Medical Xpress
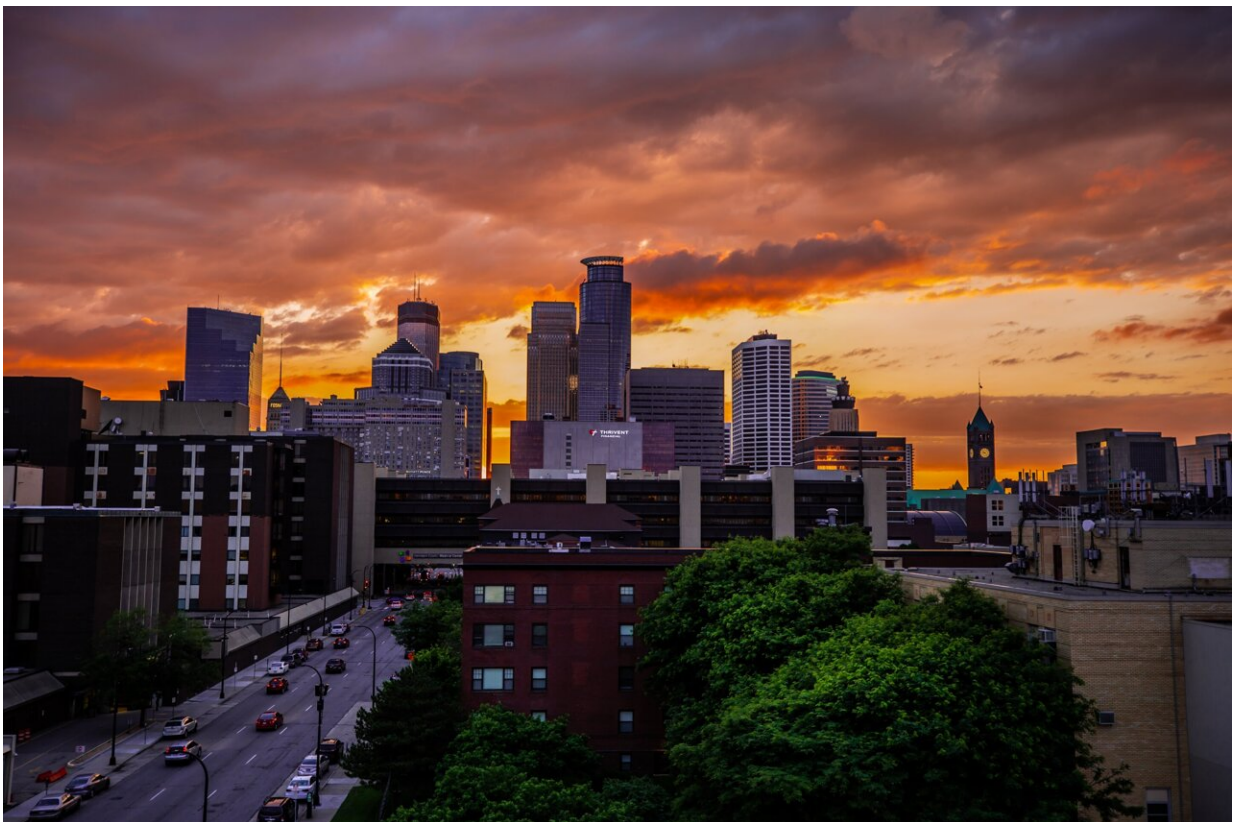
Study reveals link between neighborhood environments and likelihood of metabolic syndrome

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(Re)designing neighborhoods to prevent and potentially manage metabolic syndrome is a population-based approach. Credit: Unsplash/CC0 Public Domain

Cardiovascular diseases continue to be the leading causes of death

worldwide. Metabolic syndrome, a cluster of risk factors including hypertension and obesity, significantly increases the likelihood of cardiovascular diseases. Behavioral and lifestyle modifications, including regular physical activity, have been identified as important factors in the prevention and management of metabolic syndrome.

Creating activity-friendly environments can facilitate regular physical activity, thus reducing the risk of developing metabolic syndrome. Unfortunately, there is limited research directly investigating this connection between the neighborhood environment and the prevalence of metabolic syndrome.

To address this gap, a group of researchers from Japan and Canada led by Associate Professor Mohammad Javad Koohsari from the Japan Advanced Institute of Science and Technology (JAIST) and an adjunct researcher at the Waseda University conducted a study to explore associations between an activity-friendly built environment and metabolic syndrome in a sample of Canadian adults. The results are published in the journal *Humanities and Social Sciences Communications*.

"Targeted policy and population-level strategies have long been recognized as a tool for preventing cardiovascular diseases and studies like these play a crucial role in shaping policy and practice through informative insights," says Dr. Koohsari. Professor Yukari Nagai from JAIST, Professor Koichiro Oka from Waseda University, Professor Tomoki Nakaya from Tohoku University, Professor Akitomo Yasunaga from Bunka Gakuen University and Associate Professor Gavin R. McCormack from the University of Calgary, Canada, were also involved in this study.

The study utilized cross-sectional data from Alberta's Tomorrow Project (ATP), a province-wide cohort dataset in Alberta, Canada. Researchers examined data from ATP participants who completed the health and

lifestyle survey, underwent physical measurements and provided biological samples, and resided in urban areas.

A total of 6,718 participants were enrolled, consisting of 4,455 women and 2,263 men. The average age of the participants was 54 years and 34% of the participants had metabolic syndrome. The team measured the "greenness" of each participant's neighborhood using the normalized difference vegetation index (NDVI). They also examined specific features of the neighborhoods related to physical activity, such the density of homes, the number of intersections, and the number of places of interest.

The results showed that neighborhoods with a higher number of "points of interest"—which refers to destinations such as schools, parks, and shops—and a friendlier environment for active living were associated with fewer risk factors for metabolic syndrome. Essentially, residing in a neighborhood that offers more destinations, walkability, and opportunities for physical activity was linked to improved metabolic health.

Interestingly, the researchers also found fewer health-related risk factors in areas with a higher number of homes. This can be attributed to increased access to amenities, facilitating social interaction, and reducing reliance on cars. Such environments foster active transportation, encouraging individuals to engage in walking or cycling, which further enhances their overall metabolic well-being.

The study also noted that the NDVI was higher for women compared to men, indicating that women tend to live in neighborhoods with more greenery. However, no significant associations were found for NDVI or intersection density in relation to the metabolic syndrome outcomes.

The findings of the current study align with previous research, indicating

that activity-friendly neighborhoods, characterized by a higher number of destinations, dwelling density, and overall active living environment friendliness, were associated with lower odds of having metabolic syndrome.

"These findings indicate the importance of designing neighborhoods that encourage physical activity, as they can significantly improve overall population health," concludes Dr. Koohsari.

The study also emphasizes the need for additional research to investigate alternative measures of residential greenness and highlights the importance of cautious interpretation when generalizing findings from non-Canadian studies, considering differences in climate, politics, health care systems, and culture.