Cancer Care Ontario

# Prevention System Quality Index: Health Equity

**A companion to *2016 Prevention System Quality Index: Monitoring Ontario's Efforts in Cancer Prevention***

Ontario
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A companion to *2016 Prevention System Quality Index: Monitoring Ontario's Efforts in Cancer Prevention*

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# Prevention System Quality Index: Health Equity

**A companion to 2016 Prevention System Quality Index: Monitoring Ontario's Efforts in Cancer Prevention**

**2018**

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# Foreword

Health equity is achieved when people are able to reach their full health potential no matter where they live, what they have or who they are. Ensuring health equity across the cancer system is a strategic goal of the *Ontario Cancer Plan* for 2015 to 2019, because health inequities lead to shorter life expectancies, fewer years of good health and poorer cancer outcomes. Reducing health inequities could dramatically improve the overall health of the population and sustainability of the healthcare system in Ontario.

Populations facing health inequities often have an increased prevalence of risk factors for cancer and other chronic diseases. Using indicators and evidence from the literature, *Prevention System Quality Index: Health Equity* reports on opportunities to reduce cancer risk factors in populations facing health inequities, which include tobacco use, alcohol consumption, unhealthy eating and physical inactivity. Featured prominently in this report are recommendations for culturally relevant and co-developed policies and programs that can reduce risk factor prevalence in First Nations, Inuit and Métis populations. First Nations, Inuit and Métis face health inequities rooted in colonialism, racism and social exclusion, and have poorer health outcomes than non-Aboriginal Ontarians, including higher death rates, rising rates of new cancer cases and poorer cancer survival.

Addressing health inequities is key to strengthening system-level efforts to prevent cancer in Ontario. However, better data are essential for understanding the cancer risk of populations facing health inequities, and for monitoring the effects of policies and programs on these populations over time. I look forward to continuing to work with our partners to find opportunities for improving data, and reducing risk factors and health inequities in Ontario.

**Linda Rabeneck, MD MPH FRCPC**
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Cancer Care Ontario

Better data are essential for understanding the cancer risk of populations facing health inequities, and for monitoring the effects of policies and programs on these populations over time.

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# Highlights

*Prevention System Quality Index: Health Equity* reports from a health equity perspective on four risk factors for cancer and other chronic diseases—tobacco use, alcohol consumption, unhealthy eating and physical inactivity. Many populations in Ontario facing health inequities experience shorter overall life expectancies, and higher incidence and mortality rates for certain cancers.

This report describes the distribution of cancer risk factors in the Ontario population, and how system-level policies and programs with the potential to reduce cancer risk factors can affect groups facing health inequities. It discusses the current status of policies and programs in Ontario, as well as opportunities to reduce cancer risk factors in populations with health inequities.

The main findings show that populations facing health inequities have a higher prevalence of certain cancer risk factors and fare worse on several indicators that measure policy and program effects. Comprehensive strategies implemented across sectors at multiple levels, and include universal and targeted policies and programs are required to reduce risk factor prevalence in the population as a whole and in populations facing health inequities. Better data are needed to understand the cancer risk of populations with health inequities, and to monitor the effects of policies and programs on these populations over time.

## What is health equity?

Health equity is achieved when everyone can reach their full health potential no matter where they live, what they have or who they are. Health inequities are differences in health that are systematic, avoidable and unfair. People facing health inequities have greater health risks and poorer health outcomes.

## First Nations, Inuit and Métis populations

A major focus of the report is First Nations, Inuit and Métis who face health inequities rooted in colonialism, racism and social exclusion. First Nations, Inuit and Métis populations have a higher prevalence of several cancer risk factors, higher cancer mortality rates, rising rates of cancer incidence and poorer cancer survival than non-Aboriginal Ontarians. This report highlights recommendations for First Nations, Inuit and Métis populations from Cancer Care Ontario's *Path to Prevention—Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* report.

# Commercial tobacco

## Indicator findings: key differences in tobacco use

**More likely to smoke:**
- Lower income or education
- Rural or northern areas
- Gay, lesbian or bisexual
- Some blue collar occupations

**More likely to be exposed to second-hand smoke in vehicles or homes:**
- Adolescents in lower income or education households
- Adolescents in northern areas

**Less likely to quit smoking long term:**
- Lower income or education
- Some blue collar occupations
- Identify as Black

Ontario has made significant progress in reducing tobacco use through Smoke-Free Ontario, but many groups facing health inequities continue to smoke at much higher rates than the rest of the population. Universal and targeted interventions are needed to further reduce tobacco use.

Highlights of findings, and policy and program opportunities include:

**Increase the price of tobacco through taxes**
- Increasing tobacco prices reduces smoking more than any other policy intervention, especially in groups with low socio-economic status. Ontario has the second-lowest retail price of cigarettes in Canada and its tobacco taxes are only 65 percent of the total retail price; the World Health Organization recommends a minimum of 75 percent.

**Develop policies that prohibit smoking in multi-unit housing, with a focus on social housing**
- Residents of multi-unit housing are more likely to be exposed to second-hand smoke; residents of social housing are particularly vulnerable.
- Of the 12 largest local housing corporations (social housing providers), only five have a policy prohibiting smoking in residential units.

**Ensure sustained funding for smoking cessation interventions, including pharmacotherapy, for populations facing health inequities**
- Tailored interventions and free pharmacotherapy, such as nicotine replacement therapy, can increase smoking cessation in populations facing health inequities. The Ontario government currently funds many smoking cessation programs and is planning a coordinated cessation system, with a focus on priority populations.

## First Nations, Inuit and Métis populations

First Nations, Inuit and Métis populations have higher smoking rates, and Inuit and Métis people are more likely to be exposed to second-hand smoke than non-Aboriginal Ontarians.

**Recommended policies and programs:**
- Develop and implement a coordinated plan to prevent commercial tobacco use among First Nations, Inuit and Métis children and youth.
- Establish commercial tobacco cessation programs and services in First Nations, Inuit and Métis communities.
- Support the development of resources to address second- and third-hand smoke.
- Support community-initiated and managed tobacco control measures, while respecting First Nations' rights.

Ontario has made significant progress in reducing tobacco use through Smoke-Free Ontario, but many groups facing health inequities continue to smoke at much higher rates than the rest of the population.

# Alcohol

## Indicator findings: key differences in alcohol consumption

At similar and lower levels of drinking, groups with low socio-economic status experience more alcohol-related harms than those with high socio-economic status.

### Binge drinkers more likely to binge drink frequently (once a week or more):

- Lower income or education

Ontario has many elements of a strong alcohol control system, but there are opportunities to strengthen policies and programs as part of a cross-sectoral, comprehensive provincial alcohol control strategy.

Highlights of findings, and policy and program opportunities include:

### Increase the minimum price of alcohol in off-premises outlets

- Increasing the price of alcoholic beverages results in lower alcohol consumption in heavy drinkers, especially in low-income populations. In Ontario, current minimum prices are not high enough to appreciably reduce alcohol consumption at the population level.

### Reduce alcohol availability by limiting the density of alcohol outlets

- An increase in the availability of alcohol outlets in neighbourhoods with lower socio-economic status has been associated with increases in heavy drinking or alcohol-related harms in several jurisdictions. Some municipalities in Ontario have implemented zoning bylaws to reduce clustering of alcohol outlets, but a provincial policy limiting the density of alcohol outlets is not in place.

### Increase access to government-funded alcohol treatment services, especially for populations facing health inequities

- Many Canadians with at-risk drinking and alcohol use disorders experience barriers accessing appropriate treatment due to limited availability of services, stigma towards alcohol use disorders and financial difficulties.
- Ontario has a Mental Health and Addictions Strategy that includes goals to identify mental health and addictions problems, and to provide timely, high-quality, integrated, person-directed health and other human services.

## First Nations, Inuit and Métis populations

On-reserve First Nations adults and Inuit adults living in Inuit Nunangat (traditional Inuit homeland) are more likely to abstain from alcohol than non-Aboriginal Ontarians; however, First Nations, Inuit living in Inuit Nunangat and Métis populations have higher rates of binge drinking than non-Aboriginal Ontarians.

### Recommended policies and programs:

- Ensure that culturally acceptable and relevant alcohol prevention and treatment programs for First Nations, Inuit and Métis peoples are available.
- Broaden the impact of alcohol intervention strategies.
- Incorporate alcohol interventions into existing tobacco control initiatives.

# Healthy eating

## Indicator findings: key differences in healthy eating

**Less likely to consume vegetables and fruit:**
- Lower income or education
- Food insecure

**More likely to be food insecure:**
- Households with lower income

The high rates of food insecurity in low-income households and high prevalence of inadequate vegetable and fruit consumption in Ontario adults, especially those with low income and education, indicate the need for a provincial strategy, such as the Ontario Food and Nutrition Strategy, which was developed by organizations with a role in food systems and health.

Highlights of findings, and policy and program opportunities include:

### Develop and implement the provincial Food Security Strategy

- Ontario's Food Security Strategy, which aims to empower communities, integrate food initiatives, address income and drive innovation, is currently being developed. In Ontario, there are several community-based food programs, such as community food centres and the Student Nutrition Program that should also continue to be supported.

### Continue to implement poverty reduction policies

- Poverty reduction policies, such as raising the minimum wage and social assistance benefits, have been shown to reduce household food insecurity in Canada. Ontario has a Poverty Reduction Strategy (2014–2019) that includes increasing the minimum wage, a basic income pilot project and increasing funding for affordable housing.

### Support tailored and economically accessible food literacy programs in communities

- Food literacy programs may increase healthy eating in adults and children. In Ontario, there is little provincial coordination of food literacy programs and the school curriculum does not require practical food skills.

### Improve the food environment through strategies such as land use planning, tax incentives, re-zoning, taxes on sweetened beverages and food labelling

- Changes to the food environment, including the types of foods available from food retailers, the effects of pricing or taxation policies on food purchasing behaviours and environmental cues that prompt food choices, can improve healthy eating. In Ontario, policies and programs to increase the availability of healthy food mainly occur at the local level. Ontario's Healthy Menu Choices Act, 2015 requires menu labelling for restaurants and other food service providers with 20 or more locations.

## First Nations, Inuit and Métis populations

First Nations adults on- and off-reserve have higher rates of inadequate vegetable and fruit consumption than non-Aboriginal Ontarians. First Nations adults are more likely to live in a food insecure household than non-Aboriginal Ontarians. Métis households also have higher rates of food insecurity. Inuit have lower rates of food security than non-Aboriginal Ontarians.

**Recommended policies and programs:**
- Develop an Indigenous food and nutrition strategy.
- Reduce barriers that prevent access to healthy foods for First Nations, Inuit and Métis.
- Address environmental issues for Indigenous foods.
- Develop traditional food and nutrition skills.

# Physical activity

## Indicator findings: key differences in physical activity

**More likely to be inactive during leisure time:**

- Adults and adolescents with lower household income or education
- Immigrant adults
- Non-white adults and adolescents
- Adolescent girls

**Grade 10 to 12 students less likely to enrol in health and physical education courses:**

- Girls
- Boys at schools in lower income neighbourhoods

A comprehensive provincial physical activity strategy is needed to increase physical activity and reduce sedentary behaviour in the Ontario population, including in groups facing health inequities.

Highlights of findings, and policy and program opportunities include:

**Develop interventions that increase active transportation, with a focus on health equity**

- The built environment has an impact on active transportation, which is an important contributor to physical activity. In Ontario, the Provincial Policy Statement does not address equity in active transportation or public transit planning. The province recently announced funding for school-based active transportation initiatives.

**Require a health and physical education credit in each year of secondary school and ensure equitable physical activity opportunities**

- Participation in health and physical education can increase physical activity levels in adolescents. In Ontario, high school students are required to take only one health and physical education course, and boys attending schools in lower income neighbourhoods are less likely to enrol in non-compulsory courses than boys attending schools in higher income neighbourhoods.

**Create provincial funding and guidelines to help municipalities make sport and recreation activities accessible to residents with low incomes**

- Tailored community-based physical activity programs and facilities can increase physical activity levels in populations facing health inequities. In Ontario, some municipalities and organizations offer subsidized or no-cost recreational programming, but this subsidization is not consistently available across the province.

## First Nations, Inuit and Métis populations

On-reserve First Nations adults have higher rates of physical inactivity than non-Aboriginal Ontarians.

**Recommended policies and programs:**

- Work with First Nations, Inuit and Métis to create safe places for physical activity.
- Develop a strategy to promote equity in physical activity infrastructure for First Nations, Inuit and Métis.
- Address the socio-economic barriers to physical activity for First Nations, Inuit and Métis.
- Build and disseminate a knowledge base around physical activity interventions in First Nations, Inuit and Métis communities.

# Introduction

## Cancer Care Ontario's Prevention System Quality Index monitors system-level policies and programs that can reduce cancer risk factors and exposures in the Ontario population, and identifies opportunities to strengthen the prevention system.

A companion to the *2016 Prevention System Quality Index: Monitoring Ontario's Efforts in Cancer Prevention* report,[1] *Prevention System Quality Index: Health Equity* reports from a health equity perspective on four risk factors for cancer—tobacco use, alcohol consumption, unhealthy eating and physical inactivity. Targeting these risk factors may also reduce the burden of other major chronic diseases (e.g., diabetes, cardiovascular disease and chronic respiratory disease) because they share many of the same risk factors as cancer. A major focus of this report is First Nations, Inuit and Métis in Ontario, who have unique histories, but share the negative

consequences of colonization, which have dramatically impacted all aspects of their health. Information about the history of First Nations, Inuit and Métis in Ontario, and the causes and effects of health inequities in these populations is found in the section entitled "First Nations, Inuit and Métis peoples: the original inhabitants of Canada."

## About health equity

Health equity is achieved when everyone can reach their full health potential no matter where they live, what they have or who they are.[2,3] Health inequity is a lack of fairness or justice in health. People experiencing health inequities have greater health risks and poorer health outcomes.[3]

Differences in health between groups of people are often called health inequalities. Health inequalities are related to a variety of factors, including those that cannot be modified (e.g., age).[4] The major causes of health inequalities are social factors that promote or diminish health, which are referred to as the social determinants of health.[5] The social determinants of health are conditions in which people live and work.[5] Some populations experience barriers to accessing the resources that promote health as a result of discrimination and bias in society's political, economic and social structures and processes. This bias and discrimination leads to an unjust distribution of resources across the population, creating social inequities. Social inequities lead to systematic health differences among socio-economic populations, referred to as health inequities.[3] Poor health can, in turn, have an impact on the social determinants of health, reinforcing health inequities.[6,7]

## Populations facing health inequities

Health inequities produced by income inequality are among the most commonly measured by research and data. In Ontario, men with the lowest incomes have shorter overall life expectancies (by five years) and fewer years of full health (by eight years) than men with the highest incomes.[8] Similarly, women with the lowest incomes have shorter overall life expectancies (by two years) and fewer years of full health (by nine years) than women with the highest incomes.[8] Canadians with lower incomes have higher rates of incidence (new cases) and mortality (deaths) and poorer survival rates for certain types of cancers.[9,10] Furthermore, the five-year survival rate for all cancers is 12.4 percentage points lower in the lowest income neighbourhoods in Canada than in the highest income neighbourhoods.[11] These health inequities are likely due to a combination of factors, including differences in participation in cancer screening programs, the stage at which cancer is diagnosed, access to care, quality of care and cancer risk factor prevalence, which is the main focus of this report.[11]

Research and data suggest that other populations facing health inequities in Ontario include people with less education;[12-14] those who live in rural[14] or northern regions;[15] those who are part of a racialized[a] group;[17] those who are gay, lesbian, bisexual[18] or transgender;[19] those with a mental illness;[20] and those with a physical or developmental disability.[21-24] Women and men also experience a range of health inequities rooted in gender-based norms and biases.[13,25] Immigrants in Ontario fare better than Canadian-born Ontarians on many major health indicators, such as mortality rates[26] and cancer survival.[27] Immigrants in Canada have higher levels of education than the Canadian-born population overall,[28] but they also tend to have lower incomes and face other barriers related to the social determinants of health, which may contribute to a decline in their health advantage the longer they live in Canada.[29,30]

First Nations, Inuit and Métis peoples face unique health challenges and have poorer health outcomes than the non-Aboriginal population, including higher age-standardized cancer mortality rates, rising rates of cancer incidence and poorer cancer survival.[31-34] The rising burden of cancer in First Nations and Métis peoples has been attributed, at least in part, to their higher prevalence of several behavioural risk factors (e.g., smoking, poor diet and obesity) compared to non-Aboriginal people, even after adjusting for income, education and rurality.[35]

**Health inequities lead to shorter life expectancies, fewer years of good health and poorer cancer outcomes.**

[a]The Ontario Human Rights Commission states that "racialized group" or "racialized person" is the preferred term over "visible minority," "person of colour" or "non-white," because it expresses race as a social construct instead of a description based on perceived biological traits.[16]

Many other populations facing health inequities also have an increased prevalence of, or are more likely to be affected by, certain cancer and chronic disease risk factors. People with lower income[36] and education[36-38] are more likely than those with higher income and education to engage in two or more of these behavioural risk factors. Chronic stress, which research indicates is common in populations experiencing poverty or racism,[39-41] may be a primary mediating factor in increasing cancer risk factor prevalence and the risk of other chronic diseases in populations facing health inequities.[40,42-46] A number of studies suggest that chronic stress can overwhelm the ability to avoid unhealthy coping strategies. For example, it may be associated with increased tobacco use,[42] alcohol consumption,[43,44] unhealthy eating[46] and sedentary behaviours.[40,45] It may also be an independent risk factor for overweight and obesity,[40,47] which is an independent risk factor for cancer.[48] In addition, chronic stress may be independently associated with physiological responses that affect disease progression in general[49] and specifically with cardiac diseases.[50] However, this report did not analyze the association between chronic stress, and cancer and chronic disease risk factors, which is an emerging area of research.

## Reducing health inequities in the population

In general, as socio-economic status increases, many health outcomes improve, a pattern referred to as a "health gradient."[51] Universal policies and programs aim to improve the health of everyone in the population, but may inadvertently increase health inequities. Targeted policies and programs focus on reducing the determinants and consequences of health inequities in priority sub-populations, but may not improve the health of the population as a whole. Therefore, universal and targeted approaches are needed to improve the health of the population as a whole and to reduce health inequities.[52]

Policies and programs are also required at multiple levels (e.g., national, provincial, local and individual). Political, economic and social structures and processes should be addressed to increase the equitable distribution of resources in the population, such as by eliminating discriminatory employment barriers. Policies and programs must address the conditions that people live and work in, such as by increasing the minimum wage, increasing built environments that support active transportation and ensuring smoke-free workplaces. At the community level, they must directly address health issues in people facing health inequities, such as through targeted chronic disease prevention programs and healthcare services.[53]

Reducing the prevalence of common risk factors for chronic diseases can have a positive impact on the health of the population, including those facing health inequities, because chronic diseases—mainly cancer and cardiovascular disease—account for nearly 80 percent of all deaths in Ontario.[54] Comprehensive strategies need to be implemented across sectors, be implemented at multiple levels (e.g., national, provincial, local and individual) and include universal and targeted policies and programs to reduce risk factor prevalence in the population as a whole and in populations facing health inequities.

**Universal and targeted policies and programs are needed to improve the health of the population as a whole and to reduce health inequities.**

# First Nations, Inuit and Métis peoples: the original inhabitants of Canada

Canada's Constitution Act of 1982 recognizes "the aboriginal peoples of Canada," as "the Indian [now referred to as "First Nations"], Inuit, and Métis peoples."[55] First Nations, Inuit and Métis are not a cultural group, but rather distinct, constitutionally recognized peoples with Aboriginal and treaty rights. The arrival of Europeans and resulting policies of assimilation, such as the residential school system and the current Indian Act (applying specifically to First Nations), continue to significantly impact First Nations, Inuit and Métis peoples' ways of life and all aspects of their health.

## ONTARIO GOVERNANCE STRUCTURE

There are 133 First Nations communities located in Ontario. Each First Nations community has a government, with a Chief and Councillors who are the political representatives for the community and responsible for making decisions on behalf of the First Nation and its members. Most First Nations communities are members of one of four Provincial Territorial Organizations that advocate on behalf of the communities, each of which has a Grand Council Chief or Grand Chief as the elected leader. The four Provincial Territorial Organizations are the Association of Iroquois and Allied Indians, Anishinabek Nation (formerly Union of Ontario Indians), Grand Council Treaty #3 and Nishnawbe Aski Nation. There are 11

## Terminology

**Indigenous:** Indigenous is a collective name for the original inhabitants of Canada and their descendants. Most definitions of Indigenous include reference to the relationships of Indigenous peoples to a collective kin group and a current or historic land base. Indigenous peoples in Canada also refer to themselves by their specific tribal affiliations (e.g., Mi'kmaq, Cree, Innu, Ojibwa) or First Nations, Native, Indian, Inuit or Métis.

**Aboriginal:** Aboriginal is a government-imposed, legally defined term collectively referring to all of the Indigenous peoples of Canada and their descendants. The Canadian Constitution Act of 1982 explicitly defines the Aboriginal peoples in Canada as "the Indian [now referred to as "First Nations"], Inuit, and Métis Peoples."[55] When referencing statistics, the Government of Canada often uses the term Aboriginal.

**Indian:** Indian is a term used in legal documents by the Canadian government to classify First Nations people according to whether or not they are registered under the federal Indian Act. The Canadian government defines Status Indians as individuals who are registered under the act. First Nations people who are not registered under the act are referred to by the government as non-status Indians.

**Source:** Smylie J. Indigenous child well-being in Canada. In: Michalos AC, editor. Encyclopedia of quality of life and well-being research. Dordrecht, NL: Springer Netherlands; 2014. p. 3220-7.

Independent First Nations and two unaffiliated First Nations in Ontario. The Chiefs of Ontario is the advocacy forum and secretariat for collective decision-making, action and advocacy for all 133 First Nations communities.

Inuit Tapiriit Kanatami is the national representative organization of Inuit living in Canada. The work of Inuit Tapiriit Kanatami includes research, advocacy, public outreach and education on the issues affecting the Inuit population. Inuit Tapiriit Kanatami works closely with the four regions of Inuit Nunangat (the Inuit homeland stretching across much of the Canadian Arctic) to present unified priorities to the federal government. In Ontario, Tungasuvvingat Inuit is a provincial service provider, offering front line services such as social supports, cultural activities, healing and addictions services, and counselling and crisis intervention. With a growing percentage of Inuit living away from traditional communities, Tungasuvvingat Inuit is recognized as a leading advocate for Inuit outside their land claim area and is working towards providing more services across Ontario. A variety of Inuit organizations come together to provide services to Inuit in the Ottawa area. Tungasuvvingat Inuit, Akausivik Inuit Family Health Team, Baffin Larga, Ottawa Health Services Network Inc. and Pauktuutit Inuit Women of Canada (a national Inuit organization) also make up the Champlain Inuit Service Providers Regional Table.

The Métis Nation of Ontario represents the collective aspirations, rights and interests of Métis people and communities throughout Ontario that are part of the Métis Nation. The Métis Nation of Ontario has a democratic, province-wide governance structure. Every four years, Métis Nation citizens have the opportunity to choose their provincial and regional leadership by voting in province-wide elections.

## RESPECTING THE TREATIES

Since as early as 1701, treaties have existed between the British Crown and First Nations. Under these treaties, First Nations agreed to share the land and co-exist as equals with settlers. The Crown and First Nations have often had different understandings of what was intended or achieved by the treaties and most modern claims arise from assertions that treaty rights have not been fulfilled or were breached by the Crown. Fulfilling the commitments made in the treaties would allow First Nations communities access to resource revenue sharing, which would alleviate many socio-economic problems. The Ontario government has started down this path. The new Treaty and Aboriginal Rights Awareness Strategy announced by the provincial government in 2014 provides $7.9 million over three years to "promote constructive engagement with First Nations communities, revitalize treaty relationships and promote improved socio-economic outcomes for Aboriginal peoples."[56] The Métis Nation of Ontario is also providing input into the strategy.[57] An education and awareness campaign has been underway since 2015 to increase public awareness, understanding and recognition of treaties and treaty rights.[58]

## STRENGTHENING RELATIONSHIPS

The Government of Ontario has made efforts to work in partnership with First Nations, Inuit and Métis leadership and communities. The most senior levels of the Ontario government participate in regular meetings with First Nations, Inuit and Métis leadership, and the government has signed bilateral agreements with several First Nations, Inuit and Métis representative bodies.[59-61] First Nations, Inuit and Métis are explicitly included in major provincial government strategies, such as the Ontario Poverty Reduction Strategy (2014–2019), and in ministers' mandate letters aimed at achieving equity for First Nations, Inuit and Métis communities across diverse sectors.[62] In 2016, the government launched the First Nations Health Action Plan, which aims to improve health services, primarily in northern First Nations communities. Funding for this plan includes an initial investment of almost $222 million over three years, followed by $104.5 million in sustained annual funding.[63]

Cancer Care Ontario is the Ontario government's advisor on cancer matters and is well-positioned to support the province in developing a First Nations, Inuit and Métis chronic disease prevention strategy for Ontario. Cancer Care Ontario has built strong relationships with First Nations, Inuit and Métis communities who know and respect its work in developing policies, strategies and programs to improve cancer services. Relationship protocols have been signed between Cancer Care Ontario and the four Provincial Territorial Organizations, including Grand Council Treaty #3 (2013), Anishnabek Nation (2013), Nishnawbe Aski Nation (2014) and the Association of Iroquois and Allied Indians (2016), as well as Ontario Federation of Indigenous Friendship Centres (2014), Kitchenuhmaykoosib Inninuwug (Big Trout Lake First Nation) (2014), Métis Nation of Ontario (2015) and Champlain Inuit Service Providers Regional Table (2017).

## DEMOGRAPHICS

In 2014, there were approximately 202,960 First Nations people in Ontario who were registered under the Indian Act (also known as registered or status First Nations people), 46 percent of whom lived on-reserve.[64]

According to the 2016 Census, there were also 85,475 people who self-identified as First Nations and who were not registered under the Indian Act.[65] Almost half of registered First Nations people in Ontario who are on-reserve live in communities that are urban (47 percent).[66] Over one-quarter live in special access communities (no year-round road access to a service centre) (28 percent).[66] First Nations people in Ontario are young, with an average age of 32, compared to 40.5 for non-Aboriginal Ontarians.[65]

The Métis population is one of the fastest growing populations in Canada, having nearly doubled in size from 2006 to 2016. Ontario had the largest number of Métis in 2016, with 120,585 people, or 20.5 percent of all Métis, living in Canada. The Métis population of Ontario was relatively young, with an average age of 36.5.[65] In 2006, nearly 70 percent of the Métis population in Canada lived in urban areas, slightly less than the non-Aboriginal population (81 percent). However, Métis living in urban areas (41 percent) were twice as likely as the urban non-Aboriginal population (20 percent) to live in smaller urban centres with populations of fewer than 100,000 residents.[67]

According to the 2016 Census, 65,025 people in Canada (3,860 in Ontario) identified as being Inuit and about 79,130 people in Canada (6,870 in Ontario) reported having Inuit ancestry.[65] In 2016, over one-quarter (27 percent) of self-identifying Inuit in Canada lived in southern Canada, outside of Inuit Nunangat (the Inuit homeland made up of four regions stretching across much of the Canadian Arctic).[68] A growing number of Inuit live in southern urban centres, such as Ottawa and Toronto. Inuit are a young population, with an average age of 29.[65]

## SOCIAL DETERMINANTS OF INDIGENOUS HEALTH

The social determinants of Indigenous health affect the physical, emotional, mental and spiritual health of First Nations, Inuit and Métis peoples. The Web of Being (Figure 1), developed by the National Collaborating Centre on Aboriginal Health, illustrates the social determinants of health for First Nations, Inuit and Métis, and shows how these factors are interconnected to form a strong web that affects health and well-being. Factors such as colonialism, racism and social exclusion have a profound effect on community, family and individual health, and are responsible for the social inequities and resulting health inequities that exist between First Nations, Inuit and Métis peoples and the general Ontario population. Intergenerational trauma and a lack of trust in the western healthcare system also contribute to poorer health in First Nations, Inuit and Métis peoples than in the general population.

First Nations, Inuit and Métis have nonetheless shown an ability to survive—even to thrive—in the face of overwhelming challenges, such as government policies that have altered their ways of life and have had profound impacts for generations. Personal, familial and community resilience, restoring and promoting Indigenous identity, keeping cultures and languages alive, and self-governance have had positive impacts on First Nations, Inuit and Métis peoples' health and well-being. Some studies have shown that cultural identity can help promote First Nations people's health in general,[69] promote children's health,[70] reduce youth suicide rates[71] and contribute to improved academic achievement.[72] Other research has found that participation in cultural activities reduces depression, and lowers substance and alcohol abuse.[73]

First Nations, Inuit and Métis, therefore, take a wholistic approach to addressing risk factors, including determinants of health. This approach is based on the First Nations, Inuit and Métis view of health and wellness, which is a balance of the four dimensions of health (physical, mental, emotional and spiritual) throughout the stages of life.[74]

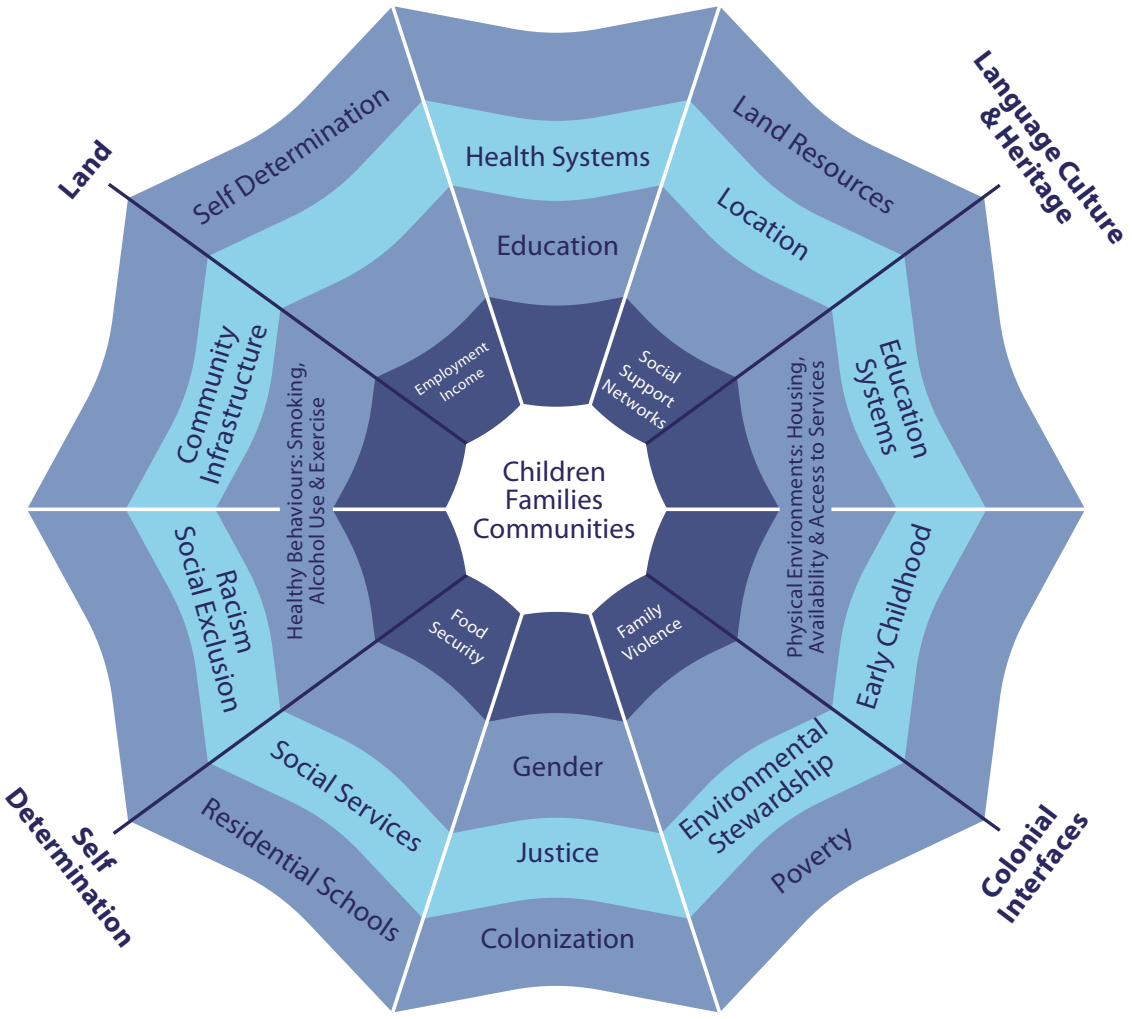
## CANCER IN FIRST NATIONS, INUIT AND MÉTIS

First Nations, Inuit and Métis populations have a disproportionately high prevalence of several behavioural risk factors and are therefore at an increased risk for some cancers and other chronic diseases (data are found in the risk factor sections of this report). There is limited information on patterns of cancer in different populations due to the absence of First Nations, Inuit, Métis or

Factors such as colonialism, racism and social exclusion have a profound effect on community, family and individual health, and are responsible for the social inequities and resulting health inequities that exist between First Nations, Inuit and Métis peoples and the general Ontario population.

FIGURE 1

**Web of Being: Social determinants and Indigenous people's health**




**Source:** Dr. Margo Greenwood, National Collaborating Centre for Aboriginal Health (NCCAH) 2009.

ethnic identifiers in Canadian cancer registries. The most recent published information indicates that from 1991 to 2010, lung, colorectal, kidney and cervical cancer incidence rates were all higher in the First Nations population, compared to other people in Ontario. First Nations women had higher incidence of all cancers combined than non-First Nations women. The First Nations population also had poorer cancer survival than the rest of Ontario.[31, 32]

The lower survival for breast cancer in First Nations women was found to be partly due to diagnosis at a later stage and a higher prevalence of comorbidities (having two or more conditions at the same time), particularly diabetes.[75]

Very little is known about cancer patterns in Métis populations in Ontario. A study of cancer mortality across Canada found that from 1991 to 2001, compared to non-Aboriginal women, Métis women had significantly higher rates of cancer death overall. Métis women also had significantly higher rates of death specifically for cancers of the lung and of the uterus, probably because Métis women get more cancers of the cervix. The cancer death rates in Métis men were similar to those in non-Aboriginal men.[33]

Research on cancer risk and burden in Inuit in Canada is mostly focused on people living in Inuit Nunangat. Incidence rates for lung cancer in Inuit men and women living in the Canadian Arctic are the highest in the world.[76] One study of cancer in the population living in Inuit Nunangat showed that Inuit are more likely to be diagnosed with lung and colorectal cancer than other Canadians, and less likely to be diagnosed with breast and prostate cancer.[77] There is very little information on cancer burden in Inuit living in Ontario.

# About the *Prevention System Quality Index: Health Equity* report

The *Prevention System Quality Index: Health Equity* report describes the distribution of cancer risk factors in the Ontario population, and how system-level policies and programs with the potential to reduce cancer risk factors can affect groups facing health inequities. It discusses the current status of policies and programs in Ontario, as well as opportunities to reduce cancer risk factors in populations with health inequities.

The report expands on recommendations made in the 2012 report that Cancer Care Ontario co-authored with Public Health Ontario entitled *Taking Action to Prevent Chronic Disease: Recommendations for a Healthier Ontario (Taking Action)*, which were about reducing health inequities in the population and addressing First Nations, Inuit and Métis health.[78] Guided by a report on the determinants of health from the Senate of Canada,[79] *Taking Action* recognized that reducing health inequities requires a whole-of-government approach that targets health disparities in all policies.[78]

In each section of the *Prevention System Quality Index: Health Equity* report, there is a sub-section on cancer risk factor prevalence, and policies and programs that can reduce cancer risk factors in First Nations, Inuit and Métis populations. While many provincial-level policies and programs can also benefit First Nations, Inuit and Métis populations, the recommendations in these sections—highlighted from Cancer Care Ontario's *Path to Prevention: Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* report—are specific to these populations and address the social determinants of Indigenous health.[74] More detailed risk factor data on First Nations, Inuit and Métis populations can be found in reports published by Cancer Care Ontario and partner organizations.[66,80,81]

This Prevention System Quality Index report aims to inform work by Ontario policy-makers, policy-influencers and program planners in governments, non-governmental organizations and local public health agencies across all sectors. Federal government agencies are also important audiences for this work because the First Nations and Inuit Health Branch of Health Canada funds the Non-Insured Health Benefits Program for registered First Nations people and recognized Inuit living in Ontario.[82]

## Risk factors

This report focuses on four major behavioural risk factors for cancer and other chronic diseases: tobacco use, alcohol consumption, unhealthy eating and physical inactivity. These risk factors were highlighted in *Taking Action*.[78] Other risk factors and exposures, such as occupational carcinogens, may also disproportionately affect populations that face health inequities, and these warrant further study. Overweight and obesity, which are independent risk factors for cancer,[83] are not discussed in this report because they are complex health issues with multiple causes and contributors.[84] Overweight and obesity have been associated with social stigma and marginalization,[85,86] and therefore on their own may be associated with health inequities. At a population level, evidence-based policies and programs to reduce overweight and obesity also support healthy eating and physical activity.

## Indicators and socio-demographic factors

There are two types of indicators in the report. Prevalence indicators measure the percentage of the population, or selected sub-population, that has a specific risk factor. Policy and program indicators monitor the process by which policies or programs are implemented, the products that result from policies or programs, or the outcomes of policies or programs, and how these policy and program effects differ in selected sub-populations. Table 1 lists each indicator and socio-demographic factor analyzed for the Ontario population, as well as the data sources. Table 2 lists the indicators, data sources and socio-demographic factors included for First Nations, Inuit and Métis populations.

**This report focuses on four major behavioural risk factors for cancer and other chronic diseases: tobacco use, alcohol consumption, unhealthy eating and physical inactivity.**

Where possible, indicators are examined according to socio-demographic factors that can impact health. For each risk factor, socio-demographic factors were selected for analysis or discussion based on input from experts and evidence from published, peer-reviewed literature (e.g., meta-analyses, systematic reviews) suggesting that there are differences across sub-populations. Therefore, some socio-demographic factors are examined only for selected risk factors or indicators, such as occupational group (based on job type) for tobacco. For feasibility, and due to data availability limits, analyses were not conducted for all possible socio-demographic factors; instead, literature or existing data are cited. Income and education are a focus of discussion in the report because they often show gradients or differences across sub-populations for cancer risk factors. Also, of the risk factors examined, income and education have the most data available and have been the most researched.

For feasibility, socio-demographic factors are analyzed independently using univariate analyses, without controlling for the potential effects of other socio-demographic factors. Therefore, while the analyses conducted for this report can show how various risk factors or policy or program effects are distributed across socio-demographic factors, they do not make it possible to determine whether a given socio-demographic factor is independently associated with a risk factor or policy effect. Multivariate analyses of these indicators would allow for the examination of potential interactions among socio-demographic factors and provide a better understanding of which socio-demographic factors may be independent predictors of particular cancer risk factors. Analysis of these indicators using a multivariate approach is an opportunity for further research.

Summary measures of inequality, which may be used to quantify absolute and relative degrees of inequality across a given socio-demographic factor, were calculated for policy and program indicators. Key summary measure results are highlighted throughout the report. All summary measure results can be found in the *Prevention System Quality Index: Health Equity* supplementary tables.

For each indicator, socio-demographic factors are generally only discussed in the text of the report when significant differences were found. Whenever the term "significant" is used, it refers to statistical significance. For Ontario-level data, whenever the phrase "slight but significant" is used, it refers to results that are significant, but that have a relatively small effect size (i.e., an absolute difference of <5.0 percent between the estimates of interest). A summary of the indicators and data sources used for the Ontario population and for First Nations, Inuit and Métis populations is found in Appendix B at the end of this report. Additional details regarding indicator definitions, methodologies, data sources and limitations are included in the *Prevention System Quality Index: Health Equity* technical appendix posted online at cancercareontario.ca/PSQI. Data tables for each indicator are included in the *Prevention System Quality Index: Health Equity* supplementary tables, also posted online.

TABLE 1

## Ontario population: Indicators, data sources and socio-demographic factors included in the report

| | | | Socio-demographic factors analyzed* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Indicator type** | **Data source(s)** | **Sex** | **Household income** | **Education** | **Residence** | **Geography** | **Immigration status** | **Cultural or racial group** | **Sexual orientation** | **Occupational group** |
| **Commercial tobacco** | | | | | | | | | | | |
| **Percentage of adults who are current smokers** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Exposure to second-hand smoke in adults** | Policy/program | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| **Exposure to second-hand smoke in adolescents** | Policy/program | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| **Smoke-free policies in social housing** | Policy/program | Local housing corporations | | | | | | | | | |
| **Quit attempts** | Policy/program | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| **Long-term smoking cessation** | Policy/program | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Alcohol** | | | | | | | | | | | |
| **Percentage of adults who drink alcohol in excess of cancer prevention recommendations** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| **Percentage of adults who binge drink** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| **Frequency of binges for adult binge drinkers** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| **Intensity of binges for adult binge drinkers** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| **Healthy eating** | | | | | | | | | | | |
| **Percentage of adults with inadequate vegetable and fruit consumption** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| **Percentage of households that are food insecure** | Policy/program | CCHS | | ✓ | | | ✓ | | | | |
| **Percentage of adults who are food insecure** | Policy/program | CCHS | ✓ | | | | | | | | |
| **Physical activity** | | | | | | | | | | | |
| **Percentage of adults who are physically inactive** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **Percentage of adolescents who are physically inactive** | Prevalence | CCHS | ✓ | ✓ | ✓ | ✓ | | | ✓ | | |
| **Enrolment in health and physical education, by school neighbourhood income** | Policy/program | Ontario Ministry of Education | ✓ | ✓ | | | | | | | |

CCHS: Canadian Community Health Survey

| *Socio-demographic factors analyzed | Definition |
|---|---|
| **Sex** | The sex of the respondent: male or female. |
| **Household Income** | Respondents' derived household income sorted into quintiles based on the ratio of household income to the low-income cut-off for the household size and community. The low-income cut-off is the threshold at which a family would typically spend a larger portion of its income than the average family on the necessities of food, shelter and clothing. |
| **Education (individual)** | The highest level of education attained by the respondent: less than secondary school, secondary school graduate, or post-secondary graduate. |
| **Education (household)** | The highest level of education attained by any member of a household: less than secondary school, secondary school graduate, or post-secondary graduate. |
| **Residence** | Respondents living in any census metropolitan area (CMA) or census agglomeration (CA) are considered urban residents and those living outside of any CMA or CA are classified as rural residents. |
| **Geography** | The northern region is defined to include only Algoma, North Bay-Parry Sound, Northwestern, Porcupine, Sudbury, Thunder Bay and Timiskaming public health units. The remaining 29 public health units comprise the southern region. |
| **Immigration status** | Distinguishes immigrants, according to time since immigration, from the Canadian-born population based on three categories: less than or equal to 10 years in Canada, more than 10 years in Canada, or Canadian-born. |
| **Cultural or racial group** | The cultural or racial group of the respondent: white, Black, East and Southeast Asian (includes Filipino, Japanese, Korean, Chinese and Southeast Asian), West and South Asian or Arab (includes South Asian, Arab and West Asian), or other (includes Latin American, other cultural or racial origin and multiple cultural or racial origins). |
| **Sexual orientation** | The sexual orientation of the respondent: heterosexual, or gay, lesbian or bisexual. |
| **Occupational group** | The occupational group (based on job type) the respondent belongs to using the National Occupational Classification-Statistics (NOC-S) 2006 at the two-digit level. An occupational group is defined as a collection of jobs, which are grouped by the type of work performed. |

Notes: Socio-demographic factors used for the stratification of indicators are based on self-reported data. • For each indicator, results for analyses by socio-demographic factors are generally only discussed in the text of the report when significant differences were found.

TABLE 2

## First Nations, Inuit and Métis populations: Indicators, data sources and socio-demographic factors included in the report

| Indicator | Indicator type | Data source(s) | Socio-demographic factors analyzed |
|---|---|---|---|
| **Commercial tobacco** | | | |
| **Percentage of First Nations on- and off-reserve who are current smokers** | Prevalence | RHS and CCHS | Age |
| **Percentage of Métis who are current smokers** | Prevalence | CCHS | Age, household income, education |
| **Percentage of Inuit who are current smokers** | Prevalence | APS | Age |
| **Exposure to second-hand smoke (home, vehicles, public places) in First Nations off-reserve** | Policy/program | CCHS | Age |
| **Exposure to second-hand smoke (home, vehicles, public places) in Métis** | Policy/program | CCHS | Age |
| **Exposure to second-hand smoke (home) in Inuit** | Policy/program | APS | Sex |
| **Alcohol** | | | |
| **Percentage of First Nations adults on- and off-reserve who abstain from drinking alcohol** | Prevalence | RHS and CCHS | Sex |
| **Percentage of Métis adults who abstain from drinking alcohol** | Prevalence | CCHS | Sex |
| **Percentage of Inuit adults who abstain from drinking alcohol** | Prevalence | APS | Sex |
| **Percentage of First Nations adults on- and off-reserve who binge drink** | Prevalence | RHS and CCHS | Sex |
| **Percentage of Métis adults who binge drink** | Prevalence | CCHS | Sex |
| **Percentage of Inuit adults who binge drink** | Prevalence | APS | Sex |
| **Healthy eating** | | | |
| **Percentage of First Nations adults on- and off-reserve with inadequate vegetable and fruit consumption (ate vegetables fewer than 2 times per day and fruit fewer than 2 times per day)** | Prevalence | RHS and CCHS | Sex |
| **Percentage of Métis adults with inadequate vegetable and fruit consumption (ate vegetables and fruit fewer than 5 times per day)** | Prevalence | CCHS | Sex, household income, education |
| **Percentage of First Nations adults (on- and off-reserve) who live in (moderately or severely) food insecure households** | Policy/program | RHS and CCHS | |
| **Percentage of Métis adults who live in (marginally, moderately or severely) food insecure households** | Policy/program | CCHS | |
| **Percentage of Inuit adults who live in food secure households** | Policy/program | APS | |
| **Physical activity** | | | |
| **Percentage of First Nations adults on- and off-reserve who are physically inactive** | Prevalence | RHS and CCHS | Sex |
| **Percentage of Métis adults who are physically inactive in leisure time** | Prevalence | APS | Sex, household income, education, geography |

RHS: First Nations Regional Health Survey
CCHS: Canadian Community Health Survey
APS: Aboriginal Peoples Survey

# Commercial tobacco

**Active smoking of commercial tobacco products increases the risk of nearly 20 different types of cancer.[87] Exposure to second-hand smoke increases the risk of lung cancer.[88]**

## Differences in tobacco use in the Ontario population

During 2012–2014, 18.9 percent of Ontarians age 25 and older smoked daily or occasionally (Figure 2). There appeared to be an inverse gradient for income, with smoking prevalence increasing as income level decreased. Adults living in households in the highest income quintile were significantly less likely to smoke than adults in any other income quintile, with adults in the lowest income quintile (25.9 percent) reporting the highest smoking rates across all income groups. For education, there was a clear inverse gradient, with smoking prevalence increasing as education level decreased. Smoking prevalence was significantly higher for adults who had not completed secondary school (33.8 percent) or who had completed secondary school (26.1 percent) than for adults who had completed post-secondary education (14.6 percent).

During this time period, men were significantly more likely to smoke than women, residents of rural and northern areas were significantly more likely to smoke than residents of urban and southern areas, and Canadian-born adults were significantly more likely to smoke than immigrants (Figure 2). During 2010–2014, gay, lesbian or bisexual adults were significantly more likely to smoke than heterosexual adults.

During 2010–2014, smoking prevalence also varied widely among occupational groups (Supplementary Table S1). Ontarians working in white-collar occupations related to social science, education, government service and religion had the lowest smoking rate, while the highest rate was seen in people employed in blue-collar occupations related to trades, transport, equipment operation and other similar occupations. During the same time period, white adults[b] were significantly more likely to smoke than adults who identified as belonging to several other cultural or racial groups (Supplementary Table S2).

## Policies and programs to reduce tobacco use

Jurisdictions that invest more in comprehensive tobacco control programs see greater reductions in smoking prevalence at a population level.[92,93] A comprehensive tobacco control program prevents youth from starting to smoke, protects people from second-hand smoke exposure, helps people quit and denormalizes the tobacco industry.[92] Ontario has made significant progress in reducing tobacco use through its comprehensive tobacco control efforts, Smoke-Free Ontario.[94] The Ministry of Health and Long-Term Care's Executive Steering Committee for the Modernization of Smoke-Free Ontario recently recommended a strategy to work towards reducing tobacco use in the province to less than five percent by 2035.[95] This goal is consistent with what the federal government has committed to achieving.[96]

Currently, many groups facing health inequities continue to smoke at much higher rates than the rest of the population. In its 2010 report, the Smoke-Free Ontario Scientific Advisory Committee recommended that equity be a core element of Smoke-Free Ontario by allocating resources from increased tax revenue to develop interventions for sub-populations, involving members of prioritized groups in the development of interventions in their communities, ensuring monitoring and surveillance of tobacco-related disparities, and capturing the different impacts on sub-populations when evaluating policies and services.[97] Boards of health in Ontario, which implement Smoke-Free Ontario at the local level, have a mandate to reduce tobacco use in priority populations, according to the 2008 Ontario Public Health Standards.[98]

The *Smoke-Free Ontario Scientific Advisory Committee Report 2016* presents evidence for effective universal and targeted interventions that could have a positive equity impact and reduce smoking rates in priority populations;[99] several of these interventions are discussed in this section on tobacco. The following sub-sections focus on selected policies and programs that, as part of a comprehensive tobacco control program, can reduce tobacco use in the population[c] and reduce health inequities.

**From the literature: Smoking prevalence by age and mental health status**

National-level data indicate that smoking prevalence varies significantly according to age group; young adults ages 20 to 24 have the highest smoking rates, and youth ages 15 to 19 have the lowest rates.[89] Additionally, in 2011, a higher percentage of Canadian youth living in lower income households smoked than youth living in higher income households.[90]

Higher smoking rates are also seen in populations experiencing poorer mental health. Population survey data analyzed from the 2009–2010 Canadian Community Health Survey and the 2015 Canadian Tobacco, Alcohol and Drugs Survey indicate that current smokers were more likely than non-smokers to score "moderate" or "high" for distress and depression, and to report a diagnosis of anxiety or a mood disorder. Current smokers are also less likely to rate their mental health as "excellent" or "very good."[89,91]

### Opportunity

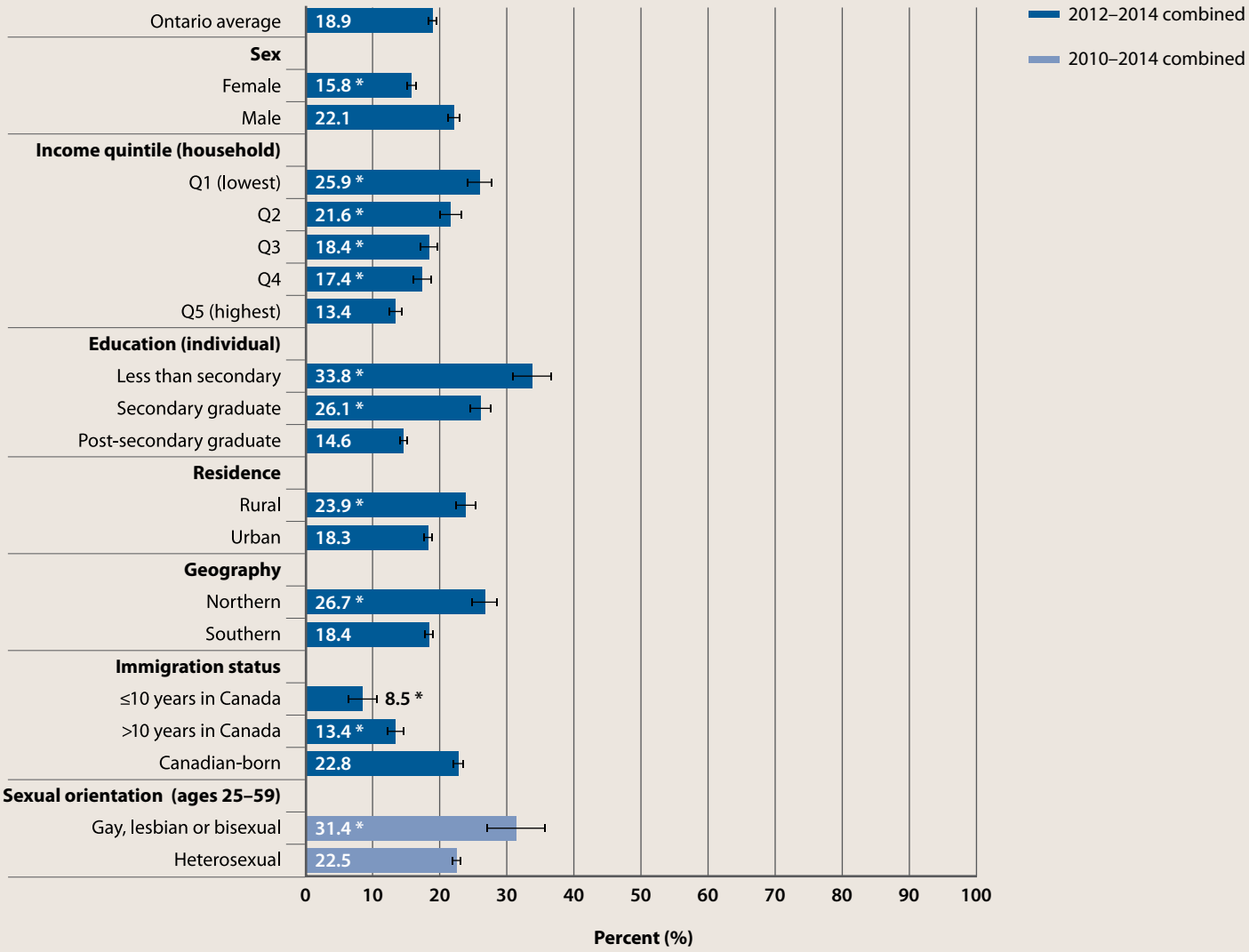
- Ensure that equity is a core element of Ontario's comprehensive tobacco control efforts.

[b]The Canadian Community Health Survey variable regarding sexual orientation excludes respondents age 60 and older. In adults, smoking prevalence tends to be lowest in those age 65 and older.

[c]For a full description and evaluation of Ontario's tobacco control program, see the *Smoke-Free Ontario Strategy Monitoring Report*, which is released annually by the Ontario Tobacco Research Unit.[100] For a comprehensive review of tobacco control policies and programs that would have the greatest impact on reducing tobacco use in Ontario, see the Smoke-Free Ontario Scientific Advisory Committee report, *Evidence to Guide Action: Comprehensive Tobacco Control in Ontario (2016)*.[99]

FIGURE 2

**Percentage of adults (age 25+) reporting current smoking, by selected socio-demographic factors, Ontario, 2010–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2010–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • Current smoking: smoking cigarettes daily or occasionally. • Combined data from the 2010–2014 CCHS were used to increase the sample size for analyses by sexual orientation. Combined data from the 2012–2014 CCHS were used for analyses by all other socio-demographic factors shown in this figure. • Analyses by sexual orientation include only ages 25–59, due to CCHS age restrictions for this variable. Analyses by all other socio-demographic factors shown in this figure include ages 25+. • * Estimate is significantly different from the rates in the following reference categories: male for analyses by sex; quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education; urban for analyses by residence; southern for analyses by geography; Canadian-born for analyses by immigration status; heterosexual for analyses by sexual orientation. • Additional analyses by occupational group and cultural or racial group are presented in Supplementary Tables S1 and S2.

## TOBACCO TAXATION

Increasing tobacco prices through taxation has the greatest impact of any policy intervention on reducing tobacco use in the population.[101] In high-income countries, a 10 percent increase in the price of tobacco reduces tobacco consumption by about four percent in adults.[102] Youth are particularly sensitive to price changes; increasing tobacco taxes can prevent youth from starting to smoke or becoming regular smokers.[101,103] When tobacco prices increase in high-income countries, tobacco use most consistently decreases in adults and youth with low socio-economic status.[104-107]

In 2017, the Ontario government announced a tobacco tax increase of $10 per carton of 200 cigarettes over three years, with a $2 increase in April 2017.[108] However, as of July 2017, Ontario continued to have the second lowest retail price for cigarettes compared to the other provinces and territories in Canada. Ontario's tobacco tax is 65 percent of the total retail price of tobacco, tied with Nunavut as the third lowest percentage in Canada.[109] Only New Brunswick has tobacco taxes that are at least 75 percent of the retail price, the minimum level recommended by the World Health Organization to reduce cigarette consumption.[110] Using the current average pre-tax price of a carton of 200 cigarettes in Ontario, tobacco taxes would have to rise by $42.04 to reach this target.

### Opportunity

- Continue to increase tobacco prices through taxation to reach the recommended minimum of at least 75 percent of the retail price.

## TOBACCO AVAILABILITY

A few studies have found that more tobacco retail outlets in a neighbourhood or living near a tobacco retail outlet is associated with increased smoking, including higher smoking initiation in youth,[111] a reduced likelihood of smoking cessation[112] and an increased risk of relapse.[113] The Institute of Medicine in the United States and the World Health Organization recommend policies that restrict actual and perceived retail access to tobacco products.[93,114] In Ontario, tobacco retail outlets remain ubiquitous, according to a study that found one tobacco retail outlet for every 1,000 people over age 15, with variation by public health unit.[115] The density of tobacco outlets in Ontario is greatest in urban and rural neighbourhoods with low socio-economic status.[115]

The *Smoke-Free Ontario Scientific Advisory Committee Report 2016* identifies zoning restrictions and government controlled outlets as promising innovative interventions which, if properly implemented, could substantially reduce the availability of tobacco products.[99] Some jurisdictions have implemented policies to reduce the number of tobacco outlets, including San Francisco,[116] Hungary[117] and New Zealand,[118] but these policies have not been evaluated.[118] In Ontario, the Smoke-Free Ontario Act prohibits the sale of tobacco products in pharmacies, healthcare and residential care facilities, university and college campuses, and vending machines. Tobacco retailers require a provincial permit to sell tobacco, but the permit is issued without a fee or the need for renewal.[119] Several municipalities charge tobacco retailers an annual licensing fee, which as of December 2015, ranges from $36 in Brockville to $806 in Ottawa.[100] Permits and licenses can prevent illegal sales, and appropriately set fees could potentially reduce the number of tobacco outlets.[100]

### Opportunity

- Develop policies to reduce the availability of tobacco products in Ontario.

## SECOND-HAND SMOKE EXPOSURE

Smoke-free laws and policies not only protect people from second-hand smoke, but also have the benefit of reducing overall smoking prevalence in the population.[103] The Smoke-Free Ontario Act prohibits smoking in enclosed workplaces and public places, in vehicles when children under 16 are present and in several types of outdoor areas, such as bar and restaurant patios, playgrounds and sports fields, and hospital grounds.[120] Several municipalities have bylaws that prohibit smoking in locations beyond those identified in the provincial legislation.[121] Despite significant declines in second-hand smoke exposure, non-smoking Ontarians continue to be exposed to second-hand smoke.

**When tobacco prices increase in high-income countries, tobacco use most consistently decreases in adults and youth with low socio-economic status.**

# 109,900
**adults**

*If all adults in Ontario had the same exposure to second-hand smoke at home as adults in the highest income group during 2012–2014, an average of 109,900 fewer adults would have been exposed to second-hand smoke at home per year.*

**Policy and program indicator: Exposure to second-hand smoke in adults, by selected socio-demographic factors**

This indicator measures self-reported second-hand smoke exposure in non-smoking adults age 25 and older in public places, in private vehicles and at home, by selected socio-demographic factors. In 2012–2014, Ontario adults were most likely to report being regularly exposed to second-hand smoke in public places (11.7 percent) than in private vehicles (3.9 percent) or at home (2.8 percent). Although overall exposure to second-hand smoke was lower in vehicles and at home than in public places, there was more variation in exposure across sub-populations (e.g., across education levels) in these locations. Therefore, second-hand smoke exposure in vehicles and at home are the focus of discussion for this indicator.

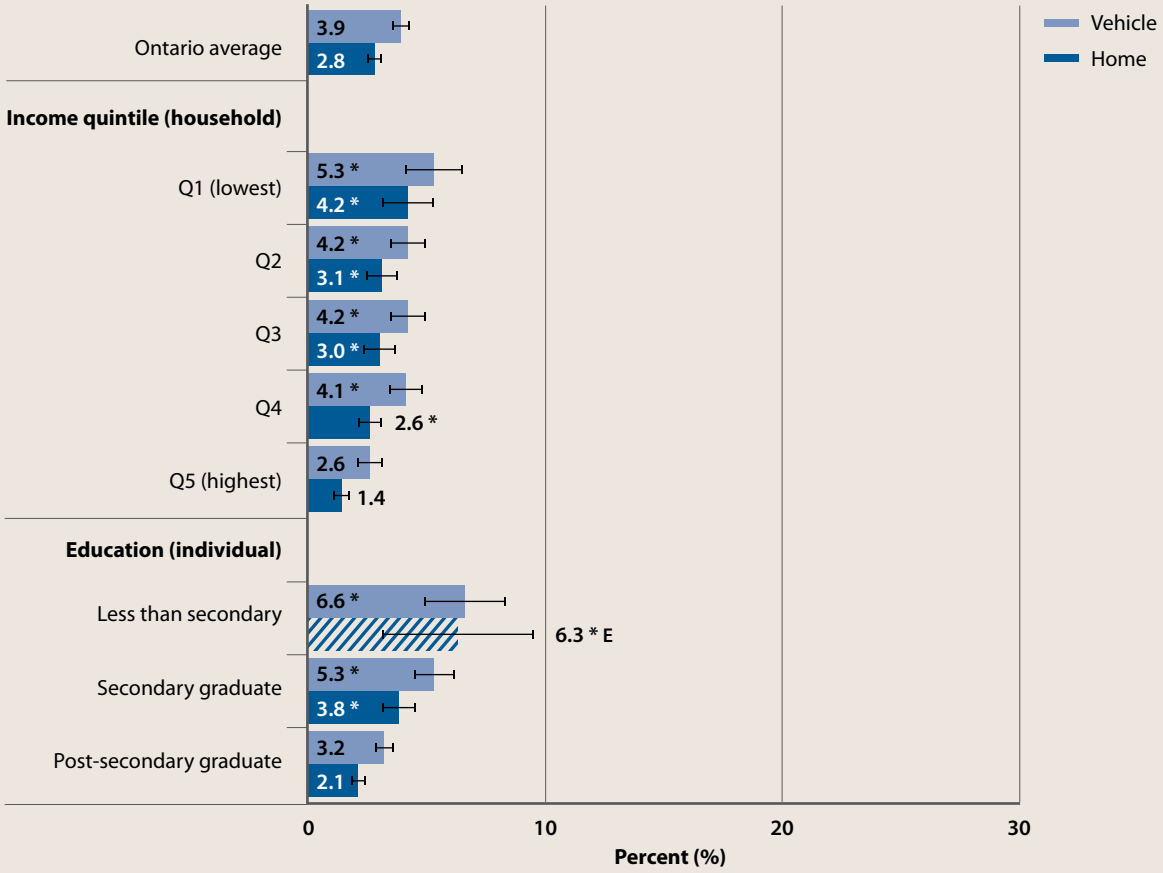
During 2012–2014, second-hand smoke exposure in private vehicles and at home varied significantly by income and education (Figure 3). Adults in the highest income quintile were slightly, but significantly, less likely to be exposed to second-hand smoke in vehicles or at home than adults in any other income quintile. Adults with a post-secondary education were slightly, but significantly, less likely to report exposure to second-hand smoke in vehicles or at home than adults with a secondary-school education or those who had not completed secondary school. However, the estimate for second-hand smoke exposure at home for adults who had not completed secondary school should be interpreted with caution due to small sample sizes.

Additional analyses for 2012–2014 revealed that if all adults age 25 and older in Ontario had the same exposure to second-hand smoke in vehicles as adults in the highest income group, the percentage of adults regularly exposed to second-hand smoke in vehicles could be reduced by 38 percent (Supplementary Table S3). This percentage represents an average of 109,800 fewer adults exposed to second-hand smoke in vehicles per year in Ontario. Similarly, if all adults age 25 and older in Ontario had the same exposure to second-hand smoke at home as adults in the highest income group, the percentage of adults regularly exposed to second-hand smoke at home could be reduced by 53 percent (Supplementary Table S5). This represents an average of 109,900 fewer adults exposed to second-hand smoke at home per year in Ontario.

During the same time period, men were slightly, but significantly, more likely to report exposure to second-hand smoke in vehicles than women, and residents of rural or northern areas were slightly, but significantly, more likely to be exposed than residents of urban or southern areas (Supplementary Table S3). Adults living in rural areas were also slightly, but significantly, more likely to be exposed to second-hand smoke at home than adults living in urban areas (Supplementary Table S5). In vehicles and at home, second-hand smoke exposure varied slightly, but significantly, by immigration status—Canadian-born residents were more likely to be exposed to second-hand smoke than immigrants who had lived in Canada for more than 10 years (Supplementary Tables S3 and S5). In public places, adults in the lowest income quintile were slightly, but significantly, more likely to report second-hand smoke exposure than adults in the highest income quintile (Supplementary Table S7).

FIGURE 3

**Percentage of non-smoking adults (age 25+) who were exposed to second-hand smoke in the past month, by location of exposure and by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Estimate is significantly different from the rates in the following reference categories: quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education. • These data and additional analyses by sex, residence, geography, immigration status and sexual orientation are presented in Supplementary Tables S3–S6.

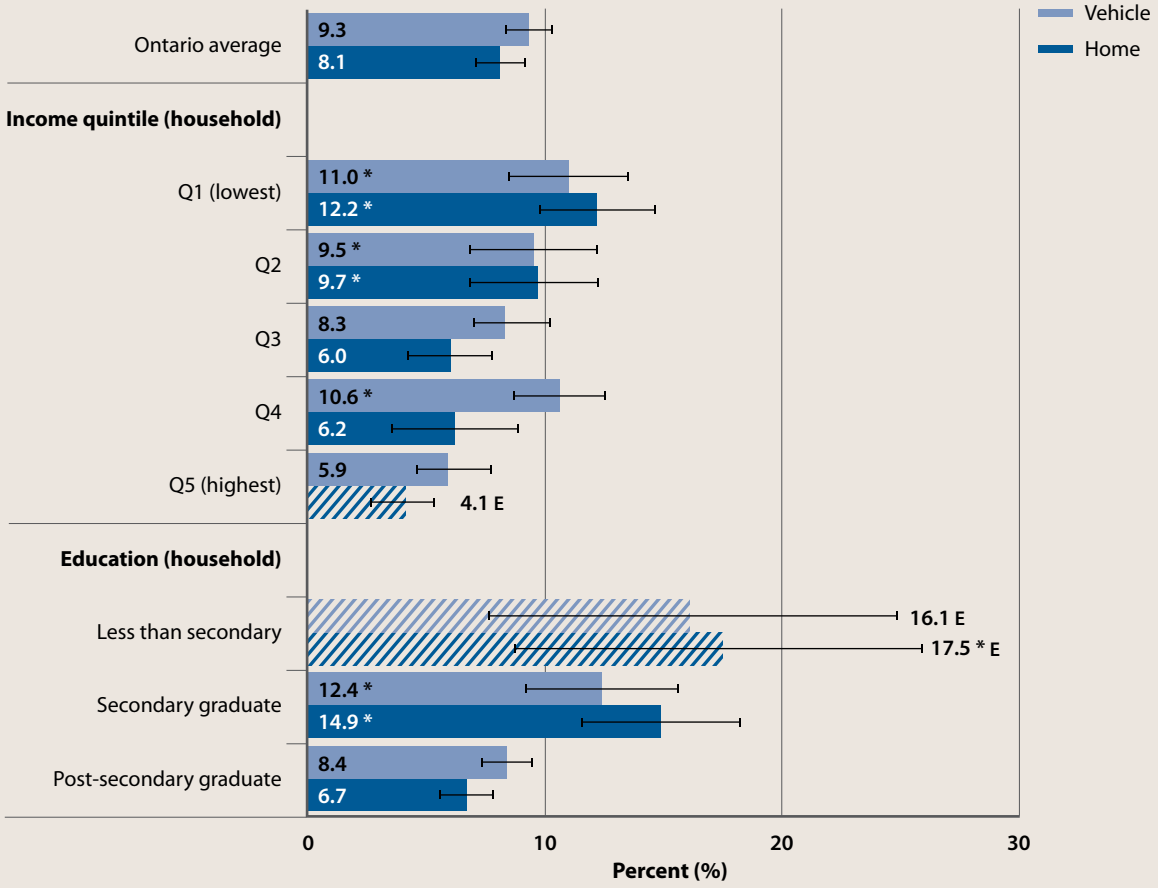
### Policy and program indicator: Exposure to second-hand smoke in adolescents, by selected socio-demographic factors

This indicator measures self-reported second-hand smoke exposure in non-smoking adolescents ages 12 to 19 in public places, private vehicles and at home, by selected socio-demographic factors. For all locations, exposure was much higher for adolescents than for adults. In 2012–2014, adolescents most commonly reported being regularly exposed to second-hand smoke in public places (24.5 percent) than in private vehicles (9.3 percent) or at home (8.1 percent). Like in adults, more variation in exposure across sub-populations (e.g., across household income levels) is seen in private vehicles and at home, than in public places.

During 2012–2014, second-hand smoke exposure in vehicles and at home varied significantly with household income and education (Figure 4). Adolescents from households in the highest income quintile were significantly less likely to be exposed to second-hand smoke in vehicles or at home than adolescents from households in most other income quintiles. Adolescents living in households with a post-secondary graduate were slightly, but significantly, less likely to report exposure to second-hand smoke in vehicles than adolescents living in households where the highest level of education was a secondary-school diploma. At home, adolescents living in households with a post-secondary graduate were significantly less likely to report exposure to second-hand smoke than adolescents living in households with less education. For second-hand smoke exposure at home, the estimates for households in the highest income quintile and where no member completed secondary school should be interpreted with caution due to small sample sizes.

FIGURE 4

**Percentage of non-smoking adolescents (ages 12–19) who were exposed to second-hand smoke in the past month, by location of exposure and by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Estimate is significantly different from the rates in the following reference categories: quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by household education. • These data and additional analyses by sex, residence and geography are presented in Supplementary Tables S9 and S10.

An additional analysis for 2012–2014 estimated that if all adolescents in Ontario had the same exposure to second-hand smoke at home as adolescents in the highest income group, the percentage of adolescents regularly exposed to second-hand smoke at home could be reduced by over 50 percent (Supplementary Table S10). This percentage represents an average of about 50,000 fewer adolescents exposed to second-hand smoke at home per year in Ontario.

During 2012–2014, adolescents living in northern regions were significantly more likely to report exposure to second-hand smoke in vehicles or at home than adolescents living in southern regions (Supplementary Tables S9 and S10). During the same time period, exposure to second-hand smoke in public places was slightly, but significantly, higher for adolescent girls than boys and for adolescents living in urban areas than rural areas (Supplementary Table S11).

Many Ontarians are exposed to second-hand smoke in private vehicles and at home, particularly people with low socio-economic status, adolescents, and those living in rural areas and northern regions. Media campaigns targeting audiences with low socio-economic status could promote smoke-free homes,[122,123] but there is limited research on this type of strategy or other interventions to promote smoke-free homes.

Ontarians also continue to be exposed to second-hand smoke in public places, especially adults with lower income. Increasing public awareness and strengthening enforcement of the more recent provincial smoke-free regulations in outdoor public places could help reduce second-hand smoke exposure.[100] Some adults are also exposed to second-

hand smoke in their indoor workplaces or workplace vehicles, indicating a need to strengthen enforcement of the Smoke-Free Ontario Act in workplaces. In 2015, 13 percent of adults age 18 and older in Ontario reported being exposed to second-hand smoke indoors at work or inside a work vehicle for five or more minutes in the previous week.[100]

### Multi-unit housing

Many people do not have control over second-hand smoke exposure in their homes. Residents of housing with multiple units (e.g., apartment and condominium buildings, attached houses and duplexes) are more likely to be exposed to second-hand smoke than those who live in single detached homes.[124] In 2016, about 45 percent of private dwellings in Ontario were in multi-unit housing.[125] In 2014, 29 percent of Ontarians living in multi-unit housing reported that tobacco smoke had entered their homes from a nearby unit or from outside the building in the previous month.[100]

The Smoke-Free Ontario Act prohibits smoking in common areas of apartment and condominium buildings, such as stairwells, hallways, parking garages and party rooms.[120] However, smoking is not prohibited inside residential units and related outdoor areas, such as balconies, patios and yards. Second-hand smoke can move between residential units, from residential units into common areas, and into residential units from outdoor areas.[126] Landlords can voluntarily adopt smoke-free policies for residential units, but these policies can only apply to new leases or if existing tenants agree to have it added to their lease.[127,128] Landlords are often interested in smoke-free policies because these policies can reduce maintenance and repair costs, as well as insurance premiums.[129] Local public health agencies are working to address second-hand smoke exposure in multi-unit housing in their communities and are supported by resources such as Smoke-Free Housing Ontario.[130]

### Social housing

Residents living in social housing are particularly vulnerable to second-hand smoke entering their home because their income, employment status, age, disabilities or chronic illnesses may restrict their ability to move. Social housing providers receive government financial support to supply housing for low- and moderate-income households.[131] There are more than 1,400 social housing providers in the province.[132] Social housing providers can voluntarily adopt smoke-free policies that apply to new leases. In addition to eliminating exposure to second-hand smoke, smoke-free policies can encourage smokers to quit.[103] In Ontario, social housing is managed through 47 service managers, which are municipalities, regional governments or district social services administration boards.[133] Service managers can play a role in adopting smoke-free housing,[134] as seen with The District of Thunder Bay Social Services Administration Board.[135] However, smoke-free policies are often developed and implemented at the level of the social housing provider, such as the local housing corporation.

### Policy and program indicator: Smoke-free policies in social housing

This indicator assesses the presence or absence of smoke-free policies in selected local housing corporations. The indicator was limited to local housing corporations because they are typically the largest single social housing provider in the service area. Smoke-free policies implemented by private non-profits and housing co-operatives were not included. For feasibility, the policy scan was limited to local housing corporations with 1,500 or more residential units. Local housing corporation websites were reviewed to retrieve the number of residential units held by each local housing corporation; a centralized list was unavailable.

Twelve local housing corporations were identified as having 1,500 or more residential units and were included in the indicator. The websites of the 12 local housing corporations were reviewed to determine the presence of smoke-free policies; the corporations were then contacted to verify the policy information on the sites. Supplementary Table S12 provides details about the smoke-free policies that were found. Only smoke-free policies that were approved and adopted for all properties in the local housing corporations are included in this indicator. Local housing corporations were also asked whether any of their individual buildings had a smoke-free policy.

**Many Ontarians are exposed to second-hand smoke in private vehicles and at home, particularly people with low socio-economic status, adolescents, and those living in rural areas and northern regions.**

As of May 2017, four local housing corporations—Ottawa Community Housing Corporation, Waterloo Region Housing, The District of Thunder Bay Social Services Administration Board and Housing York Inc.—have smoke-free policies. In January 2018, Windsor Essex Community Housing Corporation implemented a smoke-free policy (Table 3). These policies, which apply to all new leases, prohibit smoking inside residential units and related outdoor areas (e.g., balconies). Tenants who signed their lease before the policy's implementation are exempt from the policy, as long as they continue to live in the same unit. Policies have exemptions for medical marijuana, as well as for traditional tobacco use for cultural or spiritual purposes by Indigenous tenants. Only one local housing corporation, Niagara Regional Housing, indicated that they had a smoke-free policy in one of their buildings, but the policy did not apply to the whole corporation. Not all social housing is multi-unit housing, so for some residents, protection against second-hand smoke from neighbouring units may not be relevant.

There are, therefore, few smoke-free policies in local housing corporations in Ontario. The largest local housing provider, Toronto Community Housing Corporation, does not currently have a policy protecting its residents from second-hand smoke. Many local public health agencies are working with local housing corporations and other social housing providers to develop and implement smoke-free policies.[100] Activities can include surveying tenants on their tobacco use and second-hand smoke exposure, delivering presentations about smoke-free policies to the local housing corporation's board of directors and conducting evaluation surveys after the policy has

**TABLE 3**
**Smoke-free policies in social housing providers in Ontario, as of May 2017**

| Local housing corporation | Number of residents (approximate) | Has the local housing corporation implemented a smoke-free policy? |
|---|---|---|
| **Toronto Community Housing Corporation** | 110,000 | No |
| **Ottawa Community Housing Corporation** | 32,000 | Yes: Ottawa Community Housing No-Smoking Policy. Effective May 31, 2014. |
| **Peel Housing Corporation (operating as Peel Living)** | 15,600 | No |
| **CityHousing Hamilton** | 15,000 | No |
| **Windsor Essex Community Housing Corporation** | 12,000 | Yes (as of February 2018): Windsor Essex Community Housing Corporation Smoke-Free Policy. Effective January 1, 2018. |
| **Waterloo Region Housing** | 7,500 | Yes: Waterloo Region Housing Smoke-Free Policy. Effective April 1, 2010. |
| **London and Middlesex Housing Corporation** | 5,000 | No |
| **Niagara Regional Housing** | 5,000 | No |
| **The District of Thunder Bay Social Services Administration Board** | 5,000 | Yes: The District of Thunder Bay Social Services Administration Board Housing Services Smoke-Free Policy. Effective September 1, 2015. |
| **Greater Sudbury Housing Corporation** | 4,500 | No |
| **Housing York Inc.** | 4,000 | Yes: Smoke-Free Policy for Housing York Inc. Effective November 1, 2014. |
| **Halton Community Housing Corporation** | 3,600 | No |

**Sources:** Local housing corporations
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** The presence of a smoke-free policy at each of the 12 local housing corporations was determined by reviewing their website and contacting the corporation to verify what was found. • Details about the smoke-free policies are presented in Supplementary Table S12.

There are few smoke-free policies in local housing corporations in Ontario.

been implemented. Public health staff also assist housing staff to support tenants who want to quit smoking, including providing information about where to access free cessation services.[136]

In addition to local smoke-free policies, the province could consider opportunities to protect residents of social housing from second-hand smoke. In the United States, a nationwide smoke-free policy for all new leases in public housing agencies became effective in 2017.[137] As of January 2017, 29 municipalities in California enacted laws prohibiting smoking in all privately and publicly owned multi-unit housing for new and existing residents.[138]

**Opportunities:**

- Increase public awareness and strengthen enforcement of the smoke-free regulations in outdoor public places.
- Develop and implement policies to prohibit smoking in all privately and publicly owned multi-unit housing, with a focus on social housing.

## SMOKING CESSATION

Tobacco control experts suggest that increasing the number of smokers making a quit attempt (cessation of smoking for at least 24 hours) and increasing the frequency of quit attempts would have the greatest impact on increasing the long-term smoking cessation rate in the population.[139] The effectiveness of smoking cessation policies and programs in populations facing health inequities can be examined by measuring variation in the percentage of adults in the population who have made a quit attempt or who have quit smoking long term.

### Policy and program indicator: Quit attempts, by selected socio-demographic factors

This indicator measures the percentage of current smokers age 25 and older who have tried to quit smoking for at least 24 hours in the past 12 months, by selected socio-demographic factors. During 2013–2014, 43.2 percent of adult smokers had made one or more attempts to quit smoking during the past year (Figure 5). The likelihood of having made a quit attempt in the past year varied significantly by education—adults who had not completed secondary school (38.2 percent) were significantly less likely to have made a quit attempt than those who had completed post-secondary education (46.4 percent). Adults living in southern regions of the province were significantly less likely to have made a quit attempt than those living in northern regions. In addition, Canadian-born adults were significantly less likely to have made an attempt to quit than immigrants who had spent more than 10 years in Canada. The likelihood of making a quit attempt was similar across income groups.

### Policy and program indicator: Long-term smoking cessation, by selected socio-demographic factors

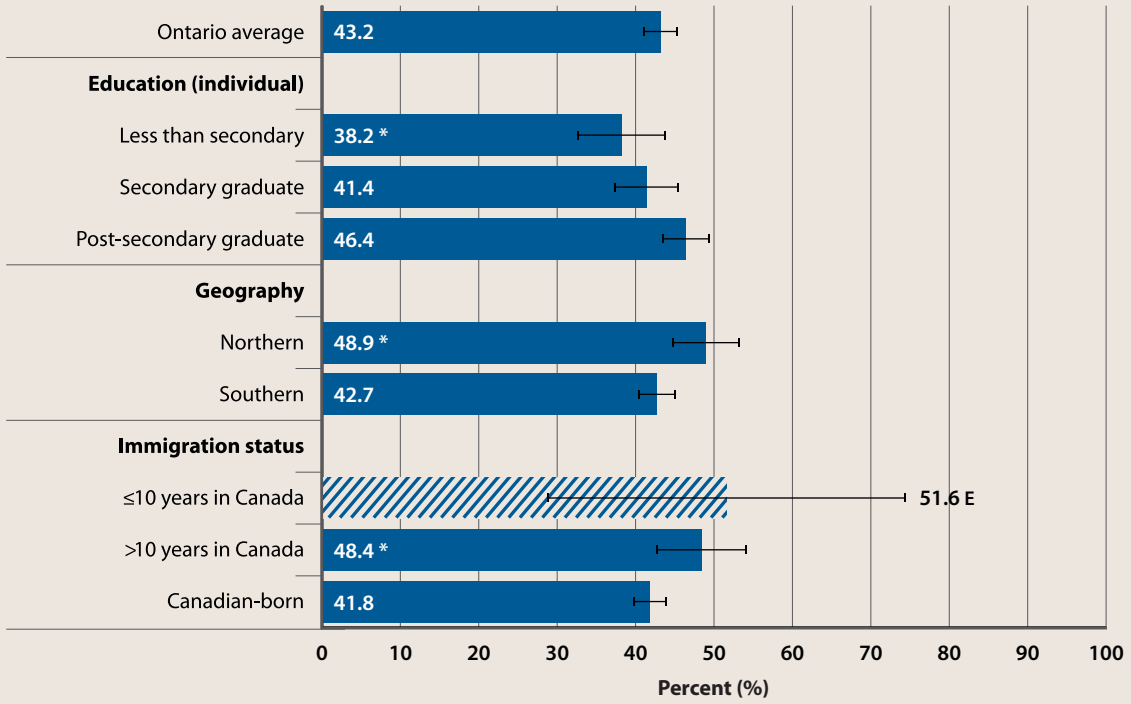
This indicator measures long-term smoking cessation, which is defined as the percentage of ever-smokers age 25 and older who quit smoking completely at least one year ago, by selected socio-demographic factors. During 2012–2014, 53.5 percent of adults who had ever-smoked had quit smoking completely at least one year ago (Figure 6). The likelihood of long-term cessation varied significantly across income and education levels. Although adults in all income groups had a similar likelihood of making a quit attempt (Supplementary Table S13), adults from the highest income quintile (63.8 percent) were significantly more likely to report long-term cessation than any other income group. Adults in the lowest income quintile (39.1 percent) were the least likely to have quit smoking. Income may therefore be a factor in achieving long-term smoking cessation in adults who make a quit attempt. Long-term smoking cessation rates were also significantly lower for adults who had not completed secondary school (39.0 percent) and for those who had obtained secondary school diplomas (48.2 percent) than for adults who had completed post-secondary education (59.2 percent). Adults living in northern regions were slightly, but significantly, less likely to report long-term cessation than those living in southern regions. Canadian-born adults were significantly less likely to have quit smoking long term than immigrants who had lived in Canada for 10 years or less (Figure 6).

Long-term smoking cessation varied significantly by occupational group during 2010–2014, ranging from a low of 42.4 percent in adults working in blue-collar occupations (i.e., trades, transport, equipment operation or related occupations) to a high of 65.0 percent in adults employed in white-collar occupations (i.e., social science, education, government service and religion occupations) (Supplementary Table S17). There was little variation in long-term smoking cessation rates between most cultural or racial groups; however, adults who identify as Black were significantly less likely to have quit smoking long term than adults who identify as white (Supplementary Table S19).

Population-level tobacco control policies and programs, such as tobacco taxation, smoke-free legislation and mass media campaigns, have been found to increase smokers' attempts to quit. However, while mass media campaigns have been found to be effective in

FIGURE 5

**Percentage of current smokers (age 25+) who have tried to quit for at least 24 hours in the past 12 months, by selected socio-demographic factors, Ontario, 2013–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2013–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Estimate is significantly different from the rates in the following reference categories: post-secondary graduate for analyses by education; southern for analyses by geography; Canadian-born for analyses by immigration status. • These data and additional analyses by sex, income, residence, occupational group and sexual orientation are presented in Supplementary Tables S13–S15.

**From the literature: Mental illness and long-term smoking cessation**

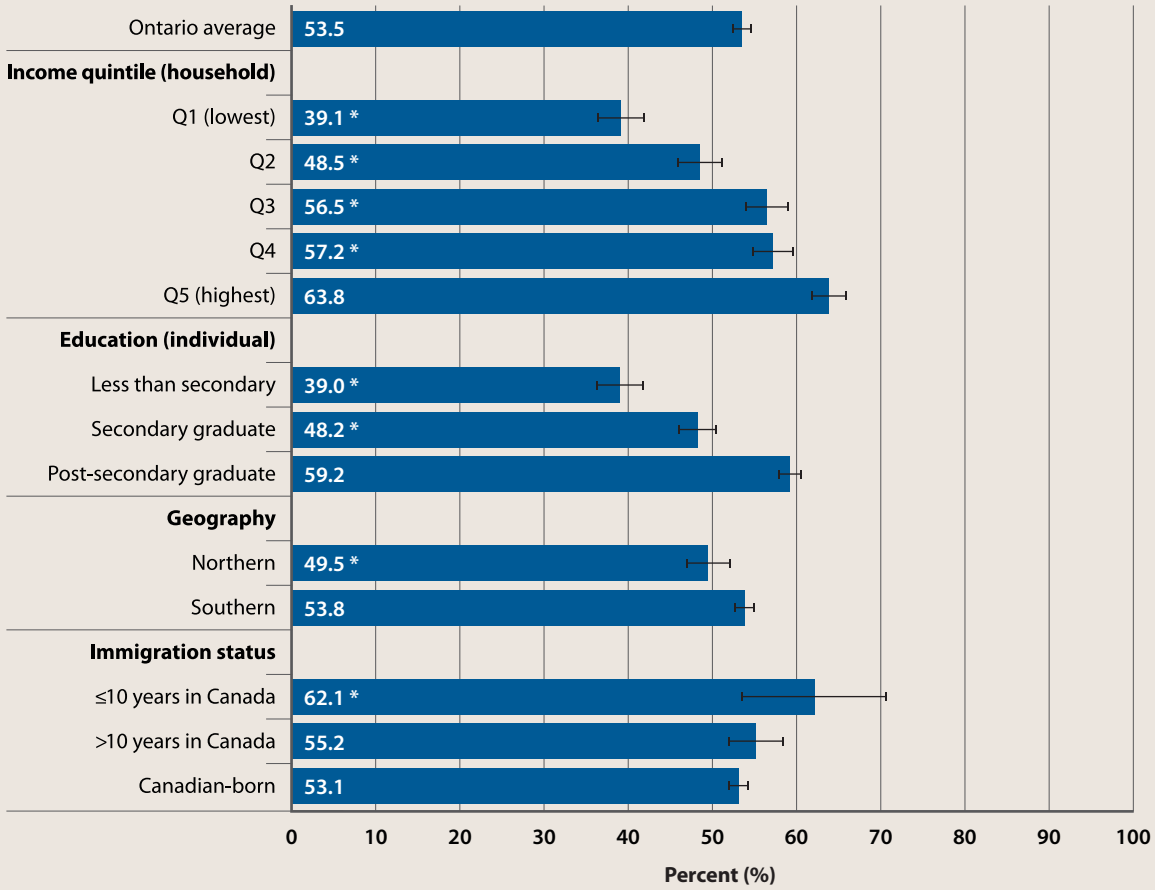
There is evidence that people living with mental illness may be less likely to maintain long-term smoking cessation. A critical review of population-based studies found that adults with lifetime or past-year major depressive disorder, dysthymia (chronic, mild depression) or depressive symptoms were twice as likely to have reported smoking relapse than adults without any of these conditions.[140] In addition, a meta-analysis found that people with schizophrenia had lower smoking cessation rates than the general population.[141]

the general population, smoking cessation media campaigns are often less effective at sustaining long-term cessation in populations with low socio-economic status.[142] In addition, advertisements that focus on the importance of repeated quit attempts may be less effective in promoting quit attempts in groups with lower education.[143]

Behavioural interventions and pharmacotherapy (smoking cessation medications, including nicotine replacement therapy), alone or in combination, are effective in helping people quit smoking.[144] For populations with low income, barriers to accessing cessation support services need to be reduced. Expanding access to free nicotine replacement therapy and behavioural supports is recommended.[97] A systematic review found that full financial coverage for cessation support services, compared to no coverage, significantly increased the proportion of smokers who attempted to quit, used smoking cessation treatments and achieved long-term cessation.[145]

FIGURE 6

**Percentage of ever-smoking adults (age 25+) who quit smoking completely at least 1 year ago, by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • Ever-smoking adults: adults who ever smoked cigarettes daily or occasionally. • This definition of long-term smoking cessation differs from that used for the 2016 Prevention System Quality Index long-term smoking cessation indicator, which measured the percentage of adult recent daily smokers (daily smokers one to two years ago) who have quit smoking completely for at least one year. • * Estimate is significantly different from the rates in the following reference categories: quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education; southern for analyses by geography; Canadian-born for analyses by immigration status. • These data and additional analyses by sex, residence, occupational group, sexual orientation and cultural or racial group are presented in Supplementary Tables S16–S19.

Tailored smoking cessation interventions are required for groups with higher smoking rates, such as lesbian, gay, bisexual and transgender people, people with mental illnesses, trade workers and young adults. For example, a systematic review found that tailored group cessation interventions for lesbian, gay, bisexual and transgender populations increased smoking cessation.[146] Also, findings from two studies highlighted that pharmacotherapy, behavioural supports and shared decision-making improved smoking cessation in people with mental illness.[147,148] In youth and young adults, particularly those with lower socio-economic status, higher tobacco taxes and improved access to cessation services have been found to increase smoking cessation.[149,150]

Ontario currently funds many provincial-level smoking cessation programs, such as telephone- and web-based support for smokers through Smokers' Helpline,[151] free smoking cessation prescription medications (not including nicotine replacement therapy) for Ontario Drug Benefit Program recipients,[152] and free nicotine replacement therapy and counselling for participants of the Smoking Treatment for Ontario Patients (STOP) program.[153] About 17 percent of smokers in Ontario make use of provincial cessation support services each year.[154] Ontario also funds smoking cessation counselling reimbursement for physicians and pharmacists,[155,156] and smoking cessation training programs for health professionals, including training directed at working with people with mental illnesses and substance use disorders.[157] Cancer Care Ontario supports a smoking cessation initiative for new ambulatory cancer patients in Ontario's 14 Regional Cancer Programs.[158]

Many other smoking cessation programs exist in hospitals and other healthcare settings (e.g., the Ottawa Model for Smoking Cessation) and in communities across the province. Several programs are targeted at populations facing health inequities, such as those with low income or mental illnesses.[153,159-161] One-time provincial funding was provided to 11 public health units from 2012 to 2014 for workplace-based smoking cessation demonstration projects that looked at how to help workers in the construction, mining, manufacturing, hospitality and service sectors quit smoking.[162] These projects identified components required for effective interventions, and found a significant reduction in the number of cigarettes participants smoked after 12 months, compared to baseline.[162]

In 2016, the government announced an action plan to support tobacco users with a coordinated cessation system. A focus of the plan is to target priority populations that have high rates of smoking, such as First Nations, Inuit and Métis peoples, people with chronic or mental health conditions or addictions, those who work in industrial or service sectors, and young adults.[163] The government committed one-time funding of $5 million, raised through the February 2016 tobacco tax increase, to provide free nicotine replacement therapy for up to 7,500 smokers leaving hospital, for 15 Indigenous communities to develop smoking cessation programs and for other communities with high smoking rates.[164] Sustained investment in this plan is required to ensure sufficient reach and intensity of smoking cessation interventions.

**Opportunities:**

- Implement mass media campaigns to help motivate smokers to quit, including those facing health inequities.
- Ensure sustained investment in evidence-based smoking cessation programs, with a focus on tailored interventions serving populations facing health inequities.
- Expand access to pharmacotherapy, including nicotine replacement therapy, for populations facing health inequities.

## Summary of opportunities to reduce tobacco use

- Ensure that equity is a core element of Ontario's comprehensive tobacco control efforts.

**Tobacco taxation**

- Continue to increase tobacco prices through taxation to reach the recommended minimum of at least 75 percent of the retail price.

**Tobacco availability**

- Develop policies to reduce the availability of tobacco products in Ontario.

**Second-hand smoke exposure**

- Increase public awareness and strengthen enforcement of the smoke-free regulations in outdoor public places.
- Develop and implement policies to prohibit smoking in all privately and publicly owned multi-unit housing, with a focus on social housing.

**Smoking cessation**

- Implement mass media campaigns to help motivate smokers to quit, including those facing health inequities.
- Ensure sustained investment in evidence-based smoking cessation programs, with a focus on tailored interventions serving populations facing health inequities.
- Expand access to pharmacotherapy, including nicotine replacement therapy, for populations facing health inequities.

**Expanding access to free nicotine replacement therapy and behavioural supports is recommended.**


*Aboriginal Tobacco Program workshop for First Nations children*

# Commercial tobacco: Focus on First Nations, Inuit and Métis

To many First Nations and Métis peoples, tobacco is a sacred plant that has cultural, ceremonial and spiritual significance. For thousands of years, tobacco has been used in First Nations ceremonies, rituals and prayer, such as to give thanks to the Creator and Mother Earth.[66] It is commonly held in the left hand during prayer or ceremony, and is often given to Elders and Traditional Knowledge Keepers as a sign of respect. Tobacco has also been used for medicinal purposes. The historical use of tobacco in Métis has been influenced by their First Nations ancestral traditions and Métis-specific historical traditions. For example, many Métis who lived around the Great Lakes were Voyageurs. Voyageurs typically worked 14 hours a day for many weeks at a time, paddling large canoes laden with goods for many thousands of kilometres. During these long and arduous journeys, a stop was made for a few minutes each hour to allow the men to rest and have a pipe. This event was so important for the early Voyageurs that distances came to be measured in pipes.[81] For Inuit, tobacco was never cultivated due to extremely cold climates in far northern regions and therefore it holds no historical or traditional significance.[165]

The recreational use (or misuse) of commercial tobacco is addictive and harmful, and is considered by some First Nations Elders to be disrespectful of the traditional use of tobacco. The recreational use of commercial tobacco is any use of tobacco in a non-traditional way, such as smoking cigarettes, chewing tobacco or snuff, smoking non-traditional tobacco in non-sacred pipes or smoking cigars. This section focuses on the recreational use of commercial tobacco as a risk factor for cancer in First Nations, Inuit and Métis populations in Ontario, and the importance of promoting respect for traditional and ceremonial uses of tobacco through education about their associated cultural benefits and teachings. The prevalence of current smoking and second-hand smoke exposure in First Nations, Inuit and Métis populations is examined, and compared to non-Aboriginal Ontarians. Recommendations to reduce or eliminate smoking and commercial tobacco use in First Nations, Inuit and Métis populations are also discussed.

## CURRENT SMOKING

### Current smoking in First Nations, Métis and Inuit

These indicators measure the percentage of First Nations, Métis and Inuit adults who reported smoking daily or occasionally.

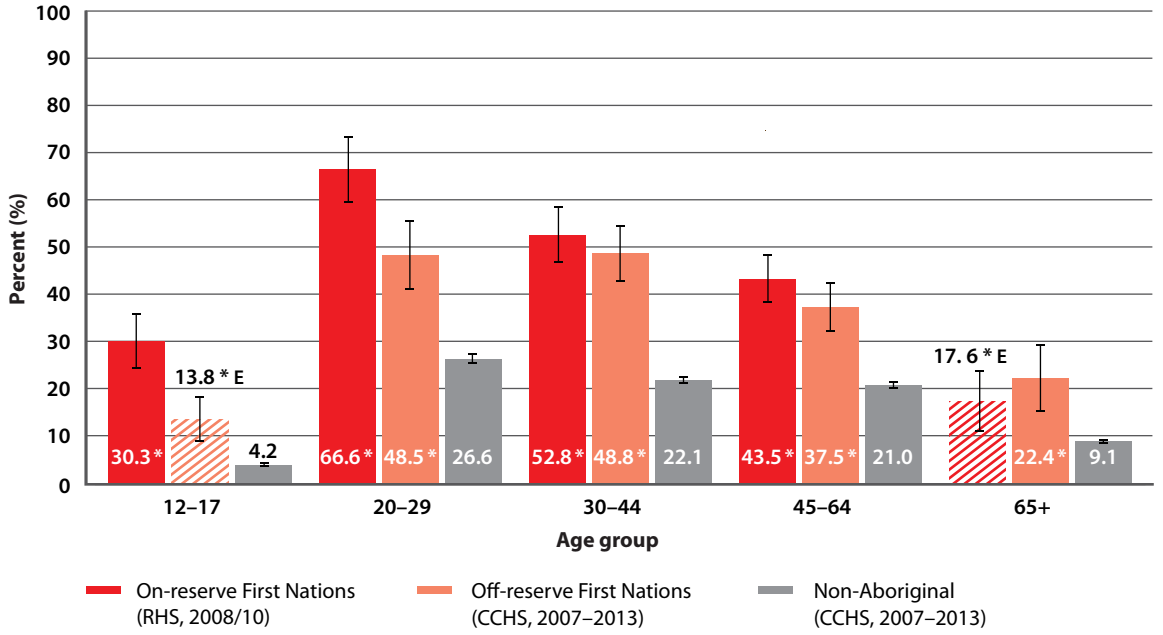
**To many First Nations and Métis peoples, tobacco is a sacred plant that has cultural, ceremonial and spiritual significance.**

### First Nations

During 2007–2013, 49.8 percent of First Nations adults age 20 and older living on-reserve and 42.7 percent of First Nations adults living off-reserve reported smoking daily or occasionally, which was significantly higher than for non-Aboriginal adults in Ontario (21.7 percent). The prevalence of smoking significantly decreased in off-reserve First Nations adults during these years.[66] The disparity in smoking rates between First Nations people and non-Aboriginal Ontarians is even greater for adolescents and young adults than it is for adults (Figure 7). Almost one-third (30.3 percent) of on-reserve First Nations adolescents ages 12 to 17 smoked, which is seven times higher than non-Aboriginal adolescents (4.2 percent), and 13.8 percent of off-reserve First Nations adolescents smoked, which is three times higher than non-Aboriginal adolescents. The estimate for off-reserve First Nations adolescents should be interpreted with caution due to small sample sizes.

FIGURE 7

**Percentage of First Nations and non-Aboriginal people who were current smokers, by age, Ontario, 2007–2013 combined**



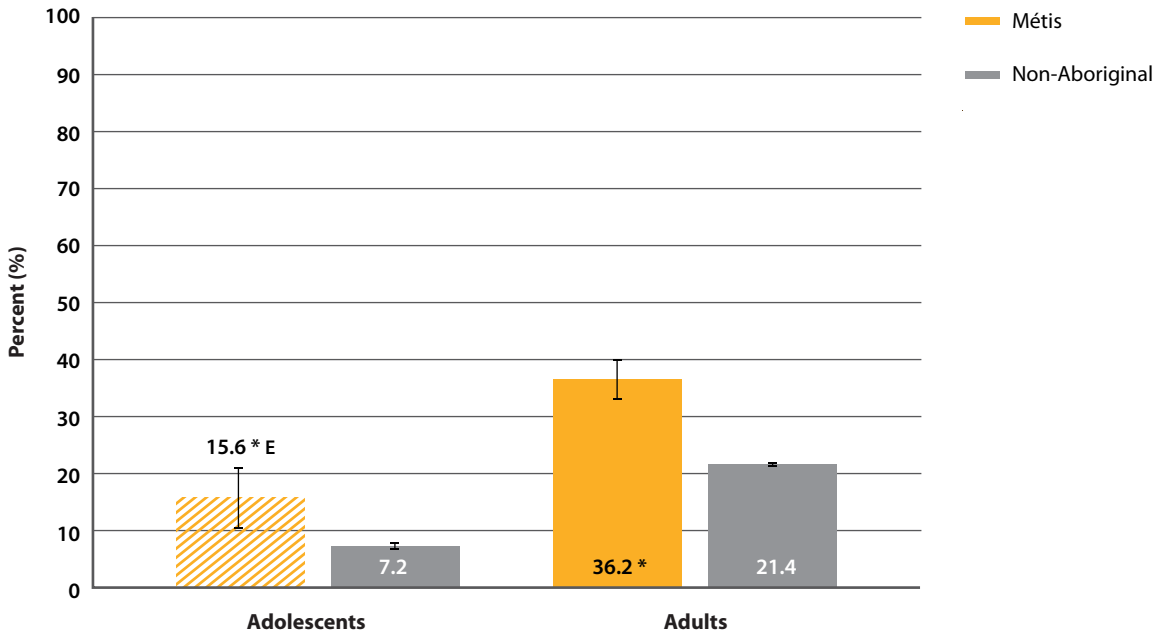

**Sources:** Canadian Community Health Survey (CCHS), 2007–2013 (Statistics Canada); First Nations Regional Health Survey (RHS) Phase 2, 2008/10 (First Nations Information Governance Centre)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

### Métis

Despite a significant decrease in the percentage of Métis people who reported smoking from 2007 to 2014, smoking rates remained much higher than in the non-Aboriginal population (data not shown). During 2007–2014, the prevalence of daily or occasional smoking was significantly higher for Métis adults age 20 and older (36.2 percent) and adolescents ages 12 to 19 (15.6 percent) than it was for non-Aboriginal adults (21.4 percent) and adolescents (7.2 percent) (Figure 8). The estimate for Métis adolescents should be interpreted with caution due to small sample sizes. Higher rates of smoking were seen in Métis adults with lower household income and lower levels of education (data not shown).

FIGURE 8

**Percentage of Métis and non-Aboriginal adolescents (ages 12–19) and adults (age 20+) who were current smokers, Ontario, 2007–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2007–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

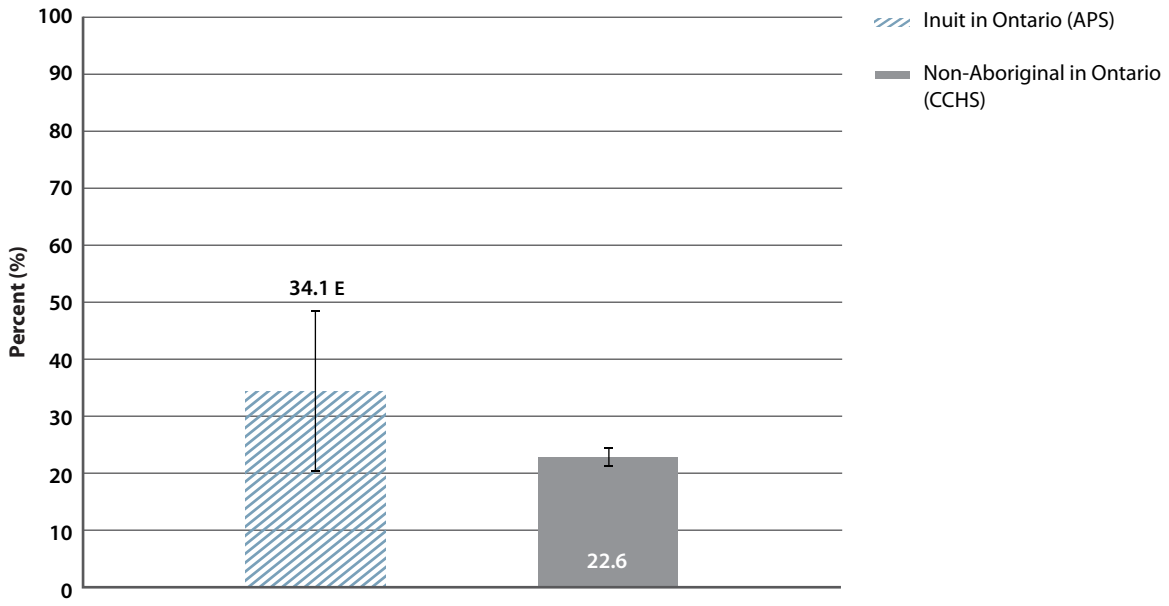
*The prevalence of smoking is significantly higher for Métis adults and adolescents than it is for non-Aboriginal adults and adolescents.*

### Inuit

In 2012, the prevalence of smoking was higher in Inuit adults age 20 and older living in Ontario (34.1 percent) than in non-Aboriginal Ontario adults (22.6 percent), although not significantly (Figure 9). There is also high variability in the estimate for Inuit adults due to small sample sizes. In 2012, in all Inuit living outside Inuit Nunangat across Canada (including those living in Ontario), the prevalence of smoking was significantly higher than in non-Aboriginal Ontarians, except for those age 45 and older, but the estimate for this older age group should be interpreted with caution due to small sample sizes (Figure 10). Those living in Inuit Nunangat had the highest smoking rates of all Inuit adults (73.9 percent).[80]

FIGURE 9

**Percentage of Inuit and non-Aboriginal adults (age 20+) who were current smokers, Ontario, 2012**

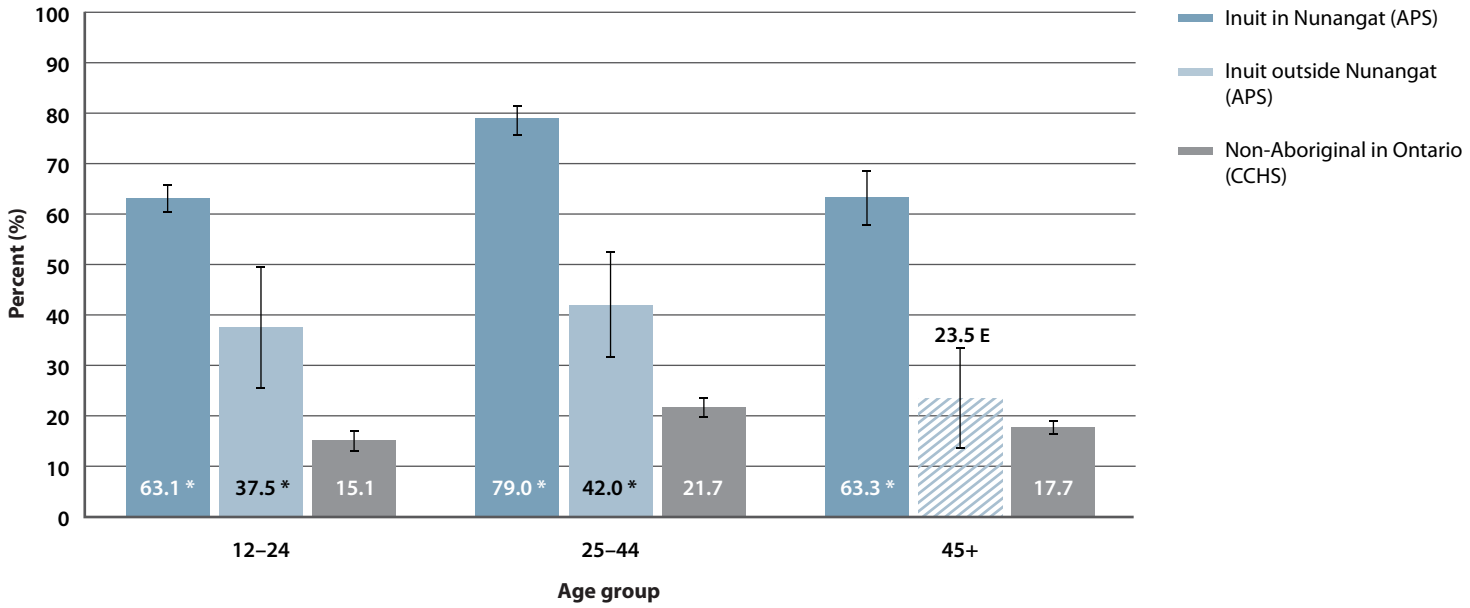



**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals.
• E: interpret cross-hatched estimates with caution due to high sampling variability.

For Inuit, tobacco holds no historical or traditional significance. However, almost three-quarters of Inuit adults living in Inuit Nunangat smoke commercial tobacco.

FIGURE 10

**Percentage of Inuit in Canada and non-Aboriginal people in Ontario who were current smokers, by age group, 2012**




**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

## SECOND-HAND SMOKE EXPOSURE

These indicators compare second-hand smoke exposure in non-smoking First Nations people living off-reserve and Métis people in Ontario, as well as Inuit in Canada, to non-Aboriginal Ontarians. There are no data available regarding exposure to second-hand smoke on-reserve. The numbers were too small to reliably estimate second-hand exposure specifically in Inuit in Ontario, so estimates were calculated for Inuit living outside Inuit Nunangat instead, which also includes those living in Ontario.

## Policy and program indicator: Second-hand smoke exposure in First Nations, Métis and Inuit

### First Nations

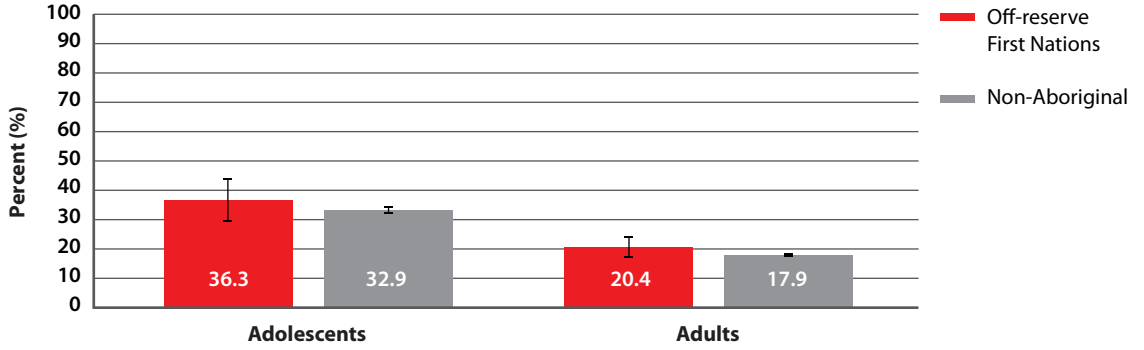
During 2007–2012, a similar percentage of off-reserve First Nations adults (20.4 percent) and non-Aboriginal non-smoking adults (17.9 percent) age 20 and older reported being exposed to second-hand smoke at home, in private vehicles or in public places (Figure 11). A higher percentage of non-smoking adolescents ages 12 to 19 than adults reported being exposed to second-hand smoke, but the percentage of off-reserve First Nations adolescents (36.3 percent) and non-Aboriginal adolescents (32.9 percent) reporting second-hand smoke exposure was similar.

### Métis

Non-smoking Métis adults (15.0 percent) age 20 and older were significantly more likely to be exposed to second-hand smoke at home or in private vehicles than non-smoking non-Aboriginal adults (8.3 percent) during 2007–2014 (Figure 12). Second-hand smoke exposure at home or in vehicles was also significantly higher for Métis adolescents (36.7 percent) ages 12 to 19 than for non-Aboriginal adolescents (16.9 percent) and Métis adults (15.0 percent). There were no significant differences in exposure to second-hand smoke in public places reported by Métis and non-Aboriginal adults or adolescents, although Métis adolescents (30.1 percent) were significantly more likely to be exposed to second-hand smoke in public places than Métis adults (15.7 percent).

FIGURE 11

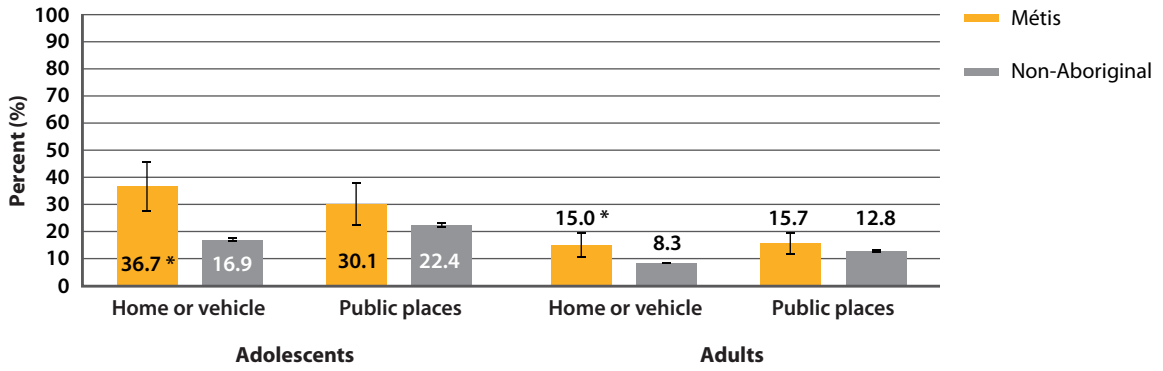
**Percentage of non-smoking First Nations and non-Aboriginal adolescents (ages 12–19) and adults (age 20+) exposed to second-hand smoke, Ontario, 2007–2012 combined**




**Source:** Canadian Community Health Survey (CCHS), 2007–2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • Data are presented in Supplementary Table S20.

FIGURE 12

**Percentage of non-smoking Métis and non-Aboriginal adolescents (ages 12–19) and adults (age 20+) exposed to second-hand smoke, by location, Ontario, 2007–2014 combined**



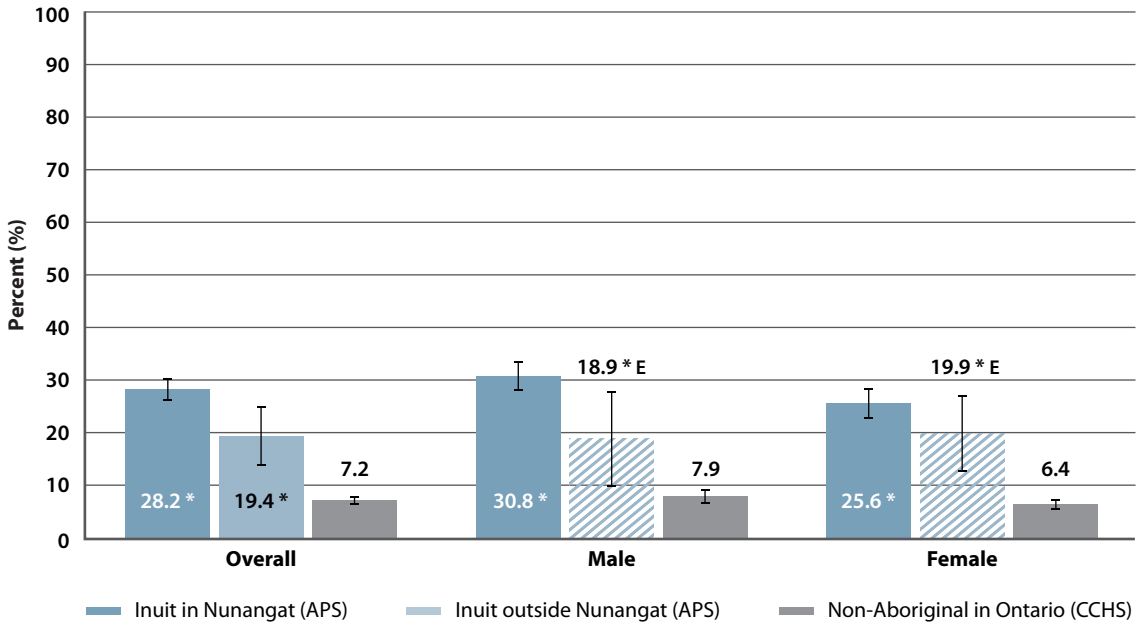

**Source:** Canadian Community Health Survey, 2007–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S21.

### Inuit

In 2012, the percentage of non-smoking Inuit age 15 and older living outside Inuit Nunangat who reported being exposed to second-hand smoke at home (19.4 percent) was significantly higher than for non-Aboriginal Ontarians (7.2 percent) (Figure 13). Among Inuit living in Inuit Nunangat, second-hand smoke exposure was four times higher (30.8 percent for men and 25.6 percent for women) than for non-Aboriginal Ontarians (7.9 percent for men and 6.4 percent for women). The estimates for Inuit men and women living outside Inuit Nunangat should be interpreted with caution due to small sample sizes. Significantly more Inuit non-smokers lived in smoking households in Inuit Nunangat (28.2 percent) than outside Inuit Nunangat (19.4 percent).

FIGURE 13

**Percentage of non-smoking Inuit in Canada and non-Aboriginal people in Ontario (age 15+) exposed to second-hand smoke at home, by sex, 2012**




**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S22.

## POLICIES AND PROGRAMS TO REDUCE TOBACCO USE IN FIRST NATIONS, INUIT AND MÉTIS

The results summarized above indicate that First Nations, Inuit and Métis populations have higher smoking rates than non-Aboriginal Ontarians. Furthermore, non-smoking Métis people in Ontario and Inuit in regions of Canada have a higher prevalence of second-hand smoke exposure at home and in vehicles than non-Aboriginal Ontarians. Although no data exist regarding the prevalence of second-hand smoke exposure in First Nations people living on-reserve, First Nations people living off-reserve have high levels of exposure to second-hand smoke. While many of the provincial-level policies and programs described in this section on tobacco can also benefit First Nations, Inuit and Métis populations, culturally relevant and co-developed policies and programs are required to decrease the future burden of tobacco-related cancers and chronic disease in First Nations, Inuit and Métis peoples.

**The *Path to Prevention* report presents four main recommendations to reduce or eliminate smoking and commercial tobacco use:**

- Develop and implement a coordinated plan to prevent commercial tobacco use among First Nation, Inuit and Métis children and youth.
- Establish commercial tobacco cessation programs and services in First Nation, Inuit and Métis communities.
- Support the development of resources to address second- and third-hand smoke (residue from tobacco smoke on indoor surfaces).
- Support community-initiated and managed tobacco control measures, while respecting First Nations' rights.

The first step to empowering First Nations, Inuit and Métis communities in making informed decisions about commercial tobacco use is to start a conversation about root causes. Cancer Care Ontario has been able to play a role in facilitating community dialogue about commercial tobacco use because of the organization's close relationships with these communities, the dedicated work of the Aboriginal Tobacco Program[166] and participatory research partnerships, such as the Research on Tobacco Reduction in Aboriginal Communities (RETRAC) project.[166,167] The *Path to Prevention* report summarizes the many organizations that are involved in chronic disease prevention activities—including tobacco control activities—for First Nations, Inuit and Métis populations in Ontario (see the *Path to Prevention* technical appendix, Appendix 3).

- **Develop and implement a coordinated plan to prevent commercial tobacco use among First Nations, Inuit and Métis children and youth**

  First Nations and Métis adolescents have a higher prevalence of smoking than non-Aboriginal adolescents (data are unavailable for Inuit adolescents in Ontario). A Canadian research study suggested that smoking prevention efforts should work with the unique strengths and needs of First Nations, Inuit and Métis youth.[168] The use of social media and emerging approaches may be effective programs for prevention.[169] A coordinated, multi-channel social marketing campaign should be developed as part of Smoke-Free Ontario to provide First Nations, Inuit and Métis children and youth with information that can help them make

educated choices. Proven marketing principles and tailored messaging that normalizes smoke-free behaviour can be applied to reach all children and youth in high-risk communities.[100,170-172]

- **Establish commercial tobacco cessation programs and services in First Nations, Inuit and Métis communities**
  The Aboriginal Tobacco Program, led by Cancer Care Ontario, works closely with First Nations, Inuit and Métis communities throughout the province to respectfully address commercial tobacco use. Programming is designed to enhance knowledge, build capacity and empower communities with the skills and tools needed to address commercial tobacco cessation, prevention and protection. The Aboriginal Tobacco Program works with Smoke-Free Ontario's objectives, while respecting the role of traditional tobacco and the rights of on-reserve First Nations to make their own decisions regarding tobacco control in their communities. Comprehensive approaches that are specific to the needs of First Nations, Inuit and Métis peoples have been shown to be effective[173] and these approaches are incorporated into the work of the Aboriginal Tobacco Program. It is recommended that the programs addressing First Nations, Inuit and Métis tobacco cessation broaden and extend their efforts to create an integrated and coordinated Ontario tobacco cessation system. Broadening the tobacco cessation system could include ensuring adequate and accessible counselling services, covering the cost of smoking cessation therapies and examining the social determinants of health.
- **Support the development of resources to address second- and third-hand smoke**
  The government can support existing initiatives and resources that address second- and third-hand smoke, such as the Aboriginal Tobacco Program, and programs offered by Friendship Centres, Aboriginal Health Access Centres, non-governmental organizations and schools. The Smoke-Free Ontario Scientific Advisory Committee recommended implementing media and social marketing strategies, and grassroots local action initiatives that address social norm change and protection from exposure to tobacco smoke, which can be effective for First Nations, Inuit and Métis communities.
- **Support community-initiated and managed tobacco control measures, while respecting First Nations' rights**
  It is imperative that policies respect the rights of on-reserve First Nations to make their own decisions regarding tobacco control in their communities. The Smoke-Free Ontario Act applies to off-reserve First Nations, Inuit and Métis, but it does not apply to on-reserve First Nations. In 2006, the Chiefs of Ontario passed a resolution calling for Provincial Territorial Organizations to "assist First Nations to become smoke-free through positive smoke-free policy/by-law development." Since this resolution was formalized, all Provincial Territorial Organizations have passed supporting resolutions and many First Nations communities have passed by-laws restricting smoking in public places.

# Alcohol

## Drinking alcohol is a cause of oral, pharyngeal, esophageal, laryngeal, colorectal and liver cancers, and is a probable cause of premenopausal breast and stomach cancers.[83,87,174,175]

People who smoke tobacco and drink alcohol have an even higher risk for some cancers.[82] A dose-response relationship exists between alcohol consumption and cancer risk, with the risk of most cancers increasing as each additional drink is consumed per day.[176] In Canada, a standard drink contains 17.05 millitres (ml) of alcohol, which is equal to approximately 43 ml (1.5 fluid ounces [fl. oz.]) of spirits, 142 ml (5 fl. oz.) of wine or 341 ml (12 fl. oz.) of beer.[177] There is no safe limit of alcohol to prevent an increased risk of cancer.[178] For people who decide to drink alcohol, the World Cancer Research Fund/American Institute for Cancer Research recommended in 2007 that men have no more than two drinks a day and that women have no more than one drink a day.[83] This recommendation is used by several cancer organizations in Canada, including Cancer Care Ontario.

## Differences in alcohol consumption in the Ontario population

During 2012–2014, 8.2 percent of Ontario adults age 25 and older reported drinking alcohol in excess of the recommended limits for cancer prevention (Supplementary Tables S23 and S24). The prevalence of consuming alcohol in excess of the recommended limits varied significantly across income quintiles, with the likelihood of exceeding the limits increasing as income increased. Adults in the highest income quintile (12.2 percent) were significantly more likely than adults in any other income quintile to drink alcohol in excess of the recommended limits, with adults in the lowest income quintile (4.9 percent) being the least likely to exceed the limits. During this time period, Canadian-born residents were also significantly more likely to drink alcohol in excess of the recommended limits for cancer prevention than immigrants. Men were slightly, but significantly, more likely to exceed the limits than women, and adults living in rural areas were slightly, but significantly, more likely to exceed the limits than adults living in urban areas.

Another drinking pattern examined for the Ontario population was binge drinking, which is defined as consuming four or more drinks for women and five or more drinks for men on one occasion at least once per month. Similar to the income gradient seen for drinking in excess of the recommended limits for cancer prevention, the likelihood of binge drinking by Ontarians age 25 and older during 2012–2014 increased as income increased (Supplementary Tables S25 and S26). Men were significantly more likely to binge drink than women and rural residents were significantly more likely to binge drink than urban residents. Canadian-born adults were significantly more likely to binge drink than immigrants, and gay, lesbian or bisexual adults were significantly more likely to binge drink than heterosexual adults. Adults who had not completed post-secondary education were slightly, but significantly, more likely to binge drink than adults who had completed post-secondary education.

While Ontarians with higher income are more likely to drink alcohol in excess of the recommended limits for cancer prevention and are more likely to binge drink than those with lower income, research suggests that in people who drink, those with lower socio-economic status experience greater harms from alcohol.[179-183]

In addition, in people who drink, groups with lower socio-economic status are more likely to engage in heavier drinking patterns, including binge drinking, which may also contribute to increased alcohol-related harms.[186-188] A population-based survey in the United States showed that binge drinking was more common in groups with higher income, but in people who reported binge drinking, the frequency (number of episodes in a month) and intensity (average number of drinks per episode) of binge drinking increased with lower income and education.[188]

Therefore, Ontarians who binge drink were examined more closely to determine whether the frequency and intensity of binge drinking episodes varied by selected socio-demographic factors. The percent of binge drinkers (defined as four or more drinks for women and five or more drinks for men on one

**From the literature: The alcohol harm paradox**

A 2015 meta-analysis found that people with lower socio-economic status were at increased risk of alcohol-related cancers of the head and neck, even after controlling for smoking status.[179] The rate of hospitalization for conditions that are entirely due to alcohol for Ontarians in the lowest income group was twice as high as the hospitalization rate for Ontarians in the highest income group in 2012 (117 versus 55 per 100,000, age-standardized).[180] Population-based surveys in Scotland and Finland found that groups with lower socio-economic status had higher alcohol-related hospitalizations and deaths than groups with higher socio-economic status, even at similar and lower levels of drinking,[181,184] although a similar study in New Zealand did not replicate this finding.[185] Researchers suggest that increased alcohol-related harms in groups with lower socio-economic status may be due to a range of causes, such as poorer nutrition status, smoking and barriers to accessing healthcare; however, these relationships have not been directly investigated.[181,182] Higher stress levels and fewer social support networks and other resources to cope with the associated consequences of living with lower income have also been suggested as contributing factors.[183]

**At similar and lower levels of drinking, groups with low socio-economic status experience more alcohol-related harms than those with high socio-economic status.**

occasion at least once per month) who reported binge drinking once a week or more was measured. Findings were similar to those seen in the United States, with the frequency of binge drinking varying by income level.[188] In Ontario during 2012–2014, 49.1 percent of adults age 25 and older in the lowest income quintile binge drank once a week or more, which is a significantly higher percentage than adults in the highest income quintile (39.7 percent) (Figure 14). Men were significantly more likely than women to binge drink once a week or more, as were adults who had not completed high school compared to adults who had completed post-secondary education.

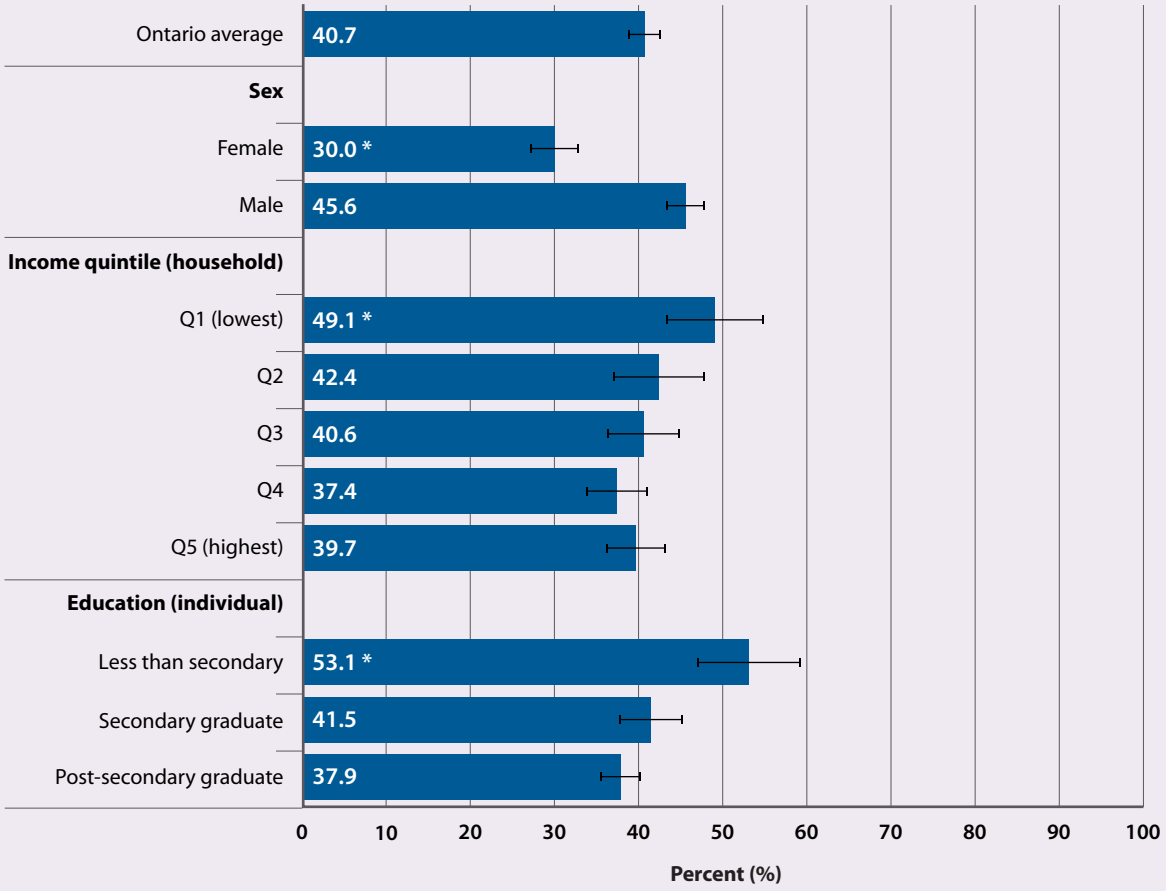
During the same time period, the intensity of binge drinking (number of drinks per binge drinking episode) was also slightly, but significantly, higher for binge drinkers in the lowest income quintile (7.3 drinks) than for binge drinkers in the highest income quintile (6.6 drinks) (Supplementary Tables S29 and S30). While low-income binge drinkers consume only about one more drink per binge episode than high-income drinkers, the effects of this small difference may be compounded because of the more frequent binges seen in low-income binge drinkers.

## Policies and programs to reduce alcohol consumption

Ontario has many elements of a strong alcohol control system, but there are opportunities to strengthen its current policies and programs. Enhancing these policies and programs should be done as part of a cross-sectoral and comprehensive alcohol control strategy, which is an approach recommended by international, national and provincial organizations.[189-191]

FIGURE 14

**Percentage of adult binge drinkers (age 25+) who reported binge drinking once a week or more, by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • Ontario average: average among all binge drinkers ages 25+. • Binge drinkers: females who drank 4+ drinks or males who drank 5+ drinks on one occasion at least once per month in the past 12 months. • * Estimate is significantly different from the rates in the following reference categories: male for analyses by sex; quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education. • These data and additional analyses by residence, immigration status and sexual orientation are presented in Supplementary Tables S27 and S28.

In December 2015, the Ontario government committed to developing a comprehensive, province-wide alcohol policy.[192] According to the 2008 Ontario Public Health Standards, at the local level, boards of health are mandated to engage in surveillance, health promotion and policy development related to alcohol misuse to reduce alcohol use in a range of settings.[193] The following sub-sections focus on selected policies and programs that, as part of a comprehensive alcohol control strategy, can reduce alcohol consumption in the population and reduce health inequities.

**Opportunity:**

- Develop and implement a comprehensive, cross-sectoral provincial alcohol control strategy.

## PRICING

Policies that set minimum prices on the sale of alcoholic beverages lead to lower alcohol consumption in heavy drinkers in all income groups, but the greatest reduction in consumption has been seen in low-income heavy drinkers.[194-196] Increases in the average price of alcohol also reduce consumption in lower income populations.[197,198] In Ontario, the Liquor Control Act includes a regulation on minimum pricing for off-premises alcohol outlets; however, products may be sold below minimum prices to clear inventory.[199] Currently, none of the minimum prices per standard drink meet the minimum price estimated by a modelling study to achieve appreciable reductions in alcohol consumption at the population level ($1.68 in 2017 dollars).[200,201] In its 2016 budget, the Ontario government announced that the minimum retail price of wine will increase to be consistent with spirits and beer, so that the minimum price of a 750-millilitre bottle of wine will be $7.95 by 2019. Minimum retail prices for cider, fortified wine and low-alcohol wine will also be phased in during this time period.[202]

**Opportunity:**

- Increase the minimum price of alcoholic beverages in off-premises alcohol outlets to a level that can appreciably reduce alcohol consumption at the population level ($1.68 per standard drink in 2017 dollars).

## ALCOHOL AVAILABILITY

Increasing the density of on- and off-premises alcohol outlets (number of outlets per population unit) in a geographic area may result in higher alcohol consumption in that area.[203] In addition, an increased percentage of privatized off-premises alcohol outlets may result in increased alcohol consumption in a population.[204,205] An on-premises alcohol outlet is a bar, restaurant or other establishment where people buy alcohol and drink it on-site. An off-premises alcohol outlet is a retail store where people buy alcohol, but drink it elsewhere. In 2015, the density of on- and off-premises alcohol outlets in Ontario was 17.2 for every 10,000 people age 15 and older, and 75.9 percent of the off-premises alcohol outlets in Ontario were privately owned, similar to 2014.[1]

An increase in the availability of alcohol outlets in neighbourhoods with lower socio-economic status has been associated with increases in heavy drinking or alcohol-related harms in the United States,[206,207] Scotland,[208,209] Wales,[210] New Zealand,[211,212] and Australia.[213] Researchers have called for regulations to address alcohol outlet disparities at the neighbourhood level, which may include measures such as zoning bylaws.[214]

Ontario does not currently have a provincial policy limiting the density of alcohol outlets. However, the Alcohol and Gaming Commission of Ontario has oversight for the location of private on- and off-premises alcohol outlets, and provincial regulations provide the opportunity for public input on the location of these outlets.[215] The government has made recent policy changes that allow for the sale of beer, cider and wine in grocery stores and the sale of wine at farmers' markets, which increases the overall number of off-premises alcohol outlets and the proportion that are private.[216,217] Additional privatization and increased density of alcohol outlets should be limited in Ontario.

At the municipal level, bylaws can be established that limit the availability of alcohol, such as zoning regulations to reduce clustering of outlets. A few municipalities in Ontario have passed these types of bylaws. For example,

An increase in the availability of alcohol outlets in neighbourhoods with lower socio-economic status has been associated with increases in heavy drinking or alcohol-related harms in several jurisdictions.

Barrie has a zoning bylaw amendment that requires nightclubs to be a minimum distance from residential areas and other nightclubs.[218] In addition, more than half of municipalities in Ontario have developed a municipal alcohol policy to regulate alcohol consumption on municipally owned or managed properties (e.g., parks and recreational facilities).[219]

**Opportunities:**

- Limit additional privatization and increased density of alcohol outlets in Ontario.
- Develop municipal zoning regulations to reduce the availability of alcohol and the proximity of outlets to vulnerable populations or neighbourhoods.

## TREATMENT FOR EXCESSIVE ALCOHOL CONSUMPTION

As seen in the data presented earlier, binge drinkers with lower income and lower education binge drink with greater frequency and intensity than those with higher income and education. However, even at similar levels of drinking, people with lower socio-economic status experience greater harms from alcohol use. Targeted treatment may be required to help these groups reduce their alcohol consumption.

There is good evidence that screening, brief intervention and referral for excessive alcohol use in primary care can be a cost-effective harm reduction strategy for lowering alcohol consumption in adults with moderate- to high-risk drinking.[220,221] Acute care may also be an important setting for screening and brief interventions.[222]

However, only a few studies have examined the effectiveness of screening, brief intervention and referral for excessive alcohol consumption in populations facing health inequities, and the results show that these interventions may lack effectiveness in these populations.[214]

The College of Family Physicians of Canada and the Canadian Centre on Substance Abuse have a website that provides healthcare providers with an evidence-informed guide to providing alcohol screening, brief intervention and referral for their patients.[223] In Ontario, referrals can be made to hospitals and not-for-profit organizations that offer clinical treatment for alcohol use disorders. Treatment may include residential or outpatient treatment, individual or group counselling, or addiction treatment medications (e.g., naltrexone).

Many Canadians with at-risk drinking and alcohol use disorders experience barriers accessing appropriate treatment due to limited availability of services, stigma towards alcohol use disorders and financial difficulties.[224,225] To improve alcohol treatment, the Canadian Centre for Substance Use and Addiction recommends strengthening the quality, accessibility and range of options for treating harmful substance use in Canada.[226] The province has a Mental Health and Addictions Strategy that includes goals to identify mental health and addictions problems, and to provide timely, high-quality, integrated, person-directed health and other human services.[227] The strategy also includes initiatives such as increasing coordination of mental health and addictions services, reviewing new funding models based on population needs and delivering services in community settings.[227]

**Opportunities:**

- Increase access to screening, brief intervention and referral in healthcare settings.
- Increase access to government-funded alcohol treatment services for the population, with additional resources tailored to people facing health inequities.

## Summary of opportunities to reduce alcohol consumption

- Develop and implement a comprehensive, cross-sectoral provincial alcohol control strategy.

### Pricing

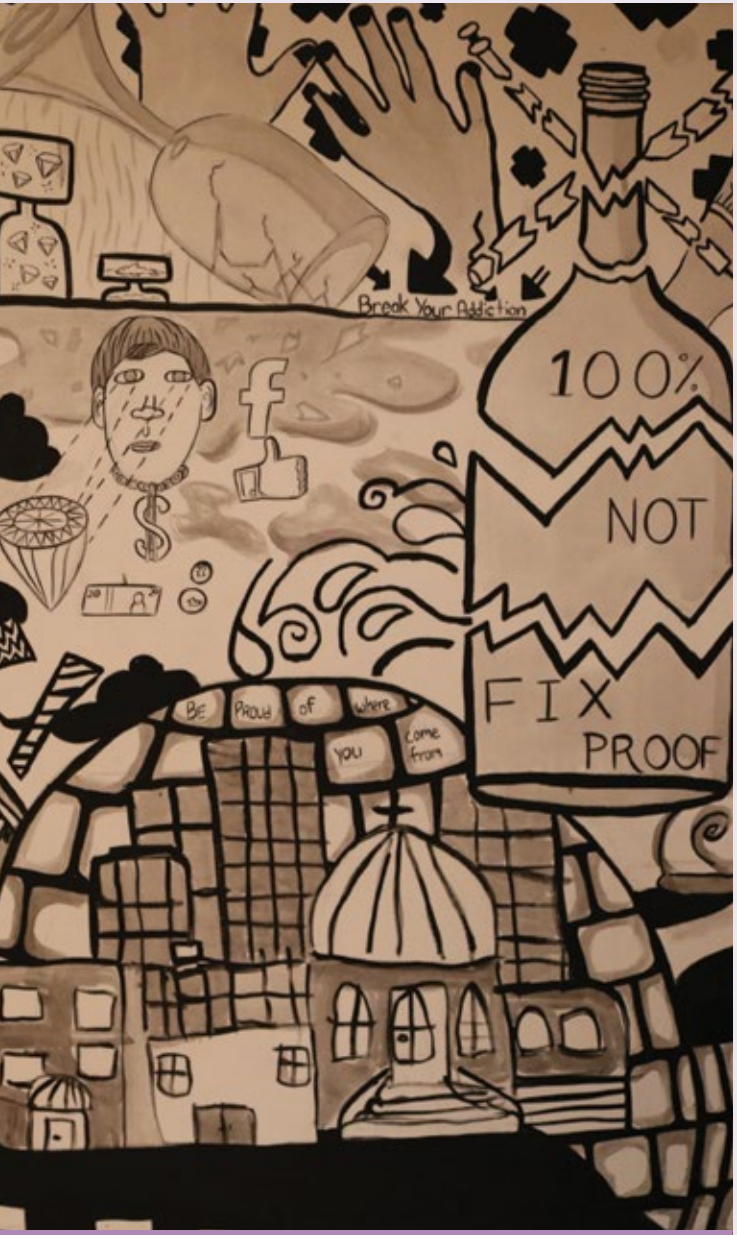
- Increase the minimum price of alcoholic beverages in off-premises alcohol outlets to a level that can appreciably reduce alcohol consumption at the population level ($1.68 per standard drink in 2017 dollars)

### Alcohol availability

- Limit additional privatization and increased density of alcohol outlets in Ontario.
- Develop municipal zoning regulations to reduce the availability of alcohol and the proximity of outlets to vulnerable populations or neighbourhoods.

### Treatment for excessive alcohol consumption

- Increase access to screening, brief intervention and referral in healthcare settings.
- Increase access to government-funded alcohol treatment services for the population, with additional resources tailored to people facing health inequities.




*Artwork at the Mamisarvik Healing Centre in Ottawa*

# Alcohol: Focus on First Nations, Inuit and Métis

Colonization brought alcohol into Indigenous communities in Canada and firmly entrenched it in the lives of First Nations, Inuit and Métis peoples.[74] Studies have shown that deaths due to alcohol-related diseases and potential years of life lost are higher for registered First Nations and Métis adults in Canada than the general population.[33] There are no equivalent studies that have evaluated deaths from alcohol-related diseases in Inuit populations, although alcohol misuse has been identified by Inuit as a primary health and social concern in their communities.[228]

Many First Nations, Inuit and Métis peoples lack accessible resources for alcohol treatment due, in part, to the location of their communities.[229] In addition, there are limited options for culturally appropriate alcohol treatment resources offered through federally or provincially funded programs. Culturally based approaches to reducing alcohol consumption in First Nations, Inuit and Métis communities was an emerging theme in the focus groups that were convened in the development of the *Path to Prevention* report.[74] Studies from Canada and the United States suggest that interventions that include cultural components are effective for younger First Nations, Inuit and Métis peoples, who are at highest risk.[230,231] Inuit Tapiriit Kanatami suggests that treating addictions requires a wholistic, culturally appropriate approach that should include land-based initiatives (programs connecting Inuit to traditional skills) and increased community capacity so community members can stay closer to home during treatment.[232]

Many First Nations reserve communities and northern Inuit communities have imposed restrictions on the availability of alcohol, making these communities "dry" or "restricted."[74,228] Examples of actions to promote abstinence from alcohol can include establishing alcohol-free zones in buildings and community events, offering addictions treatment programs, and implementing alcohol and drug bans in some communities. Approaches that work in one community may not be successful in another; approaches must be community-led and informed so that they meet the unique needs of the populations they serve.

This section compares the consumption of alcohol in First Nations and Métis populations in Ontario and Inuit populations in regions of Canada to that in non-Aboriginal Ontarians. The prevalence of abstinence from alcohol and binge drinking are examined, and recommendations to reduce alcohol consumption and achieve abstinence in First Nations, Inuit and Métis populations are discussed.

**Many First Nations, Inuit and Métis peoples lack accessible resources for alcohol treatment due, in part, to the location of their communities.**

## ALCOHOL CONSUMPTION

### Abstinence from alcohol in First Nations, Métis and Inuit

These indicators measure the percentage of First Nations, Métis and Inuit adults (excluding pregnant women) age 19 and older who reported not having an alcoholic drink in the past 12 months.

### First Nations

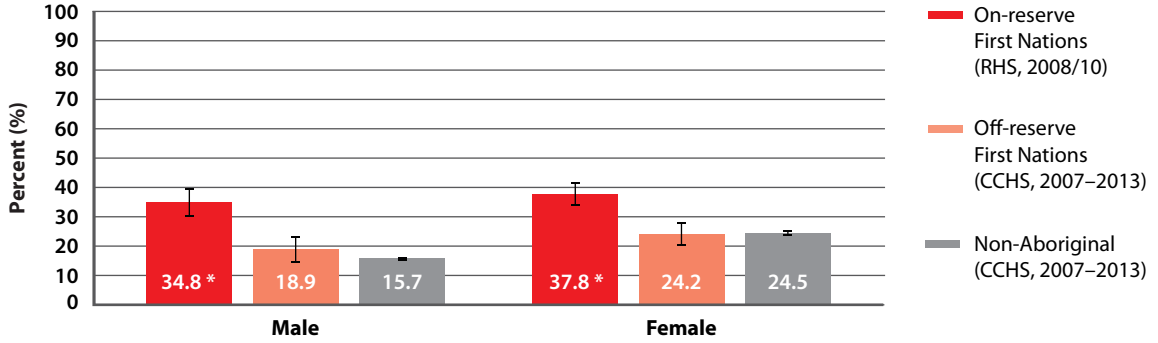
During 2007–2013, on-reserve First Nations men (34.8 percent) were significantly more likely to have abstained from drinking alcohol in the previous 12 months than off-reserve First Nations men (18.9 percent) and non-Aboriginal men (15.7 percent) (Figure 15). On-reserve First Nations women (37.8 percent) were also more likely to have abstained from drinking alcohol than off-reserve First Nations women (24.2 percent) and non-Aboriginal women (24.5 percent).

### Métis

Fewer Métis men (12.4 percent) reported abstaining from alcohol than non-Aboriginal men (16.0 percent) during 2007–2012, although this difference was not significant (Figure 16). Métis women (12.9 percent), however, were significantly less likely to abstain from alcohol than non-Aboriginal women (24.5 percent).

FIGURE 15

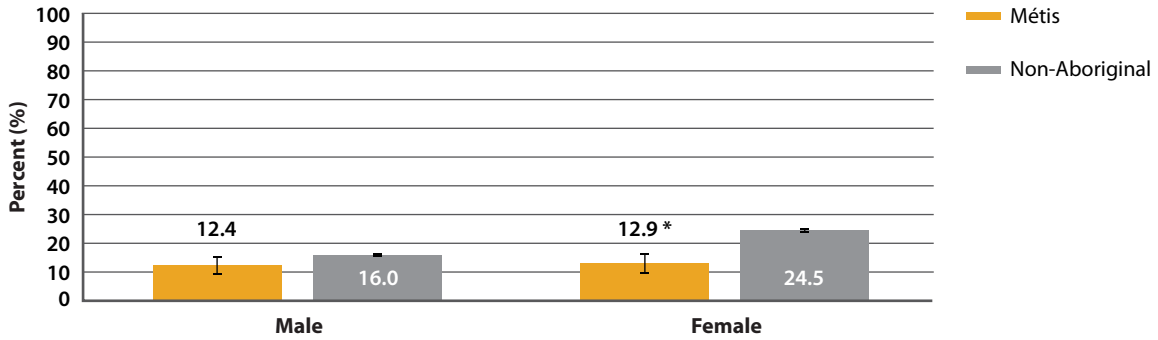
**Percentage of First Nations and non-Aboriginal men and women (age 19+) who abstained from drinking alcohol in the previous 12 months, Ontario, 2007–2013 combined**




**Sources:** Canadian Community Health Survey (CCHS), 2007–2013 (Statistics Canada); First Nations Regional Health Survey (RHS) Phase 2, 2008/10 (First Nations Information Governance Centre)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

FIGURE 16

**Percentage of Métis and non-Aboriginal men and women (age 19+) who abstained from drinking alcohol in the previous 12 months, Ontario, 2007–2012 combined**



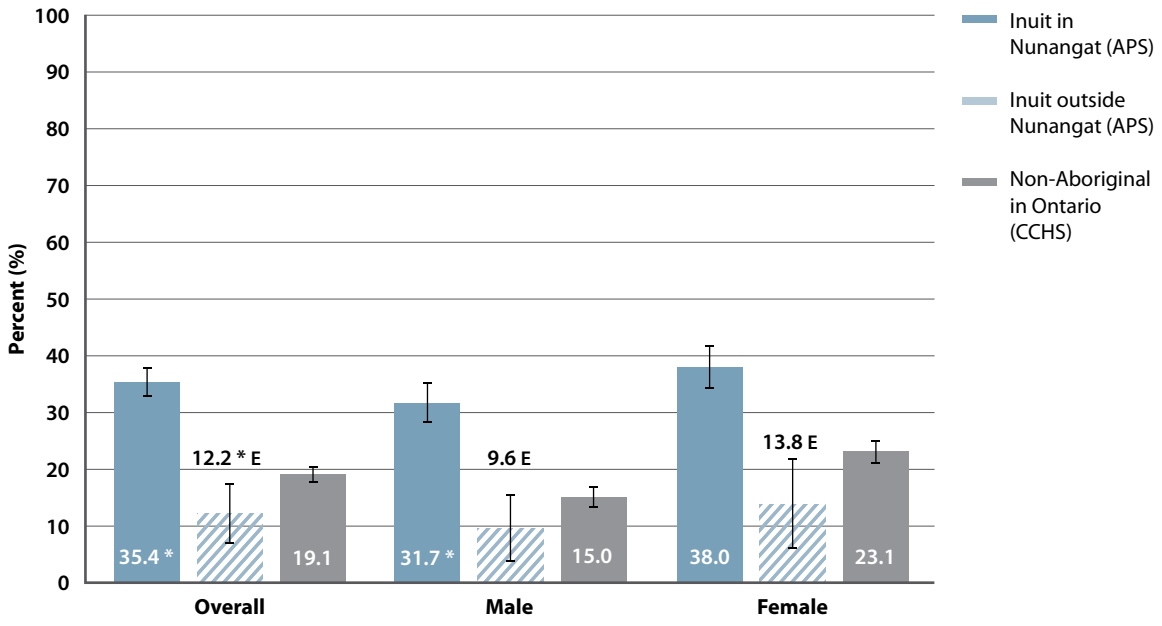

**Source:** Canadian Community Health Survey, 2007–2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

### Inuit

In 2012, Inuit adults living outside Inuit Nunangat (12.2 percent) were significantly less likely to have abstained from drinking alcohol in the previous year than non-Aboriginal Ontarians (19.1 percent) (Figure 17). More than one-third (35.4 percent) of Inuit adults living in Inuit Nunangat abstained from drinking alcohol in the previous year, which is significantly more than non-Aboriginal Ontarians. The estimates for Inuit living outside Inuit Nunangat should be interpreted with caution due to small sample sizes.

FIGURE 17

**Percentage of Inuit adults in Canada and non-Aboriginal adults in Ontario (age 19+) who abstained from alcohol in the previous 12 months, by sex, 2012**




**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

*Colonization brought alcohol into Indigenous communities in Canada and firmly entrenched it in the lives of First Nations, Inuit and Métis peoples.*

## Binge drinking in First Nations, Métis and Inuit

These indicators measure the percentage of First Nations, Métis and Inuit adults (excluding pregnant women) age 19 and older who reported having five or more drinks on one occasion at least two to three times a month in the past 12 months.

### First Nations

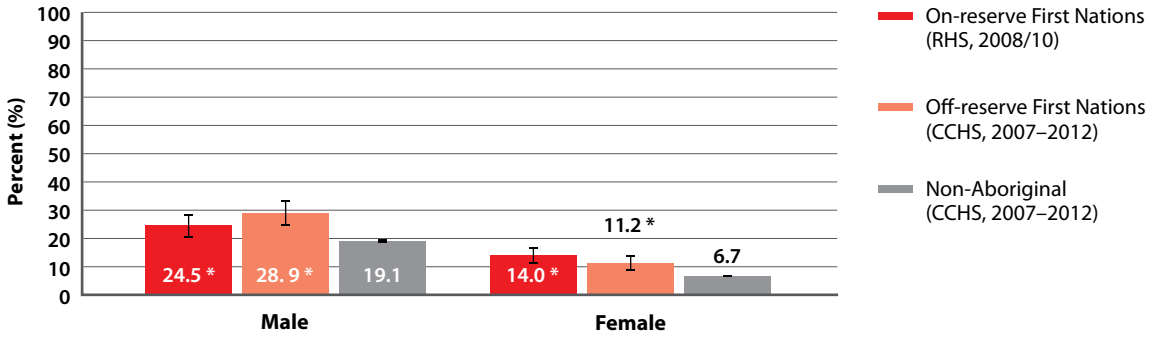
During 2007–2013, First Nations men were significantly more likely than First Nations women to binge drink (Figure 18). This pattern is similar to that seen in non-Aboriginal men and women in Ontario. During this time period, 28.9 percent of off-reserve First Nations men reported binge drinking, compared to 24.5 percent of on-reserve First Nations men and 19.1 percent of non-Aboriginal men. The prevalence of binge drinking in on- and off-reserve First Nations women was similar (14.0 percent and 11.2 percent) and was significantly higher than for non-Aboriginal women (6.7 percent).

### Métis

During 2007–2013, Métis men in Ontario were significantly more likely than Métis women to binge drink (Figure 19). The percentage of Métis men (25.8 percent) and women (10.8 percent) who reported binge drinking was significantly higher than for non-Aboriginal men (19.1 percent) and women (6.7 percent).

FIGURE 18

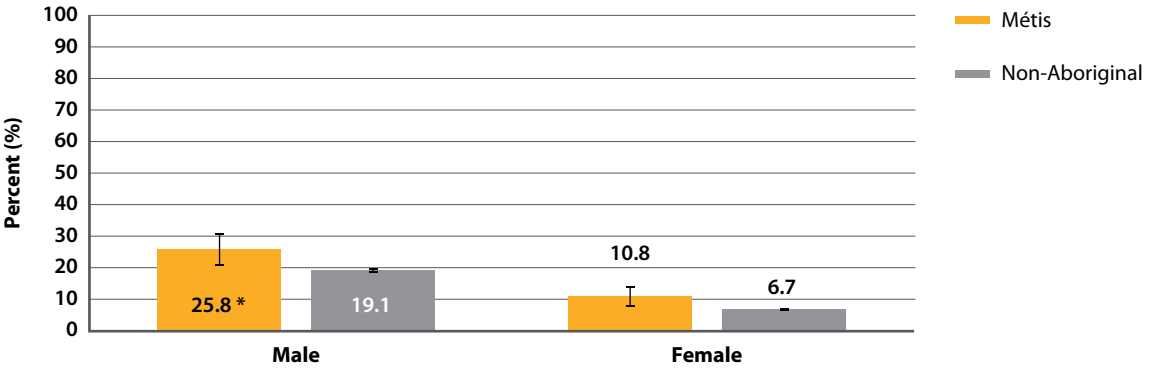
**Percentage of First Nations and non-Aboriginal men and women (age 19+) who had 5 or more alcoholic drinks on 1 occasion at least 2 to 3 times a month in the past year, Ontario, 2007–2013 combined**




**Sources:** Canadian Community Health Survey (CCHS), 2007–2012 (Statistics Canada); First Nations Regional Health Survey (RHS) Phase 2, 2008/10 (First Nations Information Governance Centre)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

FIGURE 19

**Percentage of Métis and non-Aboriginal men and women (age 19+) who had 5 or more alcoholic drinks on 1 occasion at least 2 to 3 times a month in the past year, Ontario, 2007–2013 combined**



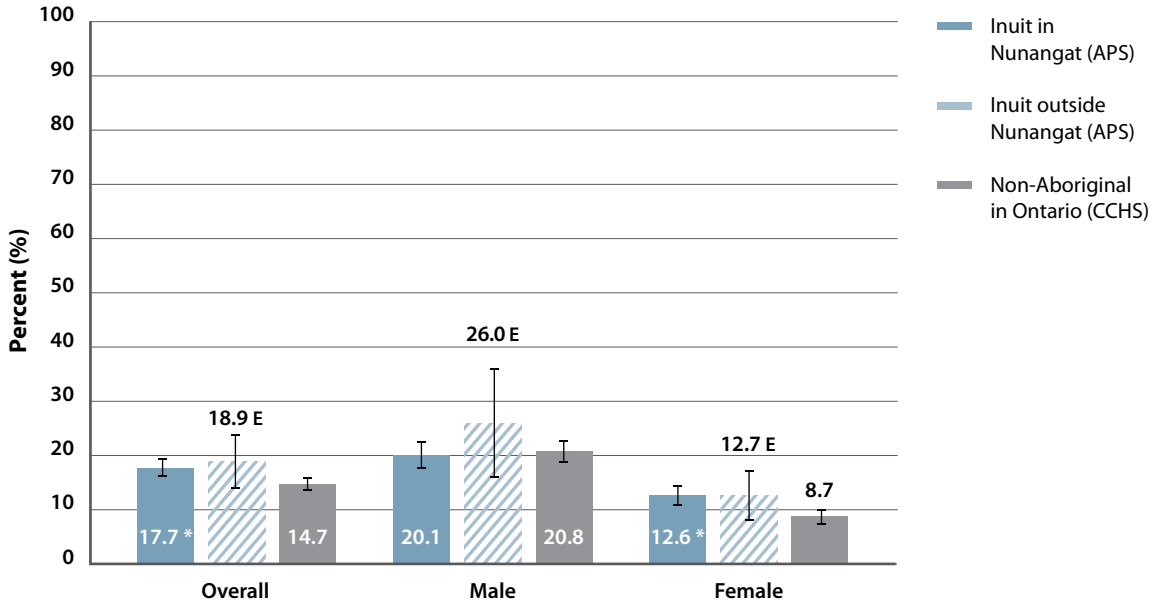

**Source:** Canadian Community Health Survey, 2007–2013 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Ontario Aboriginal identity population. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

### Inuit

In 2012, similar percentages of Inuit men living outside Inuit Nunangat (26.0 percent) and in Inuit Nunangat (20.1 percent), as well as non-Aboriginal men in Ontario (20.8 percent) reported binge drinking (Figure 20). Inuit women living outside Inuit Nunangat (12.7 percent) were more likely than non-Aboriginal women in Ontario (8.7 percent) to report binge drinking. The estimates for Inuit living outside Inuit Nunangat should be interpreted with caution due to small sample sizes. Inuit living in Inuit Nunangat (17.7 percent) were significantly more likely to binge drink than non-Aboriginal Ontarians (14.7 percent).

FIGURE 20

**Percentage of Inuit adults in Canada and non-Aboriginal adults in Ontario (age 19+) who had 5 or more alcoholic drinks on 1 occasion at least 2 to 3 times per month in the past year, by sex, 2012**




**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • * Indicates that group is significantly different from the reference category (non-Aboriginal).

Inuit Tapiriit Kanatami suggests that treating addictions requires a wholistic, culturally appropriate approach that includes land-based initiatives and increased community capacity.

## POLICIES AND PROGRAMS TO REDUCE ALCOHOL CONSUMPTION IN FIRST NATIONS, INUIT AND MÉTIS

The results summarized above indicate that there are several significant differences in the drinking patterns between First Nations, Inuit and Métis adults, and non-Aboriginal Ontarians. On-reserve First Nations people and Inuit living in Inuit Nunangat are more likely to abstain from drinking alcohol than non-Aboriginal Ontarians. However, on- and off-reserve First Nations people, Inuit in Inuit Nunangat and Métis people are more likely to binge drink than non-Aboriginal Ontarians. While many of the provincial-level policies and programs described in this section on alcohol can also benefit First Nations, Inuit and Métis populations, culturally relevant and co-developed policies and programs are required to decrease the future burden of alcohol-related cancers and chronic disease in First Nations, Inuit and Métis peoples.

**The *Path to Prevention* report presents three main recommendations to reduce alcohol consumption and achieve abstinence:**

- Ensure that culturally acceptable and relevant alcohol prevention and treatment programs for First Nations, Inuit and Métis peoples are available.
- Broaden the impact of alcohol intervention strategies.
- Incorporate alcohol interventions into existing tobacco control initiatives.

Alcohol and other substance abuse is recognized as a priority in First Nations, Inuit and Métis communities in Ontario. Mental health and addictions is one of the four priorities of the Trilateral First Nations Health Senior Officials Committee.[74] Availability and promotion of alcohol is regulated by the Liquor Control Board of Ontario and the Alcohol and Gaming Commission of Ontario. Alcohol control on First Nations reserves is within their own jurisdiction and many have taken action to limit access to and availability of alcohol in their territories.[233] Alcohol treatment programs are provided to registered First Nations and Inuit by the National Native Alcohol and Drug Abuse Program, which is administered by Health Canada.[234] In addition, the Ontario Federation of Indigenous Friendship Centres offers counselling services for alcohol and drug addictions to all First Nations, Inuit and Métis peoples.[235] Alcohol counselling and treatment programs available to the general population through the Ontario health system can also be accessed by all First Nations, Inuit and Métis peoples, but may not include culturally sensitive addictions counselling and support.[74]

The *Path to Prevention* report makes three recommendations to reduce the risk of chronic disease by reducing the misuse of alcohol in First Nations, Inuit and Métis populations. There is no safe limit for alcohol consumption with respect to cancer prevention; therefore, the goal of these alcohol policy recommendations is abstinence. Reducing alcohol consumption is an important step in achieving this aim.[74]

Community approaches, particularly those that incorporate traditional or cultural values, can help reduce alcohol consumption in First Nations, Inuit and Métis populations.

- **Ensure that culturally acceptable and relevant alcohol prevention and treatment programs for First Nations, Inuit and Métis peoples are available**
  Culturally based programming has been shown to be effective in addressing the root causes of addictions and should be supported for First Nations, Inuit and Métis peoples. A Public Health Ontario analysis of studies on alcohol-related messaging noted that community approaches, particularly those that incorporate traditional or cultural values, are commonly recommended as strategies for targeting drinking behaviour in First Nations, Inuit and Métis populations, and can help reduce alcohol consumption.[169] Culturally based programming has also been shown to be effective in younger First Nations, Inuit and Métis peoples, who are at highest risk. Although culturally based alcohol treatment and prevention services exist, they do not appear to be adequate in number to meet demands.[74]

- **Broaden the impact of alcohol intervention strategies**
  The impact of alcohol prevention and treatment programs could be improved by working with First Nations, Inuit and Métis communities to enhance the skills of existing alcohol treatment workers so that they can provide basic and advanced counselling in their communities. In addition, the scope of existing alcohol prevention and treatment programs should be broadened to include chronic disease prevention, health promotion, community development and substance-free living. The findings of an evaluation of the National Native Alcohol and Drug Abuse Program align with this broader approach and recommend building the skills of addiction treatment workers so that they can address issues such as grief and loss, family violence, sexual abuse and tobacco use. The Mamisarvik Healing Centre in Ottawa is an example of how a wholistic approach to alcohol misuse and addictions has been applied in a residential treatment setting. At all levels of the health system, a collaborative approach is needed to make the most efficient use of resources and connect people to the services they need.[74]

- **Incorporate alcohol interventions into existing tobacco control initiatives**
  A broad approach should be taken to address addictions to alcohol, tobacco and other substances through prevention and cessation strategies. The combination of drinking and smoking puts people at higher risk for some cancers. Broadening prevention and treatment programs for commercial tobacco so they include alcohol and other substances of abuse can help address the underlying causes of addictions by promoting healthy lifestyles.[236-238]

# Healthy eating

## Plant-based foods have a protective effect for several cancers.

Increased consumption of foods containing dietary fibre reduces the risk of colorectal cancer,[239] and eating non-starchy vegetables and fruit probably reduces the risk of cancers of the oral cavity, and pharynx and larynx.[83] Eating fruit may also protect against lung cancer.[83] The World Cancer Research Fund recommends eating at least five servings of non-starchy vegetables and fruit per day.[83]

### Differences in vegetable and fruit consumption in the Ontario population

Vegetable and fruit consumption is a good marker of overall diet quality—people who report consuming vegetables and fruit five or more times a day have a low likelihood of having a poor diet.[240] During 2012–2014, the majority of Ontarians (67.7 percent) age 25 and older ate vegetables and fruit fewer than five times per day (i.e., they had inadequate vegetable and fruit consumption) (Figure 21). There appeared to be an inverse gradient for income, with the prevalence of inadequate vegetable and fruit consumption increasing as income level decreased. Adults living in households in the highest income quintile (63.1 percent) were significantly less likely to have inadequate vegetable and fruit consumption than adults in any other income quintile, with adults in the lowest income quintile (72.6 percent) most likely to have inadequate consumption. A clear inverse

gradient was apparent for education; similar to income, the prevalence of inadequate vegetable and fruit consumption increased as education decreased. The likelihood of inadequate vegetable and fruit consumption was significantly higher for adults who had not completed secondary school (78.3 percent) or who had completed secondary school (72.3 percent) than for adults who had completed post-secondary education (64.2 percent).

During this time period, men (75.3 percent) were significantly more likely to report inadequate vegetable and fruit consumption than women (60.6 percent) (Figure 21). Residents of rural or northern areas were slightly, but significantly, more likely to report inadequate vegetable and fruit consumption than residents of urban or southern areas, and Canadian-born adults were slightly, but significantly, more likely to report inadequate vegetable and fruit consumption than immigrants who had lived in Canada for more than 10 years. Differences in vegetable and fruit consumption between northern and southern regions are likely due to the lack of availability and expense of nutritious foods in northern areas.[241] A more sensitive analysis specifically comparing the most remote northern regions to the least remote southern regions would likely show even greater variation in the prevalence of vegetable and fruit consumption.

## Policies and programs to increase healthy eating

The high prevalence of inadequate vegetable and fruit consumption in Ontario adults, especially in those with low income and education, indicates the need for universal and targeted healthy eating interventions. The following sub-sections focus on selected policies and programs that can increase healthy eating in the population and reduce health inequities. The topics discussed in this section on healthy eating align with those in the Ontario Food and Nutrition Strategy. In January 2017, 26 organizations that have a role in food systems and health, including Cancer Care Ontario, published the Ontario Food and Nutrition Strategy. The report contains strategic directions and actions aimed at improving the health and well-being of Ontarians and the province's food systems. Many of the actions include a health equity component.[241] A healthy eating strategy led by the provincial government is not currently in place.

**Opportunity:**

- Adopt and implement the Ontario Food and Nutrition Strategy, which contains strategic directions and actions for improving healthy eating and the province's food systems, including by increasing health equity.

### FOOD INSECURITY

Food insecurity at the household level occurs when limited financial resources compromise a household's access to nutritious food.[242] Food insecurity directly influences the quality and quantity of food eaten.[243-245] Adults and some children experiencing food insecurity tend to eat significantly fewer servings of vegetables and fruit than those who are food secure.[246] In Ontario during 2012–2014, adults who were food insecure (77.2 percent) were significantly more likely to report inadequate vegetable and fruit consumption than those who were not food insecure (66.4 percent) (Figure 21).

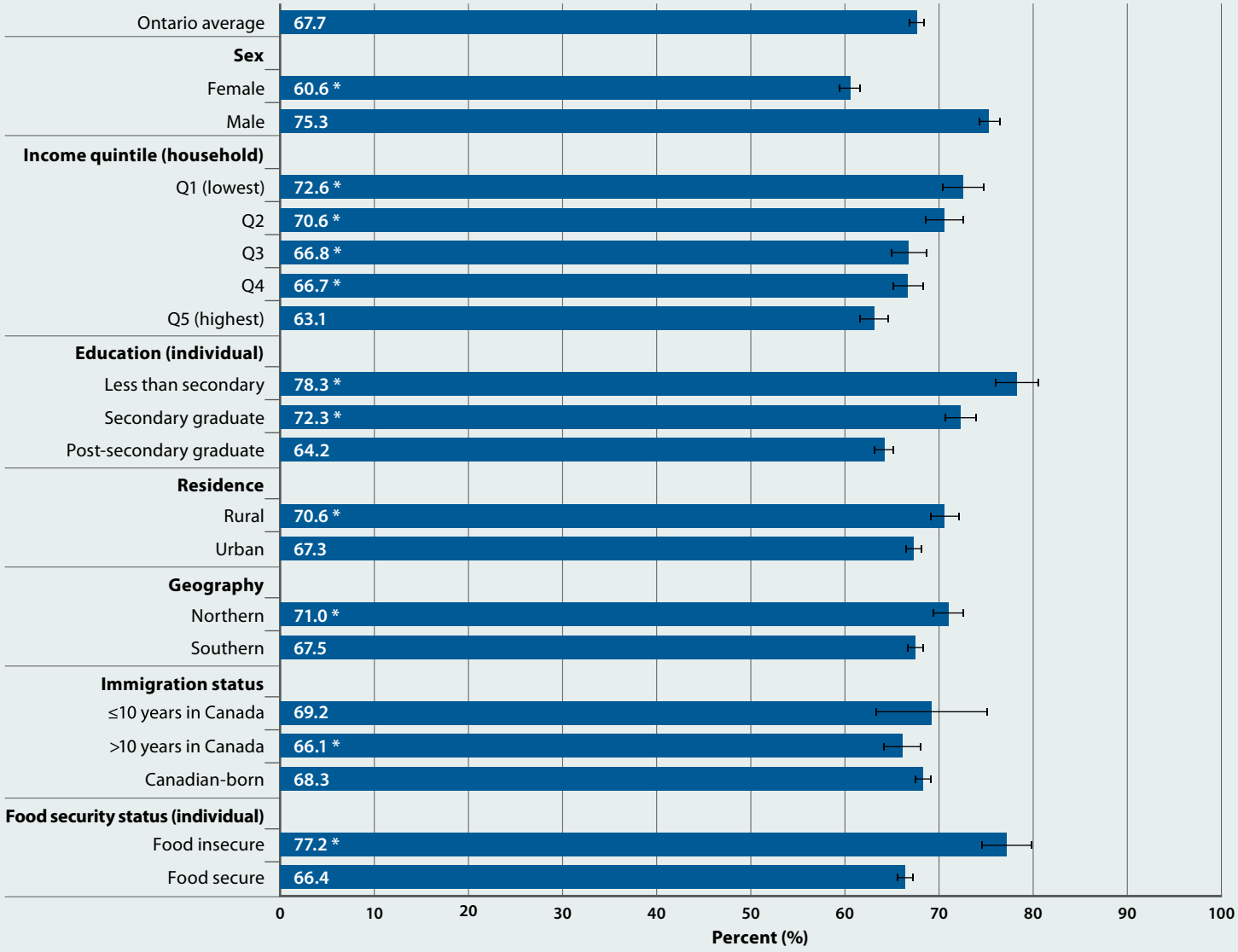
#### Policy and program indicator: Percentage of households that are food insecure, by selected socio-demographic factors

Food insecurity is often examined at the household level and includes any adults and children in a household who may be experiencing food insecurity. This indicator measures the percentage of households in Ontario that are food insecure, by household income quintile and geography, and includes all three levels of food insecurity: marginal (worrying about running out of food or limiting food selection), moderate (compromising on food quality and/or quantity) and severe (reducing food consumption or missing meals).

**The high prevalence of inadequate vegetable and fruit consumption in Ontario adults, especially in those with low income and education, indicates the need for universal and targeted healthy eating interventions.**

FIGURE 21

**Percentage of adults (age 25+) reporting inadequate vegetable and fruit consumption, by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population.
• ⊢⊣ represents 95% confidence intervals. • Inadequate vegetable and fruit consumption: consuming vegetables (excluding potatoes) and fruit fewer than five times per day. • * Estimate is significantly different from the rates in the following reference categories: male for analyses by sex; quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education; urban for analyses by residence; southern for analyses by geography; Canadian-born for analyses by immigration status; food secure for analyses by food security status.
• An additional analysis by cultural or racial group is presented in Supplementary Table S31.

During 2012–2014, 12.0 percent of households in Ontario experienced food insecurity (Figure 22). A clear inverse gradient was seen for income, with the prevalence of household food insecurity increasing as income level decreased. Households in the lowest income quintile (32.1 percent) were almost 19 times more likely to experience food insecurity than households in the highest income quintile (1.7 percent). An additional analysis for 2012–2014 showed that if all households in Ontario had the same degree of food insecurity as households in the highest income group, the percentage of households experiencing food insecurity could be reduced by 86 percent (Supplementary Table S32). This percentage represents an average of nearly 511,300 fewer households experiencing food insecurity per year in Ontario. Household food insecurity was similar in northern and southern regions (Supplementary Table S32).

### Policy and program indicator: Percentage of adults who are food insecure, by selected socio-demographic factors

While food insecurity is often examined at the household level, to examine how food insecurity varies by factors such as sex and age, it is necessary to analyze the food security of individuals. This indicator looks at individual food insecurity in Ontario adults age 25 and older, by sex and age group. During 2012–2014, 10.3 percent of adults experienced food insecurity (Supplementary Table S33). Individual food insecurity tended to decrease as age increased. Adults age 65 and older (5.2 percent) were significantly less likely to report food insecurity than adults ages 25 to 29 or 30 to 44, and slightly, but significantly, less likely to report food insecurity than adults ages 45 to 64. Adults ages 25 to 29 were most likely to be food insecure (15.5 percent) (Supplementary Table S33).

In addition, women (11.5 percent) were slightly, but significantly, more likely to be food insecure than men (9.2 percent) (Supplementary Table S34).

Based on the high prevalence of household and individual food insecurity in Ontario, it is important to address food insecurity in populations facing health inequities. In May 2017, the Ontario government started developing a Food Security Strategy for the province. A discussion paper for developing the strategy identifies four broad areas of focus to improve food security: empowering communities with custom-made solutions; integrating food initiatives; addressing income, the cost of food and other basic necessities; and driving innovation through the food system, social enterprises and non-profit organizations.[250] Measures currently being taken in Ontario to reduce poverty and increase community-based food access programs are discussed in the following paragraphs. Continuing to monitor the prevalence of food insecurity over time will help to assess the impact of poverty reduction and community initiatives. However, Ontario data for household food insecurity in 2015 and 2016 will not be available because the Household Food Security Survey Module of the Canadian Community Health Survey is not mandatory and was not selected by Ontario during these years.[251]

**From the literature: Food insecurity in Black Canadians**

Black Canadians have among the highest levels of food insecurity in the country. In 2014, 29.4 percent of Black respondents in Canadian households reported food insecurity, compared to 10.4 percent of white respondents.[242]

# 511,300
## households

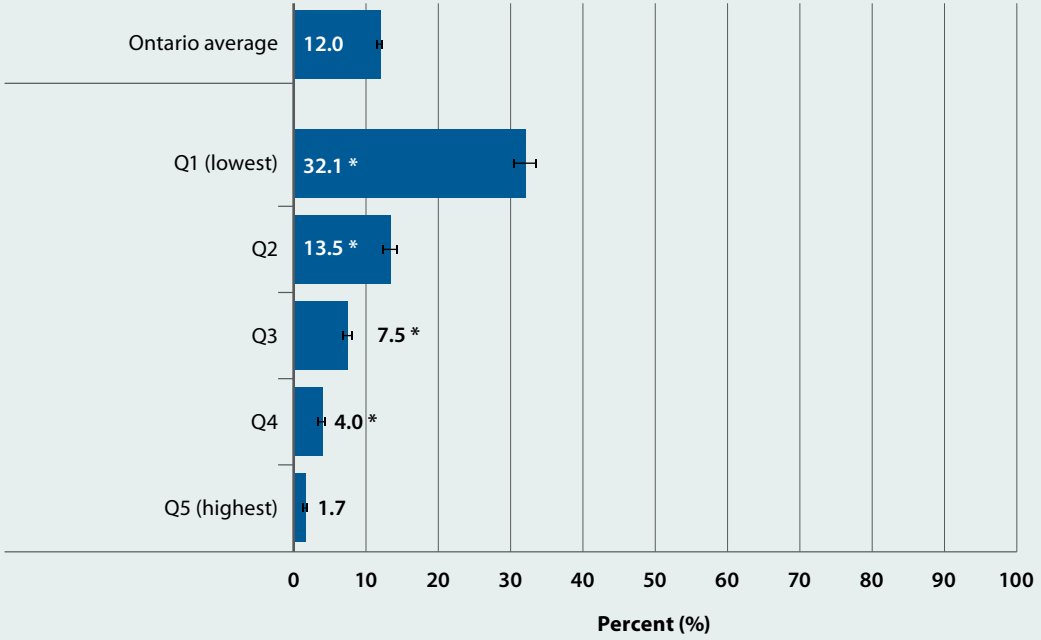
*If all households in Ontario had the same likelihood of food insecurity as households in the highest income group during 2012–2014, an average of 511,300 fewer households would have experienced food insecurity per year.*

**From the literature: Factors influencing food insecurity**

Recent research has found that populations that are more likely to have lower income, such as new immigrants[247] and people with a mental illness,[248] are also more likely to experience household food insecurity. This pattern exists because low income is a key driver of household food insecurity. In addition, Ontario households with children are at greater risk of food insecurity than households without children; in 2013–2014, 17 percent of households with children under the age of 18 experienced food insecurity.[242] However, the factors influencing food insecurity in different populations are multi-faceted. For example, in recent immigrants, food insecurity is also influenced by the availability of culturally appropriate foods.[247,249] In addition to improving incomes, targeted interventions that can be tailored towards specific groups facing health inequities are required.

FIGURE 22

**Percentage of Ontario households that were food insecure (marginal, moderate or severe), by household income quintile, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** ⊢⊣ represents 95% confidence intervals. • * Estimate is significantly different from the percentages in the following reference category: quintile 5 (Q5). • These data and an additional analysis by geography are presented in Supplementary Table S32.

## Poverty reduction

As shown in Figure 22, the risk of food insecurity is greatest at the lowest income levels. Poverty reduction policies, such as raising the minimum wage and social assistance benefits, have been shown to reduce household food insecurity in Canada.[252-254] In Nova Scotia, the minimum wage increased by 79 percent from 2002 to 2012, which resulted in improved affordability of nutritious diets.[252] In British Columbia, a one-time increase in social assistance from 2005 to 2007 temporarily decreased food insecurity in recipients until food prices were found to have risen faster than inflation after 2008.[254] A 2013 Canadian study looked at food security in low-income adults who were eligible for Old Age Security and the Guaranteed Income Supplement benefits, comparing adults ages 55 to 64 to adults ages 65 to 74. The older Canadians were less than half as likely to experience household food insecurity than the younger group.[255]

Ontario has a Poverty Reduction Strategy (2014–2019), which includes increasing the minimum wage, increasing the Ontario Child Benefit and indexing it to inflation, and enhancing funding for affordable housing.[62] In November 2017, the government passed legislation to increase the general minimum wage to $15 per hour by January 2019 and implement other changes to the province's employment and labour laws.[256] Another poverty reduction initiative is the basic income pilot project, which automatically pays

benefits to adults whose income is below a minimum level with minimal eligibility criteria; this basic income would replace Ontario Works and the Ontario Disability Support Program.[257] The Ontario Trillium Foundation and the Local Poverty Reduction Fund are provincial programs that fund community initiatives to reduce poverty, including food insecurity.[258,259]

The Ontario Food and Nutrition Strategy suggests actions to reduce household food insecurity, such as supporting policies to improve income so that Ontarians with low income can afford healthy food. The strategy also recommends ensuring that the cost of the Nutritious Food Basket, other locally appropriate food costing exercises and the cost of housing are considered when setting the rates for social assistance, minimum wage and the Special Diet Allowance.[241] The 2008 Ontario Public Health Standards mandate boards of health to monitor food affordability in accordance with the Nutritious Food Basket Protocol.

### Community-based food access programs

Community-based food access programs, such as food banks, community food centres and student nutrition programs, aim to provide access to healthy foods for households experiencing food insecurity. Food banks provide short-term, emergency access to food and serve over 330,000 Ontarians each month.[260] Some food access programs have a more comprehensive mandate, such as the five community food centres in Ontario, which integrate emergency food access services with community programs, such as gardening and cooking programs, community meals and kitchens, affordable produce markets, and advocacy and education programs.[261] The benefits of community garden and kitchen programs can include improved food literacy and nutrition, as well as social inclusion, which is a social determinant of health.[262,263] The Student Nutrition Program, funded by the Ontario government and administered by 14 lead agencies, helps a number of public schools implement a healthy snack, breakfast or meal program to all children and youth at the program site.[264] The Ontario Food and Nutrition Strategy suggests that the province should create a universal student nutrition program that would provide nutritious food to all public school students in Ontario every day. This nutrition program could increase consumption of nutritious food and potentially improve educational outcomes in students.[241,265]

Despite the benefits of community-based food access programs, research does not suggest that these programs can effectively reduce household food insecurity.[266-268] The impacts of these programs are likely limited because demand substantially exceeds their scope and because they rely on donations, rather than stable funding.[269] In addition, the programs are not designed to meet the complete food requirements of participants and their families. The Ontario Food and Nutrition Strategy suggests that community-based food access programs should be implemented in combination with poverty reduction strategies that address the root causes of food insecurity.[241]

### Opportunities:

- Continue development and ensure implementation of the provincial Food Security Strategy.
- Continue to implement poverty reduction policies, including increasing minimum wage, increasing social assistance benefits and evaluating the impact of the basic income pilot project. Ensure that the cost of the Nutritious Food Basket, other locally appropriate food costing exercises and the cost of housing are considered when setting the rates for social assistance, minimum wage and the Special Diet Allowance.
- In conjunction with poverty reduction policies, fund community-based food access programs, including a universal student nutrition program.
- Ensure that Ontario participates in the Household Food Security Survey Module of the Canadian Community Health Survey each year so that food insecurity can be monitored.

**Poverty reduction policies, such as raising the minimum wage and social assistance benefits, have been shown to reduce household food insecurity in Canada.**

## FOOD LITERACY

There is much more to food literacy than being knowledgeable about food and nutrition. Food literacy includes food skills (e.g., the ability to prepare food), self-efficacy (e.g., confidence) and the ability to make food decisions. Ecological factors, such as the social determinants of health and the food system, also play important roles in influencing food literacy.[270] Some tailored community-based food literacy programs may have a positive impact on healthy eating.[271-273] A few studies have found that practical food skills education in schools increases vegetable and fruit consumption in children.[274-278] The Ontario Food and Nutrition Strategy suggests providing economically accessible food literacy programs in schools and community settings to help Ontarians develop food skills, as well as creating resources and programs to meet the needs of each community.[241]

In Ontario, food literacy programs tend to be delivered through local public health agencies, but some programs are offered through community health centres.[279] Community-level food literacy programs often target low-income populations or newcomers.[279] In 2016, a Locally Driven Collaborative Project team of 16 local public health agencies developed an evidence-informed food literacy framework that emphasizes the comprehensive and interdependent nature of the food literacy concept. The team is currently developing a food literacy measurement tool to better assess the impact of food literacy programs on eating behaviours.[270] There are few provincial-level food literacy programs in Ontario. The Northern Fruit and Vegetable Program, funded by the Ministry of Health and Long-Term Care and delivered by the Ontario Fruit and Vegetable Growers' Association and participating public health agencies, provides elementary school students in the districts of Algoma, Porcupine and Sudbury with fresh vegetables and fruit twice a week from January to June, along with healthy eating and physical activity education.[280]

Components of food literacy development are a part of the elementary school curriculum; however, practical food skills classes (i.e., cooking) are not required as part of the elementary or secondary school curricula. Including the development of practical food skills in the school curriculum by requiring a food literacy credit at the secondary school level can provide all students with the opportunity to learn how to prepare healthy meals. According to data tracking cohorts that entered Grade 9 from the 2005/2006 to the 2009/2010 school years, about two-thirds of students did not take a course that includes a food literacy component during secondary school.1 Limited enrolment in these courses may reflect the interest and priorities of students or the limited availability of these courses in many schools.

### Opportunities:

- Support economically accessible food literacy programs in community settings that are tailored to the needs of the community.
- Modify the secondary school curriculum to include at least one compulsory course that focuses on food literacy.

## FOOD ENVIRONMENT

Changes to the food environment, such as the types of foods available from food retailers, the effects of pricing or taxation policies on food purchasing behaviours, and environmental cues that prompt food choices, can improve healthy eating. The following paragraphs focus on selected food environment policies and programs, particularly as they relate to populations with low socio-economic status.

### Food availability

Healthy eating is supported when healthy foods are as convenient and affordable as unhealthy foods. Low-income neighbourhoods or communities that lack grocery stores, supermarkets or farmers markets, which offer healthy foods or healthy foods at a more affordable price than convenience stores, are commonly referred to as food deserts. Research has found food deserts in a few, but not all, low-income communities that have been studied in Ontario.[281-283] In some other urban low-income neighbourhoods, unhealthy food providers overwhelm healthy food retailers—these neighbourhoods are referred to as food swamps.[281] Food deserts and food swamps may have a disproportionate effect on the diets of low-income groups, who may not have the resources to make regular trips to grocery stores and supermarkets that are located far from their homes or who may find that unhealthy foods are more abundant in their communities.[284] There is very little research on the prevalence of food deserts and swamps in rural environments in Ontario.[281]

The availability of healthy food in low-income communities could be improved through tax incentives and re-zoning strategies to influence the location of supermarkets and fast-food outlets. Healthy food availability could also be addressed by improving product offerings and affordability in small grocery or convenience stores.[282,285-289] The Ontario Food and Nutrition Strategy supports these tools and recommends a focus on increased access to safe, healthy, local and culturally acceptable food in communities, particularly for populations facing health inequities.[241] The Ontario government's Healthy Kids Strategy (2013)[d] also recommends changes to the food environment to improve healthy eating (e.g., providing incentives for food retailers to open stores in food deserts).[290] In addition, the Ontario Food and Nutrition Strategy recommends land use management and planning to enhance the availability of healthy foods.[241] A few municipalities have incorporated access to healthy food into their official plans, such as the Region of Waterloo and Municipality of Chatham-Kent.[291-292]

There are many community-level programs in Ontario aimed at increasing the availability of healthy food. One initiative that has been implemented in many communities is the Good Food Box program, which seeks to increase affordable access to vegetables and fruit.[267,293] Some local public health agencies have implemented programs to make healthy foods more convenient by making them available in places such as corner stores, public transportation and travelling produce markets.[294]

[d]The Healthy Kids Strategy was developed by a multi-sectoral panel to help the province meet its target of reducing childhood obesity by 20 percent in five years.

### Food pricing

Food pricing and taxation policies that aim to make healthier foods less expensive and unhealthier foods more expensive may increase healthy eating in the population as a whole.[295-300] For example, a systematic review indicates that taxes on sugar-sweetened beverages result in reduced body weights at the population level across socio-economic groups, with some studies showing greater effects in groups with lower socio-economic status.[301] Considering current trends and policies, and based on the association between the consumption of sugary drinks and overweight and obesity,[302] researchers at the University of Waterloo projected that 100,000 cases of cancer in Canada will be attributable to sugary beverages (including 100 percent fruit juice) from 2016 to 2041.[303] In 2016, the federal Standing Senate Committee on Social Affairs, Science and Technology recommended a new tax on sugar-sweetened and artificially-sweetened beverages as part of a comprehensive approach to reducing obesity in Canada.[304] The tax is supported by a number of organizations across Canada, including the Chronic Disease Prevention Alliance of Canada and the Dietitians of Canada.[305,306]

Beyond the evidence for a tax on sugar-sweetened beverages, there is little information on the effects of food pricing and taxation on lower income groups. One study found that while these kinds of policies may increase nutrition for all income groups, inequity in nutrition between low- and high-income groups may increase at the same time.[307] Agricultural subsidies may increase the local production, distribution and affordability of healthy foods, particularly in northern communities, although further research on the effects of these subsidies is needed.[308,309] In Ontario, the government invests in local food and provides subsidies to farmers through various policies and programs.[310-312]

### Environmental cues

Environmental cues, such as menu labelling, in-store navigation systems and promotions identifying healthy foods, and mass media advertisements, could have an impact on food purchasing choices. The following paragraphs looks at the current research and initiatives for menu labelling and nutritional navigation systems.

Menu calorie labelling is a relatively low-cost strategy that may reduce the number of calories bought and consumed by some groups.[313-315] However, only a few studies have assessed the impact of menu calorie labelling on purchasing patterns in populations with low socio-economic status and most reported no

**A systematic review indicates that taxes on sugar-sweetened beverages result in reduced body weights at the population level across socio-economic groups, with some studies showing greater effects in groups with lower socio-economic status.**

positive effects.[316] Limited food and health literacy in the population are possible barriers to using menu calorie labelling; therefore, tailoring the format of menu calorie labelling may help people apply the information more effectively.[315] The Ontario Food and Nutrition Strategy has recommended menu labelling that includes calories and nutrients (e.g., sodium) with either contextual (e.g., recommended daily allowances) or assessment (e.g., traffic light symbols) information, along with activities to educate the public.[241] In January 2017, the Healthy Menu Choices Act, 2015 came into effect in Ontario. It requires restaurants and other food service providers with 20 or more locations in the province to display the calorie content of standard food and beverage items on their menus and a contextual statement about the average caloric needs of adults and children.[317]

Nutritional navigation systems use shelf labels to identify healthier foods for sale in grocery stores. A few studies have reported positive effects of these systems on food purchasing choices in the general population.[318-320] Two studies in low-income neighbourhoods—one in France and another in Baltimore—combined shelf labels with other marketing strategies (e.g., prominent placement of healthy foods, taste testing, identifying inexpensive foods with good nutritional quality) and found a positive effect on food purchasing choices.[321,322] These results suggest that nutritional navigation systems should be implemented as part of a multi-component program when targeting populations with low socio-economic status.

**Opportunities:**

- Integrate healthy food access provisions into city and regional land use policies and community planning to establish healthy food environments.
- Implement tax incentives and re-zoning strategies to influence the location of supermarkets and fast-food outlets, and improve product offerings and affordability in small grocery or convenience stores.
- Implement a new tax on sugar-sweetened and artificially sweetened beverages.
- Ensure that menu labelling and nutritional navigation systems include multi-component, supportive strategies, including education tailored for populations with low health literacy.

## Summary of opportunities to increase healthy eating

- Adopt and implement the Ontario Food and Nutrition Strategy, which contains strategic directions and actions for improving healthy eating and the province's food systems, including increasing health equity.

### Food insecurity

- Continue development and ensure implementation of the provincial Food Security Strategy.
- Continue to implement poverty reduction policies, including increasing minimum wage, increasing social assistance benefits and evaluating the impact of the basic income pilot project. Ensure that the cost of the Nutritious Food Basket, other locally appropriate food costing exercises and the cost of housing are considered when setting the rates for social assistance, minimum wage and the Special Diet Allowance.
- In conjunction with poverty reduction policies, fund community-based food access programs, including a universal student nutrition program.
- Ensure that Ontario participates in the Household Food Security Survey Module of the Canadian Community Health Survey each year so that food insecurity can be monitored.

### Food literacy

- Support economically accessible food literacy programs in community settings that are tailored to the needs of the community.
- Modify the secondary school curriculum to include at least one compulsory course that focuses on food literacy.

### Food environment

- Integrate healthy food access provisions into city and regional land use policies and community planning to establish healthy food environments.
- Implement tax incentives and re-zoning strategies to influence the location of supermarkets and fast-food outlets, and improve product offerings and affordability in small grocery or convenience stores.
- Implement a new tax on sugar-sweetened and artificially sweetened beverages.
- Ensure that menu labelling and nutritional navigation systems include multi-component, supportive strategies, including education tailored for populations with low health literacy.

*Community feast at Tungasuvvingat Inuit*

# Healthy eating: Focus on First Nations, Inuit and Métis

Traditional foods play an important role in First Nations, Inuit and Métis households and in maintaining a healthy diet.[323,324] First Nations, Inuit and Métis populations' unique traditional food systems have sustained their health and well-being for many generations. These traditions include a whole food-based diet that is high in nutritional value and unique to the geographical context of each community and Nation. Traditionally, First Nations communities lived off the land, eating many different kinds of traditional foods.[66] Métis communities often took part in the collective growing, preparation, gathering and sharing of food, with a long history of coming together for feasts and family gatherings.[81] Historically, Inuit were semi-nomadic and thrived on harvesting practices that had many benefits for their communities.[325]

The introduction of European settlers and colonial policies created a drastic shift from traditional Indigenous food systems to a system increasingly dependent on "convenience" and market foods, which are typically processed foods that are of lower nutritional value. Eating a diet of country foods (traditional foods gathered from the local environment by hunting, fishing and gathering) and maintaining traditional food practices are key to maintaining First Nations, Inuit and Métis peoples' culture, identity and feelings of self-reliance.[232] While many First Nations, Inuit and Métis populations continue to participate in traditional food systems, barriers to accessing and affording country foods, a decrease in traditional food systems skills and knowledge, and concerns about environmental contaminants have made it increasingly challenging.[326] Increased reliance on a retail model to get food also exacerbates food insecurity in First Nations, Inuit and Métis communities.

This section compares vegetable and fruit consumption and food insecurity in First Nations, Inuit and Métis populations to that of non-Aboriginal Ontarians. Additional dietary indicators, such as measures of traditional food consumption, are also highly relevant to First Nations, Inuit and Métis populations, but are not presented here due to data limitations. Recommendations to address food security and improve healthy eating behaviours in First Nations, Inuit and Métis populations are discussed.

**Eating a diet of country foods and maintaining traditional food practices are key to maintaining First Nations, Inuit and Métis peoples' culture, identity and feelings of self-reliance.**

## VEGETABLE AND FRUIT CONSUMPTION

This indicator compares the prevalence of inadequate vegetable and fruit consumption in First Nations and Métis populations to that of non-Aboriginal Ontarians (Inuit data are unavailable).

### Inadequate vegetable and fruit consumption in First Nations and Métis

**First Nations**

This indicator measures the percentage of First Nations adults age 18 and older in Ontario who ate vegetables fewer than two times per day and fruit fewer than two times per day, based on responses to the First Nations Regional Health Survey Phase 2 (on-reserve First Nations) and the Canadian Community Health Survey (off-reserve First Nations). This indicator differs from other measures of vegetable and fruit consumption due to the phrasing of the dietary questions included in the First Nations Regional Health Survey, which asks respondents about their consumption of vegetables or fruit "once a day" or "several times a day."

During 2007–2013, significantly higher percentages of First Nations adults ate vegetables fewer than two times per day and fruit fewer than two times per day (84.1 percent on-reserve, 77.7 percent off-reserve), compared to non-Aboriginal adults (71.3 percent) (data not shown). First Nations men ate vegetables and fruit significantly less often than First Nations women, and this was true on-reserve (88.1 percent men vs. 80.1 percent women) and off-reserve (84.5 percent men vs. 71.5 percent women).

**Métis**

This indicator measures the percentage of Métis adults age 18 and older in Ontario who consumed vegetables and fruit fewer than five times per day, based on responses to the Canadian Community Health Survey.[81] During 2007–2012, a higher percentage of Métis adults ate vegetables and fruit fewer than five times daily, compared to non-Aboriginal adults, although the differences are not significant. A significantly higher percentage of Métis men (79.5 percent) ate vegetables and fruit fewer than five times daily, compared to Métis women (68.4 percent). Métis adults with lower levels of household income were significantly more likely than their peers with higher levels of household income to eat vegetables and fruit fewer than five times daily (85.6 percent in the lowest income quintile vs. 57.8 percent in the highest income quintile). A similar pattern was seen for education; 82.0 percent of Métis adults who had less than secondary education ate vegetables and fruit fewer than five times daily, compared to 58.5 percent of post-secondary graduates.

## FOOD INSECURITY

This indicator compares the prevalence of food insecurity in First Nations and Métis households to that of non-Aboriginal households in Ontario. For Inuit, the number of people living in food insecure households was too small to report estimates with certainty; therefore, the prevalence of food security in Inuit households compared to non-Aboriginal households in Ontario is shown. Food insecurity occurs when access to healthy food is compromised due to limited financial resources. Food insecurity is a strong determinant of health because it directly influences the quality and quantity of food eaten.[243-245] Levels of food insecurity also relate to the food access and affordability issues facing many remote First Nations, Inuit and Métis communities. Individuals or households are defined as food secure when they "at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[327]

### Policy and program indicator: Food insecurity in First Nations and Métis

**First Nations**

This indicator measures the percentage of on- and off-reserve First Nations adults in Ontario who are classified as moderately or severely food insecure, based on responses to the food security section of the First Nations Regional Health Survey (on-reserve First Nations) and the equivalent questions in the Canadian Community Health Survey (off-reserve First Nations and non-Aboriginal adults in Ontario).

During 2007–2014, a significantly higher percentage of on- and off-reserve First Nations adults were food insecure than non-Aboriginal Ontarians (Figure 23). About one-third (33.1 percent) of First Nations adults living on-reserve were in moderately food insecure households, compared to 13.8 percent of adults living off-reserve and 4.9 percent of non-Aboriginal adults. First Nations adults were also significantly more likely than non-Aboriginal adults to be living in households classified as severely food insecure. About 14.5 percent of First Nations people living on-reserve reported their household as being severely food insecure, compared to 6.2 percent of First Nations adults living off-reserve and only 1.4 percent of non-Aboriginal Ontarians. In

addition, a significantly higher percentage of on-reserve First Nations adults lived in households that were moderately or severely food insecure than off-reserve First Nations adults.

### Métis

This indicator measures the percentage of Métis households in Ontario that are classified as marginally, moderately or severely food insecure based on responses to the Canadian Community Health Survey. During 2007–2014, a significantly higher percentage of Métis people in Ontario (20.8 percent) lived in food insecure households than non-Aboriginal Ontarians (11.5 percent) (Figure 24).

## Policy and program indicator: Food security in Inuit

### Inuit

The number of people living in food insecure households measured by the Aboriginal Peoples Survey was too small to report estimates with certainty; therefore, this indicator measures the percentage of Inuit households that are food secure. A household that does not meet the criteria for food security is not necessarily food insecure. Food security (high or marginal security) is measured based on the six food-related questions in the Aboriginal Peoples Survey, which uses questions from the Canadian Community Health Survey and allows for comparison with non-Aboriginal Ontarians. It rates a household's food security over the previous 12 months as "high/marginal," "low" or "very low" based on combined responses to these questions. This measure does not capture some components of food security, such as the availability of culturally appropriate food, or

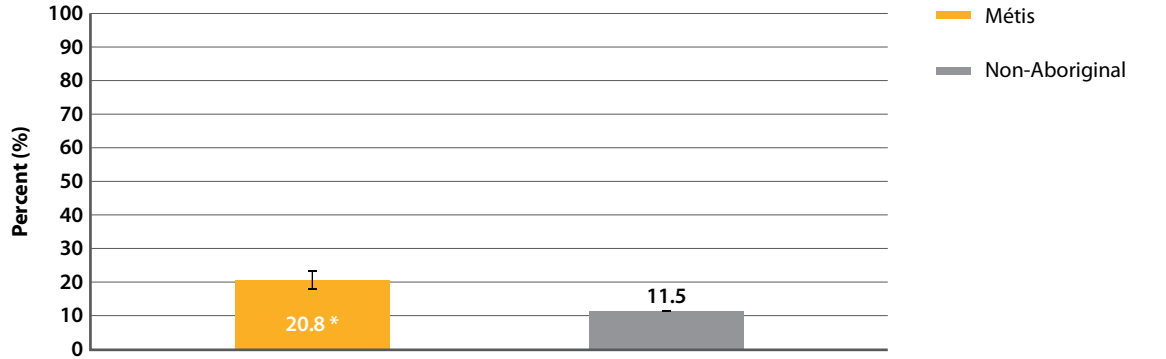
FIGURE 23

**Percentage of First Nations and non-Aboriginal adults living in households that were moderately or severely food insecure, Ontario, 2007–2014 combined**


**Source:** First Nations Regional Health Survey (RHS) Phase 2 (2008/10) Ontario Region Final Report (First Nations Information Governance Centre); Canadian Community Health Survey (CCHS), 2007–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S35.

FIGURE 24

**Percentage of Métis and non-Aboriginal households that were marginally, moderately or severely food insecure, Ontario, 2007–2014 combined**




**Source:** Canadian Community Health Survey, 2007–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S36.

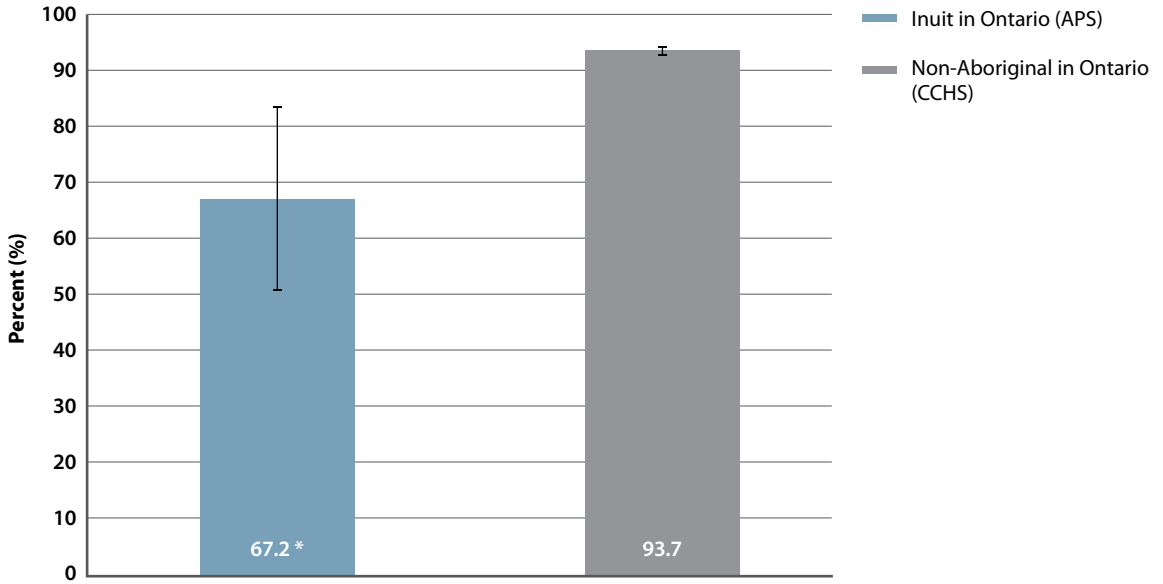
whether members of the household are worried about running out of food or funds to buy food. Instead, it measures whether or not a household has sufficient access to food to meet basic dietary needs and food preferences.

In 2012, a significantly lower percentage of Inuit living in Ontario (67.2 percent) and in Inuit Nunangat (47.1 percent) reported that their household was food secure than non-Aboriginal Ontarians (93.7 percent) (Figure 25 and Figure 26).

While food insecurity is a challenge in urban and rural or remote communities, the high cost of food in northern and remote isolated areas contributes to food insecurity in these communities. For example, in 2015, the weekly cost of market food for a family of four living in Attawapiskat in Northeastern Ontario was $1,909, compared to $847 in Toronto.[288] This premium is influenced by multiple factors, such as transportation, store maintenance, staffing, spoilage and retailer profit margins.[328]

FIGURE 25

**Percentage of Inuit and non-Aboriginal adults living in food secure households, Ontario, 2012**

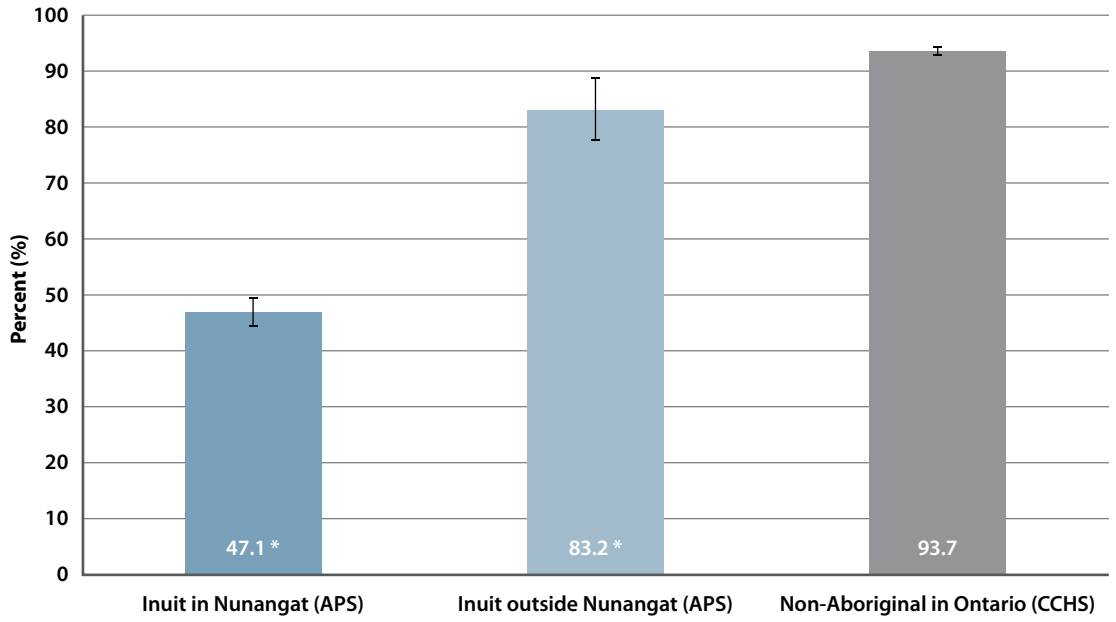



**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S37.

First Nations and Métis populations have significantly higher rates of food insecurity, and Inuit have significantly lower rates of food security than non-Aboriginal Ontarians.

FIGURE 26

**Percentage of Inuit adults in Canada and non-Aboriginal adults in Ontario living in food secure households, 2012**




**Sources:** Aboriginal Peoples Survey (APS), 2012 (Statistics Canada); Canadian Community Health Survey (CCHS), 2012 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Aboriginal Cancer Control Unit)
**Notes:** Estimates are adjusted to the age distribution of the 2006 Inuit population outside Inuit Nunangat. • ⊢⊣ represents 95% confidence intervals. • * Indicates that group is significantly different from the reference category (non-Aboriginal). • Data are presented in Supplementary Table S38.

*While food insecurity is a challenge in urban and rural or remote First Nations, Inuit and Métis communities, the high cost of food in northern and remote isolated areas contributes to food insecurity in these communities.*

## POLICIES AND PROGRAMS TO IMPROVE HEALTHY EATING IN FIRST NATIONS, INUIT AND MÉTIS

The results noted above indicate that First Nations, Inuit and Métis face barriers to eating healthy foods and food security, although the availability of comprehensive data on healthy eating in these populations is limited. While many of the provincial-level policies and programs described in this section on healthy eating can also benefit First Nations, Inuit and Métis populations, policies and programs must be co-developed with First Nations, Inuit and Métis communities to address the barriers to accessing healthy foods, including vegetables and fruit, and reducing food insecurity.

**The *Path to Prevention* report presents four main recommendations to address food security and improve healthy eating behaviours:**

- Develop an Indigenous food and nutrition strategy.
- Reduce barriers that prevent access to healthy foods for First Nations, Inuit and Métis.
- Address environmental issues for Indigenous foods.
- Develop traditional food and nutrition skills.

Indigenous food systems should be driven by First Nations, Inuit and Métis communities, and should include growing, harvesting, distributing and preparing healthy foods.[329] Effective policies and programs to increase First Nations, Inuit and Métis peoples' access to healthy foods and healthy eating behaviours must recognize the role of environment, culture, food preferences, food security and food constraints that drive food choices.[330]

Currently, there are several First Nations, Inuit and Métis strategies or organizations in Ontario that seek to provide culturally appropriate nutrition programming, such as the Ontario First Nations Integrated Health Promotion Strategy (under discussion for renewal), the Ontario Federation of Indigenous Friendship Centres and Aboriginal Health Access Centres. However, the amount of funding and support received for these programs is often insufficient, which limits the ability of organizations to reach wider First Nations, Inuit and Métis audiences.[74] At the federal level, primary providers of nutrition education include Health Canada's Aboriginal Diabetes Initiative, the Canadian Prenatal Nutrition Program and the Community Food Educator Program.

Despite existing programs, there are gaps in the policies and programs that support First Nations, Inuit and Métis peoples' access to healthy foods and healthy eating behaviours, which is seen in their disproportionate experiences of food insecurity and low prevalence of vegetable and fruit consumption compared to their non-Aboriginal counterparts. Concerted efforts must be made to align nutrition programming at the provincial and federal levels to avoid duplication and fill gaps in services. The *Path to Prevention* report makes four recommendations to increase food security and healthy eating behaviours in First Nations, Inuit and Métis populations.

- **Develop an Indigenous food and nutrition strategy**
  There should be investment to support a First Nations, Inuit and Métis food and nutrition strategy for Ontario that builds on existing Indigenous provincial, Canadian and international food strategies.[74] The Nishnawbe Aski Nation Food Strategy is an example of an Indigenous food strategy focused on rebuilding food sovereignty in Nishnawbe Aski Nation communities through the local harvesting, sourcing, producing and storing of food.[331] Cancer Care Ontario is committed to supporting Nishnawbe Aski Nation in the implementation of their food strategy through ongoing collaboration and regional support.
- **Reduce barriers that prevent access to healthy foods for First Nations, Inuit and Métis**
  Food security initiatives for First Nations, Inuit and Métis communities must build on best practice policies and programs that promote self-sufficiency and traditional community food approaches, as well as reduce reliance on processed foods. Expanding existing successful programs is also important. For example, the Northern Fruit and Vegetable Program, funded by the Ministry of Health and Long-Term Care, provides fresh Ontario produce to school children twice a week, and is accompanied by a curriculum-based resource on healthy eating and physical activity. This program currently reaches 6,600 Indigenous students in 191

schools.[332,333] In 2016, the government committed to expanding the Northern Fruit and Vegetable program as part of its investment in the province's First Nations Health Action Plan.[63]

- **Address environmental issues for Indigenous foods**
  Studies have found that the contaminant levels in traditional foods meet Health Canada's guidelines for communities participating in the Ontario First Nations Food, Nutrition and Environment Study, but some First Nations, Inuit and Métis communities view traditional foods as unsafe. Addressing the issue of contaminants requires a balanced approach that takes into account scientific evidence, respects community knowledge and works to build trust. First Nations, Inuit and Métis communities have identified the need to develop clear, concise and culturally appropriate community strategies around environmental contaminants and traditional foods, along with First Nations, Inuit and Métis-specific approaches to surveillance, monitoring and reporting.[74,334]
- **Develop traditional food and nutrition skills**
  First Nations, Inuit and Métis communities identified a need to develop an intergenerational food skills strategy to cultivate knowledge and skills in the growing, harvesting and preparing of traditional foods as a means to reclaim control over food security and increase self-sufficiency.[74] This strategy is supported by research that has shown that successful food security initiatives in remote First Nations communities increase access to traditional food and knowledge, support the role of Elders in teaching, include education on healthy food preparation and are grounded in a strong connection to the land.[335]

# Physical activity

## Physical activity reduces the risk of colon cancer, and probably reduces the risk of post-menopausal breast cancer and endometrial cancer.[48,239,336]

A 2014 meta-analysis suggests that sedentary behaviour (i.e., activities that use a low amount of energy, such as watching television), is independently associated with colorectal, breast, lung and endometrial cancers, which means that high levels of physical activity do not offset time spent engaging in sedentary behaviours.[337]

### Differences in physical activity in the Ontario population

To reduce cancer risk, the World Cancer Research Fund and the American Institute for Cancer Research recommend that adults ages 18 to 64 be moderately physically active, equal to brisk walking for at least 30 minutes every day. Adults should aim for 60 minutes or more of moderate physical activity or 30 minutes or more of vigorous physical activity every day as fitness improves.[83] The Canadian Physical Activity Guidelines recommend a minimum of 150 minutes of moderate to vigorous physical activity each week for adults, and the Canadian 24-Hour Movement

Guidelines for Children and Youth recommend a minimum of 60 minutes each day for children and adolescents ages five to 17.[338]

Due to limited data, this report examines physical activity levels during leisure time only; physical activity for transportation or at work are not included. Leisure-time physical activity accounts for only a small portion of total daily physical activity levels.[339] Total daily physical activity levels likely vary depending on the type of physical activity and the sub-population being measured. For example, studies in the United States and Japan show that compared to groups with higher socio-economic status, groups with lower socio-economic status are more likely to do work-related physical activity than leisure-time physical activity.[340,341] Better quality data are required to measure multiple types of physical activity, which would allow a more accurate representation of overall physical activity in Ontario and of differences across sub-populations.

During 2012–2014, almost half (49.3 percent) of adults age 25 and older in Ontario were inactive during leisure time, meaning that their average daily energy expenditure during leisure-time physical activities in the past three months was less than 1.5 kilocalories/kilogram/day (Figure 27). Clear inverse gradients were apparent for both income and education, with the prevalence of inadequate physical activity increasing as income and education levels decreased. Adults in the lowest income group (61.1 percent) were nearly 25 percent more likely to report inadequate physical activity than adults in the highest income group (36.2 percent). Physical inactivity during leisure time was significantly higher for adults who had not completed secondary school (61.9 percent) or who had completed secondary school (53.7 percent) than adults who had completed post-secondary education (45.0 percent).

Recent immigrants to Canada and immigrants who had lived in Canada for more than 10 years were significantly more likely to be physically inactive during leisure time than Canadian-born adults (Figure 27). Physical inactivity was slightly, but significantly, higher for women than for men, and slightly, but significantly, higher for urban or southern residents than for rural or northern residents. In addition, data for 2010–2014 show that heterosexual adults were significantly more likely to be physically inactive than gay, lesbian or bisexual adults.

**From the literature: Disabilities and physical inactivity**

People with disabilities have particularly high levels of physical inactivity. Data from the United States suggest that adults with a disability (physical, mental, emotional, or developmental) are twice as likely to be physically inactive than adults without a disability.[342,343] Data are more limited for children and adolescents, but a higher prevalence of physical inactivity has been measured in children and adolescents with complex physical disabilities,[344] autism spectrum disorder[345] and Down syndrome.[346]

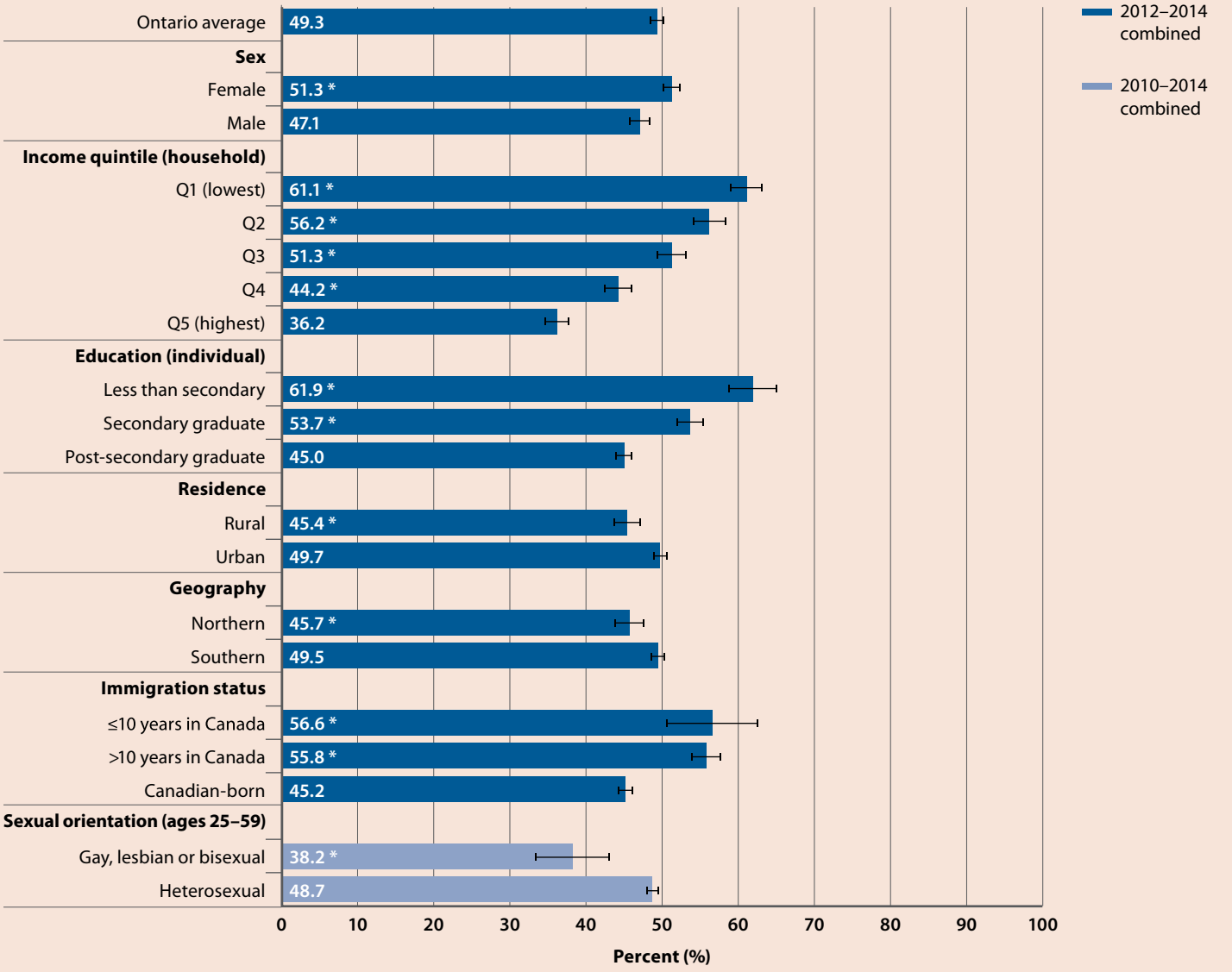
Ontario data for 2010–2014 show that adults who identify as West and South Asian or Arab, as Black, as East and Southeast Asian or Latin American, or as having multiple or other cultural or racial origins were significantly more likely to be physically inactive than white adults (Supplementary Table S39).

During 2012–2014, more than one-quarter of adolescents ages 12 to 17 in Ontario were inactive during leisure time (Figure 28). Similar to the pattern seen in adults, adolescents living in lower income households were more likely to report inadequate physical activity, with adolescents in the lowest income group (36.4 percent) being twice as likely to report inadequate physical activity as those in the highest income group (18.2 percent). Physical inactivity also differed by level of household education. Adolescents living in households where the highest level of education was a secondary school diploma (36.3 percent) were significantly more likely

Due to limited data, this report examines physical activity levels during leisure time only; physical activity for transportation or at work are not included. Leisure-time physical activity accounts for only a small portion of total daily physical activity.

FIGURE 27

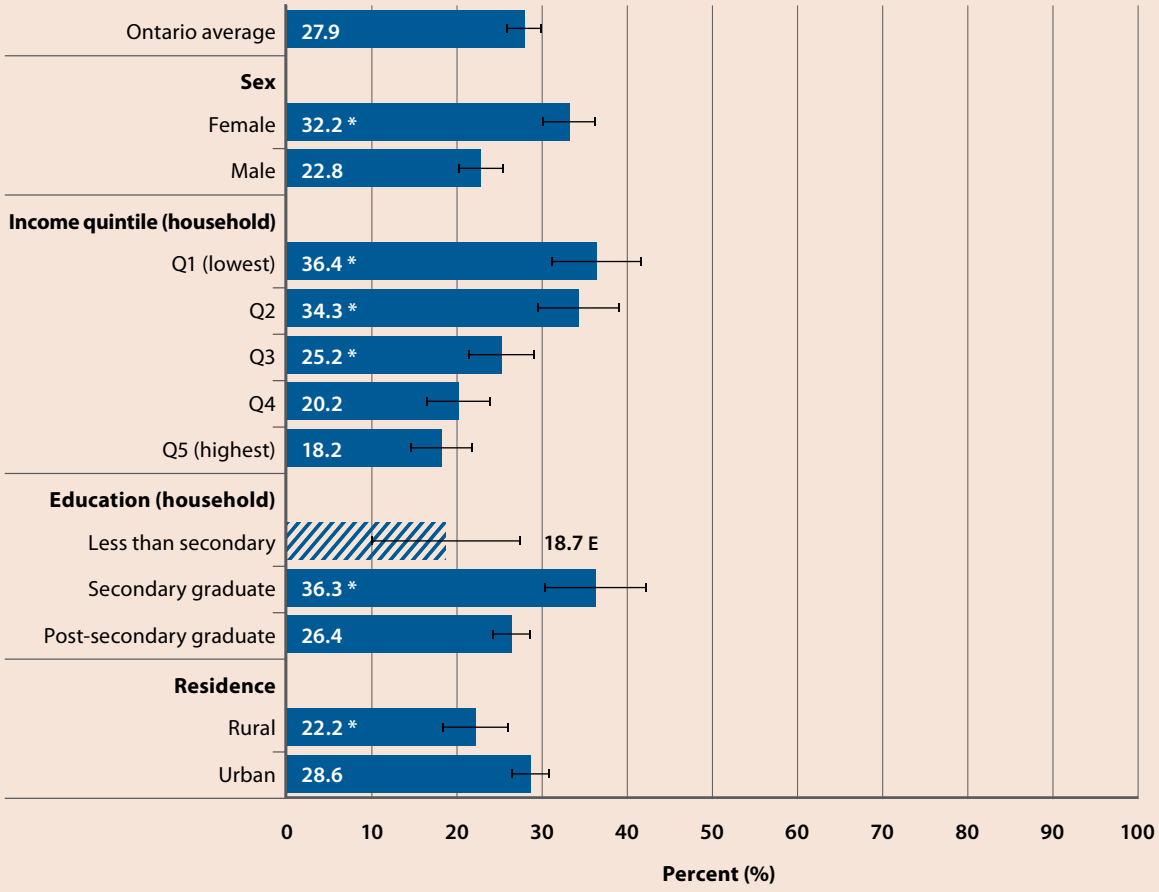
**Percentage of adults (age 25+) reporting that they were not moderately active or active during leisure time, by selected socio-demographic factors, Ontario, 2010–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2010–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** Estimates are adjusted to the age distribution of the 2011 Canadian population. • ⊢⊣ represents 95% confidence intervals. • Not moderately active or active during leisure time: reporting an average daily energy expenditure during leisure time physical activities in the past three months of less than 1.5 kcal/kg/day. • Combined data from the 2010–2014 CCHS were used to increase the sample size for analyses by sexual orientation. Combined data from the 2012–2014 CCHS were used for analyses by all other socio-demographic factors shown in this figure. • Analyses by sexual orientation include only ages 25–59, due to CCHS age restrictions for this variable. Analyses by all other socio-demographic factors shown in this figure include ages 25+. • * Estimate is significantly different from the rates in the following reference categories: male for analyses by sex; quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by education; urban for analyses by residence; southern for analyses by geography; Canadian-born for analyses by immigration status; heterosexual for analyses by sexual orientation. • An additional analysis by cultural or racial group is presented in Supplementary Table S39.

FIGURE 28

**Percentage of adolescents (ages 12–17) reporting that they were not moderately active or active during leisure time, by selected socio-demographic factors, Ontario, 2012–2014 combined**




**Source:** Canadian Community Health Survey (CCHS), 2012–2014 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** ⊢⊣ represents 95% confidence intervals. • E: interpret cross-hatched estimates with caution due to high sampling variability. • Not moderately active or active during leisure time: reporting an average daily energy expenditure during leisure time physical activities in the past three months of less than 1.5 kcal/kg/day. • * Estimate is significantly different from the rates in the following reference categories: male for analyses by sex; quintile 5 (Q5) for analyses by income; post-secondary graduate for analyses by household education; urban for analyses by residence. • An additional analysis by cultural or racial group is presented in Supplementary Table S40.

to report inadequate physical activity than adolescents living in households with a post-secondary graduate (26.4 percent). Adolescent girls were significantly more likely to be physically inactive than adolescent boys, and residents of urban areas were significantly more likely to be physically inactive than residents of rural areas.

Ontario data for 2010–2014 show that physical inactivity differed between some cultural or racial groups; East and Southeast Asian adolescents and West and South Asian or Arab adolescents were significantly more likely to report being physically inactive than white adolescents (Supplementary Table S40).

Efforts to increase physical activity often target sedentary behaviours. Recent Canadian data show differences in sedentary behaviour across sub-populations. Canadian adults who have lower income, are recent immigrants or are not white report more sedentary time (i.e., using a computer, watching television, playing video games or reading) than adults who have higher income, are Canadian-born or have lived in Canada for more than 10 years, or are white.[347] However, Canadians who have not completed secondary school tend to report less sedentary time than those with higher levels of education, and Canadians in occupations such as trades and manufacturing report less sedentary time than Canadians working in occupations such as management, business and sales.[347] As with physical activity, additional, better quality data is required to further examine the prevalence of sedentary behaviour in Ontario.

## Policies and programs to increase physical activity

Policies and programs are needed to increase physical activity and reduce sedentary behaviour in the Ontario population. These initiatives are particularly important for populations facing health inequities because they may be at higher risk for a range of chronic diseases that physical activity could help prevent. Ontario does not have a current population-wide physical activity strategy; the most recent strategy, Active 2010, was launched in 2004.[348] The 2008 Ontario Public Health Standards mandate boards of health to engage in surveillance, health promotion and policy development work and the creation of supportive environments that promote physical activity.[193] The following sub-section focuses on selected policies and programs that, as part of a comprehensive physical activity strategy, can increase physical activity in the population and reduce health inequities.

**Opportunity:**

- Develop and implement a comprehensive, cross-sectoral provincial physical activity strategy.

### ACTIVE TRANSPORTATION

Active transportation is generally considered to be the use of human-powered travel to move between destinations, with an emphasis on walking and bicycling. Adults and children who use active transportation have higher overall levels of measured and self-reported physical activity.[349-351] The built environment can have an impact on the use of active transportation. Features of the built environment that may increase active transportation include the presence of a variety of destinations (e.g., businesses, schools and workplaces) within walking distance of residences. Streets, sidewalks and bicycle lanes should connect well to these destinations.[352] Public transit also has an impact on overall physical activity;[352] on average, adults who use public transit walk an additional eight to 33 minutes a day.[353]

In 2011, active transportation was used in 21.6 percent of trips taken to or from work by adults age 19 and older in Ontario's Greater Golden Horseshoe regions; most of these active transportation trips were taken to or from public transit.1 Youth ages 11 to 18 used active transportation in 51.4 percent of their trips to or from school in the regions surveyed.1 In rural areas, active transportation may be less feasible due to large geographic areas and less developed transportation infrastructure. For example, in Dufferin County, which is a predominantly rural region, only 0.9 percent of trips by adults to or from work involved active transportation in 2011.[1] However, some rural communities, such as the County of Haliburton and the Town of Mississippi Mills, have developed active transportation plans, which identify where walking and bicycling infrastructure could be increased in town centres and between villages.[354,355] There is some evidence that features of the built environment (e.g., trails and parks) may increase active transportation in rural areas;[356] however, further evaluation is needed in Ontario.[357]

Groups with lower income are more likely to use active transportation than more affluent populations. For example, lower income populations in Canada are more likely to walk to work[358] and a survey found that people with an income of less than $20,000 were more likely to report using public transit than those with higher income.[359] Recent immigrants and established immigrants, who have lower income than people born in Canada,[360] are also more likely to use public transit to commute to work.[361] A few studies have found that children and youth living in households with low income, or children and youth attending schools in lower income neighbourhoods, are also more likely to use active transportation to get to and from school.[362-366] However, two studies in Quebec have found that neighbourhood safety may be a concern for lower income children and youth who use active transportation to get to and from school.[365,367]

In Ontario, the Ministry of Education has announced funding for active transportation initiatives, including biking to school programs and "walking school buses" that aim to increase the safety of active transportation.[368] The Provincial Policy Statement, which directs municipalities on land use planning, does not address equity in active transportation or public transit planning.[369] However, people with low income or receiving social assistance can get financial help with public transit costs in some Ontario municipalities, such as in Waterloo, Kingston, Windsor and Guelph.[370] Metrolinx's Regional Transportation Plan aims to

**Ontario does not have a current population-wide physical activity strategy.**

increase transportation accessibility for "seniors, children and individuals with special needs and at all income levels."[371,372] While it may be important to address the cost of public transit as a barrier for groups with low income, universal policies that improve the reliability, connectivity and safety of public transit, as well as walking and bicycling infrastructures, are required to increase active transportation in the population as a whole. A 2007 survey found that just over one-fifth of Ontarians indicated that inconvenient scheduling, transit being too slow and service being too infrequent were barriers to using public transit, and four percent indicated that the cost of public transit was a barrier.[359]

**Opportunities:**

- Continue to develop and replicate successful provincial and municipal policies, and school-based and community-wide programs that increase active transportation.
- Include provisions to ensure equity in provincial active transportation and public transit policies.

## PHYSICAL ACTIVITY IN SCHOOLS

Schools provide the most accessible and, in the case of publicly funded schools, equitable way to help children and adolescents in Ontario attain the recommended 60 minutes of physical activity a day. Health and physical education classes can increase overall physical activity levels in children and adolescents.[373,374] Structured, high-quality health and physical education also provides opportunities for children and adolescents to increase their physical literacy, which can help them gain the confidence and motivation to be physically active throughout their lives.[375,376]

In Ontario, elementary schools are required to ensure that students in Grades 1 to 8 receive a minimum of 20 minutes of sustained moderate to vigorous physical activity each day (referred to as Daily Physical Activity) during instructional time.[377] In secondary schools, one credit in health and physical education is required to graduate. In the 2013/2014 school year, 88.6 percent of Ontario students took this credit in Grade 9.[1] However, enrolment in health and physical education decreases in higher grades; only 26 percent of students took a health and physical education course in Grade 12 during the 2013/2014 school year.[1] The Ontario data described above show that adolescent girls are more likely to be inactive during leisure time than adolescent boys and that adolescents living in households with lower income tend to be more inactive than adolescents living in higher income households. Because enrolment in physical education can provide a substantial opportunity for physical activity for all students, enrolment in secondary-level health and physical education courses was analyzed according to sex and school neighbourhood income.

### Policy and program indicator: Enrolment in health and physical education, by sex and school neighbourhood income

This indicator measures the percentage of students in Grades 10 to 12 in 792 publicly funded secondary schools across Ontario who earned a credit in one or more health and physical education courses in the 2013/2014 school year, by sex and by school neighbourhood income quintile. Grade 9 students were not included in the analysis because a large majority of Grade 9 students earned the compulsory physical education credit in the 2013/2014 school year.

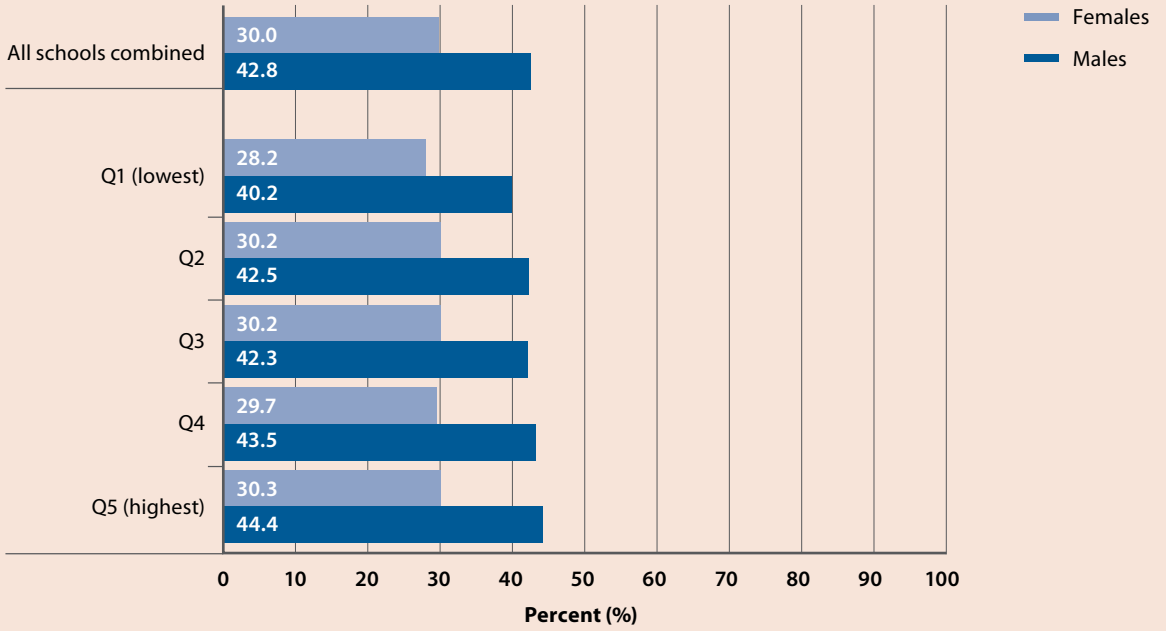
*Universal policies that improve the reliability, connectivity and safety of public transit, as well as walking and bicycling infrastructures, are required to increase active transportation in the population as a whole.*

Student-level data on income were unavailable; therefore, geospatial analyses were used to approximate the catchment area for each of the secondary schools and to determine the median neighbourhood income quintile of the catchment area for each school. Data provided by the Ministry of Education's Ontario School Information System were used to determine school enrolment numbers in order to estimate the size of the catchment areas. The 2011 Census was used to obtain the secondary school-aged population in the surrounding areas and neighbourhood-level income data.

In the 2013/2014 school year, girls in Grades 10 to 12 (30.0 percent) were significantly less likely than boys (42.8 percent) to earn a credit in one or more physical education courses (Figure 29). For boys, there appeared to be a slight gradient in the prevalence of health and physical education enrolment by income, with boys attending schools in lower income areas less likely to enrol than boys attending schools in higher income areas. Boys from schools located in the lowest income neighbourhoods (40.2 percent) were slightly, but significantly, less likely to earn a credit than boys from schools located in the highest income neighbourhoods (44.4 percent). There was little variation in the percentage of girls who earned a health and physical education credit across school neighbourhood income quintiles.

FIGURE 29

**Percentage of students (Grades 10–12) in publicly funded secondary schools who earned a credit in 1 or more health and physical education course, by sex and median income of school neighbourhood, Ontario, 2013/2014 school year**




**Sources:** Ontario School Information System, 2013/14 (Ministry of Education); Census of Population, 2011 (Statistics Canada)
**Prepared by:** Cancer Care Ontario, Prevention and Cancer Control (Population Health and Prevention)
**Notes:** For all schools combined, females were significantly less likely to earn a credit in one or more health and physical education courses than males. • Significant association between income quintile and the percentage of students who earned a credit in one or more health and physical education course for males ($p < 0.05$). • Data are presented in Supplementary Table S41.

These indicator findings are consistent with prevalence data for adolescents and adults in Ontario, which show that girls and women are significantly more likely to be physically inactive than boys and men. Qualitative studies have suggested a number of reasons for the lack of enrolment in elective physical education classes in girls, such as a dislike for competition. Therefore, researchers have recommended incorporating inclusive and cooperative activities into these classes.[378,379] The findings also reveal that boys attending secondary schools in lower income areas are less likely to enrol in health and physical education than boys attending schools in higher income areas. Contrary to this finding, an Ontario survey of 73 schools published in 2010 found that student enrolment in

health and physical education classes was lower in schools that had a higher median household income.[380] Further research is needed to fully understand the association between income and enrolment in health and physical education courses.

For the purposes of this indicator, the median income of the school neighbourhood was used. Since income data were not available at the individual or household level, it was not possible to directly link each student's household income to their enrolment in health and physical education courses. It was also not possible to examine the amount of variation in the household income of students from one school to the next. Additionally, it was assumed that students attended the school that was closest to where they lived. Further details regarding the methodology and limitations for this indicator can be found in the *Prevention System Quality Index: Health Equity* technical appendix.

In September 2017, the Ministry of Education began implementing a multi-year plan to increase Ontario students' overall well-being, including their physical development.[384] The Ontario elementary and secondary health and physical education curricula address equity issues by requiring teachers to ensure that students are exposed to a wide range of activities that accommodate the needs of boys and girls, and take into account a range of student abilities, as well as a diversity of backgrounds and needs.[385,386] In addition, the Daily Physical Activity resource guides include information on how to adapt activities for students with special needs.[387] Students whose teachers have specialized training in health and physical education tend to spend more time being active during health and physical education classes.[388-390] In the 2013/2014 school year, 19.7 percent of elementary schools and 21.7 percent of secondary schools in Ontario reported having specialist teachers assigned to teach health and physical education.[1] There has been no analysis of whether there are differences in the distribution of specialist health and physical education teachers according to school income.

Beyond the health and physical education curricula, the Ontario government funds other initiatives that can increase equity in physical activity opportunities and participation in schools. For example, the After School Program, administered by the Ministry of Tourism, Culture and Sport, funds organizations to deliver quality sports and recreation programs for children and youth in select priority neighbourhoods across the province.[391] The Ministry of Education provides funding to school boards so they can make school space more affordable for not-for-profit groups, including children's sport and recreation service providers.[392]

### Opportunities:

- Require a health and physical education credit that has a focus on physical activity in every grade from 9 to 12.
- Ensure that health and physical education, and other physical activity opportunities available for students in schools, are equitable across the province.

## COMMUNITY PROGRAMS

Community-based physical activity programs and facilities can increase participants' physical activity levels.[393,394] However, some research findings suggest that groups with low socio-economic status may have inequitable access to programs and facilities. A 2014–2015 survey found that Canadian children and youth whose parents had the highest income or education were the most likely to participate in sports and organized physical activity.[395] Studies in the United States have measured access to recreational facilities and parks by socio-economic status, and found that neighbourhoods with a predominantly low socio-economic status were more likely to lack a recreational facility.[396,397] According to a systematic review, tailored programs with multiple components and delivered in a group format are most effective in increasing physical activity in adults in socio-economically disadvantaged communities.

**From the literature: Physical education and activity opportunities in low-income schools**

Differences in physical activity and physical education opportunities available for students in low-income and high-income schools have been observed, which may influence participation in physical education. However, further research is needed to support this association. A Quebec study found that higher income schools had better facilities for sports and other physical activities, and more organized activities.[381] A United Kingdom study found that schools in more affluent areas and those with fewer pupils from ethnic minorities had more minutes of physical education per week; however, schools with more pupils eligible for free school meals also had more physical education time.[382] A United States study found that schools with students who had low socio-economic status were less likely to have a physical education teacher than schools with high socio-economic status students.[383]

Effective program components can include counselling, organized exercise classes, information distribution, exercise consultation, fitness assessment or lifestyle advice.[398,399]

Opportunities for people with low income to participate in these types of programs vary across communities in Ontario. The Healthy Kids Community Challenge, part of the Ontario government's Healthy Kids Strategy (2013), provides 45 communities with resources for programs that include promoting active play, active transportation and structured physical activity programs.[400] The Ontario Sport and Recreation Communities Fund provides provincial and local funding to not-for-profit organizations for sport, recreation and physical activity programs, many of which focus on increasing equity.[401]

The Provincial Policy Statement directs municipalities to provide a full range of equitably distributed recreational settings, including facilities and parks.[369] Parks and Recreation Ontario developed the Charter for Recreation and Parks in Ontario to provide guidance to communities when planning recreation and park services. The charter asks all communities to provide programs that take into account community needs, including promoting access to recreation for low-income Ontarians.[402,403] Many municipalities in Ontario offer discounted and free recreational programming to residents with low income, such as the Region of Peel and City of Toronto.[153,404] A number of community service organizations offer after-school programs that include free or low-cost physical activity opportunities for children and adolescents.[391]

New immigrants, some religious or cultural groups, and people with disabilities also require targeted policies so that they can fully access Ontario's recreational programs and facilities. Not-for-profit groups and settlement centres play a role in providing physical activity classes for newcomers and immigrants, and focus on meeting the needs of different cultures and religions.[405-407] Some municipal programs, such as in Hamilton and Toronto, provide accommodation for cultural and religious requirements, such as female-only swim hours and physical activity classes.[408,409] Many municipal facilities and programs support participation by residents with disabilities, such as the Region of Waterloo.[410]

**Opportunity:**

- Ensure consistency across the province by creating provincial funding and guidelines to assist municipalities in developing and implementing policies that make organized and informal sport and recreation activities accessible to residents with low income.

## Summary of opportunities to increase physical activity

- Develop and implement a comprehensive, cross-sectoral provincial physical activity strategy.

### Active transportation

- Continue to develop and replicate successful provincial and municipal policies, and school-based and community-wide programs that increase active transportation.
- Include provisions to ensure equity in provincial active transportation and public transit policies.

### Physical activity in schools

- Require a health and physical education credit that has a focus on physical activity in every grade from 9 to 12.
- Ensure that health and physical education, and other physical activity opportunities available for students in schools, are equitable across the province.

### Community programs

- Ensure consistency across the province by creating provincial funding and guidelines to assist municipalities in developing and implementing policies that make organized and informal sport and recreation activities accessible to residents with low income.


*Canoeing at Métis Nation of Ontario event*

# Physical activity: Focus on First Nations, Inuit and Métis

The link between physical activity and traditional Indigenous culture is very strong. A variety of physical activity programs are offered in First Nations, Inuit and Métis communities, including walking programs, organized sports and exercise programs (e.g., fitness classes, baseball and hockey), as well as traditional activities, such as fishing, hunting and trapping.[74] Physical activity in First Nations, Inuit and Métis populations is linked to other positive behaviours, such as healthier diets, avoiding drugs, and reduced smoking and alcohol consumption. An active lifestyle is also associated with an increased likelihood of excellent or very good self-perceived overall physical and mental health in First Nations, Inuit and Métis peoples.[74,411] However, there may be barriers to engaging in physical activity in First Nations, Inuit and Métis communities, including access to safe places to walk and play outdoors on-reserve, lack of physical activity infrastructure and trained personnel, and the cost of equipment and transportation.

This section compares the prevalence of physical inactivity in First Nations and Métis populations (data for Inuit populations are unavailable) to non-Aboriginal Ontarians. Recommendations to prevent chronic disease, including cancer, by increasing physical activity in First Nations, Inuit and Métis populations are also discussed.

## PHYSICAL INACTIVITY

This prevalence indicator measures the percentage of First Nations and Métis adults who were physically inactive, based on a daily estimated energy expenditure of less than or equal to 1.5 kilocalories/kilogram/day. For First Nations adults living off-reserve and Métis adults, the Canadian Community Health Survey asks respondents about the frequency and duration of specific physical activities during leisure time. First Nations respondents living on-reserve may also report physical activity during transportation or work because the Regional Health Survey does not specify that physical activity should only be reported during leisure time. The Regional Health Survey includes additional response options for traditional activities, such as hunting or trapping, fishing and berry picking or other food gathering, which are not listed as possible activities in the Canadian Community Health Survey.

### Physical inactivity in First Nations and Métis

**First Nations**

During 2007–2013, on-reserve First Nations women age 18 and older were significantly more likely to be physically inactive (73.5 percent) than off-reserve First Nations women (50.3 percent) and non-Aboriginal women (52.1 percent) (data not shown). On-reserve First Nations men were also significantly more likely to be physically inactive (56.1 percent) than off-reserve First Nations men (40.2 percent) and non-Aboriginal men (46.6 percent). First Nations women on- and off-reserve and non-Aboriginal women were significantly more likely to be physically inactive than men.

**Métis**

About half (45.7 percent) of Métis adults age 18 and older in Ontario were physically inactive in their leisure time during 2007–2014, which is similar to non-Aboriginal Ontarians (49.2 percent) (data not shown). Métis adults with lower household income were significantly more likely to be physically inactive than Métis adults with higher household income (53.1 percent in the lowest income quintile compared to 33.5 percent in the highest income quintile). Métis adults with lower levels of education were also significantly more likely to be physically inactive than Métis adults with higher levels of education (58.3 percent for adults with less than secondary school education compared to 40.3 percent for those with a post-secondary degree). Similar levels of physical inactivity were seen for Métis people living in the north and in the south of Ontario, and for men and women.

## POLICIES AND PROGRAMS TO INCREASE PHYSICAL ACTIVITY IN FIRST NATIONS, INUIT AND MÉTIS

The results presented above show that First Nations and Métis populations in Ontario have a high prevalence of physically inactivity. First Nations adults living on-reserve, especially women, are significantly more likely to be physically inactive than First Nations adults living off-reserve and non-Aboriginal adults. While many of the provincial-level policies and programs described in this section on physical activity can also benefit First Nations, Inuit and Métis populations, culturally relevant and co-developed policies and programs are required to reduce the risk of chronic disease by increasing physical activity in First Nations, Inuit and Métis communities.

**The *Path to Prevention* report presented four main recommendations to prevent chronic disease through increased physical activity:**

- Work with First Nations, Inuit and Métis to create safe places for physical activity.
- Develop a strategy to promote equity in physical activity infrastructure for First Nations, Inuit and Métis.
- Address the socio-economic barriers to physical activity for First Nations, Inuit and Métis peoples.
- Build and disseminate a knowledge base around physical activity interventions in First Nations, Inuit and Métis communities.

Barriers to engaging in physical activity in First Nations, Inuit and Métis communities may include: access to safe places to walk and play outdoors, lack of physical activity infrastructure and trained personnel, and the cost of equipment and transportation.

Several organizations are involved in promoting physical activity in First Nations, Inuit and Métis communities, including provincial and federal government ministries, agencies, non-governmental organizations and First Nations, Inuit and Métis organizations.[74] However, in First Nations, Inuit and Métis communities there are still issues regarding safety, equity in physical activity infrastructure and socio-economic barriers. There is also a lack of evidence regarding effective physical activity interventions. In May 2017, the Ontario government announced new funding for the Aboriginal Sport and Wellness Council of Ontario's Sport Pathway for Ontario Native Wellness program. The funding supports the participation of Indigenous youth in competitive sports, which included the 2017 North American Indigenous Games held in the Greater Toronto Hamilton Area. The government also confirmed continued funding for the Community Aboriginal Recreation Activator program, which facilitates delivery of recreational programming in 27 First Nations communities.[412]

- **Work with First Nations, Inuit and Métis to create safe places for physical activity**
  Creating safe places for physical activity involves aligning government policy and regulations that promote physical activity (e.g., the refreshed Ontario Trails Strategy) with goals for safe outdoor environments. Cancer Care Ontario can support these initiatives by providing best practice information to support active living in communities.[74] In many on-reserve First Nations communities, perceived safety is a strong determinant of engaging in walking outside, mainly due to feral dogs and a lack of safe, accessible sidewalks, trails and bike paths. Some First Nations communities have put in place stronger by-laws regarding feral dogs, which has helped to increase the safety of outdoor community spaces.[413,414]
- **Develop a strategy to promote equity in physical activity infrastructure for First Nations, Inuit and Métis**
  Having equitable access to physical activity infrastructure would allow First Nations, Inuit and Métis communities the opportunity to be involved in healthy daily activity, recreational opportunities and organized sports. A long-term investment in physical activity infrastructure (places, people and equipment) must take place, as well as community-developed research and planning to identify best practices and inform improving community infrastructure on- and off-reserve. A key factor in the promotion of equity in physical activity infrastructure is the role of health and physical education specialists in schools who help children develop fundamental physical literacy skills. These dedicated positions are lacking in many First Nations, Inuit and Métis communities, so training and funding local personnel for these roles is important for sustainability.[74]
- **Address the socio-economic barriers to physical activity for First Nations, Inuit and Métis peoples**
  Reducing socio-economic barriers would also reduce inequities in physical activity participation for First Nations, Inuit and Métis populations. Cost is a barrier to First Nations, Inuit and Métis children participating in organized physical activities. Strategies that address socio-economic barriers to physical activity and that capitalize on the success of existing physical activity programming must be developed in collaboration with First Nations, Inuit and Métis communities and key stakeholders at the federal and provincial levels.[415] ReachUp Ultimate is an example of an organization that works in partnership with First Nations, Inuit and Métis communities to provide youth workshops on ultimate Frisbee, which is a cost-efficient sport that can be played in any open space.
- **Build and disseminate a knowledge base around physical activity interventions in First Nations, Inuit and Métis communities**
  First Nations, Inuit and Métis communities and researchers have called for additional studies to bridge the data gap that exists in identifying the determinants and barriers of physical activity, and in evaluating promising practices in physical activity interventions. Promoting increased physical activity by building on First Nations, Inuit and Métis cultural elements has been shown to be promising, but needs further development. Providing examples of best practices in physical activity programming would offer useful and accessible information to community leaders.[416] For example, the Aboriginal Physical Activity & Cultural Circle is a national network that holds an annual national conference to exchange research and information on physical activity initiatives.

# Conclusion

## Health inequities are differences in health that are systematic, avoidable and unfair. People facing health inequities have greater health risks and poorer health outcomes.

The *Prevention System Quality Index: Health Equity* report describes the distribution of cancer risk factors in the Ontario population, and how system-level policies and programs with the potential to reduce cancer risk factors can affect groups facing health inequities. It discusses the current status of policies and programs in Ontario, as well as opportunities to reduce cancer risk factors in populations facing health inequities.

### Opportunities for improved data to monitor risk factors and health equity

Better data are needed to understand the cancer risk of populations facing health inequities and to monitor the effects of policies and programs on these populations over time. For example, strategies should be considered for optimizing coverage of First Nations, Inuit and Métis peoples in population-based surveys that measure risk factor prevalence. Population-based surveys should also have better identifiers for under-represented populations, such as people with disabilities and mental illnesses. In addition, equity stratifiers should be collected as part of administrative data. More robust data are required for smaller geographic areas, such as Local Health Integration Networks and their sub-regions, as well as public health units. The 2015 Annual Report of the Chief Medical Officer of Health of Ontario, *Mapping Wellness: Ontario's Route to Healthier Communities*, highlights the importance of collecting local-level data for evidence-based decision-making and reducing health inequities.[417]

Ongoing collection of risk factor data is also essential. For example, Ontario should participate in the Household Food Security Survey Module of the Canadian Community Health Survey each year so that food insecurity in the province can be continuously monitored. For some risk factors, more comprehensive data are required. For example, to more accurately measure physical activity, it is important to collect better data on physical activity achieved through active transportation and work-related activities. These types of physical activities may be more prevalent in people with lower incomes. Additional opportunities for improved monitoring of system-level cancer prevention policies and programs are outlined at the end of each section of the *2016 Prevention System Quality Index: Monitoring Ontario's Efforts in Cancer Prevention* report.[1]

In this report, socio-demographic factors were analyzed independently, without controlling for the potential effects of other socio-demographic factors. Future research could use a multivariate approach, which would allow for the examination of potential interactions among socio-demographic factors and a better understanding of which socio-demographic factors may be independent predictors of particular cancer risk factors.

## Population-based surveys that measure risk factor prevalence should have better identifiers for under-represented populations, such as people with disabilities and mental illnesses.

## Summary of findings

Overall, compared to people with higher incomes or more education, Ontarians with lower incomes or less education had a higher prevalence of cancer risk factors and fared worse on indicators intended to monitor the effects of policies and programs:

- Ontarians with lower incomes or less education were more likely to smoke and less likely to quit smoking in the long term. Second-hand smoke exposure was also higher in these groups, especially for adolescents. Residents of multi-unit housing were more likely to be exposed to second-hand smoke and those living in social housing are particularly vulnerable. Of the 12 largest local housing corporations (social housing providers), only five have a policy prohibiting smoking in residential units.
- In Ontario, binge drinkers with lower income or less education had more frequent binge drinking episodes. In some jurisdictions, an increase in the availability of alcohol outlets in neighbourhoods with lower socio-economic status has been associated with an increase in heavy drinking or alcohol-related harms.
- Ontarians with lower income or less education consumed fewer vegetables and fruit, which indicates a lower quality diet, than adults with higher income or more education. Ontario households with the lowest incomes also had the highest risk of food insecurity and were 19 times more likely to be food insecure than households with the highest incomes; food insecurity leads to compromises in food quality and quantity.
- Adults and adolescents with lower income or less (individual or household) education were more physically inactive during leisure time. In addition, there was a slight, but significant, income gradient in health and physical education course enrolment for boys in Ontario secondary schools—boys attending schools in lower income areas were less likely to enrol than boys attending schools in higher income areas.

Other populations facing health inequities had a higher prevalence of certain cancer risk factors and fared worse on some indicators of policy and program effects. A summary of significant findings for each indicator and socio-demographic factor can be found in Appendix A, Table 4 at the end of this report.

Overall, compared to people with higher incomes or more education, Ontarians with lower incomes or less education had a higher prevalence of cancer risk factors and fared worse on indicators intended to monitor the effects of policies and programs.

# Focus on First Nations, Inuit and Métis

A major focus of this report is on First Nations, Inuit and Métis peoples who face health inequities rooted in colonialism, racism and social exclusion. First Nations, Inuit and Métis populations have a higher prevalence of several behavioural risk factors than non-Aboriginal Ontarians. They are more likely to smoke, be exposed to second-hand smoke (Métis and Inuit), binge drink, have inadequate vegetable and fruit consumption (First Nations), experience food insecurity and be physically inactive (First Nations on-reserve). A summary of First Nations, Inuit and Métis populations' risk compared to non-Aboriginal Ontarians can be found in Appendix A, Table 5 at the end of this report. While many of the provincial-level policies and programs described in the report can also benefit First Nations, Inuit and Métis, culturally relevant and co-developed policies and programs are required to reduce risk factors and inequities in these populations. The report contains recommendations summarized from Cancer Care Ontario's *Path to Prevention—Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* report.[74]

There are many policies and programs in place in Ontario that can reduce the prevalence of cancer risk factors in populations facing health inequities, but there are opportunities for improvement. Comprehensive strategies that are implemented across sectors and at multiple levels (e.g., national, provincial, local and individual), and that include universal and targeted policies and programs are required to reduce risk factor prevalence in the population as a whole and in populations facing health inequities.

The causes of health inequities are complex, as are the solutions. Reducing cancer risk factors in populations facing health inequities is only one component of a larger strategy needed to increase health equity, which should include focusing efforts upstream to address the social determinants of health. Improving First Nations, Inuit and Métis peoples' health also requires a focus on the social determinants of Indigenous health, including personal and community resilience, restoring and promoting Indigenous identity, keeping cultures and languages alive, and self-governance.

Reducing cancer risk factors in populations facing health inequities is only one component of a larger strategy needed to increase health equity, which should include focusing efforts upstream to address the social determinants of health.

# Appendix A: At-a-glance summary tables

TABLE 4

**Sub-populations that were at higher risk related to commercial tobacco, alcohol, healthy eating and physical activity, Ontario, 2010–2014**

| Indicator | | Socio-demographic factor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Sex | Household income | Education | Residence | Geography | Immigration status | Cultural or racial group | Sexual orientation | Occupational group |
| **Commercial tobacco** | | | | | | | | | | |
| Current smoking | | Male | Lower income | Lower education | Rural | Northern | Canadian-born | White | Gay, lesbian or bisexual | Blue collar[2] |
| Second-hand smoke exposure: Adults | Vehicle | Male | Lower income | Lower education | Rural | Northern | Canadian-born | | — | |
| | Home | — | Lower income | Lower education | Rural | — | Canadian-born | | — | |
| | Public places | — | Lower income | — | — | — | — | | — | |
| Second-hand smoke exposure: Adolescents | Vehicle | — | Lower income | Lower education | — | Northern | | | | |
| | Home | — | Lower income | Lower education | — | Northern | | | | |
| | Public places | Female | — | — | Urban | — | | | | |
| Have not made quit attempt (in past year)[1] | | — | — | Lower education | — | Southern | Canadian-born | | — | White collar[3] |
| Have not quit long term (cessation)[1] | | — | Lower income | Lower education | — | Northern | Canadian-born | Black | — | Blue collar[2] |
| **Alcohol** | | | | | | | | | | |
| Exceed recommended limits for cancer prevention | | Male | Higher income | — | Rural | | Canadian-born | | — | |
| Binge drinking | | Male | Higher income | Lower education | Rural | | Canadian-born | | Gay, lesbian or bisexual | |
| Frequency of binges for binge drinkers | | Male | Lower income | Lower education | — | | — | | — | |
| Intensity of binges for binge drinkers | | — | Lower income | — | — | | Canadian-born | | Heterosexual | |

| Indicator | | Socio-demographic factor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Sex | Household income | Education | Residence | Geography | Immigration status | Cultural or racial group | Sexual orientation | Occupational group |
| **Healthy eating** | | | | | | | | | | |
| **Inadequate vegetable and fruit consumption** | | Male | Lower income | Lower education | Rural | Northern | Canadian-born | — | | |
| **Household food insecurity** | | | Lower income | | | — | | | | |
| **Individual food insecurity** | | Female | | | | | | | | |
| **Physical activity** | | | | | | | | | | |
| **Inactive during leisure time** | **Adults** | Female | Lower income | Lower education | Urban | Southern | Immigrants | Non-white | Heterosexual | |
| | **Adolescents** | Female | Lower income | Lower education | Urban | | | Non-white[4] | | |
| **Did not enrol in health and physical education beyond 1 compulsory credit[1]** | | Female | Lower income[5] | | | | | | | |

Notes: 1. In the full report, these indicators are presented in a positive direction (e.g., percentage that made a quit attempt). 2. Blue-collar occupation groups at increased risk: Trades, transport, equipment operators and related. 3. White-collar occupational groups at increased risk: Management; and Business, finance and administration. 4. Cultural or racial groups at increased risk: West and South Asian or Arab; and East and Southeast Asian. 5. Refers to median income quintile of school neighbourhood for this indicator.

**Legend**

- **Significantly higher risk**
- **Significantly higher risk, with a small effect size (i.e., <5.0% absolute difference)**
- **Similar level of risk across categories (i.e., no significant difference)**
- **Socio-demographic factor not analyzed**

TABLE 5

## Risk of commercial tobacco use, alcohol consumption, unhealthy eating and physical inactivity in First Nations, Inuit and Métis adults, compared to non-Aboriginal Ontarians, Ontario, 2007–2014

| Indicator | | Population | | | | |
|---|---|---|---|---|---|---|
| | | First Nations on-reserve | First Nations off-reserve | Métis | Inuit living in Nunangat | Inuit living outside Nunangat |
| **Commercial tobacco** | | | | | | |
| Current smoking | | ↑ | ↑ | ↑ | ↑ | ↑ |
| Second-hand smoke exposure | Home and vehicles | | — | ↑ | ↑ | ↑ |
| | Public places | | — | — | | |
| **Alcohol** | | | | | | |
| Binge drinking | | ↑ | ↑ | ↑ | ↑ | — |
| **Healthy eating** | | | | | | |
| Inadequate vegetable and fruit consumption | | ↑ | ↑ | — | | |
| Household food insecurity | | ↑ | ↑ | ↑ | ↑[1] | ↑[1] |
| **Physical activity** | | | | | | |
| Physically inactive | | ↑ | — | — | | |

Note: 1. As measured by lower food security

**Legend**

↑ Significantly higher risk than non-Aboriginal Ontarians

— Similar level of risk to non-Aboriginal Ontarians (i.e., no significant difference)

Data not available

# Appendix B: Indicators and data sources

The *Prevention System Quality Index: Health Equity* report includes two types of indicators. Prevalence indicators measure the percentage of the population, or selected sub-population, that have a specific risk factor. Policy and program indicators monitor the effects of a policy or program on reducing a risk factor, and how these effects may differ across selected sub-populations. In the text, whenever the term "significant" is used, it refers to statistical significance.

This report examines data for all of Ontario. Data measuring differences in the social determinants of health or cancer risk factors for specific areas of the province (e.g., public health units, Local Health Integration Networks) are available through the Ontario Marginalization Index[418] the Social Determinants of Health Map[419] and the Ontario Cancer Profiles.[420]

The report mainly uses data derived from self-report surveys. Respondents of self-report surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption). Because of this, it is possible that indicators that report on undesirable behaviours or conditions (e.g., binge drinking, food insecurity) may underestimate behaviours or exposures, while indicators that report on desirable behaviours (e.g., smoking quit attempts) may overestimate behaviours or exposures.

## Ontario population data

The data source most commonly used to develop indicators for the report is the Canadian Community Health Survey (CCHS). The CCHS is a population-based cross-sectional survey conducted by Statistics Canada that is representative of approximately 97 percent of the Canadian population age 12 and older, including First Nations people living off-reserve, Inuit and Métis populations. The CCHS survey excludes people living on-reserve, institutional residents, full-time members of the Canadian Forces and residents of certain remote regions. Those who do not have a phone number (home or mobile) are also excluded, which underestimates risk factor prevalence in some of the most vulnerable populations (e.g., people who are homeless).

For this report, indicators have been analyzed according to a range of socio-demographic factors, as described in Table 1. The socio-demographic factors chosen are consistent with those identified by a pan-Canadian group convened by the Canadian Institute for Health Information looking at equity in healthcare. Socio-demographic factors were categorized into sub-groups and a reference category was chosen. Where possible, the reference category represents the sub-group that is presumed to have the most advantage, although other sub-groups may be used as the reference group. Sub-groups were then compared against the reference sub-group to examine whether the estimates were significantly different. For analyses of adult populations, indicators were analyzed for adults age 25 and older to restrict the sample to those who are more likely to have completed their education and reached their adult socio-demographic status.

For most analyses, 2012–2014 combined data from the CCHS were used. However, some sub-populations are under-represented in the CCHS; for these groups, it was often necessary to combine additional years of data to increase sample sizes and ensure that estimates were reportable according to the Statistics Canada release guidelines. In addition, not all survey questions are asked in each cycle of the CCHS; therefore, it was not always possible to combine additional years of data. Some sub-populations are not represented in the CCHS or were not possible to adequately define based on the survey questions. For these sub-populations, the report refers to published literature for information about risk factors in these groups. It was not feasible to examine trends for the health equity indicators in the current report because it was often necessary to combine multiple years of data to produce estimates, and there are a limited number of years of CCHS data available. Furthermore, the demographic profiles of populations facing health inequities in Ontario can shift over time, making it difficult to ensure that indicators are measuring the same concepts from one time period to the next.

The report also uses administrative data from the Ministry of Education, which have limitations. Administrative data used in the report are collected for other purposes, and therefore, may only approximate what the indicator is intended to measure.

## First Nations, Inuit and Métis population-specific data

Data from three surveys are used for the First Nations, Inuit and Métis indicators presented in this report. For every indicator, First Nations, Inuit and Métis populations are each compared to non-Aboriginal Ontarians.

As described above, the CCHS includes responses from Canadians age 12 and older, excluding people living on-reserve. Estimates for First Nations people living off-reserve, Métis people and non-Aboriginal Ontarians are derived from the CCHS. For most First Nations and Métis indicators, multiple years of data (e.g., 2007–2014) are combined to ensure sufficient sample sizes for analysis.

Estimates for First Nations people living on-reserve are derived from the First Nations Regional Health Survey (RHS). The RHS is governed by the First Nations Information Governance Centre, in keeping with the principles of OCAP® (Ownership, Control Access and Possession), that establish how First Nations data should be collected, protected, used or shared. For the RHS, only one survey cycle (Phase 2, 2008/2010) was available for comparison to the CCHS.

Statistics Canada's 2012 Aboriginal Peoples Survey (APS), which includes responses from people who reported Aboriginal identity on the 2011 National Household Survey, is used to provide estimates for Inuit in this report. Inuit include those living in Inuit Nunangat (the Inuit homeland made up of four regions stretching across much of the Canadian Arctic), outside Inuit Nunangat (as a proxy for Ontario) and in Ontario (where there is a large enough sample size). Although Inuit are included in the CCHS, the number of Inuit respondents living outside Inuit Nunangat is too small to reliably produce estimates for most cancer risk factors. The CCHS also does not cover many remote regions, including large parts of Inuit Nunangat.

Where possible, cancer risk factor prevalence for First Nations, Inuit and Métis populations has been analyzed by sub-group (e.g., by sex, by age group and by education level) and a reference sub-group was chosen. The reference sub-group typically represents people who are expected to be the best-performing group (e.g., highest education level) for an indicator outcome. Sub-groups were then compared against the reference sub-group to examine whether the percentages were significantly different.

Due to small sample sizes and non-uniform data sources, the indicators presented in this report sometimes differ across First Nations, Inuit and Métis populations (see Table 2 for all First Nations, Inuit and Métis indicators and data sources). Most Canadian health databases lack Aboriginal identifiers and there is a shortage of comprehensive First Nations-, Inuit- and Métis-specific health survey data.

Additional details regarding indicator definitions, methodologies, data sources and limitations are included in the *Prevention System Quality Index: Health Equity* technical appendix posted online at cancercareontario.ca/PSQI. Data tables for each indicator are included in the *Prevention System Quality Index: Health Equity* supplementary tables, also posted online.

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