

Your postal code may influence your health: study

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Russell de Souza, first author of the study and assistant professor in the Department of Health Research Methods, Evidence, and Impact at McMaster University. Credit: McMaster University

Where you live in Canada may play a role in your risk of major diseases like cardiovascular disease, diabetes and cancer.

Researchers at McMaster University have identified trends linking [health](#) and [lifestyle factors](#) like access to public transit, the variety of fresh fruits and vegetables in [grocery stores](#), the prices of popular foods, the availability and prices of cigarettes and alcohol, and the promotion, or lack thereof, of healthy foods in restaurants.

The study findings, based on detailed data collected across Canada's 10 provinces, were published today in the journal *Cities and Health*. An interactive online map for public use showing the data by postal code is available at: <http://cvcdcontextual.mcmaster.ca>.

"We found there are significant differences in [environmental factors](#) that may contribute to health, and that these differed between urban and [rural communities](#), as well as when we compared eastern with western, and northern with southern communities," said Russell de Souza, first author of the study and assistant professor in the Department of Health Research Methods, Evidence, and Impact at McMaster.

He is also a research associate at the Population Health Research Institute (PHRI) of McMaster and Hamilton Health Sciences.

"We believe that this information shows there are factors outside of a person's control that influence the individual's health, and these factors likely differ depending on where they live."

The main findings of the study are:

- provincial and urban-rural differences exist in availability of fruits and vegetables, and advertising differs between provinces more so than between urban and rural communities;
- rural communities face higher food prices, are more subject to seasonal variation in fruit and vegetable selection, and generally see less promotion of healthy restaurant options and availability

- of nutritional information at restaurants than urban communities;
- in-store advertising for sweet drinks, and junk food are more frequent than in-store advertisements for tobacco products;
- cigarette prices are lower and the variety of brands is greater in urban than in rural tobacco stores; and are lowest in central Canada, where there is both more in-store advertising for cigarettes and signage prohibiting smoking in stores; and
- alcohol prices are lowest in Quebec.

More than 2,000 on-the-ground assessments conducted in all of the provinces were collected by trained auditors between 2014 and 2016. The assessment tool was adapted from the McMaster-led Prospective Urban and Rural Epidemiological (PURE) study that simultaneously assesses multiple contextual factors within communities and has been used internationally.

De Souza said the research was driven by concern about health trends in the nation.

"The rapid increase of overweight and obese Canadians and the associated consequences, including hypertension and diabetes, is a major health problem and threatens to halt the declines in cardiovascular disease deaths that Canada has experienced in the past 30 years," said de Souza.

"Knowledge gaps exist regarding the impact of the built environment—or the human-made physical surroundings—on how someone develops risk factors like [high blood pressure](#), and the variation of these built environments across Canada by region and rurality."

The researchers were unsurprised to find that the environmental factor trends aligned with health outcomes tracked in other studies.

"Previous Canadian studies have shown that people living in the east have a higher risk of developing [heart disease](#) than people living in the west," said de Souza.

"We also see people who live in rural environments tend to have poorer health than people who live in urban environments.

"This study helps us to understand what we call the 'causes of the causes' of diseases like cardiovascular disease. For example, what are the factors that lead to the development of high blood pressure, which can later lead to a stroke or high cholesterol, which later turns into a heart attack?"

De Souza said the researchers decided at the start of the study the data would be presented in an online, interactive map to convey the information from the community contextual health audits.

"We think presenting our data in this way offers a platform for policy makers, public health professionals and community members to collaborate to build healthier environments and fix the problems," de Souza said.

"By understanding how the built environment plays a role, we can intervene both at an individual level, as well as at a community level. It's one thing for your doctor to tell you that you need to eat more fruits and vegetables to lower your blood pressure, but what if your grocery store prices are so high that you cannot afford them? Or if to get to your grocery store, you have to drive for 30 minutes? If five to 10 servings of fruit and/or vegetables are recommended daily, we should advocate for everyone to be able to afford and access those servings."

The study was a component of the Canadian Alliance for Healthy Hearts and Minds (CAHHM), led by Sonia Anand, professor of medicine at McMaster, senior scientist of PHRI, and vascular medicine specialist at

Hamilton Health Sciences.

CAHHM is a multi-ethnic cohort study being conducted in Canada. The study aims to understand the association of socio-environmental and contextual factors, such as societal structure, activity, nutrition, social and tobacco environments, and access to health services, in relation to risk factors of cardiovascular and other chronic diseases.

"This study is unique because it will enable comparisons between communities within a region, province, and across the country. Place matters as our environment affects our health behaviours without our realizing it," said Anand, the Heart and Stroke Foundation / Michael G. DeGroot Chair in Population Health Research McMaster.

"We are making these data available to other researchers and health planners so they can further quantify the impact of the built environment on health, and to help in the building of healthier communities," she added.

As for the best place to live in Canada's 10 provinces based on study results, de Souza said it depends on your health habits and preferences.

"I would want to live somewhere that makes it easiest to change any behaviour that may be harming my health," he said. "For example, if I were a smoker, I would want to live in a place where it was hard for me to get cigarettes. If I were having a difficult time eating healthy, I would want to live somewhere where it was easy for me to walk to a grocery store and buy affordable fresh fruits and vegetables."

De Souza noted the three territories were not included in the study due to geographical limitations for the research team.

The CAHHM project is funded by Canadian Partnership Against

Cancer, Heart and Stroke Foundation of Canada, and the Canadian Institutes of Health Research (CIHR) through the Canadian Urban Environmental Health Research Consortium.

Anne Simard, chief mission and research officer of the Heart and Stroke Foundation of Canada, said: "This study demonstrates that rural, including northern and remote communities continue to face inequities with respect to access to [healthy food](#) options and even nutrition information in restaurants. This underscores the need for policies to improve nutrition in these communities."

Craig Earle, vice president of cancer control with the Canadian Partnership Against Cancer, added: "The importance of these findings is that they highlight disparities that contribute to different health outcomes depending on where you live. There are things we can collectively take action on today."

Provided by McMaster University

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