

Nutrition Services, Population and Public Health
Evidence Review: Food, Nutrition and Indigenous Peoples in Alberta

Food, Nutrition and Indigenous Peoples in Alberta

A report to inform Alberta Health
Services planning

September 2019, revised December 2021

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Executive Summary

Indigenous peoples (First Nations, Métis and Inuit) make up 6.5% of the total Alberta population. They are a diverse group, each with a distinct history, culture and traditions. As the fastest growing demographic in Canada, Indigenous peoples make significant contributions toward the health of Alberta's communities and economy. However, factors related to the legacy of colonization and contemporary policies have created significant health disparities between Indigenous and non-Indigenous peoples. These conditions limit their health, wellness and productive potential.

Examples of health disparities related to nutrition include:

- 2-3X higher prevalence of household food insecurity compared to non-Indigenous peoples
- Half of First Nations adults living on reserve experience food insecurity
- Higher prevalence of diabetes, cardiovascular disease, and obesity in adults
- Nearly 2 in 3 First Nations adults report one or more chronic health conditions
- Nearly 3 out of 10 First Nations children report having one or more chronic diseases

Indigenous peoples have a right to good health and to determine and develop health priorities and programs that affect them. Alberta Health Services, Nutrition and Food Services (NFS) is exploring how we can work with Indigenous peoples and their stakeholders to reduce health disparities. This document is a summary of learnings from our engagement work in 2018/19. It contains information about historical and contemporary factors affecting health, current nutritional intake and health status, strength-based strategies and practice considerations that can inform planning.

On their own, the health indicators and information presented in this report are insufficient for creating programs and policies to improve the health of Indigenous peoples. Discussions with Indigenous peoples are needed to ensure that the health data is interpreted and applied in accordance with traditional values and concepts of wellness. The content of this report can be used to inform strength-based discussions with Indigenous peoples about how AHS teams and programs can support their health priorities.

Introduction

The health of Indigenous peoples is a priority for Alberta Health Services (AHS). AHS Nutrition & Food Services (NFS) is exploring ways to support this priority through research, engagement and consultation with stakeholders. This report represents what we have learned thus far; learning more about Indigenous peoples living in Alberta and engaging with them and their stakeholders assist with identifying opportunities for collaboration to address food and nutrition related health topics that are of concern to Indigenous peoples in Alberta.

The purpose of this report is to summarize data and learnings from NFS' engagement work in 2018/19. A repository of information about health trends, drivers, trends, resources, and best practice approaches may inform discussions with Indigenous peoples, communities and their stakeholders on ways to support their health priorities, which may include the planning of food and nutrition related initiatives, programs or services and the development of key messages in Alberta Health Services.

This report contains a brief description of Indigenous peoples living in Alberta, factors that affect their nutritional health and well-being and current nutritional status. No new research was conducted in the collection of data. Information was drawn from published sources¹ such as:

- Indigenous Health in Alberta: A primer 101 (AHS, 2018)
- [Truth and Reconciliation Commission of Canada](#)
- [First Nations Regional Health Survey \(First Nations Information Governance Centre \[FNIGC\], 2018\)](#)
- [First Nations Food and Environment study \(FNFNES, 2016\)](#)

There are seven sections: 1) background 2) demographics; 3) food and nutrition intake; 4) health and nutrition status; 5) strength-based approaches; 6) considerations for planning; and 7) discussion and next steps. Data on social determinants of health is included to paint a holistic picture about the factors that influences what, how and if someone eats, and ultimately their nutritional health.

This report highlights well-established health disparities between Indigenous peoples and non-Indigenous peoples. The purpose of outlining the current state is to promote understanding of some of the root causes of ill health and support the identification of health priorities. Strength-based approaches are highlighted in section 5 and 6 to provide examples of how Indigenous communities have leveraged their strength and assets as a way to better their health and well-being.

¹ Readers are recommended to access these key reference documents to gain more insights on these topics. In addition, the AHS mandatory cultural competency modules can be accessed by AHS staff for additional background.

1. Background

Indigenous peoples in Alberta

The term “Indigenous peoples” is a collective name for all the original peoples of Canada and their descendants, consisting of three groups: First Nations, Métis, and Inuit, each with their own distinct languages and culture (Loppie, 2017).

In Alberta, Indigenous peoples make up approximately 6.5% of the total population, primarily comprising of individuals who self-identify as First Nations or Métis (Statistics Canada, 2017). Indigenous peoples live in urban areas and towns across Alberta, as well as First Nations Reserves and Métis settlements. In Alberta, there are 48 First Nations groups and 140 reserves located in treaty areas 6 (central), 7 (south), and 8 (north) (Government of Alberta, 2016) and eight Métis Settlements, located in the East-Central and Northern areas of the province (Government of Alberta, 2013). There is tremendous diversity in heritages, language, cultural perspectives, spiritual beliefs and access to resources between and within Indigenous groups. However, most share similar experiences during the process of colonization, such as dispossession of ancestral land and disruption of traditional lifestyle (National Collaborating Centre for Determinants of Health [NCCDH], 2018).

This section summarizes some information about Indigenous peoples that affect their food and nutrition intake. Readers are recommended to access [The Indigenous Peoples and Communities in Alberta \(AHS, 2018b\)](#) and the [AHS Indigenous Awareness and Sensitivity modules \(AHS employees only\)](#) for more insights about Indigenous identities, cultural practices, historical events, wellness approaches and social determinants of health.

Traditional foods: more than nutrition

Prior to European contact, Indigenous peoples consumed foods harvested and gathered near their geographic location (National Collaborating Centre for

Additional resources

Explore the role traditional foods play in health & wellbeing.

Burnstick, W., Russell, P., & Smith, D (2016). Traditional Foods of Alberta.

https://www.youtube.com/watch?v=OsGmq_R4BsM&list=PLi1tOF1I5ZoUvse4nEliWZCVGIzk8U8S-&index=22

Earle, L (2013). Traditional Aboriginal diets and health. National Collaborating Centre for Aboriginal Health.

<https://www.ccnca-nccah.ca/docs/emerging/FS-TraditionalDietsHealth-Earle-EN.pdf>

Aboriginal Health [NCCAH], 2013a). Examples of traditional foods, also known as country food, include wild game meats, fish, plants, and berries, which provided a diet that was generally high in animal protein, low in fat and carbohydrate (NCCAH, 2013a; Chan et al., 2016). Emerging research suggests the traditional foods supply a diet high in micronutrients and a healthy distribution of fat intake (NCCAH, 2013c).

Traditional foods not only contribute to good nutritional health, they also support other aspects of health & wellbeing; the act of harvesting, collecting, preparing, and sharing traditional foods play an important role in maintaining Indigenous peoples' connection to the land and their cultural identity, strengthen kinships between Elders and children, and keep them physically active (AFN, 2007; NCCAH, 2013c).

Socially, activities to acquire and distribute traditional foods conform to and promote cultural values such as cooperation and sharing (NCCAH, 2013c). Knowledge about hunting and harvesting were passed on from Elders to children. Traditional foods play a large role in ceremonies, gatherings and celebrations. Historically, traditional food and products, such as fur, were also traded, forming the basis of non-cash economy (NCCAH, 2013c). Traditional food is not just nourishment, it is a way of life.

Historical events

This sub-section summarizes some historical and contemporary issues experienced by First Nations and Métis peoples, the two largest Indigenous groups in Alberta, and impact on their health and wellness. These events have created and continue to perpetuate physical, social, economic, psychological disadvantages for Indigenous peoples. From a nutrition perspective, colonization negatively affected eating patterns, nutrition and health status. However, the resiliency of Indigenous peoples are evident as their culture continues to thrive amidst attempts at assimilation by the Crown in the past and the ongoing adversities they face today. Their cultural beliefs and support system are strengths they are leveraging to reclaim their health and identity. The improvement of health outcomes comes with an emphasis on the importance of dialogue and culture, and a focus on strengths and resilience of Indigenous peoples (FNIGC, 2018a). These aspects will be explored in more detailed in Section 5, *Strength-based approaches* and Section 6 *Considerations for planning*.

First Nations peoples

First Nations peoples are recognized as the original inhabitants of Canada. The First Nations groups in Alberta include Blackfoot, Cree, Chipewyan, Dene, Tsuut'ina, Stoney and others (Alberta Health Services [AHS], 2016b). Many First Nations peoples in Alberta were hunters and harvesters, subsisting off plants, wild game and/or fish from the land. First Nations groups valued consensus and co-operation, and took an egalitarian approach to governance (AHS, 2016b). Families hunted or gathered only what they needed from the land and shared their games and harvest with others in the community. Traditional knowledge and skills,

including those related to food, were passed on by Elders to the children. Child rearing was a communal effort; female relatives from extended families played an integral part in a child's care (AHS, n.d.).

European contact disrupted the traditional way of life and size of the Indigenous population (AHS, 2018a). Contact introduced infectious diseases of which Indigenous peoples have no immunity to and the buffalo population, a main source of food and which was central to many Indigenous communities' way of life and culture, declined heavily to the point of near extinction due to the fur trade (AHS, 2018a).

Between 1871 and 1921, the Canadian government negotiated treaties with various First Nations groups to enable the government to pursue agriculture, settlement, and resource development (Government of Alberta, 2013). The two parties entered discussion with different intentions (AHS, 2018b). First Nations groups viewed treaties as agreements on how the two groups will peacefully co-exist on the land; they thought carefully about terms that would ensure a future for their children - such as access to land reserves, food, medicine, farm equipment and education (AHS, 2018b). The government viewed it as a way to assimilate Indigenous peoples into colonial society (AHS, 2018b). The terms of the treaties were discussed verbally and written into legal agreements by the government, who omitted certain oral promises (AHS, 2018b, Daschuk, 2018; Government of Alberta, 2013).

In 1876, the Canadian government enacted and enforced the *Indian Act* upon First Nations groups based on the premise that it was the Crown's responsibility to care for and protect the interests of First Nations people (Government of Alberta, 2013). In practice, the *Indian Act* was used to intervene in band issues and manage land and resources, such as assigning housing, making sure children went to school, and giving permission for people to leave the reserve (Government of Alberta, 2013). It also designated power to the federal government to determine who is and who is not a Status Indian. The

Additional resources

This section provides a glimpse of how colonization impacted Indigenous peoples' health and wellbeing. Access these videos and articles to learn more.

- Truth and Reconciliation Commission of Canada. (2015). Honoring the truth, reconciling for the future [report]. [http://www.trc.ca/assets/pdf/Honouring the Truth Reconciling for the Future July 23 2015 .pdf](http://www.trc.ca/assets/pdf/Honouring%20the%20Truth%20Reconciling%20for%20the%20Future%20July%2023%202015.pdf)
- Daschuk, J. (2018), Clearing the Plains [video]: <https://www.youtube.com/watch?v=c2IUCd4yX6E&feature=youtu.be>
- Littlechild, W. (2018), Indigenous peoples must look to the past to nourish our children [article]. <https://www.theglobeandmail.com/opinion/article-indigenous-peoples-must-look-to-the-past-to-nourish-our-children/>
- Mosby, I. <http://www.ianmosby.ca/>

restrictions placed on First Nations peoples' ability to hunt and harvest on their traditional territories, a rapid decline in wild game population to the point of near extinction due to the fur trade, and expansions in land use for agriculture and industry radically changed what they were able to access and eat (Food Secure Canada, n.d.). Their diet shifted from being rich in protein to one high in refined carbohydrates. Many did not have enough to eat; malnutrition was rampant and many died of starvation (Daschuk, 2018).

The *Indian Act* also outlawed traditional activities and implemented the residential school system to assimilate of First Nations people into the European way of life (Government of Alberta, 2013; Truth and Reconciliation Commission of Canada [TRCC], 2015a; First Nations Information Governance Centre [FNIGC], 2018a). Three quarters of First Nations children, as young as three years old, were forcefully taken from their parents and extended families and placed into residential schools (FNIGC, 2018a). Nutritionally, children received poor quality food and were underfed (Mosby & Galloway, 2017). Traditional practices, including the use of traditional food or language, were banned in school (TRCC, 2015a; Food Secure Canada, n.d.). Many children died and those who survived were malnourished and lost much of their traditional knowledge, including those related to hunting and harvesting (TRCC, 2015a; Food Secure Canada, n.d.). The Truth and Reconciliation Commission found many survivors of residential schools experienced a loss of identity, self-esteem, culture, language, parenting, and traditional skills (TRCC, 2015a).

Many survivors also endured sexual, emotional, and physical abuse (TRCC 2015a; FNIGC, 2018a). The residential school experience negatively affected survivors' health and the way they parented and interacted with their children and grandchildren (TRCC, 2015a; FNIGC, 2018a). For example, the strict and regimented discipline style children experienced affected how they parented; many adopted similar approaches or became withdrawn and disengaged with their children's care (AHS, n.d.; TRCC, 2015a). During the Sixties Scoop, thousands of children from Indigenous communities were removed from their parents or caregivers and placed into child welfare programs as provincial social workers were not trained to recognize the impact of residential schools on attendees and their children (TRCC, 2015a). Not only did the Sixties Scoop remove opportunities for exposure to traditional parenting practices, many children also experienced trauma arising from separation from their caregivers and in some cases, experienced sexual, emotional, or physical abuse while in foster care (TRCC, 2015a)

The legacy and intergenerational impact of colonization, residential schools and the Sixties Scoop negatively affected and continues to affect the determinants of health of First Nations people (e.g. educational attainment, income, childhood development, access to resources) and their mental, social, spiritual, and physical health outcomes (FNIGC, 2018a). These events also affected their parenting or caregiving practices, such as a loss of positive parenting role-models and traditional childbirth and childrearing knowledge (AHS, n.d.; FNIGC, 2018a).

Métis

The Métis emerged as a nation in the 18th and 19th centuries in the fur trade era when European men partnered with First Nations women (AHS, 2016b). The Métis population in Canada is defined by their identification with ancestors from the historic Métis nation and through their way of life, culture, language, and relationship to the land (TRCC, 2015a). Métis people are diverse in their cultural and childrearing practices; however, most share a connection and a sense of mutual responsibility for each other within their large, extended family (AHS, 2016b; NCCAH, 2017). The Métis were formally recognized as one of three distinct groups of Indigenous people in 1982 (Government of Alberta, n.d.-a). Alberta is the first province in Canada to set aside settlement lands, provide financial commitments, and co-management of subsurface resources for Métis people (Government of Alberta, n.d.-b).

Many Métis children were also affected by residential schools and the Sixties Scoop. However, it is difficult to determine the scale of impact due to poor record keeping. When the *Indian Act* was implemented, there was contention between the provincial and federal government on who would fund and provide social services and education for the Métis people, (TRCC, 2015b). Although there were periods where the federal government sought to ban Métis children from enrolling in federally funded residential schools, some schools recruited and accepted Métis children to increase their enrollment numbers (TRCC, 2015b). Since their enrollment was controversial, their attendance was not always officially recorded and differed between schools and communities (TRCC, 2015b).

Métis students' experiences in schools may vary depending on how 'Indigenous' they physically appeared (TRCC, 2015b). The more non-Indigenous they appeared, the more 'civilized' they were thought to be; this meant that they may be ineligible for enrollment or provided with part-time schooling only (TRCC, 2015b). Some survivors reported positive experiences, but most reported physical abuse, malnutrition, loss of parenting skills, language, and culture, similar to experiences of First Nations survivors (TRCC, 2015a; TRCC, 2015b). Métis children were also affected by the Sixties Scoop; however, the number of children affected is difficult to estimate as Métis identity was not recorded consistently (TRCC, 2015b).

From a nutrition perspective, many Métis peoples experienced similar shifts to their diet arising from changes in their ability and skills to hunt, harvest, and fish during colonization, residential schooling, and the Sixties Scoop (Food Secure Canada, n.d.). The legacy of colonization also affected their ability to access to food and health outcomes via impact to social determinants of health, such as educational attainment and income.

Inuit

Inuit are Indigenous peoples who live in the arctic regions in Canada – Northwest Territories, Nunavut, Northern Quebec and Northern Newfoundland/Labrador – recognized as Inuit Nunangat (AHS, 2018a). Historically, the Inuit were semi-nomadic, moving to different areas during the year to harvest seals, whales and caribou to feed, house and clothe their families and communities (Inuit Tapiriit Kanatami [ITK], 2019; Inuulitsivik Health Centre [IHC], 2019). Inuit value cooperation, sharing and respect for elders (ITK, 2019). Everyone had a role in the community and community members took care of each other; these values are key to surviving and thriving in the harsh arctic conditions (ITK, 2019).

The arrival of the commercial whaling industry and, later, the fur trade brought diseases and depleted the whale and land mammal population; food became scarce (IHC, 2019). The Inuit did not negotiate land treaties with the government and were treated as Canadians, but with minimal provision of services and support (IHC, 2019). The residential school system became widespread in the North in the 1950s when the government took an interest to the economic prospects of the North (IHC, 2019). Inuit children attended residential schools located great distances from their community and were separated from their family, language, culture and home (TRC, 2015c). Students were underfed and forced to do manual labour; many also endured physical, physiological and sexual abuse (TRC, 2015c).

In the 1970s, the Canadian government encouraged Inuit to settle in small communities under the premise that it is easier to distribute social services such as education and healthcare (IHC, 2019). While this may have help address the Inuit's needs in the short term, it perpetuated social and economic hardship, as many Inuit were no longer able to live and subsist off the land (IHC, 2019). Inuit from different territories started to negotiate comprehensive land claims agreements with the Canadian Government in the 1970s to address land and resources rights (AHS, 2018b). The territory of Nunavut was established in 1999 from one of the agreements (ITK, 2019).

Today, the majority of Inuit people reside in the arctic regions. Inuit language (Inuktitut) and culture has stayed strong; about 60% of Inuit can converse in Inuktitut (ITK, 2019). In Alberta, there is a small Inuit population that resides in urban centres in the northern part of the province, largely in Edmonton (AHS, 2018a; AHS, 2018b). Due to the geographic remoteness of Inuit communities, many have to fly into urban centres to access health care and schooling. For example, Inuit who live in the territories may travel to Alberta to access health services (AHS, 2018b).

Contemporary issues and opportunities

The experience of colonization and failure of the Crown to uphold the terms of the treaties and/or provide access to services and supports equal to those received by non-Indigenous Canadians led to significant socio-economic inequalities and health disparities between Indigenous and non-Indigenous peoples in Alberta and Canada (AHS, 2018b). Many of these inequalities are sustained by current policies, structures, and societal attitudes that discriminate against Indigenous peoples. First Nations communities, Métis settlements and Inuit communities experience gaps in basic services such as health, education, social services, and housing compared to non-Indigenous communities (Statistics Canada, 2017c; FNIGC, 2018a). For example, a significant number of First Nations adults living in on-reserve communities reported concerns about the safety of their tap water, live in a crowded household and/or live in a household that is in a state of disrepair or has mold (FNIGC, 2018a). Indigenous communities may also experience limited employment opportunities and access to food stores, and health services (FNIGC, 2018a). The disparities in the social determinants of health between Indigenous people and non-Indigenous people living in Canada create barriers towards healthy eating and are further examined in Section 2. Their impact on health and nutrition status is examined in Section 3 and 4.

Dietitians and other health practitioners need to be aware of how the past and current experiences of Indigenous peoples and communities may affect and shape their nutrition intake, eating behavior, parenting and feeding practices and interactions with health care professionals and institutions. Further, one needs to be aware of how negative experiences in the past can cause patients to feel unsafe and therefore reluctant to access timely health care, thereby worsening their health outcomes (AHS, 2018a; Yeung, 2016).

Given the diversity in individual and group experience, readers are advised to use a client-first or community-first approach to understand the unique lived experience, health beliefs and priorities of individuals and groups they work with. Awareness of past experiences and current context, and their implications on how clients perceive health care services today, contribute to the development of culturally competent care (AHS, 2018a). Cultural competent care is a set of behaviours, attitudes and ways of working with Indigenous patients and communities that enables patients to feel respected in their working relationship with the health care practitioners (AHS, 2018a).

Over time, we strive to reach a place where Indigenous patients trust and feel safe in our care, through integrating culturally competent care and re-balancing the power dynamic that exist between health care provider and the patients (AHS, 2018a; Yeung, 2016). This enables AHS to provide more quality services and support (AHS, 2018a; Yeung, 2016). For more information about cultural competency and cultural safety, please refer to [Indigenous Peoples and Communities in Alberta](#) (AHS, 2018a) and other resources available on the [Indigenous Health Program Insite page](#) (accessible by AHS employees only).

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On a positive note, as a result of the strength, courage and persistence of Indigenous people and their allies, there has been progress. Within AHS, examples include the engagement of Indigenous peoples through the [Wisdom Council](#), the development of programs designed by and for Indigenous peoples, such as the AHS Indigenous Wellness Program, and the availability of Indigenous Liaisons in hospitals. In the community, First Nations children living on reserves are able to access health and educational services and support more easily through the [Jordan's principle](#) (AHS, 2018a). As we work towards reconciliation; every change, whether big or small, as individual health care practitioners and as a health care system, contributes to building and sustaining the momentum for change towards improving the health and wellness of Indigenous peoples.

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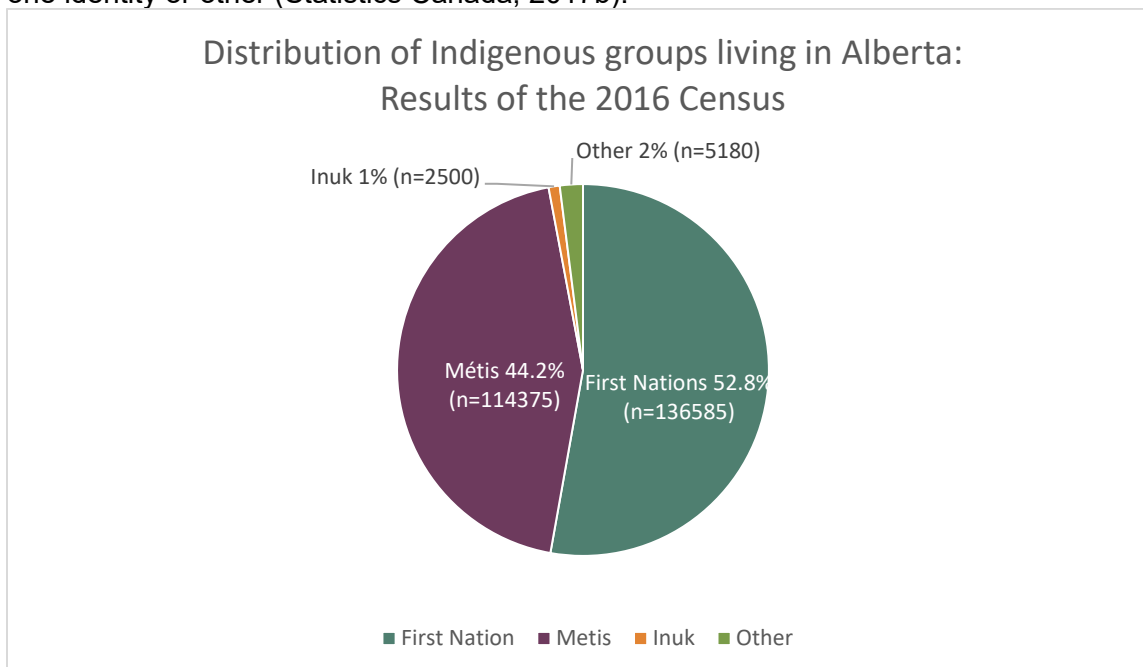
2. Demographics

This section presents demographic data, including intermediate health determinants that affect nutrition behaviours. As discussed in Section 1, many of these health determinants are linked to the legacy of colonization and present-day policies. On the whole, while significant disparities exist between Indigenous peoples and non-Indigenous peoples, positive trends are noted in some indicators. Examination of factors leading to these improvements can guide strength-based approaches to close the health gap.

Population by group

In Canada, there has been a significant growth in the Indigenous population, contributed by natural growth and an increasing number of people self-identifying as First Nations, Métis or Inuit in the Census Program (Statistics Canada, 2017a).

In the 2016 Census, 258,640 individuals living in Alberta self-identified as Indigenous, which represents about 6.5% of the total Albertan population (Statistics Canada, 2017b). 52.8% self-identified as First Nations, 44.2% as Métis, 1% as Inuk (Inuit) and 2% as having more than one identity or other (Statistics Canada, 2017b).

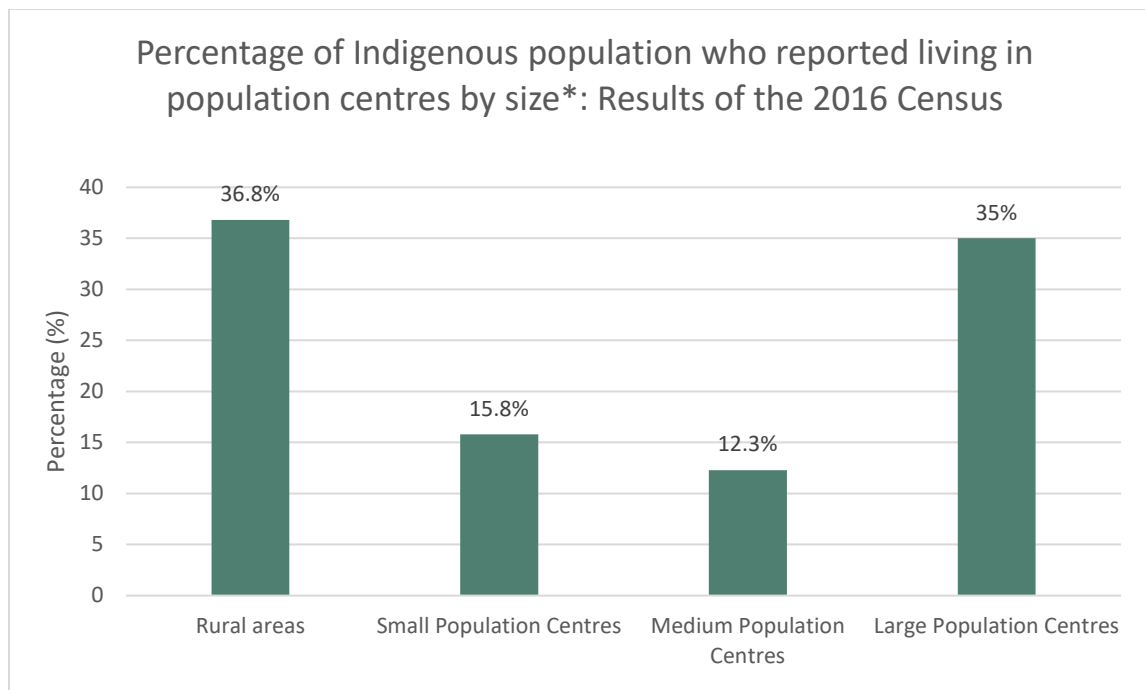


Source: (Statistics Canada, 2017b)

Of the individuals who identified as First Nations, 82% had Registered or Treaty Indian status, as defined by the *Indian Act*; 18% do not have either (Statistics Canada, 2017b).²

Population by geography

The 2016 census found the majority of Indigenous people in Alberta live in rural areas, such as Métis settlements and First Nations reserves, or in large urban population centres (Statistics Canada, 2017b).



Source: (Statistics Canada, 2017b)

*Small population centres have a population between 1,000 and 29,999; medium population centres have a population between 30,000 and 99,999; and large urban population centres have a population of 100,000 or more (Statistics Canada, 2017f)

Amongst Status First Nations living in Alberta, 43.9% reported living on-reserve and 56.1% lived off-reserve (Statistics Canada, 2017b). More than half (58%) of First Nations adults reported spending time living outside their communities for educational or employment purposes, but may return to live in the community for family reasons (FNIGC, 2018a). Of the

² Registered Indians are persons who are registered under the *Indian Act* of Canada. They are eligible for benefit such as the Non-Insured Health Benefits (Statistics Canada, 2017g). The term “Indians” is often considered as offensive. It is only used in this report as a legal identity.

three Indigenous groups, those who identified as Métis are most likely to live in a metropolitan area of at least 30,000 people (e.g. Edmonton or Calgary) (Statistics Canada, 2017b).

Urban areas in Northern Alberta, such as Wetaskiwin and Wood Buffalo, have the highest Indigenous population (Statistics Canada, 2017b).

Highest populations in Alberta by geography: Results of the 2016 Census

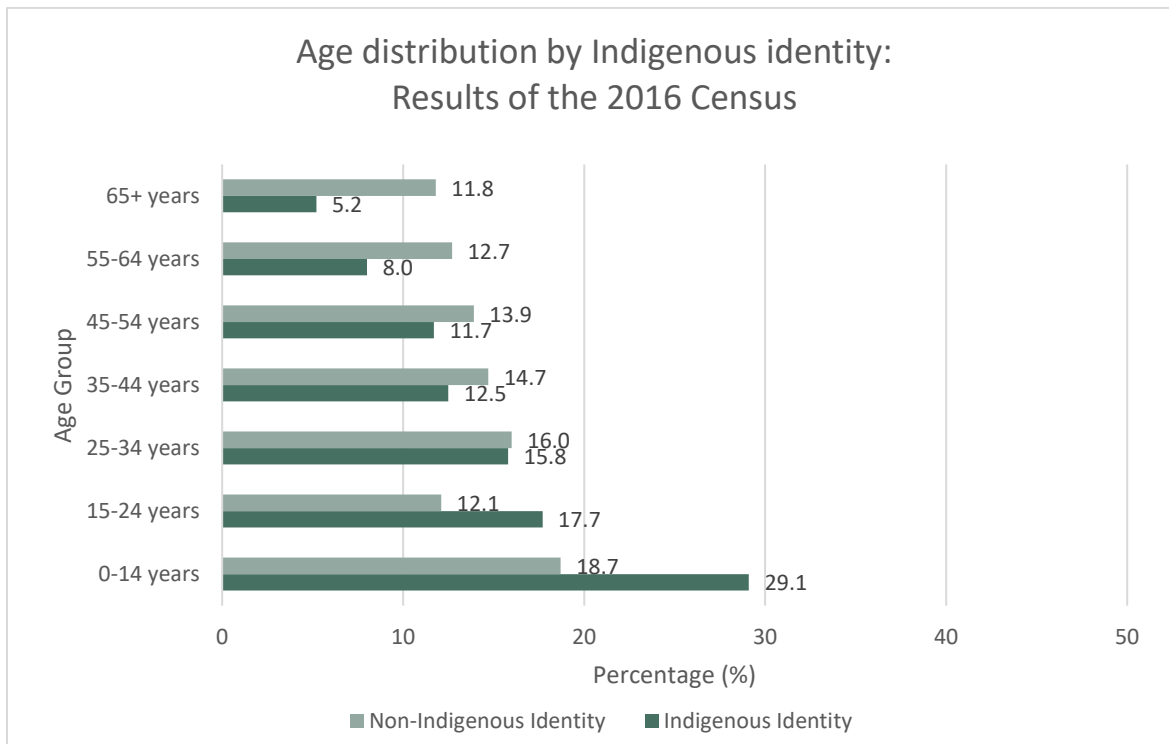
Top census metropolitan area and census agglomerations*	% Indigenous population
Wetaskiwin	14.3 %
Wood Buffalo	11.2 %
Grande Prairie	10.6 %
Lloydminster	10.6 %
Cold Lake	9.3 %
Edmonton	5.9 %
Lethbridge	5.4 %
Red Deer	5.3 %
Medicine Hat	4.9 %
Calgary	3.0 %

Source: (Statistics Canada, 2017b)

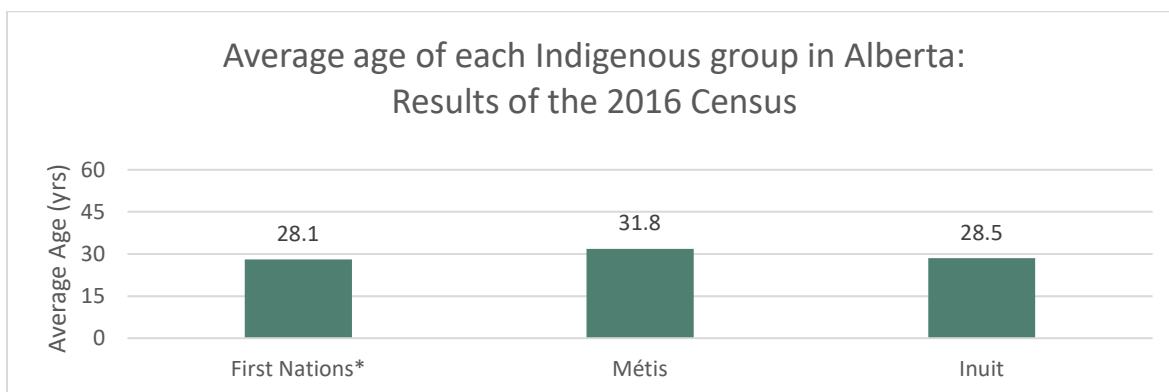
*Metropolitan areas have a total population of >100,000. A census agglomeration is formed by adjacent municipalities centred on a population centre, with high degree of integration with the population centre (Statistics Canada, 2015a)

Population by age

The Indigenous population in Alberta is significantly younger compared to the non-Indigenous population. The 2016 census found the average age of Indigenous people in Alberta was 29.8 years compared to 37.8 years for the non-Indigenous population (Statistics Canada, 2017b). Approximately 29.1% percent of the Indigenous population was 14 years of age compared to 18.7% for non-Indigenous peoples (Statistics Canada, 2017b).



Source (Statistics Canada, 2017b)



*First Nations living off-reserve; Source (Statistics Canada, 2017b)

Education

Recent results from Phase 3 (2015/16) of the First Nations Regional Health Survey (RHS)³ found a significant improvement in educational attainment of First Nations adults in Canada, living on reserve with increases in levels of high school and graduate completion since RHS Phase 2 (2008/10) (FNIGC, 2018a).

Education level	RHS 2015/16	RHS 2008/10
High school	14.8%	9.8%
Post-Secondary	45.6%	45.6%
Graduate	3.2%	1.3%

Source: FNIGC, 2018a

Despite improvements, a gap remains in levels of education attainment between First Nations adults and the general population at the high school and post-secondary levels.

Education level	First Nations living on reserve	General population
High school or higher	66.3%	88%

Source: FNIGC, 2018a

Statistics on First Nations living off reserve, Métis and Inuit are not available.

Employment

The unemployment rate for Indigenous peoples is significantly higher than the rates for non-Indigenous adults living in the Prairie region, which consists of the provinces of Alberta, Saskatchewan and Manitoba.

	Indigenous People >25 year	Non-Indigenous population
Unemployment rate	10.5%	6.3%
Employment rate	61.5%	

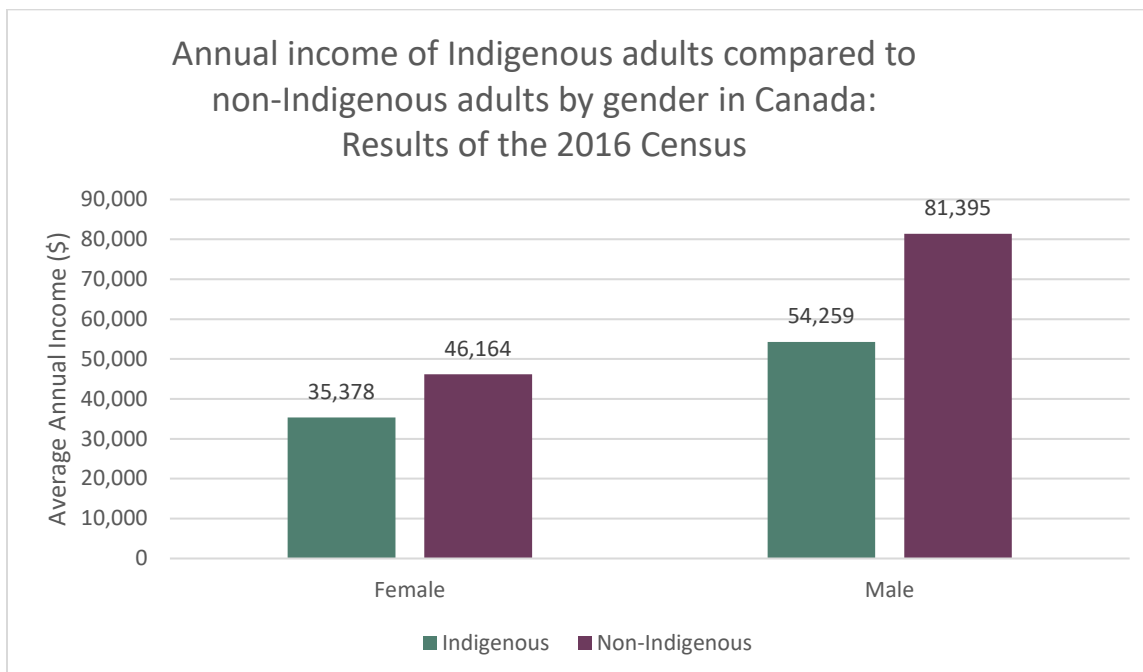
Source: Statistics Canada 2017d

³ The RHS Phase 3 is a cross-sectional survey of First Nations children, youth and adults living on First Nations reserves and in Northern communities across Canada and is designed to represent this population in all provinces and territories (except Nunavut). The RHS Phase 3 survey was collected in 2015/16; prior phases include RHS Phase 2 (2008/10) and Phase 1 (2002/03).

Income

Individual income

Indigenous peoples' average annual incomes are well below the Alberta average. In the 2016 Census of self-identified Indigenous people living on and off reserve over 15 years of age, the average annual income was \$44,232 compared to \$63,853 for non-Indigenous peoples (Statistics Canada, 2018). The average for males and females compared to their Indigenous counterpart are detailed in the table below. The trends in income gap are consistent, though appear to be most sizable for Indigenous males compared to their non-Indigenous counterparts.



Source: (Statistics Canada, 2018)

Household income

The statistics provided above represent individual and not household income. Household income is the strongest predictor of household food insecurity in Canada (Alberta Health Services [AHS], 2017a). The RHS Phase 3 (2015/16) noted while personal income has trended higher between 2002 and 2016, household income has trended downwards, which may put families at higher risk of household food insecurity (FNIGC, 2018a).

Further to this, surveys have found that adults living in rural First Nation communities are more likely to live in crowded households, defined as more than one person per room in the home, compared to non-Indigenous people or those living in off-reserve communities (FNIGC,

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2018a). The median household size for First Nations living on reserve, according to the 2013 Alberta First Nations Food Nutrition and Environment Survey (FNFNES), is 6 people (Chan et al., 2016) compared to the average household size in Alberta which has 2.6 people (Statistics Canada 2017e). In a separate survey, the mean household size for First Nations living in Canada was 4.2 (FNIGC, 2018a). In households with children or youth, the mean household size is 5.7-5.8 (FNIGC, 2018a) compared to 2.4 in Canada (Statistics Canada 2017e). Coupled with lower household income, this indicates that Indigenous families are more likely to experience household food insecurity compared to the non-Indigenous population.

Household food insecurity

Food insecurity among Indigenous peoples in Canada is a serious public health concern. A growing body of research demonstrates that household food insecurity has a significant negative impact on the physical and mental well-being of food insecure Canadians across all age groups (Alberta Health Services [AHS], 2017b). While little research has explored the unique life circumstances and experiences of Indigenous peoples in Alberta who live in food insecure households, there is compelling evidence to show a greater prevalence and severity of household food insecurity among Indigenous peoples compared to the general Canadian population across the country (AHS, 2017a).

Prevalence of household food insecurity

First Nations living off-reserve, Métis, and Inuit

The prevalence of household food insecurity and stratifier variables for Indigenous peoples who identify as Inuit, Métis, or First Nations, are available from Canadian Community Health Survey (CCHS) and are reported in in different documents, including the Public Health Agency of Canada (PHAC) 2018 report, “Key Health Inequalities in Canada” (Public Health Agency of Canada [PHAC], 2018), Health Canada reports⁴, and the PROOF series of reports⁵. Each agency or organization uses a different method of calculation, which explains the differences between prevalence rates described below. The trends are consistent between the reports– the prevalence of household food insecurity amongst Indigenous peoples is at least 2-3 times higher compared to the general population. Note that First Nations peoples living on reserve, who make up nearly 44% of Alberta’s First Nations population (more than 300,000 people) are not surveyed as part of the CCHS (Statistics Canada, 2017b). Data about this group is in the next subsection.

Using **Health Canada’s classification system**, which reports on moderate and severe, but not marginal food insecurity, the Key Health Inequalities in Canada found a prevalence of household food insecurity that is 3.7, 2.7, and 2.2 times higher among Inuit, First Nations living off-reserve, and Métis, respectively, than non-Indigenous adults (PHAC, 2018). For every 100 adults, this means 18 more Inuit, 11.5 more First Nations living off-reserve, and 8.0 more Métis adults are living in food insecure households than non-Indigenous adults (PHAC, 2018). These prevalence rates are based on CCHS data collected between 2009 – 2012.

PROOF, using the 2012 CCHS data set, with the addition of the marginal food insecurity category, reported similar but higher prevalence of food insecurity among the Canadian

⁴ <https://www.canada.ca/en/health-canada/services/food-nutrition/food-nutrition-surveillance/health-nutrition-surveys/canadian-community-health-survey-cchs/household-food-insecurity-canada-overview.html>

⁵ PROOF is an international, interdisciplinary team of researchers committed to a program of research to identify effective policy interventions to address household food insecurity. The PROOF series of reports on household food insecurity in Canada can be found here: <https://proof.utoronto.ca/resources/proof-annual-reports/>

Indigenous population; rates were more than double that of the general population (28.2% vs. 12.6%) (Dietitians of Canada, 2016a; Tarasuk, Mitchell & Dachner, 2014)⁶. Higher prevalence of all levels of food insecurity compared to non-Indigenous peoples were reported at all levels of food insecurity, marginal (5.1% vs. 4.1%), moderate (14.8% vs. 6.0%) and severe (8.3% vs. 2.6%) (Dietitians of Canada, 2016a; Tarasuk, Mitchell & Dachner, 2014). Note that this is more than double and triple the rates of the non-Indigenous peoples for moderate and severe food insecurity respectively.

Statistics Canada's analysis of CCHS 2007-2010 data (reporting on total food insecurity without the marginal food insecurity level), found the rate of household food insecurity is three times higher for Indigenous peoples compared to the non-Indigenous population (22% vs. 7%), with a wider gap among females than males (26% food insecurity among First Nations females vs. 8% among non-Indigenous females; 16% vs. 7% for males, respectively). These inequities persist for other Indigenous groups, with rates of 27% for Inuit, and 15% for Métis compared to 7% for non-Indigenous peoples (Gionet & Roshanafshar, 2013; Dietitians of Canada, 2016a).

The prevalence and severity of household food insecurity are also higher among Indigenous peoples compared to the general population when education level and income levels are considered (Dietitians of Canada, 2016a). Health Canada reported on food insecurity rates (moderate + severe food insecurity) of population groups by income and education, based on data from the CCHS Cycle 2.2, Nutrition (2004) (Health Canada, 2007). In the lowest category of income adequacy, 69.2% of Indigenous households were food insecure (about two-thirds of whom were severely food insecure), compared to 48.3% of the general population in the same income category (about half of whom were severely food insecure). Among Indigenous households with less than secondary school graduation, 44.3% were food insecure, compared to 13.8% of households in the total Canadian population (Health Canada, 2007).

First Nations living on reserve

Information on the prevalence of household food insecurity for First Nations peoples living on reserve is available through data collected in the First Nations Food, Nutrition and Environment Study (FNFNES) and the First Nations Regional Health Survey (RHS).

The 2013 First Nations Food, Nutrition and Environment Study (FNFNES)⁷ reported on the prevalence of food insecurity in participating communities across Canada using the full 18-

⁶ PROOF reports marginal food insecurity as a part of total food insecurity. Typically, reports of food insecurity amongst Aboriginal peoples such as the FNFNES and Health Canada follow the Statistics Canada reporting framework for CCHS data where 'food secure' includes food secure + marginally food insecure; and 'food insecure' includes moderately + severely food insecure (Dietitians of Canada, 2016a; Tarasuk et al. 2014). Statistics Canada uses an 18-item Household Food Security Survey Module (HFSSM) to measure the prevalence of household food insecurity across the country. The HFSSM is a validated tool within the CCHS that has been used by Health Canada consistently, since 2005.

⁷ The First Nations Food, Nutrition and Environment Study (FNFNES) includes the full 18-item Household Food Security Survey Module (HFSSM) to measure the prevalence of food insecurity.

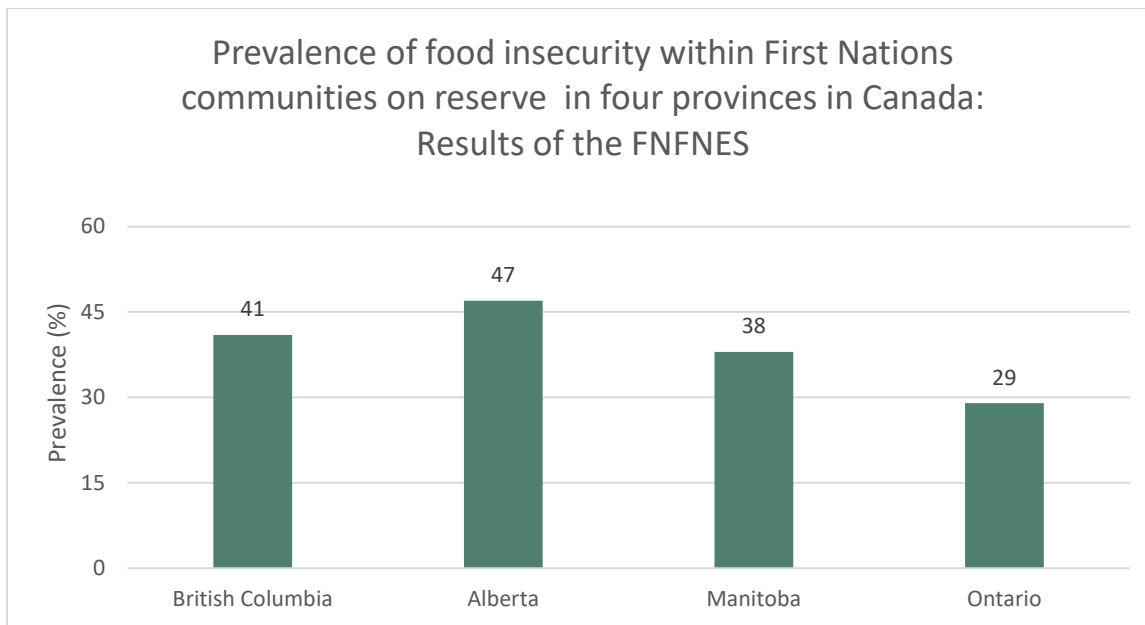
item HFSSM (Chan et al., 2016). In Alberta, 47% of households experienced either moderate or severe food insecurity in the previous year (Chan et al., 2016). The prevalence rate in Alberta were higher compared to rates reported in Ontario (29%), Manitoba (38%) and British Columbia (41%) (Chan et al., 2011; Chan et al., 2012; Chan et al., 2014).

Additional information about the food insecurity experience in First Nations communities on reserve is available from the Regional Health Survey (RHS)⁸. This survey used a shorter version of the HFSSM and a different household-level sampling frame compared to FNFNES or CCHS. Due to these differences, comparisons cannot be made with data from the other two survey. The RHS conducted in 2015/16 (a.k.a RHS Phase 3) found about half (50.8%) of First Nations households were food insecure (with 37.7% moderately food insecure and 13.1% severely food insecure). Of those households with children, about 2 in 5 (43.2%) were food insecure, and only slightly more than half were food secure (56.8%) (FNIGC, 2018b). The prevalence rates are similar to the RHS conducted in 2008-2010 (a.k.a RHS Phase 2) (FNIGC, 2018b).

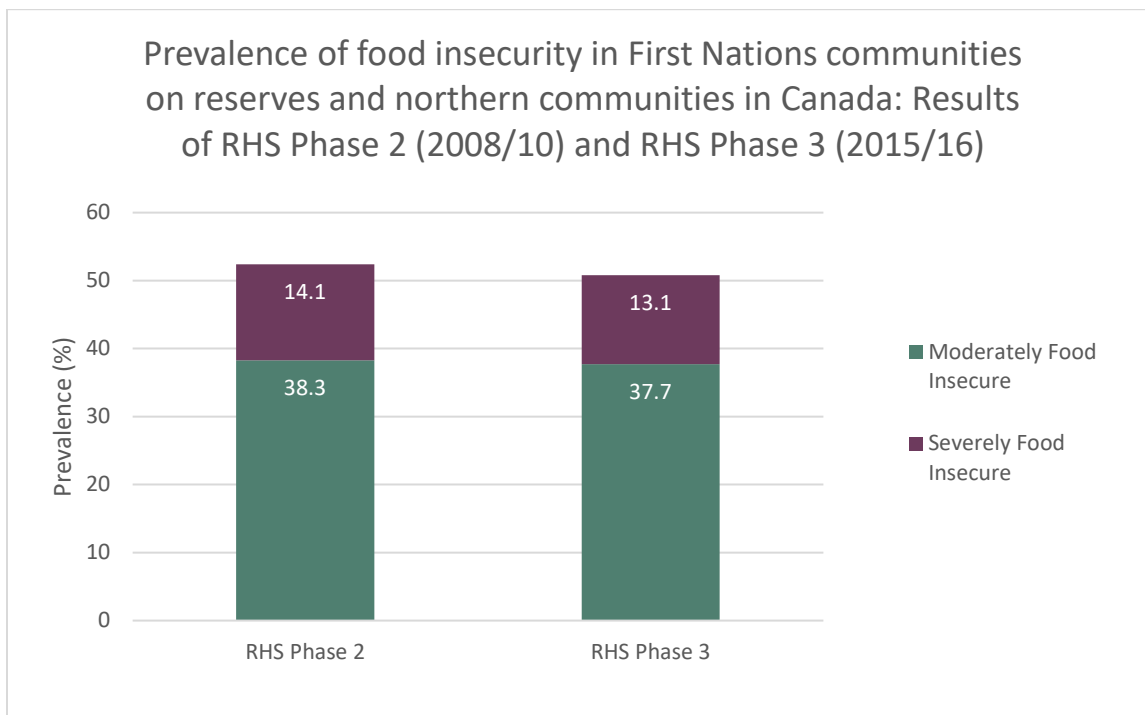
The available data shows that household food insecurity is also an urgent and alarming issue among Indigenous people across Canada.

About half of
Indigenous adults living
in First Nations
communities
experience household
food insecurity.

⁸ The Regional Health Survey (RHS) uses a shorter survey 9-items (6 adult, 3 child items) of the HFSSM. The shorter survey does not include the questions to be able to determine marginal food insecurity.



Source: (Chan et al., 2016; Chan et al., 2011; Chan et al., 2012; Chan et al., 2014)



Source: (FNIIGC, 2018b)

The RHS collected other data to help understand the unique experience and prevalence of income-related food insecurity in First Nations communities. This included the relationship between food insecurity prevalence and whether traditional foods were shared among families, and the location of the community (i.e. remoteness).

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Access to traditional
foods is associated
with lower prevalence
of food insecurity.

Having traditional food shared with one's household was analyzed against both severity of food insecurity and food quality. More First Nation adults were categorized as severely food insecure when they never had traditional food shared with their household (17.4%) versus those who had traditional food shared often by someone (11.0%) (FNIGC, 2018b). Adults who had traditional food shared in their household often reported they always/almost always ate nutritious, balanced meals (59.1%) (FNIGC, 2018b).

Remoteness is also likely to contribute to food insecurity. 34.7% of adults who lived in special access communities were food insecure, a significantly lower proportion compared to those living in remote communities 58.3% (FNIGC, 2018b). Likewise, 46.9% of adults living on reserves close to rural areas were food insecure, a significantly lower proportion than those living on reserves close to urban communities (56.3%) (FNIGC, 2018b).

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3. Food & nutrient intake

This section provides information about the food and nutrient intake of Indigenous peoples. The majority of the data presented are from:

- First Nations Regional Health Survey (RHS), which collected information for those living in First Nation communities (i.e. on-reserve) across Canada. Children, youth and adults were surveyed.
- First Nation Food and Environment Study (FNFNES), which collected information for those living in First Nations communities in Alberta. Only adults were surveyed.

The results of these two studies provide insight on the food intake of Indigenous peoples living in First Nation communities. As survey methods differ between the two studies, they cannot be used to make comparisons between First Nations living in Alberta and other communities in Canada. We were unable to locate nutrient intake information for Métis people, Inuit and First Nations living off reserve in Alberta.

It is important to keep in mind that what a person eats is affected significantly by their socio-economic status and their social and physical food environment. Key determinants such as limited income (affected by education and employment), high prevalence of household food insecurity, and food environment affect the quality and quantity of food one is able to access, regardless of knowledge or motivation.

Key findings

In general, Indigenous peoples (children, youth and adults) living on First Nations reserve communities:

- Have a lower intake of vegetables and fruit and whole grains compared to 2007 CFG recommendations (FNIGC, 2018b; Chan et al., 2016).
- The majority (>73%) consume meats and alternatives at least once a day and meet or exceed the 2007 CGF recommendations for this food group. (FNIGC, 2018b).
- Have a high intake of processed and prepared foods, which are higher in salt and sugar and lower in key nutrients like potassium and vitamin A compared to less processed foods. (FNIGC, 2018b; Chan et al., 2016)
 - Ultra-processed foods⁹ make up of 53.9% of energy intake for adults (Batel et al., 2018)

⁹ Ultra-processed foods are created to be convenient, attractive and profitable for food companies and are generally nutritionally poor. Examples of ultra-processed foods include fast food, sugary drinks, snacks, chips, candies, cookies, sweetened cereals (Batal et al., 2018).

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- Approximately two-thirds of First Nations adults, youth and children (>66%) report eating fast food at least once a week (FNIGC, 2018b)
- 37.5% of adults and 42.4% youth drink sugar sweetened beverages at least once a day (FNIGC, 2018b).
- The FNFNES found First Nations adults living in Alberta have higher than recommended energy intake from fat, higher than recommended intake of sodium, and lower than recommended intake of fibre, vitamin A, C, D, and calcium. Nutrient adequacy for select nutrients (e.g. folate and vitamin B) varies between age groups (Chan et al., 2016).

With respect to traditional foods intake, the RHS and FNFNES found:

- Traditional foods are viewed as healthy, natural and part of the culture (Chan et al, 2016).
- Almost all children, youth and adults ate traditional foods in the past year (FNIGC, 2018b; Chan et al, 2016)
- Most adults want more traditional foods, but the lack of hunters, equipment or transportation and government restrictions to hunt or gather makes it difficult for them to use more traditional foods (FNIGC, 2018b; Chan et al, 2016).
- Where Indigenous peoples live affect their intake of traditional food. Traditional foods intake is higher amongst First Nations living in reserve communities located in remote areas compared to communities located near rural or urban areas (FNIGC, 2018b).

More details about traditional food and gathering practices are described in the next sub-section.

Additional resources

Details about food and nutrient intake and traditional food usage, including the types and amounts eaten and hunting and gathering practices are available from:

- FNFNES Alberta report: http://www.fnfnes.ca/docs/FNFNESReport-ALBERTA_June_30_2016.pdf
- Regional Health Survey Phase 3 (Vol.2) report: https://fnigc.ca/sites/default/files/docs/fnigc_rhs_phase_3_volume_two_en_final_screen.pdf

Information about traditional food harvesting and gathering practices for Metis, Inuit and First Nations living off reserve are available from:

- <https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2019001-eng.htm>

Traditional foods

The acts of harvesting, hunting, gathering and consumption of traditional foods have cultural significance for Indigenous people. The RHS and FNFNES found that adults, youth and children, youth living in First Nations communities are connected to their culture and almost all are eating traditional foods at least once a year (FNIGC, 2018b).

Consumption

Almost all First Nations living on reserve (96.8% from RHS and 94% from FNFNES) reported eating traditional foods in the past year (FNIGC, 2018b; Chan et al, 2016). Game meat (79%) and berries (80%) were two of the most commonly eaten traditional foods (Chan et al., 2016). There were variations in terms of the quantity and the type of traditional food eaten between different ecozones in Alberta (Chan et al., 2016). See the [FNFNES report](#) for a list of traditional foods eaten by survey participants in Alberta.

The practice of having traditional food shared with one's household may facilitate healthy eating. More than half (59.1%) of First Nations adults living on reserve who had traditional food shared with their household often reported that they always or almost always ate nutritious, balanced meals. (FNIGC, 2018b). The more traditional foods one eats, the less ultra-process foods one has in their diet (Batal et al., 2018). In Alberta, the FNFNES found the intake of nutrients was higher on days when traditional food was eaten compared to days when it was not (Chan et al., 2016).

Traditional food intake tends to differ depending on where the communities are located - remote, special access, rural or urban areas. More than three quarters (76.5%) of First Nations adults in remote communities reported eating traditional foods often in RHS Phase 3 (2015/16); a significantly higher proportion compared to those living on reserve communities located in rural (65.3%) or urban (63.4%) areas (FNIGC, 2018b).

With respect to children, the RHS found almost all children (90.6%) and youth (92.6%) living on reserve had eaten traditional foods often or at least three times in the past year (FNIGC, 2018b). Attendance at an Aboriginal Head Start on Reserve (AHSOR) program was found to be associated with a greater connection to language and culture, including traditional food consumption. Compared to First Nations children who had never attended an AHSOR, a higher percentage of children who had attended an AHSOR had eaten traditional foods a few times or often in the year prior to the survey (95.7% compared to 87.0%). A similar trend was seen among youth (96.3% compared to 87%) (FNIGC, 2018b).

There may also be a trend towards more youth and children eating traditional foods, over time (FNIGC, 2018b). For example, in RHS Phase 3 (2015/16), 26.4% youth reported often consuming large land-based animals, 18.6% often consuming fresh water fish, and 10.4% often consuming game birds; compared to 23.0%, 15.4%, and 8.2% respectively in Phase 2 (2008/10) (FNIGC, 2018b).

Harvesting and hunting practices

The prevalence of using traditional harvesting and hunting methods among First Nations living on reserve communities in Canada was reported in RHS Phase 3 (2015/16) (FNIGC, 2018b). Alberta data specific data is reported in FNFNES (Chan et al., 2016). The prevalence for First Nations people and Métis living in urban and rural areas is available through the 2017 Aboriginal Peoples Survey (Kumar et al, 2019).

- Nearly 1 in 4 (22.5%) First Nations Adults living on reserve reported fishing in the three months prior to the survey; while nearly 1 in 5 (18.3%) reported hunting or trapping, and 1 in 6 (16.8%) reported berry picking or other food gathering (FNIGC, 2018b). In Alberta, 65% of participants reported that at least one person in the household engaged in harvesting and gathering practices (Chan et al., 2016).
- More than 1 in 10 (13.5%) First Nations children and almost 1 in 5 (19.3%) First Nations youth living on reserve in Canada reported fishing in the three months prior to the survey (FNIGC, 2018b). A greater proportion of First Nations youth (16.6%) reported hunting or trapping than First Nations children (7.4%). Nearly 1 in 6 (15.6%) First Nations children and 1 in 10 youth (13.2) reported berry picking or other food gathering (FNIGC, 2018b).
- The majority (90%) had traditional food given to them/shared by others in the community (FNIGC, 2018b).
- In Alberta, 32% First Nations people living off reserve (e.g. in urban or rural areas) hunted, fished or trapped and 29% gathered wild plants and berries; both these figures are lower compared to the Canadian average (Kumar et al., 2019). Most did so for personal consumption or to share with the community (Kumar et al., 2019).
- Canadian data on Métis peoples reported 35% hunted, fished or trapped (Statistics Canada, 2019). Most did so for personal consumption or to share with the community (Kumar et al., 2019).
- The prevalence of engaging in these traditional activities is stable for First Nations people, but appears to have decreased for Metis over time. Time constraint is the most commonly cited barrier to participation for both groups (Kumar et al., 2019)

It is not possible to determine trends in terms of participation in traditional harvesting and hunting methods over time for First Nations people living on reserve; the survey question changed between RHS Phase 2 and Phase 3 (FNIGC, 2018b).

Access to traditional foods

In Alberta, 78% of First Nations living on reserve reported they would like to eat more traditional foods as they are viewed as healthy, natural, cheaper than store bought food, and part of their culture. However, many cited barriers in accessing more traditional food due to a lack of equipment or transportation, no hunter in the household, and government regulations such as firearm certification (Chan et al., 2016). Close to half (49%) worry that their traditional food would not last and they couldn't get any more (Chan et al., 2016).

Skinner et al. (2016) conducted a scoping study of food insecurity and Indigenous peoples living in urban spaces in Canada, the United States, and Australia (Skinner et al., 2016). The authors reported access to traditional foods is an issue for many urban Indigenous peoples. Factors that may affect access to traditional food include:

- distance away from reserve or disconnect with family who are not in the urban area
- loss of skills needed to acquire and process traditional foods
- emphasis on monetary culture in the city and the resulting reduction in food sharing practices (Skinner et al., 2016)

Some research suggests youth raised in urban settings may lack the skills, knowledge or preference for traditional food (Skinner et al., 2016). However, one study by Kerpan et al. (2015) found that that traditional food was an important part of the diets of youth who experienced preparing and eating traditional food with their family and who had Indigenous programming at school (Kerpan et al., 2015). This is similar to findings from RHS which found a higher proportion of First Nations children and youth who attended an Aboriginal Head Start on Reserve program (AHSOR) ate traditional foods (FNIGC, 2018b).

Factors affecting food intake

What a person eats is affected by their socio-economic status and food environment. Limited income and the high prevalence of household food insecurity among First Nations living on reserve are key determinants that affect the quality and quantity of food they have access to. Other examples of historical, physical, political and socio-economic challenges facing Indigenous people's ability to eat well include (Dietitians of Canada, 2018):

- high cost of market foods, especially nutritious market foods
- limited variety and/or poor quality of nutritious market foods
- degradation of the local environment and access to traditional foods (e.g. climate change, environmental contamination and perception of contamination)
- lack of rights to access land and its resources (e.g. fishing and hunting licensing requirements, land claims, commercial development of land)
- high cost of obtaining traditional food (e.g. vehicle fuel)
- loss of knowledge and/or skill to obtain traditional/country foods

Many communities are taking action to draw on their assets and strengths to enable healthy eating for their people. Examples are discussed in Section 5. Awareness of challenges to healthy eating and strengths that can be leveraged can inform NFS staff when working with Indigenous clients and communities. It may also identify opportunities for NFS to contribute to government-led initiatives or policies, which are necessary to eliminate or reduce these barriers described.

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4. Health & nutrition status

Indigenous peoples have a higher incidence of diabetes, heart disease, cancer, obesity, and oral problems compared to the general population (Public Health Agency of Canada [PHAC], 2016; PHAC, 2018). Nearly 2 in 3 of First Nations adults (59.8%) reported one or more chronic health conditions as diagnosed by a health professional (FNIGC, 2018b). Although, the number of reported chronic health conditions among children living in First Nations communities (i.e. on reserve) has decreased since the RHS Phase 2 (2008/10), the burden of chronic conditions remains high. Nearly 3 in 10 (28.5%) children report having one or more chronic health conditions in RHS Phase 3 (2015/16).

Some nutrition issues identified from the literature explored in this report:

- A. Gestational diabetes
- B. High birth weights/macrosomia
- C. Breastfeeding
- D. Iron deficiency anemia in children
- E. Dental decay
- F. Overweight / Obesity
- G. Type 2 diabetes
- H. Cardiovascular Disease

These topics are described to highlight health inequalities that exist between Indigenous and non-Indigenous peoples. While these health issues can be prevented and managed by healthy lifestyle, in order to avoid propagating stereotypes that place blame on populations for their own ill health, it is critical to understand the historical, political, social, and economic conditions that influence Indigenous health and their food intake (TRCC, 2015a).

High rates of chronic health conditions do not occur in isolation (FNIGC, 2018a). Health inequalities experienced by Indigenous peoples occur at all stages of life and are heavily influenced by the social determinants of health; for Indigenous people, racism, colonization, and colonialism are among the most critical determinants of health (FNIGC, 2018a; Loppie Reading & Wien, 2009; Reading, 2014). These determinants cross-cut and influence all other determinants of health, such as poverty, employment, working conditions, and education, of First Nations, Inuit and Métis (National Collaborating Centre for Aboriginal Health [NCCAH], 2018). Examples of determinants affecting nutritional status include poverty, low employment opportunities, poor access to nutritious and affordable food, clean drinking water, and health care. A discussion is needed on how to enable healthy eating for those with low income and those who live in remote communities with limited access to nutritious and affordable food. Further, while not examined in this section, discussion is also needed on how to provide access to health care support for those diagnosed with chronic diseases to optimize health outcomes.

A. Gestational diabetes

Gestational diabetes mellitus

Gestational diabetes mellitus (gestational diabetes) is a type of diabetes that develops during pregnancy (Diabetes Canada, n.d.a). The body cannot produce enough insulin, which results in a rise in blood sugar levels. If this condition is left untreated, the baby is at an increased risk for macrosomia (weighing more than 4kg), making delivery more difficult. Gestational diabetes can also lead to increased risk for the child to be overweight and develop type 2 diabetes later in life. The mother is also at a greater risk for developing type 2 diabetes in the future.

Indigenous peoples are a high-risk group for gestational diabetes (Crowshoe et al., 2018). According to the 2006 Aboriginal People's Survey, which surveyed Indigenous people living in urban areas, First Nations living off reserve have higher rates of gestational diabetes (4.8%) compared to other Indigenous groups (Métis 2.2%; Inuit 4.0%) (Garner et al., 2010). The RHS Phase 3 (2015/16) found that among First Nations women living on reserve who reported being diagnosed with diabetes, 1 in 6 (16.9%) reported being first diagnosed with the condition while they were pregnant (FNIGC, 2018a). In Alberta, Oster et al. (2014) found the prevalence rate of gestational diabetes was 6.1%, significantly higher compared to non-First Nations women (3.8%) (Oster et al., 2014).

It has been shown that risks to the mother and fetus associated with diabetes in pregnancy can be minimized when care is available from an inter-professional team, comprised of diabetes nurse educators, dietitians, obstetricians, and endocrinologists with expertise in diabetes in preconception and pregnancy (Feig et al., 2018). First-line therapy recommended for gestational diabetes during pregnancy is diet and physical activity, according to 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada (Crowshoe et al., 2018). For further information readers are encouraged to review Alberta Health Services Nutrition Guideline for Pregnancy and the 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada (Alberta Health Services, 2013; Crowshoe et al., 2018; Feig et al., 2018).

B. High birth weight/macrosomia

Fetal Macrosomia

Babies with a birth weight greater than 4 kg are diagnosed with fetal macrosomia (Mayo Foundation for Medical Education and Research [Mayo Clinic], 2018). This condition can increase complications during delivery and increase risk of health problems after birth for both the mother and baby. The mother can experience prolonged vaginal delivery time, birth injury, and is likely to have a cesarean delivery. The child is at an increased risk for developing hypoglycemia, metabolic syndrome, and developing obesity in the future. Risk factors for macrosomia include maternal age, history of fetal macrosomia, overdue pregnancy, gestational diabetes, and maternal obesity.

Fetal macrosomia

There is a higher incidence of fetal macrosomia in First Nations compared to the general Canadian population; this has been attributed to the higher prevalence of diabetes amongst First Nations people (Smylie & Adomako, 2009). Between 2001 and 2011, First Nations people living in Alberta had an average high birth-weight rate of 17.3% (Health Canada, 2013). While not directly comparable due to differences in reporting period, the percentage of high birth-weight among the general Alberta population was 8.8% in 2017 (Government of Alberta, n.d.).

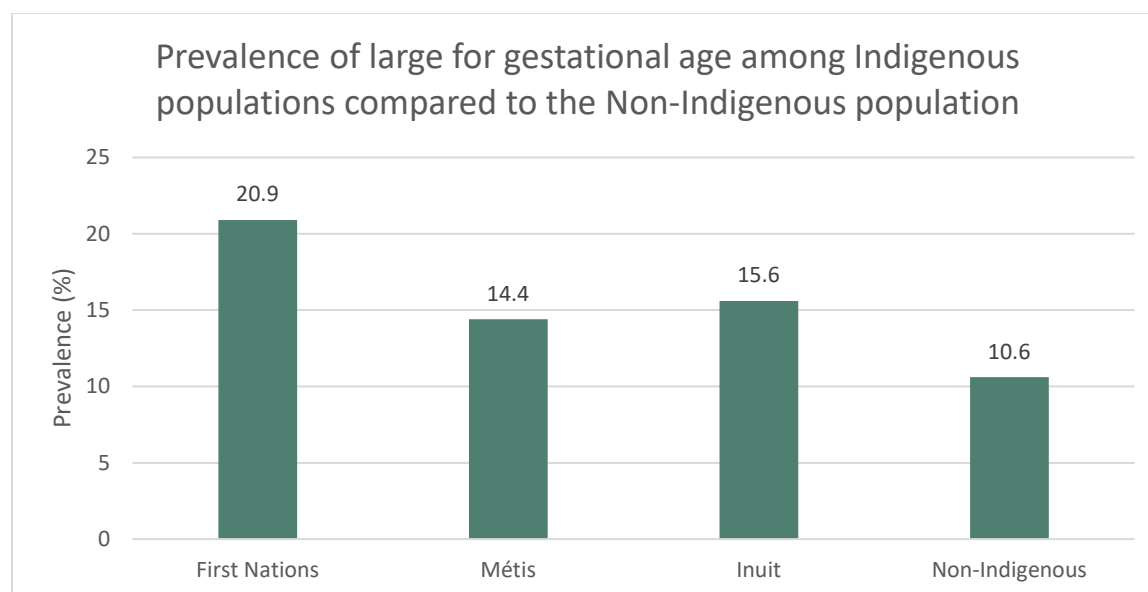
A study exploring infant birth size of Canadian Cree Nations people in Northern Quebec found 36.5% of newborns had birthweights higher than 4kg (Willows et al., 2011). The majority of these mothers were obese (53.4%) and some had diabetes (10.3%) during their pregnancy (Willows et al., 2011). These high birthweight rates are of concern because the authors also found that the risk for fetal macrosomia is higher among the Cree Nation after controlling for differences in maternal weight and gestational diabetes, suggesting a genetic predisposition for having high birthweight infants. Although there are no studies specific to birthweights and Cree Nation peoples living in Alberta, it is important to be aware of the potential genetic contribution since the Plains Cree and the Woodland Cree live in Alberta (Redish & Lewis, 2015). Cree people are one of the largest First Nations groups in Canada, and have one of the largest geographical distributions from Alberta to Quebec (Alberta Health Services n.d.-a).

Large for gestational age

Large for gestational age (LGA) is a term used for babies who have birthweights higher than the 90th percentile for their gestational age (Stanford Children's Health, n.d.). Similar health concerns as macrosomia are present with LGA babies, such as increased risk for hypoglycemia

and delivery difficulties (Stanford Children's Health, n.d.). Uncontrolled maternal diabetes is the most common cause of LGA babies (Stanford Children's Health, n.d.).

The 2006 Canadian Birth Census reports higher prevalence of LGA babies amongst Indigenous peoples compared to the non-Indigenous population (18.8 vs. 10.6%) (Bushnik et al., 2016). Similar to prevalence rates of macrosomia, First Nations infants living off reserve had the highest rate of LGA at birth (20.9%) compared to Métis (12.4%), and Inuit (15.6%) in a Canadian study of adverse perinatal outcomes (Statistics Canada, 2017a).



Source: (Statistics Canada, 2017)

Oster and Toth (2016) investigated the prevalence, longitudinal trends, and associated risk factors for adverse birth weight among First Nations pregnancies in Alberta (Oster & Toth, 2016). Using data from 2000 to 2009, the authors found First Nations ethnicity was a significant predictor of high birth weight (>4000g) and very high birth weight (>4500g). The prevalence of high birth weight decreased over time, whereas very high birth weight prevalence remained stable; overall, the prevalence of neither showed signs of increasing (Oster & Toth, 2016).

It is recommended that Indigenous women who are planning a pregnancy, or who may get pregnant are screened for diabetes (Crowshoe et al., 2018). Women at high risk, and pregnant women with diabetes or gestational diabetes, should receive nutritional counselling according to the 2018 Diabetes Canada Clinical Practice Guidelines (Crowshoe et al., 2018). The Guidelines further advise that nutrition therapy should promote adequate nutrition intake, achievement of glycemic goals, and appropriate fetal growth and maternal weight gain (Sievenpiper et al., 2018).

C. Breastfeeding

Breastfeeding

Health Canada recommends infants to be exclusively breastfed for the first six months of life (Public Health Agency of Canada, [PHAC], 2014). Breastfeeding can be sustained up to two years or longer with appropriate introduction of complementary solid foods (PHAC, 2014). Breastmilk contains the ideal amount, quality, and absorption of nutrients for growth (Health Canada, 2012a). In addition to its contribution to an infant's nutrition, there is research that associates breastfeeding with positive effects such as immunological protection for the infant and promoting maternal weight loss in the short term and promoting healthy weights and reducing the risk of type 2 diabetes for the mother and child in the long term (Hora & Vitora, 2013a; Hora & Vitora, 2013b, Kramer & Kakuma, 2012; Martens, 2016; Stuebe, 2009).

Data from the 2009-2010 CCHS showed that the prevalence of breastfeeding initiation is lower (77%) amongst Indigenous mothers (First Nations women living off-reserve, Métis, and Inuit) compared to non-Indigenous mothers (88%) (Health Canada, 2012b). Significantly fewer Indigenous mothers living off-reserve exclusively breastfed their child for six months (16.6%) compared to non-Indigenous mothers (26.7%) (Health Canada, 2012b).

Of First Nations women living on reserve, around 60% reported initiating breastfeeding in RHS Phase 2 (2008/10) (60.2%) (FNIGC, 2012), far below the proportion of mothers who reported initiating breastfeeding in the general Canadian population (90% in 2006/07) (PHAC, 2009). The prevalence of initiating breastfeeding among First Nations women, appears to have remained stable between 2002 and 2008/10, while an increase of 10% has been reported in the general Canadian population (from 80% in 2001/02 to 90% in 2006/07) (FNIGC, 2012; PHAC, 2009). According to RHS Phase 2 (2008/10), among First Nations women who breastfed, the prevalence of breastfeeding for six months or more (44.8%) was similar to that of mothers in the general Canadian population (FNIGC, 2012).

Promising findings from the recent Quebec First Nations Regional Health Survey (2015/16), on maternal and child health, revealed the proportion of First Nations children 0 to 5 years who were breastfed rose from less than 4 in 10 children to more than 5 in 10 children in 2015 (First Nations of Quebec and Labrador Health and Social Services Commission [FNQLHSSC], 2018). Of those children who were breastfed, half were breastfed for six months or more. (FNQLHSSC, 2018). It is unknown whether a similar increase was observed in Alberta as data from the RHS Phase 3 specific to the province of Alberta is not yet available at the time of this review.

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More research is needed to understand reasons why Indigenous women decide to breastfeed, or stop breastfeeding (Willows, Hanley, & Delormier, 2012). The AHS Indigenous Health Program suggests it may be related to the lack of role-modeling from mothers, grandmothers and other female relatives and changes away from the traditional communal living arrangement due to colonization (AHS, n.d.-c). Findings from the 2009/10 CCHS show that the prevalence of initiating breastfeeding among Canadian mothers including off-reserve First Nations, Inuit and Métis mothers, increased with higher educational attainment and household income (Health Canada, 2012b). It has also been reported that women who experience food insecurity and have low socioeconomic status are less likely to continue breastfeeding (Willows, Hanley, & Delormier, 2012). Evidence also shows more Indigenous women breastfeed when living in urban settings compared to rural regions (Willows, Hanley, & Delormier, 2012). Another study in Saskatoon, Saskatchewan, found a variety of contextual (sociocultural and environmental), attitudinal, cognitive (e.g. knowledge and beliefs), experiential (e.g. previous experience feeding an infant), and psychological factors all play a role in Indigenous women's breastfeeding decisions (Wagner, 2005).

Recent data from RHS Phase 3 (2015/16) reported, among First Nations children living on reserve, those who had a least one parent or grandparent who attended Indian Residential Schools were more likely to be breastfed during infancy, compared to those who did not have a parent or grandparent affected by Residential Schools (FNIGC, 2018a). This finding needs to be explored further and may be related to the tendency of survivors of Residential Schools to engage with their traditional cultures, including traditional teachings around breastfeeding (FNIGC, 2018a).

D. Iron deficiency in infant and children

Iron deficiency in infant and children

Adequate iron intake is critical for cognitive, motor and behavioural development and growth (Health Canada, 2012a). Most healthy infants have enough iron stores at birth to meet their iron needs until they are around six months old, after which breastmilk alone can no longer meet all of their nutrient requirements (Health Canada, 2012a). To help prevent iron deficiency, a variety of iron rich foods including meat, poultry, fish, legumes, and iron-fortified cereal are recommended as an infant's first complementary foods around six months of age.

Universal screening for iron deficiency is not currently done in Canada; therefore, national prevalence rates are not available (Alberta Health Services [AHS], 2016b). Hartfield (2010) summarized several small Canadian studies targeting various population groups, including Indigenous populations, of which most of the studies were on Inuit population (Hartfield, 2010). He found that the prevalence of iron deficiency among Indigenous infants and children ranged from 3.8% to 58% (Hartfield, 2010). For example, Christofides et al. (2005), reported a high prevalence of iron deficiency (53.3%) and iron deficiency anemia (27.6%) among infants 4 – 18 months of age in two Cree First Nations in Ontario and one Inuit community in Nunavut (Christofides et al., 2005). The authors noted the prevalence rate of anemia was eight times higher than among similar non-Indigenous populations in Canada (Christofides et al., 2005).

More recently, Willows, Dannenbaum and Vademoncoeur (2012) reported on the prevalence of anemia among Cree infants in the Cree region of Quebec (Willows, Dannenbaum & Vadeboncoeur, 2012). They found a prevalence rate of 12.5% for anemia, which is a reduction from the prevalence in 1995-2000 (25 to 32%), but is still higher than non-Indigenous infants (8.0%) (Willows, Dannenbaum & Vadeboncoeur, 2012). The authors attributed the decline to the introduction of an anemia screening protocol for 9-month old infants in the Cree region of Quebec (Willows, Dannenbaum & Vadeboncoeur, 2012). The Canadian Task Force on Preventive Health Care recommends routine measurement of hemoglobin concentration among Indigenous infants, 6–12 months of age (ideally at 9 months), despite this, routine screening is not performed in many Indigenous communities (Willows, Dannenbaum & Vadeboncoeur, 2012).

A variety of factors may contribute to iron deficiency anemia in Indigenous children, which may be tied to family feeding practices and living conditions (Christofides et al., 2005; Indigenous Nutrition Network, 2005), these include:

- A change from a traditional eating pattern

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- High consumption of cow's/evaporated milk, which are low in iron
- Low intake of iron rich complementary foods
- Infection with *Helicobacter pylori*¹⁰

In addition to the risk factors above, Parkin et al. (2015) found that the social determinants of health are known to increase the risk of iron deficiency in infants and children, with greater prevalence among lower income populations (Parkin et al., 2015). Currently, there are no Canadian guidelines regarding screening young children for iron deficiency anemia or iron deficiency, hence these conditions may go undetected, resulting in poor health outcomes (Parkin et al., 2015).

¹⁰ H pylori infection is high amongst Indigenous communities and statistically associated with anemia. The pathological mechanism is hypothesized to be use of iron by the bacteria, occult blood loss and/or decreased iron absorption (Christofides et al., 2005)

E. Dental decay

Dental Decay

Dental decay is the destruction of the tooth enamel by plaque formation. Dental decay can lead to inflammation and persistent pain, in turn affecting one's eating behavior, sleeping pattern and general health (National Institutes of Health, n.d.). Examples of changes to eating behaviors include the loss of appetite and decrease in fibre consumption due to the avoidance of hard food textures. Some key risk factors for dental decay include the consumption of foods and beverages high in sugar, poor oral hygiene, absence of fluoride and poverty (Canadian Paediatric Society, 2011). Untreated dental caries may lead to individuals being edentulous, losing all natural teeth.

According to the RHS Phase 3 (2015/16), First Nations adults, 20 years of age or older, living on First Nations reserve in Canada are almost twice as likely to be edentulous (11.0%) compared to the non-indigenous adults in Canada (6.4%), as documented in the Canadian Health Measures Survey (2007/09) (FNIGC, 2018a; Health Canada, 2010b). The prevalence of edentulism among First Nations adults (10.8%) has not increased among since RHS Phase 2 (2008/10) (FNIGC, 2018a).

Early childhood caries / Baby bottle tooth decay

Early childhood caries (ECC) is the presence of a decayed tooth in a child between the ages of 0 to 6 years of age (Canadian Dental Association, 2010). ECCs develop soon after a primary tooth emerges (Baghdadi, 2016). Left untreated ECC can cause pain and negatively impact chewing and eating, potentially disrupting growth and development (Schroth et al., 2009; Baghdadi, 2016). There are many risks for ECCs. Baghdadi (2016) categorized these into four categories: demographic (e.g. ethnicity, socioeconomic status), dietary (e.g. sugar containing foods and beverages, such as soda and juice, bottle feeding), microbiological, and behavioral (e.g. tooth brushing, and use of fluoridated toothpaste) (Baghdadi, 2016). The prevalence of ECC among Canadian Indigenous children varies by geographic area, among communities, and between Indigenous populations; however, rates are consistently far higher among Indigenous pre-school-aged children when contrasted to the national rate, demonstrating that poor oral health and dental decay is a pressing public health concern (Baghdadi, 216). Of promise is that the RHS Phase 3 (2015/16) reported a decline in the prevalence of ECC among First Nations children, compared to the prior two cycles, primarily among children aged 3-5 years (FNIGC, 2018a).

The recent RHS Phase 3 (2015/16) documented First Nations children living on reserve affected by and treated for baby bottle tooth decay (BBTD) and ECCs (FNIGC, 2018a). 1 in 5 children (20.0%) aged 0-11 were reported to have or had BBTD or ECCs, and 4 in 5 (80.8%) underwent some dental treatment (FNIGC, 2018a). Of those who received treatment nearly one

third travelled more than 90km from their community to attend their most recent dental care visit. The following factors were associated with BBTD/ECCs in children:

- **Duration of breastfeeding** was associated with the prevalence of reported BBTD/ECC; children who had BBTD/ECC were breastfed for a shorter duration of time compared to children without BBTD/ECC (at present or in the past).
- **Bottle feeding** was also significantly associated with BBTD/ECC. Over 1 in 5 children (21.3%) who were bottle-fed had BBTD/ECC experience, compared to 6.7% of children who were not bottle-fed. The prevalence of BBTD/ECC was 2.2 – 2.6 times higher among children who were bottle-fed sugar sweetened beverages such as Kool-Aid or other powdered drinks, fruit juices, teas and herbal mixtures or soft drinks, compared to children who did not receive these beverages (FNIGC, 2018a).

Youth

Most First Nations youth living on reserve reported their oral health as good, very good or excellent (81.1%), with about 1 in 6 youth reporting their oral health as fair or poor (18.9%). The prevalence of self-reported fair/poor oral health is considerably higher among Indigenous youth compared to the non-Indigenous youth (FNIGC, 2018a). The lowest prevalence of self-reported fair/poor oral health was among youth aged 12 – 19 in the general population (11.2%), compared to the highest rate among Inuit youth aged 12-19 (29.3%), followed by First Nations youth aged 12-17 (18.9%) (FNIGC, 2018a).

F. Overweight and obesity

Overweight and Obesity

Obesity is widely recognized as a chronic disease (Canadian Medical Association, 2015; Obesity Canada n.d). It is characterized by excess or abnormal body fat accumulated in the body that can impair health (Obesity Canada, n.d). Adult obesity can be defined as having a body mass index (BMI) of 30.0 or greater (Centre for Disease Control [CDC], 2016a). Whereas for children and teens, obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex (CDC, 2016b). Obesity in childhood has been associated with a higher chance of obesity in adulthood (World Health Organization [WHO], 2018).

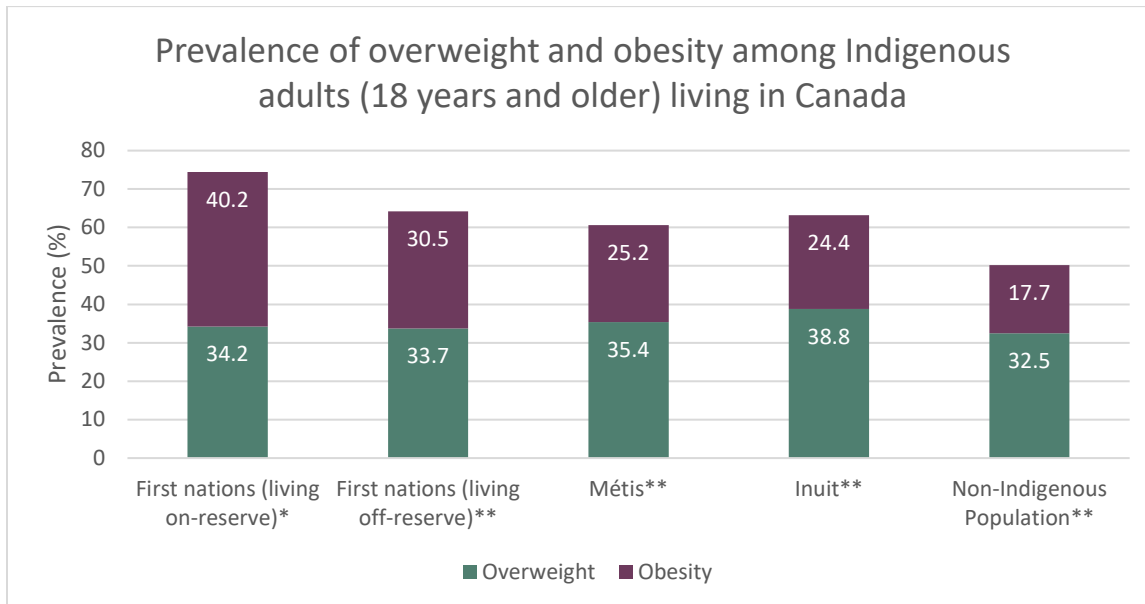
Adults who are overweight have a BMI between 25.0 and 29.9 are more susceptible to becoming obese (CDC, 2016a). For children and teens, overweight is defined by a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex (CDC, 2016b).

Both overweight and obesity, characterized by a high BMI, are a major risk factor for non-communicable diseases such as cardiovascular disease, diabetes, and some cancers (e.g. endometrial, breast, ovarian and prostate) (WHO Obesity and Overweight, 2018). Overweight and obesity result from an energy imbalance associated with dietary and physical activity patterns which can be influenced by a combination of factors including environmental and societal, behavioral, individual and genetic (National Institutes of Health, n.d.-a; World Health Organization [WHO], 2018). Specific to Indigenous peoples, determinants of obesity include factors such as colonialism, racism, social exclusion, cultural continuity and the relationship to the land (Public Health Agency of Canada [PHAC], 2011a).

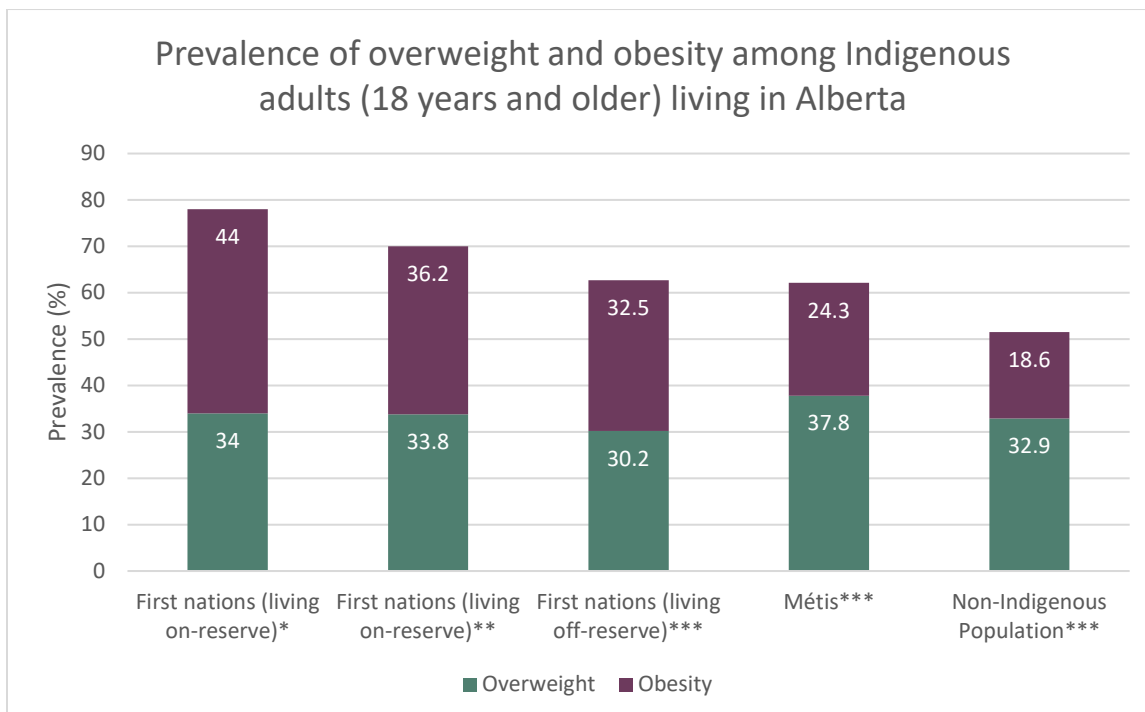
Adults

In Canada, self-reported obesity is more prevalent amongst Indigenous adults compared to non-Indigenous adults. Though not directly comparable due to the use of different data sources, the following tables illustrates the prevalence trends among Indigenous and non-Indigenous peoples in Canada, and within the province of Alberta.

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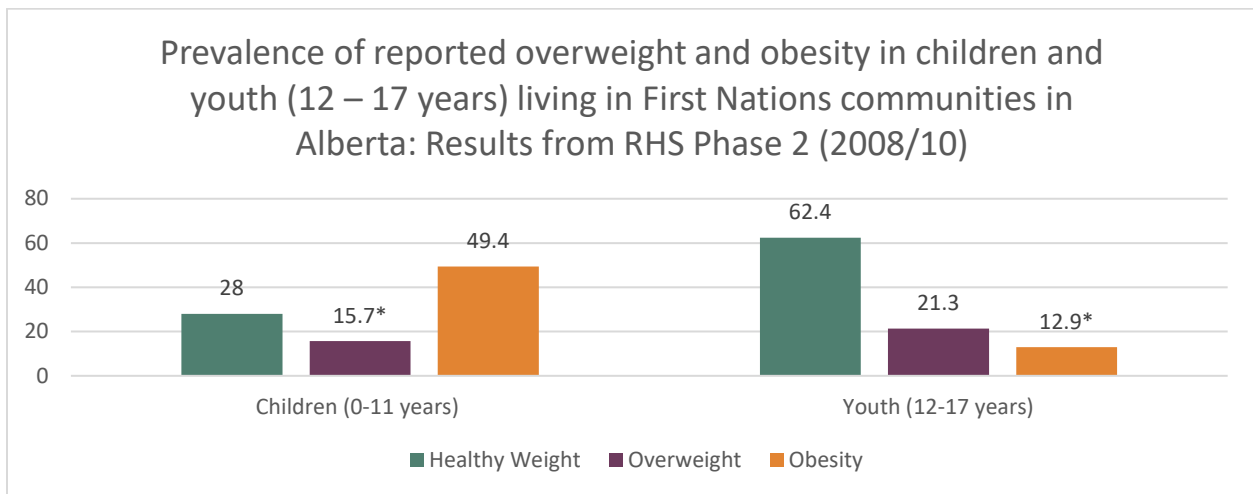
Sources: *First Nations RHS Phase 2 (2008/10) (FNGIC, 2012); **Canadian Community Health Survey 2011 – 2014 (Statistics Canada Table 13-10-0099-01, n.d.)



Sources: *Alberta 2013 FNFNES (Chan et al., 2016); **Alberta RHS Phase 2 (2008/10) (Alberta First Nations Information Governance Centre [AFNIGC], 2012); ***Canadian Community Health Survey 2011/14 (Statistics Canada, n.d.)

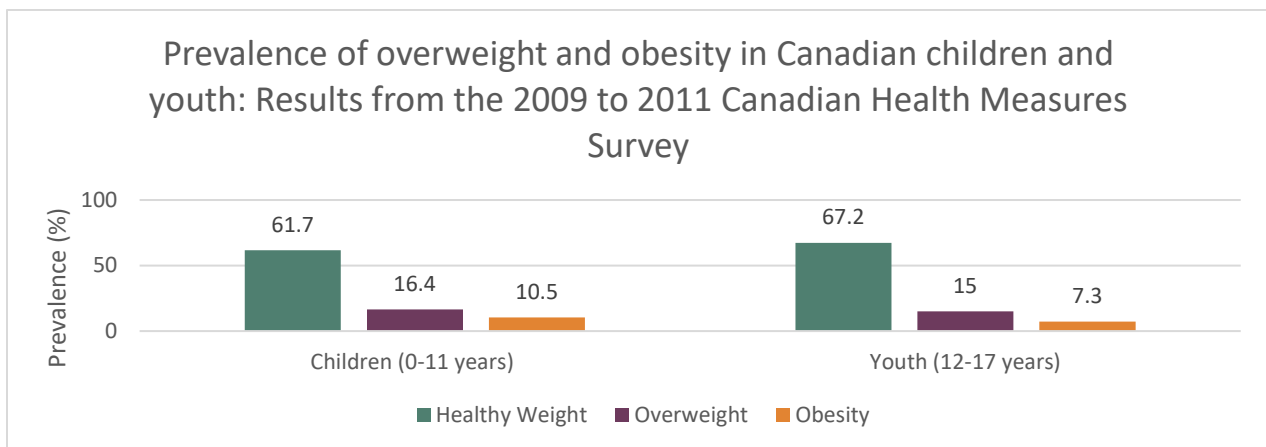
Children and youth

Similar trends are seen amongst children. Data from 2004 CCHS shows a two-fold higher prevalence of overweight among Indigenous children compared to non-Indigenous counterparts (15.8% vs. 8%) (Katzmarzyk, 2008). More recent data for First Nations children living on reserve in Alberta from RHS Phase 2 are in the figure below (Alberta First Nations Information Governance Centre [AFNIGC], 2012). Note certain values presented must be interpreted with caution due to small sample size.



*interpret with caution; Source: (AFNIGC, 2012)

While a direct comparison to the general population of children and youth cannot be made, the rates appears to be higher among Indigenous children and youth compared to the general population, which is shown in the figure below (Roberts et al., 2012).



Source: (Roberts et al., 2012)

G. Diabetes

Diabetes

Diabetes is a chronic disease characterized by high blood sugar levels due to the insufficient production of insulin by the pancreas (Diabetes Canada, n.d.-b). Uncontrolled diabetes can lead to complications such as cardiovascular disease, renal disease and amputations. A variety of risk factors, including genetic, biological, environmental, and lifestyle factors have influenced rates of diabetes in Indigenous populations in Canada (Public Health Agency of Canada [PHAC], 2011b).

Indigenous peoples living in Canada are considered a high-risk group for diabetes and related complications (Diabetes Canada, 2018). Indigenous peoples have a higher prevalence of diabetes compared to non-Indigenous people, are more likely to be diagnosed with diabetes at a younger age and experience health complications (PHAC, 2011b).

Adults

Prevalence of diabetes in Canada*		
Group	Rate (Age standardized)	Source
First Nations living on reserve	19.2%	RHS Phase 3 (2015/16)
First Nations adults living off reserve	12.7%	CCHS 2010-2013
Métis	9.9%	CCHS 2010-2013
Inuit	4.7%	CCHS 2010-2013
Non-Indigenous adults	6.8 %	CCHS 2010-2013

Source: (FNIGC, 2018a; PHAC, 2018). *Combined prevalence for type 1 and type 2.

The Government of Alberta reported that First Nations in the province had an age-standardized diabetes prevalence of 14.4 % in 2015, twice that of non-First Nations (7.3%) (Government of Alberta, 2017a). The gap was more pronounced among females. The age standardized prevalence of diabetes among First Nations females was 14.8 compared to 6.4 percent among non-First Nations females (Government of Alberta, 2017a).

The RHS Phase 3 (2015/16) found that the prevalence of diabetes to be high but stable among those living in a First Nations community (FNIGC, 2018a). Compared to non-Indigenous adults, the prevalence of diabetes is 1.9 times greater among First Nations living off reserve and 1.5 times greater among Métis adults as per the CCHS 2010-2013 (PHAC, 2018). For every 100 people, this equates to 5.9 more cases of diabetes among First Nations living off reserve and 3.1 more cases of diabetes among Métis (PHAC, 2018).

When comparing prevalence rates between genders, First Nations women living on-reserve appear to be more susceptible to developing diabetes in their life time compared to than First Nations men. 17.1% of women compared to 14% of men reported having diabetes in RHS Phase 3 (2015/16); however, this difference was not statistically significant (FNIGC, 2018a). Interestingly, the reverse of this pattern was seen among the general Canadian population; in 2016, 6.4% of females reported having diabetes compared to 7.6% of males (Statistics Canada, 2017b).

The trend is similar for diabetes incidence among First Nations in Alberta. The age-standardized diabetes incidence rate among First Nations was 1.8 times higher than among non-First Nations (Government of Alberta, 2017b). Per 100,000 people this represents 1257.6 new diagnoses among First Nations, compared to 714.7 diagnoses among non-First Nations. The difference is particularly pronounced for females between 30-34 years; they are 3.8 times more likely to be diagnosed with diabetes compared to their non-First Nations counterparts (Government of Alberta, 2017b).

In Canada, among First Nations adults living on reserve communities that were diagnosed with diabetes, nearly 3 in 5 (59%) were attending a clinic or seeing someone for diabetes education (FNIGC, 2018a). Diet (67%), was one of the most commonly reported treatments among those who were managing diabetes, alongside pills (74.6%) and exercise (52.2%). It is important to acknowledge the limitations of data collection in remote communities (FNIGC, 2018a). Data collected assumes diagnosis by a health professional which is often harder to obtain in remote communities; as a result, diabetes prevalence in these areas may be underestimated. (PHAC, 2018).

Children and Youth

Canadian Indigenous children are also more likely to develop type 2 diabetes than their non-Indigenous peers [Amed et al., 2010]. A prospective Canadian surveillance study reported the incidences of type 2 diabetes among Indigenous children was 23.2 cases per 100,000 people compared to Caucasians which was 0.54 cases per 100,000 per year (Amed et al., 2010). When comparing the age of diagnosis, Indigenous children and youths are more likely to be diagnosed before 10 years of age (11%) compared to Caucasian children and youths (8.7%) (Amed et al., 2010).

In 2015, the age-standardized diabetes incidence rate among First Nations in Alberta was 1.8 times higher than among non-First Nations people, equivalent to approximately 1257 diagnoses per 100,000 people.

Recognizing differences in the prevalence of diabetes

In a recent study of First Nations adults living in Alberta, Oster, Grier and Lightning et al. (2014) reported on the variability in the prevalence of diabetes among 31 First Nations communities (Oster, Grier & Lightning et al., 2014). While the overall average diabetes prevalence among the First Nations communities was 9.5% there were considerable differences among them; diabetes prevalence ranged from as low as 1.2% to as high as 18.3% (Oster, Grier & Lightning et al., 2014).

The authors comment that the body of epidemiological research on the burden of diabetes among Indigenous peoples has primarily focused on generalized results, with very little data reporting on community differences, and that such generalization fails to highlight the differences in prevalence among different First Nations (Oster, Grier & Lightning et al., 2014).

The study also measured Indigenous language knowledge as a proxy for cultural continuity. Like diabetes prevalence, Indigenous language knowledge prevalence varied between First Nations from as low as 10.5% and as high as 92.8%. This finding was consistent with qualitative interviews with First Nations participants, who collectively reported that cultural continuity, “being who we are” is foundational to Alberta First Nations’ health. The authors conclude that traditional culture, inclusive but not limited to traditional language, is protective against diabetes (Oster, Grier & Lightning et al., 2014).

H. Cardiovascular disease

Cardiovascular disease

Cardiovascular diseases (CVD) are a group of conditions that affect the normal functioning of the heart and blood vessels (World Health Organization [WHO], 2017). The damage caused by CVD can lead to heart attacks, strokes and death. However, 80% of premature heart attacks and strokes are preventable (WHO, 2015).

Despite a reduction in the prevalence of CVD in most western countries, the prevalence and associated mortality of CVD has increased among Indigenous Populations (First Nations, Inuit, and Métis) in Canada (Reading, 2015).

In Alberta, self-reported data from the CCHS 2011-2014 show the prevalence of high blood pressure, heart disease, or suffering from effects of stroke among First Nations off-reserve, Métis and Inuit is 17.8%, 17.4%, and 16.3% respectively, compared to 15.2% among the non-Indigenous population (Statistics Canada, n.d.).

According to the RHS Phase 3 (2015-2016), about 1 in 6 First Nations adults (17.2%) living on reserve across Canada reported having high blood pressure, 1 in 10 reported high cholesterol (10.2%), and about 1 in 25 (4.2%) reported heart disease (FNIGC, 2018a). The mean age that First Nations adults were diagnosed with high blood pressure and high cholesterol was 41.4 years and 40.6 years respectively (FNIGC, 2018a).

First Nations people typically have heart attacks earlier in life, and are likely to travel longer distances for cardiac care compared to the non-Indigenous population (Canadian Institute of Health Information Report, 2013). High and rising rates of type 2 diabetes among Indigenous youth also put them at increased risk of long-term complications including developing cardiovascular disease (Tobe, 2015).

Nutrition and lifestyle modifications are known to help improve heart health and risk of cardiovascular disease (Alberta Health Services [AHS], 2016c). For the general Canadian population, the Heart and Stroke Foundation of Canada recommends a balanced diet to prevent developing CVD (Heart and Stroke Foundation of Canada [Heart and Stroke], n.d.). Readers are encouraged to refer to Alberta Health Services Nutrition Guidelines for Cardiovascular disease for more specific information on nutrition and cardiovascular disease (Alberta Health Services, n.d.-b).

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5. Strength based approaches

Although Indigenous peoples in Canada are facing many challenges to their individual and community health, they possess many strengths and positive attributes which can be drawn and built upon to support healthy eating, health and wellness. This section is a compilation of information and examples gathered related to strength based approaches.

Holistic ‘total’ wellness

While there is considerable diversity among Indigenous peoples in geography, language and cultural practices, many conceptualize health (or wellness) within four interconnected domains – physical, emotional, mental, and spiritual health (Loppie, 2017).

The medicine wheel is a model used by many Indigenous cultures to explain this idea (AHS, 2016). That said, it is important to recognize that this symbol does not hold meaning for all Indigenous peoples (Loppie, 2017). The wheel is divided into four equal and interconnected parts (AHS, 2016). Related to health and wellness, holistic or total health and wellness is achieved when all four elements of the wheel – physical, mental, emotional and spiritual health – are in balance (AHS, 2016; FNIGC, 2018), as well as within the family, community, nation and environment (Loppie, 2017). Examples of these components may include: healthy behaviour and lifestyle, healthy mental function, cultural continuity with the past and towards future, healthy connection to culture, healthy spirituality, and a healthy home life and connection with the community (FNIGC, 2018).

According to the RHS Phase 3 (2015/16), more than two thirds of First Nations adults living on reserve reported feeling in balance physically (68.9%), emotionally (68.1%), mentally (69.8%) and spiritually (68.1%) most or all of the time (FNIGC, 2018b). Moreover, the majority of First Nations adults (80.6%) reported having a very or somewhat strong sense of belonging to their local community.

The Indigenous model of wellness and way of knowing differs from western medicine, which focuses on physical health (National Collaborating Centre for Aboriginal Health [NCCA], 2019).



Blending Indigenous and Western Knowledge

There are several differences between Indigenous and western knowledge. Western science seeks to identify ‘universal truths’ through observations of individual parts, such as randomized controlled trials (National Collaborating Centre for Aboriginal Health [NCCAH], 2019). Indigenous knowledge is holistic, different for each community and is developed through “localized lived experience, observations and holistic investigative and problem-solving processes” (NCCAH, 2019, p.9). For Indigenous people, the path to optimizing physical health needs to be balanced with improvements in other areas of health, including the spiritual aspect, which is seldom discussed in western medicine (NCCAH, 2019). Spiritual health is considered by many Indigenous people as “a ‘gateway’ to mental, physical and emotional domains of health” (NCCAH, 2019, p.15).

The use of Indigenous methodologies such as ethical space, Two Eyed Seeing and the multi-science perspective, can help leverage and integrate strengths from Indigenous and Western knowledge into the health care system (NCCAH, 2019). For example, under the ethical space framework, researchers may engage in ceremonies and prayers to “overcome negative emotions and move towards healing and reconciliation” when working with Indigenous peoples and communities to develop health programs and policies (NCCAH, 2019, p.16).

To work effectively and respectfully with Indigenous peoples, The NCCAH (2019) recommends the following best practices: 1) Respecting Indigenous knowledge; 2) Seeking guidance from Elders; and 3) using Indigenous methodologies.

This helps health care practitioners to use more holistic strategies when working with clients and communities to improve health outcomes; a practice which is consistent with client-centre care.

Research on cultural continuity

A mixed method study was conducted to look at the association between cultural continuity and diabetes prevalence in First Nation Communities Alberta (Oster, Grier & Lightning et al., 2014). Findings include:

- Cree and Blackfoot leaders reported that cultural continuity, “being who we are”, is foundational to Alberta First Nations’ health.
- Many defined culture as teachings and directions on “how to walk in this world.” Related to food and nutrition, it includes hunting and trapping, living off the land, traditional food, celebrations and ceremonies.
- Communities with higher cultural continuity have lower prevalence of diabetes after adjusting for socio-economic factors

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“Our traditional knowledge services have been a shining light in the darkness” (Oster, Grier & Lightning et al., 2014, p.4).

The authors concluded that preserving and returning to traditional culture is protective against diabetes (Oster, Grier & Lightning et al., 2014).

Determinants of healthy eating

Practice-based Evidence in Nutrition (PEN) provides the following evidence on the determinants of healthy eating for Indigenous peoples (Dietitians of Canada, 2018). It is important to recognize the limitations of current evidence from which these factors are drawn; while in many cases, they reflect the perspectives of Indigenous communities, it is also often written from the lens and perspectives of researchers from outside of the community.

Facilitators:

- traditional understanding of the connection between food/diet and health
- importance placed on the health of children
- nutritional quality of traditional/country foods
- culturally-based sharing/redistribution of traditional/country food
- community champions – community members who take action
- funding for costs associated with obtaining traditional food (e.g. boats, equipment, community freezers)
- government funded public health programs, e.g., Aboriginal Head Start, Canada Prenatal Nutrition Program, Hunter support programs).

Example of programs & initiatives

[AHS Indigenous health transformational road map](#) – strategic directions and guiding principles on how groups can come together to close the gap in health outcomes.

[AHS Indigenous Wellness Clinic and Elbow River Healing Lodge](#) provides access to primary health care that combines western medicine with Indigenous traditional approaches to health and wellbeing.

[Aboriginal Head Start](#) a national community based early intervention program.

[ENRICH First Nations](#) a research project which uses a community-based participatory approach to develop programs such as the Fathers Project and an Elders Mentoring Program to support healthy outcomes for pregnant women.

AHS NFS aims to learn more about successful strength based approaches and examples as we continue to engage with and learn from Indigenous peoples and their stakeholders.

6. Considerations for planning

Limitations of surveillance data

The demographic and nutrition data drawn from published sources such as the census and health surveys, provide insights to the nutrition and health status of Indigenous peoples living in Alberta. However, it is difficult to obtain a complete and accurate picture due to the following limitations (AHS, 2018; McBride, n.d.):

- Inconsistent methods between different surveys. For example, the Canadian Community Health Survey (CCHS) surveys Indigenous peoples living outside First Nations communities, whereas Regional Health Surveys (RHS) capture intake of those living within First Nations communities.
- Low participation rate stemming to historical distrust of being ‘researched to death’.
- Low participation rate due to the experience of having data misinterpreted by researchers and/or used against the interest of the community.
- Difficulties reaching those living off reserve or in urban settings due to high mobility.
- Data collection process may not accurately identify between First Nations, Métis, non-status First Nations and Inuit participants, who have differences in health determinants.
- Research conducted without the community may fail to reflect community health in a holistic way and consequently lead to unclear and misleading findings.
- Limitations in the availability of demographic and health data for Métis peoples, which makes it difficult to get a comprehensive picture of their state of health as a population.

Research design and data collection to collect information must be done in partnership with Indigenous peoples following a decolonizing approach and OCAP principles, both of which are described below. The Regional Health Survey is an excellent example of a survey that respects these principles.

Decolonizing Population and Public Health Initiatives

As AHS departments and programs move forward with planning Indigenous initiatives, programs and services that target Indigenous groups, it is critical that the foundation for such planning emphasizes decolonizing processes of community control, community engagement and cultural relevance (Loppie, 2017).

- **Community control** refers to the right of Indigenous peoples to control the process of programs and practices undertaken about, with and for them (Loppie, 2017).

- **Community engagement** aligns with Indigenous values of relationship, reciprocity and collective vision (Loppie, 2017). It involves the collaboration of community members with each other and/or people outside of the community, with a shared goal to move the community towards positive change that benefits the entire community (Loppie, 2017).
- **Cultural relevance** requires respect for the cultural diversity of Indigenous people in Alberta, through the engagement of local perspectives, views, and values, and the acknowledgement of the unique contexts in which programs and initiatives occur. “When Indigenous communities initiate, develop, and control the processes and products of healthy promotion, cultural relevance is enhanced.” (Loppie, 2017 pg. 191).

Furthermore, future planning, implementation and evaluation of Indigenous programs, policies and initiatives should be grounded in the OCAP® principles. OCAP® stands for ownership, control, access and possession.

OCAP® Principles

The First Nations principles of OCAP® are a set of standards that establish how First Nations data should be collected, protected, used, or shared. They are the *de facto* standard for how to conduct research with First Nations (First Nations Information Governance Centre, [FNIGC], n.d.).

These principles state that First Nations have control over data collection processes in their communities, and that they own and control how this information can be used (FNIGC, n.d.). As per the First Nations Information Governance Centre (FNIGC, n.d.):

- **Ownership** refers to the relationship of First Nations to their cultural knowledge, data, and information. This principle states that a community or group owns information collectively in the same way that an individual owns his or her personal information.
- **Control** affirms that First Nations, their communities, and representative bodies are within their rights to seek control over all aspects of research and information management processes that impact them. First Nations’ control of research can include all stages of a particular research project from start to finish. The principle extends to the control of resources and review processes, the planning process, management of the information and so on.
- **Access** refers to the fact that First Nations must have access to information and data about themselves and their communities regardless of where it is held. The principle of access also refers to the right of First Nations communities and organizations to manage and make decisions regarding access to their collective information. This may be achieved, in practice, through standardized, formal protocols.

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- **Possession** While ownership identifies the relationship between a person and their information in principle, possession or stewardship is more concrete: it refers to the physical control of data. Possession is the mechanism by which ownership can be asserted and protected.

7. Discussion and next steps

There are significant health disparities between Indigenous people and the non-Indigenous population living in Alberta. This document summarizes historical and contemporary factors affecting the nutrition-related health status of Indigenous people, and can be used to inform discussion with Indigenous people around how AHS programs can support their health priorities.

Alberta's Indigenous peoples represent a high priority population for targeted interventions designed to improve modifiable risk factors for chronic diseases. However, there is limited review-level evidence of high quality interventions proven to prevent or treat chronic disease among Indigenous peoples (Gomersall et al. 2016; Rice et al. 2016; McNamara et al. 2011). We know that the complex nutritional issues are not due to lack of knowledge so much as to socio-economic, geographical, environmental and social factors that influence the availability and cost of food (University of Sydney, 2005).

It is important to note the significant gaps in current public health assessment data. There is also a lack of organized linkages of First Nations, Inuit, and Métis health data to First Nations, Inuit, and Métis health policies, programs and services (Smylie & Adomako, 2009). On their own, the health indicators presented in this report, are insufficient for creating programs and policies to improve the health of Indigenous populations, as they do not adequately incorporate indigenous concepts of health and wellness, nor do they address the concept of a collective, or of relationships to other people, animals, spirits, or the earth (Donanuto et al. 2016).

While the information collected in this report has identified potential opportunities for AHS, for Nutrition and Food Services (NFS) it marks only the start of exploring its role in supporting food and nutrition initiatives that support the health of Indigenous peoples in Alberta. Other departments and programs may also use this information for programs that have a food or nutrition implication. In adherence of a decolonizing public health approach, the determination of health priorities and design of programs and services need to be done in collaboration with Indigenous peoples, which will require continued relationship building and engagement.

Next Steps

1. Continue to build relationships

AHS programs can benefit from consulting and building relationships with stakeholders within and outside of AHS to identify engagement strategies to respectfully and effectively communicate with and about Indigenous Peoples in Alberta. This can also identify opportunities for impactful contribution towards health and wellness initiatives and progress our staff along the continuum of cross cultural competency and cultural safety.

These partner groups include but are not limited to:

- The **AHS Indigenous Health Program** partners with Indigenous peoples, communities and key stakeholders to provide accessible, culturally appropriate health services for First Nations, Métis and Inuit peoples in Alberta. (Alberta Health Services [AHS], n.d.a)
- The **AHS Wisdom Council** provides guidance and recommendations to ensure AHS develops and implements culturally appropriate and innovative health service delivery for Indigenous Peoples. The Council focuses on Indigenous health priorities, services, and resources, and is made up of public members from across treaty areas and Alberta's health zones. (AHS, n.d.-b)
- The **AHS Population, Public and Indigenous Health Strategic Clinical Network** is comprised of a community of physicians, front-line health care workers, researchers, educators, and others focused on the promotion of health equity, healthy communities, prevention and promotion of health that contributes to population health improvement of all Albertans with a determined effort to work with Indigenous Peoples. (Population Public and indigenous Health Strategic Clinical Network, 2017).
- **First Nations Inuit Health Branch (FNIHB)** within Indigenous Services Canada works with First Nations, Inuit, other federal departments and provincial and territorial partners to support healthy First Nations and Inuit individuals, families and communities (Indigenous Services Canada, 2018).
- **AHS Alberta Prevention Legacy Fund, Community Stream** is currently piloting strength based community driven health promotion programs in several Métis settlements in Alberta.

2. Support staff with building cultural competency

AHS is committed to improving the cultural competency of its staff and management. In response to the Truth and Reconciliation Call to Action 23(iii) *'We call upon all levels of government to provide cultural competency training for all healthcare professionals'* (Truth and Reconciliation Commission, 2015), AHS requires its workforce to complete Indigenous Learning. Specifically, an Indigenous Peoples in Alberta Introduction course and an Indigenous Awareness and Sensitivity Certification Program; targets for completion have been set for October 31, 2019 and October 31, 2021 respectively (AHS, n.d.c).

3. Learn from strength-based initiatives

AHS programs can learn from strength-based community driven initiatives to inform how to better support the health of Indigenous patients and clients through existing initiatives and services. This may also provide ideas for new work.

4. Capture new learnings

This report was shared with health professionals working with Indigenous peoples for review (e.g. AHS public health dietitians, AHS Indigenous health program dietitians, FNIHB, and a U of A researcher). The reviewers suggested further exploration in the following areas:

- Meaning of food to Indigenous peoples, including Métis and Inuit.
- The types of nutrition related services and support currently provided in Alberta to different groups, by AHS and groups outside of AHS.
- Linkages between mental health and nutrition.
- Data on the prevalence of different types of cancers and nutrition related risk factors
- Information on Treaty 6,7,8 and how they intersect with the services and/or supports AHS offers.
- Practical consideration for frontline dietitians working with Indigenous clients such as trauma informed care and the cultural safety continuum.

AHS NFS plans to summarize new information or resources collected through engagement and share these learnings with stakeholders as opportunities arise.

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