



# Eating in Ontario: What Do We Know?

Vegetable and fruit consumption, food insecurity, self-rated health, and physical activity based on CCHS 2017 and implications related to COVID-19

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Nutrition Connections, March 2021

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This report is part of a series prepared to provide a better understanding of the determinants of healthy eating of Ontarians and to help inform policy and program development surrounding healthy eating and chronic disease prevention.

This is a supplement to the Nutrition Resource Centre September 2017 report: [Healthy Eating in Ontario: What do We Know? An Analysis of Eating Behaviours, Food Literacy and Food Insecurity Indicators.](#)

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## Summary

This study examines existing population-based survey data sources for Ontario to provide a cross-sectional, descriptive analysis of vegetable and fruit consumption, food insecurity, self-rated health, and physical activity. This information is useful as it provides insights into some determinants of healthy eating and health. The data source used was the Canadian Community Health Survey, 2017. When comparing Ontario to Canadian estimates there was little difference. The discussion further provides insights into the current situation with respect to the impact of COVID-19 on food insecurity and some potential policy implications.

### Vegetable and Fruit Consumption

In 2017, only 26.8% of Ontarians reported consuming vegetable and fruit five times or more per day. Youth 12-17 years of age in Ontario reported the lowest prevalence (22.9%) of consuming vegetables and fruit five or more times per day compared to adults 18-65 years old (26.7%) and adults over 65 years of age (29.0%).

The proportion of males reporting consumption of vegetables and fruit five or more times per day (21.8%) is lower compared to females (31.4%) in the Ontario population over 12 years of age.

In the population who self-identified as Indigenous 32.6% reported consuming vegetables and fruit five or more times per day compared to 26.6% reported by the non-Indigenous population in Ontario.

The lowest income quintiles in Ontario reported the lowest prevalence of consuming vegetables and fruit five or more times per day (23.0%) compared to the highest income quintile (28.4%). Consuming vegetables and fruit five or more times per day increased with income.



## Food Insecurity

In Ontario, 13.3% of all households experienced some level of marginal, moderate, or severe food insecurity.

Households with children under 18 years of age experienced higher rates of food insecurity (marginal, moderate, severe), 11.8% compared to 6.8% of households with no children in Ontario. Among all household living arrangement types in Ontario, food insecurity was highest in female lone parent households (33.6%) with children less than 18 years old.

In Ontario households, nearly one-quarter (22.5%) of adults who self-identified as Indigenous, reported moderate or severe food insecurity (marginal not reported), whereas non-Indigenous adults reported a much lower prevalence of food insecurity (6.8%).

Adults in the lowest income quintile in Ontario reported the highest prevalence of moderate or severe food insecurity (25.4%), compared to the highest income quintile (0.6%). Prevalence of food security among adults increased with income.

In Ontario in 2017, 14.3% of the adults living in households experiencing moderate to severe food insecurity were concerned about children not eating enough, while 10.9% relied on low-cost foods to feed children, and 7.0% reported they could not feed children a balanced meal, sometimes or often in the past 12 months.

## Self-rated Health

Sixty-one percent (60.5%) of Ontarians over the age of 12 self-rated their health as very good or excellent in 2017. A higher proportion of youth ages 12-17 (75.4%) and adults ages 18-65 (62.3%) rated their health as very good or excellent compared to older adults over 65 years of age (46.2%). Fifty-one percent of people who self-identified as Indigenous rated their health as very good or excellent compared to 62.5% of the non-Indigenous population. Of people in the lowest income quintile, 48.7% rated their health as very good or excellent compared to 72.1% of those in the highest income quintile.

## Physical Activity

In 2017, 68.0% of adults in Ontario self-reported being moderately active or active for leisure time physical activity. The prevalence of being moderately active or active was



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higher among adults 18 to 65 years of age (72.4%) compared to adults over 65 years of age (48.8%). There was no difference between males (68.7%) and females (67.4%) self-reporting moderate or active leisure time physical activity. Adults who self-identified as being Indigenous, reported being moderately active or active at a higher prevalence (79.1%) than people who did not identify as Indigenous (71.6%). In Ontario, the prevalence of adults who reported being moderately active or active increased across income quintiles, from the lowest income quintile (59.7%) to the highest income quintile (77.5%).

In Ontario, 73.3% of children and youth ages 12-17 did not meet Canada's Physical Activity Guidelines, which is comparable to the findings in the Canadian youth population (69.1%). Over 80% of adults, over the age of 18, in Canada do not meet the recommended physical activity guidelines.

## Key Takeaways

Being in the lowest income quintile was associated with the lowest prevalence of vegetable and fruit intake, the highest prevalence of food insecurity, and the lowest prevalence of self-rating health as very good or excellent, and the lowest prevalence of self-reporting being moderately active or active. These results affirm that having low income has the greatest negative impact on these indicators for healthy eating and overall health. Households headed by lone female parents with children under 18 and people who self-identified as being Indigenous reported the highest rates of food insecurity. Further investigation needs to include an examination of food insecurity along with eating habits and diet quality in more detail in the months to come, particularly in the wake of the COVID-19 pandemic. Continued collection and monitoring of diet, food insecurity, and health indicators over time is critical to provide evidence-based and targeted policy actions to promote healthy eating, reduce food insecurity and chronic disease.

## Implications related to COVID-19

The COVID-19 pandemic is an unprecedented, multi-factorial public health emergency, which has impacted Ontario and Canada since it emerged early in 2020. Changes to eating habits, increased food insecurity, mental health issues, and declines in physical activity have all been accentuated due to the COVID-19 pandemic. The pandemic disproportionately impacts people with low income and racialized populations including Indigenous and Black communities making their situation worse. Further study is needed to assess food insecurity and contributing factors in these populations. Long-term



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government supports in the form of income guarantees are necessary to ensure that low-income and vulnerable individuals, and families with children, have the means to access and afford a healthy diet during this time of crisis and beyond. These findings highlight the need for decision-makers to assume a targeted, upstream approach to health that addresses income and other social determinants of health to promote the physical and mental health of the population, to reduce chronic disease and the burden of chronic disease to the health care system and economy.



## Introduction

This study contributes to a series of reports that monitor indicators that influence the diet and health of Ontarians. Currently the surveillance of these indicators at the provincial level is lacking. The purpose of this study was to examine some important determinants of healthy eating and health indices available since the release of Nutrition Connections (formerly Nutrition Resource Centre), “*Healthy Eating in Ontario: What Do We Know*” report in 2017.<sup>1</sup> That study provided baseline data on health indicators and food insecurity data from the Canadian Community Health Survey (CCHS) 2014 as well as food literacy data from the CCHS Rapid Response Food Skills Modules from 2012 and 2013. No new data on food literacy indicators has been collected by CCHS since 2013, therefore food literacy data is not reported in this new report. This present study is focused on examining CCHS 2017 data for various indicators including vegetable and fruit consumption, adult and household food insecurity, self-rated health, and physical activity. This information is relevant to health intermediaries and program planners across all sectors and to government decision-makers to help prioritize areas of focus for further research and to develop policies and interventions intended to reduce health-related inequities and improve healthy eating, mental health, and physical activity behaviours, and to prevent chronic disease.

Many factors influence dietary intakes and eating habits, including aspects of the food environment, food availability and affordability, which can make it challenging for individuals to make healthy food choices. Poor dietary intakes increase the risk of chronic disease and increase costs to the health care system, while negatively impacting the health and wellness of individuals and communities.<sup>2, 3</sup> Risk factors such as poor eating habits and physical inactivity play a role in the development of chronic diseases such as cancer, cardiovascular disease, and type 2 diabetes. In Ontario, the total annual economic burden of chronic disease risk factors were estimated to be \$2.6 billion for physical inactivity and \$5.6 billion for unhealthy eating, including \$1.8 billion for inadequate vegetable and fruit consumption.<sup>4</sup> In Canada, unhealthy eating has been identified as the leading cause of chronic disease contributing to \$13.8 billion/year in direct health care (\$5.1 billion) and indirect costs (\$8.7 billion).<sup>5</sup> This was based on not eating enough protective foods (e.g., vegetables and fruit, whole grains; milk; nuts and seeds) and consuming too many foods that are considered harmful (e.g., processed and red meat; sugar-sweetened beverages).<sup>5</sup>

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Food insecurity is an important determinant of diet and health and is described as inadequate or insecure access to food due to financial constraints. Food insecurity negatively impacts the physical, mental and social health of individuals and significantly increases costs to the health care system.<sup>6</sup> For example, health care costs for Ontario adults living in severely food insecure households were found to be 121% higher compared to those living in food secure households.<sup>6</sup> For children living in food insecure households, learning and diet quality are compromised.<sup>7, 8</sup> Among Canadian households that are food insecure, prevalence of nutritional inadequacies have been reported in adolescents and adults.<sup>8</sup>

Since March 2020, when the COVID-19 pandemic in Ontario and Canada began, ensuing emergency measures, including the closure of schools, businesses and community services for several months, have contributed to a sharp rise in food insecurity. Further, the ongoing COVID-19 pandemic has resulted in changes to eating and shopping habits (e.g., eating out less/eating more at home, shopping less)<sup>10</sup> and market changes have created challenges to access food due to shopping restrictions, supply challenges and rising food costs.<sup>11</sup> Governments have provided unprecedented income supports and financial aid to food charities, however, these may not be sustainable solutions. While it is too early to tell the long-term impacts and outcomes of the COVID-19 pandemic, it will be important to monitor the impact on household food insecurity, especially for vulnerable populations at higher risk, including Indigenous and Black populations, lone parents, low-income wage earners and those who have lost secure employment due to the crisis.<sup>9, 12</sup>



## Methods and Data Sources

The data selected for this report came from the Canadian Community Health Survey (CCHS) 2017 Annual component.<sup>13</sup> The CCHS Annual component is a cross-sectional survey conducted by Statistics Canada that collects information from the Canadian population in all provinces and territories, 12 years of age and older, living in private dwellings. In all selected dwellings, a knowledgeable household member was asked to supply basic demographic information on all residents of the dwelling. One member of the household was then asked to complete a more in-depth interview, based on the age and household composition. Data was collected using Computer Assisted Interviewing (CAI) for both telephone and personal interviews. Approximately 58,600 valid interviews were conducted between January and December 2017. Individuals living on First Nations Reserves, institutionalized residents, full-time members of the Canadian Forces, youth aged 12 to 17 living in foster homes, and residents of certain remote regions were excluded from the sampling frame. Altogether, these exclusions represent less than 3% of the target population.

CCHS Share data files were used for all analyses, with exceptions of Tables 3a, 3b, and 4c, which were acquired from Statistics Canada publicly released reports. Data was limited to Ontario residents and demographic data, general health data and food insecurity data were extracted from CCHS 2017.

Vegetable and fruit consumption was classified based on the total number of times per day that respondents reported eating vegetables and fruit for the month prior to the time of the interview. The CCHS measures the number of times (frequency), not the amount consumed, and the variable was divided into less than 5 times per day, 5 to 10 times per day and more than 10 times per day. For this analysis, only the population consuming vegetables and fruit five or more times per day was shown.

In describing household food insecurity, the authors have used the approach consistent with Statistics Canada and Health Canada in population health reports—reporting on people living in moderately and severely food insecure households; and marginally food insecure households, where possible.<sup>14</sup> Adult food insecurity in the CCHS is based on a set of 10 adult-referenced questions and describes the food security situation of the adult members of the household over the previous 12 months. In households with children, adult respondents were asked an additional 8 questions about the experiences in their

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household. Food insecurity for households with children reflects the number of households with food insecurity among the child members of the household and is therefore calculated using household weights.

The food insecurity variable is adopted from the Health Canada model of food security status and reflects the number of people living in households with food insecurity among the adult members of the household. It does not necessarily reflect the experience of all adult members in the household. It captures four kinds of situations:

- Food secure: These households had access, at all times throughout the previous year, to enough food for an active, healthy life for all household members.
- Food insecure – Marginal: At times during the previous year these households had indications of worry about running out of food and/or limited food selection due to a lack of money for food.
- Food insecure - Moderate: At times during the previous year these households had indications of compromise in quality and/or quantity of food consumed.
- Food insecure - Severe: At times during the previous year these households had indications of reduced food intake and disrupted eating patterns.

Self-rated health indicates the respondent's health status based on his/her own judgement or his/her proxy. Respondents were asked to indicate their self-rated health as poor, fair, good, very good or excellent. A dichotomous variable was then created to capture those that rated their health as poor, fair or good, compared to those that rated their health as very good or excellent.

Adult physical activity was calculated using a derived variable of physical activity, based on the number of minutes of moderate to vigorous activity done in a week. The variable was dichotomized, combining sedentary or somewhat active adults and moderately active or active adults. Less than 75 minutes of vigorous activity per week was considered somewhat active or sedentary, and 75 minutes or more of vigorous activity a week was considered moderately active or active.

Youth physical activity was measured as a dichotomous variable, indicating whether a youth was physically active according to the Canadian Physical Activity Guidelines. Physical activity for youth aged 12-17 is defined as at least 60 minutes of moderate-to-vigorous physical activity each day. Moderate exercise is defined in the Canadian Physical Activity Guidelines as activity that causes a person to breathe harder and sweat at least a little.

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Given the multistage stratified survey design of the CCHS, we calculated all estimates using weighted samples provided by Statistics Canada. Both individual survey weights and household weights were used and are indicated in the results tables. Data was further analyzed in sub-groups, stratified by key socio-demographic variables such as age, sex, Indigenous identity<sup>a</sup> and income quintile. The variance estimates were generated using the bootstrap variance SAS program, and bootstrap resampling weights, provided by Statistics Canada with the CCHS Product. Variables of interest with fewer than 10 observations were withheld due to confidentiality.

The coefficient of variation (CV) was examined for each estimate and based on reporting guidelines it was determined whether estimates should be interpreted with caution or suppressed as indicated below:

### Estimated validity and interpretation

C: interpret with caution, high sampling variability associated with the estimates ( $0.15 < CV \leq 0.25$ )

D: interpret with caution, high sampling variability associated with the estimates ( $0.25 < CV \leq 0.35$ )

E: estimates do not meet Statistics Canada's quality standards for this statistical program. Conclusions based on these data will be unreliable and most likely invalid ( $CV > 0.35$ ) and were not reported.

<sup>a</sup> "Indigenous identity" includes those who self-identify as First Nations, Métis or Inuit. It is recognized that Indigenous peoples may be under-represented in data collected by Statistics Canada for a variety of reasons and therefore these estimates should be interpreted with caution.



## Results: What We Found

Among the Ontario population over 12 years of age, 7.5% of the Ontarians were 12 - 17 years old; 75.2% were 18 – 65 years old; and 17.3% were over the age of 65 in 2017 (Table 1). In Ontario, 4.1% of the population, aged 12 years and older, self-identified as Indigenous. Some of our results tables include both Ontario and Canadian data for comparison purposes, however, there is little difference between the results for Ontario compared to Canada.

### Vegetable and Fruit Consumption

In 2017, approximately one quarter (26.8%) of Ontarians, 12 years and older, reported consuming vegetables and fruit five times or more per day (Table 2). The Ontario prevalence was similar to Canada, with an estimated 28.7% of Canadians reporting consumption of fruits and vegetables five times per day or more.

Youth aged 12-17 years old in Ontario reported the lowest prevalence of vegetable and fruit consumption five times or more per day (22.9%), compared with adults 18-65 years old (26.7%) and older adults over the age of 65 (29.0%) (Table 2).

For those over the age of 12 in Ontario, the proportion of males reporting consumption of vegetables and fruit five or more times per day (21.8%) was lower than females (31.4%) (Table 2). Similarly, at the national level, the prevalence of vegetable and fruit consumption among males (22.8%) was lower than reported for females (34.4%), aged 12 years and older.

The prevalence of vegetables and fruit consumption five or more times per day was found to be similar between people who self-identified as Indigenous (32.6%) and people who did not identify as Indigenous (26.6%) in Ontario (Table 2). In comparing Ontario to national estimates there was little difference in consumption of vegetables and fruit five or more times per day, between the population who self-identified as Indigenous and non-Indigenous.

In both the Ontario and the Canadian population, reported intake of vegetables and fruit five or more times per day increased across income quintiles (Table 2). In Ontario, the lowest income quintile had the lowest prevalence of reported intakes of vegetables and fruit five or more times per day (23.0%), compared to the highest income quintile (28.4%).





Similarly, in Canada, the lowest income quintile had the lowest prevalence of reporting vegetable and fruit intakes five or more times per day (24.8%), compared to the highest income quintile (31.8%).

## **Food Insecurity**

Household food insecurity is categorized into several levels including marginal, moderate and severe, as described by Health Canada (and in the methods section), depending on the presence and extent of household experiences.<sup>14</sup> These results report on the three levels of household food insecurity where data is available. In some cases, we were only able to report on moderate and severe food insecurity.

### **Food Insecurity among Households in Ontario and Canada**

In Ontario, 13.3% of households (all living arrangements) experienced food insecurity to some degree, including marginal, moderate and severe food insecurity (Table 3a). This is consistent with the proportion of all households (12.7%) in Canada that reported experiencing food insecurity (Table 3b).

By living arrangement in Ontario, 6.8% of couples in households with no children reported experiencing food insecurity, compared to 11.8% of couples in households with children less than 18 years old (Table 3a). Among all household living arrangement types in Ontario, food insecurity was highest in female lone parent households (33.6%) with children less than 18 years old (Table 3a).

The national estimates of household food insecurity were similar to Ontario. By living arrangement in Canada, 5.7% of couples in households with no children reported food insecurity, compared to 11.7% of couples in households with children less than 18 years old (Table 3b). Consistent with data at the provincial level (3a), among all household living arrangement types in Canada (Table 3b), food insecurity was highest (33.1%) in female lone parent households with children less than 18 years old (Table 3a).

### **Food Insecurity among Adults in Households Self-Identifying as Indigenous in Ontario and Canada**

The results of this study highlight a clear difference in the prevalence of moderate and severe food insecurity between adults who self-identify as Indigenous and non-Indigenous adults at both the provincial and national levels.

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In 2017, 22.5% of adults who self-identified as Indigenous reported moderate or severe food insecurity (Table 3c), whereas non-Indigenous adults reported a much lower prevalence of food insecurity (6.8%) (Table 3c). Similarly, at the national level, one in five (20.2%) adults who self-identified as Indigenous reported moderate to severe food insecurity, which is much higher than the prevalence among non-Indigenous Canadian adults (6.2%) (Table 3c).

## **Food Insecurity among Adults in Households by Income Quintile in Ontario and Canada**

Without reporting on marginal food insecurity, at both the provincial and national levels, this study observed higher prevalence of moderate and severe food insecurity among adults in lower income households (Table 3c). In Ontario, adults in the lowest income quintile had the highest prevalence of moderate and severe food insecurity (25.4%), compared to the highest income quintile (0.6%). Similarly, in Canada, adults in the lowest income quintile had the highest prevalence of moderate and severe food insecurity (22.1%), compared to the highest income quintile (0.6%).

Table 3c does not report on marginal food insecurity, thus prevalence estimates of food insecurity are underestimated.

## **Concerns Feeding Children among Households Experiencing Moderate or Severe Food Insecurity in Ontario**

Among respondent Ontario adults in households experiencing moderate to severe food insecurity, 14.3% were concerned about children not eating enough sometimes or often in the last 12 months because the household could not afford food (Table 3d). Similarly, in Ontario 10.9% of respondent, adults in households experiencing moderate to severe food insecurity relied on low-cost foods to feed children sometimes or often in the last 12 months and 7.0% reported they could not feed children a balanced meal sometimes or often in the last 12 months. National prevalence estimates closely mirror Ontario estimates for each parameter of concern with feeding children in households experiencing food insecurity.

Table 3d. presents estimates of prevalence among adults who responded to the additional questions on challenges with feeding children. As not all respondents may have answered these questions, these results may be underestimated. Additionally, Table 3d does not report on marginal food insecurity, further underestimating prevalence of food insecurity.



## General Health Indicators

### Self-Rated Health in Ontario

Sixty-one percent (60.5%) of Ontarians over the age of 12 years self-rated their health as very good or excellent (Table 4a). A higher proportion of youth ages 12-17 (75.4%) and adults ages 18-65 (62.3%) rated their health as very good or excellent compared to older adults over 65 years of age (46.2%). Fifty-one percent (50.5%) of people who self-identified as Indigenous rated their health as very good or excellent. Of people in the lowest income quintile, 48.7% rated their health as very good or excellent compared to 72.1% in the highest income quintile (Table 4a).

### Adult Self-Reported Physical Activity in Ontario

2017 CCHS data indicated that 68.0% of Ontario adults self-reported being moderately active or active for leisure time physical activity (Table 4b). The prevalence of being moderately active or active was higher among adults 18 to 65 years of age (72.4%) compared to older adults over the age of 65 (48.8%).

There was no difference between males (68.7%) and females (67.4%) self-reporting moderate or active leisure time physical activity (Table 4b).

Prevalence of being moderately active to active was found to be higher among Ontario adults who self-identified as Indigenous (79.1%), compared to non-Indigenous adults in Ontario (71.6%) (Table 4b).

In Ontario, the prevalence of adults who reported being moderately active or active increased across income quintiles, from lowest income quintile (59.7%) to highest income quintile (77.5%) (Table 4b).

### Youth Self-Reported Physical Activity in Ontario

CCHS 2017 data indicated that 73.3% of Ontario youth 12-17 years old were not meeting Canadian Physical Activity Guidelines (Table 4c).

### Adult and Youth Self-Reported Physical Activity in Canada

At the national level, 69.1% of youth 12-17 years old and approximately 83.1% adults over the age of 18 did not meet the Canadian Physical Activity Guidelines in 2017 (Table 4d).



## Discussion

The Canadian Community Health Survey (CCHS) 2017 provides updated data for indicators of healthy eating, adult and household food insecurity, and general health, including self-rated health, and physical activity in Ontario. In this report, results for both Ontario and Canada are presented where available. Ontario is mostly on par with national estimates of prevalence across the various indicators employed in this study. Ontario is Canada's most populated province with Ontario accounting for almost 40% of the Canadian population.<sup>15</sup> Among Ontarians, over the age of 12 years, seventy-five percent (75.0%) are adults between the age of 18-65 years. Ontario has a higher percentage (17.0%) of seniors, over the age of 65, than youth ages 12-17 (8.0%). In Ontario, 4.0% of the population self-identify as Indigenous, however, this is an underestimate as it does not include those living on First Nations reserves.<sup>16</sup> Given that adults and seniors comprise the largest proportion of the population, as well as being the greatest consumers of health care services related to chronic diseases, attention should be made to improve eating and other lifestyle behaviours in the adult population.<sup>17</sup> However, to be effective in the reduction of health care expenditures and improve the health of the population, it is imperative to focus on food literacy and healthy eating among children and youth to develop and improve lifestyle behaviours, early in life, that will persist through adulthood. Thus, having an impact on health in the long-term and population health.

### Healthy Eating

The present study used data on the frequency of vegetable and fruit consumption as a marker of diet quality and healthy eating, which is common in population-based studies.<sup>18</sup> While this indicator does not measure actual intake of vegetables and fruit, it provides a quantified estimate of intake using five servings or more per day as a benchmark.<sup>19</sup> Vegetable and fruit consumption is an important indicator to monitor as it is associated with reducing risk of chronic disease.<sup>4</sup> Consuming adequate amounts of vegetables and fruit (excluding juice) has long been considered a foundation for a healthy diet and is associated with reduced risk of cardiovascular disease and other diet related chronic diseases.<sup>20, 21</sup> Other dietary factors are also associated with reducing chronic disease, including nuts and seeds, and whole grains, and these should be included as indicators in future studies.<sup>5</sup>

Consumption of vegetable and fruit in Canada has remained consistently low between 2007 and 2014<sup>19</sup> with Canadians reporting a reduction in daily consumption since 2004.<sup>22</sup>

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Polsky and Garriguet (2020) found the average frequency of vegetable and fruit consumption among Canadians over the age of 12 decreased from 5.0 times a day in 2007 to 4.7 times a day in 2014.<sup>23</sup> In 2015, the average number of total daily vegetables servings declined in all age and sex groups except in children younger than nine, compared to 2004.<sup>23</sup> This research found that lower total fruit intakes were explained by lower intakes of fruit juice, and lower vegetable intakes resulted from declines in potatoes and to a lesser extent lettuce.<sup>23</sup>

This study found that less than 30% of Ontarians and Canadians over 12 years of age reported consuming vegetables and fruit five times or more per day. This is much lower than the 50% target for vegetable and fruit consumption set by the Ontario Chronic Disease Prevention Alliance in 2018 to help reduce chronic disease.<sup>24</sup> The prevalence of vegetable and fruit consumption was lowest among youth in Ontario and Canada with a mere 23% of Ontario's youth, aged 12 – 17 years, reporting consumption five times or more per day. Furthermore, Ontario showed a low proportion of both males (22%) and females (31%) consuming vegetables and fruit five more times per day, with males consuming less than females. Given the lower estimates of vegetable and fruit consumption compared to their counterparts, youths and males across all ages should be considered for targeted interventions to promote increases in vegetables and fruit consumption and health equity.

The population estimates in this study, based on the CCHS 2017, cannot be directly compared to those generated in the previous report [Healthy Eating in Ontario: What Do We Know?](#),<sup>1</sup> which was based on the CCHS 2014 data, due to differences in the methodology and study samples of the respective cohorts. However, similar findings are observed in each CCHS sample cohort with respect to low prevalence of vegetables and fruit consumption in the general population. These findings underscore the importance of health professionals and governments taking action to implement population-based strategies aimed at increasing vegetable and fruit consumption among the population as a whole. Importantly, both studies showed that low income appears to be associated with lower consumption of vegetables and fruit. This suggests there may be important differences between subpopulations with regards to vegetable and fruit consumption and/or the determinants of healthy eating, such as food insecurity, which could lead to health inequities over time. Additionally, there may be barriers to accessing a supply of affordable vegetables and fruit in local or more remote and Northern communities.<sup>25</sup> This warrants consideration of social and geographical disparities which influence diet quality and consumption patterns of vulnerable groups, specifically, low-income households.

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In 2017, *Eating Well with Canada's Food Guide* (2007) was Health Canada's dietary guidance tool designed to help people follow a healthy diet.<sup>26</sup> The 2007 food guide specified the recommended daily number of food guide servings of vegetables and fruit for males and females by age, ranging from 5 servings to 10 servings for children (age 4-8) and adults.<sup>27</sup> In 2019, Health Canada released new dietary guidelines and a food guide, which moved away from specifying the number of daily servings of vegetables and fruit to a plate-based model communicating proportion of food choices.<sup>28</sup> The new food guide illustrates that half a plate at every meal should be comprised of vegetables and fruit.<sup>28</sup> Consistent with previous dietary guidance, vegetables and fruit remain the most prominent and proportionally largest food group demonstrating the important role that these foods play in promoting population health and reducing risk for chronic disease.<sup>28</sup> It will be important to monitor how Ontarians follow this new dietary advice going forward.

By March 2020, the COVID-19 pandemic emerged as a growing threat to the health and lives of people living in Ontario and Canada. Due to stay at home orders, the pandemic caused changes to eating behaviours, food preparation, and grocery shopping habits. Canadians were eating more at home, eating out less, and ordering more food online (e.g., groceries, meal kits, take-out/delivery).<sup>10, 29, 30, 31</sup> Canadians were also more likely to have increased their consumption of alcohol and junk food according to a survey conducted by Statistics Canada as part of their Canadian Perspectives Survey Series (CPSS).<sup>32</sup> In this survey, 27% of respondents reported eating more junk food or sweets at the end of March, compared to before COVID-19, and that proportion increased to 35% a month later.<sup>32</sup> These trends were true for both men and women, and for younger and older Canadians.<sup>32</sup> It will be important to measure changes in eating behaviours as a result of COVID-19 going forward to see if these behaviours are long lasting.

## Food Insecurity

Food insecurity is an important indicator for health and impacts 13.3% of households in Ontario and 12.7% in Canada. Those with lower incomes and experiencing food insecurity are at a higher risk of health problems and account for a higher proportion of cost by the health care system, emphasizing the need to consider strategies to improve individual and household income.<sup>33</sup> This study affirms that food insecurity is a concern in Ontario, especially for those with low income, as one-quarter of adults in the lowest income quintile reported moderate or severe food insecurity. The fact that a large proportion (65%) of food insecure households have reported wages or salaries from employment as their main source of income, points to an income problem.<sup>12</sup>



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In Ontario in 2017, households with children experienced higher rates of food insecurity than households without children, and households headed by female lone parents with children under the age of 18 experienced the highest rates of food insecurity compared to other living arrangements. Tarasuk et. al. reported that 1.2 million Canadian children in Canada lived in food insecure households in 2017-18 and this was higher than any previous national estimates.<sup>12</sup> In Ontario, 1 in 6 (17%) children were living in food insecure households.<sup>12</sup>

In food insecure households with children, this study showed that parents were concerned about feeding children, including worries about children not eating enough because they cannot afford food, relying on low-cost foods to feed children, and that children may not be getting a balanced meal. In food insecure families, the inability to provide food causes anxiety in parents and children and can lead to negative physical and mental outcomes.<sup>34</sup>

While studies are lacking on the dietary intakes of children in food insecure households in Ontario, a study by Lane et al (2019) in Saskatchewan reported nutrient inadequacies in children of food insecure newcomer families.<sup>35</sup> Not eating well can compromise healthy growth and development and learning ability.<sup>7</sup> This emphasizes the need to address economic barriers to household food insecurity; prioritizing households with children to mitigate lasting negative effects of poor nutrition in early child development, as well as negative health impacts associated with mental and physiological stress experienced by parents and caregivers in the context of poverty and food insecurity.<sup>36</sup>

The present report shows a substantial difference in the prevalence of food insecurity between adults who self-identify as Indigenous (22.5%) and non-Indigenous (6.8%) adults in Ontario. Food insecurity rates in households where the respondent identified as Indigenous have been reported as high as 28.2% in Canada.<sup>12</sup> There is strong evidence to substantiate an increased vulnerability to food insecurity among Indigenous peoples compared to non-Indigenous peoples in Canada.<sup>37</sup> Indigenous peoples in Canada are also at higher risk for chronic disease such as diabetes than the general population and face many challenges managing chronic disease.<sup>38</sup> For families living in Northern Canada, a healthy diet can cost twice as much as it would in southern regions and some on-reserve First Nations households spend half of their income purchasing a basic nutritious diet.<sup>39</sup> In these situations, households have to make difficult decisions about the kinds, quality and amounts of foods purchased for the household and may purchase food



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that provides greater satiety and is lower cost, but may be less nutritious than the healthier choices.<sup>39</sup>

High rates of food insecurity are also predominant in households where the respondent identified as Black (28.9%) compared to those who identify as white (11.1%).<sup>12</sup> The prevalence of food insecurity in the general population also differs according to immigration status, with those living in Canada for less than five years experiencing higher rates of food insecurity (17.1%) compared to those living in Canada for more than five years (13.8%), or for those who are Canadian born (12.2%).<sup>12</sup> Other factors linked to higher prevalence of food insecurity are renting versus owning a home, and lower levels of education.<sup>12</sup>

Thus, it is imperative to implement upstream policy and population health interventions that target the social determinants of health, aiming to lessen social disparities among communities to promote health equity and population health. This also underscores the need to explore the accessibility and affordability of healthy foods in vulnerable communities, especially in the context of traditional food practices among Indigenous and multicultural groups, and consider differences attributed to income levels in communities.

As discussed previously, food insecurity is related to income, and diet quality can be compromised. This study observed a potential inverse relationship between income and diet quality, as indicated by vegetable and fruit consumption reported to be lowest in the lowest income quintile and increasing across income quintiles. This finding requires further examination to determine whether low intakes of these healthy foods is due to the cost or availability of vegetables and fruit, food preference or other factors. According to a food costing report from the Agri-Food Analytics Lab at Dalhousie University, food prices were expected to rise 4% in 2020, with vegetables and bakery leading the way.<sup>40</sup> Further increases are expected in 2021 especially for meat (4.5 to 6.5%), bakery (3.5 to 5.5%) and vegetables (4.5 to 6.5%).<sup>41</sup> It will be important to monitor the cost of food going forward to see the impact this has on consumer's intake of healthy foods such as vegetables and fruit.

The most consistent way to monitor the affordability of foods in Ontario communities has been the Nutritious Food Basket (NFB).<sup>42</sup> The NFB estimates the average local cost of a basket of foods based on current nutrition recommendations and food purchasing patterns.<sup>43</sup> Since 1988, NFB data collection was mandated in public health under the Ontario Ministry of Health and Long-Term Care's (MOLTC) *Ontario Public Health*

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*Standards (OPHS).*<sup>42</sup> The OPHS were updated in 2018 and while monitoring food affordability was mandated, the use of the NFB as a protocol was not.<sup>44, 45</sup> This change in policy could contribute to inconsistent or variable food affordability data collection across the province as health units could choose to use another tool/method to monitor food affordability, which restricts capacity to conduct poverty and food insecurity advocacy efforts at the provincial level. In a recent study examining how the NFB advanced health equity advocacy by Ontario public health units, public health dietitians across Ontario agreed that the NFB tool provided localized evidence of inadequate incomes for individuals to afford a healthy diet.<sup>42</sup> Furthermore, consistently monitoring the local cost of food was deemed essential to support poverty and food insecurity surveillance and advocacy, enabling health units to adhere to the health equity mandate of the OPHS.<sup>42, 46</sup>

In Ontario, efforts have been made to address poverty and food insecurity in recent years. Provincial consultations regarding Ontario's First Food Security Strategy were held in 2017 to focus on improving access to healthy foods especially to vulnerable populations.<sup>47</sup> The [OPHA](#) participated during the consultation process, and recommended an evidence-based, collaborative and systemic approach to the strategy and continued momentum on basic income guarantee policy/program.<sup>48</sup> Unfortunately, progress on Ontario's First Food Security Strategy was abandoned soon after consultations concluded with the change in Government in Ontario. Subsequently from December 2019 to April 2020, stakeholder consultations were conducted to update the Ontario Poverty Reduction Strategy to identify opportunities to increase employment, provide support and services to people in need, and lower the cost of living.<sup>49</sup> In December 2020, the Ontario government released its [five-year poverty reduction strategy](#) outlining a cross-government plan built on the government's response to the COVID-19 outbreak and intended to prevent people from falling into poverty and dependence on social assistance while supporting economic recovery.<sup>50</sup> Through their [social services relief fund](#) the Ontario government promised \$510 million to help municipalities and social service providers such as shelters, food banks, emergency services, charities, and non-profits continue to deliver their critical services.<sup>50</sup> Researchers at the PROOF Insecurity Policy Research centre and Ontario Dietitians in Public Health (ODPH) maintain that food banks and other food programs are an ineffective and counterproductive response to food insecurity as the root cause of food insecurity is a lack of income.<sup>12, 33, 51</sup> A further problem with the new five-year poverty strategy for Ontario<sup>50</sup> is that while it includes a cross-government indicators framework to monitor progress, it is remiss in not including household food insecurity as a key indicator.

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The Ontario Dietitians in Public Health (ODPH) recently updated their [position statement and recommendations on responses to food insecurity](#), which they importantly define as an income problem related to not having enough money to buy food.<sup>51</sup> ODPH recognizes food insecurity as a human rights and social justice issue and an urgent public health problem in Ontario and Canada that requires all levels of government to be involved. Among the ODPH recommendations specifically aimed at the provincial level is the need for a poverty reduction strategy that includes targets to reduce food insecurity and policy interventions that improve the financial circumstances of households. Some policy intervention examples include setting a minimum wage that more closely aligns with the costs of living in Ontario, and establishing social assistance rates in communities across the province based on local/regional costs of living and food informed by data collected by public health units.<sup>51</sup>

ODPH further recommends the regular monitoring and surveillance of food insecurity at the provincial/territorial and national level to ensure that their recommendations and strategies to reduce poverty and food insecurity are having a positive impact.<sup>51</sup>

## Food Insecurity and COVID-19

In 2020, new research is pinpointing substantial increases in the prevalence of food insecurity both in Canada and the USA, due to unprecedented change in public policies, living conditions and economic disruption triggered by the COVID-19 pandemic.<sup>9, 36</sup> COVID-19 is a disease of serious clinical significance. In an attempt to mitigate negative impacts of the pandemic on population health and the health system, Ontario's Premier declared a state of emergency in Ontario in mid-March, requiring the immediate closure of schools, childcare, non-essential workplaces, businesses and services for several months.<sup>52</sup> Similarly, across Canada, stay at home orders were issued to slow community transmission of COVID-19. Such severe policy measures had an immediate effect on employment and household income. In one week in mid-March, it was reported that applications for unemployment insurance increased to 500,000 from 27,000 applications the previous year.<sup>53</sup> Nine months later, Canadians continue to experience unemployment, reduced hours of work, and job losses and the economic impact has been tremendous.<sup>54, 55</sup>

The immediate and persistent disruption of employment impacting household income is a main factor contributing to COVID-19-related increase in food insecurity. However, the impact of the pandemic on food insecurity and health is much more complex, multi-level and bidirectional as described by Leddy et al. in their recent paper.<sup>36</sup> These authors outline the key social and structural impacts of COVID-19 on food insecurity which

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intersect at the household level.<sup>36</sup> First, food insecurity is situated in the pre-existing structural context of health, social and economic disparities, which is magnified during public health and economic crises such that pre-existing disparities in Ontario are likely to be worsened.<sup>36</sup> Existing inequities in social determinants of health (e.g., experiences of discrimination and racism; barriers to healthcare access and utilization; residing in crowded housing conditions; and overrepresentation in essential work settings, such as farms, factories and healthcare) has put racial and ethnic minority groups at increased risk for COVID-19 complications and mortality as these populations are disproportionately impacted by COVID-19.<sup>56, 57, 58, 59</sup> Data gathered by Toronto Public Health in July 2020, showed that of all the individuals with a reported COVID-19 infection: 83% reported identifying with a racialized group; 51% were living in lower-income households; and 27% of individuals were living in households with 5 or more people.<sup>60</sup>

Statistics Canada reported on magnitude of food insecurity in Canada during the COVID-19 pandemic based on their Canadian Perspective Survey Series (CPSS) conducted in May 2020.<sup>9</sup> This involved a shortened version of the household food security survey module to assess food insecurity based on a scale of six experiences, ranging from food not lasting before there was money to buy more, to going hungry because there was not enough money for food.<sup>9</sup> The CPSS survey showed food insecurity in Canada to be significantly higher during COVID-19 (14.6%) compared to the CCHS 2017/2018 results, when accounting for differences due to only six questions being asked (10.5%).<sup>9</sup> Canadians who were absent from work due to COVID-19 during the week of data collection were almost three times more likely to be food insecure (28.4%) compared to those who were working (10.7%).<sup>9</sup> The May CPSS survey also showed a higher prevalence of food insecurity being reported among Canadians living in households with children (19.2%) compared to households with no children (12.2%).<sup>9</sup> Similar to the child feeding concerns this study reported from CCHS 2017, the May 2020 survey showed that Canadians in households with children were more likely to be worried about food running out before there was money to buy more, and having difficulty affording to eat balanced meals in the context of household food insecurity.<sup>9</sup>

These findings raise alarms for potential negative impacts of COVID-19-related food insecurity on the health of Ontarians and Canadians. Food insecurity is a driver of physiological stress, which is likely to be compounded in the COVID-19 pandemic with other stressors, such as financial stress, unemployment, isolation or disconnection from social supports/networks and concerns related to health.<sup>36, 61</sup> Importantly, Leddy et. al suggest that the social and structural context of COVID-19, such as

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unemployment/income lost, physical distancing policies, food insecurity and changes to health care services will all contribute to poorer health outcomes in the short-term, with disproportionate effects on those that are most vulnerable.<sup>36</sup>

In April 2020 the [federal government](#) provided unprecedented financial support of \$100 million to food banks and charities during COVID-19.<sup>62</sup> Research shows, however, that food banks are not effective at reducing food insecurity and most food insecure households do not use food banks.<sup>51, 61</sup> Furthermore, in June 2020, the [Ontario government](#) provided \$1 million in funding to improve access to healthy meals and snacks for school-age children and youth during the COVID-19 outbreak.<sup>63</sup> While school food programs are extremely important to provide energy and nourishment to improve learning in children, they do not address the income challenges of families, who remain food insecure. Neither of these supports address the root cause of food insecurity, which is lack of income.<sup>51</sup>

Another structural impact of COVID-19 on food insecurity, is how the pandemic has revealed fragility in the current food system.<sup>53</sup> The stay-at-home orders and immediate shutdown of non-essential businesses and institutions dramatically shifted demand from institutional food service and restaurants to household foods.<sup>64</sup> While food supply disruptions were observed and have been linked to increased food costs in Canada<sup>64</sup> there has not been a broad rapid increase in food prices.<sup>53</sup> However, there is less certainty over the immediate and long-term periods because so many factors are in flux.<sup>53</sup> Measures that capture changes in food costs, such as the Food Price Reports headed by the Agri-Food Analytics Lab at Dalhousie<sup>40, 41</sup> and the Nutritious Food Basket<sup>43</sup>, will be important to employ as the pandemic continues to provide data to help elucidate the relationship between food costs during the pandemic. Additionally, it will be important to monitor changes in diet quality and nutritional intakes as it relates to food insecurity.

The long-term impacts of food insecurity on health have been substantiated in the public health literature. Canadian adults in food insecure households are shown to be at increased risk for poorer mental and physical health, greater stress and chronic diseases, such as diabetes.<sup>36, 61</sup> Canadian children and youth who experienced hunger over a ten-year period have also been shown to have an increased likelihood of poorer health and an increased likelihood to develop chronic health conditions, such as asthma.<sup>61</sup> Given the dramatic increases in food insecurity already observed in Canada, there is an urgency to take upstream policy action to address poverty and the current COVID-19-related food



insecurity crisis to mitigate serious, far reaching negative impacts on the health of Canadians both in the short and long term.<sup>51</sup>

## Self-Rated Health

This study found differences in self-rated health between age groups in Ontario, with a higher proportion of youth ages 12 to 17 rating their health as very good or excellent (75.4%) compared to adults 18 to 65 years of age (62.3%), and older adults over 65 years of age (46.2%). These estimates are similar to the results reported in 2014.<sup>1</sup> A lower proportion of individuals who self-identify as Indigenous (50.5%) rated their health as very good or excellent, compared to non-Indigenous individuals (62.5%), which is consistent with the findings in the 2014 report.<sup>1</sup> In both 2014 and 2017, a lower proportion of adults in the lowest income quintile (44.6% and 48.7%, respectively) reported very good or excellent health status compared to the higher income quintiles.

While the present study does not measure mental health, there is evidence that mental health status has declined as a result of the COVID-19 pandemic.<sup>65</sup> In May 2020, 48% of Canadians reported having excellent or very good mental health, however this was six percentage points lower than it was at the end of March. Youth 15 to 24 years of age reported higher rates (27%) of symptoms of moderate to severe anxiety compared to adults aged 25-64 (19%) and seniors aged 65 and older (10%).<sup>65</sup> COVID-19 presents additional challenges to people from Black, Asian and minority ethnic groups who may be at higher risk of mental health issues due to inequalities in seeking support.<sup>66</sup> COVID-19 exacerbates the problem as traditional face-to-face support from mental health services are more difficult to access during the pandemic.

## Physical Activity

The Canadian Health Measure Survey (CHMS) directly measures the activity levels of children and adults and compares them to physical activity guidelines.<sup>67, 68</sup> Results from 2016 and 2017 showed that only 16% of adults aged 18 to 79 and 40% of children and youth aged 5 to 17 met the recommended targets for physical activity.<sup>59</sup> Boys aged 5 to 17 were found to be twice as likely as girls to meet the recommended target of 60 minutes a day of moderate to vigorous physical activity.<sup>67</sup> These results were stated to be consistent with results from 2007 to 2015 for children, youth, and adults.<sup>59</sup> Additional research has shown that physical activity levels of Canadian children and youth have remained stable and rates continue to remain below the guidelines for being physically active.<sup>69</sup> The present study showed that in Ontario 73% of children and youth ages 12 to



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17 in Ontario were not meeting Canada's physical activity guidelines compared to 69% of Canadian children and youth. The present study did not assess data to determine whether Ontario adults have met/not met the Canadian physical activity guidelines, however, nationally, over 80% of Canadian adults reported not achieving the recommended 150 minutes of moderate to vigorous activity per week.

The present study showed that in Ontario, 68.0% of adults self-reported being moderately active or active, which appears at odds with national data for the proportion of adults not meeting recommended guidelines, suggesting possible reporting and/or social desirability biases for this indicator. In 2017, a higher percentage of adults 18 to 65 years of age self-reported being moderately active or active than previously reported in 2014 (72.5% versus 52.4%).<sup>1</sup> There was minimal change in the population over 65 years of age being moderately active or active between 2014 and 2017 (47.3% and 48.8%, respectively). In 2014, 69.4% of youth 12-17 reported being active or moderately active, however, a direct comparison to 2017 cannot be made as the way physical activity levels of children and youth is monitored has changed over the past several years.

The recent COVID-19 pandemic has caused a decline in physical activity in adult populations due to the mandatory closures of fitness facilities, advisories to stay at home, and lock-downs in seniors residences, preventing people from getting out and moving around. Researchers from the University of British Columbia found that all levels of physical activity declined between nine and 12.6 percent shortly after physical distancing was introduced, and the trend was reversed only for moderate-to-vigorous physical activity, while light physical activity remained lower.<sup>70</sup> During the COVID pandemic in May 2020, 40% of Canadians reported doing some exercise indoors, and 57% exercised outside.<sup>65</sup> Jakobsson, et al. (2020) observed some physiological, immunological and mental outcomes associated with even short interruptions in physical activity.<sup>71</sup> Researchers argue the importance of keeping physically active during the COVID-19 pandemic to prevent additional physical and mental distress.<sup>71</sup>

Healthy eating and physical activity can significantly reduce the incidence of some types of chronic diseases and dramatically improve the overall health and wellbeing of individuals.<sup>17</sup> There is also an economic cost to unhealthy lifestyle factors. In Ontario, the total annual economic burden of chronic disease factors attributed to physical inactivity was determined to be \$2.6 billion, while the total cost of unhealthy eating was estimated at \$5.6 billion, which included \$1.8 billion for inadequate vegetable and fruit



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consumption.<sup>4</sup> Every \$1 invested in promoting healthy eating and physical activity has been estimated to yield \$6 in savings from the treatment of chronic disease.<sup>72</sup>



## Strengths and Limitations

This study relies on large scale population-based survey data which presents several limitations.<sup>73, 74</sup> The survey design for this study is cross-sectional, providing estimates at one point in time, which restricts the authors' ability to draw associations between determinants of healthy eating and other variables examined in this study.<sup>73</sup> Additionally, given the sampling frame for CCHS, the results of this study are not generalizable to households with children under the age of 12 years old.<sup>73</sup> Furthermore, CCHS data does not include individuals living on reserves or people without a permanent address, which underestimates levels of food insecurity.<sup>13</sup>

It is important to reiterate that all generated estimates were based on self-reported CCHS survey data, which can be subject to both social desirability and reporting bias.<sup>13, 73, 74, 75</sup> In a survey which aims to assess health behaviours and factors (e.g., dietary intake, healthy eating behaviours, physical activity, weight), the respondent may respond in a way as to avoid criticism or seek praise, contributing to decreased validity of data. It is a common phenomenon, particularly with healthy behaviours and healthy eating and nutrition data, that desirable behaviours are over-reported, while less desirable behaviours are under-reported.<sup>75, 76, 77</sup> There is potential for additional inherent bias, including recall bias, which is the inability to accurately recall information needed to answer the question, or response bias, meaning differences between those who agree to participate in the survey (compared to non-participants).<sup>73, 77</sup>

Due to changes in methodology and sampling for food insecurity (not reporting on marginal) and physical activity (for children) between 2014 and 2017 definitive comparisons cannot be made between this report and the Eating in Ontario Report.<sup>1</sup>

It is important to emphasize that our selection of indicators is far from exhaustive and are incomplete with respect to healthy eating specifically and for food literacy generally. Further study of indicators including all components of dietary behaviour (food and beverage consumption, nutrient intakes) and food literacy<sup>78</sup> (e.g., food and nutrition knowledge, food skills, food and cooking self-efficacy, understanding the food system and how living situations, culture and traditions impact food decisions) is required.

This underscores the need for ongoing measurement and monitoring of a comprehensive range of indicators that measure the determinants of healthy eating, including current

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dietary intake data, to make the necessary associations between determinants of healthy eating and dietary intake/diet quality.



## Conclusions

The indicators analyzed in this study, including vegetable and fruit consumption, adult and household food insecurity, self-rated health and physical activity levels, have all suggested there is an income gradient to health and the life circumstances that promote health. These findings highlight the need for decision-makers to assume a targeted, upstream approach to health that addresses social determinants of health and to promote health equity.

In general, intakes of vegetable and fruit consumption continue to be lower than recommended for the population. Food insecurity remains a priority concern particularly for people who self-identify as Indigenous and for families with children. The COVID-19 pandemic has contributed to increased food insecurity due to loss of jobs and income. Income level is demonstrated to be the strongest indicator of food insecurity and self-rated health, with those in the lowest income quintile showing higher proportion of food insecurity and poorer self-rated health. Government policies and interventions that target income security as a policy lever have the greatest potential to improve health at the population level.<sup>33, 51</sup> Mental health and physical inactivity negatively impact health and are also priority public health concerns. Action is needed to address the determinants of health in Ontarians, especially for children and youth, to improve quality of life, reduce hospitalizations and prevent death, and to reduce the economic burden of chronic disease associated with risk factors such as poor diet and physical inactivity.

While significant steps have been taken since the publication of the last report [Healthy Eating in Ontario: What Do We Know?](#), there is still a need for a better nutrition information system for monitoring and surveillance of dietary status, eating behaviours, food literacy, food insecurity and other related determinants of health, which has been advocated for over 30 years<sup>1, 79, 80, 81, 82</sup> A better bridging of research and practice can effectively improve healthy eating and health in the population and reduce chronic disease in the province.



## Policy Actions

These findings support some policy actions for Ontario and Canada including:

- Regular monitoring, surveillance and releases of data at the provincial and local-regional level regarding dietary intakes and eating patterns.
- Increased efforts to reduce burden of chronic disease by promoting [Canada's Food Guide](#) and healthy eating recommendations to all population groups to increase vegetables and fruit, whole grains, plant based-protein foods, and limit intakes of processed foods high in fat, salt and sugar, etc.
- Regular measuring, analyzing, and reporting of the prevalence and severity of food insecurity in all provinces and territories, including analysis of race-based food-insecurity data, particularly amongst Indigenous populations and Black Canadians.<sup>51</sup>
- Regular monitoring, surveillance and reporting on mental health and physical activity indicators.
- Continued use of the Nutritious Food Basket at the local health unit level to monitor the cost of healthy eating in communities.<sup>42</sup>
- Development of a poverty reduction strategy that includes targets for reduction of food insecurity as well as policy interventions that improve the financial circumstances of very low income households.<sup>51</sup>
- A minimum wage that more closely aligns with costs of living in Ontario.<sup>51</sup>
- Implementation of policy interventions that have been shown to reduce food insecurity such as income supports to families, such as Canada Child Benefit.<sup>51</sup>
- Implementation of Indigenous-led strategic direction related to food insecurity and food systems that incorporates a poverty reduction lens.<sup>51</sup>
- Continued action to address the COVID-19 food insecurity crisis with a focus on long-term policy solutions to reduce food insecurity, increase income, and stability in the food system.
- Support for actions to reduce racial disparities and inequitable access to health, including mental health services for all population groups.
- Increased efforts to promote Canada's Physical Activity Guidelines for all age groups and provide support for individuals and families to achieve them.



# Results Tables

Table 1. Demographics

Indicator		Percentage of Ontario population Estimate (95% Confidence Interval)
Total Population		13,448,494
Age	12-17 years old	7.5% (7.5, 7.5)
	18-65 years old	75.2% (75.0, 75.5)
	>65 years old	17.3% (17.0, 17.5)
Sex	Males	48.8% (48.8, 48.9)
	Females	51.1% (51.1, 51.1)
Indigenous Identity <sup>a</sup> (self-identified)	Indigenous	4.1% (3.6, 4.7)
	Non-Indigenous	95.9% (95.3, 96.4)

Source: CCHS 2017 Annual Component, Statistics Canada

<sup>a</sup> "Indigenous identity" includes those who self-identify as First Nations, Métis or Inuit.

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**Table 2: Vegetable and Fruit Consumption**

Indicator		Ontario	Canada
		Proportion of population consuming vegetables and fruit 5 times or more per day	Proportion of population consuming vegetables and fruit 5 times or more per day
		Estimate (95% CI)	Estimate (95% CI)
<b>Total Population</b>		<b>26.8%</b> (24.9, 28.7)	<b>28.7%</b> (28.1, 29.3)
<b>Age</b>	<b>12-17 years old</b>	22.9% (19.3, 26.5)	27.4% (25.4, 29.4)
	<b>18-65 years old</b>	26.7% (25.2, 28.2)	28.4% (27.6, 29.1)
	<b>&gt;65 years old</b>	29.0% (26.5, 31.5)	30.9% (29.6, 32.2)
<b>Sex</b>	<b>Males</b>	21.8% (20.1, 23.5)	22.8% (22.0, 23.6)
	<b>Females</b>	31.4% (29.6, 33.2)	34.4% (33.4, 35.4)
<b>Indigenous Identity<sup>a</sup> (self-identified)</b>	<b>Indigenous</b>	32.6% (26.2, 38.9)	27.8% (25.1, 30.5)
	<b>Non-Indigenous</b>	26.6% (25.2, 28.0)	29.7% (29.0, 30.5)
<b>Income Quintiles</b>	<b>Quintile 1</b>	23.0% (20.5, 25.6)	24.8% (23.5, 26.1)
	<b>Quintile 2</b>	26.3% (23.3, 29.2)	27.4% (26.0, 28.9)
	<b>Quintile 3</b>	27.2% (24.2, 30.2)	29.1% (27.6, 30.6)
	<b>Quintile 4</b>	28.7% (25.7, 31.7)	30.2% (28.7, 31.6)
	<b>Quintile 5</b>	28.4% (26.0, 30.9)	31.8% (30.4, 33.2)

Source: CCHS 2017 Annual Component

This variable classifies the respondent based on the total number of times per day he/she eats fruits and vegetables. The CCHS measures the number of times (frequency), not the amount consumed. Respondents reported consumption for the last month at the time of interview. Individual weights were used.

<sup>a</sup> "Indigenous identity" includes those who self-identify as First Nations, Métis or Inuit.

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**Table 3a. Household Food Security by Living Arrangement in Ontario (Statistics Canada)**

	Ontario			
	Food secure	Food insecure, marginal	Food insecure, moderate	Food insecure, severe
	Percentage of households			
Living arrangements	2017/2018			
	Percent			
<b>Total, all living arrangements</b>	86.7	4.3	5.8	3.2
<b>Female living alone</b>	82.1	4.4	8.1	5.4
<b>Male living alone</b>	83.3	4.7	6.2	5.8
<b>Couple no children</b>	93.2	2.8	2.6	1.4 <sup>E</sup>
<b>Couple with child(ren) less than 18 years old</b>	88.2	4.7	6.0	1.1 <sup>E</sup>
<b>Female lone parent with child(ren) less than 18 years old</b>	66.3	7.6	15.6	10.4
<b>Male lone parent with child(ren) less than 18 years old</b>	75.3	F	F	5.9 <sup>E</sup>
<b>Other living arrangements</b>	87.0	4.6	5.6	2.8

Symbol legend:

<sup>E</sup> use with caution

<sup>F</sup> too unreliable to be published

Source: Statistics Canada. [Table 13-10-0385-01 Household food security by living arrangement](#)

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# NUTRITION CONNECTIONS



**Table 3b. Household Food Security by Living Arrangement in Canada (Statistics Canada)**

	Canada			
	Food secure	Food insecure, marginal	Food insecure, moderate	Food insecure, severe
	Percentage of households			
Living arrangements	2017/2018			
	Percent			
<b>Total, all living arrangements</b>	87.3	4.0	5.7	3.0
<b>Female living alone</b>	83.8	4.1	7.4	4.7
<b>Male living alone</b>	83.3	4.7	6.3	5.7
<b>Couple no children</b>	94.3	2.3	2.3	1.1
<b>Couple with child(ren) less than 18 years old</b>	88.2	4.4	5.9	1.4
<b>Female lone parent with child(ren) less than 18 years old</b>	66.9	8.0	16.3	8.8
<b>Male lone parent with child(ren) less than 18 years old</b>	78.4	5.3 <sup>E</sup>	9.6 <sup>E</sup>	6.7 <sup>E</sup>
<b>Other living arrangements</b>	86.2	4.5	6.5	2.8

Symbol legend:

<sup>E</sup> use with caution

Source: Statistics Canada. [Table 13-10-0385-01 Household food security by living arrangement](#)

Available from: DOI: <https://doi.org/10.25318/1310038501-eng>

# NUTRITION CONNECTIONS



**Table 3c: Adult Food Insecurity by Indigenous Identity and Income**

Population Characteristics		Ontario		Canada	
		Proportion of adults who are food secure (including marginal food insecurity)	Proportion of adults experiencing moderate or severe food insecurity	Proportion of adults who are food secure (including marginal food insecurity)	Proportion of adults experiencing moderate or severe food insecurity
		Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)
Indigenous Identity (Self-Identified)	Indigenous Identifying Adults	77.5% (71.0, 84.0)	22.5% (16.0, 29.0)	79.8% (77.0, 82.6)	20.2% (17.4, 23.0)
	Non-Indigenous Identifying Adults	93.2% (92.4, 93.9)	6.8% (6.1, 7.6)	93.8% (93.4, 94.1)	6.2% (5.9, 6.6)
Income Quintiles	Quintile 1	74.6% (71.8, 77.5)	25.4% (22.5, 28.2)	77.9% (76.4, 79.4)	22.1% (20.6, 23.6)
	Quintile 2	90.8% (89.1, 92.4)	9.2% (7.6, 10.9)	91.6% (90.7, 92.5)	8.4% (7.5, 9.3)
	Quintile 3	95.7% (94.7, 96.7)	4.3% (3.3, 5.3)	95.7% (95.2, 96.3)	4.3% (3.7, 4.8)
	Quintile 4	98.4% (97.5, 99.1)	1.7% <sup>C</sup> (0.9, 2.5)	98.0% (97.6, 98.5)	2.0% (1.5, 2.4)
	Quintile 5	99.4% (99.0, 99.7)	0.6% <sup>C</sup> (0.3, 0.9)	99.4% (99.2, 99.6)	0.6% (0.4, 0.8)

Source: CCHS 2017 Annual Component

Food Security – adult status.

This variable is based on a set of 10 adult-referenced questions and describes the food security situation of the adult members of the household in the previous 12 months. It captures three kinds of situations:

1 - Food secure: No, or one, indication of difficulty with income-related food access.

2 - Moderately food insecure: indication of compromise in quality and/or quantity of food consumed (2 to 5 affirmative responses).

3 - Severely food insecure: indication of reduced food intake and disrupted eating patterns (>= 6 affirmative responses)

This variable is adopted from the Health Canada model of food security status. This variable does not necessarily reflect the experience of all adult members in the household. This variable reflects the number of people living in households with food insecurity among the adult members of the household (person weights).

This table does not report on marginal food insecurity thus prevalence estimates of food insecurity will be underestimated.

# NUTRITION CONNECTIONS



**Table 3d: Households Experiencing Moderate or Severe Food Insecurity Reporting Challenges Feeding Children**

Indicators	Ontario		Canada	
	Proportion of households who are food secure (including marginal food insecurity)	Proportion of households experiencing moderate or severe food insecurity	Proportion of households who are food secure (including marginal food insecurity)	Proportion of households experiencing moderate or severe food insecurity
	Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)
<b>Relied on low-cost foods to feed children sometimes or often in the last 12 months</b>	89.1% (87.7, 90.6)	10.9% (9.4, 12.3)	90.3% (89.6, 91.1)	9.7% (8.9, 10.4)
<b>Could not feed children a balanced meal sometimes or often in the last 12 months because of cost</b>	93.0% (91.9, 94.1)	7.0% (5.9, 8.1)	93.8% (93.2, 94.4)	6.2% (5.6, 6.8)
<b>Children were not eating enough sometimes or often because household could not afford food in the last 12 months</b>	85.7% (81.9, 89.4)	14.3% (10.6, 18.1)	88.5% (86.6, 90.3)	11.5% (9.7, 13.4)

Source: CCHS 2017 Annual Component

This variable is based on a set of 18 questions and describes the food security situation of the household in the previous <sup>12</sup> months. It captures three kinds of situations:

1 - Food secure: No, or one, indication of difficulty with income-related food access.

2 - Moderately food insecure: Indication of compromise in quality and/or quantity of food consumed.

3 - Severely food insecure: Indication of reduced food intake and disrupted eating patterns.

This variable is adopted from the Health Canada model of food security status. This variable reflects the number of households with food insecurity (household weights).

This table does not report on marginal food insecurity thus prevalence estimates of food insecurity will be underestimated.

# NUTRITION CONNECTIONS



**Table 4a: Self-Rated Health in Ontario**

Population Characteristics		Proportion of population in Ontario rating their health as poor, fair or good	Proportion of population in Ontario rating their health as very good or excellent
		Estimate (95% Confidence Interval)	Estimate (95% Confidence Interval)
<b>Total Population</b>		39.5% (38.2, 40.8)	60.5% (59.2, 61.8)
<b>Age</b>	<b>12-17 years old</b>	24.6% (20.8, 28.3)	75.4% (71.7, 79.2)
	<b>18-65 years old</b>	37.7% (36.1, 39.3)	62.3% (60.7, 63.9)
	<b>&gt;65 years old</b>	53.8% (51.2, 56.4)	46.2% (43.6, 48.8)
<b>Sex</b>	<b>Males</b>	39.0% (37.1, 40.8)	61.0% (59.2, 62.9)
	<b>Females</b>	40.0% (38.2, 41.7)	60.0% (58.3, 61.8)
<b>Indigenous Identity<sup>a</sup> (self-identified)</b>	<b>Indigenous</b>	49.5% (42.9, 56.2)	50.5% (43.8, 57.1)
	<b>Non-Indigenous</b>	37.5% (36.0, 38.9)	62.5% (61.1, 64.0)
<b>Income Quintiles</b>	<b>Quintile 1</b>	51.3% (48.5, 54.1)	48.7% (45.9, 51.5)
	<b>Quintile 2</b>	48.1% (44.8, 51.5)	51.9% (48.5, 55.2)
	<b>Quintile 3</b>	37.0% (34.1, 39.9)	63.0% (60.1, 65.9)
	<b>Quintile 4</b>	33.2% (30.4, 36.0)	66.8% (64.0, 69.6)
	<b>Quintile 5</b>	27.9% (25.6, 30.3)	72.1% (69.7, 74.4)

Sources: CCHS 2017 Annual Component

<sup>a</sup> “Indigenous identity” includes those who self-identify as First Nations, Métis or Inuit. Respondents were asked to indicate their self-rated health as poor, fair, good, very good or excellent. Self-rated health: This variable indicates the respondent's health status based on his/her own judgement or his/her proxy. Higher scores indicate positive perceived health status.

# NUTRITION CONNECTIONS



**Table 4b: Adult Self-Reported Physical Activity in Ontario**

Population Characteristics		Adults in Ontario who are somewhat active or sedentary Estimate (95% CI)	Adults in Ontario who are moderately active or active Estimate (95% CI)
<b>Total Population</b>		<b>32.0%</b> (30.7, 33.3)	<b>68.0%</b> (66.7, 69.3)
<b>Age</b>	<b>18-65 years old</b>	27.6% (26.1, 29.1)	72.4% (70.9, 73.9)
	<b>&gt;65 years old</b>	51.2% (48.6, 53.8)	48.8% (46.2, 51.4)
<b>Sex</b>	<b>Males</b>	31.3% (29.4, 33.2)	68.7% (66.8, 70.6)
	<b>Females</b>	32.5% (30.9, 34.2)	67.4% (65.8, 69.1)
<b>Indigenous Identity<sup>a</sup> (self-identified)</b>	<b>Indigenous</b>	20.9% (16.2, 25.6)	79.1% (74.4, 83.8)
	<b>Non-Indigenous</b>	28.4% (27.0, 29.8)	71.6% (70.2, 73.0)
<b>Income Quintiles (Adults only)</b>	<b>Quintile 1</b>	40.3% (37.2, 43.4)	59.7% (56.6, 62.8)
	<b>Quintile 2</b>	39.3% (36.0, 42.7)	60.7% (57.4, 64.0)
	<b>Quintile 3</b>	31.7% (28.9, 34.4)	68.3% (65.6, 71.1)
	<b>Quintile 4</b>	26.7% (24.0, 29.3)	73.3% (70.7, 75.9)
	<b>Quintile 5</b>	22.5% (20.2, 24.9)	77.5% (75.2, 79.8)

Source: CCHS 2017 Annual Component

<sup>a</sup> "Indigenous identity" includes those who self-identify as First Nations, Métis or Inuit. The adult physical activity indicator is a derived variable that represents a classification of physical activity for adults, based on the number of minutes of moderate to vigorous activity done in a week. This variable was dichotomized, combining sedentary or somewhat active adults and moderately active or active adults. Less than 75 minutes of vigorous activity per week was considered somewhat active or sedentary, and 75 minutes or more of vigorous activity a week was considered moderately active or active.

# NUTRITION CONNECTIONS



**Table 4c: Youth Self-Reported Physical Activity in Ontario**

<b>Population Characteristics</b>	<b>Proportion of youth in Ontario who do not meet the Canadian Physical Activity Guidelines Estimate (95% Confidence Interval)</b>	<b>Proportion of youth in Ontario who meet the Canadian Physical Activity Guidelines Estimate (95% Confidence Interval)</b>
<b>12-17 years old</b>	73.3% (69.4, 77.2)	26.7% (22.8, 30.6)

Source: CCHS 2017 Annual Component

The youth physical activity indicator is a dichotomous variable that measures whether a youth is physically active according to the Canadian Physical Activity Guidelines. Physical activity for youth aged 12-17 is defined as at least 60 minutes of moderate-to-vigorous physical activity each day. Moderate exercise is defined in the Canadian Physical Activity Guidelines as activity that causes a person to breathe harder and sweat at least a little.

**Table 4d: Household Population Meeting/Not Meeting the Canadian Physical Activity Guidelines, Canada**

<b>Age</b>	<b>Proportion of Canadians who do not meet the Canadian Physical Activity Guidelines, 2017</b>	<b>Proportion of Canadians who meet the Canadian Physical Activity Guidelines, 2017</b>
<b>12 – 17</b>	69.1	30.9
<b>18 – 39</b>	84.3	15.7 E
<b>40 – 59</b>	83.2	16.8
<b>60 – 79</b>	83.1	16.9

Symbol legend:

<sup>E</sup> use with caution

Source: Statistics Canada. [Table 13-10-0388-01 Household population meeting/not meeting the Canadian physical activity guidelines](#)

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