lillian Tamburic and Michael Brauer of the University of British Columbia; and Ulrike Gehring of Utrecht University in The Netherlands. The research was supported by a grant from Health Canada.

The study is also part of a growing body of work that indicates green space has a positive influence on health, Hystad said. Researchers examined more than 64,000 births in the Vancouver, British Columbia, area between 1999 and 2002, for individual environmental factors such as exposure to green space that might affect birth outcomes.

Since half the world's population lives in urban areas, it's important to understand how different aspects of the built environment – the buildings, parks and other human-made space we live in – might affect health, researchers said.

"We know a lot about the negative influences such as living closer to

major roads, but demonstrating that a design choice can have benefits is really uplifting," said Brauer, the study's senior author. "With the high cost of healthcare, modifying urban design features such as increasing green space may turn out to be extremely cost-effective strategies to prevent disease, while at the same time also providing ecological benefits."

It's unclear how much or what type of green space is of most benefit to developing infants, but researchers do know that adding a planter to the patio or a tree to the sidewalk median probably won't make a significant difference in birth outcomes.

"Planting one tree likely won't help," Hystad said. "You don't really see the beneficial effects of green space until you reach a certain threshold of greenness in a neighborhood."

One of the next steps for researchers is to better understand what that threshold is and why it makes a difference.

"We know green space is good. How do we maximize that benefit to improve health outcomes?" Hystad said. "The answer could have significant implications for land use planning and development."

Provided by Oregon State University