Ottawa

New
Official Plan

The Building Blocks for a Healthy Ottawa

City of Ottawa
Planning, Infrastructure, and Economic Development

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The Building Blocks for a Healthy Ottawa

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INTRODUCTION

A livable city is a healthy city. The City's next Official Plan offers an opportunity to consider how we can shape the Ottawa of the future as one of the healthiest, most livable places in North America. Ottawa is changing in many respects, including the social and cultural make up of communities, the environment, shifts in the economy, and evolving urban form and mobility options. This will require community planning that enables the City to be nimble and resilient into the future. The "Ottawa Next; Beyond 2036" study identified many future trends and disrupters that may impact these areas and could in turn also affect people's health and well-being.

As our communities continue to evolve and we deal with new and emerging challenges, it bears asking: **how can we ensure the places we build enable all people to be healthy, thrive, and live to their fullest potential?** This discussion paper explores this question and the evidence for how communities can be planned in a way that it is mindful of, and concerned with, impacts on people's health; this will help in understanding the implications of the built environment and inform the discussion for the Official Plan Review.

What is a Healthy Built Environment?

The built environment is the physical and human-made world around us (e.g., roads, pathways, buildings, parks). A healthy built environment is the physical layout and design of communities that improves people's health through behaviour, lifestyle, and protection from health hazards.[1] There is a strong and growing body of evidence that the design of our built environment has a direct influence on our physical, mental and social health, and thus our built environment holds enormous potential for addressing many of today's health challenges. It shapes our daily experiences and affects our ability to make healthy choices.[2,3,4]

The built environment can lead to better or worse personal health through a number of pathways. Health is associated with built environment features such as walkability, housing, land use, sprawl, access to and quality of neighbourhood destinations such as places to eat or buy food, libraries, sports fields, parks, and neighbourhood safety.[5]

"A healthy community is defined as a place where healthy built, social, economic, and natural environments give citizens the opportunity to live to their full potential regardless of their socially, culturally, or economically defined circumstances. A healthy community allows people to come together to make their community better for themselves, their family, their friends, their neighbours, and others..."[6]

How the built environment can influence health:

Built Environment	Mediating Factors	Human Response	Health Outcomes
Examples: Land Use Transportation Buildings and other infrastructure Public Facilities and areas	Examples: Environmental contaminants Weather and climate Noise Crime Traffic Safety and connectivity Hazards Natural Disasters	Examples: Behaviour e.g., physical activity, diet, substance abuse Psychology e.g., satisfaction, depression, social cohesion Physiology e.g., infections, immune system, hormones	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

Adapted from: The Chief Public Health Officer's Report on the State of Public Health in Canada 2017: Designing Healthy Living. Ottawa, ON: Public Health Agency of Canada; 2017

Why is Health a Focus for the Next Official Plan Review?

The Official Plan lays the foundation for how communities are planned through a set of policies. It can influence the creation of healthier environments that support people to thrive and be healthy. The implementation of the Official Plan influences individual choices, such as whether there are meaningful local destinations and if people find it easy to walk or cycle to them. Policies can foster or hinder the way people socialize and connect within a community. They can also influence structural opportunities for people to thrive, such as whether there is enough affordable housing or accessible transportation. Additionally, it can affect the environmental conditions in which we live, such as the quality of air, water and soil, and the impacts of climate change.[7] We can collectively pursue health and well-being as a core goal in building a thriving and resilient Ottawa for the future.

Exploring the Linkages

The Official Plan can be a policy prescription for health. It is an important piece of the puzzle in reducing chronic diseases and injuries, promoting mental health, and decreasing exposures to environmental hazards. To set the context for informing discussion for the Official Plan Review, this paper outlines the health challenges we face in Ottawa that are connected to our physical surroundings. The paper then explores challenges and opportunities for moving forward by exploring five core built-environment features identified in research as being linked with health.[8]

Transportation networks	Natural Environments and Greenspaces
Housing	Neighbourhood Design
Food systems	

THE GLOBAL CONTEXT

The way communities are built has impacted people's health and well-being throughout history - and continues today. In the past, crowded living conditions and poor sanitation systems led to the spread of infectious diseases, such as cholera, typhoid and tuberculosis.[9] These diseases were reduced in part through better city building and the development of municipal infrastructure, including sanitary sewers, public access to clean water, separating housing from industrial pollution, and integrating greenspaces for recreation. Efforts to deal with these diseases into the late 19th century gave rise to the professional fields of urban planning and public health.[10] These professions continue to work together as diseases (e.g., tuberculosis) persist in some places today.

The way we live our lives has changed into the 20th and 21st centuries, bringing dramatic changes to our health. We are living longer than we have ever lived before, with access to sophisticated health care services and to life-saving medical advances such as immunizations and antibiotics.[11] Despite these achievements, Canadians, as well as communities around the world, are faced with new, complex, and growing health challenges, and the accompanying rising health-related costs. They are all affected by the physical environments in which we live, learn, work, and play. Chronic diseases are rising in many parts of the world, including Canada, partly due to a lack of physical activity and healthy eating. Some people are more likely than others to experience poor health because they do not have the same opportunities to be as healthy, in part due to different physical and social environments. The rise of car-oriented development in the second half of the 20th century, most notably in North America, where land uses, like housing, employment, and recreation, were separated from each other, contribute to these challenges. During this time, there was also less frequent collaboration between the fields of urban planning and public health. The health challenges we see today are triggering an international reintegration of these fields of practice.

Ottawa's vast rural landscape, it's growing and intensifying urban areas and rural villages, and its diverse populations, offers the opportunity to think strategically and intentionally about how our city could grow into one of Canada's most livable, inclusive and healthy regions. Ottawa is undergoing a unique phase of growth as the population approaches one million and, within a greater metropolitan region, approaching 1.4 million. A new era of public transportation is also being realized through a light rail transit network, and changes in both technology and climate are accelerating.

The "Ottawa Next: Beyond 2036" study flags the trends and disruptors that could influence our city, many of which could have critical impacts on people's health and well-being. These trends include changing demographics, with an aging population that will require housing and communities to support "aging in place." It also includes immigration, which will continue to be an important source of population growth in Ottawa and will require complete communities that make Ottawa a welcoming place that supports cultural diversity. The study also recognizes that there will be increased pressures on community cohesion from challenges such as income disparity. This will require rethinking how we build a healthy, livable city where all communities are socially connected, economically viable, and offer opportunities for people to engage in meaningful cultural activities.

SPECIFIC CHALLENGES AND OPPORTUNITIES FOR OTTAWA

What does it mean to be healthy?

Health is about more than just the absence of disease; being healthy is about complete physical, mental and social well-being.[12] Health is shaped by much more than access to the health care system.[13] Our health is shaped by the conditions in which we live, learn, grow, work, and age. These are known as the social determinants of health. Because of the many factors that affect health beyond a person's biology and the healthcare system, solutions to improving health and well-being must be found outside of the healthcare system as well. Given that so much of our health starts not in the doctor's office, but in our communities, we have enormous potential to build more opportunities for good health.

> **Explore your neighbourhood:** Discover what the Ottawa Neighbourhood Study has to say about the challenges and strengths of Ottawa neighbourhoods. For example, find out how walkable your neighbourhood is by going to: https://www.neighbourhoodstudy.ca

These social determinants of health include the physical environments in which a person lives - both the natural and the built environments.

Today's Health Challenges

Over the last decades, many societal changes have impacted health. For instance, advances in technologies have influenced lifestyles, with people moving less and sitting more. Many children have less freedom to independently play and explore outside because of parents' feelings of risk. Jobs are often less physically demanding, transportation is car-oriented, and we are using social media to make social connections.

Effects on chronic diseases and mental health, impacts from climate change, and hazards from motor vehicles are examples of ongoing pressures on health associated with the environments in which we live. Today's health challenges create a societal burden - not just in terms of our well-being and quality of life - but also in terms of economic costs. Health care is one of the biggest provincial expenditures, taking up almost half of the provincial budget (41 per cent in 2015).[14]

> How healthy is Ottawa? Ottawa Public Health has published reports on a number of health topics, including a snapshot of overall health and well-being in Ottawa, which can be found at ottawapublichealth.ca

The overview below calls attention to some of today's health issues impacted by our built environments, including local data.

Chronic Diseases:

Rising levels of chronic diseases such as diabetes, heart disease and cancer are the leading causes of death in Canada.[15] Chronic diseases usually develop slowly, last a long time, and can have big impacts on quality of life. Some chronic diseases and certain types of cancers are linked to being physically inactive, eating an unhealthy diet and being overweight or obese.[16] Obesity-related chronic diseases are some of the most common health problems we face today, with significant costs to personal and social well-being. The associated costs of health care and lost productivity in Canada are estimated to be between $4.6 and $7.1 billion annually.[17]

In Ottawa, 56 per cent of adults report being overweight or obese.[18] For Ottawa youth 12-17 years old, 22 per cent reported that they are overweight or obese, and 22 per cent met the recommended physical activity guidelines.[19] Almost half of older adults in Ottawa have high blood pressure (42 per cent), 14 per cent have heart disease, and 15 per cent have diabetes.[20] Heart disease is the leading cause of death in Ottawa.

Certain cancers are considered chronic diseases and are influenced by lifestyle choices, circumstances, and environmental exposures over a lifetime.[21] In Ontario, over 90 per cent of all cancer cases that have environmental causes result from exposure to UV radiation from sunlight, radon, and fine particles in air pollution. In Ontario, there are about 2,540 skin cancer cases and about 560 lung cancer cases per year from exposure to fine particulates from breathing outdoor air.[22] Some cancers can be prevented by reducing exposures and adopting a healthier lifestyle.[23]

Mental Health and Wellness:

Mental health is essential for overall health and well-being as it impacts people's ability to realize their full potential, cope with normal stresses of life, work productively, and contribute to their community.[24] There is a growing awareness of the social and economic impacts of mental illness, substance use and addictions. Mental illness affects one in five Canadians annually, with an estimated cost of $50 billion in 2011; this includes health care, social services and income support costs, as well as lost of productivity.[25]

Two-thirds of Ottawa residents reported a strong sense of belonging to their local community in 2015/16.[26] Those between 20 to 44 years old report the lowest levels of strong community belonging.[27] A sense of belonging is linked to positive mental and physical health, while social isolation is linked to poor health.[28,29] Our sense of belonging reflects our social relationships, networks and our level of involvement in the community.

While many residents report excellent mental health, some residents have mental health challenges. In 2016, 7,075 Ottawa residents were hospitalized for a mental illness or addictions condition, representing a 45 per cent increase since 2007. Ten per cent of adults reported having received a diagnosis of a mood disorder such as depression. On average there are 80 deaths by suicide every year in Ottawa. One in nine, grade 7 to 12, students seriously considered suicide in 2017, with 60 per cent reporting that they wanted to talk to someone but did not know where to turn for help. Older adults over 65 years report lower self-rated mental health, life satisfaction and psychological well-being.[30]

Promoting positive mental health is key to building and maintaining a healthy and resilient community. It is also important in preventing the onset or worsening of mental illness, problematic substance use and addictions, and supporting the recovery from illness. Neighbourhoods can be built to promote mental well-being. There is a need to look at the many features that create the conditions for positive mental health and community resilience, including in our neighbourhoods, that encourage social connections, community involvement, supports access to community resources, and solidify our sense of belonging to our communities.[31]

Health Hazards Related to Climate Change and Extreme Weather:

The impacts of climate change will be increasingly felt through extreme heat and cold events, forest fires and floods. This can lead to serious health concerns such as heat and cold-induced hospitalizations, stress and mental health issues, and can worsen pre-existing conditions such as asthma, cardiovascular or respiratory disease.[32,33,34] Each year in Ottawa there are approximately 86 emergency room visits directly related to exposure to extreme heat, such as heat exhaustion and heat stroke, and approximately 118 visits per year directly related to extreme cold, such as hypothermia and frostbite.[35]

A larger health burden, but one that is difficult to measure, is the worsening of pre-existing chronic conditions like respiratory or cardiovascular disease by extreme heat and cold.

The increase in hot weather, combined with an aging population, could result in more heat-related deaths in urban centres if appropriate plans are not put in place. Health Canada estimates that current heat-related mortality rates could nearly triple between 2021 and 2050, increasing by over six-fold between 2051–2080.[36] Everyone is affected by extreme weather events, but those at higher risk include seniors, people who are socially disadvantaged, those with pre-existing illnesses, infants and children, outdoor labourers, and emergency response workers.

Motor Vehicle Related Exposures, Injuries and Deaths:

Health concerns related to transportation include traffic-related air pollution, as well as injuries and deaths related to motor vehicles. In Canada, it was estimated that 7,712 deaths were due to air pollution in 2015 from various sources.[37] The health impacts are variable and change from location to location. The same pollutant, depending on where it is released, could have very different impacts on health.[38] In Ontario, air quality is generally good, but traffic is still a major contributor to air pollution. Areas within 100 m of a major road (e.g. arterial) or within 500 m of a highway may pose an increased risk of health problems such as heart disease, respiratory disease and allergies.[39,40] In Ottawa, the area of increased risk accounts for 28 per cent of the population. Each person reacts differently to air pollution, and it depends on the amount of time exposed, the health status of the individual, the genetic background, and the concentration of pollutant. Children, seniors, and people with pre-existing health conditions are most at risk.[41]

Safety and well-being is impacted through injuries and deaths from vehicular traffic and street characteristics. In Ottawa, in 2017, there were five pedestrian deaths and 335 injuries; 226 cyclist injuries; and 27 motor vehicle deaths and 3,061 injuries.[42] People walking, and biking are disproportionately injured or killed compared to people driving.[43]

The dangers of walking are not shared equally. Elderly walkers are much more likely to be involved in a fatal collision than others. The third leading cause of injury-related deaths among older Ottawa adults was pedestrian injuries.[44] Although seniors make up only 13 per cent of the population in Ontario, research found that they represented 35 per cent of pedestrian fatalities.[45]

Building Communities for Everyone:

Some people experience more barriers from the built environment than others, leading to challenges in making healthy decisions. A healthy built environment can be designed to be equitable and inclusive, with everyone having the opportunity to make healthy choices. Health equity means that all people can reach their full health potential and should not be disadvantaged because of social, economic or environmental conditions. There are health inequities when people have differences in health that are unfair and that could have been avoided had their environments and circumstances not disadvantaged them.[46]

Where you live, and your life circumstances, influences your health. Many health challenges are not found equally across different groups of people. In Ottawa, people in low income groups or disadvantaged neighbourhoods are more likely to experience poor health on a range of issues. People with a low income are more than twice as likely to report fair or poor general health compared to higher income groups. They are over three times as likely to report fair to poor mental health and are twice as likely to have two or more chronic health conditions, compared to high income groups. People in less advantaged neighbourhoods have more hospitalizations than those in the most advantaged

neighbourhoods and are more likely to be food insecure. They also have more premature deaths and a higher prevalence of diabetes than people in the most advantaged neighbourhoods.[47]

Does our built environment widen the differences in health between groups? Some populations, such as children, older adults, Indigenous populations, people who are underhoused, newcomers to Canada, and persons with disabilities experience bigger barriers that can result in poorer health outcomes from the built environment. Changes to the built environments in disadvantaged neighbourhoods can help reduce health inequities. To achieve this, creating opportunities for people with higher health risks to participate in planning processes, and considering their unique needs, can help promote health.[48]

As noted in the "Ottawa Next; Beyond 2036" study, social inequalities are increasing, with a growing gap between the rich and poor. The cost of living could become a more prominent issue in the Ottawa of the future, which makes it even more important to plan proactively today.

More information about health equity and the social determinants of health in Ottawa can be found on ottawapublichealth.ca.

Indigenous Populations

Canada's actions around Reconciliation with Indigenous peoples can affect how we plan the built environment of the future. Ottawa is on the unceded territory of the Algonquin Anishinaabe nation. Meaningful engagement with Indigenous communities and understanding the historical and contemporary context of Indigenous Peoples, is considered an important first step on the path towards reconciliation. First Nations, Inuit and Metis populations are diverse and growing in Ottawa. In 2016, 25,035 Ottawa residents self-identified as Aboriginal. Local Indigenous service agencies estimate this number to be closer to 40,000.[49]

Due to past injustices, Indigenous people lost land. Meaningful engagement on how land is used, developed and respected is an important part of reconciliation. This is also a foundation for developing healthier relationships.[50] For Indigenous peoples whose connection to the land is inextricably tied to their culture, planning built environments offers an opportunity to uphold the health and sustainability of all things.[51] Place is an important part of a holistic view of health and well-being.[52] It is important to ensure that these context and views from Indigenous populations are sought and considered in planning healthy built environments early in the process.

MOVING FORWARD

The five-built environment features below outline the relationships with health, and how health and well-being can be promoted, through exploring the challenges and opportunities for each.

1. Transportation Networks

The transportation system forms the veins of the City. It is fundamental to daily life, allowing people to get around to where they need to go, and connect with each other. The physical design of the transportation network impacts how people decide to travel - whether by automobile, transit, bicycle, other forms of wheeling, or on foot. This includes the design and layout of roads and streets, sidewalks and pathways, and the accessibility of public transit. People make decisions about how to travel based on many factors, such as route safety and maintenance, weather, travel time, travel distance, and availability of vehicle and bicycle parking. There are varying costs to the person and to the municipality depending on the type of transportation.

The "Ottawa Next; Beyond 2036" study identified the growing demand for housing and employment close to rapid transportation to help reduce transportation costs and enable people to benefit from easy access to many services. Trends suggest that people want more mobility options, beyond personal vehicle use. Easy access to transit and walkable, local services will reduce the need for car ownership, which has big personal economic benefits. For the Ottawa of the future, this will mean making other forms of transportation faster and more convenient for users.

How Health is Impacted

Transportation networks and how people chose to move through their communities affects health in important ways. It affects levels of exposure to harmful emissions, levels of physical activity, and access to services, amenities, employment, education, and social networks. Transportation mode choices can impact levels of cancer, cardiovascular disease, and diabetes at the population level, as well as the frequency and severity of vehicle crashes.[53,54,55]

As the dependency on cars as the main source of transportation has grown, daily physical activity has decreased, and chronic diseases, injuries, and exposure to car emissions increased. This has created a burden on our health. Places that are designed for travel mostly by car are associated with higher levels of obesity and chronic diseases such as diabetes.[56]

Active Transportation

Being more physically active supports healthy aging and healthy development in children and youth, and can help people living with diseases and conditions such as cancer, diabetes and mood disorders, improve their health.[57] Active transportation includes any kind of human-powered transportation to get to places, such as walking, biking, and transit (because of the walk or bike ride on either end of the trip).[58] Active transportation has a lot of potential to improve health across the population, as it is physical activity with a practical purpose. It can be easier to get the recommended minutes of daily physical activity to stay healthy through routine, built-in activities such as travel, rather than through add-on recreational activities.

Physical inactivity, as well as overweight and obesity, have been linked to the places we live and the ability to use active transportation. Some research has shown that each kilometre walked per day could decrease the risk of obesity by almost five per cent.[59] Research with Ottawa Public Health explored how much active transportation could improve the health of the population. The study projected that implementing the walking, cycling and transit targets in Ottawa's 2013 Transportation Master Plan could

prevent as many as 1,620 cases of diabetes over 10 years. This would be comparable to 17,300 inactive people taking up an exercise intervention to increase physical activity.[60]

Emissions

Emissions from driving remains a significant ongoing source of local air pollution. Increasing active transportation is not only an important way to reduce chronic diseases, but also has positive benefits through reducing emissions from vehicles and for promoting a sustainable environment, all of which have positive health impacts. Using public transit reduces pollution emissions per passenger-kilometer, and transit-oriented development (i.e. development focused around transit stations) helps reduce emissions through people driving less.[61]

Injuries

Road injuries are largely preventable.[62] Community design that promotes high traffic volume and speed, and has less pedestrian and cyclist infrastructure, can lead to more injuries and fatalities. Speed is a big factor in the likelihood of life-threatening injuries or death in a motor-vehicle collision. Pedestrians have about an 80 per cent chance of dying when struck by a vehicle driving 50 km/h or higher. This risk decreases to about 10 per cent at a speed of 30 km/hr. At speeds higher than 30 km/hr, drivers have more of a chance of making mistakes, with the potential for fatal consequences.[63] Roads signed and designed with speeds of 30 km/hr or lower promote safety and reduce injuries.

Supporting Active Transportation

Planning principles that prioritize active transportation contribute to higher levels of physical activity and positive health outcomes. This includes prioritizing safety, providing affordable and accessible public transit, promoting walkable and accessible pedestrian infrastructure, and promoting bicycle safety and connectivity. [64]

Active transportation relies on walkable communities that make walking, cycling and transit use easy, safe, and convenient. Walking, cycling, and public transit infrastructure support health when designed in a way that is high quality, connected, and encourages people to use modes of travel other than the car. This includes increased street connectivity to help reduce travel times, traffic calmed roads, as well as a street design that break up a grid network, encouraging cars to slow down and make car travel less direct. It also includes connecting pathways for active transportation. Using active transportation can involve various methods, individually or in combination, from walking and/or biking to using transit. Providing facilities to help make those connections safely and easily can help make active transportation a more viable option. This includes providing safe cycling infrastructure to transit stations, with bike racks and shelters at stations.[65]

Attention to neighbourhood land use planning is important since distances between uses, land characteristics, street and sidewalk width and design, and building height, set-back, and design influence desirability and safety of walking and cycling.[66,67]

A healthy transportation network supports active transportation and decreases dependence on driving. In addition, designing a safe transportation network requires recognizing that "the vulnerability of the human body should be a limiting design parameter for the traffic system" for which road design and managing speed is key.[68]

Building Communities for Everyone

The World Health Organization states that "equal protection for all road users should be a guiding rule, to avoid an unfair burden of injury and death for vulnerable road users", especially given that people walking, and biking bear a disproportionate share of road injury and risk.[69] Some groups experience

more barriers through the transportation system. For instance, the decrease of children who walk and bike to school is in part due to the barriers to getting to school safely and conveniently.[70] Older adults are more susceptible to road injuries.[71] Issues such as sidewalk design, traffic, rest areas, and aesthetics all affect the safety and comfort of older adults using active transportation.[72] As such, supportive active transportation infrastructure is safe and accessible for all ages and abilities.[73]

Driving is not inexpensive; the cost of car ownership averages $9500 per year in Canada.[74] People with lower incomes may have to spend a larger proportion of their budget on cars in communities that are primarily designed for the automobile. They may also be more likely to rely on public and active transportation to access essential services including employment, grocery stores and schools.[75,76] At the same time, some research shows that people with low income and minority populations may be less likely to live near or travel along roads that have high quality, safe and accessible facilities for walking and cycling.[77]

Good street design can help promote mental and social health, with streets providing important places to socialize.[78] Mental health is also affected through long commute times, which can be a source of stress, or through active transportation, which can have positive mental health impacts.[79] Streets can function both as places to be and linger, and places to move through. Designing streets that encourage people to connect with others has physical and mental health benefits, and increases the likelihood of active transportation being chosen.[80]

Exposure to traffic-related air pollution can worsen health for groups that are already at higher risk of poorer health outcomes. It can lead to, or make more severe, asthma in children. It is also associated with cardiovascular mortality and disease, respiratory symptoms in adults, decreased lung function for all ages, onset of asthma in adults and lung cancer. Children, seniors, and people with pre-existing health conditions are more at risk. Groups more exposed to higher levels of traffic-related air pollution are often people with lower incomes and education as they are more likely to live or attend school closer to major roads and highways. Overall, the general air quality in Ontario is good, but air quality is still an issue to be aware of, particularly because of local sources of air pollution such as nearby traffic,[81] wood burning, or industry, which can adversely impact more immediate areas. However, the benefits of being physically active outdoors outweigh the risks exposure to of air pollution, and in fact, many harmful pollutants can be found inside vehicles, at higher levels than outside vehicles.[82]

Local Data

There are a number of behaviours and health outcomes in Ottawa that may be influenced by transportation systems and how they relate to the built environment. For instance,

- One quarter of grade 7 to 12 students meet the recommended daily requirements of Physical Activity Guidelines. Only 18 per cent of grade 7 to 12 students walk or cycle to school.[83]
- 23 per cent of seniors use public transit.[84]
- 21 per cent of seniors fell in the past year; many were injured enough to make it hard to do things they normally do (54 per cent).[85]
- In 2011, Ottawa commuters spent an average of 26 minutes per day on their morning commute.[86]
- In 2011, during morning peak travel, 45 per cent of people used sustainable modes: 9.5 per cent for walking, 2.7 per cent for cycling, 22.4 per cent for transit, and 10 per cent as a car passenger.[87]
- About 3.1 million daily trips were made in the capital region during a typical workday in fall 2011 by those five years of age and over.[88] Of the total, about 21 per cent of trips were less than two

kilometres and about 44 per cent of trips were less than five kilometres; trips that may be of a practical distance for walking and cycling, with appropriate conditions.[89]

2. Housing

Home is the place where people spend most of their time. It is where we connect with friends and family, eat meals, rest and sleep. Housing is a basic human right - but people experience different standards of housing.[90] The quality, cost, design, and location of a home, as well as the availability of local shops, services, amenities, and the surrounding transportation system, all affect people's satisfaction and enjoyment of their homes.

The "Ottawa Next; Beyond 2036" study recognizes that we are facing challenging housing demands, with access to affordable housing becoming a growing issue. Housing costs are increasing, with people looking for more affordable housing arrangements or moving to more affordable suburbs. This can trigger higher transportation costs to the individual, as well as society. With the population aging, there will need to be more housing to help people age in place, in their community. A mix of housing options to meet needs across life stages are required throughout Ottawa's communities, and this includes providing affordable quality housing.

How Health is Impacted

Housing affects physical, mental and social health and well-being,[91] and it is a key determinant of health. Healthy housing is affordable, safe and accessible. Poor housing quality is associated with chronic illnesses, injuries, poor nutrition, and mental illnesses. Healthy, secure housing is very important for addressing many of these health challenges.[92] Location of housing is also connected to other social determinants of health, such as social support and sense of community.[93] Good, affordable housing supports health by increasing the amount of disposable income households have, which increases the accessibility of healthy foods and supports healthy lifestyles and healthy relationships.[94]

Building Communities for Everyone

Housing needs are strongly connected with poverty and can worsen health inequities. Some groups are more affected by inadequate housing, such as recent immigrants, lone-parent households and visible minority households.[95] Children living in unsuitable, inadequate or unaffordable housing conditions are especially vulnerable to poor health as it can limit their ability to reach their full potential.[96] People living with low income who have access to affordable housing experience better health and are more likely to have money left over for other life necessities.[97]

Those who are in core housing need have less money available for other life necessities such as food, transportation, and child care.[98] Spending too much on housing, or living in inadequate housing can also have poor health effects through increased stress, fewer educational opportunities, exposure to contaminants and poor indoor and outdoor air quality, vulnerability to extreme heat (no air conditioning), and trouble paying for health services.[99] Planning and building design to reduce exposure to environmental hazards can reduce harms.[100]

The changing of neighbourhoods through gentrification is also an important aspect of the health equity and housing link. Gentrification is the changing of a deteriorating neighbourhood through renovations and improvements to such things as housing, repaving, adding trees and benches, or new services and amenities that result in making the area more desirable to live in. It can lead to an increase in rent costs, sparking demographic and economic shifts. It can result in displacement of residents because of

increased property values, as well as stress from changed social networks of residents and lost home security.[101]

Housing security is a key dimension of healthy housing. Housing affordability issues can lead to homelessness. The emergency shelter system is over-capacity in Ottawa.[102] Many people who are homeless live with mental illness, which is often combined with substance misuse. Stable housing is a key step in improving health and well-being.[103]

Supportive housing for people such as older adults or those who need mental health supports in their homes, is another important housing need in healthy and complete communities. This includes ensuring it is possible to repurpose existing housing such as single-family homes.

"Affordable housing is a cornerstone of inclusive communities."[104] Prioritizing affordable housing options through diverse housing forms and tenure types helps ensure that we are building communities for everyone. This can help reduce health inequities and ensure there are diverse housing options that could help people stay in communities longer. Mixed income housing developments and promoting age-friendly communities with housing for multiple stages of life are some of the potential approaches.[105] In Ontario, this could be supported by new inclusionary zoning tools and targets, which allow municipalities to require new developments to have a certain percentage of affordable housing.[106]

Local Data

- About 13 per cent of people in Ottawa live on low incomes.[107, 108]
- Over one in 10 Ottawa households have homes that require major repairs, do not have enough bedrooms, or would be unable to pay 30 per cent or less of their before-tax income on alternative local housing, meaning they are in core housing need.[109]
- 29 per cent of rental households in Ottawa are in core housing need, compared to only five per cent of owner households.[110]
- Average rent in Ottawa is $1,113. There is a significant shortfall between the average market rent in Ottawa and people's income. For instance, a $14/hr minimum wage job at 35 hours per week with a monthly income of $1,960, affordable rent at 30 per cent of income would be $588 per month. For someone on Ontario Works with a maximum income of $789, affordable rent at 30 per cent of income would be $212. For an older adult with Canada pension plan/old age security income, a maximum monthly income of $1,699, affordable rent at 30 per cent of income would be $509.[111]
- 20 per cent of Ottawa rental households spend over 50 per cent of their income on rent and utilities.[112]
- Of all female lone-parent rental households, 46 per cent are in core housing need – the highest rate in Ottawa. The next highest rates are for rental immigrant households, households with one 65+ renter, and renters with at least one child under 18 years of age.[113]
- 13 per cent of Ottawa households maintained by those 65 and older were in core housing need.[114]
- Ottawa residents who rent their homes reported lower self-rated mental health and life satisfaction.[115]
- Chronic homelessness (people homeless for six months or more in the past year) increased in Ottawa by 21 per cent between 2014-2017. During that time, overall shelter use in Ottawa increased by 16 per cent.[116]

3. Food Systems

The ability to afford and access healthy food is a necessity for healthy living; however, food choices are influenced by many different factors, including our local food system. The local food system is in turn influenced by the built environment. Land-use planning and design that encourages both production and distribution of healthy local foods can ensure that everyone has equal access to affordable, culturally appropriate and healthy foods.

The "Ottawa Next; Beyond 2036" study found that about 40 per cent of our rural lands are occupied by farmland. Climate change may impact the future of agriculture by decreasing water availability and introducing new challenges such as pests, invasive species, weeds and disease. The study recommends protection of local agricultural land and food sources, and promotion of local and coordinated foods systems, as well as access to affordable, culturally appropriate, healthy food to build a resilient Ottawa for the future.

How Health is Impacted

Access to healthy food is important - when households have limited access to healthy food, they become at higher risk for chronic diseases such as diabetes, heart disease, hypertension, and certain types of cancers.[117, 118] Research shows that diets rich in vegetables and fruits, where people consume five or more servings per day, are associated with healthier weights and lower risk of all-cause mortality;[119] however, only one third of Ottawa residents consume the recommended minimum serving of five vegetables and fruits per day,[120] 48 per cent of calories come from ultra-processed foods,[121] and many do not meet the recommended daily intakes of vitamins and minerals.[122] This shows that there is a lack of nutritious foods in the diet of the average Canadian. Our food choices are affected by many factors, and the way that the built environment impacts our food decisions is complex. Although the research is still emerging, there may be a link between access to healthy food in our neighbourhoods and our food decisions.[123] "Food deserts" (areas where it is difficult to find affordable healthy food) and "food swamps" (areas where unhealthy foods are more available than healthy foods) have entered our vocabulary. Some evidence suggests that better access to healthy foods results in healthier diets and better overall health.[124] Enabling local temporary or permanent farmers' markets and providing space and support for residents to grow food in urban and suburban settings can support healthy eating.[125] Additionally, incorporating community gardens within greenspace into landscape design and park planning can play a supportive role.[126]

A healthy local food system can also be promoted by protecting the local agricultural industry since it can play a major and important role in meeting the dietary needs of the community. When communities have access to a sustainable supply of healthy locally grown and produced foods, they are less vulnerable to the external factors that affect the food supply such as politics, trade and the cost of oil.[127]

Building Communities for Everyone

Food is a health equity issue when people have physical or financial difficulty accessing healthy food. Food insecurity occurs when households cannot afford the variety or quantity of food they need for a balanced diet and may need to go hungry by eating less, skipping meals or not eating for a whole day. Food insecurity is a serious and complex public health issue and does not affect everyone equally. Children are most severely affected by food insecurity and are more likely to develop depression, asthma and to have issues with hyperactivity and inattention.[128, 129, 130] Adults in food insecure households are more likely to report poorer mental and physical health, higher levels of anxiety and stress,[131] suffer from oral health problems[132] as well as chronic conditions such as diabetes.[133] Food

insecurity also makes managing chronic disease through diet more challenging, leading to higher healthcare costs for both the individual and the healthcare system.[134]

Income is the strongest predictor of food insecurity. Individuals and families living on low and fixed incomes often do not have enough money to afford nutritious food after paying for rent and other basic necessities. Reducing the cost of rent through affordable housing can leave those living on low and fixed incomes with more money at the end of the month, possibly increasing their ability to afford more nutritious food. On top of financial constraints for buying healthy food, low income households, recent immigrants and older adults are more likely to experience transportation barriers (i.e. no car, limited public transit) that can make it difficult to travel to stores for healthy food when compared to high income households.[135] Enhancing connectivity of active transportation networks to increase accessibility to healthy food retails can promote healthy eating.[136] High enough population densities and a high mix of land uses can help ensure local grocery stores are viable and easily accessible. A neighborhood grocery store needs a population of over 5,000 people to be economically viable.[137]

Research also shows that when people have high access to unhealthy foods, and limited access to healthy foods in their community (i.e. food swamps), they may be at a greater risk for developing obesity and diabetes, which can worsen the health inequities in the community.[138]

Local Data

- One in 15 Ottawa households (6.5 per cent) report being moderately or severely food insecure.[139] Food insecurity disproportionately affects low-income households and new immigrants.

- Only 3.5 per cent of Ottawa households above the low-income cut-off report moderate or severe food insecurity compared to 20.2 per cent of households below the low-income cut off and 18.8 per cent of households with recent immigrants.[140]

- Over 90 per cent of Ottawa residents consider distance to grocery stores important when choosing where to live.[141]

- 21 per cent of neighbourhoods in Ottawa are classified as food deserts, where grocery stores and other food retailers are not available or easily accessible.[142]

- Almost half (48 per cent) of survey respondents consider the availability of fresh produce at corner stores poor or very poor[143], which highlights the limited number of healthy food choices in small food retail neighbourhood locations.

- Agricultural land protection is an important part of ensuring resilient local food systems. Approximately 85,800 hectares of arable land in the National Capital Region were lost to settlements and roads between 1971 and 2011.[144]

- There has been a 17.5 per cent decline in Ottawa farm numbers since 2006, with 1,045 farms in 2016.[145]

4. Natural Environments and Greenspaces

Ottawa features beautiful natural environments and greenspaces. They include forests, wetlands, rivers, lakes and tributaries as well as playing fields, playgrounds and parks. Many are accessible to the public and provide spaces for recreation and leisure needs.[146, 147] They can provide many health benefits but are also important habitats for wildlife and fish.

The "Ottawa Next; Beyond 2036" study identifies that in the future there will be greater pressure placed on these areas due to development, and due to rising temperatures and increased storm events resulting from climate change. This will create pressure on public health to support the community in protecting their health and ensuring they can adapt to the negative impacts of loss of greenspace and climate change.

How Health is Impacted

Natural environments and greenspaces are an important feature in promoting health. There are many ways that greenspaces with trees and urban forests provide health benefits.

Stress Reduction and Mental Health Promotion

There is growing evidence that exposure to greenspace reduces stress, anger, fatigue, sadness, anxiety and increases individual energy levels independent of other benefits such as physical activity.[148] Living near urban greenspace can lead to more time spent outside and better self-reported mental and physical health. For example, children who are active in nature perform better on tests, and dementia patients exposed to nature were calmer.[149]

Increased Physical Activity

Living near urban greenspace promotes physical activity.[150] Physical activity in natural environments is observed to create greater positive feelings than exercising indoors.[151] More greenness in neighbourhoods may help children maintain a healthy weight. Neighbourhood greenness may play an important role in promoting recreational physical activity.[152] Children with a park playground located within 1 kilometre of their home were five times more likely to have healthy weights.[153] Low income neighbourhoods with lots of greenspace had fewer deaths associated with circulatory diseases, and children had healthier weights.[154] Quality is also important as greenspace that is perceived as unsafe and poorly maintained does not provide health benefits.[155] Trees support active transportation; planted along a road, they can help make the road feel less wide and have a traffic calming effect. This in turn can make active transportation feel safer.[156]

Heat and Humidity Regulation

Ongoing exposure to high temperatures and humidity for people who are not acclimatized can create health risks where sources for relief (e.g., air conditioning, cool breezes, trees) are not available. Built-up areas are hotter than nearby rural areas because human-made surfaces absorb and store heat (urban heat islands); this effect will increase as the built environment grows and intensifies. Increasing urban forests and increasing the amount of vegetation and number of trees planted reduces the impact of urban heat islands because a healthy urban tree canopy protects the urban landscape from rising temperatures. Trees also cool the air by releasing water vapour during their breathing process. Ultimately, trees increase the ability for people to withstand the health effects of extreme heat. Urban trees have a better ability to provide relief from heat compared to artificial shade structures or open greenspaces.[157] A tree can be a natural air conditioner. The evaporation from a single tree can produce the cooling effect of 10 room size air conditioners operating 20 hours a day.[158]

Air Pollution Filtration

People create air pollution through driving, using electricity generated by non-renewable energy, and indirectly through the manufacturing of goods they buy. Breathing air pollution can lead to a wide range

of health impacts that include tiredness, headaches, worsening of asthma symptoms, allergies, chronic pulmonary disease, certain cancers, heart attack, stroke and other cardiovascular diseases.[159, 160]

Outdoor air quality is expected to decline with climate change due to higher levels of ground-level ozone and airborne dust (including smoke from wildfires), as well as increased production of pollens and spores by plants, and the burning of fossil fuels.[161]

Trees in natural environments and greenspaces help capture and/or filter air pollution through their leaves. Trees remove ozone, fine particulate matter, nitrogen dioxide, sulphur dioxide and carbon monoxide. Urban trees can also remove micro pollutants such as cadmium, chromium, nickel and lead from the air.[162] Planting more trees in urban areas can lead to greater absorption of pollution and help improve the air quality.[163] Research showed that a 10 square kilometre area with a 25 per cent tree cover has the potential to remove 90.4 tonnes of particulate matter, which could prevent two deaths and two hospitalizations per year.[164] Incorporating greater distances between major arteries and residential and institutional construction, especially buildings such as daycares, schools, and long-term facilities will protect health by reducing exposures to air pollution.[165]

Protection from Ultraviolet Radiation, Wind, Noise and Storm Water Runoff

Prolonged exposure to the sun can lead to skin cancers.[166, 167] Reducing overall exposure to sunlight is the most important way to prevent skin cancer and other health effects of UV radiation. Communities that are designed with shade trees provide shelter from the sun and reduce associated health risks.[168]

Trees also help buffer the effects of wind. Increased wind speeds at street level are created in cities when wind becomes redirected, funneled, or accelerated as air hits a building and does not have anywhere else to go. This can increase human comfort in the summer-months by helping evaporate sweat but in the winter-months can increase heat loss by producing a wind-chill. Planting trees strategically can act as a wind buffer and reduce the air speed at street level.

Trees are also useful tools in protecting against noise. Urban environments can foster high levels of background noise that is known to have health impacts (e.g. from traffic). Planting trees close to the noise source reduces noise levels. Trees scatter the sound and the unpaved ground absorbs it. Noise reductions between five to eight decibels have been achieved with tree and vegetation planting along roadsides.[169] Wide belts (30 metres) of tall dense trees combined with soft ground surfaces can reduce noise by 50 per cent or more.[170]

Trees and urban forests play an important role in dealing with urban surface water management and runoff. Cities have more paved surfaces and less vegetation and soil to absorb the water. This can lead to greater water runoff and can create flooding conditions that could lead to health concerns and hazards (e.g. structural damage and poor indoor air quality). Urban forests and trees intercept and retain or slow the flow of precipitation reaching the ground. Planting trees is an important part of a comprehensive stormwater management strategy because they can reduce the rate and volume of storm water runoff, decrease flood damage, reduce stormwater treatment costs, and enhance water quality.[171]

Exposure Risks

Despite the well documented benefits there are some features of the natural environment that warrant precautions. Those include insects such as mosquitoes that can carry West Nile virus, ticks that can carry the bacterium that causes Lyme disease and exposure to stinging insects such as bees and wasps. There

are other risks associated with noxious plants such as poison ivy, wild parsnip or giant hogweed that can result in skin rashes.[172] Ragweed and other plants and trees that produce pollen are important causes of seasonal allergies.[173] The built environment and its linkages to the natural environment and greenspaces can be shaped in a way to minimize these risks (e.g., boardwalks, selection of path location, and selective plant control).

Building Communities for Everyone

Exposure to nature helps create safe and comfortable conditions for vibrant, socially connected communities.[174] Equitable access to greenspaces helps ensure everyone can benefit. However, access to urban trees and forests is not always equal among different income groups.[175, 176, 177]

Low-income neighbourhoods can have lower air quality than higher-income neighbourhoods, which can lead to health vulnerabilities for lower-income residents.[178, 179] The health benefits of improvements to quality of greenspace can be greater for lower income than higher income residents, possibly due to the relationships between income and baseline health, funds for recreation, and time available for recreation.[180] Lower income residents are more vulnerable to extreme heat because of poor housing conditions, such as lack of air conditioning and proper ventilation; this is worsened by less greenspace to offset extreme temperatures. With climate change, people who are vulnerable will be more seriously impacted.[181]

Trees have the potential to help address social inequities. A more even distribution of trees across communities can equalize the benefits from greenspace and trees. Low-income areas may benefit greater from urban greenspaces than more affluent neighbourhoods as it provides spaces and opportunities to connect that they otherwise would not have.[182] In more vulnerable neighbourhoods, safety of perceived community greenspaces is an important factor to its use.[183] For older adults vulnerable to social isolation, greenspace has been shown to provide an environment for mental restoration and social connections.[184] Living near greenspace is related to better self-reported well-being, and this is more pronounced in lower income neighbourhoods.[185] Providing linkages to natural environments and greenspaces that are safe and easy to get to, and are designed for all ages including older adults, ranges in physical abilities, and cultural groups, will maximize opportunities for everyone to access these spaces and promote health.[186] Natural environments and greenspaces are under-utilized public health resources that offer potential to address the growing burden to mental health and disease in Ottawa.[187]

Local Data

Ottawa is feeling the effects of climate change. There have been several extreme weather events in recent years, and an increase in the type and number of vector borne diseases (West Nile virus, Lyme disease) and invasive species that have important health impacts.

- The Air Quality Health Index shows that Ottawa's ambient air quality is good, though specific locations may be adversely impacted by local air pollution sources such as motor vehicle traffic or wood combustion smoke.
- Since 2008, the Emerald Ash borer has already killed or forced the removal of tens of thousands of ash trees. 25 per cent of the City's tree population was composed of ash species.[188]
- Some Ottawa neighbourhoods have more greenspace than others.[189]
- Two tornadoes in Ottawa in 2018 severely damaged many homes and downed 85 substations causing over 180,000 homes across the City to lose power[190] including a key component of Ottawa's electrical system. The impacts included compromised cold storage of vaccines in

medical clinics across the city[191], and spoiled food in fridges, including those of many low-income households who had recently stocked them after having just received their child tax benefit, and thousands of kilograms of perishable food at food banks.[192]

- There were 10 days of extreme heat in Ottawa in 2018. One heat event lasted six days with humidex values that were greater than 40. It coincided with Canada Day (reached 47 humidex), which normally draws large crowds, resulting in only approximately 20,000 people attending Parliament Hill. That day there were approximately 16 emergency room visits and 150 calls to paramedics about health impacts from extreme heat.[193]
- The 2017 Ottawa River Flood impacted approximately 300 properties.[194]
- There were 20 cases of West Nile virus and 186 cases of Lyme disease reported amongst Ottawa residents in 2017.[195]

5. Neighbourhood Design:

The design of neighbourhoods includes how land uses and transportation networks are arranged in relation to each other. Neighbourhood design also impacts the look and feel of a community, and influences lifestyles and behaviours, such as whether people choose to travel on foot, by bike, or by car. It involves the design of the public realm, which is for everyone, and can help create socially inclusive communities. Neighbourhood design affects how walkable communities are - people's transportation choices are influenced not only based on the transportation system, but also by the surrounding urban form. Neighbourhood design is often reflective of a community's time of construction and the main transportation types available at that time.

The "Ottawa Next; Beyond 2036" study identified that planning for future growth needs to include the building of spaces designed to foster social cohesion, given ongoing changes in demographics. This can be supported by planning for vibrant public spaces usable by all ages, cultures and communities, as well as providing access to schools, libraries and other social services, especially as densities increase. The study recommends transforming suburbs into more complete communities.

How Health is Impacted

Neighbourhood design promotes health when communities are complete, compact, and connected. This makes them more walkable and less car dependent.[196, 197] Complete communities have a diverse mix of land uses which include a mix of housing types, that are close and connected to local retail, schools, amenities, employment, parks and open spaces. Connections include safe and compact street grids, and networks to pathways that help make active transportation routes more direct and take less time.[198] Healthy neighbourhood design is compact through densities that are high enough to support and make viable, local shops and services. This brings places closer together which makes them more walkable. Community design can also be more compact through efficient planning where new developments are built within or beside exiting communities. It takes more than just density to make a neighbourhood compact. Healthy neighbourhood design is also built to a human scale, which means that the environment is designed to feel comfortable and proportional from the perspective of a person walking, versus from the perspective of someone driving through. Healthy neighbourhoods connect places through a street layout that makes it easy, pleasant and safe to get around using active transportation.

Walkable communities that meet the needs for daily living, through being complete, compact and connected, are associated with a wide range of health benefits. One of the key factors that determines

people's level of physical activity through active transportation is their neighbourhood and its walkability.[199] Walkable neighbourhoods are associated with better health through physical activity, social engagement, mental health, perceptions of crime, and reduced road traffic collisions.[200] Designing "twenty-minute neighbourhoods" is a strategy for building walkable communities to make it easy and convenient to access local daily needs within the area on foot within twenty minutes.[201]

In comparison, less walkable communities are associated with less physical activity, more obesity and chronic diseases such as diabetes, less community engagement, and poorer mental health.[202, 203] Car-oriented environments associated with long commutes and loss of leisure time affect stress levels and leave less time for civic involvement.[204] Designing walkable communities that encourage active transportation help reduce car reliance and supports sustainable environments.

Social Connections

Social supports and networks help create a sense of belonging and are good for health. As social beings, people need places to connect in person. Neighbourhood design can influence how people are connected and part of the community.[205] People with a strong sense of community belonging are more likely to have better physical and mental health.[206] Neighbourhoods can be designed to provide places for socializing, both formally and informally. Streets that are pedestrian and cycling-friendly can be great places to connect with neighbours, as can vibrant public places such as parks, community facilities, schools, libraries, cafes and grocery stores. Designing streets as spaces to promote social connections support place-making and result in health benefits.[207] Community design that includes greenspace and trees can help encourage connecting with others by making spaces more attractive, cooler, and more beautiful. [208]

Walking and biking helps to bring "eyes on the street" through people interacting, and this contributes to feelings of community safety.[209] The degree to which people feel safe and are engaged in their community influences social cohesion, which in turn, is associated with health and well-being. Social relationships and connections with friends, family, neighbours, and volunteer organizations have a direct association with health. Decreased social connections have been linked to a higher risk for health conditions such as cardiovascular disease, atherosclerosis, high blood pressure, cancer, impaired immune function, reduced mobility, depression and slower recovery times.[210, 211, 212]

Building Communities for Everyone

Communities that proactively plan for a range of ages and provide for the needs of those that are more vulnerable help to ensure that communities are for everyone and contribute to the overall health of the population. Age-friendly planning includes designing communities for older adults and children, to ensure needs can be met across the lifespan. Caregivers are increasingly reluctant to let children independently play, explore and travel, even though this is an important part of healthy child development.[213] Children are more physically active when they can roam and take risks.[214] A child-friendly community is about more than planning for playgrounds; it recognizes the role the built environment plays in shaping children's development and opportunities. It includes building environments that support outdoor play and exploration, independent travel, connections with others, and exposure to nature.[215]

The expected aging of the population and greater cultural diversity through immigration can result in higher burdens of poor health, but these health inequities can be reduced through the built environment. Groups living with lower incomes often live in neighbourhoods that are less walkable, which can worsen already existing health problems and create more health inequities.[216] Communities

that are car dependent can make it challenging for older adults to stay in their communities as they age, to access the services they need, to use active transportation, and to engage and connect with others.[217] Planning communities to ensure people can age in place, with a built environment that supports older adults, is an important part of creating vibrant, healthy communities built for everyone. Age-friendly communities ensure that the housing types, built form, and transportation networks support adults as they age. Older adults tend to spend more time in their communities. More walkable, complete, compact and connected communities foster more independence, physical activity and social connections for people as they age.[218]

Ultimately, when we plan communities to be welcoming and inclusive for children and older adults, we have created communities that are more equitable, vibrant and healthier for everyone.[219]

Local Data

- Less advantaged neighbourhoods have more than twice the rates of emergency room visits for mental health and addictions compared to most advantaged neighbourhoods.[220]
- One in ten (11 per cent) Ottawa residents agreed that the crime rate in their neighbourhood made it unsafe to go on walks at night.[221]
- Five of the Stage 1 LRT stations - Bayview, Lyon, Parliament, Rideau, and St. Laurent - have a very high walk score, meaning they are very walkable through having local services and amenities.[222]
- Nine in ten Ottawa adults consider it important for a neighbourhood to have public and open spaces, such as playgrounds, parks, plazas, patios, street corners with places to sit, and other areas that create a place for people to gather.[223]
- Seventy-nine percent of Ottawa adults find aesthetics to be an important characteristic when thinking about their ideal neighbourhood.[224]
- Most Ottawa adults consider connected sidewalks or pathways important features in an ideal neighbourhood.[225]
- Over two out of three Ottawa adults felt that having restaurants, retail stores, schools, and their workplace within walking distance of their homes was very important when deciding where to live.[226]
- Research in Ontario, including Ottawa, showed that more walkable neighbourhoods had lower overweight or obesity and less diabetes.[227]

Conclusion - the Building Blocks for a Healthy Ottawa by Design

Positive changes to our physical world can lead to improved health. The Official Plan Review gives us an opportunity to think about the intended and unintended health consequences of how we grow as a city and region. By considering the health impacts of Official Plan policies, we can leverage opportunities to plan for transportation networks, housing, food system, natural environments, and neighbourhood design that foster health and well-being. Healthier people make for a healthier and more resilient Ottawa. Let's start a conversation!

> Ottawa Public Health has two videos about the links between health and the built environment. You can check them out here.

Relationships with Other Discussion Papers

Promoting Health Across All Sections of the Official Plan

Health is shaped by the circumstances and the environments in which people live.[228] All of the Official Plan discussion topics have potential impacts on health because they all affect the conditions in which we live, learn, grow, work and age - the social determinants of health. As such, there may be potential health benefits and costs to policies that impact these topics. Ongoing exploration of these health consequences can help enrich conversations about trade-offs and impacts on health and well-being, now and in the future.

Ottawa-Gatineau Region:

A healthy, vibrant Ottawa-Gatineau region helps support a healthy, thriving population. For example, people's sense of community, belonging, and social connectedness can be impacted by the places to which they travel in the Ottawa-Gatineau region, whether for work, errands, recreation, or learning, all of which can impact health. The ability to use transit and active transportation between regions and the availability of affordable housing in different parts of the region can have health impacts as well. Integrated emergency management approaches support coordinated efforts to deal with unexpected events, whether from infectious diseases, or extreme weather events, for instance.

Economy:

Income is a key determinant of health.[229] Income disparity can lead to social inequities and poorer health. A healthy economy is one that benefits the whole community and helps reduce inequities. Investments in the economy can lead to an investment in health.

Housing:

Housing is also a key determinant of health.[230] A diversity of housing that is available for people with a range of financial backgrounds, including those with a lower income, supports health and well-being. The amount spent on housing is a common determinant of food insecurity.[231] Meeting housing needs includes both the provision of market rate housing as well as an integrated system providing affordable and supportive housing.

Climate:

The way cities are built can influence how vulnerable and resilient people are to the health impacts of climate change. People can be protected from the harmful impacts through urban design, such as reducing heat island effects, using trees to provide shade from extreme heat events, and having the ability to absorb water run-off from extreme rain events.

Energy:

Energy created by fossil fuels is used to support running our homes and businesses and for transportation. These can create pollutants and global warming gases that impact our health, from air quality to climate change. Extreme heat results in increased demand and costs for cooling businesses and homes. Blackouts could result from the overloading of the electrical grid as it responds to the increased pressures to supply cooling. Blackouts may also result from other types of extreme weather, which could have adverse health impacts through, for instance, loss of food. As we move towards sustainable types of energy, architecture, and transportation, there is the potential for better health outcomes (i.e., reduced exposure to emissions).

Infrastructure:

The size of the water and sewer pipes to homes sets the maximum capacity for how dense an area can grow. In addition, water run-off from a built environment must go somewhere. Water retention ponds and/or processes to clean the water before joining natural water systems can be important to support health and well-being because it can impact the quality and the process of providing safe drinking water, safe recreational water, and a healthy natural environment for river and lake flora and fauna.

Natural Ottawa:

The exposure to various natural environment features are associated with important health impacts, both for humans and the natural world. This includes parks, street trees, and forests. It provides cooling, air filtration, heat and humidity regulation, and promotes mental and physical health.

Rural Ottawa:

The characteristics of rural environments can contribute to unique health challenges for the people that live there. Low densities can increase dependence on driving and make active transportation and the provision of transit less viable. Amenities and services are often further away, making social isolation a potentially more challenging issue for those who are not able to travel easily. Access to employment can be made more challenging when transportation and or distance is an issue, and can contribute to economic insecurity, also a determinant of health. However, rural Ottawa provides an abundant resource of natural places, giving people the opportunity to be exposed to greenspaces. Rural areas can grow to minimize impact on surrounding agricultural land through focused village growth that is age-friendly, complete, compact and connected in a way that is appropriate for rural environments, while at the same time enhancing local economies by, for example, becoming day trip destinations for urban dwellers.

ANNEX A - Beyond 2036 Themes Addressed

Social/Cultural//Quality of Life

- Greater immigration leading to greater cultural diversity
  - Integration of new immigrants
  - Creating affordable housing for newcomers in walkable, transit-supportive communities
- Changing demographics
  - Promotion of complete communities
  - Different forms of residential and assisted living
  - Age-in-place opportunities
- Increased pressure on community cohesion
  - Policies that support public realm and vibrant streets for all ages and communities
  - Access to quality schools, libraries, and other social services
- Increased social inequality
  - Provision of quality affordable housing
  - Affordable, reliable and accessible transit/mobility options
  - Promoting access to affordable, local, and culturally appropriate food
- Evolving city identity
  - Distinct cultural quarters or cultural cohesion/cooperation
  - Green city, access to the outdoors
- Increased pressure on community health
  - Improved health promotion and education
  - Improved community design to promote healthy outcomes; promotion of daily physical activity

Environment

- Greater pressure on Ottawa's natural environment from urban development
  - Retention of existing tree canopy into both urban infill and suburban development
  - Diversification, protection, and enhancement of natural systems as a means to capture larger percentages of stormwater
  - Environmental planning built into healthy community development
  - Mitigation of heat island effect
- Rising temperature
  - Building technologies and development approaches that maximize energy efficiencies and reduce emissions
  - Climate resistant design of public and private spaces
  - Retention and maintenance of urban forest
  - Appropriate responses to invasive species
- Increased storm events
  - Ice, wind and flood-resistant design for buildings and energy distribution networks

- Natural, or more resilient, stormwater infrastructure
- Greater pressure on agriculture and food sources
  - Promotion of local food sources and protection of agricultural land through land use policy and zoning
  - Local and coordinated food systems
  - Access to affordable nutritious food
- Greater pressure on public health and emergency response
  - Public education and protection in regard to climate change
  - Urban design that supports public health, including greater access to tree-shaded public spaces and streets across the city
- Increased pressure to conserve energy, reduce greenhouse gas emissions and design for a low carbon future
  - Comprehensive mobility strategy involving reduction in car use and the design of public transit and active transportation networks to be more convenient
  - Innovations in mass mobility considering urban and rural needs

Urban Form and Mobility

- Evolving urban/rural structure
  - Transforming existing suburbs into more complete communities with supporting mobility planning
- Pressure on communities
  - Requirements for complete communities
  - Tailored response to needs of different communities to become more complete
  - Future of public spaces
- Changing housing demands
  - Ensuring a mix of affordable housing options that meet future needs
  - Diversity of affordable housing locations in downtown, suburbs and rural communities
- Demand for housing and employment close to transit
  - Ensuring affordability of housing in proximity to transit
  - Access to transit stations from surrounding communities
- Growing importance of consumer experience and needs to travel
  - Considering ways for the more effective means of transportation to be designed as the quickest and most convenient for people to use
  - Mobility equity and choice

Economic Development

  - Development of distinct, interesting and memorable places.
  - Enhanced access to the Ottawa River and natural areas.

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