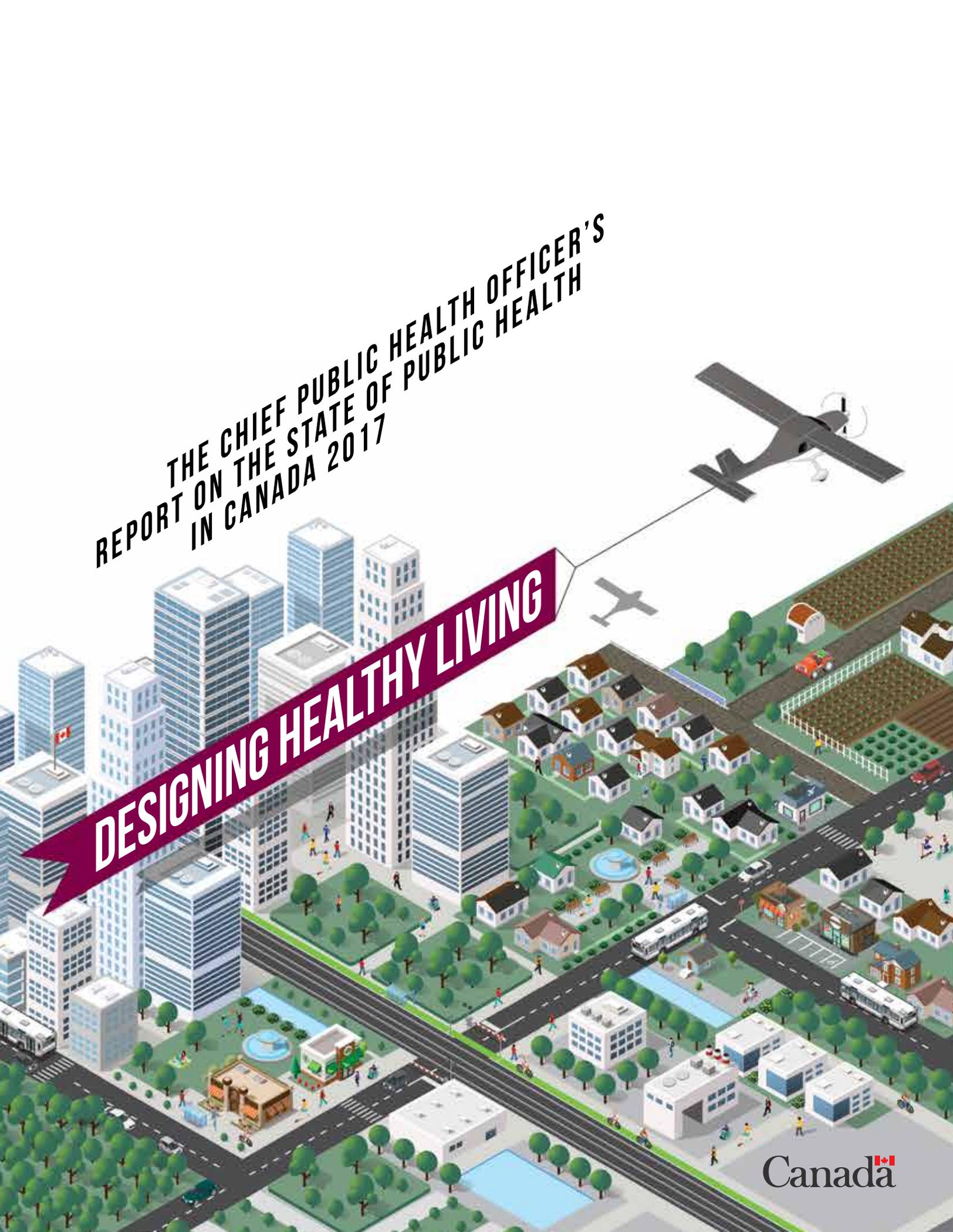
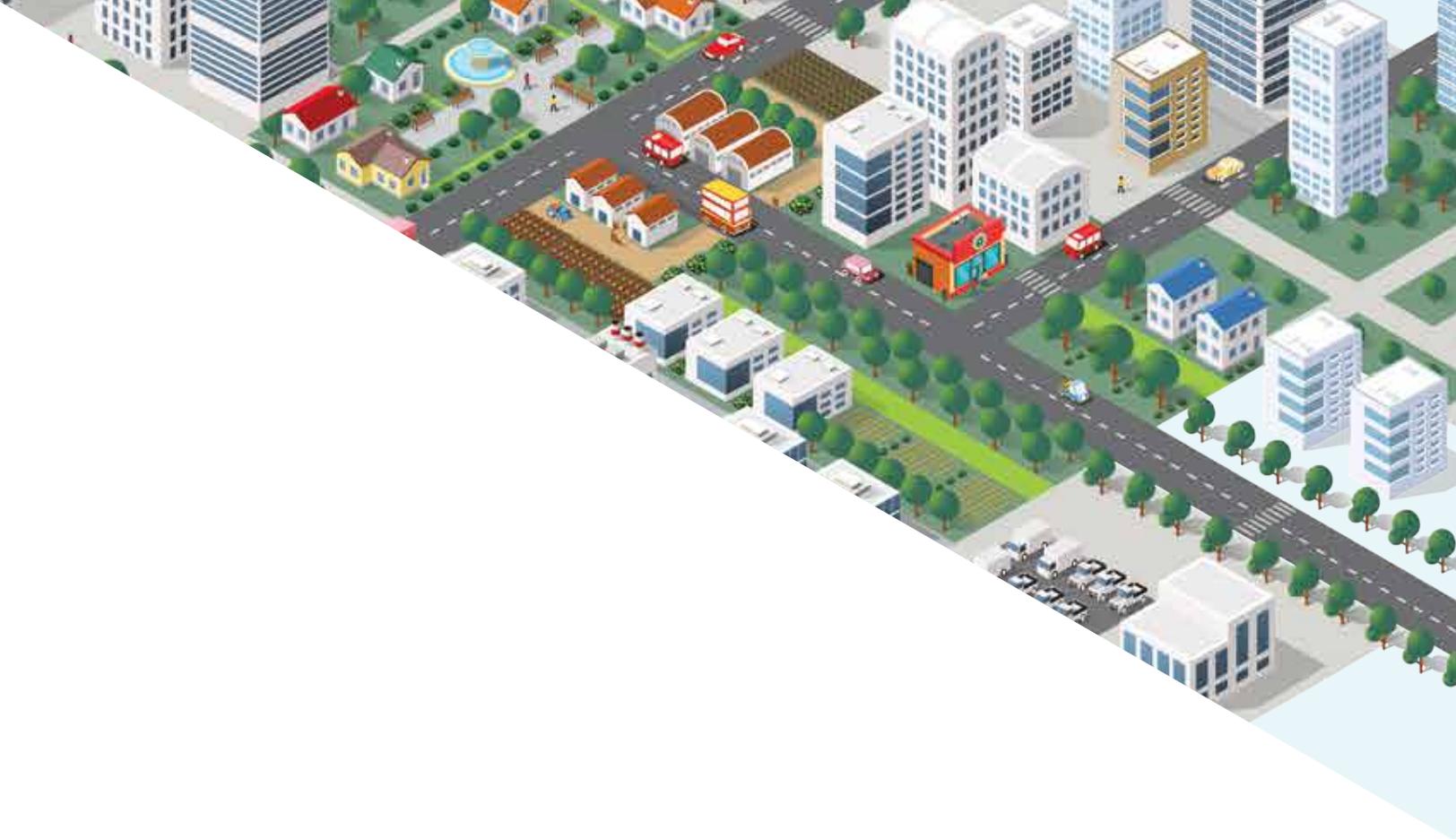


**THE CHIEF PUBLIC HEALTH OFFICER'S
REPORT ON THE STATE OF PUBLIC HEALTH
IN CANADA 2017**

DESIGNING HEALTHY LIVING





Également disponible en français sous le titre :
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To obtain additional information, please contact:

Public Health Agency of Canada

Address Locator 09002

Ottawa ON K1A 0K9

Tel.: 613-957-2991

Toll free: 1-866-225-0709

Fax: 613-941-5366

TTY: 1-800-465-7735

Email: publications@hc-sc.gc.ca

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A MESSAGE FROM CANADA'S CHIEF PUBLIC HEALTH OFFICER



Without being aware of it, our neighbourhoods and how they are built influence how healthy we are.

I chose designing healthy living as the topic for my first report as Canada's Chief Public Health Officer because of the tremendous potential that changing our built environment has for helping Canadians live healthier lives.

Chronic diseases like diabetes, cancer and cardiovascular disease are the leading causes of death in Canada. It is alarming that in 2011, almost 2.7 million or 1 in 10 Canadians 20 years and older were living with diabetes. Rising rates of type II diabetes can be considered a red flag for poor health as they are associated with higher rates of other diseases and conditions and linked to an unhealthy diet, low physical activity and higher rates of overweight and obesity. Rates of type II diabetes and other chronic diseases in Canada could be reduced by seamlessly integrating healthy living into our daily lives which can be achieved, in part, by designing and redesigning our communities.

Improving public health and preventing disease through changes to our environment is a well-founded concept. For example, infectious disease rates in the last century were reduced not just through scientific innovation and vaccination, but also through infrastructure planning by improving sanitation and addressing overcrowding in residential neighbourhoods.

This report answers many questions but also raises several others. We need better information if we are to measure the health impacts of community design to incorporate evidence-based strategies into community planning. This report will raise awareness among Canadians about the unique aspects of their communities that they could take advantage of to improve their health. It will also encourage more dialogue across the many disciplines involved in community planning and health promotion so that neighbourhood design considers and promotes physical activity, healthy diets and mental wellness.

Dr. Theresa Tam
Chief Public Health Officer of Canada





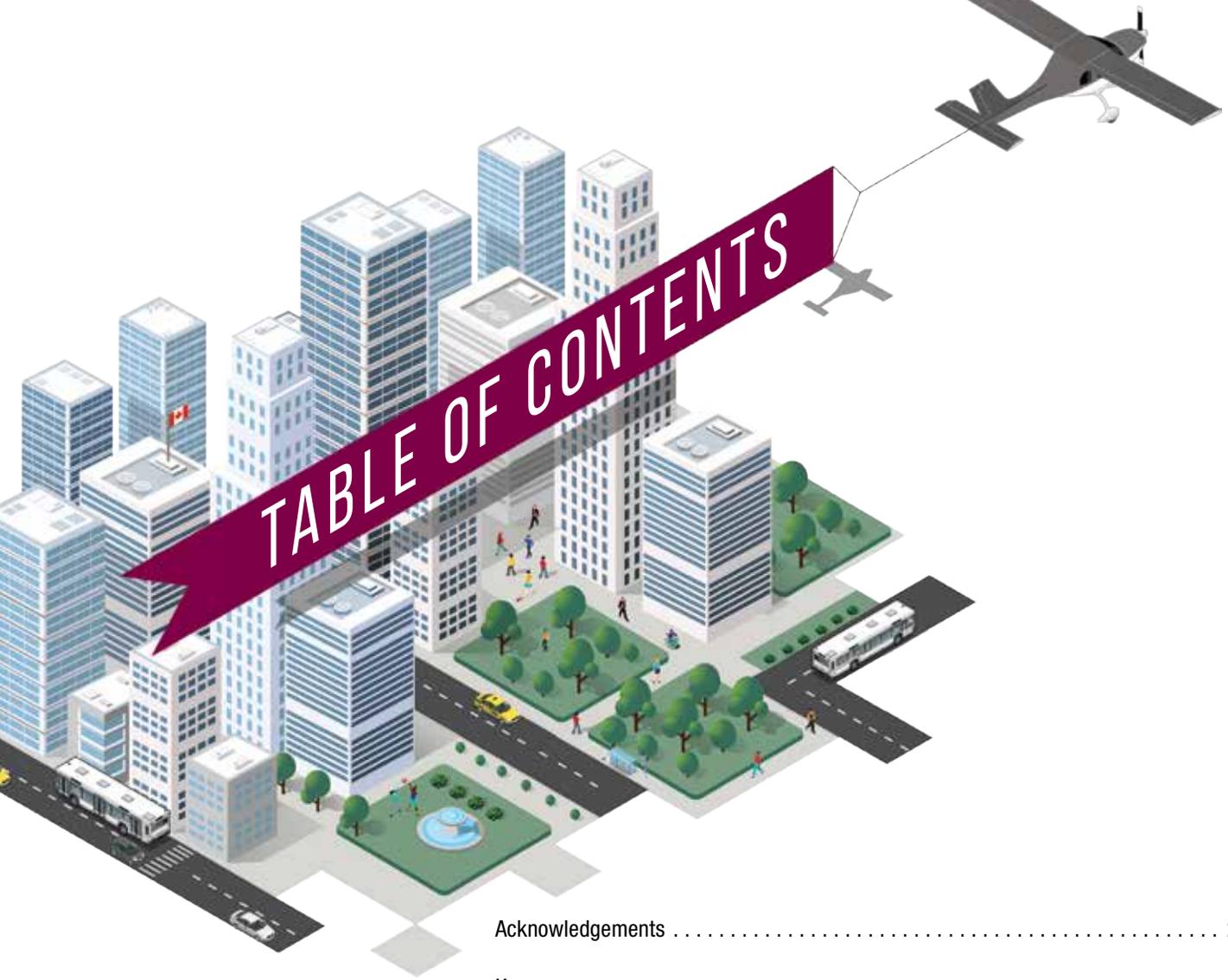


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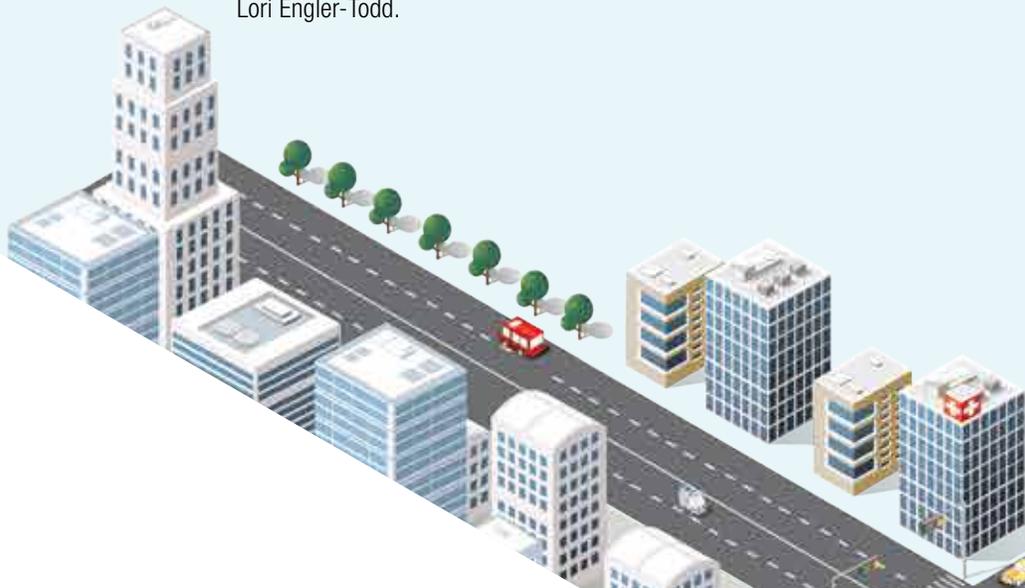
I would like to express my appreciation to the consultants who provided invaluable expert advice

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KEY MESSAGES

This Report raises awareness about how our built environment provides a foundation for healthy living and ultimately our health.

It is possible to improve or worsen the health of populations by changing our physical world. **Conditions and chronic diseases linked to unhealthy living are increasing in Canada.** For example, over 7.8 million Canadians 18 years and older were living with obesity in 2015, which is more than a quarter of this population. Obesity increases the risk for premature death and chronic diseases, such as cardiovascular disease, cancer and diabetes.

The relationship between the built environment, healthy living, people's behaviour and health status is complex. Even so, cities and communities can be designed and built to set people up for success so that **healthy choices are the easier choices.**

The majority of Canadians – about 80% – live in urban or suburban areas. While there are trends, the health of a population varies within the same geographic area. The **rise of urban sprawl** is a concern as it has been linked to sedentary lifestyles, easy access to unhealthy food, more time spent driving, less physical activity and higher rates of obesity.

While we know that **changing the built environment can be a cost-effective way to increase physical activity**, less is known about how to improve healthy diets and mental wellness through neighbourhood design as these are newer fields of study.

Improving the opportunity to cycle, walk or take public transit to work or school by changing the built environment is a growing area of research. Changing the built environment could significantly influence people's daily physical activity. **Community design features**, such as connected streets, a mix of residential, commercial, educational and employment areas, bike paths, and good public transit **can support**

being active to get to work or other places; whereas green spaces, waterways, walking paths, trails and recreation facilities **can promote recreational physical activity.**

Neighbourhoods with easy access to healthier food options appear to be linked to better diets and better health. Those with a higher ratio of unhealthy to healthy food options appear to be linked to poor diets and worse health. However, there are **significant gaps in our knowledge** and other factors, such as affordability, may have a bigger influence on diet than the built environment.

Neighbourhoods may not be set up to address social isolation and loneliness. Communities with houses that have front yards or that are close to the street, have destinations to walk to and have places for people to gather could encourage social interaction. Studies suggest that green spaces are linked to a variety of health benefits including lower risk for premature death. Ties to the land, water, family, community and identity, as well as a holistic, interconnected view of health and well-being are important components of Indigenous culture that can provide insight into healthy neighbourhood design.

Going forward, decision-makers and planners at all levels should take a **multi-sectoral, collaborative approach and consider health as an important outcome**, as appropriate, when making infrastructure planning decisions. **More targeted and hypothesis-driven research, standardized data collection and systematic evaluations** of the health impact of community design features are needed. With the diversity of communities and cities across Canada, **considering context and engaging citizens** are important for ensuring that a community's unique needs are met when designing for healthy living.



UNDERSTANDING THE COMPLEXITIES OF THE LINK BETWEEN THE BUILT ENVIRONMENT AND HEALTH

Recognizing the complexity of the link between the built environment, healthy living and people's behaviour is essential when designing communities to improve health. For example¹⁻¹⁰

It is important to consider where a neighbourhood is situated and who lives there: Neighbourhoods are situated within a bigger context and are impacted by many factors beyond the built environment including laws, policies, socioeconomic factors, culture, beliefs and attitudes. Neighbourhoods are also dynamic and change over time. For example, people move in and out of neighbourhoods for many reasons, including due to their current state of health. People tend to live in neighbourhoods with others who are similar to them, often having similar characteristics, such as culture, values or similar socioeconomic status.

People's behaviour and health are affected by many factors: Where we live is one factor among many that influences behaviour and health. Where people live, work, study, shop, play and are active can involve many neighbourhoods. Because it can take time for a neighbourhood to impact the health of its residents, it is difficult to identify which features or which neighbourhoods create a health impact on a population – for example, effects on health could be due to features that no longer exist or neighbourhoods that people lived in as children.

Applying research can be challenging: Research in the area of health and the built environment is rapidly evolving. To date, most studies have been observational and cross-sectional (comparing different groups of people at a specific point in time), making our ability to determine which neighbourhood features cause changes in health challenging. More targeted and hypothesis-driven research and evaluations of the health impact of community design features are needed.

Researchers also use a variety of definitions, methods and measures, which has led to some contradictory results. This limits our ability to draw conclusions and to develop effective initiatives based on existing evidence. Each community is unique with different characteristics, behavioural norms and needs. It can be difficult to directly apply findings from one community to another, including the application of findings from the United States or Europe to the Canadian context. Standardized, open data collection would support knowledge sharing and identification of approaches that can be effective across different communities. Within Canada, much of the research is situated in large urban settings, meaning there is a gap in our knowledge of the role of the built environment in small, rural, remote and Indigenous communities.





SECTION 1

WHAT THIS REPORT IS ABOUT

This Report raises awareness about how our built environment provides a foundation for healthy living and ultimately our health.

It is possible to improve or worsen the health of populations by changing our physical world. The percentage of Canadians who report they are **obese, living with diabetes, or a mood disorder** has been increasing in Canada.^{11,12} These health issues have a serious impact on quality of life and are linked to some of the leading causes of death, including cancer, cardiovascular disease and respiratory disease.¹³

Lifestyle factors, such as a lack of physical activity, sedentary behaviour, poor diet and lack of social connection can increase the risk for poor health outcomes.^{14–18} For example, evidence suggests that about 30% of cancers can be prevented by adopting a healthy lifestyle.¹⁹ While healthy behaviour is shaped by many forces, these lifestyle factors are all influenced by our **built environment**.

WHAT IS *URBAN SPRAWL*?

Urban sprawl refers to urban areas expanding beyond their core, often into rural areas to form suburbs. This frequently results in different land use design than in urban centres, a lack of diversity in land use across suburbs and the need for more roads and infrastructure.^{27,39}

WHAT IS THE *BUILT ENVIRONMENT*?

For the purposes of this report, the built environment is defined as the external physical environment where we live, work, study and play. It includes buildings, roads, public transit systems, parks, and other types of infrastructure. It is linked to how we design, plan and build our communities.²⁰

This report focusses on the built environment and healthy living in terms of **physical activity, healthy diets and mental wellness** (including social connectedness). Although this report addresses these topics separately, it is recognized that they interact and influence health together. For example, a healthy diet and physical activity can lead to weight loss and reduced risk for obesity separately, but are more effective in combination.²¹

There are **many other ways that the built environment can impact health** including through its role in air pollution, safety (e.g., injuries), housing, heat, UV exposure, climate change and natural disasters.

Healthy cities and communities are also defined by more than their built environment. Examples of other factors that are important to consider include inequity in terms of health and poverty, community engagement, social factors, cultural factors, economic factors and factors linked to the natural environment.

CHANGING CANADIAN LIFESTYLES

In the 1940s, the split between urban-rural living was about 50-50; now about 80% of Canadians live in an urban or suburban area.²² Our communities are changing and often expanding through **urban sprawl** rather than **by building compact and complete communities**.²³⁻²⁶ Urban sprawl has been linked to sedentary lifestyles, easy access to unhealthy food, less physical activity and higher rates of obesity.²⁷⁻³⁶ One of the key results of urban sprawl that may explain some of these impacts is more time spent driving.³⁴⁻³⁶ From 1999 to 2016, the number of registered light motor vehicles including cars and SUVs in Canada has increased at a faster rate than Canada's population, at 36% compared to 19%. This suggests that Canadians are increasingly relying on driving.^{37,38}

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

Although they appear to be the same, lack of physical activity and sedentary behaviour are two separate concepts. Lack of physical activity involves not being active enough to meet physical activity guidelines. Sedentary behaviour is any behaviour that involves low energy expenditure, such as sitting or lying down. Based on these definitions, an individual can be both active and sedentary.

NEIGHBOURHOODS TO SUPPORT HEALTHY LIVING

Figure 1 explains how neighbourhoods can be designed and built to provide a foundation for healthy living by promoting physical activity, healthy diets and supportive environments. These can be simple, practical measures, such as having stores that sell fresh fruit and vegetables near to where people live.

FIGURE 1:

Examples of potential pathways from a neighbourhood's built environment to good health. e.g., 42-59

NEIGHBOURHOOD DESIGN FEATURES

Promote physical activity

- High population/residential density
- Connected streets
- Place to walk and ride a bike
- Close to stores, school and work
- Attractive areas
- Parks, green spaces and recreation facilities
- Good public transit

Provide healthy food options

- Stores that sell healthy food nearby
- Farmers' markets
- Community gardens

Create a supportive environment

- Places to gather
- Front porches, front yards
- Good sidewalks
- Access to attractive and green spaces
- Cultural spaces, architecture, public art

HEALTHY LIVING

Physical activity

Healthy diets

Supportive environments

HEALTH

Reduced risk for obesity and diabetes

Reduced risk for poor mental health

Improved mental wellness

SNAPSHOT OF WHAT CANADA'S LARGEST CITIES ARE DOING

- Vancouver's [Healthy City Strategy](#)
- Toronto's [Complete Streets Guidelines](#)
- Montreal's [structuring efficient transportation networks to fully integrate into the urban fabric](#) (in French only)

We do not yet know **how to quantify the extent to which the built environment affects healthy living**, but we know enough to say with confidence that neighbourhoods that are built with health in mind are important for making healthy choices the easiest choices. For example, this could involve designing communities so that people live close enough to walk or bike to work or school.

The most developed area of research related to the built environment and healthy living is about the impact on physical activity. Research has shown that changing the built environment is a cost-effective way to increase physical activity in large populations. Examples include building multi-use trails on the bed of former railway tracks, equipment in parks, new bike and walking paths and easy access to recreation facilities.^{40,41} The roles of the built environment in healthy diets and mental health and wellness are still relatively new fields of study. Our knowledge is growing.

BUILDING HEALTHIER CANADIAN NEIGHBOURHOODS

Many Canadian cities are changing our built environment for the better. The concept of designing healthy cities as a global issue emerged from an initial healthy cities workshop held in Toronto in 1986.^{60,61} Today, there are many promising approaches available to improve communities with most focusing on urban settings.⁶² Multiple sectors working together with community planners is essential to building healthy communities and supporting healthier Canadians.^{62,64}

Figure 2 captures the complexity of the built environment's link to behaviour and health outcomes. It outlines how the built environment and other mediating factors can influence human behaviour which can lead to different health outcomes. This complex relationship exists within a multi-dimensional context defined by other determinants of health, such as age, genetics, gender, social environment, culture and health care.

WHAT THIS REPORT COVERS

This report brings together evidence to explore how we can design Canadian communities to serve as a foundation for healthy living. Included in this report are the following sections

- **Canadian communities** – This section provides an overview of the Canadian context through a snapshot of trends in health, data on Canada's population and urban, suburban and rural health.
- **Building blocks of healthy living** – This section explores how the built environment can create active neighbourhoods, influence healthy diets and lead to supportive environments.
- **Design features and specific populations** – This section covers how the built environment can affect health in different populations by focusing on children, youth and older adults, as well as populations experiencing health inequity.
- **Designing communities for healthy living in Canada** – This section provides an overview of how different sectors work together to design healthy communities in Canada and also provides examples of initiatives and approaches underway in some Canadian cities.
- **A call to action** – This section aims to provide guidance on how we can better harness the impact of the built environment to improve the health and well-being of Canadians.



FIGURE 2:

Overview of how the built environment might influence health. (adapted from⁷²)

BUILT ENVIRONMENT

Examples:

- Land use
- Transportation
- Buildings and other infrastructure
- Public facilities and areas

MEDIATING FACTORS

Examples:

- Environmental contaminants
- Weather and climate
- Noise
- Crime
- Traffic safety
- Hazards
- Natural disasters

HUMAN RESPONSE

Examples:

- Behaviour – e.g., physical activity, diet, substance use
- Psychology – e.g., satisfaction, depression, distress, social cohesion
- Physiology – e.g., infections, immune system, hormones

HEALTH OUTCOMES

Examples:

- Individual level – e.g., obesity, perceived health status, well-being
- Population level – e.g., rates of premature death, rates of diseases and other conditions

OTHER DETERMINANTS OF HEALTH

e.g., age, genetics, gender, social environment, income, education, culture, health care system

THE HISTORY OF PUBLIC HEALTH AND URBAN PLANNING

Public health and urban planning have a long history of working together to tackle disease. In the early 1900s, the focus of this collaboration was on improving sanitation, reducing overcrowding to reduce infectious disease and moving people away from areas with high pollution. However, separating residential areas from areas of employment has likely contributed to our reliance on motor vehicles and urban sprawl.^{31,70,71} More recently, public health professionals and urban planners are working together to tackle health issues linked to urban sprawl, such as low levels of physical activity and high rates of chronic diseases and conditions such as obesity and diabetes.^{70,71}



SECTION 2

CANADIAN COMMUNITIES

This section provides a snapshot of broad factors that differ across Canada and that also relate to the built environment.

While the majority of Canadians, about 80%, live in urban areas, Canada's considerable geographic expanse creates communities with unique characteristics and needs. This diversity and how it is changing are important to consider when thinking about the built environment and its impacts on health.

TRENDS IN CANADIAN HEALTH

Canadians are generally healthy, but some Canadians are healthier than others.¹¹ Diseases and conditions that are linked to unhealthy living have been increasing in Canada. For example, the percentage of Canadians

- Aged 20 years and older living with **diabetes** has increased from 6% in 2000 to 10% in 2011 (based on hospitalization and physician claims).¹¹
- Who were **obese** increased from 21% in 2003 to 25% in 2012.¹² Data from a revised survey on Canadians ages 18 years and older showed that rates of obesity have increased from 23% in 2004 to 27% in 2015.⁷³ Obesity in younger children appears to be decreasing from 14% in 2004 to 10% in 2015.⁷⁴
- Who said they had been **diagnosed with a mood disorder** increased from 5% in 2003 to 8% in 2014.¹¹

Diabetes, obesity and mental health issues are all linked to a wide variety of other diseases and conditions, making them proxies for overall health.^{11,19,690-692}

WHERE CANADIANS ARE LIVING IN 2016

In 2016, Canada's population reached more than **35 million people**. Canada has one of the lowest population densities in the world at four people per square kilometre (km²); however, its population is largely clustered in a smaller area, mostly in urban centres and along the southern border with the United States.^{23,77}

In 2016, it was estimated that

- 27 million or 76% of Canadians lived in areas with more than 100,000 residents.²⁴
- 86% of Canada's population resided in four provinces: Ontario (38%), Quebec (23%), British Columbia (13%) and Alberta (12%).²³
- 12.5 million or almost 36% of Canadians lived in one of Canada's three largest urban centres, namely Toronto, Montreal or Vancouver.²³
- The population of Canada's three territories was 2% the size of Toronto's population.⁷⁸

CANADA'S POPULATION IS AGING

The 2016 Census showed that for the first time, there are more adults over the age of 65 years (5.9 million) than children under the age of 15 years (5.8 million). The number of Canadians over the age of 85 years is growing four times more quickly than the overall Canadian population.^{75,76}

However, the Prairie Provinces, the Territories and Indigenous populations have proportionally more children than older adults. Ontario has a similar proportion of each age group.⁷⁵

Large urban areas are aging less quickly than rural areas. The suburbs have even younger populations than urban centres.⁷⁵



DEFINING URBAN AND RURAL AREAS

There are many definitions used to categorize urban and rural areas. Generally, urban areas have large populations in relatively small areas. Rural areas have small populations and are defined as any settlement lying outside urban or areas.^{25,39,80-82}

Statistics Canada defines an **urban area** or population centre as having a population of at least 1000 and a population density of at least 400 people per km². **Rural areas** are those that are outside an urban area.⁸²

Rural areas can include small towns, villages and other settlement of fewer than 1000 people and areas that contain estate lots, agricultural land, undeveloped areas and remote and wilderness areas.⁸²

For First Nations communities, Indigenous and Northern Affairs Canada defines urban, rural, remote and special access by proximity and access to nearest service centre⁸³

- **Urban** – within 50km and having road access; just over 34% of communities.
- **Rural** – between 50 to 350 km and having road access; 44% of communities.
- **Remote** – over 350 km and having road access; almost 4% of communities.
- **Special access** – no year-round road access; 17% of communities.

SUBURBAN LIVING

By the 1960s, many Canadians lived in what we recognize today as suburbs.⁶³ Evidence shows that suburbs are not a new phenomenon, reaching back to at least medieval times. Their form and function as well as the characteristics of their residents have changed over time, affected by various events such as the Great Depression and the World Wars.⁶³ Compared to urban areas that have compact, walkable neighbourhoods, suburban living is often viewed as having an over-reliance on driving and fewer places to walk to, which can lead to less physical activity and more sedentary behaviour.^{27–32, 34–36}

There is no universal definition of what constitutes a suburb. Suburbs can be defined in many ways, including through administrative or political boundaries, boundaries of a city's central core, distance from city centre or population density.³⁹ How many Canadians live in the suburbs depends on the definition used. Canadian data show that

- When defining suburbs by **administrative or political boundaries**, a greater proportion of people lived in the suburbs in Toronto (51%), Montreal (55%) and Vancouver (73%) in 2006. A smaller proportion of people lived in the suburbs in Ottawa (28%), Calgary (8%), Edmonton (29%), Quebec City (31%) and Winnipeg (9%).³⁹

- In 2016, the population of **municipalities that were located near large urban centres** continued to grow at a faster pace (7%) than the large urban centres (6%). An example of a municipality located near a large urban centre is Whistler, British Columbia, which is located near Vancouver. Municipalities that were located farther away from any size of urban centre were less likely to have a growing population.²⁵
- For **municipalities located within large urban areas**, 31 had a population growth that was more than three times the Canadian average of 5%. Almost 26% of these municipalities were located in Montreal. Examples of municipalities located within large urban areas include Mirabel which is part of the greater Montreal and Cochrane which is part of the greater Calgary area.²⁵
- The proportion of Canadians **living in single-detached homes**, which is a common characteristic of suburban areas, has been **decreasing over the last 30 years**, although more than half of Canadians lived in single-detached houses in 2016. Among Canada's top ten most populated cities, multiple family dwellings (e.g., apartment buildings) were more common in Toronto, Montreal, Vancouver and Quebec City while single-detached homes were more common in Calgary, Edmonton, Ottawa-Gatineau, Winnipeg, Hamilton and Kitchener-Cambridge-Waterloo.⁷⁹

Urban and rural communities have different characteristics, needs and built environments. Although most Canadians live in or near urban areas, 20% of Canadians live in rural areas. **Most research on the built environment and its influence on health has focused on urban areas.** Existing research on rural areas suggests that they may need a tailored approach.^{e.g., 84,85}



URBAN, SUBURBAN AND RURAL HEALTH

Health differs across and within urban, suburban and rural areas.⁸⁶ Factors such as age, gender, income, education, employment, population mobility, health care access and other characteristics likely play a role.^{86–91, 98–100}

Determining which areas are healthier and why is challenging due to

- Multiple definitions of urban, suburban and rural areas.
- Large variation in health status within urban, suburban and rural areas. For example, within urban areas, poor health can cluster in disadvantaged neighbourhoods.^{e.g.,94,101–104}
- Differences in how communities are designed in urban, suburban and rural areas.
- Variations of socio-demographic factors across communities, such as age and income that influence health.
- Mobility of populations, particularly people moving from rural to urban areas.
- Changes in determinants of health across communities over time.

Typically, data on urban, suburban and rural differences provide only a snapshot of the health of current residents. Data from the United States suggest it is important to track changes over time. For example, urban areas in the United States have experienced a larger decrease in mortality rates for many diseases and conditions than rural areas, creating a widening gap in health inequity.⁸⁹

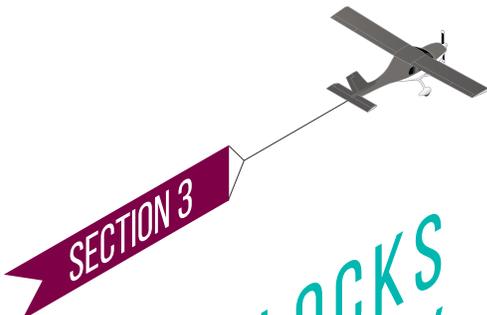
Older Canadian data show that which area is healthier depends on the health outcome being measured. People living in **urban areas** tend to have lower mortality rates for injury, poisoning, suicide and motor vehicle accidents as well as lower rates of smoking, arthritis and being overweight or obese and higher rates of people eating recommended amounts of fruit and vegetables than rural or suburban areas.⁸⁶ Urban areas also tend to have higher rates of cancer, infectious disease, stress and a weaker sense of community

belonging. Urban residents are also more likely to be exposed to poor air quality.^{86,93–97}

People living in **rural areas** were more likely to report they were in poor or fair health, were less stressed and had a stronger sense of community belonging than people living in urban or suburban areas. Residents of rural areas also tended to have the highest rates of mortality from all causes as well as from respiratory disease, the latter of which may be linked to smoking patterns. Generally, the more rural the area, the worse the health outcome for these measures, but the stronger the sense of community belonging.⁸⁶

Determining how healthy suburbs are is complicated and sometimes contradictory. Urban sprawl has been linked to sedentary lifestyles, easy access to unhealthy food, less physical activity and higher rates of being overweight or obese.^{27–36,86} Yet when suburban areas are defined based on the proportion of residents who commuted to work in larger urban centres, those areas with the highest proportion had the lowest rates of people living with any chronic disease or dying from all causes, circulatory disease, respiratory disease, cancer or diabetes. Men living in these areas also had longer life expectancies than all other areas.⁸⁶ Suburbs with a strong connection to urban centres may benefit more from a range of employment opportunities and services.

Where people grow up may affect their health differently than where they live as adults. For example, some evidence has shown that people who grow up in an urban area react more strongly to stressful social situations than those who grow up outside urban areas.^{113,114} **How long an individual has lived in an area may also have an effect.** For example, living or growing up in urban areas has been linked to a higher risk for poor mental health, a difference that cannot be fully explained by socio-demographic factors, such as age, gender, marital status, socioeconomic status or ethnicity.^{105–112} This risk may be “dose-dependent” – the longer someone has lived in an urban environment or the “more urban the environment” (e.g., higher population density), the higher the risk.^{110–112}



BUILDING BLOCKS FOR HEALTHY LIVING

SECTION 3

3A ACTIVE NEIGHBOURHOODS

This section explores research on how we can build active communities to improve health.

The majority of Canadians do not get enough exercise.¹¹⁵ Being physically active is an essential component to good health, yet Canadians are generally not active enough to gain optimal health benefits. How can we increase physical activity? Building communities that make being active an easy choice is an important step. Figure 3 shows how the complexity of neighbourhood features is likely linked to better health by increasing physical activity.

PHYSICAL ACTIVITY AND HEALTH

Globally, physical inactivity is thought to cause 6% to 10% of non-communicable diseases.¹¹⁷ At least 30 minutes of moderate physical activity a day can decrease the risk of premature death by at least 19%.¹¹⁸ Being **physically active is strongly linked to**^{119–145}

- Better muscle strength, cardiovascular function and mental health.
- Healthy development in children and youth.
- Healthy aging.
- Reduced risk for premature death, even with a small increase in physical activity.
- Reduced risk of diseases and conditions such as obesity, heart disease, some types of cancer, diabetes, dementia, osteoporosis, and cardiovascular issues.
- Better health in people who are living with various diseases and conditions (e.g., cancer, diabetes, mood disorders).

DID YOU KNOW?

In 2013, only **10% of Canadian children** and youth and **20% of Canadian adults** met the [Canadian Physical Activity Guidelines](#) when their activity levels were measured via accelerometers.¹¹⁵

The Guidelines recommend that

Toddlers should do at least three hours of physical activity over each day of any intensity.

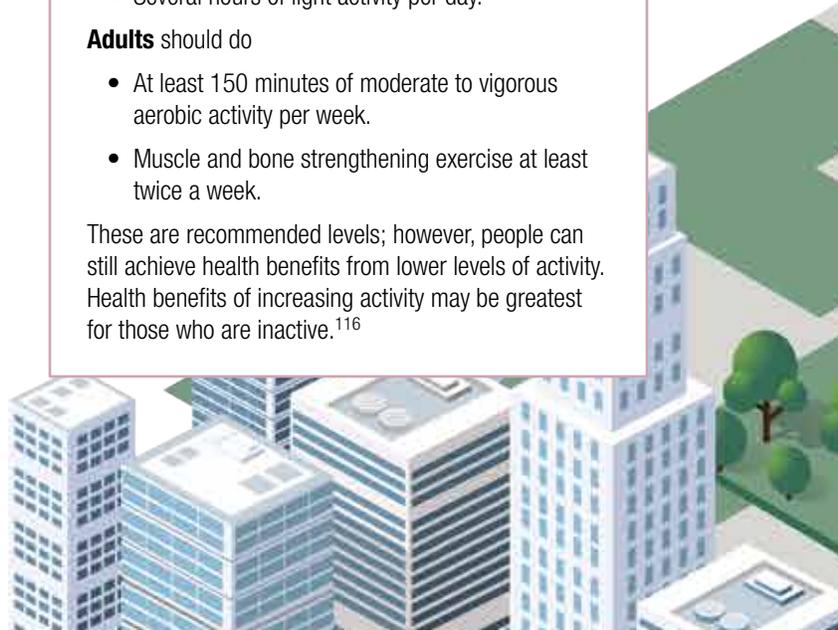
Children and youth should do

- At least one hour a day of moderate to vigorous aerobic activity.
- Muscle and bone strengthening exercise at least three times a week.
- Several hours of light activity per day.

Adults should do

- At least 150 minutes of moderate to vigorous aerobic activity per week.
- Muscle and bone strengthening exercise at least twice a week.

These are recommended levels; however, people can still achieve health benefits from lower levels of activity. Health benefits of increasing activity may be greatest for those who are inactive.¹¹⁶



BUILDING NEIGHBOURHOODS THAT PROMOTE PHYSICAL ACTIVITY

Neighbourhoods can be designed to promote utilitarian (activity to get somewhere or do something), recreational (activity during leisure time) physical activity or both. Both types of activity can be important contributors for meeting physical activity guidelines and are linked to similar and different types of neighbourhood features.

At a population level, efforts have focused on harnessing the built environment to build communities that encourage active transportation in the forms of walking, cycling and using public transit, as well as recreational physical activity. In some situations, the relationship between the built environment and physical activity has been linked to better health, such as lower body mass index and body fat; improved cardiovascular disease risk factors; lower risk for cancer; lower risk for premature death from all causes; better mental health; and a stronger sense of community belonging.^{146–168}

WHAT IS ACTIVE TRANSPORTATION?

Active transportation is the use of human powered transportation to get places. Examples include biking or walking to work.¹⁷¹ Public transit is also a form of active transportation as people walk to access public transit or to their destination at the end of their trip.^{172–176}

ENCOURAGING ACTIVE TRANSPORTATION

Walking and cycling are common forms of physical activity and active transportation

- Walking is popular and considered to be a great way to be physically active for all ages. It is often a better choice in busy, dense areas.^{169–170}
- Cycling is an efficient way of being moderately to vigorously active and allows people to travel farther distances than walking. It often has less infrastructure to support it than has walking.^{169,177}

Active transportation can contribute to people's daily physical activity.¹⁷⁸ Not many people currently use active transportation.¹⁶⁷ At a population level, active transportation has good potential to increase people's activity levels and improve their health.¹⁶⁸ It is one way to

- Address people's lack of time to be physically active.
- Reduce the amount of time Canadians spend driving.
- Help people reach recommended levels of physical activity.

FIGURE 3:

Overview of how the built environment influences physical activity to influence health. (adapted from⁷²)

NEIGHBOURHOOD FEATURES

- Mixed land use
- Population density
- Connected streets
- Destinations nearby
- Public transit
- Paths, trails, sidewalks
- Recreation areas and facilities
- Green space
- Attractiveness

MEDIATING FACTORS

- Examples:
- Air pollution
 - Weather and climate
 - Crime
 - Traffic safety
 - Hazards

HUMAN RESPONSE

- Physical activity

HEALTH OUTCOMES

- Reduced risk for:
- Premature death
 - Obesity
 - Diabetes
 - Cardiovascular disease
 - Cancer
 - Poor mental health

OTHER DETERMINANTS OF HEALTH

e.g., age, genetics, gender, social environment, income, education, culture, health care system



The built environment can play an important role in active transportation. Generally, areas with higher population density, a mix of residential, commercial, educational and employment areas, connected streets, good access to destinations, good public transit and attractiveness have been linked to more active transportation or reduced driving, although the strength of this link is unclear.^{179–187} In Canada, active transportation has been linked to having^{179,188,189–192}

- A public transit stop nearby.
- A choice of destinations within a reasonable distance.
- Well-maintained sidewalks.
- Dedicated areas for cycling.
- Affordable recreation facilities.
- Safe traffic.

For **cycling**, examples of features that have been linked to active transportation include bike paths close to where people live; bike paths that provide access to a variety of destinations in a short distance; good connections between roads and routes; safe cycling routes; safe places to park bikes, including near railway or bus stations; available short-term bike rentals; signals and traffic lights for cyclists; and routes with fewer hills and safer traffic.^{49,169,177,193–205}

Examples of initiatives on active transportation in Canada can be found here: [Public Health Agency of Canada](#).

There are other factors to consider in terms of active transportation. For example, **providing employment opportunities closer to where people live and making driving a less appealing choice than active transportation.**^{180,181,200} Examples of strategies that have led to less traffic on the roads include car free zones or days, increasing the cost of driving and free or low cost public transit.^{209–216} Places like Canada where residents can have long distances to travel and rely heavily on motor vehicles may have difficulty implementing some of these strategies.

PROMOTING RECREATIONAL PHYSICAL ACTIVITY

Physical activity during leisure time is not always linked to the same neighbourhood features as active transportation.^{166,191,217} Some evidence also suggests that people who live in walkable neighbourhoods and are more likely to use active transportation may be less likely to be active during their leisure time.^{185,190}

Recreational walking is linked to neighbourhood features such as destinations (e.g., lakes, waterways, sports and cultural destinations), attractiveness, good street lighting, good sidewalks, paths and trails, nearby recreational areas and facilities and green space.^{54,217–223} Canadians who live in neighbourhoods with these features were more likely to be active during their leisure time. Traffic and safety can also influence leisure time activity.¹⁸⁸

MEDIATING FACTORS AFFECTING THE LINK BETWEEN THE BUILT ENVIRONMENT, PHYSICAL ACTIVITY AND HEALTH

The built environment can impact people's physical activity and their health. However, there are factors that can affect this link and that should be considered when designing communities. Examples that are relevant in Canada include traffic safety, air pollution, weather, climate and daylight.

TRAFFIC SAFETY

Evidence suggests that the health benefits of walking or cycling are greater than the risk for injury from traffic.²³² People are more likely to choose active travel when they feel it is a safe alternative. There are many ways to build infrastructure to make roads safer for motor vehicles, pedestrians and cyclists. Effective **approaches to influence traffic safety** involve reducing speed (e.g., speed bumps, speed limits, narrowing lanes), decreasing points of conflict with pedestrians and cyclists, increasing visibility of pedestrians (e.g., curb extensions) and diverting traffic away from residential areas.^{45,56,233,234}

DID YOU KNOW?

In 2011¹⁸⁸

- 62% of Canadians said there were stores within walking distance of their home.
- 78% had free or low-cost recreational facilities and areas nearby.
- 72% had a transit stop within a 15 minute walk of their home.
- 70% said they lived in an attractive neighbourhood.

Canadians were more likely to be active if their neighbourhoods had places to walk to (e.g., stores), free or low cost recreational facilities or areas, specifically for cycling, good sidewalks, interesting features and a higher level of safety.¹⁸⁸

POPULATION DENSITY

Estimates from the United States suggest that neighbourhoods with a population density of around 360 to 1540 people per km² are linked to more walking. Less time driving is linked to neighbourhoods with a population density of 1160 people per km² or more.²²⁹ In 2016, there were 32 urban areas in Canada with a population density of at least 360 people per km² and one with a population density of at least 1160 people. About 43% of Canada's population lived in these urban areas.²³⁰ Within Canadian urban areas, population density differs across neighbourhoods with those closest to the city's centre often being most dense (e.g., Toronto²³¹).

A ROLE FOR RAISING AWARENESS

Believing that a neighbourhood is walkable, whether or not it actually is, is linked to more walking and better health.^{206–208} This suggests that raising awareness about a neighbourhood's walkability could be an important way to increase physical activity.

Pedestrian safety can also be increased through pedestrian signals, traffic lights, signs to remind pedestrians to look for vehicles, pedestrian islands, overpasses, underpasses, barriers, fences, sidewalks and good streetlights.^{236,237} Collisions between pedestrians and vehicles are more likely to occur near schools and in commercial areas and are linked to higher population density, traffic volume, pedestrian volume, road density and number of intersections.²³⁷ Canadian research has shown that people will choose to walk or bike if their route is safe and attractive. Some evidence suggests that cyclists will pick a safer, more attractive route over a shorter, more direct route.^{232,238–242}

Cycling safety can influence the likelihood that people will use their bikes. People cycle more when they feel safe and dedicated infrastructure for cycling is available. This may be particularly important for those who are less confident on a bicycle.^{55,243} Approaches such as having dedicated cycling routes, paths and lanes, reducing speed limits for motor vehicles, having places to cycle to, having access to public transit and having good street connectivity have been linked to more cycling. More traffic, highways and congestion are linked to less active travel, including less cycling. Some approaches for reducing the number of motor vehicles on the road, such as increasing costs of motor vehicle ownership, limiting parking and car-free areas might also help increase walking and cycling.²⁴³

AIR POLLUTION

Being active (e.g., running, cycling) in high traffic areas can increase the risk for exposure to air pollution.²⁴⁴ Exercise may increase the amount of pollution that enters the lungs. Air pollutants can irritate the lungs, changing breathing patterns and heart rate during exercise.²⁴⁷ Particulate matter can increase blood pressure and heart rate as well as activate the immune system.²⁴⁸ In Canada, this is less of an issue than in other countries because generally, Canada's air quality is relatively good.^{245,246}

What are the risks?^{168,249–254}

- There are more health benefits from exercise than there are health impacts from exposure to air pollution, except in areas with high levels of air pollution.
- There are many harmful pollutants inside motor vehicles, sometimes at levels that are higher than outside the vehicle.

People can reduce their exposure to air pollution while being active outside by using roads that are less busy or paths and trails without motor vehicle traffic as well as by avoiding exercise or exercising less intensely on days when air quality is poor.^{271,272}

Information on daily air quality in Canada can be found at the [Air Quality Health Index](#).

CYCLING – GLOBAL COMPARISONS

Cycling on a regular basis is popular in several **European countries**, particularly the Netherlands, Denmark, Germany, Finland, Sweden and Belgium. Cycling is also safer in these countries.²²⁴ It is supported through widespread dedicated cycling infrastructure, traffic calming in residential neighbourhoods, bike parking, integration with public transit, traffic education for both drivers and cyclists and events that promote cycling and increase public support. In these cities, mixed land use and high population density ensures there are many places that are accessible by bike. Owning a car is also expensive, and driving to get places is challenging, although some countries like the Netherlands and Germany have high levels of car ownership and cycling.^{200,225}

Cycling on a regular basis is not nearly as popular in **North America**. In 2013/2014, about 12 million or 41% of **Canadians** said they had cycled at least once in the previous year. Younger Canadians were more likely to use their bikes than older Canadians, and men were more likely to use their bikes than women. Men living in urban areas were more likely to cycle than men in rural areas; however, the opposite pattern was seen for women. Canadians are less likely to ride their bikes than in the past, a trend that is likely not due to the aging population. It may be at least partially due to increases in other activities such as running.²²⁶

Canadians are more likely to use their bikes than Americans. This difference is thought to be due to a more supportive built environment for cycling in Canada (e.g., mixed land use, short distances to destinations, higher costs of driving, safer cycling, more dedicated cycling infrastructure and training related to cycling).^{227,228}



EXPOSURE TO AIR POLLUTION is linked to an increased risk for²⁵⁴⁻²⁷⁰

- Premature death from diseases and conditions such as heart disease, stroke, respiratory disease, lung cancer, diabetes and respiratory infections in children.
- Poor respiratory and cardiovascular health even at low levels of exposure, especially among people at greater risk, such as those with asthma and other lung conditions, children and older adults.
- Living with respiratory disease, asthma, pneumonia and otitis media in children, sudden infant death syndrome, adverse birth outcomes (particularly in mothers with pre-existing medical conditions), atherosclerosis, hypertension, diabetes and neurological conditions such as dementia.

DID YOU KNOW?

In 2014, 90% of people worldwide were living in places where air quality did not meet the World Health Organization’s air quality guidelines (for fine particulate matter).²⁶³ As a whole, Canada’s air quality meets these standards, although air quality does vary across the country.^{263,264}

WEATHER, CLIMATE AND DAYLIGHT

It is no surprise that bad weather, unsafe conditions due to weather, extreme temperatures and lack of daylight all reduce the likelihood that people will be active outdoors.²⁷³⁻²⁹² Even in Nordic countries like Finland where many people use active transportation, the proportion of those who do so in the winter is lower than in warmer months.²⁹³

This is an important consideration in Canada due to our diverse climate. However, it also provides an opportunity for innovation in the built environment to support physical activity across seasons and different types of weather. For example, suggestions to increase physical activity in colder months include having better access to more and better indoor recreation facilities (e.g., swimming pools, gyms) and promoting facilities for outdoor winter recreation (e.g., skating, snowshoeing, skiing).²⁸¹ Well-lit neighbourhoods and access to indoor recreation facilities could also encourage physical activity during periods of shorter daylight.²⁹¹⁻²⁹⁵

3B ACCESS TO HEALTHY FOOD

This section explores research that relates to how we can design communities that promote healthy eating.

A healthy diet is a key component of good health and involves **eating healthy food and avoiding unhealthy food. What we choose to eat is influenced by many factors, including what food is available and accessible in our communities and beyond.** Figure 4 shows how the complexity of neighbourhood features is likely linked to better health through healthy diets.

DIET AND HEALTH

There is little doubt that a healthy diet is linked to better health. Generally speaking, there are certain foods that are considered to be healthy and that together, form **a balanced, healthy diet.** Examples include vegetables, fruit, grain products, low fat milk, fish and lean meat as well as traditional or country food for Indigenous populations. A balanced, healthy diet also involves eating regularly, consuming appropriate portions and minimizing how much food we eat that is high in saturated fat, sugar and salt.³⁰⁰

DID YOU KNOW?

Many Canadians do not consume a healthy diet.²⁹⁶ Canadian diets have been changing – the percent of daily energy intake from carbohydrates has been decreasing for Canadian adults while the intake of fat and protein has increased from 2004 to 2015.²⁹⁷ Sugars account for just over 20% of Canadians' total intake.^{298,299} Many Canadians do not meet recommendations for vitamin and mineral intake.²⁹⁷

FIGURE 4:

Overview of how the built environment influences diets to influence health. (adapted from⁷²)

NEIGHBOURHOOD FEATURES

- Living close to healthy food sources – e.g., supermarkets
- Living farther away from unhealthy food sources – e.g., convenience stores, fast food outlets
- Zoning of unhealthy food sources
- Farmers' markets
- Community gardens

MEDIATING FACTORS

- Examples:
- Low prices
 - Convenient store hours
 - Long growing season
 - Food security

HUMAN RESPONSE

- Healthy diets

HEALTH OUTCOMES

- Reduced risk for:
- Premature death
 - Obesity
 - Diabetes
 - Poor mental health

OTHER DETERMINANTS OF HEALTH

e.g., age, genetics, gender, social environment, income, education, culture, health care system

ACCESS TO HEALTHY FOOD AT WORK

Many people spend most of their waking day at work. Some evidence suggests that bringing food to work from home is linked to a healthier diet than buying food at work or near work.³⁰¹ Access to healthier food choices at or near work has also been linked to a healthier diet, but not necessarily to weight loss.^{302–304} Workers in rural areas may face limited food choices.³⁰⁵

There are many factors that influence what people choose to eat. Currently, many places that sell food offer a wide variety of choices that includes food that is high in calories, fat, sodium and sugar. This can create challenges for healthy eating. **Information about food and nutrition is constantly evolving, often presenting conflicting messages about what to eat and what to avoid.**³⁰⁶ What constitutes a healthy diet and identifying how it contributes to better health can vary across individuals. People differ in how they digest and metabolize food, meaning not everyone reacts to food in the same way.^{307,308} Personalized diets are an emerging area of research that could lead to dietary advice that is based on individual differences.^{309,310}

BUILDING NEIGHBOURHOODS THAT PROMOTE A HEALTHY DIET

We choose the food we eat based on many interconnected factors, including access to healthy food in our neighbourhoods. The built environment can play a role although results from research are mixed and sometimes conflicting.^{311–313} Experts believe that current food environments are set up so that it is easy for people to eat unhealthy food.³¹⁴

Food or nutrition environments include a wide variety of factors that influence diet, such as government and industry policies, community environment (e.g., accessibility to and type and location of stores and restaurants), organizational environment (e.g., home, school, work, other), consumer environment (e.g., available food options, price, promotion, placement, nutrition information), media, advertising and individual characteristics (e.g., socio-demographic characteristics, psychosocial factors, perceived nutrition environment).³²⁴ The built environment is part of this overall picture with its main focus being access to healthy and unhealthy food. There are **gaps in our knowledge** about the role of the built environment in healthy diets in Canada, particularly in rural and remote communities.³²⁵

ACCESS TO HEALTHY AND UNHEALTHY FOOD

Neighbourhoods that promote a healthy diet should aim to increase the **availability and accessibility of healthy food** for all residents. Affordability and food quality are also key factors.³²⁵ Whether or not living near places that sell healthy and unhealthy food affects health is not clear. Some evidence suggests that **when people have better access to sources of healthy food than they do to sources of unhealthy food, they are more likely to have healthier diets, are less likely to be obese and have a reduced risk for early death,** but not all research has shown a link between access and health.^{58,316,326–338}

EXAMPLES OF MEDIATING FACTORS THAT INFLUENCE FOOD CHOICES

58,102,148,306,315–323

- Food prices can have a bigger influence on diet and health than distance to a food source, particularly for low income families.
- Many people do not always shop for food in their home neighbourhoods and have access to transportation so they can buy food elsewhere.
- People tend to establish a routine and buy from the same stores most of the time.
- Many stores sell both healthy and unhealthy food. Store hours can affect access to healthy food.
- Access to healthy food differs across countries and municipalities. It can also differ across urban, suburban and rural areas.



ACCESS TO ALCOHOL

Easy access to alcohol is linked to increased alcohol consumption and negative health impacts. For example, neighbourhoods that have a higher density of places that sell alcohol were more likely to have incidents of violent crime, including family violence and motor vehicle accidents.^{91,340–345} A higher density of liquor stores was also linked to lower prices for alcohol, problem drinking and bigger impacts on health (e.g., alcohol-related hospital admissions, mental health).^{346–351}

Access is also an important factor to consider for other drugs, including for the public health implications of the legalization of cannabis.

FOOD DESERTS AND FOOD SWAMPS

Food deserts are areas with limited access to nutritious and affordable healthy foods. Some evidence has shown that there is a link between food deserts and poor health, although not all research has found this effect.^{148,315,327,338,339}

Food swamps are areas with many unhealthy food options. Evidence suggests that there is a link between food swamps and poor health (e.g., unhealthy diets, higher BMI, obesity, diabetes).^{323,339,352–361}

Food deserts and food swamps can co-exist in the same community. However, research suggests that in Canada and particularly in urban areas, **food swamps are more common than food deserts**.^{362–364} Stores that sell food in rural areas can differ from stores that sell food in urban areas.

Food deserts may be more common in rural areas.³²⁰

Food deserts also tend to be common in **remote communities**, especially those without grocery stores.³²⁵

Creating policies and legislation that **restrict access to fast food** by influencing where fast food restaurants are built and limiting unhealthy food sources (e.g., convenience stores) near schools are approaches that have been considered to address unhealthy diets and obesity.^{363–365} Zoning could also be used to **support healthy diets** (e.g., zoning that increases access to places that sell fruit and vegetables in rural communities).^{363,366}

MEDIATING FACTORS AFFECTING THE LINK BETWEEN THE BUILT ENVIRONMENT AND DIET

The impact of the characteristics of a particular neighbourhood on diet is often linked to access to healthy or unhealthy food. There are many factors that can influence or are related to food access, including seasons and food insecurity.

SEASONS

Canada experiences distinct seasons and fluctuating growing seasons, with both affecting food growth and production as well as availability of traditional or country food. Although a wide variety of food is available all year for many areas in Canada due to food imports, the availability and price of fruit and vegetables in stores fluctuate across seasons.³⁹⁰ Farmers markets and community gardens are also seasonal, providing fresh produce based on the growing season. Despite its short growing season, Canada produces a good amount of fruit and vegetables, and production has generally increased.^{391,392}

FOOD INSECURITY

Access to food to form a healthy diet can be difficult for families experiencing food insecurity.³⁹³ In 2014, about 12% of Canadian households were living with food insecurity at some point in the previous year. Not all provinces and territories collect information on food insecurity, so this is not a full estimate of the issue.³⁹⁴

Food security does not appear to be strongly related to living close to stores that sell food or to community food programs.^{396,397} Some evidence suggests that food insecurity is lower in rural areas, particularly for those areas with many farms.^{394,396}

Food insecurity and food prices are much higher in the territories. In 2014, Nunavut reported that almost 47% of households experienced food insecurity in the previous year, and the Northwest Territories reported just over 24%.³⁹⁴ In Nunavut, food insecurity was higher in smaller communities than in the capital, Iqaluit.³⁹⁸ Examples of approaches that may help address food insecurity in the North include food sharing networks, better access to country food and community greenhouses.^{399,400}

WHAT IS FOOD SECURITY?

Food security occurs when people can **afford** and **have access** to enough safe and nutritious food for a healthy diet and life. Lack of food security or food insecurity is linked to poor physical and mental health and wellness.^{394,395}

FARMERS' MARKETS AND COMMUNITY GARDENS

Cities and communities are using various approaches to bring healthy food options to their residents. Two examples include farmers' markets and community gardens. Currently, our knowledge of their effectiveness is limited.

Farmers' markets: To help provide their residents with better access to healthy food, some municipalities are supporting or considering farmers' markets. Their impact appears to be localized, improving access to healthy food options for those who live nearby and in some cases, improving diets.³⁶⁷⁻³⁷⁸ The variety of food is not always better at farmers' markets than at supermarket, and certain food can be more expensive.³⁷⁹

Community gardens: Similar to farmers' markets, community gardens are another approach being supported or considered. Some studies have found that community gardens have been linked to better diets, mental health and well-being, as well as lower BMI.³⁸⁰⁻³⁸⁷ Community gardens tend to be found in areas with supermarkets, meaning people already have healthy food options available.³⁷¹ This can make it difficult to assess the impact of community gardens independently of supermarkets. Community gardens are also linked to community belonging and in some cases, social support.^{388,389}





3C SUPPORTIVE ENVIRONMENTS

This section explores research that relates to how we can build communities that promote mental wellness.

Mental wellness is a key component of daily well-being and a healthy life. Many factors play a role in the risk for poor mental health, including where we live, work, study and play. Figure 5 shows how the complexity of neighbourhood features is likely linked to better health through social support, reduced stress and community belonging.

SOCIAL SUPPORT, STRESS AND HEALTH

Social support and low stress have been strongly linked to good health.

SOCIAL SUPPORT

Social support can **decrease the risk for premature death and poor health** in the form of cardiovascular disease,

stress, poor mental health and other health issues such as cancer and infectious disease, likely linked to factors such as impaired immune function or delayed access to health care.^{401–403} Canadians with more family and friends were more likely to report being in very good or excellent physical and mental health at all ages.⁴⁰⁴ It is thought that social support is linked to better health because it promotes healthy behaviours and helps people deal with difficult situations.⁴⁰³

FIGURE 5:

Overview of how the built environment influences social support, stress and community belonging to influence health. (adapted from⁷²)

NEIGHBOURHOOD FEATURES

- Low population density
- Houses close to the street
- Front porches, front gardens or yards
- Green space
- Destinations nearby
- Public transit
- Places to gather
- Community facilities and services
- Paths, trails, sidewalks
- Public art
- Attractiveness

MEDIATING FACTORS

- Examples:
- Low crime
 - Safe traffic
 - Few hazards
 - Low noise
 - Affordable housing
 - Little trash, litter, graffiti, vandalism or abandoned buildings

HUMAN RESPONSE

- Social support
- Reduced stress
- Community belonging

HEALTH OUTCOMES

- Reduced risk for:
- Poor mental health
 - Premature death
 - Poor immune function
 - Many chronic diseases and conditions

OTHER DETERMINANTS OF HEALTH

e.g., age, genetics, gender, social environment, income, education, culture, health care system



SOCIAL ISOLATION AND LONELINESS

Feeling socially isolated or lonely can **increase the risk for premature death and poor health** in the form of increased risk for depression, poor sleep, difficulties paying attention, impaired decision making, problem solving and memory, cognitive decline, poor cardiovascular function, poor immune function and stress.^{406–409}

COMMUNITY BELONGING

In Canada, people who have a strong **sense of community belonging** are more likely to report having excellent or very good physical and mental health.^{410,411} In 2014, almost 19.4 million or 66% of Canadians age 12 years and older felt a very strong or somewhat strong sense of community belonging.⁴¹²

STRESS

Chronic stress has a wide range of impacts on health, increasing the risk for early death and poor physical and mental health.^{e.g., 413–416} In 2014, almost 6.7 million or 23% of Canadians over the age of 15 years said they had experienced quite a lot of life stress in the previous year.⁴¹²

BUILDING NEIGHBOURHOODS THAT PROMOTE MENTAL WELLNESS

Neighbourhoods can be built to increase social interactions and reduce stress.

SOCIAL INTERACTIONS

Neighbourhoods can affect social interactions by **increasing the probability of meeting others and by providing places to gather**.^{418,419} Neighbourhoods that are linked to higher levels of neighbourliness, social capital (defined as social networks and interactions that increase trust and support among neighbours) or a sense of community^{419–433}

- Have houses close to the street and with front porches, front gardens or yards.
- Have green spaces.
- Are pedestrian friendly.
- Have walkable destinations and accessible public transit.
- Are clean.
- Have low traffic and parking.
- Have places where people gather (e.g., places of worship, local tavern, coffee shops, restaurants, parks, recreation areas and facilities, community centres, libraries).
- Are places where people walk for leisure and people see each other out and about.
- Create feelings of safety.

WHY DO WE FEEL LONELY?

Loneliness is often temporary and is thought to be a motivator for people to seek out social support.⁴⁰⁷ When loneliness becomes a long-term situation, there are risks to health.^{407,417} Loneliness can happen at any age, but it is triggered by different factors across the lifespan.⁴¹⁷ Loneliness appears to be highest in adolescence when teenagers are seeking to establish their own identity and in old age when people begin losing loved ones and have poorer health.⁴¹⁷

DID YOU KNOW?

In 2013^{404,405}

Friends and neighbours

- 6% of Canadians said they had **no close friends**. This is higher for Canadians 75 years and older at 15%.
- 75% of Canadians said they had **three or more close friends**, which is an increase from 70% in 2003. This is higher for Canadians ages 15 to 24 years at 88%.
- About 40% of Canadians said they **knew many or most of their neighbours**.
- 44% of Canadians **see their friends** at least a few times a week, which is lower than in 2003 at 56%.

Family

- 55% of Canadians said they **felt close** to at least five family members.
- 26% of Canadians **see relatives** at least a few times a week, which is lower than in 2003 at 38%.
- 86% of Canadians with close ties to at least five relatives were **satisfied with their lives** compared to 75% with one or two close relatives and 69% with no close relatives.

Areas with these features can have drawbacks that need to be considered when building communities for mental wellness. For example, neighbourhoods that are linked to higher levels of sense of community and social capital may not be affordable for everyone, may not be diverse or may not be what some people prefer.^{435–440} Areas with many stores and restaurants may draw in people from other neighbourhoods, leading to a lower sense of community for residents.⁴¹⁹

STRESS AND POOR MENTAL HEALTH

Neighbourhood features and characteristics linked to **an increase risk for stress and poor mental health** include^{441–450}

- Hazards (e.g., uneven sidewalks, potholes in roads, debris)
- Noise
- Trash and litter
- Poor quality housing
- Lack of places to gather
- Lack of services
- Low walkability
- Unattractiveness
- Lack of access to green spaces and community facilities
- Negative characteristics like abandoned buildings
- Unsafe neighbourhoods.

Getting from home to work or school is a regular routine for many Canadians. In Canada, the majority of people work in the municipality in which they live. For example, 55% of commuters who live in Mississauga work in Mississauga and 81% of commuters who live in Toronto work in Toronto. A similar pattern can be seen in and near Montreal and Vancouver.⁴⁵¹

Long commute times can be a source of stress, particularly when commuters feel they lack control over conditions, traffic and time.^{452–461} This can also result when travelling by public transit. Improvements in public transit infrastructure (e.g., fewer stops to reach a destination) can reduce commuters' stress in some situations.^{454,462–465} Some drivers enjoy their commute and find it is a good buffer between work and home.^{466,467} Over the long-term, stressful or long commutes have been linked to poor health in some situations but not others.^{485,500–502}

DID YOU KNOW?

Commuting varies greatly across Canada,⁴⁵¹ likely due to factors such as differences in the infrastructure available for commuting, commuting distances and climate.

In 2011, over 15 million Canadians commuted to work. About 80% of these commuters used a private vehicle, while about 12% used public transit and 7% walked or biked.⁴⁵¹ In 2011, about 27% of Canadians said they had used active transport in the previous three months.¹⁸⁸

In 2011, Canadians who commuted to work spent about 25 minutes to travel from home to work. About 17% of Canadians spend at least 45 minutes commuting to work.⁴⁵¹

Taking public transit took longer on average than driving to work – Canadians who drove to work took about 24 minutes to do so while those who took the bus took 40 minutes, those who took the subway took 45 minutes and those who took light rail, a streetcar or commuter train took almost 53 minutes. For public transit, this includes the time to walk to public transit stops and waiting time.⁴⁵¹

Canadians who commuted by walking or cycling spent less time commuting – people who walked spent about 13 minutes commuting while those who cycled spent about 20 minutes.⁴⁵¹ This could be because people who choose to commute via active transportation live closer to work.

MEDIATING FACTORS AFFECTING THE LINK BETWEEN THE BUILT ENVIRONMENT AND MENTAL WELLNESS

Currently, experts do not agree on how to build crime-free or low crime communities, but safety is considered a key element of healthy communities.⁵⁰⁰

CRIME

Being a victim of a crime or a fear of crime can lead to long-lasting effects on mental health and wellness.^{501–505} A fear of crime can lead people to change their behaviour as a response to their fears. This can lead to unhealthy outcomes like physical inactivity and mistrust.^{502,506,507}

IMPROVING MENTAL WELLNESS

Research on how to harness the built environment to improve mental wellness is limited and weak but growing. Examples of approaches that could be targeted include

- **Increasing green spaces:** Looking at the impact of green spaces on health is a relatively new area of research. **Green spaces have been linked to better mental and physical health.**^{44,51,52,468–481} It is thought that their availability may lead to better health through increased physical activity, less exposure to air pollution, more social interactions and/or feeling less stressed.^{471,482,483} How green spaces are linked to mental wellness may change across the lifespan and differ by gender.^{470,484}

DID YOU KNOW?

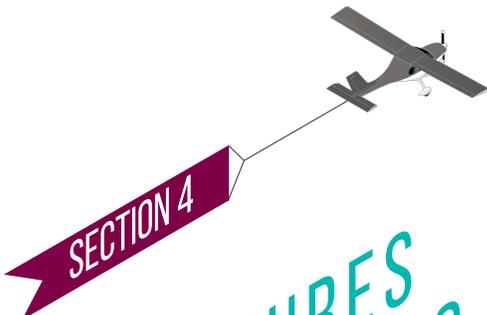
In 2014, 20% of Canadians over the age of 15 years said they had been victim of at least one crime (e.g., assault, robbery, breaking and entering, theft of personal property, vandalism) in the previous year.⁵⁰⁹

Understanding local crime patterns and neighbourhood features that may promote crime appears to be important for reducing crime.⁵⁰⁸ Two examples of promising strategies that look at the **built environment to prevent crime** are

- **Crime Prevention through Environmental Design (CPTED):** Supported by the United Nations and countries across the world, CPTED aims to decrease crime by reducing opportunity. It supports clear identification of public and private areas (e.g., through signs and fences), removing litter and graffiti, reducing unused or underused spaces, improving surveillance (e.g., improve visibility, strategic placement of windows, good street lighting) and controlling access.⁵¹⁰
- **Situational Crime Prevention (SCP):** This approach aims to understand where, why and when crime happens in a neighbourhood and to reduce opportunities for crime by increasing its risks and decreasing its rewards. This involves tailored solutions that can include changing neighbourhood features to reduce crime.^{508,511}

- **Reducing noise:** Noise in our neighbourhoods can come from sources such as motor vehicles, airplanes, trains, industrial areas, construction and noisy neighbours. The World Health Organization estimates that **among environmental factors that influence health, noise pollution is second to air pollution** in terms of its impacts in Europe.⁴⁸⁵ Living in a noisy neighbourhood has been linked to an increased risk for health issues such as^{486–491}
 - Hearing loss.
 - Stress as well as poorer quality of life, mental health and sleep.
 - Hypertension, cardiovascular disease, diabetes and respiratory disease.
 - Poorer memory and reading skills in children.
- **Creating public art:** The **attractiveness of a space can affect how people feel, think and behave.** For example, art in public places has been shown to have a calming effect.^{492–494} Art can reflect culture and also build social and community connections.⁴⁹⁵ Some evidence suggests that art projects that involve a community can improve the health and well-being of its residents as well as build a better sense of community.^{496–499}

Evidence suggests that these approaches are effective in some situations, but may address only the symptoms of crime and not its causes. In some situations, they may potentially increase or displace crime.^{508,510,512–518} There is some evidence that neighbourhood interventions may reduce fear of crime. Reducing physical disorder (e.g., litter, graffiti, vandalism) and improving the maintenance of properties and public areas appear to increase feelings of safety to some extent.⁵¹⁹



SECTION 4

DESIGN FEATURES FOR SPECIFIC POPULATIONS

This section explores how design features of the built environment impact healthy living in children, youth and older adults as well as their role in health inequities.

Most research on the impact of the built environment on healthy living, and health in general has focused on adults. Research on children, youth, older adults and marginalized groups is limited despite known health risks and inequities for these groups. There is also limited research on **how the built environment may affect gender differently.** Some research suggests that there may be gender differences, but results are mixed and overall conclusions remain elusive.⁵²⁰

CHILDREN AND YOUTH

PHYSICAL ACTIVITY

In 2014, Canadian data showed that 31% of boys and 22% of girls in Grade 6 were physically active every day for at least 60 minutes. This dropped to 22% of boys and 10% of girls by Grade 10. Students in Grades 6 to 10 are more likely to participate in team sports than individual sports.⁵²¹ It appears that a greater proportion of Canadian students in Grades 6 to 10 are spending more of their leisure time playing video games and on the computer than in the past.^{521,522}

The presence of **parks and green spaces** may play an important role in increasing physical activity in children in urban areas, although some evidence shows that **neighbourhoods with destinations, such as recreation facilities, parks, playgrounds and features linked to walking** are associated with lower levels of physical activity in children.^{523,524} A key factor for physical activity may be the availability of undeveloped areas that allow for unstructured play.⁵²⁵

Living in suburbs or small towns was linked to the highest levels of physical activity in children while living in urban areas was linked to the lowest. Children living in rural areas were more likely to spend time outdoors and in unstructured play than children living in urban areas.⁵²⁸ This may be linked to how safe rural neighbourhoods, in terms of both traffic and crime, are perceived to be.

Parents' concerns about safety are linked to their willingness to allow their children be active outside.^{529–534} Like other age groups, children who walk or cycle are more likely to get injured than children who travel in a motor vehicle.⁵³⁵

Measures to increase safety such as traffic calming and having recreation areas nearby were linked to more physical activity and fewer injuries among children. Features such as higher road density, having schools and other services nearby and crosswalks were linked to more walking, but not increased safety.^{536–539} Crime is also an issue. Children living in neighbourhoods with less crime are more likely to be physically active.⁵⁴⁰

THE NEED FOR CHALLENGING PLAY

Challenging play is important for children's development as well as their physical and mental health. This type of play encourages children to evaluate their environment and its challenges before taking action. It has also been linked to helping children learn about assessing and managing risks, to be more independent and to develop better learning and judgment skills.^{526,527}

TABLE 1:

Proportion of Canadian students using active transportation in 2011 and 2014.^{521,522}

	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
2014					
Boys	31%	25%	27%	28%	26%
Girls	29%	25%	26%	24%	19%
2011					
Boys	41%	36%	39%	27%	31%
Girls	36%	32%	36%	25%	22%

Walking, cycling or using public transit to get to school can increase children's and teenagers' physical activity levels, yet many Canadian students are not using active transportation.⁵⁴¹⁻⁵⁴⁴ It appears that using active transportation in Canada is decreasing. Among students in Grades 6 to 10, rates appear to be decreasing, particularly in lower grades (see Table 1).^{521,522} A survey of Canadians parents in 2012 showed that 58% walked to school as children while 28% of their own children walk to school today.⁵⁴⁵

Distance and safety are two key factors – children are more likely to use active transportation if their school is nearby and the route to get there is safe.⁵⁴⁶⁻⁵⁵⁶ They are also more likely to use active transportation in areas experiencing urban sprawl.⁵⁵⁷ **Parents are important role models** for their children in terms of physical activity. For example, for every 20 minutes of activity a parent did on weekends or during evenings, their children's activity increased by five to ten minutes.⁵⁵⁸ Children whose parents use active transportation are also more likely to do so.^{559,560}

HEALTHY DIETS

Research in this area is still evolving, but generally, access to healthy or unhealthy food has the same effect on children and teenagers as it does on adults.⁵⁶¹ One aspect that differs is the fact that children and teenagers can also be influenced by **food access near schools or on route to school**. Recent findings suggest that children and teenagers who live or go to school in neighbourhoods with many places that sell unhealthy food are more likely to have an unhealthy diet and be overweight, be obese, have higher insulin resistance and have poor bone density.⁵⁶¹⁻⁵⁶⁵

MENTAL WELLNESS

Green spaces may have a positive influence on children's brain, behavioural and physical development.⁵⁶⁶⁻⁵⁷¹ In Canada, children who spend more time outdoors are more likely to be physically active, have fewer problems with their friends and have better psychosocial health.⁵⁷¹

PHYSICAL ACTIVITY, HEALTHY EATING AND PREGNANT/ POSTPARTUM WOMEN

There is a lack of research on the role of the built environment on the health of pregnant and postpartum women. However, they may benefit from a neighbourhood that encourages physical activity and healthy eating. Evidence suggests that healthy diets and physical activity are important for appropriate weight gain during pregnancy, although they may have no effect on issues such as preeclampsia, gestational diabetes and induction of labour.^{572,573} Weight gain during pregnancy is also linked to a child's health, including the risk of high birth weight and being overweight in childhood.⁵⁷⁴⁻⁵⁷⁶

Research is mixed, but some evidence suggests that exercise and healthy diets in the postpartum period are linked to weight loss and improvement in postpartum depression symptoms.⁵⁷⁷⁻⁵⁸¹ Many women have trouble losing weight during the postpartum period, suggesting a need for specific interventions for this group.^{582,583}

OLDER ADULTS AND FALLS

In Canada, about 20% to 30% of older adults fall every year. Falls are also the leading cause of hospitalization among older Canadians.^{608,609}

Older adults who felt that they were part of their community and that people would help them were less likely to experience falls. Neighbourhoods that were thought to be cleaner and safer were linked to fewer falls.⁶¹⁰

Outdoor hazards increase the risk or the perceived risk for falls among older adults. Examples include uneven surfaces, curbs, lack of street, sidewalk and path maintenance, poor lighting, potholes, cluttered areas, unsafe traffic, unclear signs and crossings that are perceived to be unsafe.^{611,612}

OLDER ADULTS

Communities are not always built to support aging. **Most older adults want to stay in their homes and neighbourhoods as they get older.** As they age, older adults are also more likely to spend more time in their neighbourhoods and to be more sensitive to changes in their environment.⁵⁸⁴ Canada's population is aging.¹¹ Ensuring that the built environment supports healthy aging is becoming increasingly important.

PHYSICAL ACTIVITY

Even older adults who are already in poor health can benefit from being active.^{585,586} Many neighbourhood features (e.g., attractiveness, living near stores, services or friends) that are linked to more utilitarian walking in other age groups are also linked to more utilitarian walking in older adults, although research is mixed and likely influenced by other factors like mobility, income and attitudes.⁵⁸⁷⁻⁶⁰⁷ **Some research suggests that walkable neighbourhoods are linked to more walking even among older adults with mobility issues.**⁶⁰⁵

Some of the biggest barriers to being active for older adults include **how accessible and safe their neighbourhood is** (e.g., access to services, public transit, safety of sidewalks, weather, noise, lighting, street curbs, attractiveness, challenging street crossings due to short traffic lights or wide streets, proximity to destinations).^{588,611,613,614} **Living in the suburbs is linked to many of these factors and can create a challenging situation for older adults,** particularly for those who no longer drive. Concerns about safety include worries about crowds, crime, violence and traffic.⁶¹⁵

For older adults who have health and mobility issues, having benches in neighbourhoods is important. They function as rest stops during longer trips and can be good places for older adults to better enjoy green spaces and areas near water.⁶¹⁶

SOCIAL ISOLATION

Neighbourhoods may not be set up to address the risk for social isolation associated with aging. Loneliness is an important public health issue for Canada's aging population. Risk factors for being lonely at an older age include not being married, being in poor health, having a declining income and having a low education.⁶¹⁷ Limited research has addressed how the built environment can support social interactions and reduce social isolation for older adults.⁶¹⁸ Walkable neighbourhoods and physical activity itself are linked to increased activity and being more social in older adults.^{614,618}

POPULATIONS EXPERIENCING HEALTH INEQUITY

Building a healthy community addresses the needs and improves the health of all of its residents, including those who are marginalized.¹ Access to food, clean water and housing are basic needs. It makes sense that some approaches to improve healthy living, such as building more recreational areas or cycling infrastructure, may not have a positive impact on community health before these basic needs are met.

ACCESSIBILITY FOR PEOPLE LIVING WITH A DISABILITY

The needs of people living with a disability are not always considered when designing and building communities.⁶¹⁹⁻⁶²² In 2012, 3.8 million or 14% of Canadians 15 years and older reported living with a disability that limited their daily activities.⁶²³

Evidence suggests that neighbourhoods with good accessibility, high quality and safe streets, lower traffic density as well as uncrowded and open spaces increase the likelihood that people with a disability can be mobile, productive and social.^{613,621,622,624-626}

Winter can further reduce accessibility for people living with a physical disability, leading to increased risks to health and for being isolated.^{620,627-630}



Certain features can worsen health inequity, particularly in disadvantaged neighbourhoods. Examples of these features include^{631,632}

- Lack of transportation options
- Limited access to healthy food, housing and health care
- Lack of parks and recreation facilities
- Empty buildings and vacant lots
- Poor air or water quality
- Lack of safety, higher crime
- Increased social isolation
- Residential segregation

Affordability is an important factor that influences where people decide to live. For those living with a low income, access to affordable housing is linked to better health and more income being available to support health and well-being.^{633–639}

Limited research is available on the role of the built environment for Indigenous populations, people living in poverty, the homeless and people with a disability, and no evident research is available on people who identify as lesbian, gay, bisexual, transgendered, queer, questioning, intersex and two-spirited (LGBTQQI2S).

GENTRIFICATION

Gentrification is the transformation of areas into middle class or affluent neighbourhoods. There is limited evidence and some debate about whether or not gentrification benefits or harms a neighbourhood's original residents, particularly those with a low income.^{640,641}

INDIGENOUS COMMUNITIES

About 50% of Canada's Indigenous population live in an urban area, a proportion that has grown over time. About 34% of the urban Indigenous population live in Winnipeg, Edmonton, Vancouver, Calgary and Toronto.⁶⁴² Whether Indigenous Peoples live in an urban, rural or remote area varies by Indigenous population

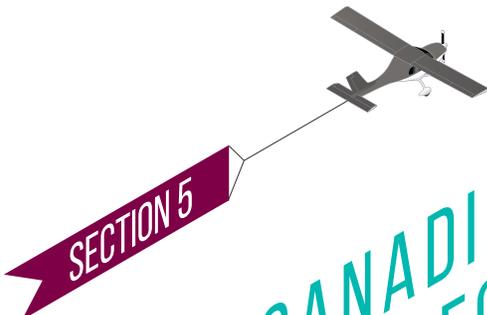
- In 2006, about 70% of Metis lived in an urban area.⁶⁴³
- In 2006, about 40% of First Nations lived on-reserve while 60% lived off reserve. Among those who lived off reserve, 47% lived in major urban centres, 31% lived in smaller urban areas and 21% lived in rural areas.⁶⁴⁴
- In 2011, about 75% of Inuit lived in four northern regions that span the Territories and Labrador.⁶⁴⁵

For First Nations and Inuit populations, particularly those living in remote and isolated communities, there are challenges and opportunities for harnessing the built environment to support healthy living. Challenges can include lack of infrastructure and jurisdictional barriers. From a built environment perspective, some of the more pressing health concerns for remote Indigenous communities are related to **safe drinking water, food availability, security and safety, access to health care and housing quality, affordability, accessibility and crowding**.^{646–653}

Like Canada as a whole, Indigenous populations are also dealing with a shift to sedentary lifestyles, physical inactivity, unhealthy diets and resulting impacts on health.^{653,654} This is linked to a shift from traditional built environments. Traditionally, Indigenous communities and camps were designed and located with purpose and to address community needs, well-being and geographic realities. In some cases, communities were temporary and moved in response to changes in season and food availability. With colonization and assimilation, communities were displaced and relocated, often away from traditional lands and practices.⁸³

For healthy living, there is limited research on the impact of the built environment on Indigenous communities.⁸³ Examples of barriers to physical activity that have been identified include isolation, an environment that does not make being physical active easy (e.g., weather, hazardous roads, safety, aggressive animals) and a lack of time, opportunities, support, programs, facilities and equipment.^{83,654–657}

There are also **opportunities to learn from Indigenous populations**. Ties to the land, water, family, community and identity are important components of Indigenous culture that also emphasizes wholeness, connectedness and balance.^{653,658} For Indigenous communities, place is an important source of health and is seen as part of a holistic, interconnected view of health and well-being.⁶⁵⁸ Many Indigenous communities have developed or are interested in developing land-based programs to support improved wellness outcomes.



DESIGNING CANADIAN COMMUNITIES FOR HEALTHY LIVING

MULTI-SECTORAL COLLABORATION

Currently, public health professionals are working closely with urban planners, traffic engineers, architects and policy makers at all levels across Canada to varying degrees. Building these relationships is seen as a particularly important step for moving initiatives forward.⁶⁵⁹

Health in All Policies is an important approach that encourages decision makers across all sectors to consider the health implications of public policies.⁶⁷⁻⁶⁹

This has been noted as an important approach for planning, development and equity.^{1,2} For public health, designing healthy communities is truly a population health approach. It involves finding a balance to

- Improve the health of all Canadians and reduce health inequities.
- Prevent unhealthy behaviours and poor physical and mental health.
- Consider the influence of the social determinants of health.

Much of what drives this work happens at the local level; however, provincial, territorial and federal laws, regulations and policies can have an impact. Examples include investments in various sectors such as public transportation and the establishment of policies for municipal planning.

This section provides a brief overview of some of the approaches that are used to design communities in Canada to improve healthy living. Communities that effectively support, promote and inspire healthy living take a collaborative, multidisciplinary effort that includes expertise not traditionally linked to health, such as economics and transportation. They involve all levels of government and engage at the community level.⁶⁵⁹

TACKLING URBAN SPRAWL

While some cities are working to proactively address or prevent urban sprawl, the response to urban sprawl is often reactive happening once its effects are already being felt. Urban sprawl is often characterized as living in the suburbs. Although suburbs are linked to unhealthy behaviours²⁷⁻³², they often provide attractive options at affordable prices for some Canadians. Many Canadians want to live in the suburbs and enjoy doing so.^{65,66} This suggests that there is a need for innovative thinking to tackle the unhealthy aspects of suburban living.

Examples of proactive approaches can be found in Ontario and Metro Vancouver where growth plans have been developed to address urban sprawl. In southern Ontario, this included establishing density targets for development and protection of green spaces. The goals of the Metro Vancouver plan include

- Having its population concentrated in compact communities with access to a range of housing choices, employment, amenities and services.
- Protecting industrial and agricultural land.
- Protecting natural areas for clean air, water and food as well as diverse recreational activities.
- Developing complete communities with a range of housing choices, good distribution of employment, access to services and amenities and support for walking, cycling and public transit to foster healthy lifestyles.
- Having a compact, transit-oriented urban setting that supports a range of sustainable transportation choices.



EXAMPLES OF CANADIAN GUIDELINES AND OTHER RESOURCES

There are many guidelines on promising practices for building healthy communities. Below are some examples

- [Canadian Institute of Planners - Healthy Communities Practice Guide](#)
- [Built Environment Readiness Assessment Tool](#)
- [Planning by Design: a healthy communities handbook](#)
- [Healthy Built Environment Linkages Toolkit](#)
- [Healthy Development Assessment - User Guide](#)
- [Active Design Guidelines](#)

LOCAL PLANNING

All cities in Canada have plans, policies and laws in place to guide the design and building of their communities. Active transportation is now the most addressed issue by planners, followed by access to public spaces, social networks and meeting areas. Lack of government or political support is the most often cited barrier for making sure planning considers health implications.⁶⁶⁰

The built environment is something that can be tangibly changed. **It is important for understanding population-level physical barriers and incentives for making healthy choices.**^{e.g.,72} To help people maximize health benefits from their built environment, public health can support the evaluation of initiatives or approaches to determine what works and what does not, and in what settings. It can also maximize the effectiveness of the built environment through policies and programs focused on designing healthy living. Improving health should be a goal of all community planning.

EXAMPLES FROM CANADA'S THREE LARGEST CITIES

Many of Canada's larger cities have initiatives in place to help design and build communities that promote healthy living. Vancouver, Toronto and Montreal are used below as examples of multi-sectoral planning at a large scale for large populations. It should be noted that multi-sectoral community planning is happening in many areas, including planning that covers the suburbs and smaller communities. What works in larger cities may not work for the suburbs, smaller cities and communities or rural or remote communities.

The shift to a focus on the impact of the built environment on healthy living has taken time. **Making widespread changes is difficult** and often starts as smaller changes at the community level. Evidence is important, but so is **context**. Evidence needs to match a community's needs, situation and characteristics to be considered relevant. This makes local knowledge and community engagement important. Seeing the effects of change also takes time, particularly on the health of a population. Together, these challenges show that harnessing the built environment to improve health is no easy task.⁶⁶¹

THE STORY OF PORTLAND

Portland, Oregon is often used as an example of a city that changed its built environment and improved its citizens' health by containing urban sprawl. Since 1979, the city has put in place many approaches

- Limiting development outside of its urban boundaries.
- Keeping its population closer to the city's centre in dense, mixed-use neighbourhoods.
- Developing a well-connected light rail system that services many areas of the city.

Mortality rates decreased from almost 9,000 per million people per year in 1989–1994 to almost 8,000 per million people per year in 1995–2000. This change has been linked to the city's approach to containing urban sprawl.⁷²



VANCOUVER

Population in 2016: **2.5 million**

For many years, the City of Vancouver has focused on developing a sustainable city and on improving the health and well-being of its residents through policies, planning and related initiatives. In 2006, the Vancouver Coastal Health Authority implemented a collaborative focus on the built environment. The Health Authority has worked closely with communities on their Official Community Plans to ensure that the built environment is considered in their development.⁶⁶¹

Information on planning, zoning, development, community building and public health can be found at:

- [Urban planning, sustainable zoning and development](#)
- [Building community](#) (e.g., neighbourhood planning, improving public spaces, Indigenous communities, accessibility, seniors, women, youth)
- [Public health](#)

Healthy City Strategy: Vancouver’s Healthy City Strategy presents a long-term, integrated plan for healthier people, healthier places and a healthier planet. Champions from a range of sectors are guiding the adoption of the Strategy’s Healthy City for All vision.

Below are examples of the Strategy’s themes related to the built environment and healthy living.

Theme	Goals and targets	Working towards goals and targets
Active living and getting outside	<p>Goal: All residents are engaged in active living and have incomparable access to nature</p> <p>Targets:</p> <ul style="list-style-type: none"> • By 2020, all residents live within a five minute walk of a park. • By 2025, increase the rate of people meeting Canadian physical activity guidelines by 25% of 2014 levels. 	<p>Vancouver Board of Parks and Recreation Strategic Framework</p> <p>Greenest City Action Plan</p> <p>Transportation 2040 Plan</p> <p>Parks, gardens, beaches</p> <p>Recreational activities</p>
Getting around	<p>Goal: Safe, active and accessible ways of getting around</p> <p>Targets:</p> <ul style="list-style-type: none"> • By 2020, make over 50% of trips by foot, bicycle and public transit. 	<p>Transportation 2040 Plan</p> <p>Greenest City Action Plan</p>

Theme	Goals and targets	Working towards goals and targets
<u>Environment to thrive in</u>	<p>Goal: Residents have the right to a healthy environment and equitable access to a livable environment in which they can thrive</p> <p>Targets:</p> <ul style="list-style-type: none"> • Add a biodiversity target and a target related to toxins prevention to the Greenest City Action Plan and increase neighbourhood Walk Scores. 	<p>Building community</p> <p>Greenest City Action Plan</p> <p>Climate Change Adaptation Strategy</p> <p>Urban planning</p> <p>Vancouver Economic Commission</p> <p>VIVA Vancouver – creating vibrant pedestrian spaces</p> <p>Transportation 2040 Plan</p>
<u>Feeding ourselves well</u>	<p>Goal: A healthy, just and sustainable food system</p> <p>Targets:</p> <ul style="list-style-type: none"> • By 2020, increase citywide and neighbourhood food assets (e.g., more opportunities to grow own food, local food market nearby, better access to affordable food) by a minimum of 50%. 	<p>Vancouver Food Strategy</p>

Other Strategy themes address [children’s development](#), [affordable housing](#), [poverty and unemployment](#), [access to services](#), [safety and community belonging](#), [social connections](#), [lifelong learning](#) and [culture](#)

Other city websites and resources:

- [Parks, recreation and culture](#)
- [Home, property and development](#)
- [Streets and transportation](#)
- [Green Vancouver](#)
- [Resilient city](#)

Citizen engagement and involvement

In Vancouver, citizens can be involved in many aspects of city government and municipal affairs. The City promotes engagement through Talk Vancouver, an on-line forum, and public consultations. They also hold open City Council meetings and provide opportunities for members of the public to speak at City Council meetings, for citizens to serve on boards and committees and for citizens to volunteer. They also use various means, including social media, to reach out to citizens.

More information on how to become involved can be found here: [Citizen involvement](#).



TORONTO

Population in 2016: **5.9 million**

Toronto was one of the first cities to adopt the concept of [Healthy Cities](#). This concept defines a healthy city as one that is continually working to enhance its environments and communities to improve its citizens' health and well-being.^{662,663} Toronto Public Health has been heavily involved in the development of various plans and strategies and in working with other municipal sectors on the built environment.⁶⁶¹

Information on city planning and public health in Toronto can be found at:

- [City planning](#)
- [Public health](#)

Below are examples of innovative approaches, best practices, activities and projects taking place in Toronto to improve healthy living by focusing on the built environment.

Activities	Goals	Working towards goals and targets
<p>Complete Streets Guidelines</p>	<p>Complete Streets involve the following components:</p> <p>Streets for People</p> <ul style="list-style-type: none"> • Improve safety and accessibility • Give people choices and connected networks • Promote healthy and active living <p>Streets as Placemaking</p> <ul style="list-style-type: none"> • Respect local context • Create vibrant and attractive public spaces • Improve environmental sustainability <p>Streets for Prosperity</p> <ul style="list-style-type: none"> • Support economic vitality • Enhance social equity • Be flexible and cost effective 	<p>Develop and implement guidelines</p> <p>Recognized in Toronto's Official Plan</p> <p>Developed in consultation with many sectors and stakeholders</p> <p>Examples of complete streets in Toronto:</p> <ul style="list-style-type: none"> • College Street • Royal York Road • Front Street • Port Union • John Street • McNicol Avenue • Yorkville
<p>Toronto Food Strategy</p>	<ul style="list-style-type: none"> • Support food friendly neighbourhoods • Make food a centrepiece of Toronto's new green economy • Eliminate hunger in Toronto • Connect city and countryside through food • Empower residents with food skills and information • Urge federal and provincial governments to establish health-focused food policies 	<p>Examples of projects:</p> <ul style="list-style-type: none"> • Grab Some Good markets • FoodReach • Food retail environmental mapping • Locally grown world crops

Activities	Goals	Working towards goals and targets
<u>Parks, Forestry and Recreation Initiatives</u>	Examples: <ul style="list-style-type: none"> • Parks and Recreation Facilities Master Plan • Parks Plan • Toronto Parks and Trails Wayfinding Strategy • Strategic Forest Management Plan • Toronto Ravine Strategy • Skateboard Strategy 	
<u>Transportation Initiatives</u>	Examples: <ul style="list-style-type: none"> • Road Safety Plan • Toronto Cycling Network Plan • Toronto Walking Strategy • Beautiful Streets Program • StreetARToronto • Graffiti Plan • Accessible Streets 	

Other city websites and resources:

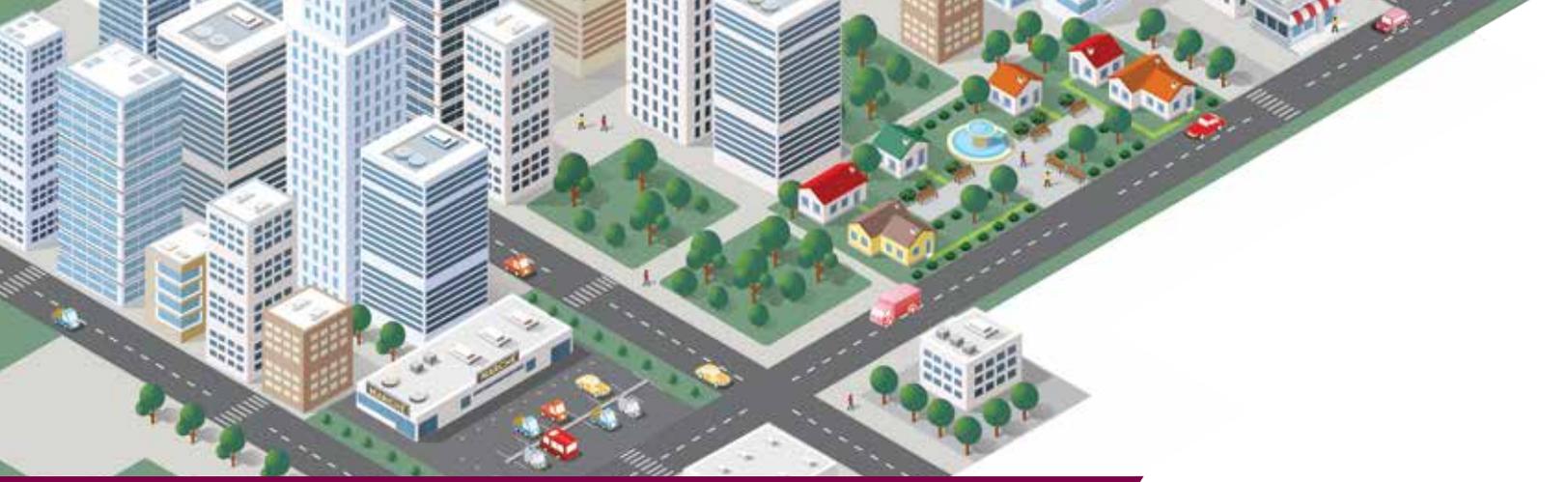
- [Toronto Public Health – Built Environment](#)
- [Healthy Toronto by Design](#)
- [Improving Health by Design in the Greater Toronto-Hamilton Area](#)

Citizen engagement and involvement

Get [Involved Toronto](#) aims to create opportunities for Toronto’s residents to shape a vision for the City’s future, plan changes in its neighbourhoods, provide information and insight on issues being tackled by City Council and serve on boards, advisory groups or volunteer in other ways.

The City of Toronto holds Council and committee meetings that are open to the public, undertakes various public consultations and provides many engagement opportunities to its citizens. A recent pilot project asked citizens to propose and vote on projects to improve their neighbourhoods through the [Participatory Budgeting Pilot Project](#).

Toronto also engages citizens through social media. The City’s chief planner has a [blog](#) to discuss and engage citizens on various planning projects and issues.



MONTREAL

Population in 2016: **4.1 million**

Montreal has many initiatives and projects in place that address the built environment. For many years, the City has involved neighbourhoods and non-governmental organizations in addressing issues related to the built environment.⁶⁶⁴ The Direction de santé publique de Montréal has also been involved in policy development and in supporting various projects on the built environment for the past 30 years. Since the early 2000s, it has focused on transportation and health.⁶⁶¹

Information on planning, health and public safety can be found at:

- [Planning](#) (in French only)
- [Health and public safety](#)

Urban plan (in French only): The city of Montreal's urban plan was adopted in 2004 and significantly modified in early 2016.

Theme	Goals	Supporting actions, principles and programs
<p><u>Structuring efficient transportation networks to fully integrate into the urban fabric</u> (in French only)</p>	<p>Goal: Consolidate and develop Montreal's territory in relation to existing and planned transportation networks</p>	<p>Actions:</p> <ul style="list-style-type: none"> • Facilitate travel between different areas of the City by establishing new public transportation services • Promote urban development that favours the use of public transportation • Strategically connect different areas of the City by completing the road network • Complete the City-wide bikeway network to provide access to activity areas and public transportation infrastructure • Promote urban development and the use of public transportation and bicycles by taking action on parking <p>Other:</p> <p>The City of Montreal's transport plan Design of bicycle parking areas The cycling action plan Parking policy actions</p>
<p><u>An enhanced architectural, archaeological and natural heritage</u> (in French only)</p>	<p>Goal: Preserve and enhance the built and archaeological heritage</p>	<p>Actions:</p> <ul style="list-style-type: none"> • Preserve and enhance natural environments by ensuring their harmonious integration into urban development <p>Other:</p> <p>Policy respecting the Protection and Enhancement of the Natural Environment</p>

Theme	Goals	Supporting actions, principles and programs
A healthy environment (in French only)	<p>Goal:</p> <ul style="list-style-type: none"> • Ensure the optimal management of resources in an urban context • Mitigate issues caused by urban activities • Control development in areas with environmental constraints 	<p>Actions:</p> <ul style="list-style-type: none"> • Support healthier urban development • Reduce air pollutants and greenhouse gas emissions • Ensure efficient management of water and wastewater management infrastructure • Ensure the recovery and re-use of waste • Pursue the rehabilitation of contaminated sites with government funding • Give priority to rehabilitating contaminated sites in the vicinity of certain metro and commuter train stations, as well as in areas to be transformed • Control the impact of issues related to urban activities • Control construction in areas with environmental constraints <p>Other:</p> <p>Strategic plan for sustainable development</p> <p>Water management policy</p> <p>Municipal waste management plan</p> <p>Implementation of traffic calming measures</p> <p>Noise mitigation policy</p>

Other plan themes include [high-quality, diversified and complete living environments](#), [a prestigious, convivial and inhabited centre, dynamic, accessible and diversified employment areas](#), [high quality architecture and urban landscapes](#) (links in French only)

Other city websites and resources:

- [Community life and education](#)
- [Transportation and public works](#)
- [Environment and sustainable development](#)
- [Housing and taxation](#)
- [Activities and recreation](#)

Citizen engagement and involvement

In Montreal, citizens can be involved in many aspects of city government and municipal affairs. The City undertakes consultations on various issues and holds open City Council meetings. They also use various means, including social media, to reach out to citizens.

More information on how to become involved can be found here: [Democratic participation](#).

COMMUNITY PLANNING AND INDIGENOUS POPULATIONS

Planning has always been a part of Indigenous communities and included many traditional and historical practices. Over time, these practices have been ignored, particularly in urban centres. However, there are examples that this is changing

- Today, there are a growing number of examples in Indigenous communities of community-based planning with strong participation, recognition of community needs, collaborative processes and inclusion of traditional knowledge.^{83,665–667}
- Indigenous communities have unique factors that need to be considered when undertaking community planning. Examples include Indigenous culture, traditional knowledge, colonization, residential schools, self-determination, language and geography.⁶⁶⁸
- The federal government supports communities in collaboration with community members for planning that takes place on-reserve.⁸³
- Some planners, municipalities and communities in Canada have strengthened relationships with urban Indigenous populations. Examples of promising practices include involving First Nations, tribal or band councils in decision making and strategic planning as well as recognizing Indigenous history and heritage in planning projects.^{665–667}
- Tools are available that aim to help build collaborative land use planning between First Nations and municipalities in urban settings. Relationship building is important. Treaties, First Nations laws and legal traditions as well as legislation and policies at all levels of government play a role in planning in First Nations reserves.^{668–670}

PERSPECTIVES FROM PROVINCES AND TERRITORIES

Based on a survey of planners from Canadian provinces in 2013, **strong provincial leadership** through policies, legislation and regulations that recognizes the role of the built environment in health can greatly benefit municipalities and communities in planning, designing and building healthy communities. Currently, approaches, policies, regulations and legislation that consider health in the design and building of communities **vary considerably across Canada**.⁶⁷¹

Although different sectors do work together to develop healthy communities, the **need for better collaboration** has been noted at both the provincial and municipal level. Leaders

from the health sector, academics and non-governmental organizations are seen as important supporters of healthy communities.⁶⁷¹

British Columbia, Ontario, Quebec and New Brunswick are provinces where strong healthy community networks exist. The principles that guide these networks include community engagement, political commitment, multi-sectoral collaborations, asset-based community development and healthy public policy. Important factors for this approach include recognizing the social determinants of health, diversity, social justice and equity, empowerment and community ownership, research and evaluation, and creativity and innovation.^{672,673} More details on these networks, including their governance and organizational profiles, can be found [here](#) and [here](#).

In its [Land Use and Sustainability Framework](#), the Government of the Northwest Territories has noted that **“land is life” and has recognized the need to consider spiritual, cultural, physical, economic and social factors** when managing lands, waters and natural resource. It also supports many initiatives that help develop healthy communities, including [Community Wellness Initiatives](#) and [On the Land Healing programs](#).

FEDERAL PROGRAMS

The **Public Health Agency of Canada** (PHAC) supports work on the link between the built environment and healthy living through surveillance, research, knowledge mobilization, collaborations and funded interventions:

- Surveillance and research activities include the development of the [Physical Activity, Sedentary Behaviour and Sleep Indicators Framework](#).
- PHAC also supports six [National Collaborating Centres for Public Health](#). The Centres for [Healthy Public Policy](#), [Environmental Health](#) and [Aboriginal Health](#) all have publications on the built environment.
- As part of its [Innovation Strategy](#), PHAC is funding initiatives that foster active communities. Examples include [Active Neighbourhoods Canada](#) and other initiatives to support school environments and food-secure communities.
- Through its [Multi-sectoral Partnerships to Promote Healthy Living and Prevent Chronic Disease](#), PHAC is supporting interventions that target the built environment. Examples include [Creating Connections](#) in St. Thomas, Ontario and [Healthy by Design: Active Apartment Neighbourhoods](#), in Toronto.

The **Canadian Institutes of Health Research** (CIHR) is supporting research on health and the built environment including [\\$17.7 million for nine Intersectoral Prevention Research Grants](#) that focus on healthier cities and communities.

HEALTHY CANADA BY DESIGN

This initiative began in 2009 and was funded by the Canadian Partnership Against Cancer and Health Canada. Its aim was to move evidence into action and build collaborations that harness the built environment to improve health. Members of this initiative include the Urban Public Health Network, the Heart and Stroke Foundation, the Canadian Institute of Planners, the National Collaborating Centre for Healthy Public Policy, the Canadian Institute of Transportation Engineers and several universities.^{62,674,675}

About 163 government policies related to the built environment and increasing physical activity were influenced by the Healthy Canada by Design and the related Children's Mobility, Health and Happiness projects.⁶⁵⁹

INTERNATIONAL INITIATIVES

Many countries are looking to the built environment to improve health. Covering all the examples that exist is outside the scope of this report. Outlined below are two examples of World Health Organization initiatives.

HEALTHY CITIES

The concept of building a healthy city has a long history. As an international movement, it grew in part from an initial health city workshop held in Toronto in 1984 and aligns with the [Ottawa Charter for Health Promotion](#). In 1986, the [World Health Organization Healthy Cities](#) project began with the involvement of representatives from 21 cities and seven countries in Europe.^{60,61} This project focuses on clean and safe environments, community connections, interaction and engagement, stable and sustainable ecosystems, meeting basic needs of all citizens, diverse, vital and innovative local economies and good health.^{60,61,662} Today, there are approximately 30 national Healthy Cities networks with more than 1400 cities involved.^{61,676}

In Canada, the healthy communities movement has developed on a different path with a broader approach that looks beyond urban areas and involves several separate networks rather than a pan-Canadian approach. Initiatives tend to be more local and built on existing community capacity. Across Canada, this has led to a wide variety of strategies that reflect individual community needs and have led to a broad range of results.⁶⁷⁷

AGE-FRIENDLY COMMUNITIES

In 2006, the [World Health Organization](#) started its Global Age-Friendly Cities project and in 2007, published a guide for developing age-friendly cities. Since that time, its [Global Network for Age-friendly Cities and Communities](#) has grown to include 287 communities in 33 countries with Canada being a key partner. This project focuses on eight areas for making communities age-friendly: outdoor spaces and buildings; transportation; housing; social participation; respect and social inclusion; civic participation and employment; communication and information; and community support and health services.^{678,679}

In Canada, communities in all provinces are implementing [age-friendly initiatives](#). PHAC recently developed a set of indicators to help communities evaluate the implementation of these initiatives, as did the World Health Organization.⁶⁷⁹⁻⁶⁸¹

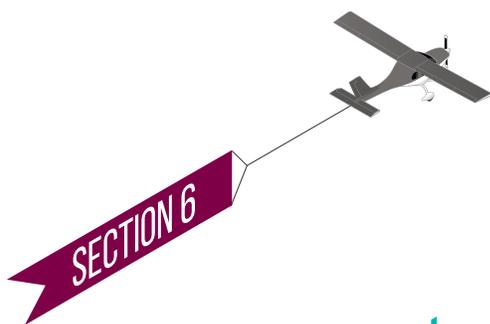
Most work on age-friendly communities focuses on aging in urban areas, but there is a need to consider what age-friendly communities look like in rural settings.⁶⁸²⁻⁶⁸⁵ In 2007, a report called [Age-Friendly Rural and Remote Communities: A Guide](#) was developed in Canada and endorsed by federal, provincial and territorial Ministers responsible for seniors. Its purpose was to raise awareness of the needs of older adults and to present a practical guide for rural and remote communities in Canada.

MOVING RESEARCH AND EVALUATION INTO PLANNING

Taking research that links a design feature to a health outcome, such as walkable communities and diabetes, and translating it into community action is challenging. Policies and programs need to be developed and implemented using the most relevant and up-to-date evidence, but they also need to be evaluated to determine their effectiveness.

Many projects and initiatives related to the built environment have taken place or are underway in Canada, but many are not evaluated or if they are, evaluation findings may not be accessible. In addition, cities and communities already collect data on various built environment initiatives, but data are not collected in a standardized way, limiting their use for researchers and planners in other communities. Systematically sharing data, knowledge and lessons learned about the effectiveness of initiatives is important to improve the health of Canadians in all communities.

Doing research that is policy and program relevant and engages stakeholders is a good step towards ensuring that community and neighbourhood planning is evidence-based.⁶⁸⁶⁻⁶⁸⁸ This type of research can help create traction with decision-makers and help generate public awareness and community support.⁶⁸⁹



A CALL TO ACTION



We can do more to help Canadians take charge of their own health. We have an exciting opportunity to **consciously** design our communities to support healthy living and help Canadians **unconsciously** improve their own health and the health of generations to come.

Changing behaviour is complicated. Why people do what they do is based on a wide variety of connected factors. These include age, physical and mental health, socioeconomic status, culture, and genetics as well as how we react to our physical and social environments. The built environment is only one piece of this much larger puzzle.

Designing the built environment for healthy living is about **supporting social connection** and seamlessly **providing access** to features that promote physical activity, healthy eating and mental wellness. It can include simple things like connected streets, access to healthy food and places to gather with family and friends.

We know that communities are not all designed the same way and that they evolve over time. In addition, most of us spend our lives in many different neighbourhoods at any given time and across our lifespan. This makes it challenging to quantify how the built environment impacts health.

However, we know that where you live can matter.

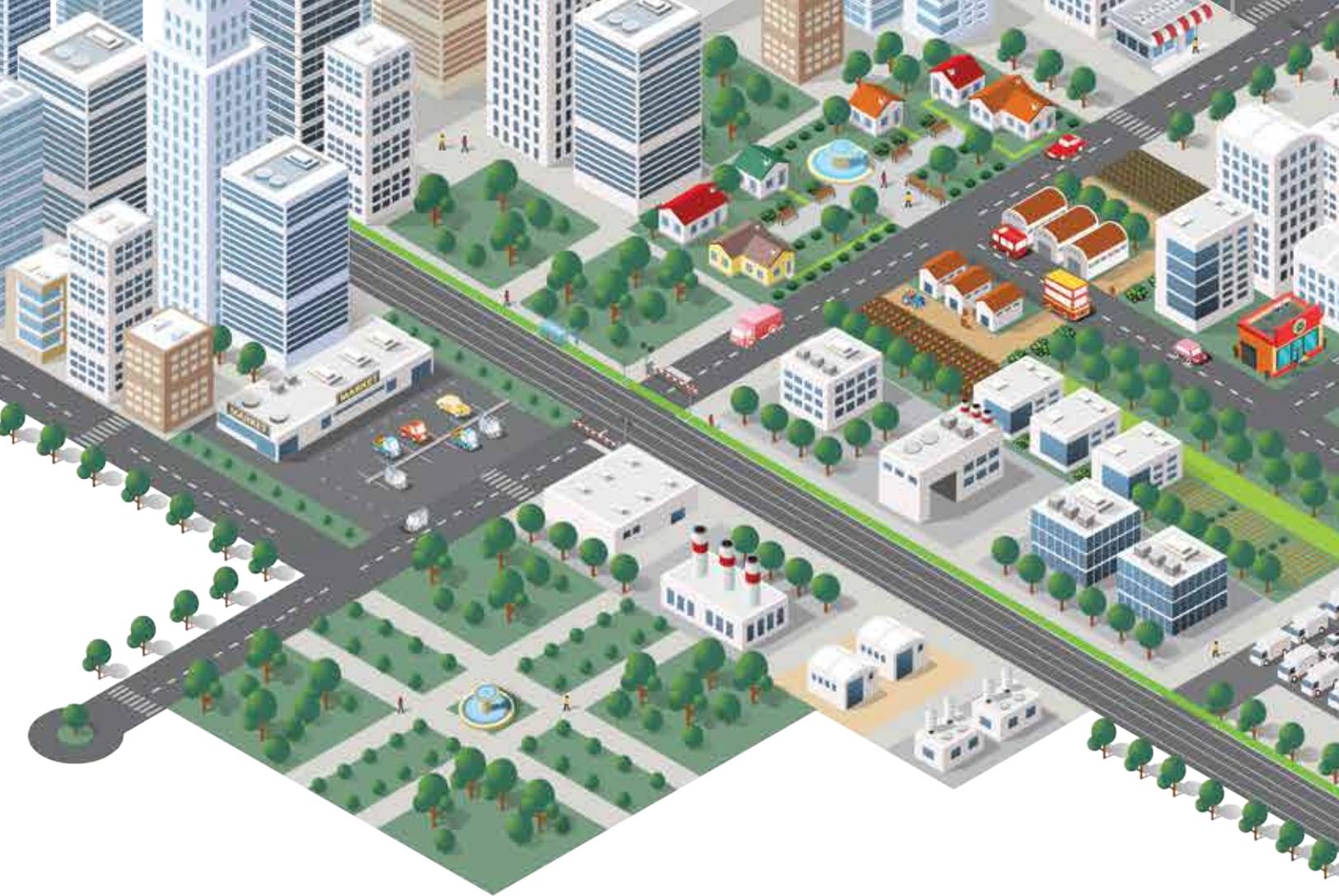
For example:

- For someone with a life-threatening chronic disease, being closer to urgent care and specialized health services can be a key consideration for good health.
- For young families, neighbourhood features that support challenging play, active transportation and parents' opportunities to be healthy role models can provide the whole family with a foundation for healthy living.
- Living in smaller communities can foster a strong sense of community belonging.

While many cities in Canada are already considering health in their community planning, there is much that remains to be explored. Research in this area is relatively young and moving findings into action is still a challenge. This means that we can be proactive and **now is the time for public health to work closely with other sectors to take advantage of this growing domain.**

Public health can influence the way forward and ensure that community planning and infrastructure initiatives, as well as sustainable, economic and technological development are based on integrated evidence and consider good health as a key outcome. Unravelling the complexity of the impact of the built environment on population health lies in **precision public health**, which uses data to guide interventions to benefit populations more effectively.



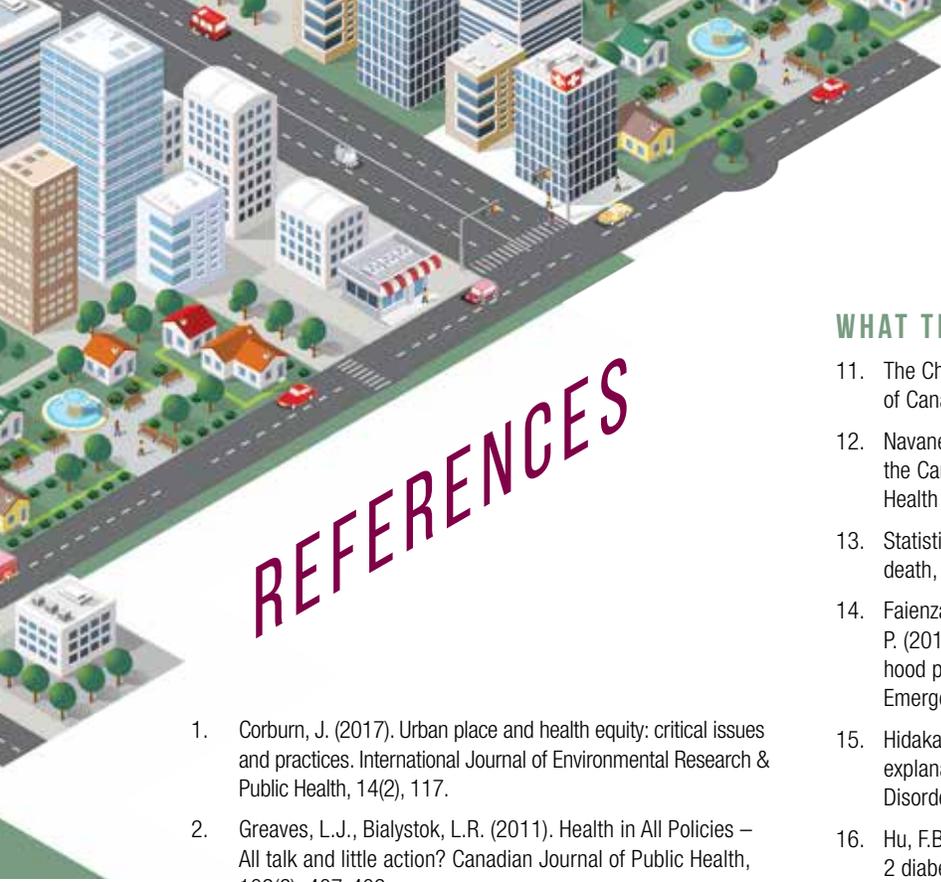


SIX ACTIONS

Going forward, I call on domestic and international partners, all levels of government including municipal, provincial, and federal leaders, political decision makers, community planners, and entrepreneurs **to take action in the following six ways:**

1. **Consider the health of populations** when designing and re-designing communities and developing and implementing major infrastructure projects, especially in cities given that most of us live in urban or suburban areas. As much as possible, proactively examine projects for their health promotion potential.
2. **Avoid worsening health inequity** when designing and re-designing communities by considering the needs and circumstances of populations experiencing these inequities.
3. **Evaluate the health impacts** of community design features by enlisting public health expertise. Make the findings from these evaluations openly accessible.
4. **Strengthen existing approaches, share lessons learned and best practices.** For all communities, learn from each other in terms of both successful and less successful approaches. Build on existing Canadian networks to foster a pan-Canadian dialogue.
5. **Collaborate to collect standardized data and engage citizens.** Support a better understanding of community needs and the health impact of community design on populations.
6. **Innovate so that the healthy choices are the easy choices.** Bring together ideas and concepts from across disciplines and sectors. Combine strategies that promote healthy living with those that improve the built environment to optimise impact and investment.

All of these actions could improve the lives of millions of Canadians. As Canada's Chief Public Health Officer, this is an easy goal for me to stand behind.



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ACTIVE NEIGHBOURHOODS

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