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First Nations Health Status Report

Alberta Region 2011–12, Revised Edition

Report by the Medical Officer of Health

Canada

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First Nations Health Status Report – Alberta Region 2011–12, Revised Edition

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MESSAGE FROM THE MEDICAL OFFICER OF HEALTH

Dear reader,

Welcome to the *First Nations Health Status Report – Alberta Region 2011–12, Revised Edition.*

Since 2003, I have been reporting annually on the health status of First Nations living in communities in Alberta. These reports began with a focus on health protection interventions: communicable disease control (immunization, incidence and management of notifiable infectious diseases, tuberculosis, HIV, sexually transmitted and blood-borne infections, and infectious disease outbreaks) and environmental public health (water quality monitoring, food safety, waste disposal and housing inspections). In subsequent years, the Health Status reports expanded their content to cover vital statistical data such as causes of deaths, including analyses of specific leading causes of illness (for example, diabetes) and death (for example, injuries) among First Nations peoples living in Alberta. These regional reports have been shared with community health directors and staff, as well as regional program officers and public health officials. Community-specific reports have been issued to support local planning and decision making since 2003.

In this year's report, we shift our focus to the demographic trends among First Nations peoples living in Alberta, the factors that impact the health of individuals and communities, the health of mothers and children living in First Nations communities, and the profile of cancer occurrence, distribution and impact among First Nations peoples living in Alberta. This revised edition includes a supplemental chapter that provides a more in-depth, contextualized analysis of maternal and child health among First Nations and non-First Nations in Alberta.

The reported information and analyses are made possible thanks to the ongoing partnership and collaboration of community-based First Nations public health staff, regional First Nations and Inuit Health Branch public health staff serving the communities, Aboriginal Affairs and Northern Development Canada, Alberta Health and Alberta Health Services. As in the past, this report has been produced with the goal of assisting First Nations leadership in health program planning and priority setting as well as supporting the various health portfolios working with First Nations communities and organizations.

To all who have contributed to this enterprise, I would like to express my sincere gratitude for your diligent efforts and your continued support. As always, I look forward to your community and program feedback as we continue to work together to improve the health status of First Nations in Alberta.

Together on the journey,

Dr. Wadieh R. Yacoub, MBBCh, M.Sc., FRCP(C)
Medical Officer of Health
Director of Health Protection,
Health Assessment and Surveillance
First Nations and Inuit Health Branch
Health Canada–Alberta Region

HIGHLIGHTS

Demographics

- The total First Nations population registered to bands in Alberta is increasing (2001–2011).
- The majority of this population resides on-reserve (63%), but the off-reserve population is quickly growing.
- Most of the population growth experienced on-reserve is due to an aging population, that is, those over the age of 65 years.
- The largest proportion of the population residing on-reserve is aged 15–24 years, and there has been no population growth in the 0–14 age group.

Maternal and Child Health

- Vital Statistics
  - The life expectancy at birth for First Nations registered to bands in Canada has increased.
  - The fertility rates of First Nations registered to bands in Alberta were stable from 2001 to 2006 and declined from 2007 to 2011.
  - In Alberta, the average age of first-time First Nations mothers is 21.1 years and for first-time First Nations fathers is 24.4 years.
  - Accidental injury and assault accounted for 43% of all childhood deaths, and SIDS deaths alone accounted for 11% of all infant deaths between 2001 and 2011.
- Prenatal Health
  - The rate of pregnant women with diabetes complications during pregnancy increased by 149% from 2001 to 2011.
  - More than half (53%) of all pregnant First Nations women registered to bands in Canada reported never smoking during their pregnancy.
- Mother-to-Child Transmission
  - The rate of mother-to-child transmission, or vertical transmission, of sexually transmitted infections among the First Nations in Alberta residing on-reserve is very low. Communities and leadership must continue to promote and support the screening and treatment of pregnant women to ensure that these low rates continue.
- Infancy (under the age of one)
  - Sixty per cent of First Nations mothers registered to bands in Canada reported initiating breastfeeding.
  - Infant immunization coverage rates have remained generally stable since 2005.
- Childhood (one to six years of age)
  - Thirty-six per cent of all First Nations children registered to bands in Canada participated in the Aboriginal Head Start On-Reserve (AHSOR) Program. Children who participated in this program are more likely to speak or understand a First Nations language than those who did not attend. Forty-five First Nations communities in Alberta participate in AHSOR.

- *Childhood continued*
  - Aboriginal children represent approximately 9% of the total Alberta child population but 67% of the children under Ministry of Children and Youth Services care.
  - First Nations children registered to bands in Canada are most likely to be categorized as overweight or obese (62.5%) rather than normal or underweight (37.5%).
  - In 2011, childhood immunization coverage was consistent or improved relative to 2010.

Cancer

- The most common cancers diagnosed among First Nations living in Alberta from 1997 to 2010 were breast, lung, colorectal and prostate.
- Lower rates of these cancers are found among First Nations as compared to the non-First Nations population.
- The number of prostate cancer cases diagnosed among First Nations men was lower than expected based on rates in non-First Nations men from 1997 to 2010.
- Cervical cancer incidence among First Nations females is higher than among non-First Nations females.
- Kidney cancer is one of the five most common cancer diagnoses among First Nations in Alberta, regardless of sex.
- Five years after diagnosis, the survival rate of First Nations individuals with cancer is approximately half. For cancers diagnosed between 2002 and 2006, the five-year survival rate was 53% for First Nations and 62% for non-First Nations in Alberta.

Health Protection – Year in Review 2011–12

- Major Public Health Occurrences
  - During the autumn and winter of 2011–12, a pertussis outbreak occurred in two First Nations communities in Northern Alberta, resulting in 51 identified cases. Targeted immunizations were delivered in both communities.
  - A community shigellosis outbreak (113 confirmed cases and 110 probable cases) continued in five communities, with sporadic cases in four other First Nations.
- Communicable Disease Control
  - The majority (76%) of notifiable diseases reported in 2011 were sexually transmitted infections (STIs).
  - Rates of STIs in 2011 were lower among First Nations individuals living on-reserve, relative to First Nations individuals living off-reserve in Alberta.
  - The rate of newly reported HIV cases in First Nations individuals decreased by 22% between 2006 and 2011.
  - The rate of active tuberculosis decreased by nearly 40% in the First Nations population living on-reserve in Alberta between 2001 and 2011.
- Animal Bites
  - In 2011, there were 252 reported cases of animal bites, a 740% increase from 2001.
- Environmental Health
  - During the 2011–12 fiscal year, 83% of routinely scheduled water sample tests were carried out. Communities should be congratulated for their continued efforts to ensure the safety of drinking water.

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Demographics

DEMOGRAPHICS

There are 46 First Nations in Alberta that fall within three treaty areas. Most First Nations individuals living on reserve and Crown land in Alberta reside within Treaty 6 (43%), followed by Treaty 7 (31%) and Treaty 8 (26%).

TABLE 1.1 First Nations communities in Alberta by treaty area, 2012

TREATY 8

1. Athabasca Chipewyan First Nation
2. Beaver First Nation
3. Bigstone Cree Nation
4. Chipewyan Prairie First Nation
5. Dene Tha' First Nation
6. Driftpile First Nation
7. Duncan's First Nation
8. Fort McKay First Nation
9. Fort McMurray First Nation
10. Horse Lake First Nation
11. Kapawe'no First Nation
12. Little Red River Cree Nation
13. Loon River First Nation
14. Lubicon Lake Indian Nation (no reserve)
15. Mikisew Cree First Nation
16. Peerless Trout First Nation
17. Sawridge Band
18. Smith's Landing First Nation
19. Sturgeon Lake Cree Nation
20. Sucker Creek First Nation
21. Swan River First Nation
22. Tallcree First Nation
23. Whitefish Lake First Nation (Atikameg)
24. Woodland Cree First Nation

TREATY 6

25. Alexander First Nation
26. Alexis Nakota Sioux Nation
27. Beaver Lake Cree Nation
28. Cold Lake First Nations
29. Enoch Cree Nation
30. Ermineskin Cree Nation
31. Frog Lake First Nation
32. Heart Lake First Nation
33. Kehewin Cree Nation
34. Louis Bull Tribe
35. Montana First Nation
36. O'Chiese First Nation
37. Paul First Nation
38. Saddle Lake First Nation
39. Samson Cree Nation
40. Sunchild First Nation
41. Whitefish Lake First Nation # 128 (Goodfish)

TREATY 7

42. Blood Tribe
43. Piikani Nation
44. Siksika Nation
45. Stoney Tribe (Bearspaw)
45. Stoney Tribe (Chiniki)
45. Stoney Tribe (Wesley)
46. Tsuu T'ina Nation

Source: *Aboriginal Affairs and Northern Development Canada (AANDC), 2012*

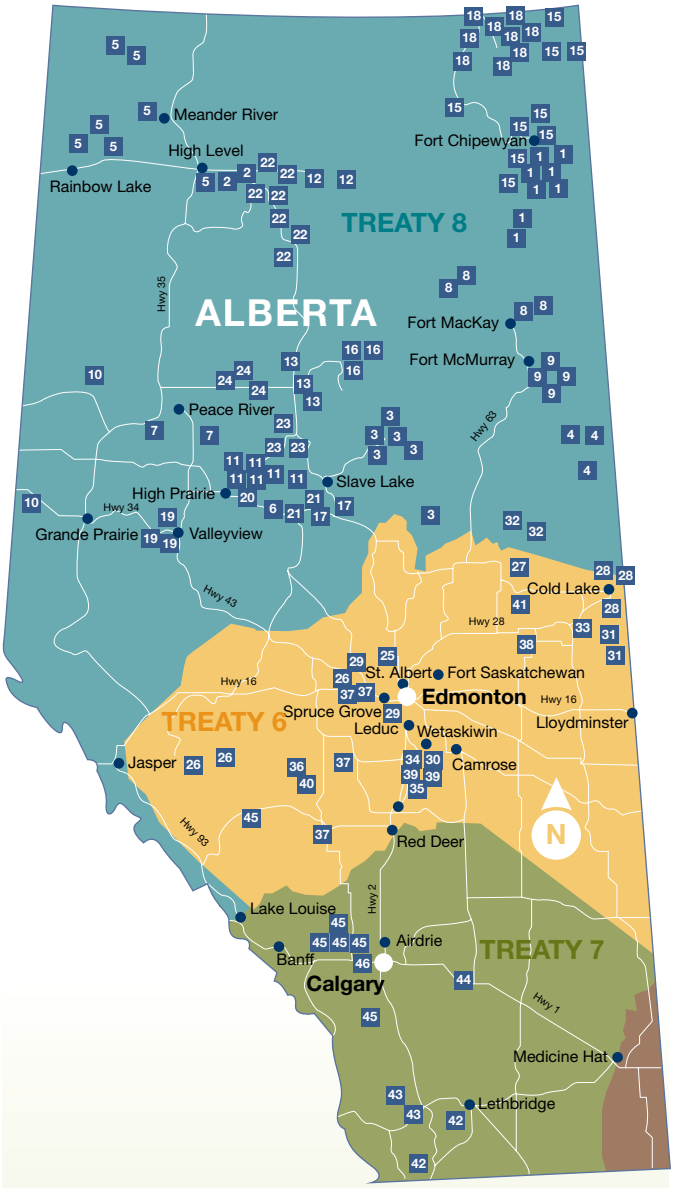


FIGURE 1.1 First Nations communities in Alberta by treaty area, 2012

A Changing Population

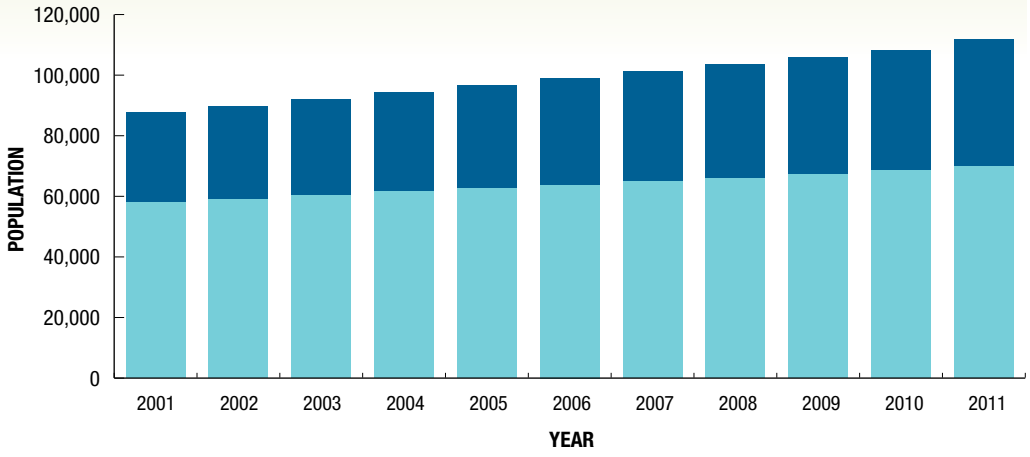
The First Nations population registered to bands in Alberta has increased over time (Figure 1.2). In 2011, a total of 111,691 First Nations individuals were registered to bands in Alberta, with 69,932 residing on reserve and Crown land and 41,759 residing off-reserve.[1] This population represents approximately 13% of the total First Nations population registered to bands in Canada.

TABLE 1.2 Comparison of First Nations populations registered to bands in Alberta and Canada, 2001–2011

	Alberta	Canada
Total population (2011)	111,691	868,206
Growth of total population (2001-2011)	27%	26%
Proportion residing on-reserve & Crown land (2011)	63%	54%
Growth of population residing on-reserve & Crown land (2001-2011)	20%	18%
Proportion residing off-reserve (2011)	37%	46%
Growth of population residing off-reserve (2001-2011)	41%	37%

The growth of the First Nations population registered to bands in Alberta (27%) is comparable to growth of the First Nations population registered to bands across Canada (26%) (Table 1.2). From 2001 to 2011, the First Nations population residing off-reserve grew approximately twice as fast as the First Nations population residing on reserve and Crown land in Alberta (41% vs. 20%) and in Canada (37% vs. 18%).

FIGURE 1.2 First Nations population registered to bands in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Off-Reserve	29,657	30,766	31,773	32,873	34,033	35,226	36,369	37,436	38,684	39,924	41,759
Reserve & Crown Land	58,046	59,046	60,287	61,549	62,571	63,712	46,792	66,005	67,093	68,394	69,932

Source: *AANDC-Indian Registry System as of December 31 of the appropriate year*

1 See Appendix C for a breakdown of the First Nations population registered to bands in Alberta (2011).

FIGURE 1.3 First Nations population registered to bands in Alberta, living on reserve or Crown land, 2011

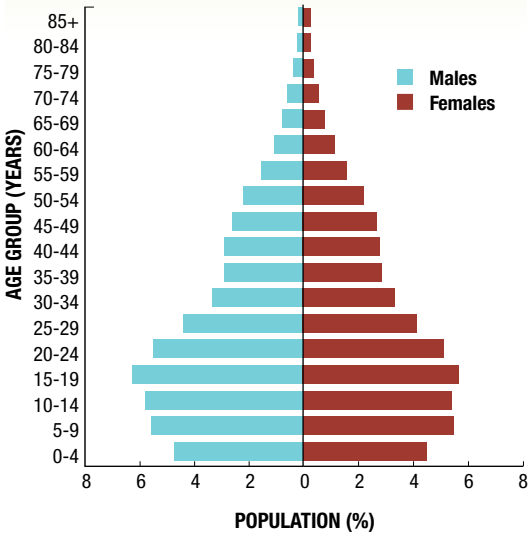
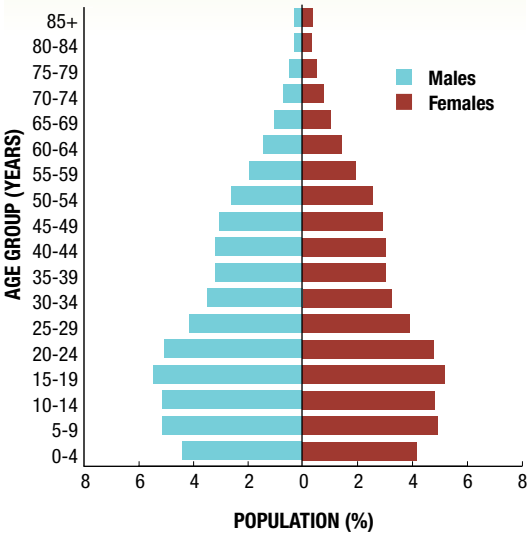


FIGURE 1.4 First Nations population registered to bands in Canada, living on reserve or Crown land, 2011



Source: *AANDC-Indian Registry System as of December 31 of the appropriate year*

The population pyramids for First Nations registered to bands living on reserve and Crown land in Alberta (Figure 1.3) and Canada (Figure 1.4) both display narrowing bases, indicating declining birth rates and slowing population growth. For First Nations in Alberta, and in Canada, the largest population segment is the 15- to 19-year-old age group. Generally, there are slightly more males than females up to age 25, a balanced gender ratio up to age 74, and more females than males over age 75.

From 2001 to 2011, the First Nations population living on reserve and Crown land in Alberta experienced no population growth between the ages of 0 and 14 years (0%). In the 15- to 64-year-old age group, the growth was moderate (32%), and for those over age 65, the growth was high (56%). These changing population demographics will require health programming that meets the needs of a rapidly increasing elderly cohort while also considering the large group of adolescents and young adults between the ages of 15 and 24.

Social Determinants of Health

Social determinants directly influence the health and well-being of individuals and populations. These determinants are interconnected and include broad physical, emotional, mental and spiritual factors. Social determinants help to provide a holistic picture of the health and quality of life of a population.[2, 3, 4]

Insufficient education can result in poor literacy, making it difficult for individuals to access and interpret health-related information.

Education and Employment

Education is a powerful social determinant of health. Insufficient education can result in poor literacy, making it difficult for individuals to access and interpret health-related information.[5] Approximately 56% of First Nations adults registered to bands in Canada living on-reserve report attaining at least a high school education. This educational attainment is slightly lower than for First Nations living off-reserve.

First Nations females are more likely than First Nations males to further their education and complete a post-secondary education (28.7% vs. 18.8%).[6] Higher educational attainment in mothers is associated with a multitude of positive health outcomes within a family.[7] Increased maternal education is strongly related to higher contraception use, smaller family size, lower infant and child mortality, and higher educational attainment in the subsequent generation.[8]

2 Reading, C. L., & Wien, F. (2010). *Health inequalities and the social determinants of Aboriginal peoples' health.* National Collaborating Centre for Aboriginal Health. Retrieved from http://www.nccah-ccnsa.ca/docs/nccah%20reports/LoppieWien-2.pdf

3 Lachance, N., Hossack, N., Wijayasinghe, C., Yacoub, W., & Toope, T. (2009). *Health determinants for First Nations in Alberta.* Ottawa: Health Canada.

4 National statistics are used when provincial statistics are not available.

5 Reading, C. L., & Wien, F. (2010). *Health inequalities and the social determinants of Aboriginal peoples' health.* National Collaborating Centre for Aboriginal Health. Retrieved from http://www.nccah-ccnsa.ca/docs/nccah%20reports/LoppieWien-2.pdf

6 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities*. Ottawa: Author.

7 King, E. M., & Hill, M. A. (Eds.). (1993). *Women's education in developing countries: Barriers, benefits, and policies.* London: John Hopkins University Press.

8 Ibid.

Educational attainment is closely related to employment opportunities. It appears that First Nations living on-reserve are less likely to be employed than are First Nations living off-reserve (51.9% vs. 66.3%).[9] Some First Nations communities in Alberta participate in economic development activities and industrial activities, such as those related to oil sands and waste management.

Language, Cultural Continuity and Self-Determination

Cultural continuity, including Indigenous language use, refers to the level of cultural connectedness within a community.[10] Because communities with higher levels of Indigenous language knowledge experience fewer suicides than communities with lower levels, Indigenous language knowledge is regarded as a strong predictor of First Nations well-being.[11] Communication in Indigenous languages is far more common within on-reserve populations in Canada than off-reserve populations (51% vs. 12%).[12]

Self-determination is exercised when a community plans and controls activities (for example, community-based health programs) according to its own priorities and its own cultural and social needs. It influences all other determinants of health, including education, employment, housing, safety, and social and health services.[13] The benefits of self-determination are particularly evident in the context of transferred First Nations communities across the country.[14]

Indigenous language knowledge is regarded as a strong predictor of First Nations well-being.

9 Gionet, L. (2009). *First Nations people: Selected findings of the 2006 Census.* Ottawa: Statistics Canada.

10 Hallett, D., Chandler, M. J., & Lalonde, C. E. (2007). Aboriginal language knowledge and youth suicide. *Cognitive Development, 22,* 392-399.

11 Ibid.

12 Gionet, L. (2009). *First Nations people: Selected findings of the 2006 Census.* Ottawa: Statistics Canada.

13 Reading, C. L., & Wien, F. (2010). Health inequalities and the social determinants of Aboriginal peoples' health. National Collaborating Centre for Aboriginal Health. Retrieved from http://www.nccah-ccnsa.ca/docs/nccah%20reports/LoppieWien-2.pdf

14 Hallett, D., Chandler, M. J., & Lalonde, C. E. (2007). Aboriginal language knowledge and youth suicide. *Cognitive Development, 22*, 392-399.

Physical Environment

First Nations families living on-reserve are three times more likely to live in crowded conditions[15] than those living off-reserve (26% vs. 9%).[16] Crowded conditions make it difficult for children to have room to play or study and can increase the likelihood of behavioural and learning difficulties in children.[17, 18] Crowding is also associated with increased risk of disease transmission, particularly respiratory infections, injury, mental health problems and family tension.[19] The quality of housing on-reserve has decreased over time.[20] Poor-quality housing can result in a lack of ventilation, with resulting mould growth that can contribute to a variety of health conditions, including asthma and allergies, particularly among children.[21, 22] First Nations registered to bands in Canada living on-reserve are more than twice as likely to require major home repairs[23] than First Nations living off-reserve (44% vs. 18%).[24]

Details on inspections of daycares and Aboriginal Head Start On-Reserve (AHSOR) facilities are discussed in the "Maternal and Child Health" section.

First Nations families living on-reserve are three times more likely to live in crowded conditions than those living off-reserve.

Colonialism and Residential Schools

There is a strong correlation between the social inequalities experienced by the First Nations population and Canada's colonial history, including the Indian Residential School System.

The Indian Residential Schools Resolution Health Support Program, a community-based program supported by Health Canada and Aboriginal Affairs and Northern Development Canada, provides emotional, cultural and professional counselling support services to former Indian Residential School students and their families. The impact of these factors is further discussed on page 29 in the "Children in Care" section.

15 Crowding is defined as more than one person per room.

16 Gionet, L. (2009). *First Nations people: Selected findings of the 2006 Census*. Ottawa: Statistics Canada.

17 McBride, S. R. (2001). *Over-representation of Aboriginal students reported with behavioural disorders. A report to the Ministry of Education – British Columbia, Aboriginal Education Branch.* Victoria: Ministry of Education – British Columbia, Aboriginal Education Branch.

18 Canada Mortgage and Housing Corporation (2004). 2001 Census housing series issue 6: Revised Aboriginal households. *Research Highlight, Socio-economic Series 04-036.* Ottawa: Author.

19 Judd, N. L. et al. (2004). Consideration of cultural and lifestyle factors in defining susceptible populations for environmental disease. *Toxicology, 198*, 121-133.

20 Gionet, L. (2009). *First Nations people: Selected findings of the 2006 Census.* Ottawa: Statistics Canada.

21 Strachan, D. P. (2000). The role of environmental factors in asthma. *British Medical Bulletin, 56,* 865-882.

22 Lawrence, R., & Martin, D. (2001). Moulds, moisture and microbial contamination of First Nations housing in British Columbia, Canada. *International Journal of Circumpolar Health, 60,* 150-156.

23 Dwellings in need of major repairs are those that, in the judgement of the respondent, require repairs in defective plumbing or electrical wiring, or structural repairs to walls, floors, or ceilings.

24 Gionet, L. (2009). *First Nations people: Selected findings of the 2006 Census.* Ottawa: Statistics Canada.

Maternal and Child Health

MATERNAL AND CHILD HEALTH

Maternal and child health is an area of public health concerning a wide range of health and wellness indicators and health care needs of women during their childbearing years (15–44), including reproductive health, prenatal health, labour and delivery experiences, postpartum care, and parenting practices. It also includes the well-being and health care needs of infants and children.[25, 26]

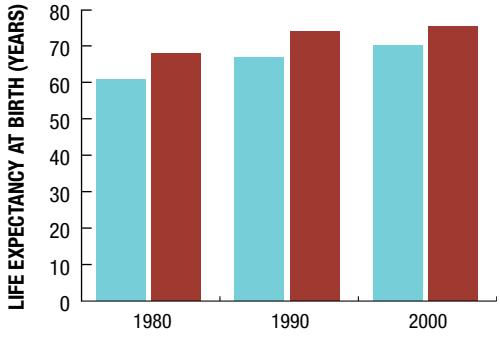
Vital Statistics

Vital statistics describe the general well-being of a population. Measures include life expectancy, fertility, mortality and morbidity (the burden of illness) within a population. This report will highlight maternal, infant and child vital statistics. These statistics help public health planners understand how health-related events are distributed in a population. Vital statistics are closely related to social determinants of health and other broad quality-of-life measures.

Life Expectancy at Birth

Between 1980 and 2000, the life expectancy at birth for First Nations individuals registered to bands in Canada increased 9.3 years for males and 7.2 years for females (Figure 2.1). Increasing life expectancy helps explain why the fastest-growing segment of the population is over age 65 and highlights the importance of providing chronic disease management for an aging population. In 2011, the life expectancy of First Nations females in Alberta was 72.5 years, compared to 84.4 for non-First Nations females. The life expectancy for First Nations males in Alberta was 68.6 years, compared to 80.2 years for non-First Nations males.[27]

FIGURE 2.1 Life expectancy at birth for First Nations individuals registered to bands in Canada, by gender, 1980–2000



	1980	1990	2000
Male	60.9	66.9	70.2
Female	68.0	74.0	75.2

Source: *First Nations and Northern Statistics Section, Corporate Information Management Directorate, Information Management Branch, AANDC (2005). Basic Departmental Data (2004). Ottawa: Minister of Public Works and Government Services Canada.*

25 Children are defined as being between the ages of one to six. In this report, some childhood indicators extend past six years.

26 Please refer to "Appendix A: Methodology" and "Appendix B: Data Sources and Limitations" for more detail.

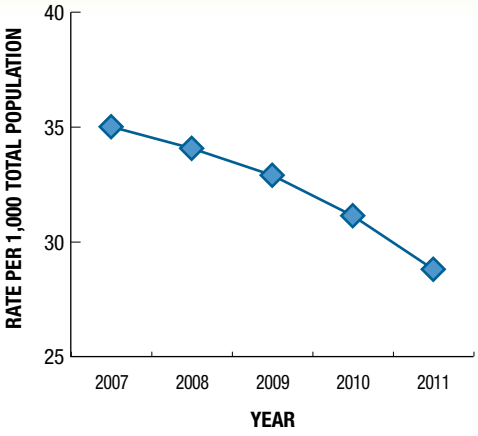
27 Government of Alberta, Alberta Health. (2012). Unpublished raw data.

Fertility

The fertility of a population refers to its birth rates and is important for planning services that target mothers, infants and children. From 2001 to 2006, the crude birth rates for First Nations individuals registered to bands in Alberta, regardless of residency, were stable, between 31.8 and 33.9 live births per 1,000 total population (including males and females of all ages). From 2007 to 2011, the crude birth rates declined from 34.9 to 28.7 live births per 1,000 total population (Figure 2.2).

The standardized general fertility rates followed a similar pattern from 2001 to 2011. From 2001 to 2006, the standardized general fertility rates remained stable among First Nations women of childbearing age in Alberta.[28] From 2007 to 2011, they significantly declined.

FIGURE 2.2 Crude birth rates among the total First Nations population in Alberta, 2007–2011

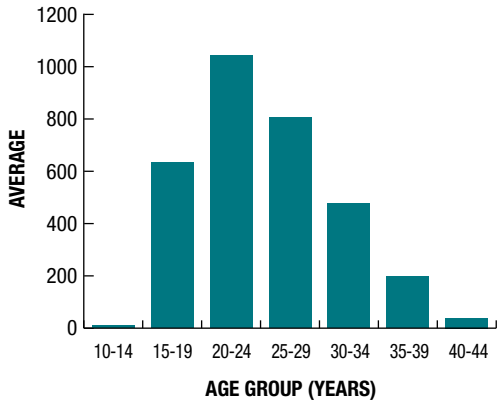


	2007	2008	2009	2010	2011
Rate	34.9	34.0	32.8	31.1	28.7

Source: *AANDC-Indian Registry System as of December 31 of the appropriate year & Alberta Health*

Together, the crude birth rates and standardized general fertility rates indicate that the fertility of the First Nations population registered to bands in Alberta, regardless of residency, was stable between 2001 and 2006 and declined between 2007 and 2011. This finding is consistent with the trend observed in the population pyramid presented in the "Demographics" section (see Figure 1.2). The First Nations population in Alberta is thus experiencing declining birth rates and slowing population growth.

FIGURE 2.3 Average number of births per year by maternal age group among First Nations in Alberta, 2001-2011



	10-14	15-19	20-24	25-29	30-34	35-39	40-44
Births	10.2	633.6	1043.8	806.6	477.4	198.5	38.7

Source: *Government of Alberta, Alberta Health*

Age Distribution of Parents

From 2001 to 2011, the age distribution of first-time First Nations parents in Alberta was stable. The average age of first-time First Nations mothers was 21.1 years and of first-time First Nations fathers was 24.4 years. For all births between 2001 and 2011, the most common maternal age peaked within the 20- to 24-year-old age group (see Figure 2.3).

For a comparison of births by maternal age group among First Nations and non-First Nations women in Alberta, see page 76.

28 Standardized to the 2006 Canadian population.

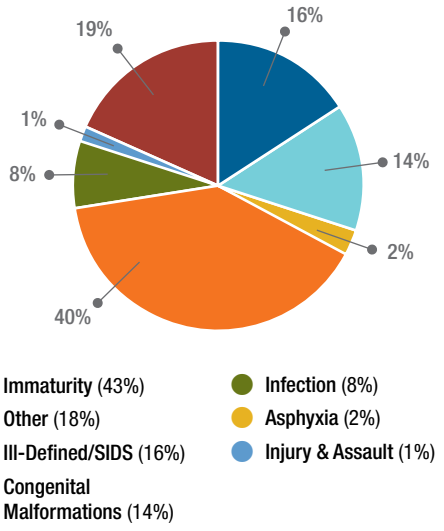
Morbidity and Mortality

Mortality rates describe the relative frequency of death within some specified interval of time in a specific population. These rates help public health planners to identify the most frequent causes of death in order to implement health interventions. The annual crude mortality rate in 2011 for First Nations in Alberta was 7.2 per 1,000 population.[29]

From 2001 to 2011, the rate of maternal mortality (death) during some phase of childbearing was 5.7 per 100,000 deliveries. This low rate is a result of factors such as access to health care, prenatal care, health professionals during delivery, and safe therapeutic abortion services.

From 2001 to 2011, the average rate of infant mortality among First Nations infants in Alberta between birth and one year of age was 11.5 deaths per 1,000 live births. This rate varied considerably (range = 8.4 to 13.7 deaths per 1,000 live births) but did not increase or decrease significantly.[30]

FIGURE 2.4 Causes of death among First Nations infants in Alberta, 2001–2011



Source: *Government of Alberta, Alberta Health* n = 407

The most commonly reported cause of death among First Nations infants in Alberta is immaturity (40%) (Figure 2.4).[31] Prenatal care, smoking cessation, and abstinence from alcohol and drugs during pregnancy are some of the interventions that reduce the risk of immaturity.

The second leading cause of infant death is Ill-defined/Sudden Infant Death Syndrome (SIDS) (16%). SIDS deaths alone accounted for 11% of all infant deaths from 2001 to 2011. Targeted interventions are needed to inform parents about protective factors associated with reductions in SIDS deaths: breastfeeding, placing infants to sleep on their backs and cessation of maternal smoking during pregnancy.[32]

For a comparison of infant mortality rates among First Nations and non-First Nations in Alberta, see page 85.

29 Please refer to the *First Nations Health Status Report – Alberta Region 2010–11* for detailed information, including mortality and leading causes of death.

30 $\rho(9) = 0.26$, $p = 0.43$.

31 Examples include but are not limited to disorders of the newborn related to length of gestation and fetal growth and respiratory and cardiovascular disorders specific to the perinatal period.

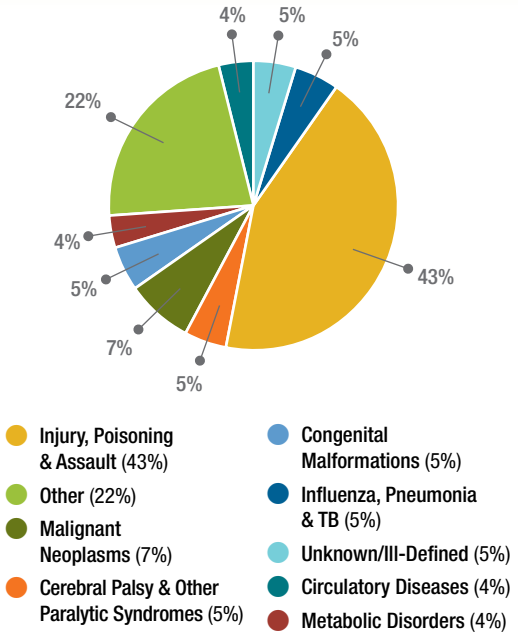
32 Gilbert, N. et al. (2012). Temporal trends in sudden infant death syndrome in Canada from 1991 to 2005: Contribution of changes in cause of death assignment practices and in maternal and infant characteristics. *Paediatric and Perinatal Epidemiology, 26,* 124-130.

From 2001 to 2011, the average child mortality rate, or deaths occurring in children between the ages of one and six years, was 70.4 deaths per 100,000 population per year. This rate varied considerably over time (ranging from 39.1 to 99.8 deaths per 100,000 population per year) but did not increase or decrease significantly.[33] The causes of these deaths are shown in Figure 2.5. The most commonly reported cause of death in children is accidental injury[34], poisoning and assault (43%).

Importantly, many of these deaths can be avoided with appropriate public health interventions, such as childproofing the home and providing appropriate child restraints in vehicles.

For a comparison of child mortality rates among First Nations and non-First Nations children in Alberta, see page 86.

FIGURE 2.5 Causes of death among First Nations children in Alberta, 2001–2011



Source: *Government of Alberta, Alberta Health* n = 81

Preconception

Family planning is an essential component of primary health care and reproductive health. Effective family planning reduces maternal and newborn morbidity and mortality as well as the transmission of STIs, particularly HIV.[35]

Contraception

Contraception allows women to plan their family and prevent unwanted pregnancy. The Non-Insured Health Benefits (NIHB) Drug Utilization Database indicates that the amount paid for contraception from 2001 to 2011 increased 97%.[36, 37] The main contributor to this trend is increased use of intrauterine devices (IUDs) and intrauterine systems (IUSs)[38]. IUDs and IUSs are classified as a long-term form of contraception and are effective for up to five years. In Alberta, First Nations women between the ages of 15 and 19 years have demonstrated the greatest increase in IUD and IUS use.[39]

33 $\rho(9) = -0.15$, $p = 0.67$.

34 Examples include but are not limited to pedestrians injured in transport accidents, car occupants injured in transport accidents, land transport accidents.

35 World Health Organization (2012). *Family planning.* Retrieved from http://www.who.int/mediacentre/factsheets/fs351/en/index.html

36 $\rho(9) = 0.99$, $p = 0.00$.

37 Please interpret amount paid for contraception as a proxy for contraception use with caution. Other factors can influence the cost of pharmacy items; however, this data does not capture pharmacy items that are paid for by the client or other benefits programs, or provided at Health Centres or in physician offices.

38 An intrauterine system is a contraceptive device that contains the hormone progestogen.

39 Health Canada. (2010). *Trends in contraception use in Alberta First Nations women aged 15 to 44: Preliminary findings* [unpublished report].

Therapeutic Abortion

Access to safe therapeutic abortions contributes to low maternal mortality rates.[40] Between 2001 and 2011, the crude abortion rate increased from 37.6 to 44.2 therapeutic abortions per 1,000 population among First Nations women in Alberta.[41] The age-specific therapeutic abortion rate was consistently highest among First Nations women between the ages of 20 and 24 years in Alberta.

The increasing use of long-term contraception methods and therapeutic abortions is consistent with the finding that the fertility rate is declining in the First Nations population residing on-reserve in Alberta. Increased maternal education is consistently correlated with increased contraception use and smaller family size. Decreased fertility among First Nations in Alberta could be linked to increased pursuit of further education by First Nations women.

Pregnancy

Prenatal care involves promoting health during pregnancy in order to reduce maternal and infant mortality and morbidity. Beginning from conception, parents have a profound impact on the healthy growth and development of their child.[42]

> Children are held in the highest regard; they are considered the greatest gift from the creator.
>
> - First Nations Maternal and Child Health Family Visitor

Examples of efforts that promote and support the health of mother and unborn child during pregnancy are the Parent-Child Advocacy Program (FASD prevention), the Canada Prenatal Nutrition Program – First Nations and Inuit Component, the Aboriginal Diabetes Initiative and Maternal and Child Health visitations.

40 World Health Organization (2012). *Family planning.* Retrieved from http://www.who.int/mediacentre/factsheets/fs351/en/index.html

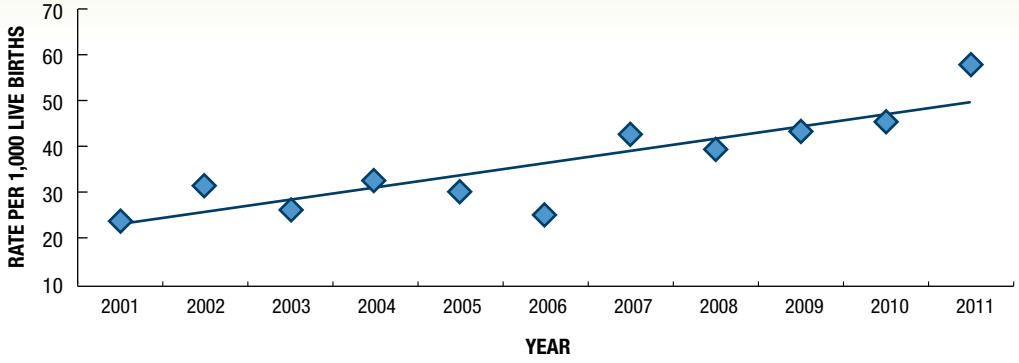
41 When standardized, this increase was found to be statistically significant. Standardized to the 2006 Canadian population.

42 Berk, L. E., & Roberts, W. (2008). *Child Development* (3rd Canadian ed.). Toronto: Pearson Education Canada.

Gestational Diabetes

Pregnant women with gestational diabetes are at an increased risk of pre-eclampsia and delivering infants who are large for their gestational age. The rate of pregnant First Nations women in Alberta with diabetes complications during pregnancy increased drastically between 2001 and 2011, by 149% (Figure 2.6).[43] The age-specific rate was consistently highest in women aged 40–44 years (averaging 174 cases per 1,000 live births).

FIGURE 2.6 Rate of First Nations women in Alberta experiencing diabetes complications during pregnancy, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Rate	23.3	31.4	26.1	32.1	29.7	25.4	42.6	40.5	44.1	45.4	58.1

Source: *Government of Alberta, Alberta Health*

Gestational diabetes is best managed by improving diet—including reducing sugars and simple carbohydrates and following a balanced eating plan with fruits, vegetables and whole-grain cereals—and increasing physical activity. Medical practitioners should follow up with women with gestational diabetes after delivery, as they are at an increased risk for developing Type 2 diabetes.

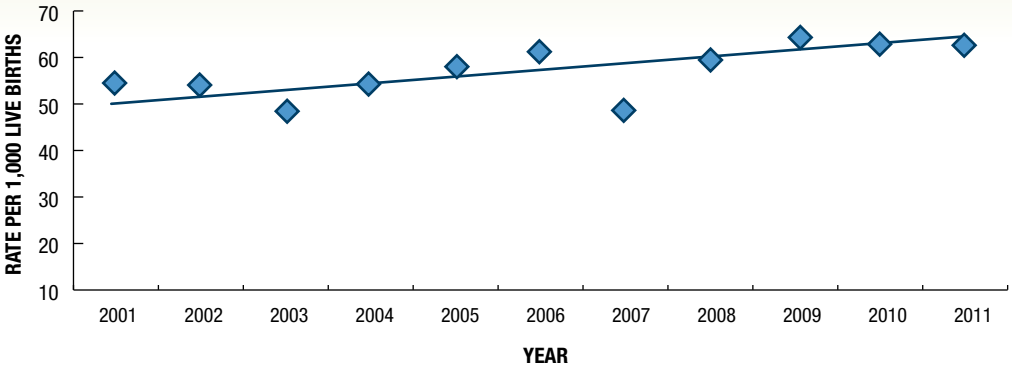
For a comparison of gestational diabetes rates among First Nations and non-First Nations women in Alberta, see page 77.

43 $\rho(9) = 0.85$, $p = 0.00$.

Hypertension

During pregnancy, a blood pressure of 140/90 mmHg or higher is considered abnormally elevated and is associated with an increase in perinatal mortality and morbidity. It is most likely caused by pre-eclampsia, the new onset of hypertension during pregnancy that resolves within a few weeks after delivery. The rate of pregnant First Nations women in Alberta with hypertension complicating their pregnancy significantly increased by 14% between 2001 and 2011 (Figure 2.7).[44] Overall, 40% of these cases were due to pre-eclampsia.[45] The age-specific case rate was consistently highest in women over the age of 35 (averaging 116.5 cases per 1,000 live births).

FIGURE 2.7 Rate of First Nations women in Alberta experiencing hypertension complications during pregnancy, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Rate	55.1	53.9	48.3	54.2	57.8	60.9	48.5	59.3	63.8	62.7	62.4

Source: *Government of Alberta, Alberta Health*

For a comparison of rates of hypertension complications during pregnancy among First Nations and non-First Nations women in Alberta, see page 78.

Smoking[46]

More than half (53%) of all pregnant First Nations women registered to bands in Canada living on-reserve reported never smoking during their pregnancy. Of the women who did report smoking during pregnancy (47%), nearly half reported smoking daily, while the other half reported occasional smoking. Forty per cent of women reported environmental exposure to smoke within their household during pregnancy. Maternal smoking among First Nations has been associated with lower levels of education and income, having at least one parent or grandparent who attended residential school, household crowding and living in a remote community.[47] Eliminating exposure to smoke during pregnancy is a key preventative strategy to help reduce the rate of SIDS deaths in infancy.

44 $\rho(9) = 0.73$, $p = 0.02$.

45 Other causes of hypertension during pregnancy include chronic hypertension, gestational hypertension or renal disease.

46 Only limited data is available specific to smoking during pregnancy among First Nations in Alberta.

47 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

Fetal Alcohol Spectrum Disorder

Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term that refers to a lifelong disability resulting from prenatal exposure to alcohol. Exposure to alcohol during pregnancy is the main risk factor for developing FASD. A history of maternal alcohol consumption is currently the best screening tool available for identifying FASD cases. There are currently no population-based estimates for First Nations children with FASD in Canada or Alberta.[48]

In Alberta, since 2005, the FASD Mentoring Program has been active in seven First Nations communities: Blood Tribe, Tsuu T'ina, Enoch, Samson, Ermineskin, O'Chiese and Saddle Lake. This evidence-based program is a three-year home visitation initiative targeting high-risk alcohol- or drug-abusing women via multidisciplinary intervention efforts.[49] The three specific objectives of the FASD Mentoring Program are to prevent future FASD and drug-exposed births, improve the quality of life of individuals already affected by FASD, and reduce the impact of FASD on the quality of life of affected children and their families through early diagnosis. Early diagnosis allows supports to be offered as soon as possible to the child and family.

Of First Nations women in Alberta who gave birth between 2001 and 2011, nearly 98% did so with the aid of an attending physician.

Birth

In order to access health services, many First Nations women give birth in an urban centre, away from home and family support. Childbirth can be a difficult time for women, and First Nations communities have made efforts to reintroduce traditional ceremonies, language and knowledge in order to return the birthing process to a community-based celebration.[50]

Attendant of Birth

Of First Nations women in Alberta who gave birth between 2001 and 2011, nearly 98% did so with the aid of an attending physician.[51] Registered nurses were the second most common attendants of birth (1.0%), followed by midwives (0.7%).[52]

48 Janet Smiley In Jonsson, E., Dennett, L., and Littlejohn, G. (2009) *Fetal Alcohol Spectrum Disorder (FASD): Across the Lifespan.* Institute of Health Economics. Edmonton: Author.

49 Grant, T. M. (2010). *Parent-child assistance program: A model of effective community intervention with high-risk families.* Seattle: University of Washington.

50 Health Council of Canada. (2011). *Understanding and improving Aboriginal maternal and child health in Canada*. Retrieved from http://publications.gc.ca/collections/collection_2011/ccs-hcc/H174-23-2011-eng.pdf

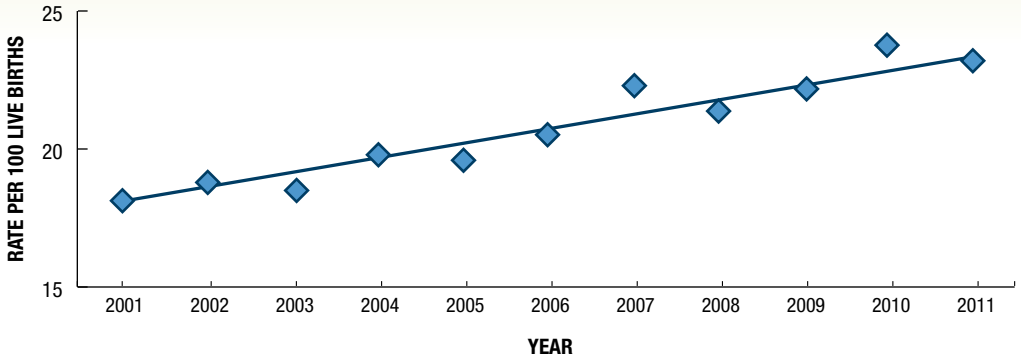
51 Attendant information excluded for 2002 and 2006 due to missing information.

52 Government of Alberta, Alberta Health. (2012). Unpublished raw data.

Types of Birth

Over 99% of First Nations women in Alberta who gave birth between 2001 and 2011 did so in a hospital setting. While most (79%) of these deliveries were vaginal,[53] Caesarean deliveries increased significantly, by 28%.[54] The proportion of Caesarean deliveries in First Nations women in Alberta increased from 18.1 to 23.7 per 100 live births (Figure 2.8). The age-specific Caesarean proportion was highest among women over the age of 35 (averaging 28.6 Caesarean deliveries per 100 live births).

FIGURE 2.8 Rate of Caesarean delivery among First Nations mothers in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Rate	18.1	18.7	18.5	19.7	19.4	20.5	22.3	21.3	22.1	23.7	23.2

Source: *Government of Alberta, Alberta Health*

For a comparison of rates of Caesarean delivery among First Nations and non-First Nations women in Alberta, see page 79.

Primary Care Networks have partnered with Alberta Health Services and FNIHB to provide several First Nations communities with holistic and culturally sensitive midwifery services at their community health centres. The initiative was acknowledged as a promising practice by the Health Council of Canada in 2011.

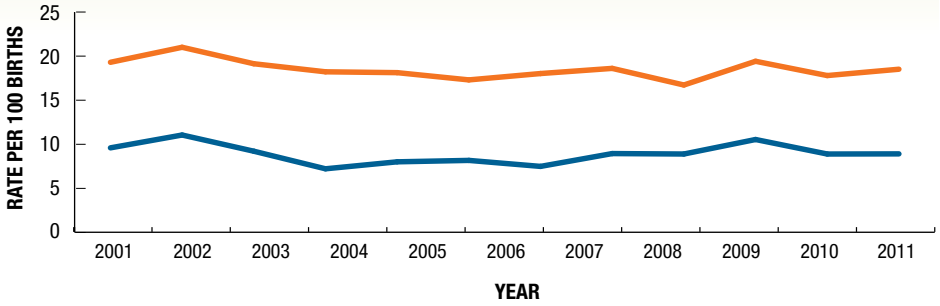
53 Includes normal and assisted deliveries.

54 $\rho(9) = 0.95$, $p = 0.00$.

Gestational Age

Gestational age refers to the age of a newborn infant; a normal pregnancy lasts between 38.0 and 42.0 weeks. Pregnancies lasting less than 37 weeks are considered premature, and pregnancies lasting longer than 42 weeks are considered post-mature. From 2001 to 2011, the average gestational age of First Nations infants in Alberta was 38.7 weeks (range = 38.5 to 38.9 weeks).[55] During the same period, the rate of First Nations infants being born small for gestational age[56] in Alberta was 8.9 per 100 live births (range = 7.2 to 11.1 per 100 live births) (Figure 2.9). The rate of First Nations infants being born large for gestational age[57] in Alberta was 18.5 per 100 live births (range = 17.3 to 21.0 per 100 live births).

FIGURE 2.9 Small and large for gestational age rates among First Nations infants in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Large for Gestational Age	19.3	21.0	19.1	18.2	18.1	17.3	18.0	18.6	16.7	19.4	17.8
Small for Gestational Age	9.6	11.1	9.2	7.2	8.0	8.2	7.5	9.0	8.9	10.5	8.9

Source: *Government of Alberta, Alberta Health*

Despite the documented association between gestational diabetes and a large size for gestational age, there is no evidence that the rate of babies born large for gestational age increased from 2001 to 2011, even though there was a significant rise in diagnosed cases of gestational diabetes in this population.[58]

For a comparison of rates of infants born small and large for gestational age among First Nations and non-First Nations in Alberta, see pages 80 and 81.

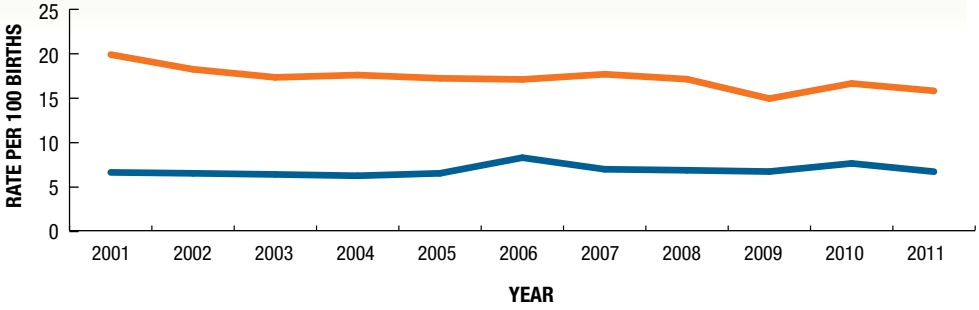
55 Government of Alberta, Alberta Health. (2012). Unpublished raw data.

56 The rate of small for gestational age births is defined as the number of live births whose birth weight is below the 10th percentile of the sex-specific birth weight for gestational age reference, expressed as a proportion of all singleton live births in a given place and time.

57 The large for gestational age rate is defined as the number of life births whose birth weight is above the 90th percentile of the sex-specific birth weight for gestational age reference, expressed as a proportion of all singleton live births in a given place and time.

58 $\rho(9) = -0.49$, $p = 0.13$.

FIGURE 2.10 Low- and high-birth-weight rates among First Nations infants in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
High Birth Rate	19.9	18.3	17.4	17.6	17.3	17.1	17.7	17.2	15.0	16.7	15.8
Low Birth Rate	6.6	6.5	6.4	6.2	6.5	8.3	7.0	6.8	6.7	7.6	6.7

Source: *Government of Alberta, Alberta Health*

Birth Weight

From 2001 to 2011, the average birth weight of a First Nations infant was 3.4 kg (range = 3.4 kg to 3.5 kg). From 2001 to 2011, the average low-birth-weight rate[59] for First Nations infants born in Alberta was 6.8 low-birth-weight infants per 100 live births per year (range = 6.2 to 8.3 low-birth-weight infants per 100 live births per year) (Figure 2.10). The average high-birth-weight rate[60] for First Nations infants born in Alberta was 17.3 high-birth-weight infants per 100 live births per year (range = 15.0 to 20.0 high-birth-weight infants per 100 live births per year).

For a comparison of low- and high-birth-weight rates among First Nations and non-First Nations in Alberta, see pages 82 and 83.

Mother-to-Child Transmission

Mother-to-child transmission, or vertical transmission, is the transfer of infection or disease from mother to infant during the perinatal period.[61] Chlamydia, gonorrhea, syphilis and HIV are all tested for routinely during pregnancy, as well as upon request.[62] Treatment is offered in order to address the infection in the mother as well as prevent transmission to the infant.

From 2007 to 2010, the rate of vertical transmission of chlamydia among First Nations women living on-reserve in Alberta was 1.4 per 10,000 live births. The rate of vertical transmission of syphilis was 2.2 per 10,000 live births. HIV and gonorrhea were not transmitted vertically in pregnancy during this period in the First Nations population on-reserve in Alberta—a great success story. Communities and leadership must continue to promote and support the screening and treatment of pregnant women by health centre staff to ensure that these low rates continue.

59 Infants weighing less than 2.5 kg are classified as having a low birth weight.

60 Infants weighing more than 4.0 kg are classified as having a high birth weight.

61 The perinatal period extends from the 28th week of gestation to the 28th day after birth.

62 Syphilis is tested for three times during pregnancy because of the high likelihood of reinfection.

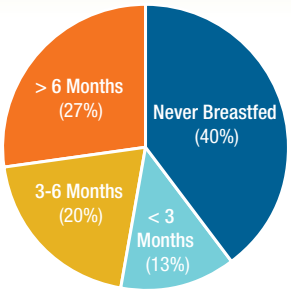
Infancy

During the first year of life, an infant's neural pathways for vision, hearing, language and even higher cognitive functioning are in the prime developmental stages. Infancy is the most important time for parents to provide a healthy environment with adequate nutrition, free from contaminants, and plenty of positive social interaction.[63]

Breastfeeding[64]

Breast milk is considered the best source of nutrition for an infant and is associated with a reduced risk of SIDS during infancy. Sixty per cent of First Nations mothers living on-reserve in Canada report initiating breastfeeding (Figure 2.11). This proportion did not change between 2003 and 2010.[65] First Nations mothers who reported breastfeeding for more than six months were more likely to be over the age of 35, have achieved more education, live in larger communities and not smoke during pregnancy than mothers who did not initiate breastfeeding.[66]

FIGURE 2.11 Breastfeeding among First Nations mothers in Canada, 2008–2010



Source: *FNIGC, First Nations Regional Longitudinal Health Survey (RHS) 2008/10*

I was able to present all of the positive aspects of breastfeeding, and both parents completely changed their attitudes and were committed to breastfeeding their new baby.

- First Nations Maternal and Child Health Family Visitor

Prenatal care, the Canada Prenatal Nutrition Program – First Nations and Inuit Component (CPNP-FNIC), and the Maternal and Child Health Program help new parents understand the health benefits breastfeeding has for both mothers and babies. Maternal and Child Health Family Visitors attest that they have been able reduce social stigma and change negative attitudes toward breastfeeding by presenting its many advantages to expecting couples.

63 Alberta Health and Wellness, Office of the Chief Medical Officer of Health. (2011). Let's talk about the early years. Edmonton: Government of Alberta.

64 Only limited data is available specific to breastfeeding rates among First Nations in Alberta.

65 First Nations Information Governance Centre. (2012). First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities. Ottawa: Author.

66 Ibid.

Immunization

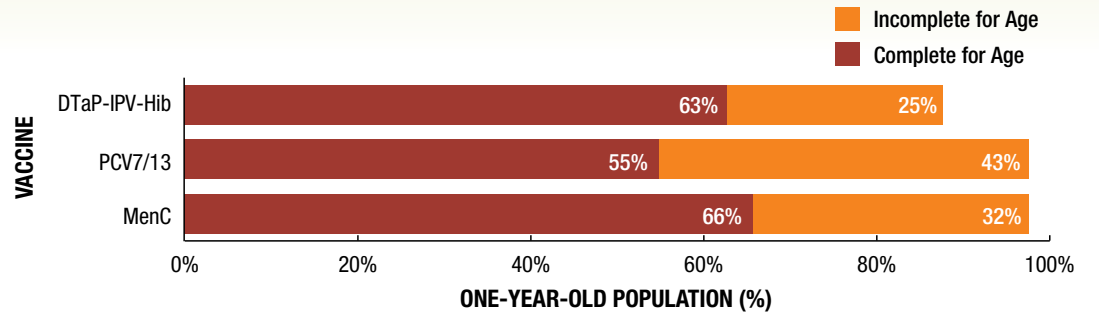
Immunization protects individuals and communities against many communicable diseases. The recommended immunization schedule is designed to provide vaccinations when individuals are at the greatest risk of being exposed to certain diseases and serious related complications. It has been developed taking into consideration the maturity of the immune system. While incomplete immunization provides some protection against disease, the target for completing the series according to the recommended immunization schedule is 97% of a population in order to provide the best protection.

The Alberta immunization schedule recommends the following immunizations before a child reaches one year of age:

- Three doses of diphtheria, tetanus, pertussis, polio and Haemophilus influenzae type b (DTaP-IPV-Hib) vaccine[67]
- Three doses of pneumococcal conjugate-7/13 (PCV7/13) vaccine
- Two doses of meningococcal type C (MenC) vaccine

The rates of coverage for the complete series of recommended immunizations, or complete for age, for one-year-old children residing on-reserve in Alberta have remained generally stable since 2005.[68] In 2011, there was a 5% decline in complete-for-age immunization coverage for DTaP-IPV-Hib, a 3% decline for PCV7/13 and a 1% increase for MenC, relative to 2010.[69]

FIGURE 2.12 Immunization coverage for one-year-old children in First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region*

67 The PVC-7 valent was used until 2009. In 2010, the PCV-13 valent was introduced.

68 *Health Canada. (2011). First Nations Health Status Report – Alberta Region 2010–11.*

69 Three doses of DTaP-IPV-Hib and PCV 13 are recommended at two, four, and six months of age, and the coverage rates should be exactly the same if immunized according to the schedule. There will be differences if immunized off schedule relating to the required number of doses for age at immunization recommendations.

Childhood

The significant physical, cognitive, social and emotional developments that occur before the age of six influence not only children's immediate health but also the quality of life they experience throughout their lifetime.[70]

First Nations Language and Parenting

Among First Nations primary caregivers registered to bands in Canada living on-reserve, most (93%) believe that it is important for their child to learn a First Nations language.[71] This proportion is 24% higher than the proportion of primary caregivers reporting that it was important for their child to learn a First Nations language living off-reserve.[72] Grandparents are cited as the most important source of cultural knowledge, followed by parents, aunts and uncles, and school teachers.[73] Thirty-six per cent of all First Nations children registered to bands in Canada living on-reserve participated in the Aboriginal Head Start On-Reserve (AHSOR) Program. Children who participated in this program are more likely to speak or understand a First Nations language than those who did not attend.[74] Exposure to an Aboriginal preschool program off-reserve is far less common.[75] Language and cultural continuity are strong predictors of First Nations individual, family and community well-being.

Our traditions are healing families.

- First Nations Maternal and Child Health Family Visitor

Aboriginal Literacy and Parenting Skills programs and Traditional Parenting courses are offered through the Maternal and Child Health Program in several First Nations communities throughout Alberta. Though the structure of these classes varies from community to community, they typically cover topics such as:

- Exploring values
- Strengths of family
- Dreams, hopes and goals
- Connecting with the past
- Self-care
- Accessing health services

70 Alberta Health and Wellness, Office of the Chief Medical Officer of Health. (2011). *Let's talk about the early years*. Edmonton: Government of Alberta.

71 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

72 Statistics Canada. (2010). *Profile of Aboriginal children, youth and adults.* Retrieved from http://www12.statcan.ca/census-recensement/2006/dp-pd/89-635/

73 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

74 Ibid.

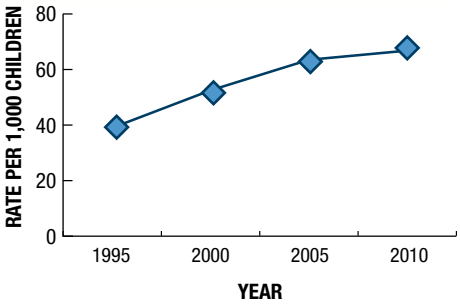
75 Bougie, E. (2009). *Aboriginal Peoples Survey, 2006: School experiences of off-reserve First Nations children aged 6 to 14.* Ottawa: Statistics Canada.

Children in Care

In Alberta, the Ministry of Children and Youth Services has formally identified the overrepresentation of Aboriginal children in care as a high priority that will require new strategies that are sensitive to the history of colonization and residential schools.[76]

In Alberta, as of March 2011, Aboriginal children represented less than 10% of the total provincial population but 67% of the children in care.[77, 78] The rate of Aboriginal children in care in Alberta has increased from 39 to nearly 67 Aboriginal children in Ministry care for every 1,000 Aboriginal children (Figure 2.13).[79]

FIGURE 2.13 Aboriginal children under Ministry of Children and Youth Services care in Alberta, 1995–2010



	1995	2000	2005	2010
Rate	39.0	52.5	63.5	66.8

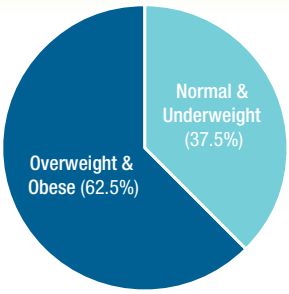
Source: *Government of Alberta, Ministry of Children and Youth*

Nutrition and Body Mass Index

Nutrition is a crucial component of healthy child development. At six months of age, infants require the nutritional diversity of solid foods, in addition to breast milk, and by one year of age, their diets should include a balance of all the basic food groups.[80]

Body mass index (BMI) is an estimate of body fat and is based on weight and height. The categories are age- and sex-specific and include underweight, normal, overweight and obese. First Nations children[81] registered to bands in Canada living on-reserve are more likely to be categorized as overweight or obese (63%) than normal or underweight (38%) (Figure 2.14).[82]

FIGURE 2.14 BMI classification of First Nations children registered to bands in Canada, 2008–2010



Source: *FNIGC, First Nations Regional Longitudinal Health Survey (RHS) 2008/10*

76 Government of Alberta. (2012). *Child & youth advocate: 2010–11 annual report.* Retrieved from http://advocate.gov.ab.ca/home/documents/AR2010to2011.pdf

77 Aboriginal Affairs and Northern Development Canada. (2010). Implementation Evaluation of the Enhanced Prevention Focused Approach in Alberta for the First Nations Child and Family Services Program. Retrieved from http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/aev_pubs_ev_fcf_1324061826904_eng.pdf

78 Government of Alberta. (2012). *Child & youth advocate: 2010–11 annual report.* Retrieved from http://advocate.gov.ab.ca/home/documents/AR2010to2011.pdf

79 $\rho(2) = 1.00$, $p = 0.08$.

80 Berk, L. E., & Roberts, W. (2008). Child Development (3rd Canadian ed.). Toronto: Pearson Education Canada.

81 In this study, children were aged 2–11 years.

82 First Nations Information Governance Centre. (2012). First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities. Ottawa: Author.

The Good Food Box initiative has been adopted by several First Nations communities in Alberta. The Good Food Box encourages healthy eating by making a variety of fresh, nutritious fruits and vegetables more easily accessible to communities. Foods are purchased in bulk from a supplier in order to receive a better price. Then the food is packed and picked up or delivered by workers and volunteers to community members who place orders.

This high proportion of First Nations children categorized as overweight or obese is alarming, as more than 80% of overweight children become overweight adults. Overweight and obese status is an underlying risk factor for cardiovascular disease, Type 2 diabetes, gallbladder disease, some forms of cancer and premature death. There is no established genetic contribution to obesity; the most consistent and strongest correlate of obesity is low socioeconomic status. The most effective ways to treat childhood obesity are family-based interventions that communicate nutrition information and the importance of regular physical activity.[83]

Environmental Health in Daycares and AHSOR Facilities

From April 1, 2009, to March 31, 2012, 287 inspections of 60 daycares and 118 inspections of 35 AHSOR facilities in First Nations communities were conducted in Alberta. Most (80%) of these inspections were routine and were carried out in accordance with the Alberta Public Health Act's standards and regulations. The act and its supporting regulations are used as guides for minimum requirements to protect the health and safety of children in these facilities.[84]

Infection Control

A number of measures necessary for maintaining environmental health relate to infection control. The most common deficiencies related to infection control in daycares and AHSOR facilities were as follows (Figure 2.15):

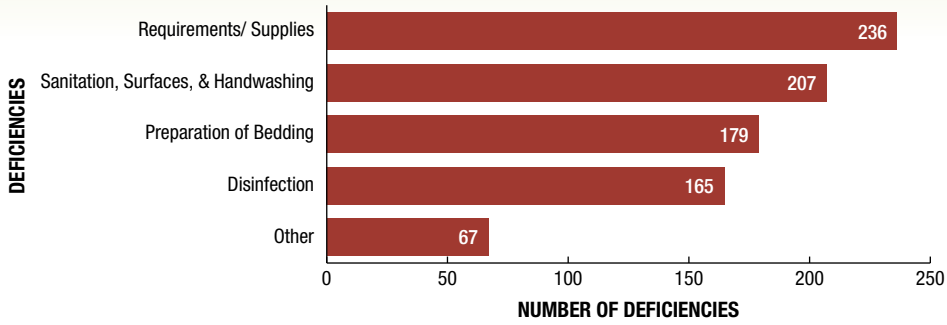
- Shortages in diapering and hand sink supplies (236 observations). Necessary supplies include an accessible handwash sink supplied with warm water, soap and paper towel.
- Inadequate sanitation, surfaces and handwashing (207 observations). Areas must be kept tidy to allow proper cleaning. Surfaces must not be cracked, chipped or otherwise damaged, because such damage prevents thorough sanitizing. Handwashing must be performed as needed.

83 Berk, L. E., & Roberts, W. (2008). Child Development (3rd Canadian ed.). Toronto: Pearson Education Canada.

84 This data relates only to observed deficiencies associated with infection control and does not represent all observations made during this time period.

- Improper preparation of bedding or storage (179 observations). Sleeping mats and bedding should be washed daily or stored so that dirty mats and bedding do not touch other mats and bedding.
- Inadequate disinfection practices (165 observations). Sanitizer spray bottles should be available in each room to allow for easy sanitization of spills and accidents. Spray solutions should be mixed to the appropriate concentration and changed as needed.

FIGURE 2.15 Infection control deficiencies observed at daycares and AHSOR facilities in First Nations communities in Alberta, 2009–2012



Source: *Health Canada, FNIHB – Alberta Region*

In Alberta, First Nations communities are encouraged to contact their Environmental Health Officer to discuss proper diapering procedures and any other infection control practices.

Mould

Allergies and asthma are the most commonly diagnosed health conditions among First Nations children registered to bands in Canada living on-reserve.[85] Poor infrastructure, such as inadequate ventilation, inadequate insulation and leaking plumbing, in addition to high humidity, can result in mould growth that can aggravate symptoms in children.[86, 87] From April 1, 2009, to March 31, 2012, fewer than 5% of inspections identified mould growth in the daycares and AHSOR facilities. It is important to repair leaking plumbing, address landscaping and drainage issues, and maintain air handling units in order to prevent mould growth in these facilities.

85 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

86 Strachan, D. P. (2000). The role of environmental factors in asthma. *British Medical Bulletin, 56*, 865-882.

87 Lawrence, R., & Martin, D. (2001). Moulds, moisture and microbial contamination of First Nations housing in British Columbia, Canada. *International Journal of Circumpolar Health. 60,* 150-156.

Preschool Tuberculosis Screening Program

Tuberculosis (TB) is a bacterial infection that is transmitted through coughing. TB infection usually remains inactive; however, the risk of developing the active disease is highest in children under the age of three years. Preschool TB screening was conducted in 30 First Nations communities in Alberta in 2011. Of the 361 preschool children who received the tuberculin skin test (TST), there were no positive reactions (0%). This is an excellent finding as it strongly indicates that robust contract-tracing investigations carried out by community staff are detecting infected children with consistent success. The proportion of children who received the TST (20%) from the pool of eligible children is consistent with previous years.[88]

Immunization

The following section reports on vaccinations delivered in preschool and during the school years. While incomplete immunization provides some protection against disease, the target for completing the series according to the recommended immunization schedule is 97% of a population in order to provide the best protection. For information about immunization coverage in infancy, please see page 27.

Two-Year-Olds

Before a child reaches two years of age, the Alberta immunization schedule recommends the following immunizations:

- Four doses of DTaP-IPV-Hib vaccine
- Three doses of meningococcal type C (MenC) vaccine
- Four doses of pneumococcal conjugate-7/13 (PCV7/13) vaccine[89]
- One dose of measles, mumps, rubella (MMR) and varicella/chickenpox (VZV) vaccine[90]

The rates of coverage for the complete series of recommended immunizations or complete for age, for two-year-old children residing on-reserve in Alberta have remained generally stable since 2005.[91] The coverage rates for DTaP-IPV increased 1%, Hib increased 6%, PCV7/13 increased 13%, MenC increased 12%, and MMR and VZV increased 5%, relative to 2010.

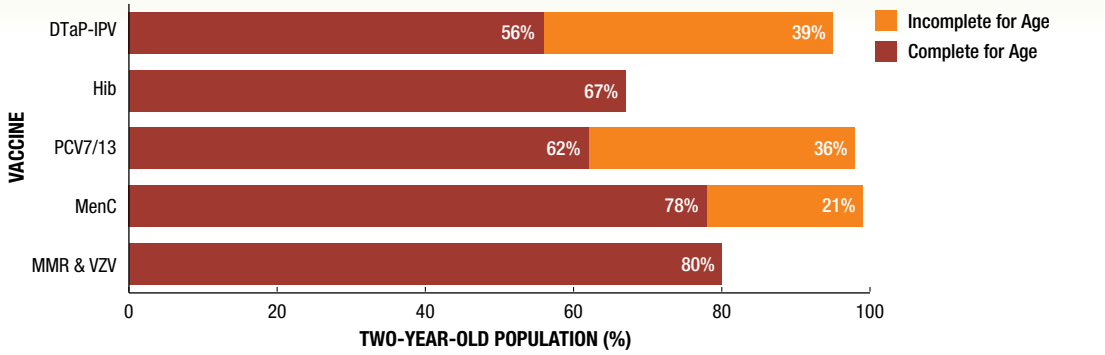
88 Ibid.

89 The PVC-7 valent was used until 2009. In 2010, the PCV-13 valent was introduced.

90 The measles, mumps, rubella (MMR) and varicella/chickenpox (VZV) vaccines were combined in 2011.

91 Health Canada. (2011). *First Nations Health Status Report – Alberta Region 2010–11.*

FIGURE 2.16 Immunization coverage rates for two-year-old children in First Nations communities in Alberta, 2011

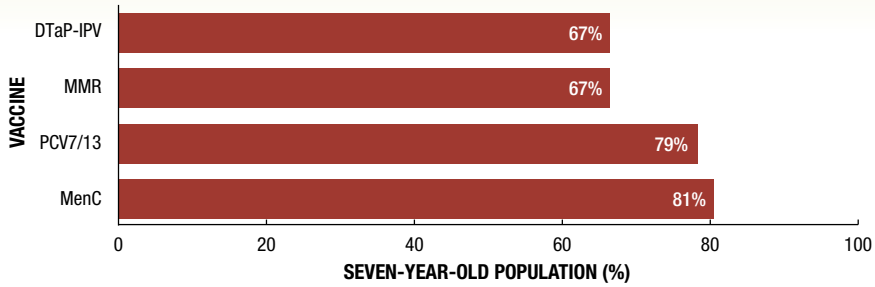


Source: *Health Canada, FNIHB – Alberta Region*

Seven-Year-Olds

Routine immunizations should be completed by age six. An assessment at seven years of age (school entry) provides a picture of the level of completion for these recommended vaccinations. Series-complete immunization coverage rates for the DTaP-IPV, MMR, PCV7/13 and MenC vaccinations in seven-year-old children residing on-reserve in Alberta have remained stable since 2010 (Figure 2.17).[92]

FIGURE 2.17 Immunization coverage rates for seven-year-old children in First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region*

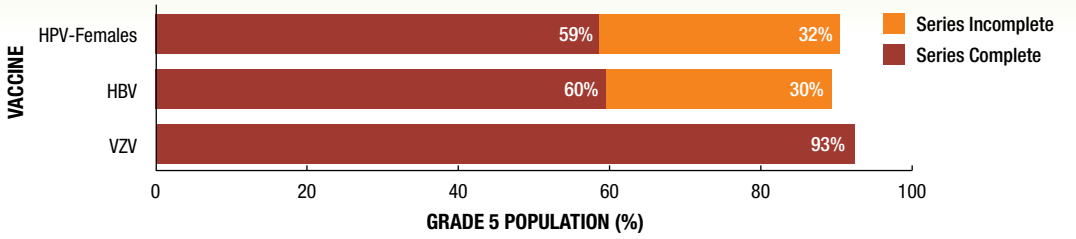
92 Ibid.

School-Age Children

During Grade 5, students attending school on-reserve are offered the hepatitis B (HBV) vaccination, and female students are also offered the human papilloma virus (HPV) vaccination. History of varicella disease and vaccination is also assessed, and VZV vaccination is offered as appropriate. The target for series-complete immunization coverage for these vaccinations is 100%.

In 2011, series-complete immunization coverage rates for HBV declined by 11%; however, series-complete immunization coverage for VZV increased 7% relative to 2010 (Figure 2.18).[93] The series-complete immunization coverage for the HPV vaccination in Grade 5 female students increased relative to 2010.[94]

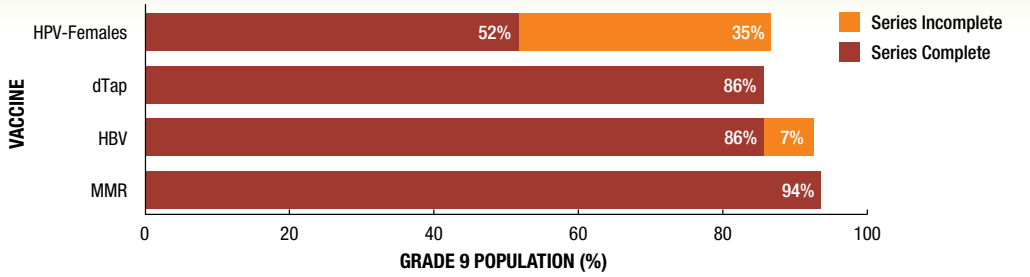
FIGURE 2.18 Immunization coverage rates for Grade 5 students in First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region*

During Grade 9, students are offered the diphtheria, tetanus and pertussis (dTap) vaccination. Female students are also offered the HPV vaccination and a final opportunity to document or complete the MMR and HBV vaccinations. Series-complete immunization coverage for HBV increased by 10%, MMR increased by 4% and dTap increased by 7% relative to 2010 (Figure 2.19).[95] The series-complete immunization coverage for the HPV vaccination in Grade 9 female students also increased relative to 2010.[96]

FIGURE 2.19 Immunization coverage rates for Grade 9 students in First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region*

93 Ibid.
94 Ibid.
95 Ibid.
96 Ibid.

Cancer

CANCER

Cancer is a group of more than 200 different diseases that are characterized by abnormal cells in the body that divide and spread without control. With scientific development and increased knowledge around infectious disease control, disease patterns have shifted from infectious to chronic diseases. Although this shift occurred over centuries in industrialized societies, for First Nations people in Canada it has unfolded quickly, over a few decades, due to the adoption of Western lifestyles.[97] It is reflected in increased rates of chronic diseases, such as cancer, in First Nations people.

The age of a population is a key factor in the prevalence of cancer. In Canada, 69% of new cases and 62% of cancer deaths occur among those 50 to 79 years of age.[98] This pattern is especially concerning among First Nations living in Alberta because the population is aging at an increasing pace (Figure 1.3). As the population becomes older, the impact of cancer becomes greater. The aging demographic, coupled with a strong presence of risk factors for cancer (for example, smoking, physical inactivity, metabolic conditions, higher levels of environmental contamination, low fruit and vegetable consumption, and poor cancer-screening practices), increases the risk of higher burdens of cancer in future generations.[99]

Cancer Trends

The most common types of cancers (neoplasms), lung, colorectal, prostate and breast, generally occur less frequently among First Nations people than among non-First Nations population while less common cancers, cervix and kidney, are reported to occur more frequently among First Nations across Canada.[100] This pattern is also seen among First Nations in Alberta.

The most common cancers diagnosed among First Nations in Alberta from 1997 to 2010 were breast, lung, colorectal and prostate. These four cancers accounted for 51% of new cancer cases and 48% of cancer deaths.

97 Young, T.K. (1994). *The Health of Native Americans: Towards a Biocultural Epidemiology.* In Assembly of First Nations. (2009). Access to cancer screening and First Nations. Retrieved from http://64.26.129.156/cmslib/general/AFN%20Cancer%20Screening%20Review-final-ENG.pdf.

98 Canadian Cancer Society's Steering Committee on Cancer Statistics. (2012). *Canadian Cancer Statistics 2012.* Toronto: Canadian Cancer Society.

99 Elias, B., Kliewer, E. V., Hall, M., Demers, A. A., Turner, D., Martens, P., Hong, S. P., Hart, L., Chartrand, C., Munro, G. (2001). The burden of cancer risk in Canada's Indigenous population: A comparative study of known risks in a Canadian region. *International Journal of General Medicine, 4,* 699-709.

100 Marrett, L. D., & Chaudhry, M. (2003). Cancer incidence and mortality in Ontario First Nations, 1968-1991. *Cancer Causes and Control, 14,* 259-268.

TABLE 3.1 Summary of rates of new cases, deaths, and stage at diagnosis of common cancers diagnosed among First Nations living in Alberta, 2010

Cancer Types	Age-Standardized Incidence Rates (per 100,000 Population)	Age-Standardized Mortality Rate (per 100,000 Population)	Cancer Stage with Greatest Percentage of Cases Diagnosed
Breast (Females Only)	102.5	22.6	Stage 1
Prostate (Males Only)	102.4	33.3	Stage 2
Lung	57.2	29.6	Stage 4
Colorectal	34.4	6.2	Stage 4
Cervical	15.4	4.7	Stage 1
Kidney	14.5	4.4	Stage 1
Stomach	11.5	6.4	Stage 4
All Cancers	342.6	123.9	N/A

Source: *Alberta Health Services, Cancer Surveillance*

In 2010, breast cancer (in females) and prostate cancer (in males) were the most common newly diagnosed cancer among First Nations in Alberta, but lung cancer topped the list among cancer-related deaths overall (Table 3.1). Despite more First Nations in Alberta being diagnosed with breast cancer than other cancers, only a small proportion are dying from this cancer. Breast and cervical screening efforts are prominent across Alberta.[101, 102] Screening programs for breast and cervical cancers can lead to cancers being diagnosed at an earlier stage.

Breast and cervical screening efforts are prominent across Alberta.

Less common cancers with a relatively poor prognosis, such as stomach cancer, have a higher rate of mortality even though they account for a small percentage of newly identified cases.[103]

Cancer Mortality (Deaths)

Cancer is the third most common cause of death among First Nations living in Alberta.[104] When examining cancer mortality, First Nations had a significantly higher cancer-related death rate than non-First Nations in the 30- to 39-year-old age group. However, among individuals over 80 years of age, the First Nations cancer-related death rate was significantly lower than non-First Nations (Health Canada, 2011).

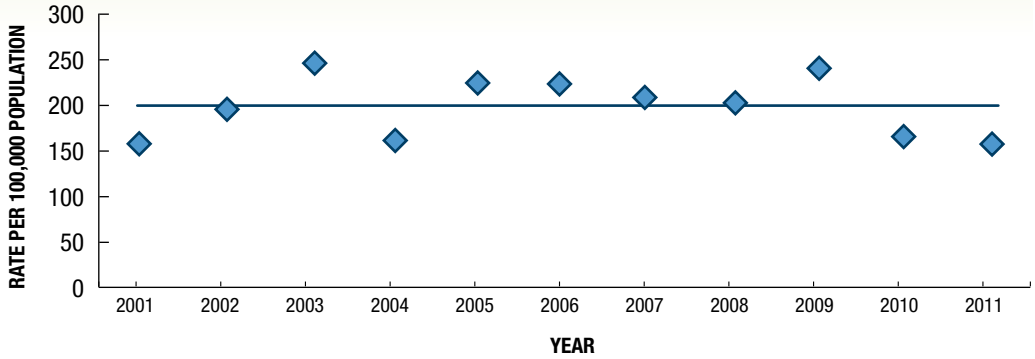
101 Alberta Health Services. (2012). *Breast cancer: At a glance.* Retrieved from http://www.screeningforlife.ca/breastcancer

102 Alberta Cancer Board. (2006). *Cancer in Alberta: A regional picture 2006.*

103 Ibid.

104 Health Canada. (2011). First Nations Health Status Report – Alberta Region 2009–10.

FIGURE 3.1 Standardized mortality rate due to cancer among First Nations individuals in Alberta, 2001–2011



Source: *Government of Alberta, Alberta Health, Interactive Health Data Application*

The rate of cancer deaths among First Nations in Alberta showed little change between 2001 and 2011 (Figure 3.1). There were 1,082 cancer deaths between 1997 and 2010. Nearly half of cancer deaths among First Nations individuals were due to the top four most commonly diagnosed cancers: lung (25%), breast (9%), colorectal (8%) and prostate (6%) cancer. Regardless of sex, lung cancer remained the leading cause of cancer deaths among First Nations.[105]

Cancer is the third most common cause of death among First Nations living in Alberta.

Sex-Specific Mortality

From 1997 to 2010, the number of cancer deaths was significantly higher than expected among First Nations males in Alberta compared to non-First Nations males; this pattern is similar among females. The year-to-year trend in standardized mortality rate increased for First Nations males (1997–2010) yet was stable for First Nations females. The standardized mortality rate for all cancers among First Nations males was almost 56% higher than for First Nations females.[106] The data suggests that First Nations males with cancer in Alberta have a poorer prognosis than First Nations females. This difference may be attributed to women accessing health care services more frequently[107] and/or differences in the types of cancers (sites) diagnosed in males and females.[108]

105 Based on crude cancer-related death rates.

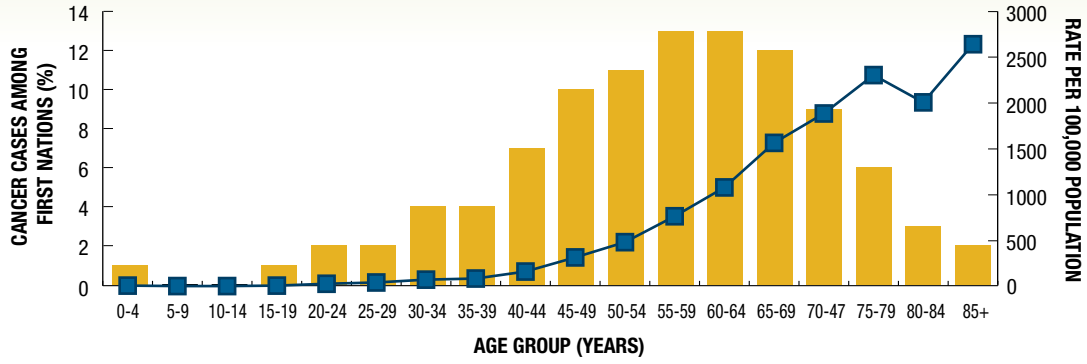
106 Based on a three year moving average between 2008–2010.

107 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

108 Survival and distribution patterns vary depending on the site of cancer.

Age Distribution of Cancer Cases

FIGURE 3.2 Age distribution of cancer cases among First Nations individuals in Alberta diagnosed between 1997 and 2010



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-47	75-79	80-84	85+
%	1	0	0	1	2	2	4	4	7	10	11	13	13	12	9	6	3	2
Rate	11.8	6.9	6.6	12.3	31.5	46.5	76.5	88.9	165.4	318.6	485.5	766.9	1,080.8	1,566.0	1,885.5	2,304.4	2,006.7	2,640.0

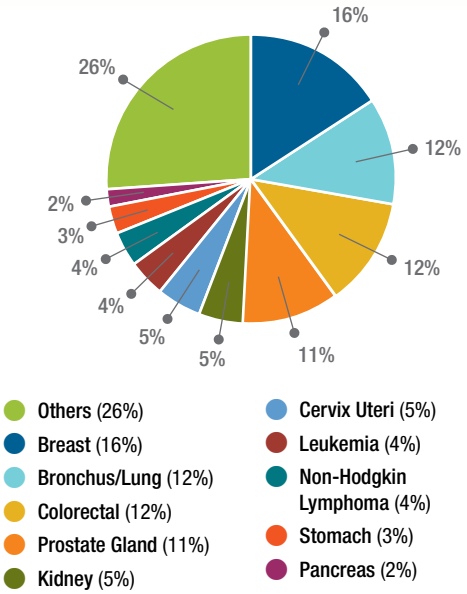
Excludes Non-Melanoma Skin Cancer
Source: *Alberta Health Services, Cancer Surveillance*

As age increases, the rate of cancer diagnosis also increases—a trend found among both First Nations and non-First Nations people living in Alberta. Around the age of 40, cancer rates increase quickly in First Nations (Figure 3.2). Screening and cancer education in the middle-age population are therefore particularly important. Around 68% of all cases occur between 45 and 74 years of age.

Cancer Incidence (New Cases)

From 1997 to 2010, there were 2,726 cancer cases diagnosed among First Nations people living in Alberta. The most common cancers diagnosed were breast, lung, colorectal and prostate, accounting for 51% of new cancers and 48% of cancer deaths (Table 3.1 and Figure 3.3). A similar pattern is reported in the non-First Nations population. While prostate cancer ranked first among all newly diagnosed cancers reported among non-First Nations, breast cancer occurred most often among First Nations individuals in Alberta.

FIGURE 3.3 New cancer cases diagnosed among First Nations living in Alberta, 1997–2010



Source: *Alberta Health Services, Cancer Surveillance* n=2726

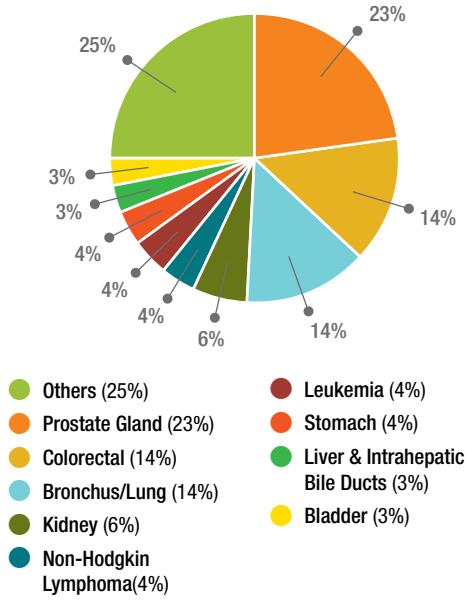
Cervical and stomach cancers were more commonly diagnosed among First Nations than non-First Nations in Alberta, being among the 10 most commonly diagnosed cancers for First Nations but not among the top 10 for non-First Nations. Overall, the number of cancer cases found in First Nations was no different than expected based on rates in non-First Nations from 1997 to 2010.[109]

Sex-Specific Incidence

No significant year-to-year change was identified in the cancer incidence rates for male and female First Nations in Alberta (1997–2010). Between 1997 and 2010, the number of cancers diagnosed among First Nations was no different than expected based on rates among non-First Nations in Alberta, with one exception: First Nations males had a significantly lower number of cases between 1997 and 2003.

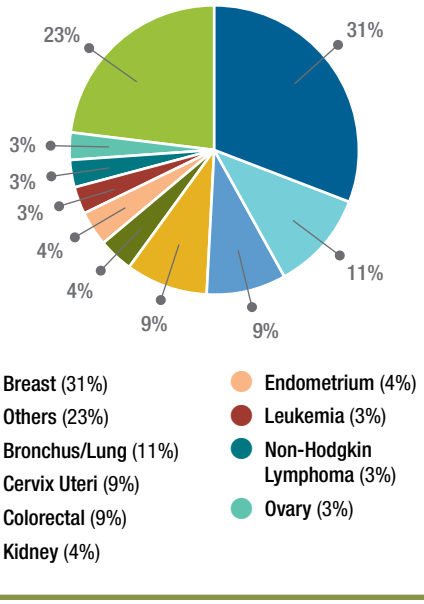
Prostate cancer was the most frequently diagnosed cancer (23% of cases) among First Nations males in Alberta (Figure 3.4) while breast cancer was the most frequently diagnosed cancer (31%) among female First Nations in Alberta (Figure 3.5).

FIGURE 3.4 New cancer cases diagnosed among First Nations males living in Alberta, 1997–2010



Source: *Alberta Health Services, Cancer Surveillance* n=1326

FIGURE 3.5 New cancer cases diagnosed among First Nations females living in Alberta, 1997–2010



Source: *Alberta Health Services, Cancer Surveillance* n=1400

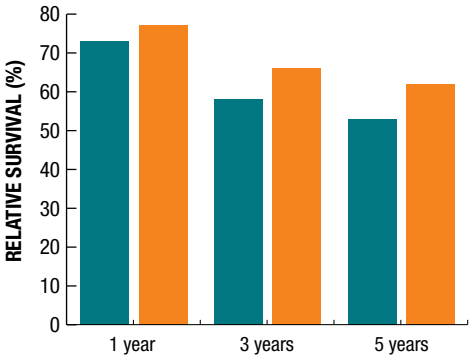
From 1997 to 2010, there were 2,726 cancer cases diagnosed among First Nations people living in Alberta.

109 Based on 1997-2010 indirect standardized incidence rates (ISIR).

Stage at Diagnosis and Survival

The survival rate among First Nations with cancer five years after diagnosis is 53% (Figure 3.6). First Nations in Alberta have significantly lower survival than non-First Nations across all time periods.[110] Cancer mortality may be reduced and survival increases when cancers are detected and treated in the early stages.[111]

FIGURE 3.6 Relative survival ratios for all cancers, First Nations and non-First Nations individuals in Alberta, 2002–2006



	1 year	3 years	5 years
First Nations	72.7	58.2	52.9
Non-First Nations	76.5	65.5	61.9

Source: *Alberta Health Services, Cancer Surveillance*

Cervical Cancer and HPV

Increased rates of cervical cancer have been reported among First Nations in various regions across Canada.[112, 113] The number of cases of cervical cancer and deaths due to cervical cancer in First Nations women in Alberta was significantly higher than expected based on rates among non-First Nations women (1997–2010). Among First Nations and non-First Nations women in Alberta, the trend of newly diagnosed cervical cancer cases has not significantly changed from year to year.

At the time of writing this report, one Primary Care Network, in Alberta, has made a nurse practitioner available to a number of First Nations communities. She prescribes contraception and performs cervical cancer screening and comprehensive well-woman visits.

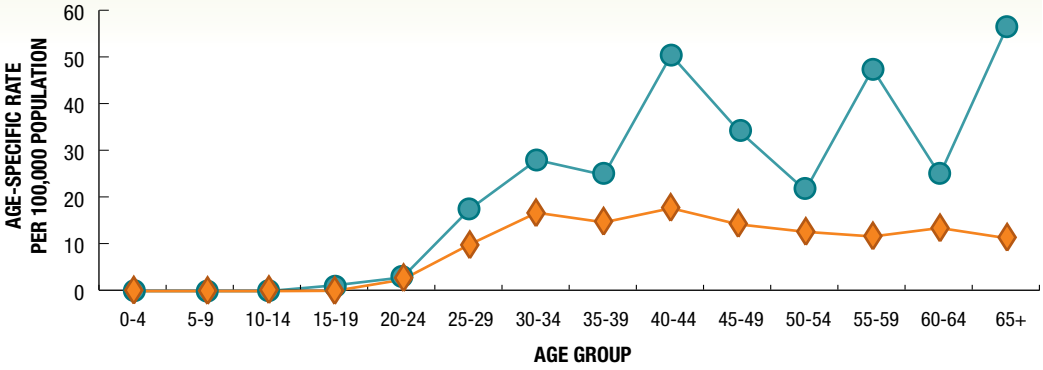
110 Survival ratios (2002–2006) were determined by comparing First Nations and non-First Nations diagnosed with cancer against the general Alberta population of the same age.

111 World Health Organization. (2012). *Cancer* [fact sheet 297]. Retrieved from http://www.who.int/mediacentre/factsheets/fs297/en/

112 First Nations Centre/National Aboriginal Health Organization. (2010). *Cervical cancer in First Nations women.* Ottawa: National Aboriginal Health Organization.

113 O'Brien, B.A., Mill, J., & Wilson, T. (2009). Cervical screening in Canadian First Nation Cree women. *Journal of Transcultural Nursing, 20*(1), 83-92.

FIGURE 3.7 Age-specific cervical cancer rate for First Nations females in Alberta diagnosed between 1997 and 2010



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
First Nations	0	0	0	1.3	2.9	17.5	28.1	24.9	50.6	34.5	21.6	47.6	24.9	56.6
Non-First Nations	0	0	0	0.1	2.5	10.0	16.8	14.7	17.8	14.3	12.7	11.1	13.5	11.3

Source: *Alberta Health Services, Cancer Surveillance*

Among First Nations communities in Alberta, cervical cancer rates remain low until age 25 and then increase (Figure 3.7).

Risk factors for HPV and cervical cancer:

- High number of sexual partners
- Young age at first intercourse
- Sexual behaviour of women's sexual partners
- Smoking
- High number of live births
- Low socioeconomic status
- Long-term use of birth control pills

Source: First Nations Centre/National Aboriginal Health Organization. (2010). *Cervical cancer in First Nations women.* Ottawa: National Aboriginal Health Organization.

Although more cases of cervical cancer among First Nations females in Alberta are diagnosed at stage I (38%) than at any other stage, this percentage of cases detected early is still lower than among non-First Nations women (56%). Across stage II to stage IV, a greater percentage of First Nations females appear to be diagnosed than non-First Nations females. Although cervical cancer survival data for First Nations in Alberta were not available, the five-year survival rate for cervical cancer among Canadian females aged 15–29 years is 86%.[114]

114 Canadian Cancer Society's Steering Committee: Canadian Cancer Statistics 2009. Toronto: Canadian Cancer Society, 2009.

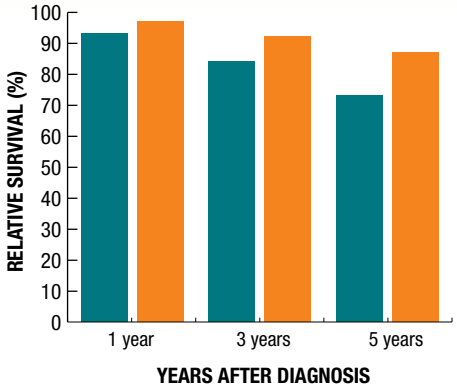
Infection with the human papilloma virus (HPV) is directly implicated in 99% of cervical cancers.[115] HPV is transmitted by sexual contact and skin-to-skin contact. There are various types of HPV, some more cancer-causing than others. Aboriginal women have higher rates of HPV infection than non-Aboriginal women,[116] putting them at greater risk of developing cervical cancer than non-First Nations women. Educating young First Nations females and encouraging them to get the HPV vaccination (recommended for females aged 9 to 26), combined with efforts to promote early cervical cancer screening through routine PAP tests, can reduce the burden of cervical cancer among First Nations women in Alberta.

In Alberta, breast cancer incidence among First Nations is generally lower than in the non-First Nations population

Breast Cancer

The numbers of breast cancer cases and deaths due to breast cancer among First Nations females were no different than expected based on rates among non-First Nations females in Alberta (1997–2010). While mortality rates in First Nations females were stable over time, the mortality rates among non-First Nations females decreased 3.2% annually. In Alberta, breast cancer incidence among First Nations is generally lower than in the non-First Nations population, but the breast is the most common site for cancer in both populations. This finding has also been noted among other First Nations in Canada.[117] Most breast cancer cases among First Nations females in Alberta were diagnosed in stage I or stage II (69%).

FIGURE 3.8 Relative survival ratio for First Nations and non-First Nations females diagnosed with breast cancer in Alberta, 2002–2006



	1 year	3 years	5 years
First Nations	92.7	83.8	72.6
Non-First Nations	97.3	91.5	87.3

Source: *Alberta Health Services, Cancer Surveillance*

115 World Health Organization. (2010). *Human papillomavirus (HPV).* Retrieved from http://www.who.int/immunization/topics/hpv/en/

116 Kliewer, E. V., Demers, A. A., Brisson, M., Severini, A., Lotocki, R., Elias, B., Hammond,G., & Wurtak, G. (2010). The Manitoba human papillomavirus vaccine surveillance and evaluation system. *HealthReports, 21*(2), 37.

117 Canadian Institute for Health Information. (2008). *Comparison of cancer patterns and trends in First Nations people and the general population of Ontario,* 1968 to 2001. Ottawa: Author.

Screening for Life Program

- Alberta Health Services' mobile mammogram trailer visits several First Nations communities and surrounding sites in Alberta. Participating First Nations communities include the following:
  - » Brocket
  - » Cold Lake First Nations
  - » Fort McKay
  - » Frog Lake
  - » Goodfish Lake
  - » Hobbema
  - » John D'or Prairie
  - » Morley
  - » Saddle Lake
  - » Siksika
  - » Standoff
  - » Sturgeon Lake
  - » Sucker Creek
  - » Wabasca
- First Nations women in other communities can access the program in neighbouring communities.

Source: Alberta Health Services. (2012). Breast cancer: At a glance. Retrieved from http://www.screeningforlife.ca/breastcancer

Of First Nations females diagnosed with breast cancer between 2002 and 2006, 73% were as likely to be alive five years after diagnosis as females of the same age in the general Alberta population; this percentage was significantly lower than among non-First Nations females (87%) (Figure 3.8). An Ontario study suggests that the key factor in the difference in survival rates is pre-existing health conditions, such as diabetes, cardiovascular disease and renal disease.[118]

Prostate Cancer

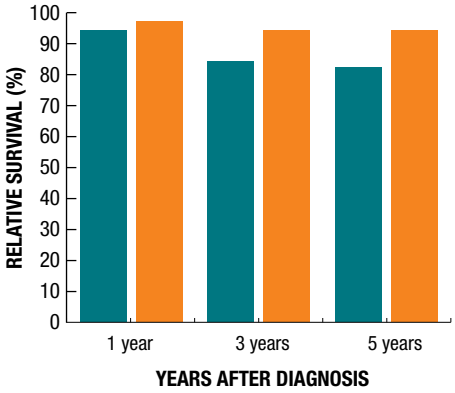
Relative to non-First Nations males, First Nations males are less likely to be diagnosed with prostate cancer. However, First Nations males who are diagnosed with prostate cancer are more likely to die from the disease.[119] The number of prostate cancer deaths among First Nations males in Alberta was significantly higher than expected compared to non-First Nations males. The trend in prostate cancer deaths has not changed over time.

118 Sheppard, A., Chiarelli, A. M., Marrett, L. D., Nishri, E. D., & Trudeau, M. E. (2011). Stage at diagnosis and comorbidity influence breast cancer survival in First Nations women in Ontario, Canada. *Cancer Epidemiology Biomarkers and Prevention, 20,* 1991.

119 For the years 1997–2010.

The percentage of cases of prostate cancer diagnosed in stage II, III or IV appears to be similar for First Nations and non-First Nations males in Alberta. Most First Nations males with prostate cancer (77%) were diagnosed in stage II. This is encouraging, as early diagnosis has a positive impact on prostate cancer prognosis. Between 2002 and 2006, the survival rate among First Nations males five years after diagnosis was 83%; however, this rate is still significantly lower than among non-First Nations males (Figure 3.9).

FIGURE 3.9 Relative survival ratio for prostate cancer among First Nations and non-First Nations males in Alberta, 2002–2006



	1 year	3 years	5 years
First Nations	95.4	85.0	83.0
Non-First Nations	98.1	95.3	94.8

Source: *Alberta Health Services, Cancer Surveillance*

Early Detection and Treatment

Inadequate access to cancer screening services for First Nations individuals was an identified concern in the First Nations Regional Longitudinal Health Survey of 2002–03.[120] Numerous Canadian publications

Some barriers to screening experienced by First Nations:

- Lack of transportation to get to screening facility
- Fear of cancer and cancer diagnosis
- Geographic location
- Shyness and discomfort in discussing sexual health or undergoing procedures
- Lack of culturally relevant services
- Shortage of female health care providers to perform screening
- Overlooking the diversity among of Aboriginal people in the development of informative resources on cancer and screening

Source: Friedman, D. B., & Hoffman-Goetz, L. (2007). Assessing cultural sensitivity of breast cancer Information for older Aboriginal women. *Journal of Cancer Education, 22*(2), 112-118.

120 Assembly of First Nations/First Nations Information Governance Committee. The First Nations Regional Longitudinal Health Survey 2002/03 (2nd ed.). Ottawa: Author.

address the unique barriers to screening faced by First Nations across Canada.[121, 122, 123] There are organized programs for screening services related to cervical, breast and colorectal cancers, which First Nations may access in Alberta.

Another concern is that First Nations people do not access treatment as often as non-First Nations. Issues that may impede access to treatment include transport, accommodation, lack of culturally appropriate preparation for the experience of cancer treatment and certainty of support services.[124] Recommendations for increasing First Nations participation in cancer screening programs also apply to efforts for improved treatment participation. These include aligning culturally sensitive health services with the various First Nations cultures in Alberta, making greater use of First Nations patient navigators and improving access to screening initiatives in remote and rural communities.[125]

Traditional Healing

The importance of traditional healing has been highlighted in a variety of literature addressing cancer in the Aboriginal context.[126, 127, 128] First Nations adults who reported having visited a traditional healer in the 12 months prior to answering the First Nations Regional Longitudinal Health Survey reported feeling more balanced mentally and spiritually.[129] In addition, the acknowledgement of Aboriginal healing methods for treating diseases was identified as a need in the Aboriginal Cancer Care Needs Assessment in Ontario.[130] The presence of and access to a spiritual component in cancer treatment is essential for First Nations people.

121 Cancer Care Ontario—Aboriginal Cancer Care Unit. (2002). Analysis of the findings—Aboriginal cancer care needs assessment. Toronto: Author.

122 Alberta Health Services. (2012). Cancer screening in Aboriginal communities: A promising practices review. Retrieved from http://www.albertahealthservices.ca/poph/hi-poph-aboriginal-health-review-2012.pdf.

123 Assembly of First Nations. (2009). *Access to cancer screening and First Nations.* Retrieved from http://64.26.129.156/cmslib/general/AFN%20Cancer%20Screening%20Review-final-ENG.pdf.

124 Shahid, S., Finn, L., Bessarab, D., Thompson, S. C. (2011). "Nowhere to room . . . nobody told them": Logistical and cultural impediments to Aboriginal peoples' participation in cancer treatment. Australian Health Review, 35, 235-241.

125 Alberta Health Services. (2012). Cancer screening in Aboriginal communities: A promising practices review. Retrieved from http://www.albertahealthservices.ca/poph/hi-poph-aboriginal-health-review-2012.pdf

126 Friedman, D. B., & Hoffman-Goetz, L. (2007). Assessing cultural sensitivity of breast cancer Information for older Aboriginal women. *Journal of Cancer Education, 22*(2), 112-118.

127 Sheppard, A., Chiarelli, A. M., Marrett, L. D., Nishri, E. D., & Trudeau, M. E. (2011). Stage at diagnosis and comorbidity influence breast cancer survival in First Nations women in Ontario, Canada. *Cancer Epidemiology Biomarkers and Prevention, 20,* 1991.

128 Cancer Care Ontario—Aboriginal Cancer Care Unit. (2002). Analysis of the findings—Aboriginal cancer care needs assessment. Toronto: Author.

129 First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities.* Ottawa: Author.

130 Cancer Care Ontario—Aboriginal Cancer Care Unit. (2002). Analysis of the findings—Aboriginal cancer care needs assessment. Toronto: Author.

End-of-Life (Palliative) Care

Cancer ranks within the 10 most cited reasons for home and community care within First Nations communities in Alberta (fiscal years 2008–09 to 2011–12).[131] Palliative care helps people live more comfortably with cancer rather than curing the symptoms caused by cancer. The World Health Organization refers to palliative care as "an urgent humanitarian need for people worldwide with cancer."[132] Community and home-based care is central to providing relief from pain for clients in remote settings. Given the aging First Nations population living in Alberta and the increase in age-associated chronic illnesses, such as cancer, the need for access to end-of-life care is anticipated to grow.

131 Health Canada – First Nations and Inuit Health Branch. (2012). *First Nations Home and Community Care Program report* [unpublished internal report].

132 World Health Organization. (2012). *Cancer* [fact sheet 297]. Retrieved from http://www.who.int/mediacentre/factsheets/fs297/en/

Health Protection

HEALTH PROTECTION

HEALTH PROTECTION YEAR IN REVIEW 2011–12

Major Public Health Occurrences

Shigellosis Outbreak

Over the last year, community and regional public health staff continued to work together to investigate and control outbreaks of shigellosis in several First Nations communities in Alberta. Shigellosis, an extremely contagious diarrheal illness, sometimes results in community outbreaks that can last for extended periods of time, despite intensive control measures. From April 2011 to March 2012, five First Nations communities experienced outbreaks of shigellosis, and an additional four communities had at least one confirmed case. In total, there were 113 confirmed cases and 110 probable cases. Health Canada and community health staff responded in partnership, working together with community leadership, community-based clinicians and public health officials from Alberta Health Services in activities such as outbreak investigation, client management, community awareness and education, and disease prevention and control.

As a large proportion of confirmed and probable cases occurred in children under 10 years of age (60%), community health staff are encouraged to maintain and strengthen their relationships with community child care facilities and schools, to continue conducting disease surveillance and to promptly notify community health staff of any unusual increases in illness. These activities allow control measures to be implemented quickly, reducing the spread of illness to others.

Pertussis Outbreak

During the autumn and winter of 2011–12, a pertussis (whooping cough) outbreak occurred in two First Nations communities in Northern Alberta. Pertussis is a highly contagious respiratory illness that is marked by a persistent cough. As pertussis has been a vaccine-preventable disease in Canada since 1943,[133] its detection is of public health significance. During the outbreak, 29 lab-confirmed cases and 22 probable cases were identified, with the majority of cases occurring in the under-20 age group.

133 Alberta Health and Wellness. (2011). Public health notifiable disease management guidelines: Pertussis. Retrieved from http://www.health.alberta.ca/documents/Guidelines-Pertussis-2011.pdf

Targeted immunization and assessment clinics were held in both communities. The community response team also took critical actions to contain this outbreak. An accelerated pertussis vaccination schedule was offered for babies, and eligibility for the vaccination was expanded to include adults. Each pertussis case or caregiver of the case was interviewed to identify household and other close contacts, and was given direction about treatment, self-care and how to prevent infecting others. Posters and literature were distributed throughout the community, providing information about disease prevention, how to seek diagnosis and treatment, and immunization clinic hours. Individualized immunization reminders were sent out for all eligible children under five years of age.

Wildfires

In 2011, 310 major environmental incidents occurred in First Nations communities in Alberta. These included wildfires (with evacuations), floods (with evacuations), well site blowouts, pipeline releases, motor vehicle accidents and associated spills, a provincial diesel fuel shortage, two airplane crashes, sewage lagoon releases and utility failures.[134] Over 3,000 First Nations individuals were evacuated as a result of these incidents, and at least 36 First Nations communities in Alberta were affected.

One of the most notable disasters in 2011 was the wildfires that affected a large area around Slave Lake. The entire population of the Town of Slave Lake, on-reserve members of Sawridge band and some residents of the Municipal District of Lesser Slave River No. 124 were forced to relocate due to encroaching wildfires. Many other wildfires in the province were being monitored by First Nations and Inuit Health Branch and Environmental Public Health Services staff throughout the year. Several large fires affected numerous First Nations communities, some of which were fully evacuated due to heavy smoke, falling ash or encroaching fire. Other First Nations communities were put on evacuation standby. In Alberta, the cause of most wild fires is believed to be lightning strikes.

134 D. Carlson (personal communications, October 18, 2012)

Communicable Disease Control

Communicable Disease Control (CDC) activities are part of an overall regional public health program aimed at protecting and promoting health through the prevention and control of communicable diseases. CDC is a mandatory program and functions within the context of the *Alberta Public Health Act.*

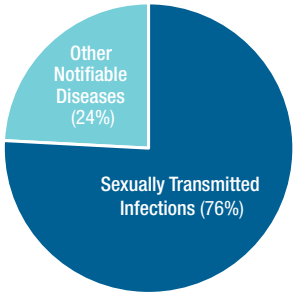
Notifiable Infectious Diseases

In 2011, the majority (76%) of notifiable diseases reported by First Nations communities in Alberta were sexually transmitted infections (STIs) (Figure 4.1).

Aside from STIs, enteric diseases made up the majority (56%) of other notifiable diseases (Figure 4.2). The number of enteric infections reported during 2010 and 2011 remains higher than in previous years because of the shigellosis outbreak that began in 2010 and continued through 2011, affecting nine communities. The higher proportion of pertussis cases was also associated with an outbreak affecting two communities.

Reports of invasive pneumococcal disease (IPD) increased in 2011 after declining from 2005 to 2010 in First Nations individuals residing on-reserve within Alberta. Forty-one cases were reported in 2011, a substantial increase from 17 cases in 2010.

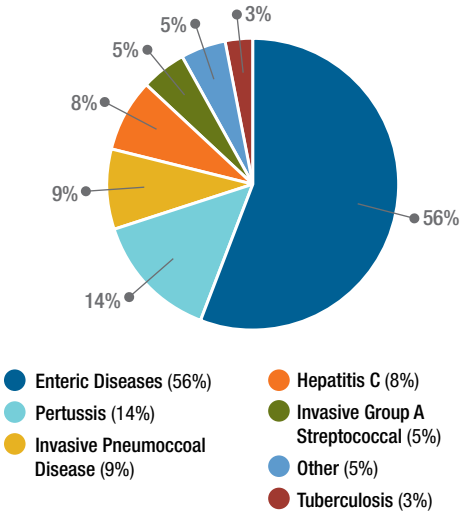
FIGURE 4.1 Proportion of notifiable diseases reported among First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region. Government of Alberta, Alberta Health*

n=1749

FIGURE 4.2 Proportion of notifiable infectious diseases (excluding STIs) reported among First Nations communities in Alberta, 2011



Source: *Health Canada, FNIHB – Alberta Region. Government of Alberta, Alberta Health*

n=420

TABLE 4.1 Notifiable disease (excluding STIs and blood-borne pathogens) cases and incidence rates among First Nations communities, off-reserve First Nations population and non-First Nations population in Alberta, 2011

Disease	Cases Reported by First Nation Communities	Rate Per 10,000 Population		
		First Nations On Reserve	First Nations Off Reserve	Non-First Nations
Shigellosis	198	28.3	6.0	0.3
Pertussis	59	8.4	2.2	0.2
Invasive Pneumococcal Disease (IPD)	41	5.9	9.3	0.8
Hepatitis C	35	5.0	34.0	0.1
Invasive Group A Streptococcal Disease (iGAS)	20	2.9	5.0	0.5
Salmonellosis	14	2.0	7.7	2.4
Campylobacteriosis	14	2.0	5.5	2.9
Giardiasis	11	1.6	1.7	1.3
Varicella Zoster, Shingles	5	0.7	2.4	2.2
E. Coli O157	<5	NR	NR	0.2
Mumps	<5	NR	NR	<0.1
Invasive Meningococcal Disease	<5	NR	NR	<0.1
Invasive Haemophilus Influenzae-type b (Hib)	<5	NR	NR	0.1
Hepatitis A	<5	NR	NR	0.1
Cryptosporidiosis	<5	NR	NR	<0.1

Footnote: NR = not reported due to small counts, <5 = counts less than five
Sources: *Health Canada, FNIHB – Alberta Region, Alberta Health; AANDC, Indian Registry System*

When comparing the rates in Table 4.1:

- The rates of shigellosis and pertussis were highest among First Nations living on-reserve.
- Rates of salmonellosis, campylobacteriosis and varicella zoster (shingles) were lower among First Nations living on-reserve.

Influenza Vaccine

In 2011–12, 10,924 individuals received the seasonal influenza vaccine in First Nations communities in Alberta (Table 4.2). A higher number of infants (less than one year old) were immunized in 2011–12 than in the previous season. This number does not reflect First Nations community members who received influenza immunization off-reserve. Influenza immunizations continue to decrease since the H1N1 pandemic in 2009.

TABLE 4.2 Distribution of individuals who received the seasonal influenza vaccine in First Nations communities by target group, Alberta, 2011

Target Group		Number of Individuals by Influenza Season	
		2011-12	2010-11
Age Group	6–23 Months	778	328
	24–59 Months	772	625
	5–8 Years	906	982
	9–64 Years	6,670	7,935
	65 Years and Older	942	966
Health Care Workers		665	838
Pregnant Women		191	231
Total Number of Individuals		10,924	11,905

Source: *Health Canada, FNIHB – Alberta Region*

Sexually Transmitted Infections and Blood-Borne Pathogens

STIs are the most commonly reported notifiable infectious diseases in Alberta, accounting for two-thirds of all reported diseases.[135] Bacterial STIs, such as chlamydia, gonorrhea and syphilis, are all preventable and treatable with antibiotics. Early diagnosis and treatment prevents serious complications for the infected person, including further spread to others. Access to health services and public health messaging are essential, as timely diagnosis, treatment and prevention are key factors in reducing STI transmission.[136]

Access to health services and public health messaging are essential, as timely diagnosis, treatment and prevention are key factors in reducing STI transmission.

135 Government of Alberta. (2012). *Notifiable sexually transmitted infections – 2011 annual report.* Edmonton: Author.

136 Wynne, A., & Currie, C. L. (2011). Social exclusion as an underlying determinant of sexually transmitted infections among Canadian Aboriginals. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health, 9*(1), 113-127.

First Nations individuals continue to experience a disproportionate burden of STIs and HIV. In the general Canadian population, the rate of newly reported HIV cases is decreasing. This is also true for the First Nations population in Alberta. In contrast, rates of HIV have been increasing among the overall First Nations population across Canada.[137] A wider, culturally specific lens that goes well beyond looking at sexual behaviour is needed to address factors underlying high rates of STIs and blood-borne pathogens among First Nations. A strong connection between vulnerability to STIs and HIV and intergenerational trauma, social marginalization[138] and internalized racism has been shown to impact the wellness of Aboriginal peoples.[139, 140, 141]

Among the on-reserve First Nations population in Alberta, combined rates of chlamydia, gonorrhea and syphilis have increased by 38% in the last five years (2007–2011). Chlamydia continues to be the most commonly reported STI, with rates increasing by 50%, while cases of gonorrhea and syphilis plateaued in recent years.

A variety of Health Canada programs promote awareness of STIs and HIV and the importance of getting tested and treated: Mental Health and Addictions, National Native Alcohol and Drug Abuse Program (NNADAP), Brighter Futures and Building Healthy Communities Program, FASD, and many on-reserve pre- and postnatal classes and youth groups.

137 Health Canada – First Nations and Inuit Health Branch. (2010). *HIV and AIDS.* Retrieved from http://www.hc-sc.gc.ca/fniah-spnia/diseases-maladies/aids-sida/index-eng.php

138 Alberta Health and Wellness – Community and Population Health Division. (2011). *Alberta sexually transmitted infections and blood borne pathogens strategy and action plan 2011-2016.* Retrieved from http://www.health.alberta.ca/documents/STI-BBP-Plan-2011.pdf

139 Ibid.

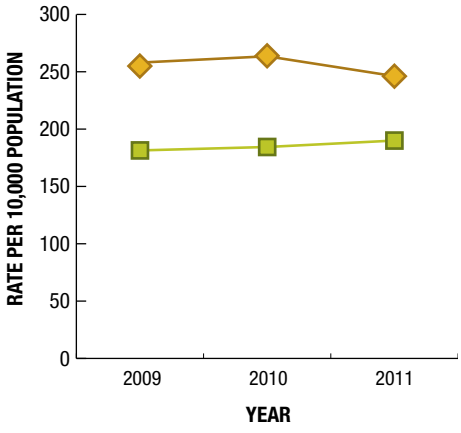
140 Wynne, A., & Currie, C. L. (2011). Social exclusion as an underlying determinant of sexually transmitted infections among Canadian Aboriginals. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health, 9*(1), 113-127.

141 Restoule, J.P., McGee, A., McGee, Flicker, S., Larkin, J. & Smillie-Adjarkwa, C. (2010) Suit the situation: Comparing urban and on-reserve aboriginal youth preferences for effective HIV prevention messaging. *The Canadian Journal of Aboriginal Community-Based HIV/AIDS Research, 3* (Winter), 3-16.

Rates of STIs in 2011 were significantly lower among First Nations people living on-reserve than First Nations people living off-reserve in Alberta; these rates are significantly higher than among non-First Nations (26.8 cases per 10,000 population) (Figure 4.3). *In future reports, we plan to examine how STI testing patterns impact the STI reporting rates.*

Females between the ages of 15 and 24 account for the greatest proportion of STI cases among First Nations individuals in Alberta (47% on-reserve and 68% off-reserve) (Figure 4.4). In 2011, a total of 19 cases were also reported among on-reserve children under the age of 15. Of these cases, 14 were female. The incidence of STIs among children is an ongoing concern. The root causes underlying this serious public health issue must be addressed with community-centred solutions.

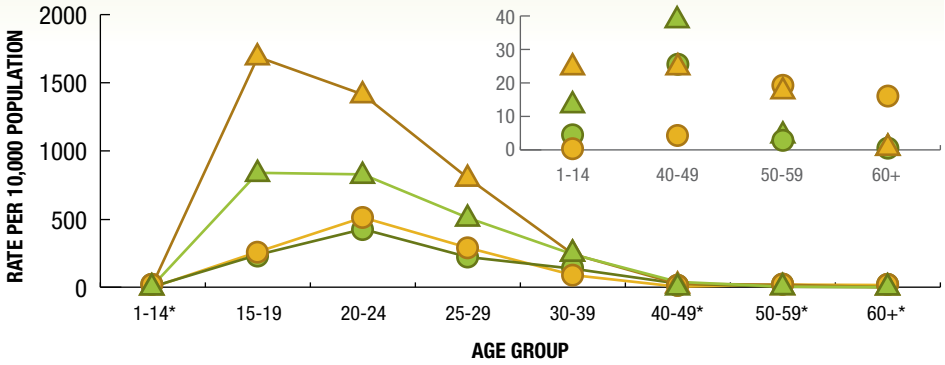
FIGURE 4.3 STI rates among on-reserve and off-reserve First Nations populations in Alberta, 2009–2011



	2009	2010	2011
On-Reserve	181.4	184.4	190.0
Off-Reserve	258.0	263.5	246.2

***Source**: Alberta Health; AANDC, Indian Registry System*

FIGURE 4.4 STI rates among First Nations communities and First Nations living off-reserve by gender and age group, Alberta, 2011



	1-14*	15-19	20-24	25-29	30-39	40-49*	50-59*	60+*
Females On-Reserve	13.0	839.0	827.7	508.9	240.8	38.9	3.7	0.0
Females Off-Reserve	25.1	1689.5	1414.0	800.7	242.7	25.0	17.9	0.0
Males On-Reserve	4.5	237.6	426.1	221.4	135.8	26.7	2.9	0.0
Males Off-Reserve	0.0	259.3	511.4	289.5	88.7	3.7	19.0	15.8

*See smaller graph for more detailed information among this age group.
***Source:** Alberta Health; AANDC, Indian Registry System*

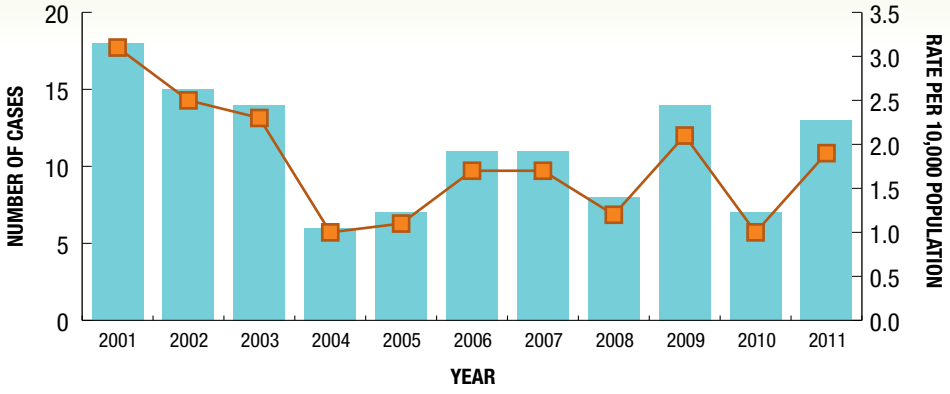
HIV Infection and AIDS

In 2011, 35 cases of HIV were reported among First Nations living in Alberta (representing 16% of newly diagnosed cases in Alberta). Nine of these were reported in on-reserve communities. The rates of newly diagnosed HIV cases among First Nations in Alberta continues to be higher than among non-First Nations (First Nations on-reserve: 1.3 cases per 10,000 population; First Nations off-reserve: 6.2 cases per 10,000 population; and non-First Nations: 0.5 cases per 10,000 population). Among non-First Nations, 183 HIV cases were reported in 2011. The rate of newly reported cases of HIV among First Nations individuals decreased by 22% between 2006 and 2011. In 2011, the most common risk exposure for on-reserve First Nations individuals was heterosexual transmission (56%), while intravenous drug use (46%) was the leading cause of HIV among off-reserve First Nations individuals. In 2011, fewer than five cases of AIDS were identified among First Nations living on-reserve in Alberta.

Tuberculosis

The rate of active tuberculosis (TB) decreased by nearly 40% in First Nations communities within Alberta between 2001 and 2011. In the province of Alberta, the rate of active TB remains below 0.5 per 10,000 population. Most cases are diagnosed among foreign immigrants arriving in Alberta. In 2011, there were 13 active cases of TB reported among First Nations living on-reserve in nine Alberta communities (Figure 4.5). The rate of active TB was 1.9 per 10,000 population. Six of these cases were among males, and seven were among females. Ages of these cases ranged from infancy to 77 years. From 2000 to 2011, the annual number of cases ranged from six to 18 (averaging 11 cases per year) in First Nations communities in Alberta.

FIGURE 4.5 Number and rate of active TB cases among First Nations communities in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
First Nations On-Reserve Rates	3.1	2.5	2.3	1.0	1.1	1.7	1.7	1.2	2.1	1.0	1.9
Number of Cases	18.0	15.0	14.0	6.0	7.0	11.0	11.0	8.0	14.0	7.0	13.0

Source: *Alberta Health; AANDC, Indian Registry System*

Among the 64 cases reported between 2006 and 2011, 55 had at least one risk factor that increases the risk for active TB disease.[142] The most common risk factor among cases (2006–2011) was having a pre-existing medical condition that increases the risk of developing active TB disease, such as HIV, chronic renal failure or diabetes (55%).

Prompt preventative treatment for active TB disease is vital once a person is diagnosed with an inactive or latent TB infection (LTBI). Although someone with LTBI does not show disease symptoms and cannot spread the germ to others, a person with LTBI has a 10% lifetime risk of developing active TB disease.[143] In 2011, 39 individuals (26 females and 13 males) were recommended for LTBI treatment; of these people, 56% were recommended for LTBI as part of TB case contact follow-up. Although the majority accepted treatment, 31% refused. Of the 11 individuals who started treatment in 2011, nine completed an adequate course.

The rate of active TB decreased by nearly 40% in First Nations communities within Alberta between 2001 and 2011.

In 2011, more communities have implemented the "At Risk Medical Conditions Screening Program" than in the last three years. This program helps to identify those at highest risk for developing TB disease—those with a high-risk medical conditions or a history of TB infection. Treatment of LTBI prevents the development of active TB disease. For people unable to take treatment for LTBI, education about TB risk and ongoing monitoring identifies TB disease early and reduces its transmission. When TB cases (active or latent) are identified, First Nations staff follow up with all possible contacts of a case and determine the risk of TB infection. First Nations community staff are to be commended for their ability to assess, provide treatment and conduct surveillance for TB, thus reducing transmission and preventing future cases in the communities.

Animal Bites

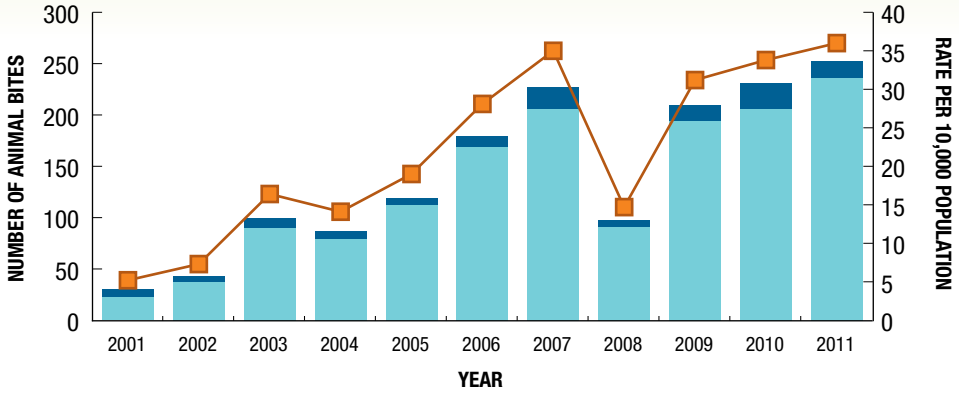
The number of animal bites reported in First Nations communities in Alberta increased between 2001 and 2011 (Figure 4.6). During that period, a total of 1,573 bites were reported. In 2011, 252 animal bite cases were reported, a 740% increase from 2001. Consistent with the last 10 years, almost all (94%) animal bites were from dogs, and most reported injuries were to the hands and calves (55%). As animal bites become a greater burden on communities, it is anticipated that awareness and reporting will increase.

In 2011, 252 animal bite cases were reported, a 740% increase from 2001.

142 Health Canada. (2012). *It's your health: Tuberculosis.* Retrieved from http://www.hc-sc.gc.ca/hl-vs/alt_formats/pacrb-dgapcr/pdf/iyh-vsv/diseases-maladies/tuberculosis-eng.pdf (see for a list of risk factors for TB).

143 Public Health Agency of Canada. (2011). *Tuberculosis.* Retrieved from http://www.phac-aspc.gc.ca/tmp-pmv/info/tubercul-eng.php

FIGURE 4.6 Number and rate of reported animal bites in First Nations communities in Alberta, 2001–2011



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of Bites by Other Animals	7	5	9	7	6	10	21	6	15	25	16
Number of Dog Bites	23	38	90	80	113	169	206	91	194	206	236
Rate of All Animal Bites	5.2	7.3	16.4	14.1	19.0	28.1	35.0	14.7	31.2	33.8	36.0

Source: *Health Canada, FNIHB – Alberta Region; AANDC, Indian Registry System*

The proportion of male victims is higher than female victims for all age groups. More children under the age of 10 were reported to have been bitten in 2011 than in 2010. In 2011, 65 cases were classified as provoked,[144] and of these, 25% involved children 10 years of age and younger.

Environmental Health

Water Quality

Access to a safe drinking water supply is a basic need for good health. Regular water sampling, which includes bacteriological and chemical testing according to set guidelines, is a critical component of ensuring the health of communities. Microbiological testing for public and semi-public water supplies in First Nations communities in Alberta has plateaued at around 80% since 2006. During the 2011–12 fiscal year, 83% of routine scheduled microbiological samples were tested. Communities should be congratulated on their continuous efforts to ensure the safety of drinking water. Out of 76 public water systems, 70 (92%) were sampled twice (minimal requirement) and six (8%) were sampled once.

> Communities should be congratulated on their continuous efforts to ensure the safety of drinking water.

144 A provoked attack is one where a human does something to provoke an animal (even if the action is unintentional) and the attack is the animal's normal response to such an action.

Drinking Water Advisories

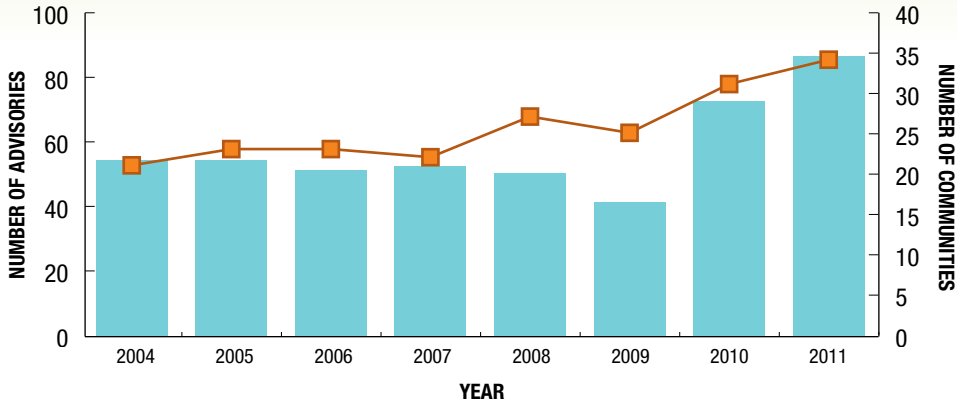
Drinking water advisories (DWAs) are issued by environmental health officers to alert the public about the safety of a particular drinking water supply. DWAs can be issued for various reasons, but ultimately are intended to protect public health. During the 2011–12 fiscal year, 86 DWAs were issued in 34 First Nations communities in Alberta (Figure 4.7). DWAs have been increasing since 2009.

First Nations communities in Alberta that achieved the 90% target for water testing during the 2011–12 fiscal year:

- Beaver Lake
- Louis Bull
- Blood
- Montana
- Enoch
- Morley
- Ermineskin
- Piikani
- Frog Lake
- Samson South
- Kehewin
- South Tallcree
- Sturgeon Lake

Beaver Lake achieved 100%!

FIGURE 4.7 Number of drinking water advisories and affected First Nations communities in Alberta, 2004–2011



	2004	2005	2006	2007	2008	2009	2010	2011
Number of Drinking Water Advisories	54	54	51	52	50	41	72	86
Number of Communities	21	23	23	22	27	25	31	34

Source: *Public Health Agency of Canada, Canadian Network for Public Health Intelligence (CNPHI) Water Advisory Database*

Of the 86 DWAs:

- 84 (98%) were boil water advisories.
- 28 (33%) were carried forward from previous years.
- 27 (31%) remained active, and 59 (69%) were rescinded (as at March 31, 2012).
- DWAs ranged from one day to 1,759 days (4 years and 10 months), with a median duration of 82 days (including DWAs still active as at March 31, 2012).
- 46 occurred in public water systems and 40 occurred in semi-public water systems.

Almost half of the DWAs issued during fiscal 2011–12 were the result of water line breaks or loss of system pressure. A quarter of the advisories were related to contamination from an unknown source; this was typically observed in semi-public water systems.

When a water distribution system goes under a boil water advisory, public health recommendations to community members include boiling water before consumption or finding alternative water sources (on- or off-reserve).

Public water system

- Drinking water that services more than five buildings or facilities and involves the distribution of water though pipes or other conveyances such as water trucks. This type of water supply typically serves from 50 to 1,000 people.

Semi-public water system

- System for providing water to the public for human consumption, potentially, but not necessarily, through pipes or other structures such as cisterns or wells. This type of water supply typically serves fewer than 50 people.

Appendices

APPENDIX A: Methodology

Indicator	Definition
Age-Specific Disease Incidence Rate	Total number of cases in a particular age group reported / Total First Nations population in the same age group during the year reported
Child Mortality Rate	Total number of First Nations deaths between one and six years of age during a year / First Nations children aged one to six during that year reported
Crude Birth Rate	Total number of First Nations live births during a year reported by AH / Total First Nations population during that year reported
Crude Disease Incidence Rate	Total number of cases reported for a specific disease / Total First Nations population at risk for the disease during that year reported
Crude Mortality Rate	Total number of First Nations deaths during a year reported by AH / Total First Nations population during that year reported
Crude Therapeutic Abortion Rate	Total number of therapeutic abortions reported by AH / Total First Nations population during that year reported
High-Birth-Weight Rate	Number of First Nations high-birth-weight infants per year from AH / Total live births during the year reported
Infant Mortality Rate	Total number of First Nations deaths under one year of age during a year / Total First Nations population during that year reported
Large for Gestational Age Rate	Number of First Nations infants large for gestational age per year from AH / Total live births during the year reported
Low-Birth-Weight Rate	Number of First Nations low-birth-weight infants per year from AH / Total live births during the year reported
Maternal Mortality Rate	Total number of First Nations deaths from all puerperal causes during a year / Total live births during the year reported
Proportion of Caesarean Deliveries (Rate)	Number of First Nations Caesarean births per year from AH / Total live births during the year reported
Rate of Diabetes Complications	Number of First Nations pregnancies with diabetes complications from AH / Total live births during the year reported
Rate of Hypertension Complications	Number of First Nations pregnancies with hypertension complications from AH / Total live births during the year reported
Small for Gestational Age Rate	Number of First Nations infants small for gestational age per year from AH / Total live births during the year reported
Standardized General Fertility Rate	Expected births during a year according to 2006 Canadian Census Population / Total number of women of childbearing age in 2006 Canadian Census
Standardized Therapeutic Abortion Rate	Expected abortions during a year according to 2006 Canadian Census / Total number of women of childbearing age in 2006 Canadian Census

APPENDIX B: Data Sources And Limitations

Aboriginal Affairs and Northern Development Canada (AANDC) – Indian Registry System (IRS)

The Indian Registry System at Aboriginal Affairs and Northern Development Canada provides counts as at December 31 of the appropriate year, and no adjustment is made for late reporting of births or deaths. IR data is only updated at a life event, either a birth or a death, and consequently does not reflect updated residency information. This method limits the comparability between off-reserve and on-reserve/Crown land residency. Further, the data does not accurately portray the actual on-reserve population, as the register is limited to First Nations with registry to bands in Alberta and Canada, and the residency field is optional when the Indian Registry Administrator updates the system.

For most statistics provided in this report, the population source for First Nations was the IRS, including on- and off-reserve populations. On-reserve data also includes those First Nations living on Crown land.

Alberta Health Services – Cancer Surveillance (AHS-Cancer)

Incidence, mortality, staging distribution and survival data were provided by the Alberta Health Services Cancer Surveillance program using the Alberta Cancer Registry database. In 2012, AHS-Cancer produced a technical report on behalf of Health Canada titled *First Nations Cancer Statistics: Alberta 1997–2010.* The information from this report is referenced throughout the "Cancer" section.

Government of Alberta, Alberta Health (AH)

Estimates of live births and maternal and paternal age are derived from data collected in the Newborn Metabolic Screening (NMS) Application. This data allows mothers and infants to be linked to the First Nations registry. The First Nations registry includes anyone ever having registered with the Alberta Health Care Insurance Plan (AHCIP) as either status First Nation or Inuit and includes some Alberta residents belonging to out-of-province bands. Non-status Indians and Métis cannot be identified in the (AHCIP) population registry, and are therefore not included. The NMS records do not include newborns born outside of Alberta, including many infants born to Alberta mothers in Lloydminster.

Estimates of deaths are derived from the Alberta Vital Statistics death files for each calendar year. Non-Alberta residents dying in Alberta are on the Vital Statistics file, but are not included. Each Alberta Vital Statistics Death Record is linked to the First Nations Registry to assign a First Nations status to each deceased individual. In addition, all infants with a mother with First Nations status are flagged as First Nations. The population excludes members of the Armed Forces and RCMP, inmates in federal penitentiaries and those who have opted out of the Alberta Health Care Insurance Plan. Alberta Vital Statistics death files do not include Alberta residents who die outside of the province. Causes of death are coded according to the International Classification of Diseases (ICD-10) coding system.

Alberta Health provides an Interactive Health Data Application that hosts a variety of public health indicator data, including data on First Nations in Alberta.

Health Canada, First Nations and Inuit Health Branch (FNIHB) – Alberta Region

Program-specific data has been provided by a variety of areas within FNIHB – Alberta Region. The following directorates have contributed data to support this report: Health Protection, Health Assessment and Surveillance, Health Promotion and Disease Prevention, Non-Insured Health Benefits Program, and Nursing.

APPENDIX C: First Nations Population Registered to Bands in Alberta (2011)

	Band	Reserve and Crown Land	Off-Reserve	Total
TREATY 8	Athabasca Chipewyan First Nation	237	742	979
	Beaver First Nation	433	482	915
	Bigstone Cree Nation	3,022	3,912	6,934
	Chipewyan Prairie First Nation	360	397	757
	Dene Tha' First Nation	1,991	804	2,795
	Driftpile First Nation	899	1,566	2,465
	Duncan's First Nation	140	117	257
	Fort McKay First Nation	372	342	714
	Fort McMurray First Nation	267	370	637
	Horse Lake First Nation	453	532	985
	Kapawe'no First Nation	113	227	340
	Little Red River Cree Nation	4,194	569	4,763
	Loon River First Nation	430	97	527
	Lubicon Lake Indian Nation	274	189	463
	Mikisew Cree First Nation	773	1,938	2,711
	Peerless Trout First Nation	502	266	768
	Sawridge Band	47	379	426
	Smith's Landing First Nation	158	166	324
	Sturgeon Lake Cree Nation	1,419	1,461	2,880
	Sucker Creek First Nation	738	1,812	2,550
	Swan River First Nation	387	787	1,174
	Tallcree First Nation	532	631	1,163
	Whitefish Lake First Nation (Atikameg)	1,460	884	2,344
	Woodland Cree First Nation	775	255	1,030
	Treaty 8 Total	**19,976**	**18,925**	**38,901**

	Band	Reserve and Crown Land	Off-Reserve	Total
TREATY 6	Alexander First Nation	1,029	912	1,941
	Alexis Nakota Sioux Nation	1,029	734	1,763
	Beaver Lake Cree Nation	382	605	987
	Cold Lake First Nations	1,299	1,235	2,534
	Enoch Cree Nation	1,601	670	2,271
	Ermineskin Cree Nation	3,253	903	4,156
	Frog Lake First Nation	1,847	1,013	2,860
	Heart Lake First Nation	199	112	311
	Kehewin Cree Nation	1,133	800	1,933
	Louis Bull Tribe	1,668	371	2,039
	Montana First Nation	731	210	941
	O'Chiese First Nation	806	365	1,171
	Paul First Nation	1,340	608	1,948
	Saddle Lake First Nation (includes Whitefish Lake First Nation #128 [Goodfish])	6,241	3,333	9,574
	Samson Cree Nation	5,971	1,591	7,562
	Sunchild First Nation	856	410	1,266
	Treaty 6 Total	**29,385**	**13,872**	**43,257**
TREATY 7	Blood Tribe	8,080	3,368	11,448
	Piikani Nation	2,398	1,182	3,580
	Siksika Nation	3,917	2,858	6,775
	Stoney Tribe (Bearspaw)	1,614	133	1,747
	Stoney Tribe (Chiniki)	1,583	127	1,710
	Stoney Tribe (Wesley)	1,445	147	1,592
	Tsuu T'ina Nation	1,529	379	1,908
	Treaty 7 Total	**20,566**	**8,194**	**28,760**

Source: *Aboriginal Affairs and Northern Development Canada (AANDC)-Indian Registry System as of December 3, 2011*

APPENDIX D: Acronyms and Initialisms

AANDC	Aboriginal Affairs and Northern Development Canada
AHS	Alberta Health Services
AHSOR	Aboriginal Head Start On-Reserve
AIDS	Acquired Immunodeficiency Syndrome
CPNP-FNIC	Canada Prenatal Nutrition Program-First Nations and Inuit Component
CNPHI	Canadian Network for Public Health Intelligence
dTap	Diphtheria, Tetanus and Pertussis vaccine
dTaP-IPV-Hib	Diphtheria, Tetanus, Pertussis, Polio & *Haemophilus influenzae* type b Vaccine
DWA	Drinking Water Advisory
FASD	Fetal Alcohol Spectrum Disorder
FNIGC	First Nations Information Governance Centre
FNIHB	First Nations and Inuit Health Branch
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
ICD-10	International Classification of Diseases – 10th Edition
IPD	Invasive Pneumococcal Disease
IUD	Intrauterine Device
IUS	Intrauterine System
LTBI	Latent (inactive) Tuberculosis Infection
MenC	Meningococcal type C Vaccine
NMS	Newborn Metabolic Screening
NDR	Notifiable Diseases Registry
NIHB	Non-Insured Health Benefits
PCV7/13	Pneumococcal Conjugate-7/13 Vaccine
RHS	First Nations Regional Longitudinal Health Survey
SIDS	Sudden Infant Death Syndrome
STI	Sexually Transmitted Infection
TB	Tuberculosis
TST	Tuberculin Skin Test

APPENDIX E: Alberta Region Health Protection Contact Information

Medical Officer of Health:
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Dr. Hakique Virani 780-495-2000

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Karen Saganiuk.....780-495-6074

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Tuberculosis Program Coordinator:
Andrea Warman 780-495-5407

Enhanced Tuberculosis Screening Nurse:
Sandy Jacobs 780-495-6071

Senior Environmental Health Officer:
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Senior Environmental Health Officer:
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Maternal and Child Health

SUPPLEMENT

MATERNAL AND CHILD HEALTH SUPPLEMENTAL CHAPTER

This supplement to the "Maternal and Child Health" section provides additional analyses comparing First Nations and non-First Nations populations in Alberta for 11 infant, child and maternal health indicators:

1. Age distribution of mothers
2. Diabetes complications during pregnancy
3. Hypertension complications during pregnancy
4. Caesarean delivery
5. Infants born small for gestational age
6. Infants born large for gestational age
7. Low-birth-weight infants
8. High-birth-weight infants
9. Infant and child emergency department visits
10. Infant mortality
11. Child mortality

Limitations

All data obtained for this supplement are courtesy of Alberta Health, so the rates reported here are different from the rates reported in the original Maternal and Child Health section of this report. The reason for the difference is that the population of First Nations living in Alberta reported by Aboriginal Affairs and Northern Development Canada is smaller than the population reported by Alberta Health. This is because AANDC reports the population of First Nations registered to Alberta Bands irrespective of their province of residence, while Alberta Health reports the population of First Nations living in Alberta irrespective of band of registration.

Standardization and Statistical Significance

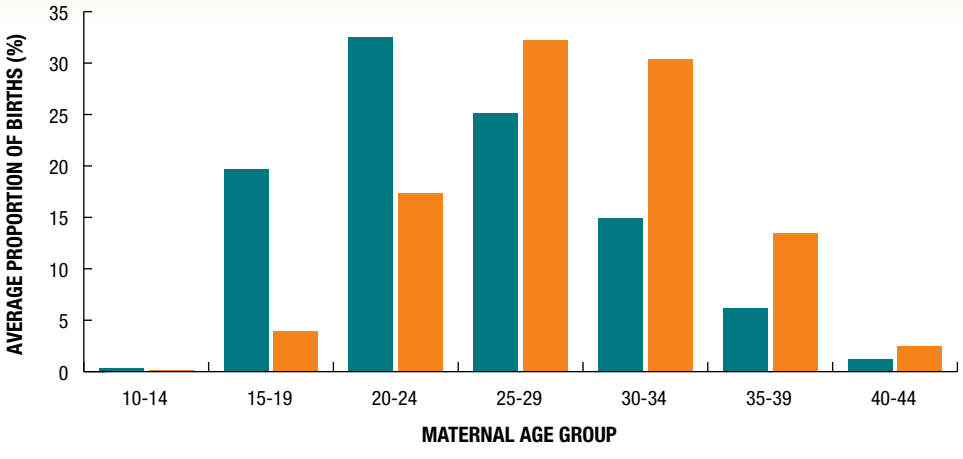
Maternal and infant health outcomes are closely related to the age of the mother when she is pregnant. It is important to control for the effect of maternal age when comparing indicators from two different populations. A statistical procedure called *indirect standardization* is used in this chapter to remove the effect of the mother's age on the health indicator. The crude (actual), non-standardized rates are also provided, simply because readers may find it helpful to know the actual number of cases for health program planning purposes. Without controlling for maternal age, it is necessary to take caution when comparing crude rates between two populations.

Statistical significance is used here to help determine whether any apparent difference in rates between First Nations and non-First Nations is likely a true difference or whether the rates are likely the same. It does not guarantee that there is a true difference, but it does provide a measure of confidence (95%).

If you have questions about these limitations, the standardization or the statistical significance of the data in this report, please contact the Alberta Region Health Assessment and Surveillance manager (see Appendix E for contact information).

Age Distribution of Mothers (2001–2011)

FIGURE 5.1 Average proportion of births by maternal age group among First Nations and non-First Nations women in Alberta, 2001–2011



	10-14	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	0.3	19.7	32.5	25.1	14.9	6.2	1.2
Non-First Nations	0.1	3.9	17.4	32.2	30.4	13.5	2.5

Source: *Government of Alberta, Alberta Health*

From 2001 to 2011, the age of First Nations and non-First Nations women in Alberta who gave birth differed. This difference in the distribution of maternal age did not change between 2001 and 2011.

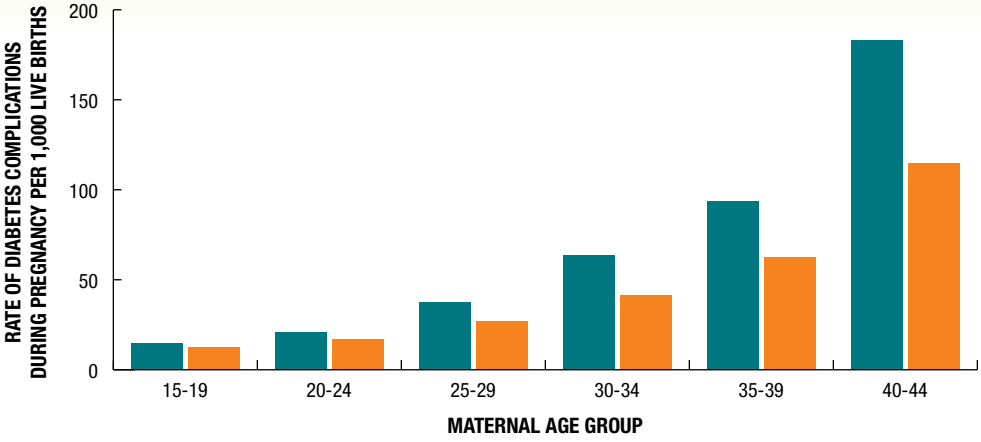
Among the First Nations population in Alberta, the largest average proportion of births per year occurred within the 20-to-24-year-old age group (33%), whereas among the non-First Nations population in Alberta, the largest average proportion of births[145] per year occurred within the 25-to-29-year-old age group (32%) (Figure 5.1).

For the age distribution of first-time First Nations parents, and the average number of births per year by maternal age group in Alberta, see page 16.

145 Proportion of births refers to the percentage of births in a particular age group in relation to the total number of births across all age groups.

Rates of Gestational Diabetes (2001–2011)

FIGURE 5.2 Age-specific rates of diabetes complications during pregnancy among First Nations and non-First Nations women in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	14.6	21.0	37.4	63.4	93.4	183.1
Non-First Nations	12.3	16.9	27.0	41.2	62.4	115.0

Source: *Government of Alberta, Alberta Health*

The rate of gestational diabetes[146] increases with maternal age (Figure 5.2). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of gestational diabetes cases among the First Nations population.[147] There were approximately 43%[148] more cases of gestational diabetes than expected[149] in the First Nations population than in the non-First Nations population.

Crude (actual) rates[150] of gestational diabetes in Alberta (2001–2011):

- First Nations women: 37 cases per 1,000 live births
- Non-First Nations women: 36 cases per 1,000 live births
- Both populations showed an increased rate of gestational diabetes over time.[151, 152]

For a graph of the overall rate of First Nations women experiencing diabetes complications during pregnancy from 2001 to 2011, see page 20.

146 Data included ICD9 codes 648.0 (diabetes mellitus complicating pregnancy, childbirth or the puerperium) and 648.8 (abnormal glucose tolerance). Pregnant women with gestational diabetes are at increased risk of complications, including pre-eclampsia (high blood pressure and protein in the urine after the 20th week of pregnancy), delivering infants who are large for gestational age, Caesarean delivery and birth lacerations. The infant is at risk for complications of hypoglycemia (dangerously low blood sugar levels after birth), excessive levels of insulin, birth trauma (brachial plexus) injury, and potentially long-term obesity and glucose intolerance.

147 From 2001 to 2011, the observed number of gestational diabetes cases in First Nations women in Alberta was 1.43 (95% CI = 1.40, 1.46) times greater than the number that would be expected if the rate of gestational diabetes were the same as in the non-First Nations population.

148 95% CI = 40%, 46%.

149 The expected number is calculated based on the indirect standardization to the comparative population.

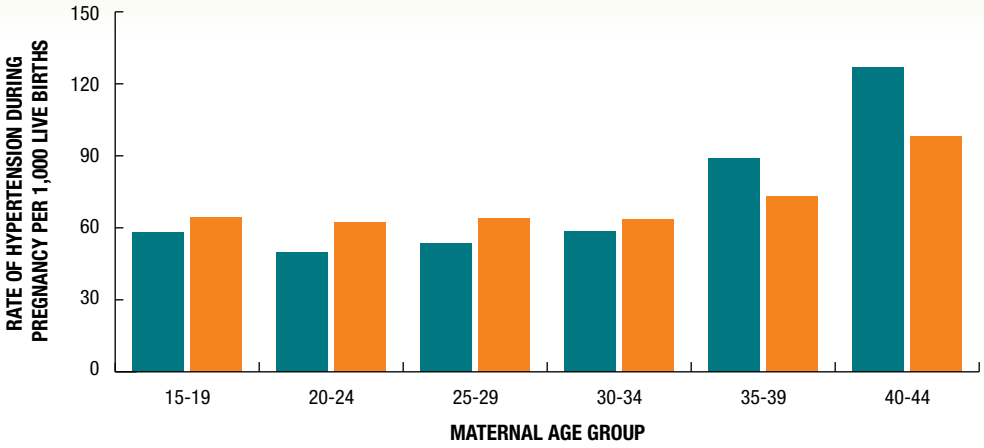
150 Crude rates are actual numbers of events; they have not been adjusted to account for the influence of other factors (for example, maternal age or gestational age).

151 See page 20.

152 $\rho = 0.88$, $p < 0.01$.

Rates of Hypertension During Pregnancy (2001–2011)

FIGURE 5.3 Age-specific rates of hypertension complications during pregnancy among First Nations and non-First Nations women in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	58.2	50.0	53.4	58.7	88.9	126.8
Non-First Nations	64.4	62.4	63.9	63.7	73.1	98.2

Source: *Government of Alberta, Alberta Health*

The rate of hypertension[153] during pregnancy increases with maternal age (Figure 5.3). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of cases of hypertension during pregnancy among the First Nations population.[154] There were approximately 11%[155] fewer cases of hypertension during pregnancy than expected in the First Nations population than in the non-First Nations population.

Crude (actual) rates of hypertension during pregnancy in Alberta (2001–2011):

- First Nations women: 57 cases per 1,000 live births
- Non-First Nations women: 66 cases per 1,000 live births
- Both populations showed an overall increase of hypertension during pregnancy over time.[156, 157]

For a graph of the overall rate of First Nations women experiencing hypertension complications during pregnancy from 2001 to 2011, see page 21.

153 Data included ICD9 code 642 (hypertension complicating pregnancy, childbirth and the puerperium). Pregnant women with hypertension are at increased risk of complications, including stroke and premature delivery.

154 From 2001 to 2011, the observed number of hypertension cases during pregnancy in First Nations women in Alberta was 0.89 (95% CI = 0.86, 0.92) times the number that would be expected if the rate of hypertension during pregnancy were the same as in the non-First Nations population.

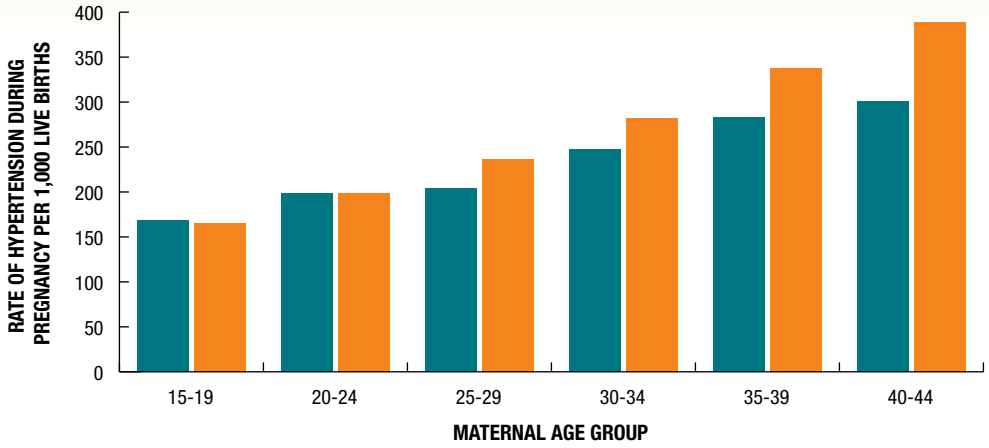
155 95% CI = 8%, 14%

156 See page 21.

157 $\rho = 0.85$, $p < 0.01$.

Rates of Caesarean Delivery (2001–2011)

FIGURE 5.4 Age-specific rates of Caesarean delivery among First Nations and non-First Nations women in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	168.1	198.7	204.2	247.8	283.6	300.5
Non-First Nations	165.7	198.5	236.1	281.9	337.6	388.5

Source: *Government of Alberta, Alberta Health*

The rate of Caesarean delivery increases with maternal age (Figure 5.4). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of Caesarean deliveries among the First Nations population.[158] There were 7%[159] fewer Caesarean deliveries than expected in the First Nations population than in the non-First Nations population.

Crude (actual) rates of Caesarean delivery in Alberta (2001–2011):

- First Nations women: 208 per 1,000 live births
- Non-First Nations women: 258 per 1,000 live births
- Both populations had an overall increase of Caesarean delivery.[160, 161]

For more information about types of birth for First Nations women in Alberta, see page 23.

Though both populations had an overall increase in Caesarean deliveries, First Nations women had 7% fewer than non-First Nations women.

158 From 2001 to 2011, the observed number of Caesarean deliveries in the First Nations population in Alberta was 0.93 (95% CI = 0.92, 0.94) times the number that would be expected if the rate of Caesarean deliveries were the same as in the non-First Nations population.

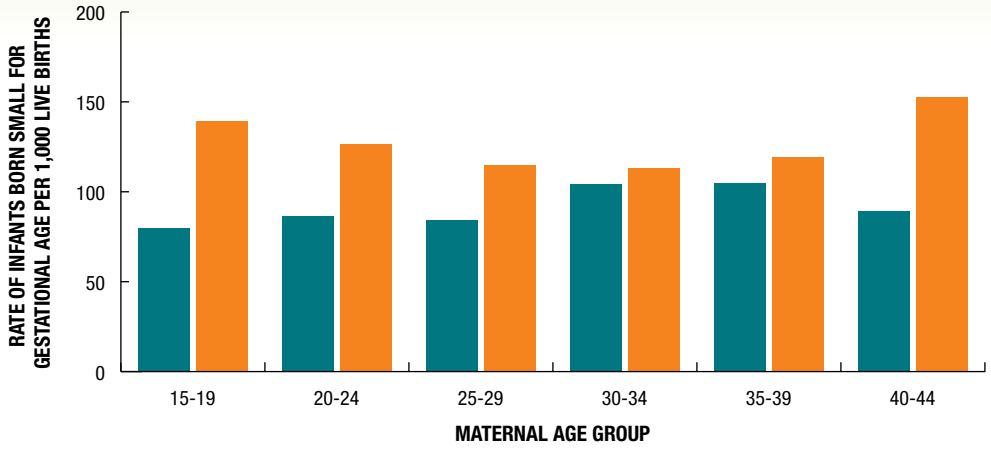
159 95% CI = 6.5%, 7.6%.

160 See page 23.

161 $\rho = 0.83$, $p < 0.01$.

Rates of Infants Born Small for Gestational Age (2001–2011)

FIGURE 5.5 Age-specific rates of infants born small for gestational age among First Nations and non-First Nations populations in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	79.9	86.5	84.4	104.0	104.9	89.2
Non-First Nations	139.4	126.6	115.0	113.1	119.3	152.9

Source: *Government of Alberta, Alberta Health*

The rate of infants born small for gestational age[162] varies according to maternal age (Figure 5.5). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of infants born small for gestational age among the First Nations population.[163] There were 29%[164] fewer infants born small for gestational age than expected in the First Nations population than in the non-First Nations population.

Crude (actual) rates of infants born small for gestational age in Alberta (2001–2011):

- First Nations women: 88 per 1,000 live births
- Non-First Nations women: 119 per 1,000 live births
- The rates remained stable in both populations over time.[165, 166]

For a comparison between the numbers of infants born small and large for gestational age among First Nations in Alberta, see page 24.

162 The rate of infants born small for gestational age is defined as the number of live births of infants whose birth weight is below the 10th percentile of the sex-specific birth weight for gestational age reference, expressed as a proportion of all singleton live births in a given place and time.

163 From 2001 to 2011, the observed number of infants born small for gestational age was 0.71 (95% CI = 0.68, 0.74) times the number that would be expected if the rate of infants born small for gestational age were the same as in the non-First Nations population.

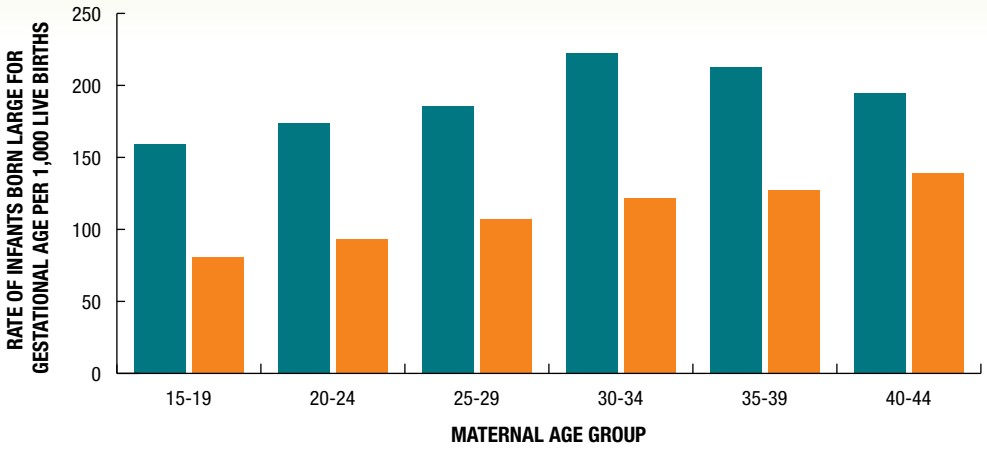
164 95% CI = 26%, 32%.

165 See page 24.

166 $\rho = 0.52$, $p = 0.11$.

Rates of Infants Born Large for Gestational Age (2001–2011)

FIGURE 5.6 Age-specific rates of infants born large for gestational age among First Nations and non-First Nations populations in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	159.1	173.5	185.9	222.1	213.0	194.8
Non-First Nations	80.7	93.1	107.5	122.0	127.1	139.2

Source: *Government of Alberta, Alberta Health*

The rate of infants born large for gestational age[167] varies with maternal age (Figure 5.6). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of infants born large for gestational age among the First Nations population.[168] There were 81%[169] more infants born large for gestational age than expected in the First Nations population than in the non-First Nations population. There is a documented association between gestational diabetes and large size for gestational age.[170]

Crude (actual) rates of infants born large for gestational age in Alberta (2001–2011):

- First Nations women: 184 per 1,000 live births
- Non-First Nations women: 111 per 1,000 live births
- The rate remained stable among First Nations,[171] but declined among the non-First Nations population over time.[172]

For a comparison between the numbers of infants born small and large for gestational age among First Nations in Alberta, see page 24.

167 The rate of infants born large for gestational age is defined as the number of live births of infants whose birth weight is above the 90th percentile of the sex-specific birth weight for gestational age reference, expressed as a proportion of all singleton live births in a given place and time.

168 From 2001 to 2011, the observed number of infants born large for gestational age was 1.81 (95% CI = 1.77, 1.86) times the number that would be expected if the rate of infants born large for gestational age were the same as in the non-First Nations population.

169 95% CI = 77%, 86%.

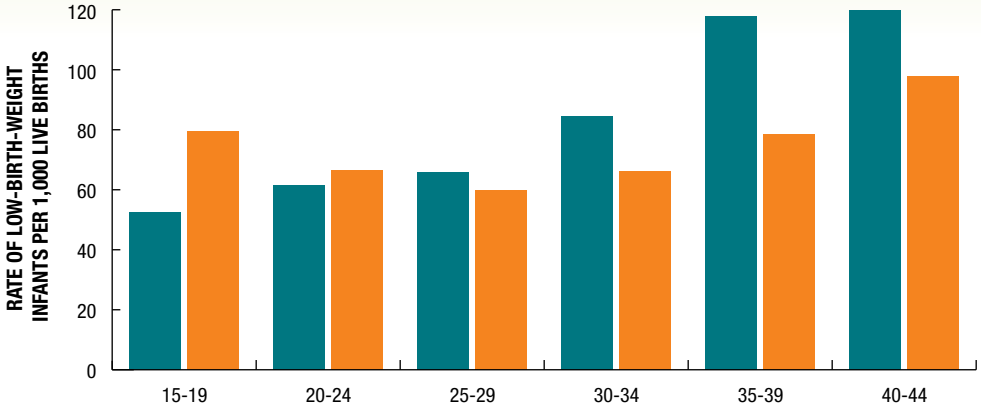
170 Waldemar, C. A. (2011). Large-for-gestational-age infants. In Kliegman, R. M., Stanton, B., St. Geme, S., Schor, N., & Behrman, R. E. (Eds.). *Nelson textbook of pediatrics* (19th ed.). Philadelphia (PA): Elsevier.

171 See page 24.

172 $\rho = -0.79$, $p < 0.01$.

Rates of Low-Birth-Weight Infants (2001–2011)

FIGURE 5.7 Age-specific rates of low-birth-weight infants among First Nations and non-First Nations populations in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	52.5	61.4	65.8	84.4	117.7	119.7
Non-First Nations	79.4	66.6	59.8	66.1	78.6	97.7

Source: *Government of Alberta, Alberta Health*

The rate of low-birth-weight infants[173] varies with maternal age (Figure 5.7). After controlling for maternal age, there was no difference between the observed and expected number of low-birth-weight infants among the First Nations population.[174] The rates were similar between First Nations and non-First Nations in Alberta over this period of time.

Crude (actual) rates of low-birth-weight infants in Alberta (2001–2011):

- First Nations population: 68 per 1,000 live births
- Non-First Nations population: 67 per 1,000 live births
- The rates remained stable overall among both populations over time.[175, 176]

For a graph comparing low- and high-birth-weight rates among First Nations infants in Alberta, see page 25.

173 Infants weighing less than 2.5 kg at birth are classified as having a low birth weight.

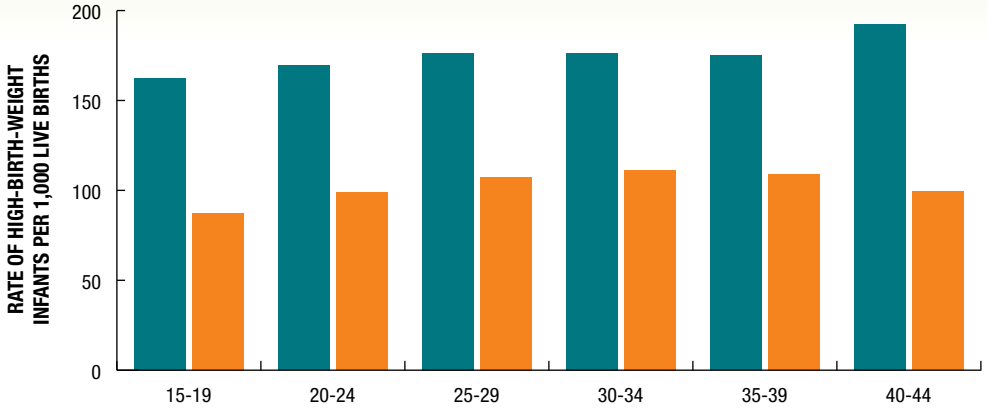
174 From 2001 to 2011, the observed number of low-birth-weight infants was 1.00 (95% CI = 0.98, 1.02) times the number that would be expected if the rate of low-birth-weight infants were the same as in the non-First Nations population.

175 See page 25.

176 $\rho = 0.69$, $p = 0.02$.

Rates of High-Birth-Weight Infants (2001–2011)

FIGURE 5.8 Age-specific rates of high-birth-weight infants among First Nations and non-First Nations populations in Alberta, 2001–2011



	15-19	20-24	25-29	30-34	35-39	40-44
First Nations	162.4	169.3	176.3	176.5	175.0	192.5
Non-First Nations	87.5	98.9	107.4	111.4	109.2	99.3

Source: *Government of Alberta, Alberta Health*

The rate of high-birth-weight infants[177] varies with maternal age (Figure 5.8). After controlling for maternal age, there was a statistically significant difference between the observed and expected number of high-birth-weight infants among the First Nations population.[178] There were 69%[179] more high-birth-weight infants than expected in the First Nations population than in the non-First Nations population. Gestational diabetes among expectant mothers is associated with high birth weight newborns.[180]

Crude (actual) rates of high-birth-weight infants in Alberta (2001–2011):

- First Nations population: 171 per 1,000 live births
- Non-First Nations population was 105 per 1,000 live births
- The rates remained stable[181] among the First Nations population but declined among the non-First Nations population over time.[182]

For a graph comparing low- and high-birth-weight rates among First Nations infants in Alberta, see page 25.

177 Infants weighing more than 4.0 kg at birth are classified as having a high birth weight.

178 From 2001 to 2011, the observed number of high-birth-weight infants was 1.69 (95% CI = 1.65, 1.74) times the number that would be expected if the rate of high-birth-weight infants were the same as in the non-First Nations population.

179 95% CI = 65%, 74%.

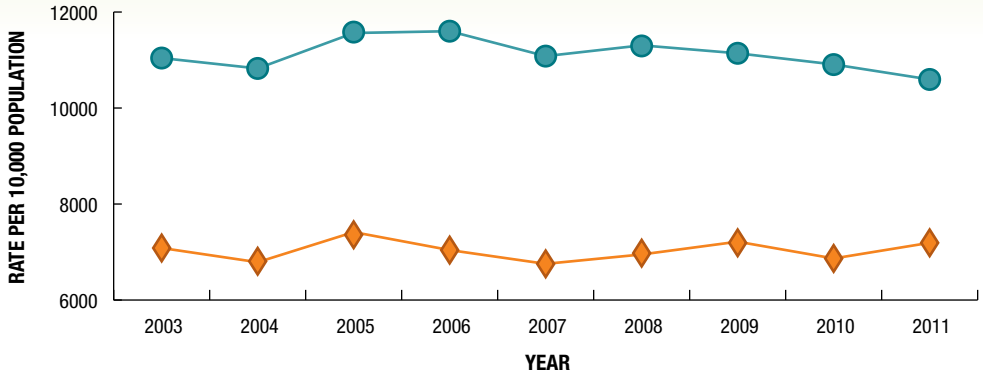
180 Ryan, E.A. (2011). Diagnosing gestational diabetes. *Diabetologia*, 54, 480-486.

181 See page 25.

182 $\rho = -0.99$, $p < 0.01$.

Infant and Child Emergency Department Visits (2003–2011)

FIGURE 5.9 Emergency department visit rates by year among First Nations and non-First Nations infants and children in Alberta, 2003–2011



	2003	2004	2005	2006	2007	2008	2009	2010	2011
First Nations	11,265	11,099	11,665	11,694	11,296	11,468	11,341	11,163	10,923
Non-First Nations	6,831	6,604	7,085	6,798	6,578	6,728	6,932	6,664	6,914

Source: *Government of Alberta, Alberta Health*

The overall rate of emergency department visits[183] by First Nations infants[184] and children[185] in Alberta was relatively stable between 2003 and 2011, with minimal year-to-year variability (Figure 5.9). A similar trend was observed among the non-First Nations population for the same period.

First Nations infants and children had consistently higher rates of emergency department visits (67% higher, on average) than non-First Nations children during the entire period between 2003 and 2011 (Figure 5.9). Infants accounted for 30% of these visits in the First Nations population and 23% in the non-First Nations population.

First Nations infants and children had consistently higher rates of emergency department visits than non-First Nations children.

The most common reasons for emergency department visits among First Nations and non-First Nations infants and children in Alberta were similar. They were: respiratory diseases, injuries and poisonings, ear diseases, and infectious and parasitic diseases.[186]

183 Emergency visits beginning with ICD10 z-codes were excluded from the analysis. ICD10 z-codes are used when a person who may or may not be sick uses health services for purposes such as to donate an organ, receive a vaccination or discuss a problem that is not actually a disease or injury.

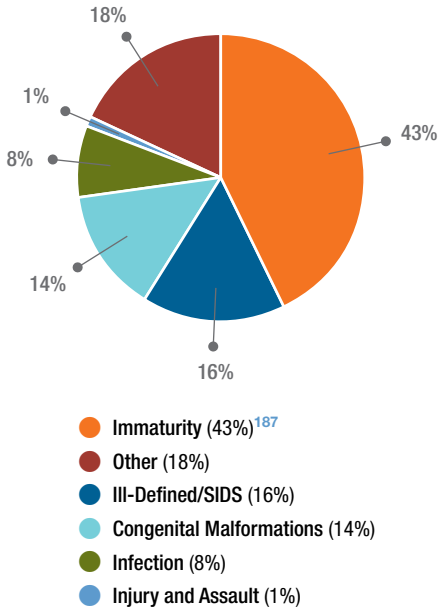
184 Infants are defined as being less than one year of age.

185 Children are defined as being between one and six years of age.

186 Government of Alberta, Alberta Health. (2012). Unpublished raw data.

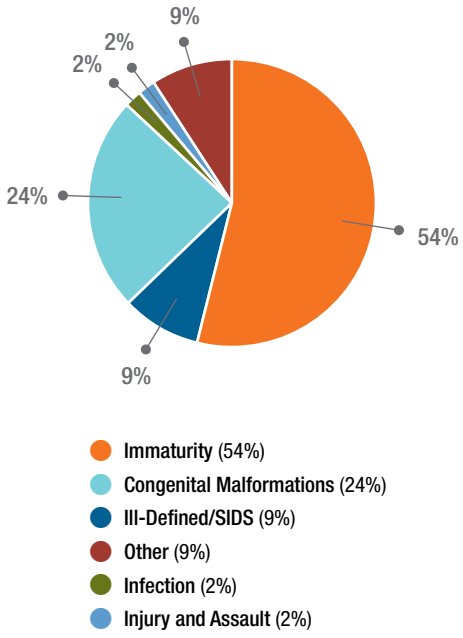
Infant Mortality (2001–2011)

FIGURE 5.10 Causes of death among First Nations infants in Alberta, 2001–2011



Source: *Government of Alberta, Alberta Health* n = 407

FIGURE 5.11 Causes of death among non-First Nations infants in Alberta, 2001–2011



Source: *Government of Alberta, Alberta Health* n = 1156

First Nations infants have a higher mortality rate than non-First Nations infants (12 deaths per 1,000 live births vs. 6 deaths per 1,000 live births, respectively). Data suggests that the risk of infant mortality in the non-First Nations population is stable but has been rising in the First Nations population since 2006.[188]

From 2001 to 2011, the leading causes of First Nations infant deaths in Alberta were immaturity[189] (43%), ill-defined/sudden infant death syndrome (SIDS) (16%), congenital malformations (14%), infection[190] (8%), and injury and assault (1%) (Figure 5.10).[191]

187 This percentage differs from the one provided in Figure 2.4 on page 17 due to the inclusion of asphyxia under the Immaturity category. Due to rounding, this change also impacted the 'Other' category.

188 Government of Alberta, Alberta Health and Wellness, Surveillance and Assessment Branch. (2012). *Draft Infant mortality in Alberta: First Nations and non-First Nations*. Public health surveillance bulletin.

189 *Immaturity* refers to conditions generally associated with preterm birth, and with conditions in the child associated with immaturity, related to either low birth weight or short gestation, or both. Examples include cervical incompetence, premature rupture of membranes, multiple pregnancy, chorioamnionitis and necrotizing enterocolitis of the newborn. Asphyxia is also included in this category. [Cole, S., Hartford, R.B., Bergsjo, P., & McCarthy, B. (1989). International collaborative effort (ICE) on birth weight, plurality, perinatal and infant mortality: A method of grouping underlying causes of infant death to aid international comparisons. *Acta Obstet Gynecol Scand*, 68: 113-117.]

190 *Infection* includes intestinal diseases, bacterial diseases, viral infections, influenza, pneumonia, etc.

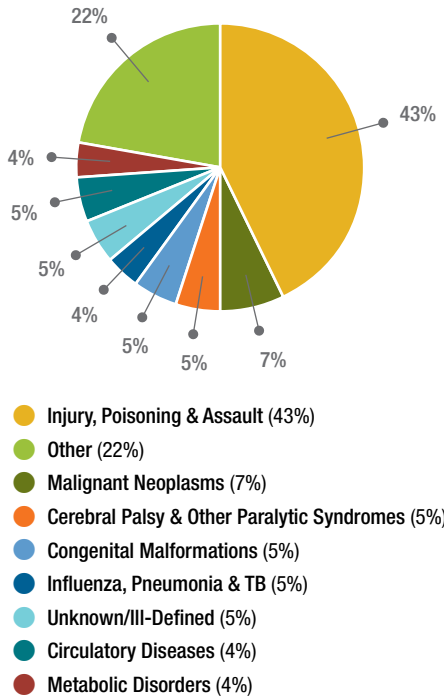
191 Due to the small absolute number of deaths in the First Nations population, ranking and proportions are easily skewed in relation to the more stable non-First Nations population in Alberta. The small sample size thus reduces the reliability of comparisons; please interpret with caution.

From 2001 to 2011, the leading causes of infant deaths in the non-First Nations population in Alberta were similar; however, deaths due to ill-defined reasons/SIDS occurred at a higher rate in the First Nations population (1 death per 1,000 live births[192] vs. less than 1 death per 1,000 live births,[193] respectively).

Deaths due to immaturity and congenital anomalies are most commonly observed during the neonatal period (up to 28 days after birth) and are highly correlated with maternal age.[194] This factor is not controlled for in this comparison, and the higher proportion of infant deaths for these categories within the non-First Nations population is expected because there are more births to older women among the non-First Nations Population than among the First Nations population (Figure 5.1). Deaths due to ill-defined reasons/SIDS and infectious diseases are most commonly observed during the postneonatal period (between 28-364 days of age) and are highly correlated with socioeconomic factors;[195] these factors are not addressed explicitly here.

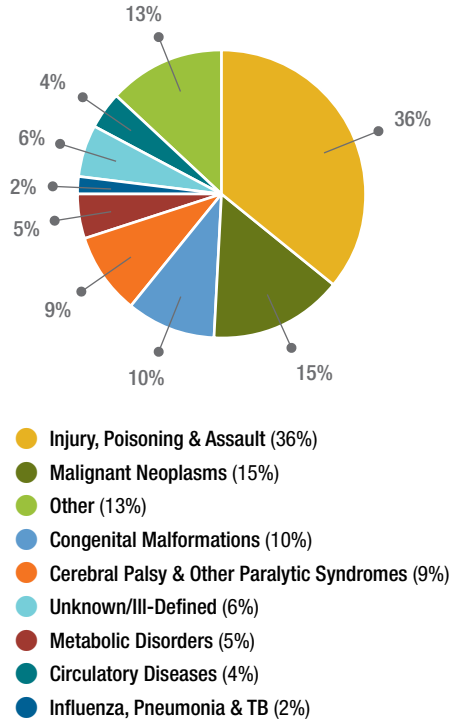
Child Mortality (2001–2011)

FIGURE 5.12 Causes of death among First Nations children in Alberta, 2001-2011



Source: *Government of Alberta, Alberta Health* n = 81

FIGURE 5.13 Causes of death among non-First Nations children in Alberta, 2001-2011



Source: *Government of Alberta, Alberta Health* n = 490

192 $\rho = -0.27$, $p = 0.42$.

193 $\rho = -0.78$, $p < 0.01$.

194 Kliegman, R. M., Stanton, B., St. Geme, S., Schor, N., & Behrman, R.E. (Eds.). (2011). *Nelson textbook of pediatrics* (19th ed.). Philadelphia (PA): Elsevier.

195 Ibid.

There is a higher mortality rate among First Nations children than among non-First Nations children (39 deaths per 100,000 population vs. 19 deaths per 100,000 population, respectively).

From 2001 to 2011, the leading causes of child deaths among First Nations in Alberta were accidental injury, poisoning and assault (43%), followed by malignant neoplasms[196] (7%), congenital malformations and cerebral palsy and other paralytic syndromes (5%), and metabolic disorders[197] (4%) (Figure 5.12).[198] The leading causes of death were similar in the non-First Nations population (Figure 5.13). For a more detailed analysis of child mortality among First Nations in Alberta, please refer to the *2010–11 First Nations Health Status Report*.

Summary

Maternal child health indicators are important measures of health and health services. First Nations mothers tend to have children at a younger age than non-First Nations mothers in Alberta. Between 2001-2011, the rate of gestational diabetes was higher among First Nations expectant mothers, however, they had fewer cases of hypertension during pregnancy and fewer Caesarian deliveries than non-First Nations women. The impact of diabetes during pregnancy on the rate of fetal growth and birth weight of First Nations babies was evident in higher rates of small for gestational age babies as well as higher birth weights. Rates of low-birth-weight babies born to First Nations mothers are similar to those of non-First Nations mothers in Alberta. First Nations infants and children have had consistently higher rates of emergency department visits (67% higher on average) between 2003-2011.

The information provided in the supplement is intended to aid community and regional planners in setting priorities when addressing the health and well being of First Nations mothers and their children.

196 *Malignant neoplasms* refers to all types of cancers diagnosed in childhood.

197 *Metabolic disorders* refers to diabetes mellitus, disorders of other endocrine glands, disorders of the thyroid gland, intraoperative complications of the endocrine system, other nutritional deficiencies, and so forth.

198 *Other* includes but is not limited to coagulation defects/ purpura and other hemorrhagic conditions, general symptoms and signs, degenerative diseases of the nervous system, episodic and paroxysmal disorders, other forms of heart disease, diseases of the esophagus/ stomach and duodenum, renal tubule-interstitial diseases, other disorders of the blood and blood-forming organs, certain degenerative diseases of the nervous system and certain disorders involving the immune mechanism.

Appendix to the Maternal and Child Health Supplement: Data Analyses

Indicator	Definition
Age Distribution of Mothers (2001–2011)	Average proportion of births by maternal age group among First Nations and non-First Nations women reported by Alberta Health (AH)
Causes of Infant Deaths (2001–2011)	Cumulative proportion of causes of infant deaths by ICD10-CA classification reported by AH
Causes of Child Deaths (2001–2011)	Cumulative proportion of causes of child deaths by ICD10-CA classification reported by AH
Rate of Diabetes Complications (2001–2011)	$SIR^{199} = \frac{\text{Observed cases of diabetes complications in First Nations population reported by AH}}{\text{Expected cases of diabetes complications if risk approximated non-First Nations population reported by AH}}$
Rate of Hypertension Complications (2001–2011)	$SIR = \frac{\text{Observed cases of hypertension complications in First Nations population reported by AH}}{\text{Expected cases of hypertension complications if risk approximated non-First Nations population reported by AH}}$
Rate of Caesarean Delivery (2001–2011)	$SIR = \frac{\text{Observed Caesarean deliveries in First Nations population reported by AH}}{\text{Expected cases of Caesarean deliveries if risk approximated non-First Nations population reported by AH}}$
Rate of Infants Born Small for Gestational Age (2001–2011)	$SIR = \frac{\text{Observed births of infants small for gestational age in First Nations population reported by AH}}{\text{Expected births of infants small for gestational age if risk approximated non-First Nations population reported by AH}}$
Rate of Infants Born Large for Gestational Age (2001–2011)	$SIR = \frac{\text{Observed births of infants large for gestational age in First Nations population reported by AH}}{\text{Expected births of infants large for gestational age if risk approximated non-First Nations population reported by AH}}$
Rate of Low-Birth-Weight Infants (2001–2011)	$SIR = \frac{\text{Observed low-birth-weight infants in First Nations population reported by AH}}{\text{Expected low-birth-weight infants if risk approximated non-First Nations population reported by AH}}$
Rate of High-Birth-Weight Infants (2001–2011)	$SIR = \frac{\text{Observed high-birth-weight infants in First Nations population reported by AH}}{\text{Expected high-birth-weight infants if risk approximated non-First Nations population reported by AH}}$

199 SIR = Standardized Incidence Ratio