



# Alberta Child Health Surveillance Report



R  
E  
P  
O  
R  
T

2005  
Alberta Centennial

Alberta  
HEALTH AND WELLNESS

2005  
Health Surveillance

Suggested citation: Child Health Surveillance Project Data Group (2005). *Alberta Child Health Surveillance Report 2005*. Edmonton, AB: Alberta Health and Wellness.

For more information contact:

**Health Surveillance**

Alberta Health and Wellness  
24<sup>th</sup> Floor, Telus Plaza North Tower  
10025 Jasper Avenue  
PO Box 1360 STN MAIN  
Edmonton, Alberta T5J 2N3  
CANADA

Phone: 1 (780) 427-4518  
Toll Free: 310-0000 (in Alberta only)  
Fax: 1 (780) 427-1470  
Email: [Health.Surveillance@gov.ab.ca](mailto:Health.Surveillance@gov.ab.ca)  
Internet: <http://www.health.gov.ab.ca>

ISSN 0-7785-3472-3 Alberta Child Health Surveillance Report 2005 (Print)  
ISSN 0-7785-3473-1 Alberta Child Health Surveillance Report 2005 (Online)

### Data Group

Xinjie Cui BMed PhD (Chair)	Manager, Health Surveillance, AHW
Joseph Dong PhD	Consultant, Health Surveillance, AHW
Ken Morrison BA	Data and Information Coordinator, Health Surveillance, AHW
Thu-Ha Nguyen BSc	Health Data Analyst, Health Surveillance, AHW
Don Schopflocher PhD	Senior Bio-Statistician /Senior Manager, Health Surveillance, AHW
Leslie Twilley PhD	Consultant, Twilley Consulting Services
Fu-Lin Wang BMed PhD	Epidemiologist, Health Surveillance, AHW

### Internal Working Group

Regina Beckett	Project Manager, Population Health Strategies, AHW
Xinjie Cui (Chair)	Manager, Subpopulation Surveillance, Health Surveillance, AHW
Micky Elabdi	Communication Officer, Communications, AHW
Gloria Keays	Deputy Provincial Health Officer, Provincial Health Office, AHW
Don Schopflocher	Senior Manager/Senior Bio-Statistician, Health Surveillance, AHW
Larry Svenson	Manager, Epidemiologic Surveillance, Health Surveillance, AHW

### Cross-Ministry Reference Group

Heather Bell Dechant	Manager, Alberta Children and Youth Initiative, Alberta Learning
Taranjeet Birdi	Evaluation Consultant, Public Health Agency of Canada
Brian Boles	Senior Manager, Research Liaison, Alberta Children's Services
Phil Burke	Manager, Aboriginal Health, Population Health Strategies, AHW
Xinjie Cui (Chair)	Manager, Health Surveillance, AHW
Lynn Damberger	Director, Advocacy and Liaison, Alberta Mental Health Board
Kathy Huebert	Research Officer, Research Services, AADAC
Josephine Longo-Kimber /Sandy Radomski	Senior Planners, Health Benefits, Alberta Human Resources and Employment
Donna Ludvigsen	Senior Manager, Population Health Strategies, AHW
Mark Nicoll	Manager, Strategic Planning, Office for Disability Issues, Alberta Seniors and Community Supports
Sandi Roberts	Director, Alberta Children and Youth Initiative, Alberta Learning

### Expert Advisory Committee

Gail Andrew MD	Developmental Pediatrician, Glenrose Rehabilitation Hospital
Jeff Bisanz PhD	Professor, Department of Psychology, University of Alberta
Xinjie Cui (Chair) BMed PhD	Manager, Health Surveillance, AHW
Corine Frick MSc	Director, Alberta Perinatal Health Program
Gloria Keays MD FRCP(C)	Deputy Provincial Health Officer, AHW
Martin Lavoie MD FRCP(C)	Medical Officer of Health, David Thompson Health Region
Delmarie Sadoway MHSA	Senior Operating Officer, Primary Care Division, Capital Health Authority
Donald Spady MD MSc	Pediatrician/Epidemiologist, Department of Pediatrics, University of Alberta
Suzanne C. Tough PhD	Team Leader, Decision Support/Research Team, University of Calgary/Calgary Regional Health Authority

AHW = Alberta Health and Wellness

AADAC= Alberta Alcohol and Drug Abuse Commission

## Acknowledgements

Alberta Health and Wellness would like to acknowledge the contributions of the members of the Data Group, the Internal Working Group, the Cross-Ministry Reference Committee, and the Expert Advisory Committee. Without their generous efforts and valuable contributions this report would not have been possible.

The Data Group was responsible for:

- Developing data management plans
- Developing standards for data extraction and analysis
- Performing data analyses
- Reviewing the relevant literature
- Compiling and writing the report
- Formatting the report and preparing it for publication

The Internal Working Group was responsible for:

- Defining the purpose and scope of the project
- Drafting a report outline
- Providing input on process and the establishment of the cross-ministry reference group and the advisory committee
- Engaging in internal communication
- Reviewing drafts of documents

The Cross-Ministry Reference Group was responsible for:

- Providing feedback on the framework and outline of the report from their ministries' perspectives
- Serving as liaison with their ministries
- Working on sub-working-groups if required
- Reviewing draft reports in a timely fashion
- Assisting in the distribution of the final report to relevant areas within their ministries

The Expert Advisory Committee was responsible for:

- Providing input on the framework and outline of the report
- Working as experts on sub-working-groups
- Reviewing draft reports in a timely fashion

The assistance of Irene Wong at Statistics Canada's Research Data Centre at the University of Alberta is also noted.

# Table of Contents

<i>Acknowledgements</i> .....	ii
<b>1. EXECUTIVE SUMMARY/HIGHLIGHTS</b> .....	<b>1</b>
<b>2. INTRODUCTION</b> .....	<b>7</b>
2.1 BACKGROUND .....	7
2.2 METHODOLOGY .....	11
2.2.1 <i>General Methodology Notes and Limitations</i> .....	13
2.2.2 <i>Contents</i> .....	17
2.2.3 <i>Data Sources</i> .....	21
<b>3. CHILD HEALTH DETERMINANTS</b> .....	<b>27</b>
3.1 POPULATION .....	27
3.1.1 <i>Child Population</i> .....	29
3.2 SOCIO-ECONOMIC STATUS .....	33
3.2.1 <i>Socio-Economic Status</i> .....	35
3.3 FAMILY ENVIRONMENT .....	41
3.3.1 <i>Parenting Style</i> .....	43
3.3.2 <i>Child Neglect/Abuse</i> .....	47
3.4 HEALTH-RELATED BEHAVIOURS .....	51
3.4.1 <i>Physical Activity</i> .....	53
3.4.2 <i>Body Mass Index</i> .....	57
3.4.3 <i>Smoking</i> .....	61
3.4.4 <i>Alcohol Consumption</i> .....	63
3.5 MATERNAL BEHAVIOURS .....	65
3.5.1 <i>Smoking During Pregnancy</i> .....	67
3.5.2 <i>Alcohol Consumption During Pregnancy</i> .....	71
<b>4. CHILD HEALTH STATUS</b> .....	<b>75</b>
4.1 BIRTH OUTCOMES .....	75
4.1.1 <i>Low Birth Weight</i> .....	77
4.1.2 <i>High Birth Weight</i> .....	81
4.1.3 <i>Congenital Anomalies</i> .....	85
4.1.4 <i>Fetal Alcohol Spectrum Disorder</i> .....	89
4.2 CHILD DEVELOPMENT .....	91
4.2.1 <i>Motor and Social Development</i> .....	93
4.2.2 <i>Cognitive Development</i> .....	97
4.3 MENTAL HEALTH .....	101
4.3.1 <i>Attention Deficit Disorder</i> .....	103
4.3.2 <i>Anxiety and Neurotic Disorders</i> .....	107
4.3.3 <i>Depression</i> .....	111
4.4 CHRONIC CONDITIONS .....	115
4.4.1 <i>Asthma</i> .....	117
4.4.2 <i>Diabetes</i> .....	123
4.4.3 <i>Cancer</i> .....	127
4.5 VACCINE-PREVENTABLE DISEASES .....	131
4.5.1 <i>Pertussis</i> .....	133
4.5.2 <i>Invasive Pneumococcal Disease</i> .....	137
4.5.3 <i>Invasive Meningococcal Disease</i> .....	141
4.5.4 <i>Other Vaccine-Preventable Diseases</i> .....	143
4.6 SEXUAL HEALTH .....	145
4.6.1 <i>Chlamydia</i> .....	147
4.6.2 <i>Gonorrhoea</i> .....	151
4.6.3 <i>Human Immuno-deficiency Virus</i> .....	155
4.6.4 <i>Teenage Pregnancy</i> .....	157
4.7 INJURIES .....	161

4.7.1 Injuries .....	163
4.8 MORTALITY .....	171
4.8.1 Mortality.....	173
<b>5. HEALTH SERVICE UTILIZATION.....</b>	<b>179</b>
5.1 IMMUNIZATION .....	179
5.1.1 Immunization.....	181
5.2 HOSPITALIZATION.....	185
5.2.1 Hospitalization .....	187
5.3 EMERGENCY ROOM USE .....	197
5.3.1 Emergency Room Use .....	199
5.4 PHYSICIAN'S OFFICE VISITS.....	209
5.4.1 Physician's Office Visits.....	211
<b>6. REFERENCES .....</b>	<b>221</b>
6.1.1 REFERENCES .....	221
<b>7. APPENDICES.....</b>	<b>227</b>
7.1.1 Diagnosis Codes Used for Data Extraction .....	229
7.2.1 Epidemiologic Measures for Maps.....	233
7.3.1 Alberta Routine Immunization Schedule .....	239
7.4.1 Child Populations.....	243

## 1.1 Executive Summary/ Highlights

Alberta's population is aging.

The First Nations population is considerably younger than the non-First Nations population.

A significant number of Alberta children, especially those with single mothers, are at risk of not having basic needs met.

Virtually all Alberta parents report positive interactions with their 2 to 3 year olds, but such interactions are less likely as the children get older.

More than 1% of Alberta children are abused and/or neglected each year.

Alberta's children enjoy excellent health overall. Compared to the rest of the world, socio-economic status is high, and child mortality and disease rates are low. There are areas of concern for Alberta's children, however. Some of our children are subjected to abuse and/or neglect, many children are overweight or inactive, some children contract sexually transmitted infections, and many children experience hospitalizations and emergency room visits due to injuries. We need to work toward eliminating the incidence of these preventable health concerns.

This comprehensive cross-ministry report is a strong positive step toward understanding and ultimately improving the health of Alberta's children.

### Health Determinants

#### Population

- In 2004, people between the ages of 0 and 19 made up 27.3% of Alberta's population; that figure is projected to decrease to 21.9% by 2033.
- In 2004, 41.8% of the First Nations population was between 0 and 19 years of age, compared with 26.6% for the non-First Nations population.
- Girls born in Alberta in 2004 can expect to live to 82.6 years of age, boys to 77.8 years of age.

#### Socio-Economic Status

- 3.2% of children in Alberta received child welfare or social assistance in 2003, with infants more likely than older children to fall into this category.
- The National Child Benefit Supplement is given to 31.4% of Alberta's children.
- According to the Market Basket Measure, 15.4% of Alberta children lived in low-income families in 2000, compared with 11.9% for the Alberta population as a whole. Of Alberta children living in female lone parent families, 34.3% were low-income.

#### Family Environment

- A positive interaction style of parenting was reported by 96.2% of parents of 2 to 3 year olds in 2000/01. The rate of positive interactions fell to 44.1% for 10 to 11 year olds.
- In 2003, 16.2 out of every 1,000 Alberta children (12,518) were the victims of substantiated cases of child abuse and/or neglect.
- The rate of child abuse and/or neglect was lower in 2003 than in previous recent years, partially due the implementation of the Differential Response Initiative, involving preemptive measures when risk factors for abuse/neglect are present.

### Health-Related Behaviours

- In 2000/01, about 90% of 10 to 13 year olds were physically active outside of school at least once a week. This rate decreased to 80% for 14 to 17 year olds.
- 29.0% of Alberta children were overweight in 2000/01. Average body mass index increased after age 7, and was highest for 14 to 17 year olds, as expected due to puberty.
- In 2002, 19% of Alberta students in grades 5 to 9 reported ever trying smoking cigarettes, down from 39% in 1994. 16% of 15 to 19 year olds reported being current smokers and smoking 100 or more cigarettes in their lifetime.
- 56.4% of Alberta students in grades 7 to 12 in 2002 reported consuming alcohol in the previous 12 months, with higher reported rates for males, aboriginal students, and older students. 81.2% of grade 12 students reporting drinking alcohol in the previous 12 months.

### Maternal Behaviours

- Smoking during pregnancy was reported by 22.1% of Alberta women in 2002. The rate was markedly higher for younger mothers, especially teenage mothers. Even among women with the lowest rates (those 30 years old and older), one in seven women smoked while pregnant.
- The rate of smoking during pregnancy for First Nations women was approximately triple that of non-First Nations women.
- 4.0% of Alberta women reported to health care providers that they consumed alcohol during pregnancy. The rate was highest for teenage mothers, at 10.7%.

### Health Status

#### Birth Outcomes

- In 2004, the rate of low birth weight births was 6.4 out of every 100 live births.
- Low birth weight rates were lowest for mothers between 25 and 34 years old, and were highest for mothers in their 40s.
- High birth weight babies represented 1.7 out of every 100 live births in 2004.
- The high birth weight rate for First Nations babies was double that of non-First Nations infants.
- The rate of congenital anomalies increased between 1998 and 2003. In 2003, 37.7 out of every 1,000 total births involved a congenital anomaly.
- Congenital anomalies are more common in infants delivered to older mothers.
- Reliable data on prevalence of Fetal Alcohol Spectrum Disorder in Alberta are not available.

## 1.1 Executive Summary/ Highlights

Most Alberta children engage in physical activities outside of school at least once a week.

More than one quarter of Alberta children are overweight.

Rates of trying smoking are decreasing among students in grades 5 to 9.

Alcohol consumption is widespread among Alberta youth.

Smoking during pregnancy is common, especially among young mothers and First Nations mothers.

Alcohol consumption during pregnancy still occurs in Alberta.

Rates of low birth weight are elevated in Alberta.

First Nations mothers have a higher rate of high birth weight infants than non-First Nations mothers.

Rates of congenital anomalies are increasing.



## 1.1 Executive Summary/ Highlights

The large majority of Alberta children shows normal motor, social, and cognitive development at early ages.

Attention deficit disorders are three times more common in boys than in girls.

Anxiety and depression are more common in girls than in boys.

There is increased risk of anxiety and depression in 15 to 17 year olds.

Asthma is common, especially among boys.

Diagnoses of asthma are often made before the age of 5, and First Nations children tend to be diagnosed earlier than non-First Nations children.

Diabetes in childhood is increasing.

Childhood cancer is rare in Alberta.

### Child Development

- In 2002/03, 11.5% of Alberta children showed delayed motor and social development and 11.0% showed advanced development.
- Delayed cognitive development was indicated in 10.7% of Alberta children in 2002/03, with advanced development in 16.7% of children.
- These rates did not change with time from 1994/95 to 2002/03, and are similar to rates for Canada as a whole.

### Mental Health

- In 2003, attention deficit disorder was diagnosed in 33.0 out of every 1,000 boys in Alberta and 10.5 out of every 1,000 girls. The rate increased for boys and girls between 1998 and 2003.
- First Nations children tend to be diagnosed with attention deficit disorder at younger ages than non-First Nations children.
- Anxiety disorders were more common in girls than in boys, with rates of 19.6 and 15.7 per 1,000, respectively, in 2003.
- The rate of anxiety disorder diagnosis was highest for 15 to 17 year olds, with First Nations children in this age group being particularly likely to be diagnosed.
- Depression was also more likely to be diagnosed in girls (12.3 out of 1,000 girls) than in boys (8.3 per 1,000 boys) in Alberta in 2003.
- Depression rates for 15 to 17 year olds are dramatically higher than those for younger children. Among 15 to 17 year olds, 13,329 were diagnosed with depression between 2001 and 2003.
- From 2001 to 2003, diagnosed depression rates were lower among First Nations children than non-First Nations children.

### Chronic Conditions

- There were 78.2 possible cases of asthma per 1,000 boys in Alberta in 2003, and 57.3 per 1,000 girls.
- Diagnoses of possible cases of asthma peak between 1 and 4 years of age.
- There is a tendency for First Nations children to be diagnosed with possible cases of asthma at younger ages than non-First Nations children.
- The childhood diabetes rate increased between 1998 and 2002 in Alberta. The 2002 rate was 2.4 (per 1,000 children).
- Diabetes diagnoses (including both Type I and Type II diabetes) increase linearly with increasing age during childhood.
- Alberta childhood cancer rates did not change between 1998 and 2003. In 2003, 106 children were diagnosed with cancer (1.4 per 10,000 children).
- Childhood cancer is most common in children under 5 years of age.

### Vaccine-Preventable Diseases

- Alberta pertussis rates declined up to 2003, after an outbreak in the mid-1990s. In 2004, another outbreak occurred, with a rate of 65.7 (per 100, 000).
- Infants have higher rates of pertussis than older children.
- Invasive pneumococcal disease occurred in 8.5 out of 100,000 children in 2004. The rate peaked at 17.3 in 2001.
- Children under the age of five are most likely to have invasive pneumococcal disease.
- Invasive meningococcal disease rates peaked in 2000 and 2001. In 2004, there were only two cases, for a rate of 0.3 (per 100,000 children).
- There were no cases of Hib (Haemophilus influenzae type b) or measles in Alberta in 2004.

### Sexual Health

- In 2004, the rate of newly reported cases of chlamydia was more than 8 times higher in girls (237.5 per 100,000) than in boys (27.5). The rate for girls increased between 1998 and 2004.
- Chlamydia rates increase dramatically with increasing age in childhood. One percent of 17 year olds were diagnosed with chlamydia between 2002 and 2004.
- Gonorrhoea was also more common in girls. In 2004, the rate of newly reported cases of gonorrhoea was 30.8 (per 100,000) for girls, and 7.6 for boys.
- Gonorrhoea rates increase dramatically with increasing age. Between 2002 and 2004, 121.8 out of 100,000 17 year olds acquired gonorrhoea.
- Human immuno-deficiency virus (HIV) infection is rare in Alberta children, with seven cases reported between 1998 and 2002. No cases were reported in 2003.
- The teenage pregnancy rate decreased between 1998 and 2003. Teenage pregnancies occurred in 7.8 out of 1,000 girls in 2003.

### Injuries

- Injuries are the leading cause of mortality for children age 1 to 19 years.
- Motor vehicle collisions are the major cause of injury death in all age groups. Motor vehicle collisions resulting in injury or fatality, and suicide are much more common in the teenage years than in the pre-teen years.
- More boys die from injury than girls.
- Complications of medical care and unintentional falls are the leading causes of hospitalization for injury.

## 1.1 Executive Summary/ Highlights

Pertussis is the most common vaccine-preventable disease in Alberta, with two recent outbreaks.

Invasive pneumococcal disease and invase meningococcal disease rates have fallen recently following immunization campaigns.

Sexually-transmitted diseases are being contracted by Alberta youth. Rates are higher for girls.

Rates of chlamydia and gonorrhoea are increasing for girls. Gonorrhoea rates are increasing for boys.

HIV is very rare among Alberta children.

Teenage pregnancies are decreasing.

After one year of age, the most common cause of death is injury.

Mortality due to motor vehicle collisions and suicide increases in the teenage years (15 to 19).

Complications of medical care and unintentional falls are the most common causes of injury hospitalizations.

## 1.1 Executive Summary/ Highlights

Boys have higher rates of death, hospitalization, and emergency room visits due to injury than girls.

Child mortality is low in Alberta.

Most child deaths occur in infancy.

A significant number of Alberta two year olds are under-immunized.

Boys are more likely than girls to be hospital patients. Infants and First Nations children are also at increased risk of hospitalization.

Perinatal conditions and respiratory conditions are the most common causes of childhood hospitalizations overall. Injury and poisoning is the leading cause for 10 to 17 year olds.

### Injuries continued

- Sports-related injuries are a common cause of hospitalization for school-aged children. Hospitalization for motor vehicle collisions and parasuicidal behaviours (deliberate self-harming behaviours) increases in frequency in adolescence.
- Hospitalization rates for injury declined between 1998 and 2003. Rates were higher for males than for females for all causes except for parasuicidal behaviour, which was higher among girls.
- Emergency department visits due to injuries tend to have different causes than injury deaths or hospitalizations.
- Boys are more likely than girls to be treated in emergency departments for injuries.

### Mortality

- Child mortality is low in Alberta, with 407 deaths in 2003 (52.6 per 100,000 children).
- The childhood mortality rate is highest by far in infants, at 609.8 (per 100,000) for 1998 to 2003 combined.
- Perinatal conditions, congenital anomalies, and transport accidents are the leading causes of child mortality in Alberta.

### Health Service Utilization

#### Immunization

- In 2003, 86.2% of one year olds were up to date on their immunizations for diphtheria, pertussis, tetanus, polio, and Hib. The rate fell to just under 78% for two year olds.
- 90.3% of two year olds were up to date on their measles, mumps and rubella immunizations in 2003.

#### Hospitalization

- Boys are more likely to be hospital patients than girls in Alberta. In 2003, the rates were 4.2 (per 100 boys) and 3.7 (per 100 girls).
- Infants were most likely to be hospitalized of all age groups.
- First Nations children were more likely to be hospitalized than non-First Nations children, though the hospitalization rate for First Nations children decreased between 1998 and 2003.
- First Nations rates were especially elevated for 1 to 4 year olds and 15 to 17 year olds.
- Perinatal conditions and respiratory disorders accounted for almost half of all hospital visits by children in 2003.
- Injury and poisoning was the leading cause of hospitalization for 10 to 17 year olds.
- Respiratory conditions were a more common cause of hospitalization for First Nations children than non-First Nations children, whereas perinatal conditions were more common for non-First Nations children.

### Emergency Room Use

- The rate at which children were patients in emergency rooms increased between 1998 and 2003 in Alberta, and was consistently higher for boys than for girls. In 2003, there were 30.9 boy patients per 100 boys and 27.9 girl patients per 100 girls.
- First Nations children were more likely than non-First Nations children to be patients in emergency rooms. The difference between First Nations and non-First Nations children was largest for infants.
- The emergency room patient rate was highest for children aged 1 to 4 years.
- The top three causes of emergency room use by children in 2003 were “other injuries”, “persons encountering health services for specific procedures and health care” and “other acute respiratory infections.
- For children under 5 years, “other acute respiratory infections” were the leading cause of emergency room use, while “other injuries” were the leading cause for 6 to 17 year olds.

### Physician’s Office Visits

- Unlike hospital and emergency room patient rates, girls are more likely than boys to visit physicians’ offices. In 2003, the physician patient rates in Alberta were 86.9 for girls (per 100) and 85.1 for boys.
- Physician patient rates in childhood were highest for children under 5 years of age.
- Non-First Nations children in all age groups visited physicians’ offices more often than First Nations children between 2001 and 2003.
- Leading causes of visits to physicians’ offices were acute respiratory infections, symptoms, services related to development, and diseases of the ear and mastoid process.
- For infants, the leading cause of physician’s office visits was services related to development, while for 1 to 17 year olds, acute respiratory infections were the leading cause.
- Acute respiratory infections were more common for First Nations children than non-First Nations children.

## 1.1 Executive Summary/ Highlights

Boys are more likely than girls to be patients in emergency rooms in Alberta. First Nations children and young children are also at increased risk of visiting emergency rooms.

Respiratory infections bring children under 5 to emergency rooms most often, while injuries are the most common cause of emergency room visits for children between 6 and 17 years.

Girls are more likely than boys to be patients in physician’s offices. Young children and non-First Nations children have elevated rates of physician’s office visits.

Acute respiratory infections are the leading cause of physician’s office visits for 1 to 17 year olds.

## 2. Introduction

*2.1 Background*

*2.2 Methodology*



## 2.1 Background

Children in Alberta today have unprecedented opportunities to meet every parent's goal of leading happy, healthy lives. The changes to society that have accompanied the development of those opportunities also bring challenges for Alberta's children, however. Children and their families must now find ways to combat issues such as sedentary lifestyles, obesity, and mental health concerns.

This report was developed to provide a detailed look at the health issues facing today's children, so that we can begin to work together to optimize the health of Alberta's children, and indeed of the future of the province.

The Alberta Child Health Surveillance Report framework (see section 2.2.2 Contents) was drafted by a working group in the fall of 2004, based on a literature review that included an extensive survey of similar reports from other jurisdictions. An advisory panel of experts was assembled to provide input on this framework and on the outline for the report. A cross-ministry reference group was formed to enable broad-based reporting on a wide range of health topics. The data group met frequently to discuss optimal handling of the often huge and complex datasets.

The goal was to create the first comprehensive report on the health of Alberta's children, with high quality reporting on as many facets of child health as was possible.

We present an extensive and current survey of the health determinants, health status, and health service utilization of children in Alberta, including wherever possible information on changes over time, effects of age group, the First Nations subpopulation, and regional differences.

For the first time in Alberta's 100 year history, we have a detailed picture of child health in Alberta.

It is our hope that this report will prove useful to governments, educators, service providers, researchers, program planners, and others concerned with the welfare of children, ultimately benefiting the children of Alberta themselves.





## 2. Introduction

### *2.1 Background*

### *2.2 Methodology*

*2.2.1 General Methodology Notes and Limitations*

*2.2.2 Contents*

*2.2.1 Data Sources*



## 2.2.1 General Methodology Notes and Limitations

- Whenever possible and appropriate, data are broken down by year, age group, region of residence, First Nations status, and leading causes.
- In most cases, we were able to provide data for at least 5 calendar years (generally 1998 to 2002). In many cases, we were able to provide additional data for 2003 and 2004.
- A child was defined as a person between the ages of 0 and 17 years. This includes children up to one day less than 18 years of age. Age was calculated at calendar year-end (December 31), rather than at time of service. Note that national data sometimes included 18 and 19 year olds.
- Only Alberta residents are included in analyses unless otherwise stated. Provincial rate calculations include Alberta residents with an “unknown” RHA code.
- The most recent regional health authority (RHA) boundaries, which came into effect in December 2003, were used.
- There may be access issues that apply to more remote regions of the province, with some services (such as mental health and specialized services) being less available in those areas. Patients may in fact move to larger centres to gain access to services in some cases. Any known discrepancies in access should be taken into account when interpreting regional rates.
- Classification of individuals as to First Nations status is subject to errors for a variety of reasons and is considered an approximate estimate only. For our purposes, children were considered to be First Nations children if they were dependents of family units that contained a First Nations Treaty Status parent. First Nations status was attributed to any individual currently residing in Alberta who had ever been recorded as having First Nations Treaty Status. First Nations Treaty Status is assigned to adults when the First Nations and Inuit Health Branch of Health Canada informs the Alberta Health Care Insurance Plan that an individual has treaty status. See Schopflocher (2004) for a detailed discussion of assignment of First Nations status.
- National comparisons are made where possible. Where Canada and Alberta data are compared, a single data source is used to ensure that data collection and extraction are consistent. The Alberta data used in these comparisons may differ from those provided in other analyses that do not involve national comparisons.

- Statistical analyses are mainly descriptive, including frequencies, rates, percentages, means, and standard errors. Differences are interpreted in terms of confidence intervals. Confidence intervals are plotted on figures. Very small confidence intervals are not always easily visible.
- With rare events or detailed break-downs, rates may be based on small numbers, which reduces their statistical reliability. Caution should always be exercised in interpreting these rates. Data are often combined across three-year periods to increase reliability of rates.
- Reporting tends to improve with time, so time trends must be interpreted with caution for those datasets in which reporting variability is possible. There may also be regional differences in reporting and coding for those data that are acquired from the health regions.
- Beginning with April 2002 data, a new coding system for classification of diseases (International Statistical Classification of Diseases and Related Health Problems Tenth Revision, an Enhanced Canadian Version (ICD-10-CA) is in use for morbidity data. For data prior to April 2002 (and for some 2002 data) the International Classification of Disease – 9th Revision – Clinical Modification (ICD-9-CM)) Codes were used. Because the coding systems are not identical, there may be discrepancies between data for 2002 and later years. Comparisons of data coded with ICD-10-CA and those coded with ICD-9-CM should be undertaken with caution.
- Diagnostic criteria for diseases and conditions may change over time, affecting the interpretation of time trends.
- Increased awareness of diseases and conditions may lead to increased diagnosis rates. There is always a possibility that diseases and conditions are misdiagnosed, though such occasions are expected to be rare.
- The rates for conditions, diseases, and health service utilization represent only those patients seeking care. The rate may therefore be expected to be underestimates of the true underlying rates.
- Testing for communicable diseases is continually increasing in frequency and quality. This should be taken into consideration when interpreting time trends.

## 2.2.1 General Methodology Notes and Limitations

## 2.2.1 General Methodology Notes and Limitations

- There are some limitations that are intrinsic to administrative databases. Diagnostic fields are not always validated; this applies in particular to physician claims data.
- Because of differences in definitions and dates of extracting data for analyses, the statistics in this report may not be the same as those previously published by Alberta Health and Wellness.
- Child populations used as denominators in rate calculations appear in Appendix 7.4.1. All populations are by calendar year, and were based on mid-year estimates (June 30).



## 2.2.2 Contents

The Alberta Child Health Surveillance Report 2005 framework appears at the end of this section. The Report contains health indicators for Alberta children selected from this framework, including:

### Health Determinants

- Child population (population distributions, general fertility rate, life expectancy)
- Socio-economic status (welfare/social assistance, Alberta Health Care premium subsidy, National Child Benefit Supplement, Market Basket Measure)
- Family environment (parenting style, child abuse/neglect)
- Health-related behaviours (physical activity, body mass index, smoking, alcohol consumption)
- Maternal behaviours (smoking during pregnancy, alcohol consumption during pregnancy)

### Health Status

- Birth outcomes (low birth weight, high birth weight, congenital anomalies, Fetal Alcohol Spectrum Disorder)
- Child development (cognitive development, motor and social development)
- Mental health (Attention Deficit Disorder, anxiety and neurotic disorders, depression)
- Chronic conditions (asthma, diabetes, cancer)
- Vaccine-preventable diseases (pertussis, invasive pneumococcal disease, invasive meningococcal disease, other vaccine-preventable diseases)
- Sexual health (chlamydia, gonorrhoea, HIV, teenage pregnancy)
- Injuries
- Mortality

### Health Service Utilization

- Immunization
- Hospitalization
- Emergency Room Use
- Physician's Office Visits

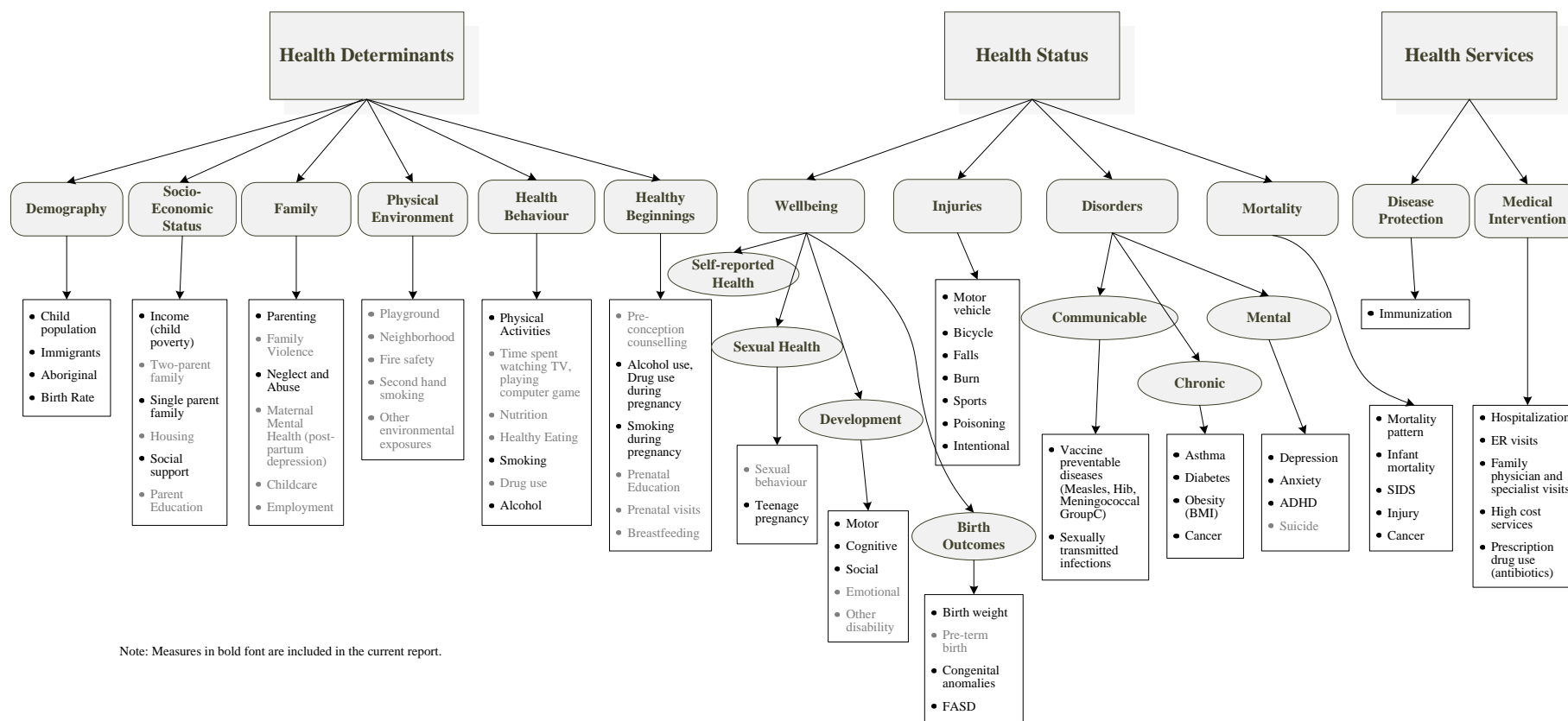
- Some indicators from the framework were not included in the completed report.
- Several indicators were excluded because they were reported on elsewhere. These included maternal mental health, preterm birth, and breastfeeding data (appearing in *Alberta Reproductive Health: Pregnancies and Births 2004* (Alberta Health and Wellness, 2004) and the *Canadian Perinatal Health Report 2003* (Health Canada, 2003)), childhood drug use (reported on in a variety of Alberta Alcohol and Drug Abuse Commission reports), and childhood disability indicators (a profile of disability in Alberta will appear in an upcoming report from Alberta Seniors and Community Supports).
- Other measures were available, but resource considerations resulted in their exclusion. This applied to data on two-parent families, housing, parental education, child care, parental employment, neighbourhood variables, screen time (computer or television), prenatal health care visits, and emotional development.
- For other indicators, reliable up-to-date provincial data were not readily available, including measures of family violence, playground safety and availability, fire safety, second-hand smoke exposure, other environmental exposures, nutrition, pre-conception counseling, prenatal education, and sexual behaviours. Some of these measures are crucial to our understanding of child health in Alberta, and the development of reliable and timely data sources is an important goal for future reports.

## 2.2.2 Contents



## Alberta Child Health Surveillance Report Framework

Alberta Health and Wellness





## 2.2.3 Data Sources

### Indicators from AHCIP registry:

- Populations for rate calculations throughout the report
- Social assistance
- Health care premium subsidy
- Demographic information (age, gender, place of residence, First Nations status)

### Indicators from Vital Statistics:

- General fertility
- Life expectancy
- Alcohol consumption during pregnancy
- Cigarette smoking during pregnancy
- Low birth weight
- High birth weight
- Teenage pregnancy
- Mortality

### Indicators from Statistics Canada Census:

- Immigrant status
- Single parent families

### Indicators from Alberta Human Resources and Employment:

- National Child Benefit Supplement

### Indicators from Alberta Children's Services:

- Child abuse/neglect

Data sources appear below; in the left column are the indicators generated from these sources.

### Alberta Health Care Insurance Plan (AHCIP) Registry

The AHCIP Registry was established to enable premium collection and assessment of registrant eligibility for services claimed by medical practitioners. The current report used demographic information from this database. The **Alberta Stakeholder Registry Population Files** are derived from the Registry and were used to estimate the population of the province and its regions. Information on First Nations status was also obtained from the Alberta Stakeholder Registry Population Files.

### Vital Statistics

Vital Statistics data are managed by Alberta Government Services. Vital Statistics data used in this report include birth data (date of birth, age of mother, birth weight, sex, alcohol consumption during pregnancy, smoking during pregnancy, region of residence) and death data (age at death, sex, region of residence).

### Statistics Canada Census

The federal government completes a census of Canada's population every five years. The Census of Population provides population counts for Canada, the provinces and territories (as well as smaller geographic units). The census also provides information about demographic, social and economic characteristics (Statistics Canada, 2002a).

### Alberta Human Resources and Employment

Alberta Human Resources and Employment provided data on Alberta children receiving the National Child Benefit Supplement.

### Alberta Children's Services

Data on child abuse/neglect in Alberta were provided by Alberta Children's Services. The data were extracted from case records of substantiated cases of abuse and/or neglect.

## National Longitudinal Survey of Children and Youth (NLSCY)

“The National Longitudinal Survey of Children and Youth (NLSCY) is a long-term study of Canadian children that follows their development and well-being from birth to early adulthood. The study is designed to collect information about factors influencing a child's social, emotional and behavioural development and to monitor the impact of these factors on the child's development over time” (Statistics Canada, 2005c).

Survey data are collected every two years, and there have been releases of five cycles of data so far, the first in 1994/95, and the latest in 2002/03. The survey design is complex, and not all age groups or variables are available in all cycles. The first cycle included children aged 0 to 11 years, and in each cycle new 0 to 1 year olds were added. The oldest children continued to be followed, so that by Cycle 5, the participants ranged from 0 to 19. Additional 4 and 5 year olds were added in later cycles, to boost sample sizes for early childhood indicators. By Cycle 5, however, weights for cross-sectional data (allowing comparisons across age groups and over time in the same age groups, such as those included in this report) for children over the age of 5 years were not released, because the sample was deemed no longer representative of the population. For this reason, we report Cycle 5 data only for children 5 and under.

For parenting style, body mass index, and physical activity level, time trends are for 10 to 11 year olds. Age effects for these indicators use Cycle 4. For cognitive development and motor and social development, time trends include all five cycles. No age effects are presented for these measures because they were only used with limited age ranges.

Because of the complex survey design, standard errors and confidence intervals cannot be calculated in the usual manner. Statistics Canada provides weights to be used with bootstrapping techniques to obtain more accurate variance estimates. These bootstrap weights were used to obtain all standard errors and confidence intervals for the NLSCY data used in this report.

All NLSCY data analyses were carried out at the Research Data Centre, University of Alberta. While the analyses are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

## 2.2.3 Data Sources

### Indicators from NLSCY:

- Parenting style
- Body mass index
- Physical activity level
- Cognitive development
- Motor and social development

## 2.2.3 Data Sources

### Indicators from AADAC:

- Alcohol consumption

### Indicators from hospital inpatient files:

- Smoking during pregnancy (by First Nations status)
- Low birth weight (by First Nations status)
- High birth weight (by First Nations status)
- Asthma (hospitalizations)
- Hospitalizations

### Indicators from ACASS:

- Congenital anomalies

### Alberta Alcohol and Drug Abuse Commission (AADAC)

Data on alcohol consumption behaviour were provided by AADAC. AADAC is an agency of the Government of Alberta, with a mandate to provide information, prevention, and treatment services to Albertans for alcohol, drug, and gambling problems. The data used in the present report came from AADAC's 2002 survey of Alberta youth, The Alberta Youth Experience Survey. Most of the data we report came from the technical report on that survey (AADAC, 2003a), and other data from the survey were provided directly by AADAC.

### Hospital Inpatient (Morbidity) Files

Hospital morbidity data consist of one record for each inpatient separation (discharge, transfer, or death) in acute care hospitals in Alberta. Prior to 2002, inpatient data was collected by hospitals and directly submitted to the Canadian Institute for Health Information (CIHI). CIHI edited and delivered files to AHW. AHW performed certain edits and appended additional data elements. In April 2002, AHW implemented a new system for collecting inpatient data, the Morbidity and Ambulatory Care Abstracting Record (MACAR) system. In MACAR, the hospitals submit data directly to AHW and an edited file is then delivered from AHW to CIHI.

For this report, asthma hospitalizations and overall hospitalization data came from the Hospital Inpatient Files. The Hospital Inpatient Files were also used for First Nations status analyses for certain measures (smoking during pregnancy, low birth weight, high birth weight) for which First Nations status was not available in the primary data source.

### Alberta Congenital Anomalies Surveillance System (ACASS)

ACASS is a congenital anomalies registry system that is funded and maintained by the Health Surveillance Branch, Alberta Health and Wellness. ACASS obtains information about infants (under one year of age) with congenital anomalies from a variety of sources, including the Notice of a Live birth or a Stillbirth and Newborn Record (often referred to as the Notice of Birth (NOB)), medical certificates of stillbirth, and medical certificates of death. A notification form called the Congenital Anomaly(ies) Reporting Form is completed by hospital health records personnel following the birth or an admission of an affected child. Because many children with congenital anomalies are not admitted to hospital, out-patient information is also obtained (Alberta Health and Wellness, 2001).

### **Alberta Health Care Insurance Plan (AHCIP) Fee-For-Service Claims**

The AHCIP registers Albertans for billable services and pays providers of those services. A detailed database of provider claims for payment is kept (the Fee-For-Service Claims database). Data on services rendered was used in several sections of this report. Note that services provided by physicians in salaried positions are not included in this database.

### **Ambulatory Care Classification System (ACCS)**

ACCS is a system for the collection and costing of data on facility-based ambulatory care, such as same-day surgery, day procedures, emergency room visits, and community rehabilitation program services occurring in publicly-funded facilities.

### **Alberta Cancer Registry**

Cancer data are from Alberta Cancer Board. The Division of Population Health and Information, Alberta Cancer Board, operates the Alberta Cancer Registry. The registry is a computerized database of all incidents of cancer in Alberta. Diagnosed primary cancers are coded by their site, morphology and other biological and demographic information (Alberta Cancer Board, 2005).

### **Communicable Disease Reporting System (CDRS)**

Communicable disease case reports are centrally collected and maintained in the CDRS, which is a secure database managed by the Disease Control and Prevention Branch of Alberta Health and Wellness. The CDRS has two systems:

- **Notifiable Disease Registry (NDR) System.** NDR data used in this report include disease infection, diagnosis dates, and demographic information about the infected person. Data for notifiable diseases are reported to the system by the various health authorities.
- **Sexually Transmitted Disease (STD) System.** Sexually transmitted infection data used in this report include disease infection, dates of laboratory and diagnosis confirmation, demographic information on the infected person, and health region of residence.

## **2.2.3 Data Sources**

### **Indicators from AHCIP Fee-for-Service Claims:**

- Depression
- Asthma (physician's office visits)
- Diabetes
- Physician's office visits

### **Indicators from ACCS:**

- Asthma (emergency room visits)
- Emergency room visits

### **Indicators from Alberta Cancer Registry:**

- Cancer

### **Indicators from NDR System:**

- Pertussis
- Invasive Pneumococcal Disease
- Invasive Meningococcal Disease
- Measles
- Hib
- HIV

### **Indicators from STD System:**

- Chlamydia
- Gonorrhoea

## 2.2.3 Data Sources

### Indicators from Alberta Injury Database:

- Injuries

### Indicators from Regional Health Authorities:

- Immunization

### Indicators from national sources:

- Smoking
- National comparisons

### Alberta Injury Database

The Alberta Injury Database was developed by the Health Surveillance Branch in conjunction with the Alberta Centre for Injury Control & Research. This database tabulates all deaths with a cause of injury indicated, all inpatient discharges from acute care hospitals with an external cause of injury code indicated, and all emergency room visits from Alberta hospitals with an external cause of injury code recorded. Injuries were defined using the International Classification of Diseases, 9<sup>th</sup> Revision Clinical Modification–External Causes (ICD-9 E-Codes 800 to 999.9) and International Classification of Diseases 10<sup>th</sup> Revision–External Causes (ICD-10 Codes S00 to T98). Complications of medical and surgical care (ICD-9 Codes E870-879 and E930-949 and ICD-10 Codes Y40 to Y84) were included in these data. Non-residents who were hospitalized or died in Alberta were excluded.

### Regional Health Authorities

Immunization coverage rates are reported directly to Health Surveillance, Alberta Health and Wellness by the Regional Health Authorities.

### Statistics Canada/Public Health Agency of Canada/Health Canada/Human Resources Development Canada

Data on a variety of topics from various branches of the federal government were used throughout the report, primarily to provide comparisons between Alberta and Canada on selected measures. Readers are referred to the cited sources for these data.





## 3. Child Health Determinants

*3.1 Population*

*3.2 Socio-Economic Status*

*3.3 Family Environment*

*3.4 Health-Related Behaviours*

*3.5 Maternal Behaviours*



### 3.1.1 Child Population

#### Background

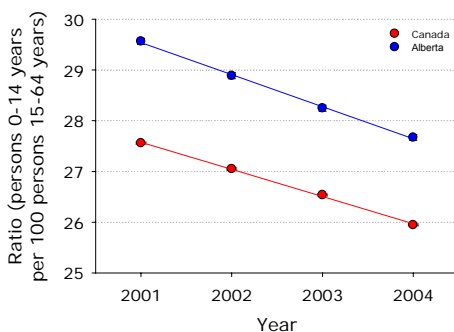
**Child Population:** *Number of children aged 0 to 17 years living in Alberta.*

**Total Fertility Rate:** *Estimate of the number of live births per 1,000 women age 15-49 years over a lifetime. A total fertility rate of 1,500 would represent 1.5 live births per woman.*

**Child Dependency Ratio:** *The ratio of the number of people under 15 years old to the number of working-age people (15 to 64 years old) in a population.*

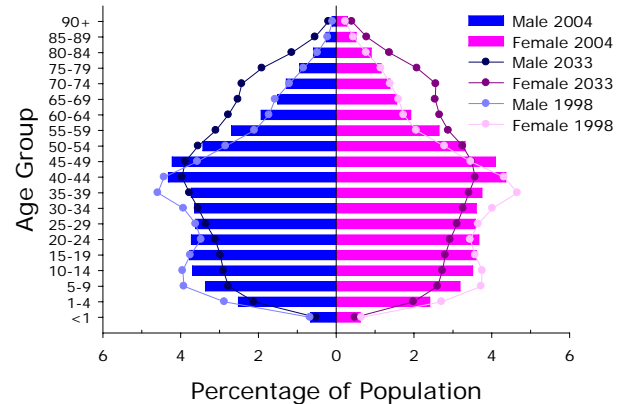
The Alberta child dependency ratio has been declining in recent years and is expected to continue to decline until approximately 2010, when the children of the late 1990s “baby bust” (a period of decreased fertility rates) begin to leave the under 15 age group. The ratio is expected to slightly increase as the baby boomers retire. By 2025, the children of the baby bust of the late 1990’s will enter their childbearing years, resulting in a downturn in the ratio. Alberta’s child dependency ratio is higher than Canada’s. The populations of Canada and Alberta are aging, however, and the ratio for both decreased between 2001 and 2004 (see figure below). In 2004, there were about 26 children per 100 working-age people in Canada, compared with almost 28 in Alberta (Statistics Canada, 2005a).

Child Dependency Ratio, Alberta and Canada, 2001 to 2004  
Source: Statistics Canada (2005a)

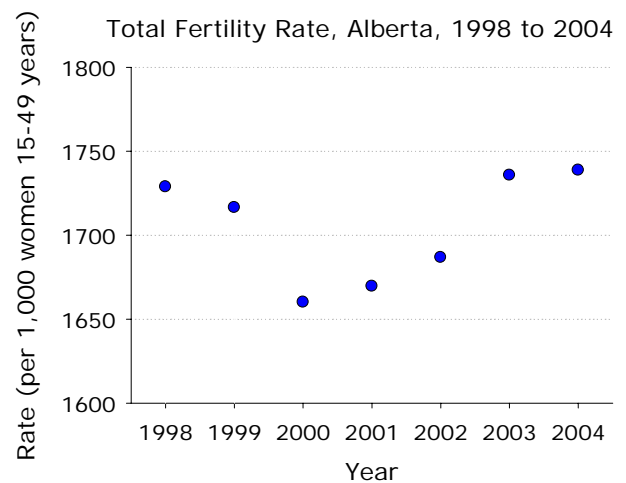


#### Time Trends (see Table 3.1.1.1, 3.1.1.2)

Population Distribution of Alberta, 2004 compared with 1998 and 2033

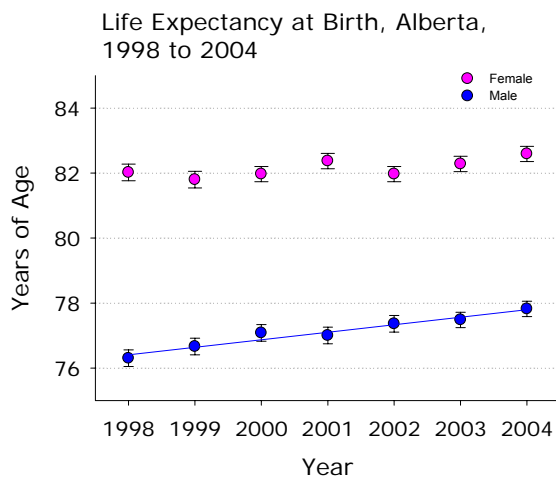


- When population pyramids for 1998 and 2004 are compared, it is evident that Alberta’s population is aging. There were more children in 1998 than there were in 2004. This is partly due to a minor “baby bust” in Alberta in the late 1990’s.
- Projections for 2033 show continued aging of the population and reduction in the proportion of children. In 1998, people aged 0 to 19 made up 29.6% of the population. The figures are 27.3% and 21.9% for 2004 and 2033, respectively.



- Fertility rates declined throughout the 1990s in Alberta, and reached a low point in 2000. The total fertility rates for 2003 and 2004 were elevated relative to the three years preceding.
- In 2004, the total fertility rate for Alberta was 1,739 (per 1,000 women age 15-49 years). This means that the average number of live births to Alberta women was 1.74.
- Fertility was lowest in RHAs 3, 5, and 6 from 2002 to 2004.

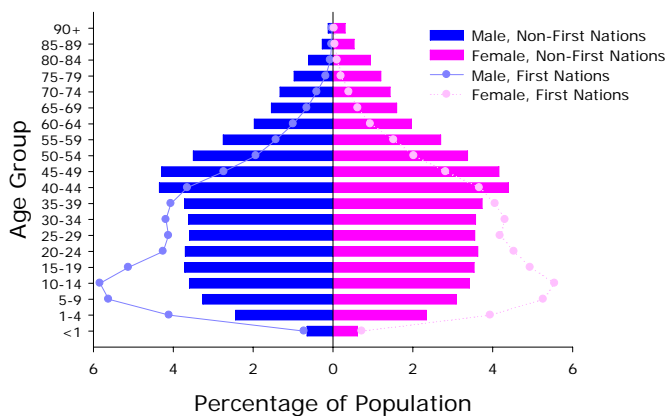
### Time Trends continued (see Tables 3.1.1.3, 3.1.1.4, 3.1.1.5, 3.1.1.6)



- Life expectancy is high for Alberta's children. In 2004, life expectancy at birth was 82.6 years for females, and 77.8 years for males. Between 1998 and 2004, life expectancy at birth increased for males and remained stable for females.
- Life expectancy in 2004 was highest in RHA 3 for both males and females.

### First Nations

Population Distribution of Alberta, First Nations vs. Non-First Nations, 2004



- The population pyramid for First Nations is strikingly different from that for the non-First Nations population. The First Nations population in Alberta is much younger than the non-First Nations population, with many more children, and fewer persons age 40 and older.
- In 2004, 41.8% of the First Nations population in Alberta was 0 to 19 years in age, compared with 26.6% of the non-First Nations population.

## 3.1.1 Child Population

### Background continued

Alberta has a smaller immigrant population than the country as a whole. In 2001, 18.2% of Canada's population was comprised of immigrants, compared with 14.7% in Alberta (Statistics Canada, 2003).

The child immigrant population is also smaller in Alberta than in Canada. In 2001, 5.5% of children living in Canada were born in other countries, compared with 3.6% of children living in Alberta (Statistics Canada, 2003).

### 3.1.1 Child Population

---

---

#### Limitations and Methodology Notes

The total fertility rate is the sum of the age-specific fertility rates for each year of age between 15 and 49 in a given year. The age-specific fertility rate is the number of live births per 1,000 women in a given age group in a given year.

Shaun Malo, Health Surveillance, Alberta Health and Wellness, contributed to this section.

Table 3.1.1.1 Total Fertility Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Total Fertility Rate</b>	1,729	1,716	1,660	1,670	1,687	1,736	1,739

Table 3.1.1.2 Total Fertility Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Total Fertility Rate</b>	1,998	1,866	1,613	1,923	1,435	1,611	2,037	2,032	2,261	1,720

**Source:** Vital Statistics, Birth File, Department of Government Services, May 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.1.1.3 Life Expectancy at Birth, Females, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Life Expectancy at Birth</b>	82.02	81.80	81.97	82.37	81.97	82.28	82.59
<b>Standard Error (SE)</b>	0.13	0.13	0.12	0.12	0.12	0.12	0.12

Table 3.1.1.4 Life Expectancy at Birth, Males, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Life Expectancy at Birth</b>	76.30	76.66	77.08	77.00	77.36	77.48	77.82
<b>Standard Error (SE)</b>	0.13	0.13	0.13	0.13	0.13	0.12	0.12

Table 3.1.1.5 Life Expectancy at Birth by Residence RHA, Females, 2004

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Life Expectancy at Birth</b>	81.97	81.52	83.25	81.53	81.87	82.90	81.18	81.47	79.87	82.59
<b>Standard Error (SE)</b>	0.51	0.63	0.20	0.39	0.63	0.21	0.54	0.61	1.33	0.12

Table 3.1.1.6 Life Expectancy at Birth by Residence RHA, Males, 2004

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Life Expectancy at Birth</b>	76.93	76.34	79.27	76.67	77.97	77.64	75.50	76.60	74.98	77.82
<b>Standard Error (SE)</b>	0.55	0.64	0.20	0.41	0.59	0.22	0.54	0.62	1.04	0.12

**Source:** Vital Statistics, Death File, Department of Government Services, May 2005 release.

Vital Statistics, Birth File, Department of Government Services, May 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness.

**Notes:** Records for Albertans dying outside of Alberta are not included in the Alberta Vital Statistics Registry, as a result, estimates will generally exceed those calculated by Statistics Canada.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

## 3. Child Health Determinants

*3.1 Population*

*3.2 Socio-Economic Status*

*3.3 Family Environment*

*3.4 Health-Related Behaviours*

*3.5 Maternal Behaviours*





### 3.2.1 Socio-Economic Status

#### Background

**Child Welfare:** *Financial and medical benefits provided for a child when parents/guardians are unable or unwilling to care for the child, and the child is living in another home with an adult caregiver (Alberta Children's Services, 2005b).*

**Social Assistance:** *Monthly financial assistance from the provincial government for families who cannot meet basic needs.*

**Health Care Premium Subsidy:** *Alberta Health Care premiums are subsidized for low-income families.*

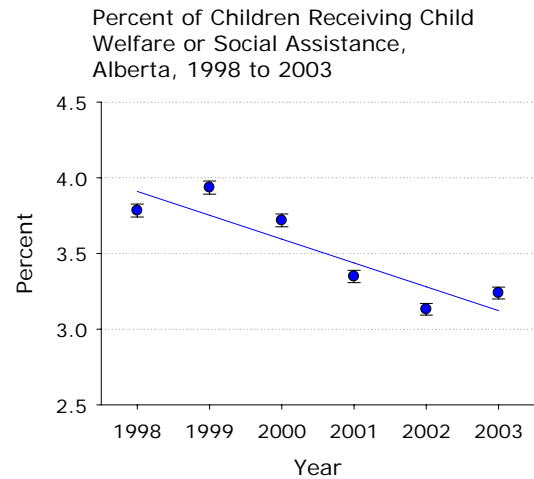
**National Child Benefit (NCB):** *A federal government program that provides the Child Tax Benefit (CTB) to low-income families with children, and the National Child Benefit Supplement (NCBS) to the lowest-income families.*

**Alberta Child Health Benefit (ACHB):** *ACHB provides the following coverage for children in low-income families: prescription drugs, basic dental, optical, emergency ambulance, and essential diabetic supplies.*

**Market Basket Measure (MBM):** *The percentage of people who cannot buy necessary goods and services in their community, including food, clothing and footwear, shelter, transportation, telephone services, recreation, and school supplies.*

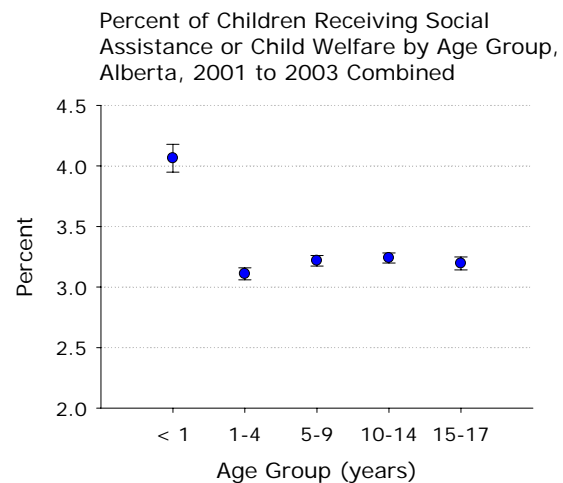
**Depth of Poverty:** *The difference between disposable income and the low-income threshold (i.e., MBM), expressed as a proportion of the threshold. For example, if the MBM threshold was \$20,000 and a family had a disposable income of \$15,000, their depth of poverty would be .25 (Human Resources Development Canada, 2003).*

#### Time Trends (see Tables 3.2.1.1, 3.2.1.3)



- Between 1998 and 2003, the percentage of children in families receiving child welfare or social assistance dropped, from 3.8% (28,875 children) to 3.2% (25,047 children).
- The percentage of children in families receiving a health care premium subsidy declined, from 16.6% in 1998 (126,780 children) to 12.0% in 2003 (93,120 children).

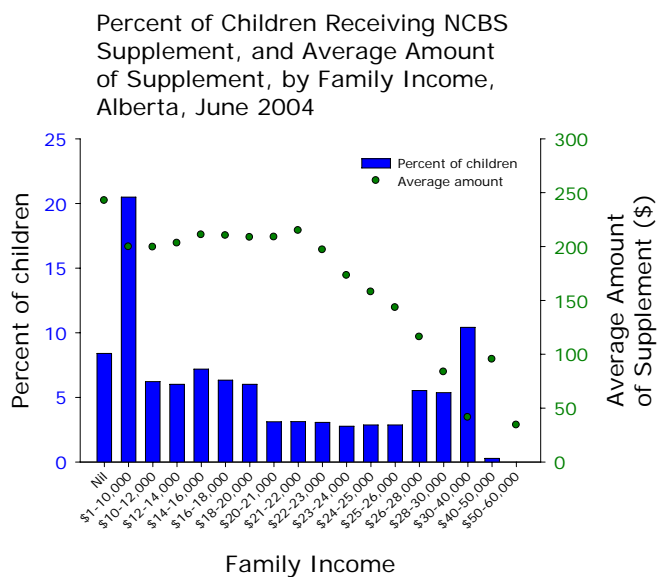
#### Age Effects (see Tables 3.2.1.2, 3.2.1.4)



- For 2001 to 2003 combined, 4.1% of infants (4,615 children) received child welfare or social assistance, compared with just over three percent in other age groups.
- Children under one year of age were also the most likely to be in a family receiving a health care premium subsidy. From 2001 to 2003, 16.2% of children under 1 were subsidized (18,384 children), compared with the lowest rate of 10.2% for children age 15 to 17 years (42,269 children).

## National Child Benefit Supplement

- In June 2004, there were 242,522 children in Alberta who were receiving the National Child Benefit Supplement (NCBS). This is 31.4% of Alberta children.
  - Of the children receiving the NCBS, 61.2% (148,534 children) did not benefit from other government-funded health programs.
  - All children who receive the NCBS are eligible to receive the Alberta Child Health Benefit (ACHB). However, of the 148,534 children receiving the NCBS but not receiving other government health benefits, only 46.5% (69,085 children) also received the ACHB; 79,449 eligible children did not receive it.
  - Alberta Human Resources and Employment is currently investigating strategies to increase awareness and access to the program.



- NCBS monthly supplement amounts are based on net family income and number of children. The figure above displays data on the 242,522 children in families receiving the NCBS. 20.5% of the children are in families with incomes between \$1 and \$10,000.
- Average amount of supplement per family begins to decline when family incomes are in the \$22,000 to \$23,000 range. Only families with five or more children receive the supplement when income is between \$40,000 and \$60,000.

## 3.2.1 Socio-Economic Status

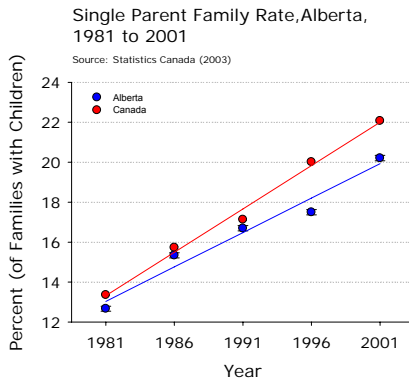
### Background Continued

Family income has a strong relationship with health status. Children living in poverty are at increased risk of poor physical health during childhood, and of poor physical, cognitive, and emotional functioning in adulthood (World Health Organization, 2003). Some groups, most notably single mothers, are more likely to remain in low-income categories (Canadian Institute for Health Information, 2004).

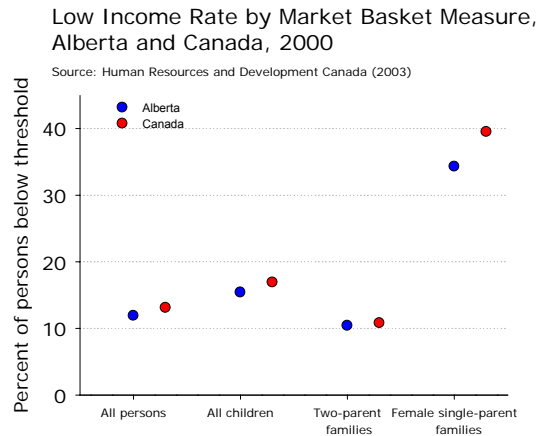
### 3.2.1 Socio-Economic Status

#### Background Continued

More children lived in single parent families in 2001 than in 1981 in both Canada and Alberta (see figure below). The 1996 and 2001 censuses showed that single families were less common in Alberta than in Canada. In 2001, about one in five Alberta families with children were headed by a single parent (Statistics Canada, 2003).



#### Market Basket Measure of Low Income (see Tables 3.2.1.5, 3.2.1.6)



- In 2000, 15.4% of Alberta children were low income according to the Market Basket Measure (MBM; Human Resources Development Canada, 2003). This figure jumped to 34.3% for female lone parent families. The overall rate of low income for all persons was 11.9%, indicating that children (especially those with single mothers) are at increased risk of being without basic needs and services.
- 16.9% of Canadian children are below the MBM thresholds. For female single-parent families in Canada, 39.5% are below the threshold. Thus, Canada and Alberta rates are similar, with the exception of a 5% difference for female single-parent families.
- When depth of poverty is considered, Alberta fares slightly worse than Canada. The depth of poverty for children in Alberta is .29, compared with .26 for Canada. This means that, on average, the income of a child in a low-income family in Alberta is 29% below the MBM threshold, compared with 26% for Canada.
- For female lone-parent families, depth of poverty is .32 in Alberta and .27 in Canada.
- Overall, there are proportionately fewer low-income families in Alberta than in Canada. Those who are low-income in Alberta have a greater depth of poverty than those in Canada as a whole. Low-income families in Alberta are slightly less able to buy necessary goods and services than those in other parts of Canada.

## 3.2.1 Socio-Economic Status

### Limitations and Methodology Notes

The measures reported here serve only as proxies for socio-economic status, as socio-economic status is difficult to measure directly.

Dr. Gloria Keays, Deputy Provincial Health Officer, Alberta Health and Wellness, and Josephine Longo-Kimber and Sandy Radomski, Senior Planners, Health Benefits, Alberta Human Resources and Employment, contributed to this section.

Table 3.2.1.1 Number and Proportion of Children Receiving Child Welfare or Social Assistance by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of children receiving welfare or social assistance</b>	28,875	30,304	28,635	25,806	24,229	25,047
<b>Proportion (per 100 children)</b>	3.8	3.9	3.7	3.3	3.1	3.2
<b>Standard Error (SE)</b>	0.02	0.02	0.02	0.02	0.02	0.02

Table 3.2.1.2 Number and Proportion of Children Receiving Child Welfare or Social Assistance by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	12 to 17
<b>Number of children receiving welfare or social assistance</b>	4,615	14,556	20,424	22,273	13,214	26,503
<b>Proportion (per 100 children)</b>	4.1	3.1	3.2	3.2	3.2	3.2
<b>Standard Error (SE)</b>	0.06	0.03	0.02	0.02	0.03	0.02

**Source:** Alberta Health Care Insurance Plan (AHCIP) Registry Based Mid-Year Population, Alberta Health and Wellness, June 2004 release.

Alberta Health Care Insurance Plan (AHCIP) Registry Based Quarterly Population, Alberta Health and Wellness, June 2004 release.

**Notes:** The age is calculated at June 30 of each year.

Children 17 years or younger receiving child welfare or social assistance are reported by Child Welfare Services or Family Social Services of Human Resources and Development in a year.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.2.1.3 Number and Proportion of Children Receiving Health Care Subsidy by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of children on subsidy</b>	126,780	122,794	120,457	98,270	95,193	93,120
<b>Proportion (per 100 children)</b>	16.6	15.9	15.6	12.8	12.3	12.0
<b>Standard Error (SE)</b>	0.04	0.04	0.04	0.04	0.04	0.04

Table 3.2.1.4 Number and Proportion of Children Receiving Health Care Subsidy by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	12 to 17
<b>Number of children on subsidy</b>	18,384	66,018	82,845	77,067	42,269	87,395
<b>Proportion (per 100 children)</b>	16.2	14.1	13.0	11.2	10.2	10.6
<b>Standard Error (SE)</b>	0.11	0.05	0.04	0.04	0.05	0.03

**Source:** Alberta Health Care Insurance Plan (AHCIP) Registry Based Mid-Year Population, Alberta Health and Wellness, June 2004 release.

Alberta Health Care Insurance Plan (AHCIP) Registry Based Quarterly Population, Alberta Health and Wellness, June 2004 release.

**Notes:** Age is calculated at June 30 of each year.

Receiving subsidy is defined as AHCIP registrant 0-17 years of age who receives any subsidy for AHCIP premium in a year. The subsidy recipients have tax return proof of a low family income, i.e., annual taxable income is less than five times one's non-refundable tax credits in a given year.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.2.1.5 Incidence of Low Income Based on Market Basket Measure, Alberta and Canada, 2000

	Alberta	Canada
All persons	11.9%	13.1%
Children under 18	15.4%	16.9%
Two-parent families with children	10.4%	10.8%
Female-lone-parent families	34.3%	39.5%

Table 3.2.1.6 Depth of Low Income Based on Market Basket Measure, Alberta and Canada, 2000

	Alberta	Canada
All persons	0.33	0.31
Children under 18	0.29	0.26
Two-parent families with children	0.29	0.26
Female-lone-parent families	0.32	0.27

Source: Human Resources and Development Canada (2003). Understanding the 2000 Low Income Statistics Based on the Market Basket Measure. □



# 3. Child Health Determinants

*3.1 Population*

*3.2 Socio-Economic Status*

*3.3 Family Environment*

*3.3.1 Parenting Style*

*3.3.2 Child Abuse/Neglect*

*3.4 Health-Related Behaviours*

*3.5 Maternal Behaviours*





### 3.3.1 Parenting Style

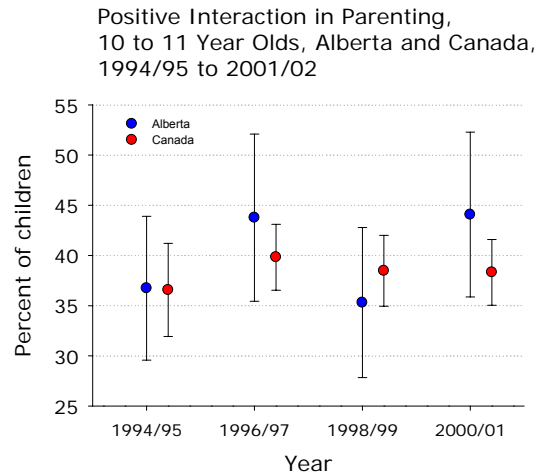
#### Background

Positive Interaction: *A high score on the Positive Interaction Parenting Scale from the Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY). The scale has a highest possible score of 20, and scores of 13 and higher were counted as "positive interaction" for this report. See Methodology Notes at the end of this section for details).*

Positive interaction between parents and children tends to decline during toddler and preschool years and level off in elementary school. The most important predictors of level of positive interaction are the mother's employment status, the number of children in the family, and whether the family is a single- or two-parent family. Many of these variables are related to the amount of time available to parents to interact with their children. Income and parental education level are also associated with level of positive interaction (Cook and Willms, 2002).

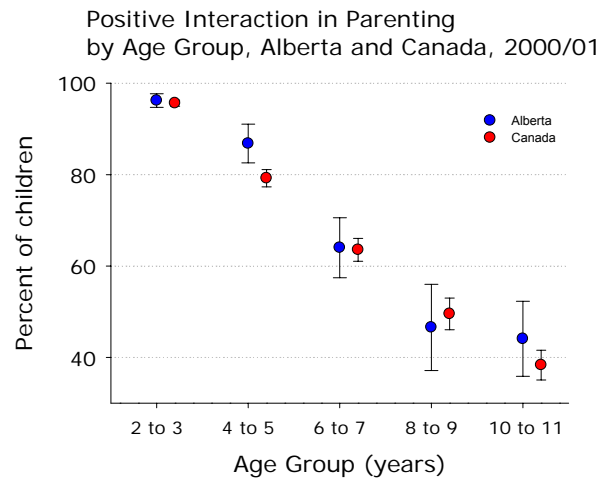
A high level of positive interaction between parents and children is associated with increased pro-social behaviour and decreased risk of behaviour problems, with a slightly stronger effect of positive interaction for older children than for younger children. This occurs even when the effects of socio-economic status and family structure are statistically removed (Cook and Willms, 2002).

#### Time Trends (see Table 3.3.1.1)



- There were no time trends between 1994/95 and 2000/01 in positive interaction for 10 to 11 year old children. Alberta and Canada rates were similar.
- In 2000/01, 44.1% of Alberta parents reported positive interaction with their 10 to 11 year olds.

#### Age Effects (see Table 3.3.1.2)



- Parents were much more likely to report positive interaction with younger children than with older children.
- In 2000/01, 96.2% of Alberta parents of 2 to 3 year olds reported positive interaction with their children, compared with 44.1% of 10 to 11 year olds.

### 3.3.1 Parenting Style

---

---

#### Limitations and Methodology Notes

While the research and analysis in this section are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

The NLSCY Positive Interaction Parenting Scale was a combination of scores on the following questions:

- How often do you praise your child, by saying something like 'Good for you!' or 'What a nice thing you did!' or 'That's good going!'?
- How often do you and your child talk or play with each other, focusing attention on each other for five minutes or more, just for fun?
- How often do you and your child laugh together?
- How often do you do something special with your child that he/she enjoys?
- For age 3+: How often do you play sports, hobbies or games with your child?/For age <3: How often do you play games with your child?

The allowed responses were: 0=Never, 1=About once a week or less, 2=A few times a week, 3=One or two times a day, 4=Many times each day.

Possible scores ranged from 0 to 20, with scores of 13 and higher classified as "high positive interaction" in this report.

Time trends data are based on 10 to 11 year olds, while age effects are based on the most recent NLSCY cycle for which a large range of ages is available (Cycle 4, 2000/01).

All data are weighted to represent the entire population, using cross-sectional weights provided by Statistics Canada. In Cycle 4, positive interaction data reported here were based on sample sizes of 1,961 2 to 11 year old Albertans and 19,982 2 to 11 year old Canadians.

Table 3.3.1.1 Positive Interactions in Parenting, 10 to 11 Year Olds, by Year, Alberta and Canada, 1994/95 to 2000/01

Alberta		1994/95	1996/97	1998/99	2000/01
Children with High Positive Interactions		30,356	36,350	27,718	36,479
Total Children		82,634	83,053	78,503	82,768
Rate (per 100 children)		36.7	43.8	35.3	44.1
Standard Error (SE)		3.65	4.25	3.81	4.19

Canada		1994/95	1996/97	1998/99	2000/01
Children with High Positive Interactions		286,891	313,674	282,363	296,257
Total Children		784,528	787,704	733,889	773,090
Rate (per 100 children)		36.6	39.8	38.5	38.3
Standard Error (SE)		2.37	1.67	1.80	1.67

Source: National Longitudinal Survey of Children and Youth, Cycles 1 to 4, Statistics Canada, 2003 and 2005 releases.

Notes: High positive interaction indicates a score of 13 or higher on the NLSCY Positive Interaction Scale.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.3.1.2 Positive Interactions in Parenting by Age Group, Alberta and Canada, 2000/01

Alberta		2 to 3	4 to 5	6 to 7	8 to 9	10 to 11
Children with High Positive Interactions		70,143	65,957	49,344	37,259	36,479
Child Population		72,924	75,994	77,091	80,023	82,768
Rate (per 100 children)		96.2	86.8	64.0	46.6	44.1
Standard Error (SE)		0.75	2.16	3.35	4.81	4.19

Canada		2 to 3	4 to 5	6 to 7	8 to 9	10 to 11
Children with High Positive Interactions		643,313	578,769	471,670	381,229	296,257
Child Population		672,745	730,593	742,134	769,670	773,090
Rate (per 100 children)		95.6	79.2	63.6	49.5	38.3
Standard Error (SE)		0.33	0.97	1.27	1.76	1.67

Source: National Longitudinal Survey of Children and Youth, Cycle 4, Statistics Canada, 2005 release.

Notes: High positive interaction indicates a score of 13 or higher on the NLSCY Positive Interaction Scale.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



### 3.3.2 Child Neglect/Abuse

#### Background

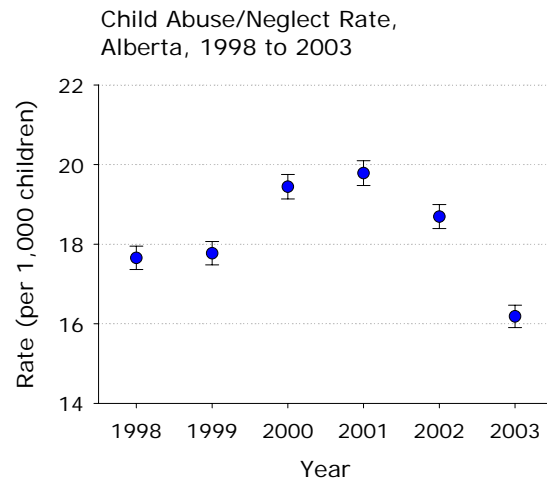
Abuse/neglect is a substantiated instance of abuse and/or neglect of a child, reported to Alberta Children's Services through Child and Family Services and Designated First Nations Authorities. Under the Child, Youth and Family Enhancement Act, individuals are obligated to report suspected instances of abuse and/or neglect. Reports are primarily from professionals (often school personnel or police), parents, relatives or neighbours. To arrive at a unique count of children, the most recent substantiated investigation outcome in a given year was selected. Instances not reported are not included.

The Differential Response Initiative (DRI) was implemented province-wide in 2003. In this program, early intervention is offered when an investigation does not result in a substantiated case of abuse/neglect but risk factors associated with abuse/neglect are evident. Preliminary analysis indicates for every 100 DRI interventions there is an estimated decrease of 30 cases of substantiated abuse and neglect 3 to 5 months later.

Risk factors associated with abuse and/or neglect include a low level of caregiver functioning and family stressors such as alcohol/drug abuse, childhood history of abuse, mental illness, spousal violence and lack of social supports (Trocmé et al., 2001, 2005).

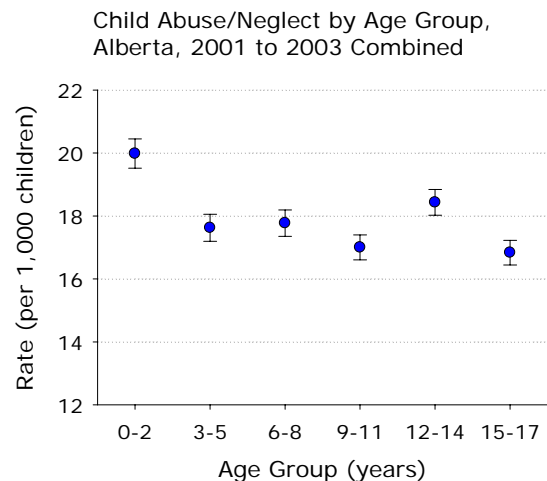
Trocmé et al. (2001, 2005) provide a detailed analysis of child abuse and neglect in Canada.

#### Time Trends (see Table 3.3.2.1)



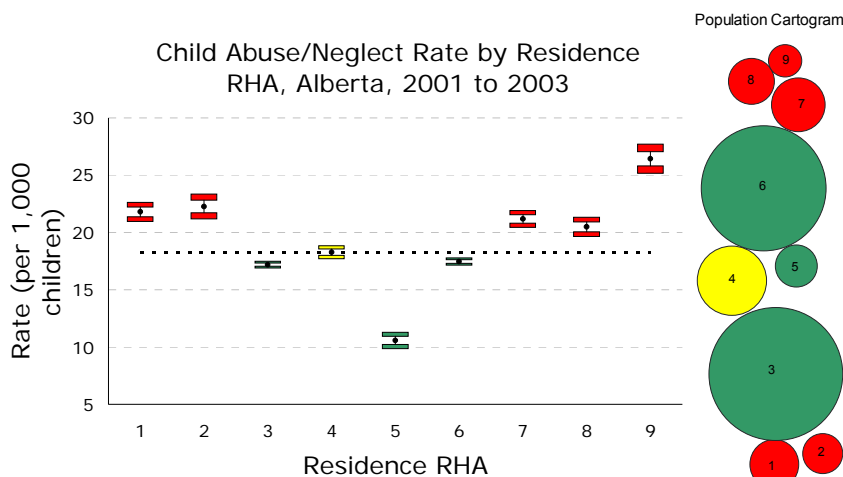
- Child abuse/neglect rates increased after 1999 in concert with increasing numbers of reports overall. The substantial rate decrease in 2003 may be due to the implementation of the Differential Response Initiative (DRI; see Background section).
- In 2003, there were 12,518 Alberta children enduring substantiated abuse and/or neglect. This is a rate of 16.2 abused/neglected children per 1,000 children.

#### Age Effects (see Table 3.3.2.2)



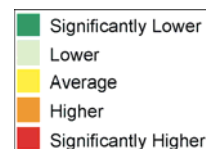
- The rate of child abuse/neglect varied with age group for 2001 to 2003 combined data. The infant and toddler age group (0 to 2 years) had the highest rate of substantiated abuse/neglect. For 2001 to 2003 combined, the rate was 20.0 (per 1,000 children) for this age group, representing 6,880 children.
- Rates for the other age groups varied from 17.0 to 18.4.

**Regional Data** (see Table 3.3.2.3)



- There were regional variations in the rate of child abuse/neglect for 2001 to 2003 combined. In general, the rates were lower in the central regions of the province and elevated in northern and southern regions.
- The rate was lower than the provincial average in RHAs 3, 5, and 6, and higher than the provincial average in RHAs 1, 2, 7, 8, and 9. Given that First Nations children are over-represented in the child protection system, rates are generally higher in regions with larger First Nations populations.
- Rates varied from 10.6 in RHA 5 (876 children) to 26.4 in RHA 9 (1,705 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

### 3.3.2 Child Neglect/Abuse



Child Neglect/Abuse 2001 to 2003



**Limitations and Methodology Notes**

The rates reported here are underestimations of the true rates of child abuse/neglect, because true but unreported or unsubstantiated cases are not included.

Brian Boles, Alberta Children’s Services, contributed to this section.

Table 3.3.2.1 Child Abuse/Neglect Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of substantiated children</b>	13,474	13,686	14,976	15,250	14,465	12,518
<b>Rate (per 1,000 children)</b>	17.7	17.8	19.4	19.8	18.7	16.2
<b>Standard Error (SE)</b>	0.15	0.15	0.16	0.16	0.15	0.14

Table 3.3.2.2 Child Abuse/Neglect Rate by Age Group, Alberta, 2001 to 2003 Combined

	0 to 2	3 to 5	6 to 8	9 to 11	12 to 14	15 to 17
<b>Number of substantiated children</b>	6,880	6,334	6,769	6,885	7,645	6,963
<b>Rate (per 1,000 children)</b>	20.0	17.6	17.8	17.0	18.4	16.8
<b>Standard Error (SE)</b>	0.24	0.22	0.21	0.20	0.21	0.20

Table 3.3.2.3 Child Abuse/Neglect by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of substantiated children</b>	2,657	1,637	13,567	4,132	876	12,101	3,262	2,296	1,705	42,233
<b>Rate (per 1,000 children)</b>	21.8	22.3	17.2	18.3	10.6	17.5	21.2	20.5	26.4	18.2
<b>Standard Error (SE)</b>	0.42	0.54	0.15	0.28	0.36	0.16	0.37	0.42	0.63	0.09

Source: Alberta Children's Services, Government of Alberta, December 2004 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.





# 3. Child Health Determinants

*3.1 Population*

*3.2 Socio-Economic Status*

*3.3 Family Environment*

*3.4 Health-Related Behaviours*

*3.4.1 Physical Activity*

*3.4.2 Body Mass Index*

*3.4.3 Smoking*

*3.4.4 Alcohol Consumption*

*3.5 Maternal Behaviours*



### 3.4.1 Physical Activity

#### Background

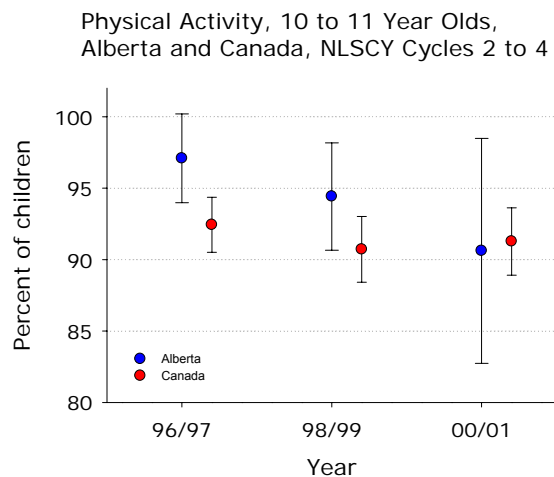
**Physical Activity:** *An active child is defined as one who engaged in physical activities outside of school at least once a week. Physical activities included organized sports or activities with a coach or instructor, or unorganized sports or physical activities without a coach or instructor (see methodology notes at the end of the section for details). Data for this section come from Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY).*

In childhood, cardiovascular fitness, strength, flexibility and bone density are all developed by physical activity. Physical activity promotes positive self-esteem, improved cognitive performance, a sense of well-being and healthy body weight. Physically active youth are also less likely to use tobacco, alcohol, or other drugs (Public Health Agency of Canada, 2003).

A physically active lifestyle reduces the risk for many conditions, including cardiovascular disease, cancer, diabetes, osteoporosis, and obesity (Public Health Agency of Canada, 2003).

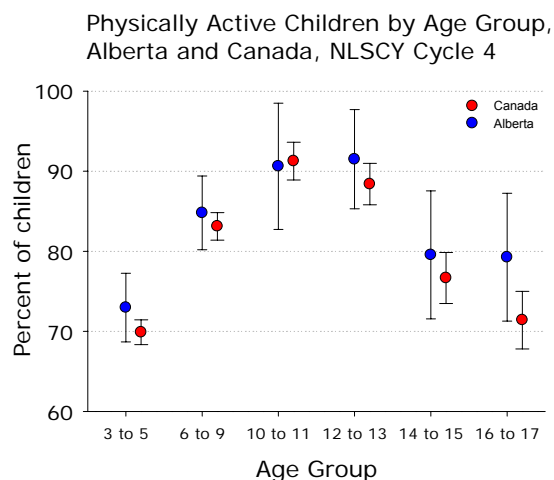
Pérez (2003) found that, among overweight children, activity levels declined as the children got older. Further, overweight children who spent an average of 18 minutes or more in physical education at school were more likely to become more active as they got older than children who spent less time in physical education. Hancox, Milne, and Poulton (2004) found that high childhood television viewing time was associated with poor fitness and overweight in adulthood.

#### Time Trends (see Table 3.4.1.1)



- Although the percentage of 10 to 11 year olds in Alberta who were physically active fell from 97.1% in 1996/97 to 90.6% in 2000/01, the decrease was not statistically significant.
- Alberta and Canada had similar rates.

#### Age Effects (see Table 3.4.1.2)



- For Canadian children, physical activity levels peak between 10 and 13 years of age, and then decrease. Alberta data follow a similar pattern, though the small sample sizes prevent statistically significant effects.
- In 2000/01, about 90% of 10 to 13 year old Albertans engaged in physical activity outside of school at least once a week, compared with about 80% of 14 to 17 year olds.
- Note that these data are based on a very liberal definition of “physically active” (activity only once a week or more).

---



---

### Limitations and Methodology Notes

While the research and analysis in this section are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

Children aged 10 to 11 were asked:

- During the past 12 months, how often have you played sports or done physical activities **WITHOUT** a coach or an instructor (biking, skateboarding etc.)?
- During the past 12 months, how often have you played sports **WITH** a coach or instructor (swimming lessons, baseball, hockey, etc.)?
- During the past 12 months, how often have you taken part in dance, gymnastics, karate or other groups or lessons, other than in gym class?

Responses were allowed in the following categories: 1=Never, 2=Less than once a week, 3=1 to 3 times a week, 4=4 or more times a week. An active child was one with a response of 3 or 4 to *at least one* of the questions (i.e., active at least once a week).

Similar questions were asked of children aged 12 to 17, and of parents of children aged 3 to 9.

Caution must be taken in comparing responses for 3 to 9 year olds with those of older children, because parents responded for 3 to 9 year olds, while 10 to 17 year olds answered for themselves.

The definition of “physically active” used in this section is quite liberal, as health professionals generally recommend physical activity several times a week. Many, but not all, of the “active” children in these analyses were active outside of school several times a week.

Questions on physical activity included participation in art lessons in Cycle 1 (1994/95) of the NLSCY; for this reason, this cycle was excluded from analyses in this section.

For Cycle 5, data were only available for 3 to 5 year olds; for this reason, this cycle was excluded from analyses in this section.

The time trend is based on 3 to 9 year olds, for Cycles 2 to 4.

Age effects are based on Cycle 4, the most recent cycle of the NLSCY for which data on a large range of ages is available.

All data are weighted to represent the entire population, using cross-sectional weights provided by Statistics Canada. In Cycle 4, physical activity data reported here were based on sample sizes of 2,027 3 to 17 year old Albertans and 21,625 3 to 17 year old Canadians.

## 3.4.1 Physical Activity

Table 3.4.1.1 Physically Active Children 10 to 11 Years Old, by Year, Alberta and Canada, 1996/97 to 2000/01

Alberta	1996/97	1998/99	2000/01
Active children	71,059	63,737	49,845
Child Population	73,191	67,509	55,010
Rate (per 100 children)	97.1	94.4	90.6
Standard Error (SE)	1.58	1.92	4.02

Canada	1996/97	1998/99	2000/01
Active children	634,573	574,605	558,238
Child Population	686,484	633,434	611,674
Rate (per 100 children)	92.4	90.7	91.3
Standard Error (SE)	0.98	1.17	1.20

Source: National Longitudinal Survey of Children and Youth, Cycles 2 to 4, Statistics Canada, 2003 and 2005 releases.

Notes: Physically active children participated in physical activity outside of school at least once per week in the last year.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.4.1.2 Physically Active Children by Age Group, Alberta and Canada, 2000/01

Alberta	3 to 5	6 to 9	10 to 11	12 to 13	14 to 15	16 to 17
Active children	82,792	134,152	49,845	46,100	46,475	54,464
Child Population	113,811	158,199	55,010	50,385	58,421	68,710
Rate (per 100 children)	72.7	84.8	90.6	91.5	79.6	79.3
Standard Error (SE)	2.18	2.35	4.02	3.16	4.08	4.07

Canada	3 to 5	6 to 9	10 to 11	12 to 13	14 to 15	16 to 17
Active children	755,040	1,273,271	558,238	522,013	481,634	491,124
Child Population	1,083,827	1,532,034	611,674	590,569	628,207	687,789
Rate (per 100 children)	69.7	83.1	91.3	88.4	76.7	71.4
Standard Error (SE)	0.79	0.87	1.20	1.32	1.63	1.83

Source: National Longitudinal Survey of Children and Youth, Cycle 4, Statistics Canada, 2005 release.

Notes: Physically active children participated in physical activity outside of school at least once per week in the last year.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 3.4.2 Body Mass Index

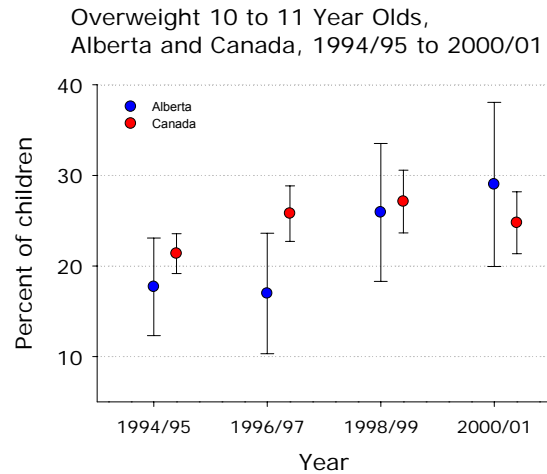
### Background

Body Mass Index (BMI) is defined as a person's weight in kilograms, divided by their height in meters squared. Recently, international norms have been developed that allow classification of children aged 2 to 17 as "overweight" or not based on BMI (Cole et al., 2000). In this section, we report percentage of overweight children (according to Cole et al.), as well as average BMI measurements. Data for this section come from Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY). Heights and weights are reported by parents for children 2 to 11 years old and are self-reported for children 12 to 17 years old.

Self-reported health is lower for individuals with higher BMIs, while health care utilization is higher. Asthma, arthritis, high blood pressure, diabetes, epilepsy, and thyroid conditions are associated with obesity (Alberta Health and Wellness, 2005b). Rates of type II diabetes, hyperlipidemia and hypertension are increasing in severely overweight children (Tremblay & Willms, 2000).

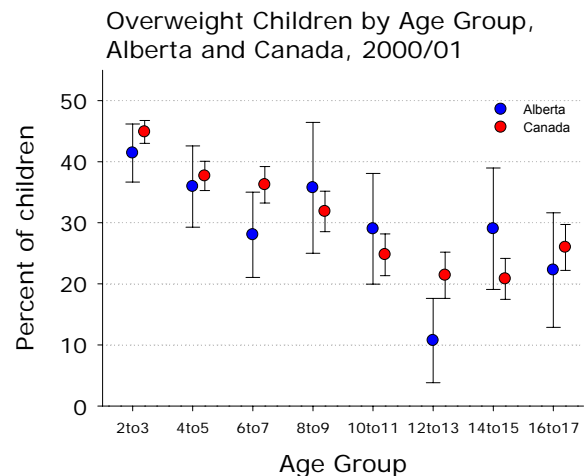
Risk factors for obesity include parental obesity, high birth weight, early maturation, low physical activity, poor diet, and poverty (Lissau, Burniat, Poskitt, & Cole, 2002). Physical activity and diet are the most modifiable of these factors.

### Overweight Time Trends (see Table 3.4.2.1)



- In 2000/01, 29.0% of Alberta children aged 10 to 11 were overweight. The rate did not vary over time for Alberta or Canada, for either 2 to 3 year olds or 10 to 11 year olds.
- Increases in rates of overweight children have been widely reported. The data reported above are for a limited time period, which can make trends difficult to discern. Furthermore, recent increasing trends may apply to directly measured BMI rather than self-reported (or parent-reported) data like that presented here (Tjepkema & Shields, 2005).

### Overweight Age Effects (see Table 3.4.2.2)



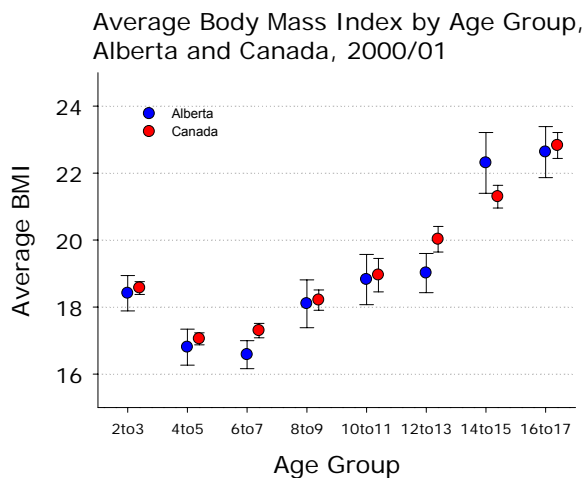
### 3.4.2 Body Mass Index

#### Overweight Age Effects continued (see Table 3.4.2.2)

- In general, the percentage of children who are overweight declines until puberty and then stabilizes, as seen in the Canadian data. Alberta data are more variable due to smaller sample sizes.
- In 2000/01, the percentage of Alberta children who were overweight was lowest for the 12 to 13 year olds, at 10.7%.

#### Average Body Mass Index (see Tables 3.4.2.1, 3.4.2.2)

- Average BMI for children aged 10 to 11 did not vary with time from 1994/5 to 2000/01. In 2000/01, the average BMI for Alberta children aged 10 to 11 was 18.8.



- Average BMI was lowest between the ages of 4 and 7, and increased thereafter. This is expected, given the changes in body composition that occur with puberty.

---

#### Limitations and Methodology Notes

While the research and analysis in this section are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

The Cole et al. (2000) norms consist of age- and sex-specific BMI cutoff points for body mass index for overweight and obesity, based on adult BMI cutoff points of 25 for overweight and 30 for obesity. The childhood norms are based on international data from several studies and are applied to children aged 2 to 17.5, in half year intervals.



### 3.4.2 Body Mass Index

For children under 12 years, height and weight were reported by the parents. For children aged 12 to 17, height and weight were self-reported. In an unspecified number of cases, children were actually measured and weighed; otherwise, heights and weights were from memory or were estimated. This variability in measurement will tend to lead to underestimation of BMI, as people tend to round downward for height and often underestimate weight. Caution is advised in comparing 2 to 11 year olds with 12 to 17 year olds, as parent- and self-reporting may be associated with different biases.

Data for BMI are based on “actual age at time of interview, in months”, rather than “effective age”, which is used for the other NLSCY data appearing in this report. Effective age is used to keep children in the age groups to which they are assigned, independent of whether survey data were collected before or after the children’s birthdays. For Cycle 4, the effective age is calculated as 2000 minus year of birth. Thus a child born in 1998 would have an effective age of 2 years old in Cycle 4, regardless of whether they had had their second birthday at the time of the survey. Actual age at time of interview, in months, was required to classify children as overweight or not based on 6-month intervals of age.

Time trends data are based on 10 to 11 year olds for Cycles 1 to 4. Cross-sectional data are only available for 0 to 5 year olds in Cycle 5, so that cycle was excluded from the time trends analysis. Age effects are based on the most recent cycle for which a large range of ages is available (Cycle 4).

All data are weighted to represent the entire population, using cross-sectional weights provided by Statistics Canada. In Cycle 4, overweight child data reported here were based on sample sizes of 1,960 2 to 17 year old Albertans and 19,925 2 to 17 year old Canadians.

Table 3.4.2.1 Overweight Children 10 to 11 Years Old, by Year, Alberta and Canada, 1994/95 to 2000/01

Alberta	1994/95	1996/97	1998/99	2000/01
Overweight children	12,292	12,675	18,346	20,544
Total children	69,473	74,739	70,800	70,823
Rate (per 100 children)	17.7	17.0	25.9	29.0
Standard Error (SE)	2.75	3.39	3.89	4.62
Average BMI	18.2	18.1	18.8	18.8
Standard Error (SE) of Average BMI	0.22	0.25	0.30	0.38

Canada	1994/95	1996/97	1998/99	2000/01
Overweight children	150,163	180,742	167,751	158,972
Total children	702,799	701,019	618,870	641,820
Rate (per 100 children)	21.4	25.8	27.1	24.8
Standard Error (SE)	1.12	1.56	1.76	1.74
Average BMI	18.6	18.9	19.0	19.0
Standard Error (SE) of Average BMI	0.10	0.14	0.17	0.26

Source: National Longitudinal Survey of Children and Youth, Cycles 1 to 4, Statistics Canada, 2003 and 2005 releases.

Notes: Children are classified as overweight based on BMI, as per Cole et al. (2000) norms.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.  
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 3.4.2.2 Overweight Children by Age Group, Alberta and Canada, 2000/01

Alberta	2 to 3	4 to 5	6 to 7	8 to 9	10 to 11	12 to 13	14 to 15	16 to 17
Overweight children	27,275	23,147	17,420	22,814	20,544	4,425	13,844	9,856
Total children	65,847	64,428	62,130	63,865	70,823	41,329	47,705	44,300
Rate (per 100 children)	41.4	35.9	28.0	35.7	29.0	10.7	29.0	22.2
Standard Error (SE)	2.43	3.40	3.56	5.47	4.62	3.52	5.07	4.79
Average BMI	18.4	16.8	16.6	18.1	18.8	19.0	22.3	22.6
Standard Error (SE) of Average BMI	0.27	0.28	0.21	0.36	0.38	0.30	0.46	0.39

Canada	2 to 3	4 to 5	6 to 7	8 to 9	10 to 11	12 to 13	14 to 15	16 to 17
Overweight children	241,547	213,931	223,227	202,761	158,972	98,125	113,000	146,486
Total children	538,336	567,988	616,262	636,720	641,820	458,471	542,878	564,097
Rate (per 100 children)	44.9	37.7	36.2	31.8	24.8	21.4	20.8	26.0
Standard Error (SE)	0.95	1.22	1.53	1.69	1.74	1.93	1.71	1.92
Average BMI	18.6	17.0	17.3	18.2	19.0	20.0	21.3	22.8
Standard Error (SE) of Average BMI	0.10	0.09	0.11	0.15	0.26	0.19	0.17	0.20

Source: National Longitudinal Survey of Children and Youth, Cycle 4, Statistics Canada, 2005 release.

Notes: Physically active children participated in physical activity outside of school at least once per week in the last year.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.  
Data may differ from previously published data due to differences in definitions and dates of data extraction.

### 3.4.3 Smoking

#### Background

Smoking: *Ever trying smoking (Youth Smoking Survey) or smoking more than 100 cigarettes in a lifetime (Canadian Tobacco Use Monitoring Survey).*

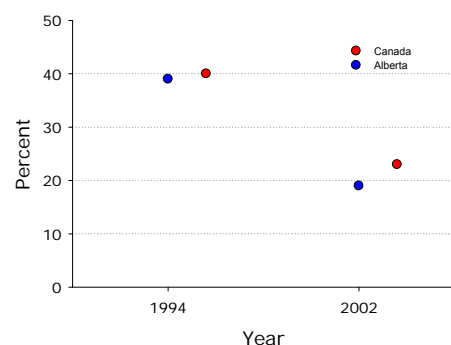
Cigarette smoking and exposure to second-hand smoke is associated with a host of negative health outcomes, including developmental effects, respiratory infections, asthma, cardiovascular diseases, various cancers, reproductive problems, ulcers, Crohn's disease, tooth decay, gum disease, osteoporosis, and cataracts (Health Canada, 2005a).

Youth smoking rates are higher for youth who have lower socioeconomic status, are aboriginal, have low self-esteem, who perceive their academic performance to be below average, are female and want to weigh less, or have close friends or parents who smoke (Health Canada, 2005b).

According to the Youth Smoking Survey, the percentage of grade 5 to 9 students who have ever smoked cigarettes has declined dramatically in recent years (see figure below). In 1994, 40% of Canadians in grades 5 to 9 had ever smoked, compared with 39% of Albertans. In 2002, the rates were 23% for Canada and 19% for Alberta; the Alberta rate was lower than the Canadian rate (Health Canada, 2005b).

Students who have ever smoked, Grades 5 to 9, Alberta and Canada, 1994 and 2002

Source: Health Canada (2005b)



#### Prevalence, Grades 5 to 9

- Data for students in grades 5 to 9 are from the Youth Smoking Survey (Health Canada, 2005b).
- In 2002, just 19% of Alberta students in Grades 5 to 9 reported that they had ever tried smoking, even just a puff. This is a significant decline from 39% in 1994.
- The rate of ever trying smoking for males was 21%; the female rate was 18%.
  - Among the 19% who had ever tried smoking, 87% had also tried a drink of alcohol, 64% had consumed five drinks or more, and 43% had tried marijuana.
  - 91% of Alberta students in Grades 5 to 9 reported smoking less than one whole cigarette in their lifetime.
  - 98% of these students had smoked less than 100 cigarettes in their lifetime.

#### Prevalence, 15 to 19 Year Olds

- Data for 15 to 19 year olds are from the 2004 Canadian Tobacco Use Monitoring Survey (Statistics Canada, 2005e).
- In 2004, 16% of Alberta youth and young adults age 15 to 19 years had smoked more than 100 cigarettes in their lifetime and reported that they currently smoked cigarettes.
  - The rate of smoking for males was 14%; the female rate was 17%.
  - 9% of Alberta youth age 15 to 17 (Grades 10 to 12) reported smoking on a daily or occasional basis.
  - 26% of young adults age 18 to 19 reported that they currently smoked.

### 3.4.3 Smoking

---

#### Limitations and Methodology Notes

See the 2002 Youth Smoking Survey technical report (Health Canada, 2005b) for a detailed discussion of methods and limitations for the grade 5 to 9 smoking data.

See the Microdata User Guide for the Canadian Tobacco Use Monitoring Survey, Annual, February – December 2004 (Statistics Canada, 2005f) for a detailed discussion of methods and limitations for the smoking data for 15 to 19 year olds.

Dr. Allison McKinnon, Tobacco Research Information Services Division, Alberta Alcohol and Drug Abuse Commission, provided this section.

## 3.4.4 Alcohol Consumption

### Background

Alcohol Consumption: *Self-reported consumption of alcohol during the previous 12 months. This excludes students who "had a sip of alcohol to see what it is like".* Data in this section are from a survey done by AADAC (AADAC, 2003a).

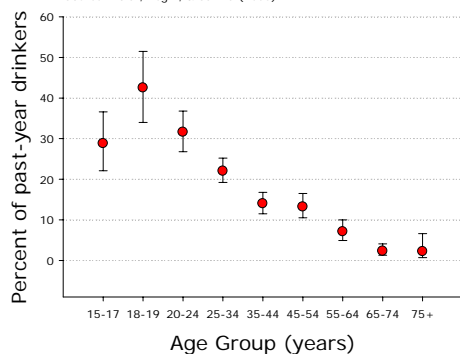
Short term effects include impaired vision, balance, speech, and judgment. In the long term, excessive alcohol consumption can lead to ulcers, sexual dysfunction, liver disease, brain damage, and cancer, in addition to social, legal, and financial difficulties (AADAC, 2003b).

Risk factors for alcohol use by grade 7 to 12 students include peer risk behaviour, parental approval of licit/illicit substance use, age, family discord and signs of leaving school early (AADAC, 2004).

Heavy episodic drinking (drinking a large amount of alcohol on one occasion) is most common among youth and young adults, and is associated with high risk sexual activity and drinking and driving incidents (AADAC, 2005). In Canada, heavy episodic drinking is reported by about 30% of youths aged 15 to 17 who drank in the past year (Adlaf, Begin, & Sawka, 2005).

Rate of Drinking 5 or More Drinks on a Typical Drinking Day, by Age Group, Canada, 2004

Source: Adlaf, Begin, & Sawka (2005)

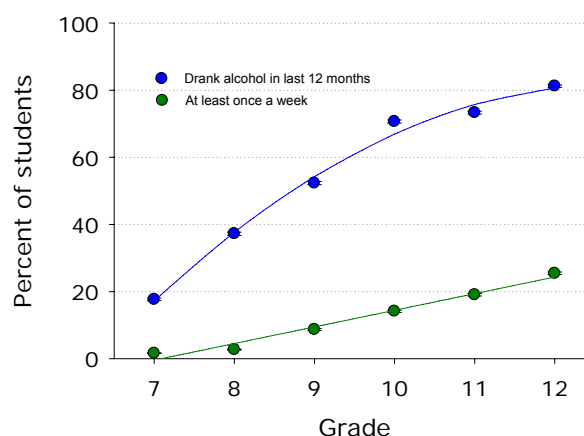


### Prevalence (see Tables 3.4.4.1, 3.4.4.2, 3.4.4.3, 3.4.4.4)

- In 2002, 56.4% of Alberta students in grades 7 through 12 reported drinking alcohol in the previous 12 months. This excludes students who only “had a sip of alcohol to see what it is like”.
- Among students who drank alcohol in the previous 12 months, 12.4% did so at least once a week.
- Drinking initiation (age when began drinking) was between grades 4 and 7 for 55.5% of students reporting drinking alcohol in the last 12 months.
- 59.7% of male students reporting drinking alcohol in the last 12 months, compared with 53.6% of female students.
- More Aboriginal students reported drinking alcohol (65.2%) than non-Aboriginal (56.1%).

### Age Effects (see Tables 3.4.4.3, 3.4.4.4)

Alcohol Consumption by Grade, Alberta, 2002



- In 2002, alcohol consumption during the previous 12 months was reported by 17.7% of grade 7 students in Alberta. This rate rose to 81.2% by grade 12.
- 1.6% of grade 7 students who drank alcohol in the previous 12 months did so at least once a week, compared with 25.4% of grade 12 students.
- According to AADAC, about 1 in 4 students in grades 11 and 12 is at risk of hazardous and harmful alcohol use (AADAC, 2003a).

### 3.4.4 Alcohol Consumption

#### Limitations and Methodology Notes

Some of the data in this section appear in *The Alberta Youth Experience Survey 2002 Technical Report* (AADAC, 2003a). Other data in this section were provided directly by the Alberta Alcohol and Drug Abuse Commission.

See the AADAC report for a detailed discussion of limitations. General concerns with this type of data include non-representative samples and self-report biases.

Kathy Huebert, Research Services, Alberta Alcohol and Drug Abuse Commission, contributed to this section.

Table 3.4.4.1. Alcohol Consumption Rate (in the previous 12 months) by Grade, Alberta, 2002

	7	8	9	10	11	12	Total
<b>Students drinking in past year</b>	7,239	14,929	21,624	29,315	30,053	40,147	143,307
<b>Number of students</b>	40,953	40,094	41,316	41,491	41,000	49,458	254,312
<b>Rate (per 100 students)</b>	17.7	37.2	52.3	70.7	73.3	81.2	56.4
<b>Standard Error (SE)</b>	0.19	0.24	0.25	0.22	0.22	0.18	0.10

Source: Alberta Alcohol and Drug Abuse Commission, 2004.

Table 3.4.4.2. Alcohol Consumption Rate (at least once a week) by Grade, Alberta, 2002

	7	8	9	10	11	12	Total
<b>Students drinking at least once a week</b>	665	1,091	3,597	5,858	7,807	12,574	31,592
<b>Number of students</b>	40,953	40,094	41,316	41,491	41,000	49,458	254,312
<b>Rate (per 100 students)</b>	1.6	2.7	8.7	14.1	19.0	25.4	12.4
<b>Standard Error (SE)</b>	0.06	0.08	0.14	0.17	0.19	0.20	0.07

Source: Alberta Alcohol and Drug Abuse Commission, 2004.

Table 3.4.4.3. Alcohol Consumption (in the previous 12 months), Grade when First Drank, Alberta, 2002

	4 to 7	8 to 12
<b>Students starting drinking</b>	85,763	68,759
<b>Number of students</b>	154,522	154,522
<b>Rate (per 100 students)</b>	55.5	44.5
<b>Standard Error (SE)</b>	0.13	0.13

Source: Alberta Alcohol and Drug Abuse Commission, 2004.

Table 3.4.4.4. Alcohol Consumption (in the previous 12 months) by Sex, Alberta, 2002

	Female	Male
<b>Students drinking in past year</b>	75,064	67,264
<b>Number of students</b>	140,032	112,612
<b>Rate (per 100 students)</b>	53.6	59.7
<b>Standard Error (SE)</b>	0.13	0.15

Source: Alberta Alcohol and Drug Abuse Commission, 2004.

## 3. Child Health Determinants

*3.1 Population*

*3.2 Socio-Economic Status*

*3.3 Family Environment*

*3.4 Health-Related Behaviours*

*3.5 Maternal Behaviours*

*3.5.1 Smoking During Pregnancy*

*3.5.2 Alcohol Consumption During Pregnancy*





### 3.5.1 Smoking During Pregnancy

#### Background

Smoking during pregnancy: *Self-report of cigarette smoking at any time during pregnancy, including quitting during pregnancy.*

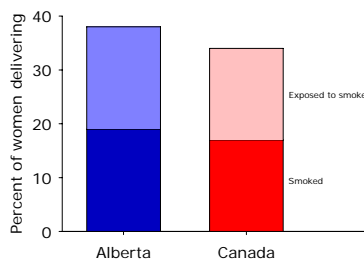
Smoking during pregnancy is associated with increased risk of a number of negative outcomes, including intrauterine growth restriction, decreased birth weight, preterm birth, stillbirth, and infant death (Pollack, Lantz, & Frohna, 2000; Tough, Svenson & Schopflocher, 1999).

Young mothers are most likely to smoke during pregnancy (Tough, Svenson & Schopflocher, 1999).

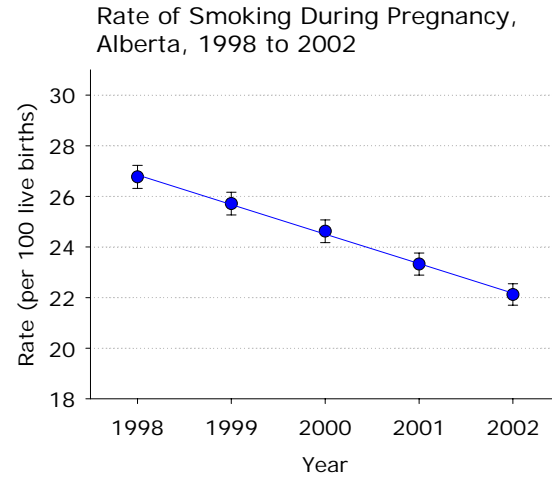
Alberta mothers report smoking during pregnancy at a rate similar to the national average. In 2000/01, 19% of Alberta women who had given birth during the previous five years reported smoking; the Canadian rate was 17%. A further 19% of Albertans and 17% of Canadians were regularly exposed to smoking during or after pregnancy even though they did not smoke during pregnancy (Millar & Hill, 2004).

Women Smoking or Exposed to Smoke While Pregnant, Alberta and Canada, 2000/01

Source: Millar & Hill (2004)

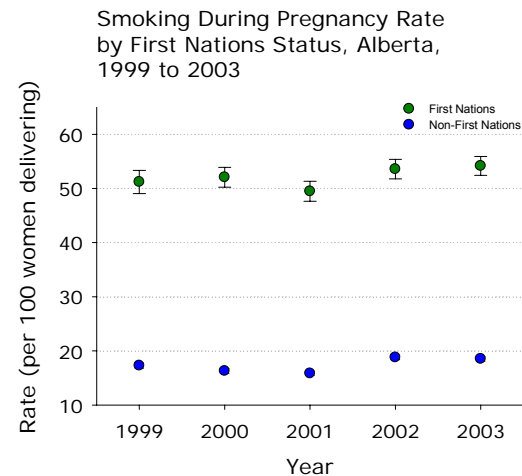


#### Time Trends (see Table 3.5.1.1)



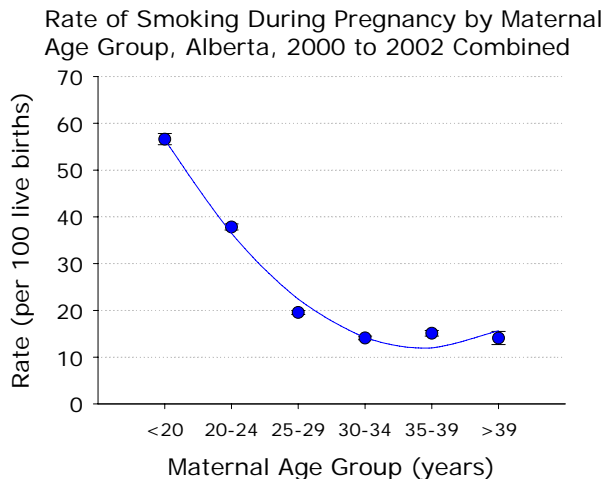
- The percentage of women reporting smoking or quitting smoking during pregnancy shows a small linear decline between 1998 and 2002.
- In 1998, 26.8% of women smoked during pregnancy (this is 9,629 women). Each year afterward, a decrease of just over 1% occurred. In 2002, 22.1% of pregnant women smoked during pregnancy (8,255 women).

#### First Nations (see Table 3.5.1.4)



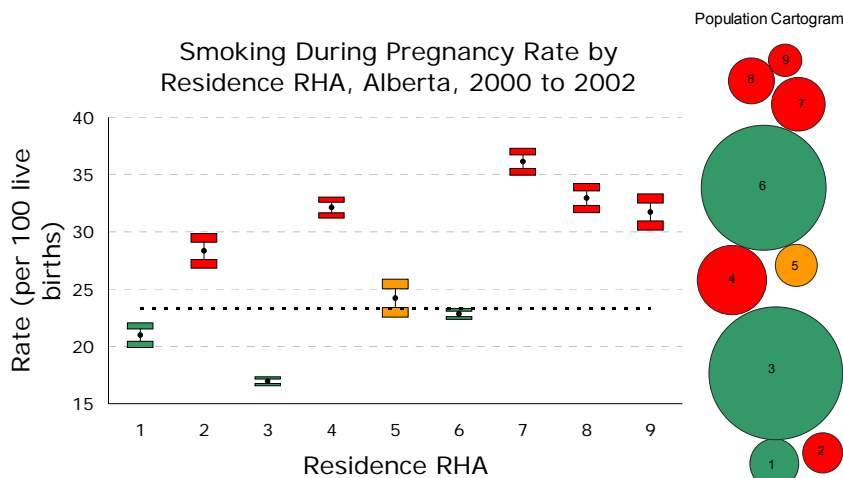
- First Nations women are approximately three times more likely to smoke during pregnancy than non-First Nations mothers.
- In 2003, 54.2% of First Nations women giving birth in Alberta hospitals reported smoking during their pregnancy (1,675 women). The rate for non-First Nations women was 18.5% (6,521 women).

**Age Effects** (see Table 3.5.1.2)



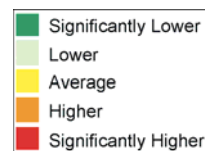
- Teenage mothers are most likely to report smoking during pregnancy. More than 50% of Alberta teen mothers (3,816 teens) smoked during pregnancy from 2000 to 2002.
- The lowest smoking rates during pregnancy (14.4%, or 6,730 women) occurred in mothers aged 30 and older.

**Regional Data** (see Table 3.5.1.3)

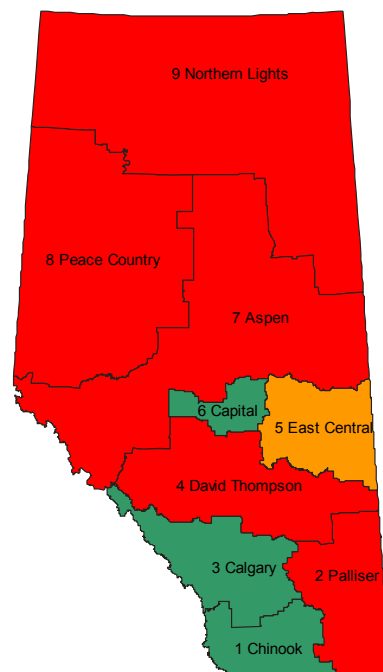


- For 2000 to 2002 combined, the rate of smoking during pregnancy was lower than the provincial average in RHAs 1, 3, and 6. The rate of smoking during pregnancy was higher than the provincial average in RHAs 2, 4, 7, 8, and 9.
- There was a large range in the rates, from 17.0 (per 100 live births) in RHA 3 (6,603 women reporting smoking during pregnancy) to 36.1 in RHA 7 (2,433 women).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

### 3.5.1 Smoking During Pregnancy



Smoking During Pregnancy 2000 to 2002



### 3.5.1 Smoking During Pregnancy

#### Limitations and Methodology Notes

Smoking during pregnancy data were self-reported rather than directly measured and were therefore subject to social desirability biases. They likely underestimate true rates.

Data by First Nations status were taken from a different source (hospital morbidity files) than the other data in this section (Vital Statistics files) and thus rates and trends differ somewhat.

Table 3.5.1.1 Smoking During Pregnancy, Alberta, 1998 to 2002

	1998	1999	2000	2001	2002
Number of mothers smoking	9,629	9,361	8,777	8,491	8,255
Number of live births	35,967	36,399	35,644	36,404	37,315
Rate (per 100 live births)	26.8	25.7	24.6	23.3	22.1
Standard Error (SE)	0.23	0.23	0.23	0.22	0.21

Table 3.5.1.2 Smoking During Pregnancy by Maternal Age Group, Alberta, 2000 to 2002 Combined

	<20	20-24	25-29	30-34	35-39	>39
Number of mothers smoking	3,816	8,379	6,597	4,339	2,058	333
Number of live births	6,740	22,154	33,739	30,738	13,628	2,363
Rate (per 100 live births)	56.6	37.8	19.6	14.1	15.1	14.1
Standard Error (SE)	0.60	0.33	0.22	0.20	0.31	0.72

Table 3.5.1.3 Smoking During Pregnancy by Residence RHA, Alberta, 2000 to 2002 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of mothers smoking	1,212	1,025	6,603	3,301	652	7,389	2,433	1,813	1,092	25,523
Number of live births	5,777	3,617	38,942	10,278	2,693	32,361	6,736	5,504	3,442	109,363
Rate (per 100 live births)	21.0	28.3	17.0	32.1	24.2	22.8	36.1	32.9	31.7	23.3
Standard Error (SE)	0.54	0.75	0.19	0.46	0.83	0.23	0.59	0.63	0.79	0.13

Source: Vital Statistics, Birth File, Department of Government Services, January 2004 release.

Notes: Only live births with available information on maternal smoking are included.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Data include Alberta residents only.

Table 3.5.1.4 Smoking During Pregnancy by First Nations Status, Alberta, 1999 to 2003

First Nations	1999	2000	2001	2002	2003
Number of mothers smoking	1,077	1,483	1,394	1,601	1,675
Number of total mothers	2,103	2,848	2,817	2,988	3,092
Rate (per 100 mothers)	51.2	52.1	49.5	53.6	54.2
Standard Error (SE)	1.09	0.94	0.94	0.91	0.90
Non-First Nations	1999	2000	2001	2002	2003
Number of mothers smoking	4,239	5,095	5,057	6,336	6,521
Number of total mothers	24,517	31,255	31,884	33,689	35,168
Rate (per 100 mothers)	17.3	16.3	15.9	18.8	18.5
Standard Error (SE)	0.24	0.21	0.20	0.21	0.21

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.

Notes: "Total mothers" include records with valid information on smoking during pregnancy only

Data for 1999 is based on 9 month data only (April to December)

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Data include Alberta residents only.



## 3.5.2 Alcohol Consumption During Pregnancy

### Background

Alcohol consumption during pregnancy: *Self-report of alcohol consumption of any amount at any time during pregnancy.* These data are from the Vital Statistics *Notice of Birth* form.

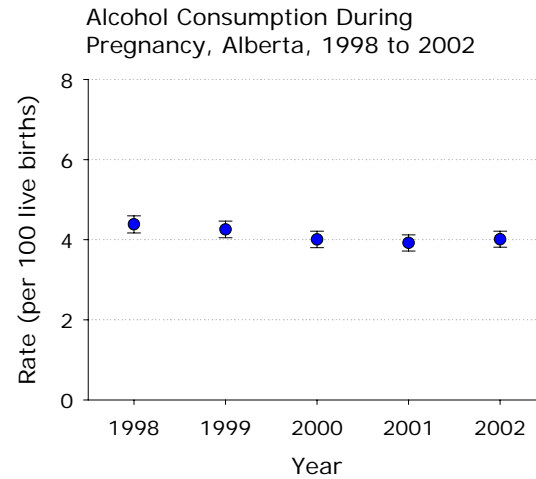
First trimester alcohol consumption may lead to structural and anatomical defects. Second or third trimester consumption may result in growth restriction and functional impairment. Potential effects include miscarriage, intrauterine growth restriction, fetal alcohol syndrome, and cognitive or behavioural abnormalities (Public Health Agency of Canada, 1998).

Mothers who are older or in higher income adequacy groups are more likely to report consuming alcohol during pregnancy than younger or lower income adequacy mothers. Younger mothers are more likely to engage in binge drinking (Public Health Agency of Canada, 1998).

Tough et al. (2005) found that 50.9% of first-time Alberta mothers reported alcohol consumption before their pregnancies were recognized. 18.3% consumed alcohol even after pregnancy was confirmed.

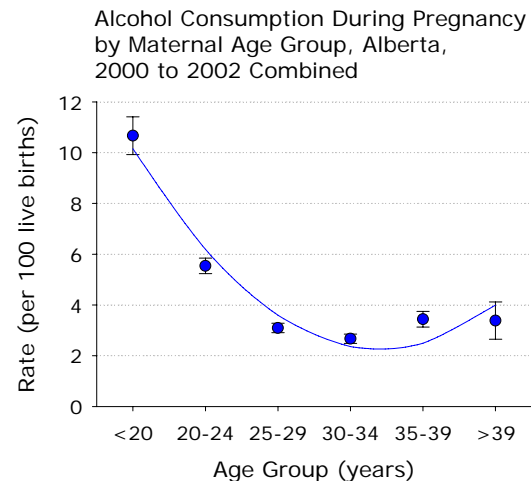
14.6% of mothers with children under two reported consuming alcohol during pregnancy in Canada in 1998/1999, down from 17.4% in 1994/1995. In 1998/99, mothers without high school educations had an alcohol consumption rate during pregnancy of 9.9%, while mothers with university/college graduation had a rate of 17.7% (Health Canada, 2003a).

### Time Trends (see Table 3.5.2.1)



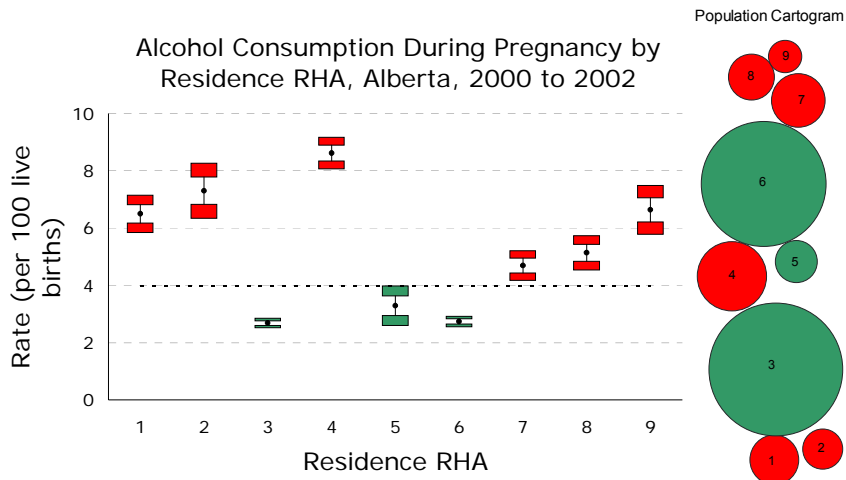
- About 4% of Alberta mothers report consuming alcohol during pregnancy. This rate did not change with time between 1998 and 2002. In 2002, the rate was 4.0% (1,473 women).
- These rates are considerably lower than figures reported in the Background, and probably represent an underestimation of the true rate. This is likely due in part to differences in data collection methods and definitions of alcohol use.

### Age Effects (see Table 3.5.2.2)



- For 2000 to 2002 combined, rates of alcohol use were highest for teenage mothers, followed by mothers aged 20 to 24 years. Among teenage mothers, more than one in ten (10.7%; 701 mothers) reported consuming alcohol during pregnancy.
- Among mothers over age 24, less than 4% reported consuming alcohol during pregnancy from 2000 to 2002.

**Regional Data** (See Table 3.5.2.3)



- The rate of alcohol consumption during pregnancy for 2000 to 2002 combined was below the provincial average in RHAs 3, 5, and 6, and above the provincial average in all other RHAs.
- The lowest rates were in RHAs 3 and 6 (2.7 per 100 live births). There were 1,036 women reporting alcohol consumption during pregnancy in Calgary RHA, and 879 in Capital RHA.
- The highest rate was in RHA 4 (8.6, or 881 women).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

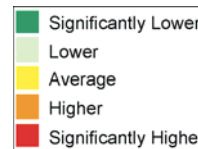
**Limitations and Methodology Notes**

Alcohol consumption during pregnancy data were self-reported and were therefore subject to social desirability biases. They likely underestimate true rates.

The rates we derived from Vital Statistics data in this section are considerably lower than figures reported in the Background, and do not show increased rates for older mothers. These differences are likely due in part to differences in data collection methods and definitions of alcohol use. For example, Vital Statistics data are collected from mothers at time of birth, while the Tough et al. (2005)/Health Canada/Public Health Agency of Canada data were from surveys.

Dr. Suzanne Tough, Departments of Paediatrics and Community Health Sciences, University of Calgary, and Calgary Health Region, contributed to this section.

**3.5.2 Alcohol Consumption During Pregnancy**



Alcohol Consumption During Pregnancy 2000 to 2002

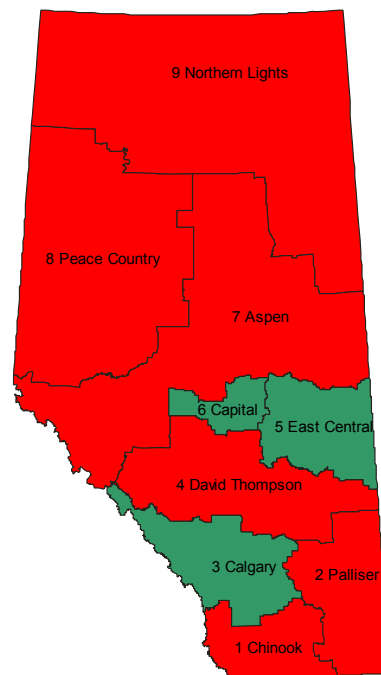


Table 3.5.2.1 Alcohol Consumption During Pregnancy by Year, Alberta, 1998 to 2002

	1998	1999	2000	2001	2002
<b>Number of mothers consuming alcohol</b>	1,556	1,530	1,408	1,406	1,473
<b>Number of live births</b>	35,510	35,950	35,152	35,883	36,723
<b>Rate (per 100 live births)</b>	4.4	4.3	4.0	3.9	4.0
<b>Standard Error (SE)</b>	0.11	0.11	0.10	0.10	0.10

Table 3.5.2.2 Alcohol Consumption During Pregnancy by Maternal Age Group, Alberta, 2000 to 2002 Combined

	<20	20 to 24	25 to 29	30 to 34	35 to 39	>39
<b>Number of mothers consuming alcohol</b>	701	1,203	1,028	812	464	79
<b>Number of live births</b>	6,570	21,719	33,235	30,409	13,488	2,336
<b>Rate (per 100 live births)</b>	10.7	5.5	3.1	2.7	3.4	3.4
<b>Standard Error (SE)</b>	0.38	0.16	0.09	0.09	0.16	0.37

Table 3.5.2.3 Alcohol Consumption During Pregnancy by Residence RHA, Alberta, 2000 to 2002 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of mothers consuming alcohol</b>	370	215	1,036	881	88	879	310	281	227	4,287
<b>Number of live births</b>	5,698	2,945	38,596	10,227	2,677	32,099	6,610	5,472	3,421	107,758
<b>Rate (per 100 live births)</b>	6.5	7.3	2.7	8.6	3.3	2.7	4.7	5.1	6.6	4.0
<b>Standard Error (SE)</b>	0.33	0.48	0.08	0.28	0.34	0.09	0.26	0.30	0.43	0.06

**Source:** Vital Statistics, Birth File, Department of Government Services, January 2004 release.

**Notes:** Only live births with available information on maternal alcohol consumption are included.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Data include Alberta residents only.





# 4. Child Health Status

## *4.1 Birth Outcomes*

*4.1.1 Low Birth Weight*

*4.1.2 High Birth Weight*

*4.1.3 Congenital Anomalies*

*4.1.4 Fetal Alcohol Spectrum Disorder*

## *4.2 Child Development*

## *4.3 Mental Health*

## *4.4 Chronic Conditions*

## *4.5 Vaccine-Preventable Diseases*

## *4.6 Sexual Health*

## *4.7 Injuries*

## *4.8 Mortality*



## 4.1.1 Low Birth Weight

### Background

Low birth weight: *Birth weight of less than 2,500 grams.*

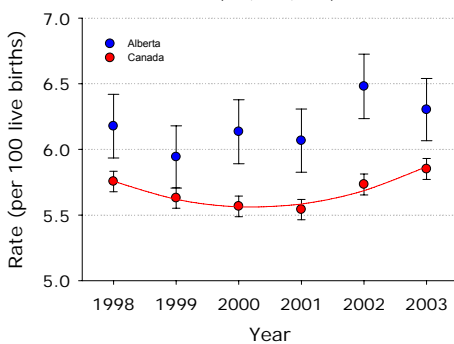
Low birth weight babies often have fetal, neonatal and long-term complications, including physical, cognitive, behavioural, and educational impairments and fetal and infant mortality (Millar & Chen, 1998; Chen et al., 1998; Nault, 1997).

Low birth weight infants may be small-for-gestational-age, or preterm, or both. These types of low birth weight likely have different underlying causes and different effects on later development.

Some of the risk factors for low birth weight are maternal smoking, multiple gestation, low pre-pregnancy weight, low pregnancy weight gain, and delayed childbirth.

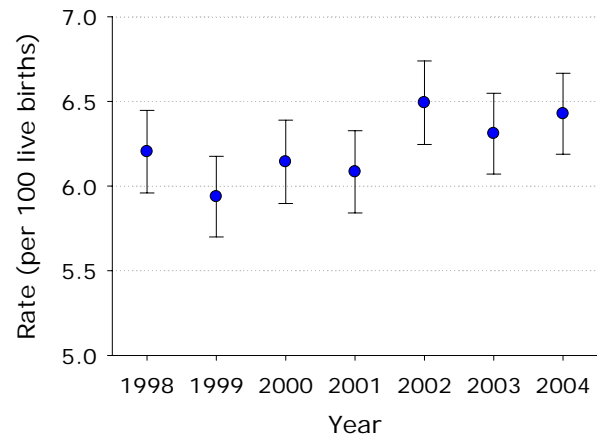
Alberta's low birth weight rate is higher than Canada's. In 2003, the rate was 6.3 (per 100 live births) in Alberta and 5.9 in Canada (Statistics Canada, 2001, 2002b, 2005b).

Low Birth Weight Rate, Alberta and Canada, 1998 to 2003  
Source: Statistics Canada (2001, 2002b, 2005b)



### Time Trends (see Tables 4.1.1.1, 4.1.1.4)

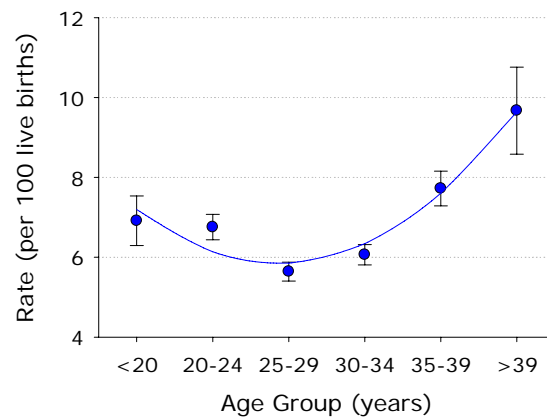
Low Birth Weight Rate, Alberta, 1998 to 2004



- Between 1998 and 2004, Alberta's low birth weight rate ranged between 5.9 and 6.5 (per 100 live births). There were 2,588 low birth weight births in 2004, for a rate of 6.4.
- Low birth weight rates did not differ for First Nations and non-First Nations babies.

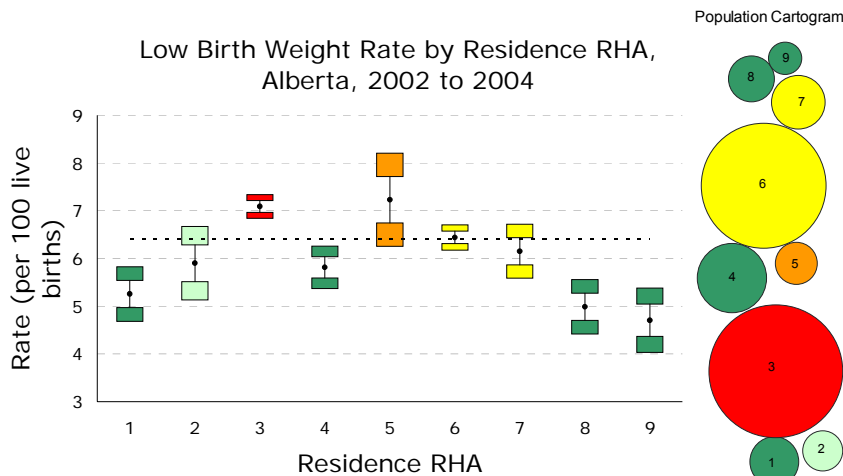
### Age Effects (see Table 4.1.1.2)

Low Birth Weight Rate by Maternal Age Group, Alberta, 2002 to 2004 Combined



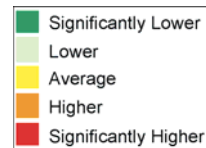
- Low birth weight births are most common in the youngest and especially the oldest maternal age groups.
- For 2002 to 2004 combined, there were 445 low birth weight infants born to women under 20 (6.9 per 100 live births).
- For women in their forties, about one in ten live births results in a low birth weight baby. For 2002 to 2004 combined, there were 273 low birth weight babies born to mothers in their forties (9.7 per 100 live births).

**Regional Data** (see Table 4.1.1.3)

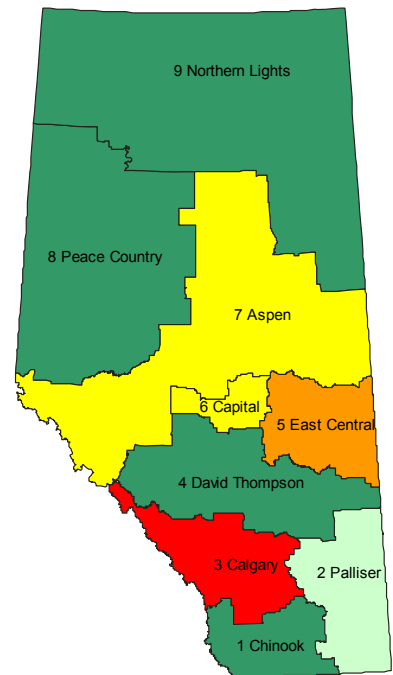


- RHAs 1, 4, 8, and 9 had fewer low birth weight births than the overall provincial average from 2002 to 2004. The lowest rate was in RHA 9, with 185 low birth weight births and a rate of 4.7 (per 100 live births).
- The low birth weight rate in the Calgary region was higher than the provincial average for 2002 to 2004 combined. The rate was 7.1 (per 100 live births) in this region, representing 3,025 low birth weight babies.
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

## 4.1.1 Low Birth Weight



Low Birth Weight 2002 to 2004



### Limitations and Methodology Notes

Data by First Nations status were taken from a different source (hospital morbidity files) than the other data in this section (Vital Statistics files). Caution should be exercised in comparing rates derived from different sources.

Table 4.1.1.1 Low Birth Weight Births and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
Number of low birth weight births	2,328	2,243	2,250	2,265	2,486	2,515	2,588
Number of live births	37,529	37,778	36,625	37,226	38,293	39,859	40,267
Rate (per 100 live births)	6.2	5.9	6.1	6.1	6.5	6.3	6.4
Standard Error (SE)	0.12	0.12	0.13	0.12	0.13	0.12	0.12

Table 4.1.1.2 Low Birth Weight Births and Rate by Maternal Age Group, Alberta, 2002 to 2004 Combined

	<20	20-24	25-29	30-34	35-39	>39	All
Number of low birth weight births	445	1,599	2,077	2,064	1,129	273	7,589
Number of live births	6,437	23,669	36,818	34,044	14,622	2,823	118,419
Rate (per 100 live births)	6.9	6.8	5.6	6.1	7.7	9.7	6.4
Standard Error (SE)	0.32	0.16	0.12	0.13	0.22	0.56	0.07

Table 4.1.1.3 Low Birth Weight Births and Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of low birth weight births	321	222	3,025	647	204	2,248	442	295	185	7,589
Number of live births	6,108	3,762	42,661	11,125	2,822	34,904	7,185	5,914	3,931	118,419
Rate (per 100 live births)	5.3	5.9	7.1	5.8	7.2	6.4	6.2	5.0	4.7	6.4
Standard Error (SE)	0.29	0.38	0.12	0.22	0.49	0.13	0.28	0.28	0.34	0.07

Source: Vital Statistics, Birth File, Department of Government Services, May 2005 release.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Total included unknown

Table 4.1.1.4 Low Birth Weight Births and Rate by First Nations Status and Year, Alberta, 1998 to 2003

First Nations	1998	1999	2000	2001	2002	2003
Number of low birth weight births	144	149	176	148	167	163
Number of live births	2,697	2,644	2,684	2,585	2,564	2,551
Rate (per 100 live births)	5.3	5.6	6.6	5.7	6.5	6.4
Standard Error (SE)	0.43	0.45	0.48	0.46	0.49	0.48

Non-First Nations	1998	1999	2000	2001	2002	2003
Number of low birth weight births	2,057	1,904	1,967	1,983	2,187	2,190
Number of live births	33,683	33,698	32,687	33,313	34,255	35,781
Rate (per 100 live births)	6.1	5.7	6.0	6.0	6.4	6.1
Standard Error (SE)	0.13	0.13	0.13	0.13	0.13	0.13

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.1.2 High Birth Weight

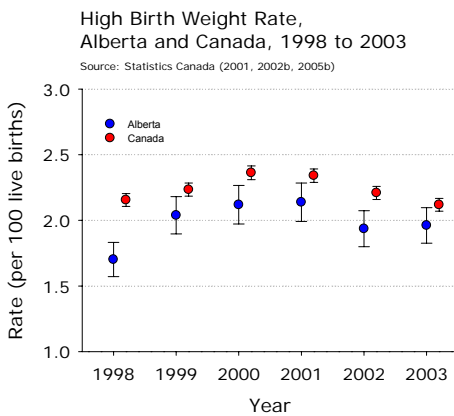
### Background

High birth weight: *Birth weight of 4,500 grams or more.*

High birth weight pregnancies have a higher risk of birth complications, such as cephalopelvic disproportion and shoulder dystocia. There is consequently an increased risk of delivery interventions, cesarean section, maternal injury, infant morbidity, and infant mortality (Ferber, 2000; Rodrigues, Robinson, Kramer, & Gray-Donald, 2000).

Risk factors for high birth weight include maternal obesity, excessive maternal weight gain during pregnancy, maternal diabetes, prolonged pregnancy, and First Nations ethnicity (Armstrong, Robinson, and Gray-Donald, 1998; Haram, Pirhonen, and Bergsjø, 2002).

Alberta's high birth weight rate was generally lower than Canada's between 1998 and 2003. In 2003, the Canadian rate was 2.1 (per 100 live births), compared with 2.0 in Alberta (Statistics Canada, 2001, 2002b, 2005b).

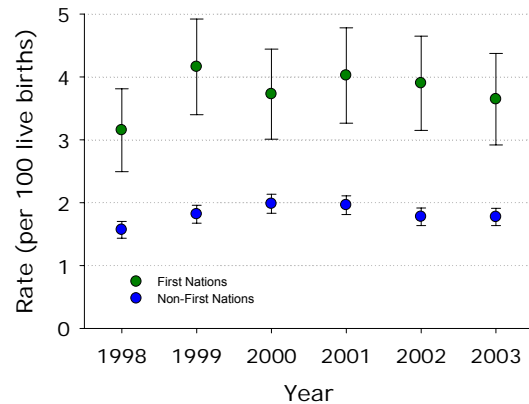


### Time Trends (see Table 4.1.2.1)

- Between 1998 and 2004, the high birth weight rate did not vary significantly with time.
- In 2004, there were 696 high birth weight babies born in Alberta, or 1.7 per 100 live births.

### First Nations (see Table 4.1.2.4)

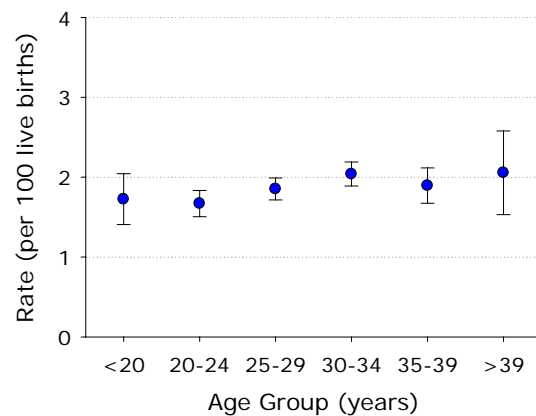
High Birth Weight Rate by First Nations Status, Alberta, 1998 to 2003



- The high birth weight rate for First Nations infants was double that of non-First Nations infants in Alberta.
- In 2003, there were 93 First Nations births of 4,500 grams or more, for a rate of 3.6 (per 100 live births). There were 634 non-First Nations high birth weight births, for a rate of 1.8.

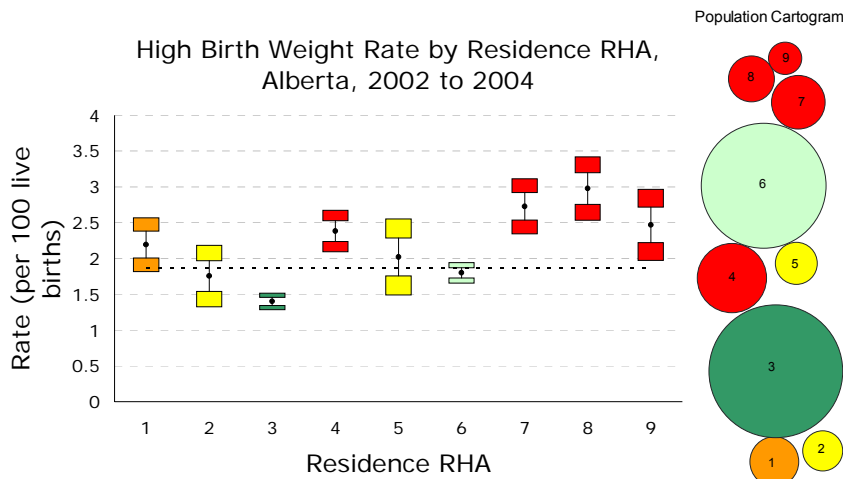
### Age Effects (see Table 4.1.2.2)

High Birth Weight Rate by Maternal Age Group, Alberta, 2002 to 2004 Combined



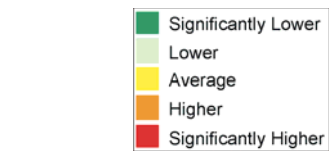
- For 2002 to 2004 combined, the high birth weight rate did not vary with maternal age.

**Regional Data** (see Table 4.1.2.3)

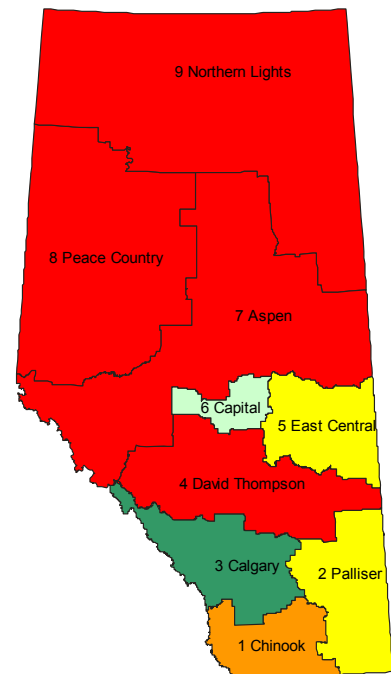


- The Calgary region had a high birth weight rate that was lower than the provincial average for 2002 to 2004 combined. The rate was 1.4 (per 100 live births; 597 babies of 4,500 grams or more).
- The high birth weight rate was significantly higher than the provincial average in RHAs 4, 7, 8, and 9. The highest rate was in RHA 8, where there were 176 babies born weighing 4,500 grams or more between 2002 and 2004, for a rate of 3.0 (per 100 live births).
- The higher rates in the northern part of the province correspond with the proportionately higher number of First Nations individuals residing in these areas.
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

### 4.1.2 High Birth Weight



High Birth Weight 2002 to 2004



**Limitations and Methodology Notes**

Data by First Nations status were taken from a different source (hospital morbidity files) than the other data in this section (Vital Statistics files). Caution should be exercised in comparing rates derived from different sources.

High birth weight cutoffs vary. We used 4,500 grams in this section; it is also common to use a 4,000 gram cutoff.



Table 4.1.2.1. High Birth Weight ( $\geq 4,500$ g) Births and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
Number of high birth weight births	642	766	778	796	741	780	696
Number of live births	37,529	37,778	36,625	37,226	38,293	39,859	40,267
Rate (per 100 live births)	1.7	2.0	2.1	2.1	1.9	2.0	1.7
Standard Error (SE)	0.07	0.07	0.08	0.07	0.07	0.07	0.06

Table 4.1.2.2. High Birth Weight ( $\geq 4,500$ ) Births and Rate by Maternal Age Group, Alberta, 2002 to 2004 Combined

	<20	20-24	25-29	30-34	35-39	>39	All
Number of high birth weight births	111	395	682	694	277	58	2,217
Number of live births	6,437	23,669	36,818	34,044	14,622	2,823	118,413
Rate (per 100 live births)	1.7	1.7	1.9	2.0	1.9	2.1	1.9
Standard Error (SE)	0.16	0.08	0.07	0.08	0.11	0.27	0.04

Table 4.1.2.3. High Birth Weight ( $\geq 4,500$ g) Births and Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of high birth weight births	134	66	597	265	57	628	196	176	97	2,217
Number of live births	6,108	3,762	42,661	11,125	2,822	34,904	7,185	5,914	3,931	118,419
Rate (per 100 live births)	2.2	1.8	1.4	2.4	2.0	1.8	2.7	3.0	2.5	1.9
Standard Error (SE)	0.19	0.21	0.06	0.14	0.26	0.07	0.19	0.22	0.25	0.04

Sources: Vital Statistics, Birth File, Department of Government Services, May 2005 Release

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.1.2.4. High Birth Weight ( $\geq 4,500$ g) Births and Rate by Year and First Nations Status, Alberta, 1998 to 2003

First Nations	1998	1999	2000	2001	2002	2003
Number of high birth weight births	85	110	100	104	100	93
Number of live births	2,697	2,644	2,684	2,585	2,564	2,551
Rate (per 100 live births)	3.2	4.2	3.7	4.0	3.9	3.6
Standard Error (SE)	0.34	0.39	0.37	0.39	0.38	0.37

Non-First Nations	1998	1999	2000	2001	2002	2003
Number of high birth weight births	528	612	648	653	608	634
Number of live births	33,683	33,698	32,687	33,313	34,255	35,781
Rate (per 100 live births)	1.6	1.8	2.0	2.0	1.8	1.8
Standard Error (SE)	0.07	0.07	0.08	0.08	0.07	0.07

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted August 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



### 4.1.3 Congenital Anomalies

#### Background

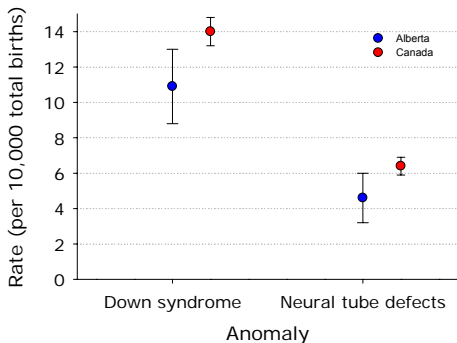
Congenital anomalies: *Developmental disorders identified prior to, at, or after birth, including malformations, deformations, disruptions, and dysplasias.* Congenital anomalies in live births, stillbirths, and terminated pregnancies (collectively referred to as “total births”) are included. In Alberta, the most prevalent categories are musculoskeletal anomalies, congenital heart defects, and central nervous system anomalies.

Congenital anomalies are a leading cause of fetal/infant death, and an important cause of morbidity and long-term disability.

Some risk factors for congenital anomalies are genetic factors, alcohol and substance use during pregnancy, environmental teratogens, lack of nutrients (e.g., folic acid), high maternal age, and low socioeconomic status (Baird & Sadovnick, 1991; Honein & Rasmussen, 2000; McClone, 2003).

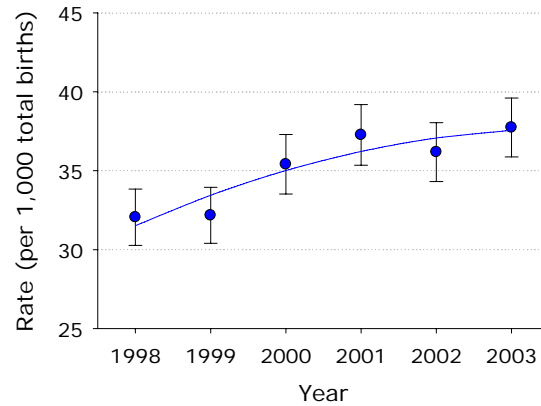
For 1997 to 1999 combined, the rate of Down syndrome was lower in Alberta than in Canada. The rate of neural tube defects in Alberta was similar to Canada’s rate (Health Canada, 2003a).

Down Syndrome and Neural Tube Defects, Alberta and Canada, 1997 to 1999 Combined  
Source: Health Canada (2003a)



#### Time Trends (see Table 4.1.3.1)

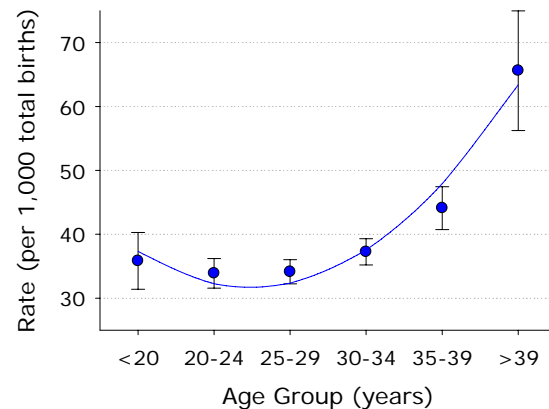
Congenital Anomalies Rate, Alberta, 1998 to 2003



- Alberta’s congenital anomalies birth prevalence rate (per 1,000 total births) increased from 32.0 in 1998 to 37.7 in 2003. In 2003, 1,515 babies were diagnosed with congenital anomalies.

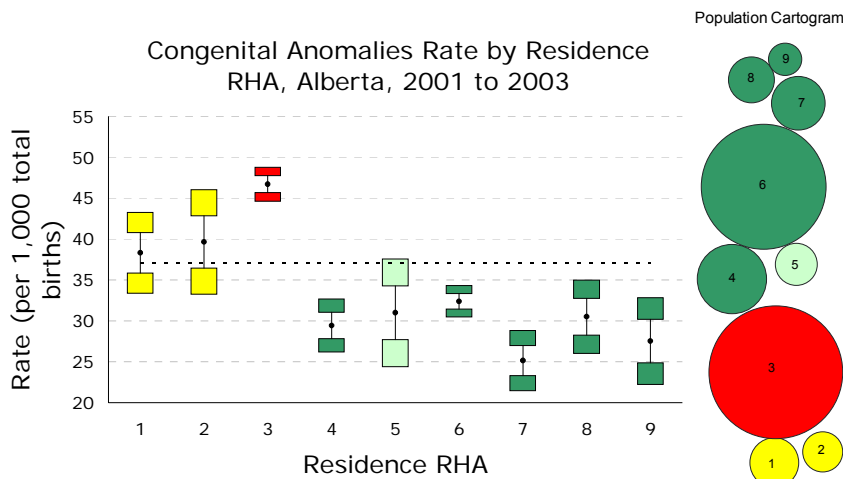
#### Age Effects (see Table 4.1.3.2)

Congenital Anomalies Rate by Maternal Age Group, Alberta, 2001 to 2003 Combined



- The Alberta birth prevalence rate of congenital anomalies increased with increasing maternal age for 2001 to 2003. The rate (per 1,000 total births) was lowest for mothers under 35 and highest for mothers over 39 (65.6; 176 babies).
- The effect of maternal age is particularly significant for Down’s syndrome, other chromosomal anomalies, and heart septal defects (Alberta Health and Wellness, 2001; Reproductive Health Report Working Group, 2004).

**Regional Data** (see Table 4.1.3.3)



- The congenital anomalies rate was significantly lower than the provincial average in RHAs 4, 6, 7, 8 and 9 for 2001 to 2003 combined. The lowest rate was 25.1 (per 1,000 total births; 182 cases) in RHA 7.
- The rate of congenital anomalies was higher than the provincial average in RHA 3, with a rate of 46.7, or 1,934 cases for 2001 to 2003 combined. Note that this rate may be affected by higher average maternal age and reporting differences in this RHA.

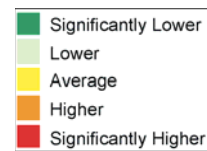
**Limitations and Methodology Notes**

Improved diagnosis, reporting, and surveillance, increasing maternal age, and inclusion of pregnancy terminations for fetal anomalies all likely contributed to the increasing rate of congenital anomalies over time.

Many aspects of reporting of congenital anomalies may not be consistent across regions over time, including reporting of fetal anomalies and diagnosis of minor anomalies. These differences could contribute to variations in rates across regions.

Fu-Lin Wang, Epidemiologist, Health Surveillance, Alberta Health and Wellness, wrote this section.

**4.1.3 Congenital Anomalies**



Congenital Anomalies 2001 to 2003

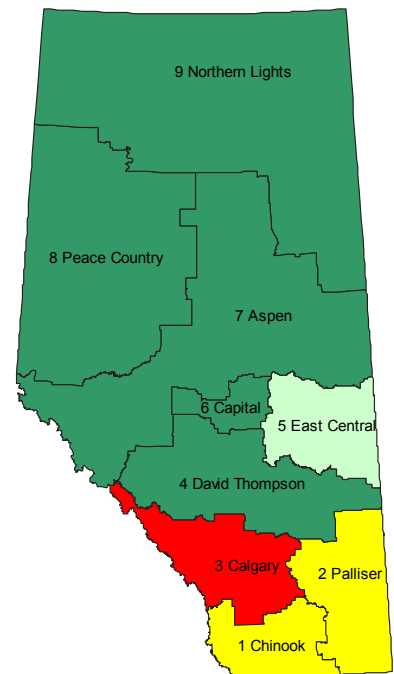


Table 4.1.3.1 All Congenital Anomalies Cases and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of cases</b>	1,209	1,224	1,305	1,396	1,394	1,515
<b>Number of total births</b>	37,725	38,048	36,865	37,484	38,546	40,142
<b>Rate (per 1,000 total births)</b>	32.0	32.2	35.4	37.2	36.2	37.7
<b>Standard Error (SE)</b>	0.91	0.90	0.96	0.98	0.95	0.95

Table 4.1.3.2 All Congenital Anomalies Cases and Rate by Maternal Age Group, Alberta, 2001 to 2003 Combined

	<20	20 to 24	25 to 29	30 to 34	35 to 39	≥40	All
<b>Number of cases</b>	241	797	1,222	1,231	635	176	4,305
<b>Number of live births</b>	6,725	23,513	35,798	33,049	14,402	2,683	116,172
<b>Rate (per 1,000 live births)</b>	35.8	33.9	34.1	37.2	44.1	65.6	37.1
<b>Standard Error (SE)</b>	2.27	1.18	0.96	1.04	1.71	4.78	0.55

Table 4.1.3.3 All Congenital Anomalies Cases and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of cases</b>	232	148	1,934	321	86	1,110	182	180	105	4,305
<b>Number of total births</b>	6,056	3,735	41,417	10,905	2,775	34,272	7,238	5,902	3,812	116,172
<b>Rate (per 1,000 total births)</b>	38.3	39.6	46.7	29.4	31.0	32.4	25.1	30.5	27.5	37.1
<b>Standard Error (SE)</b>	2.47	3.19	1.04	1.62	3.29	0.96	1.84	2.24	2.65	0.55

**Sources:** Vital Statistics, Birth File, Department of Government Services, January 2004 release.

Alberta Congenital Anomalies Surveillance System, February 2004 release.

**Notes:** Total births = Live births + Still births

Cases include all congenital anomalies in and outside ICD-9 Chapter XIV. The number of babies was counted.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.1.4 Fetal Alcohol Spectrum Disorder

### Background

Fetal Alcohol Spectrum Disorder (FASD): *FASD includes a broad range of outcomes that can occur in an individual who was exposed to alcohol prenatally.*

There is no single psychometric or physical test for FASD. Diagnosis requires multidisciplinary assessment of function and reliable confirmation of prenatal alcohol exposure. Most individuals have no visible markers. The characteristic dysmorphic face with midfacial hypoplasia of full Fetal Alcohol Syndrome (FAS) occurs with alcohol exposure between 19 and 21 days of gestation (Sulik, Johnston, & Webb, 1981).

Alcohol use in pregnancy and FASD are present in all cultures and socio-economic groups. Outcomes depend on amount, pattern and timing of alcohol exposure, as well as other variables unique to the fetal-maternal unit. Effects may include life-long physical, learning, behavioral and mental disabilities (Chudley, Conroy, Cook et al., 2005). Disabilities may not be evident at a young age in a supportive environment. At later ages, impairments in memory, judgment, abstract thinking, etc. lead to inability to function in daily life.

FASD is one of the major known causes of developmental disability in children in Canada. There is no cure; the brain damage is irreversible and the life-long support services are required. Because research has not been able to confirm a safe level of alcohol, experts agree that a woman should not drink when she is pregnant and others should support a woman's healthy choices (Alberta Children's Services, 2005a).

### Prevalence

- There are no Alberta data on FASD prevalence.
- Estimating the prevalence of FASD has been difficult for many reasons, including lack of understanding of FASD by health professionals, lack of consistent screening tools, lack of access to trained multidisciplinary assessment teams, confusions in terminology, health care system coding inconsistencies, and difficulties in confirming the use of alcohol in the target pregnancy. For these reasons, reliable data on the prevalence of FASD are not available.
- The Public Health Agency of Canada estimates that the rate of FASD in Canada is 9 (per 1,000 live births), with full Fetal Alcohol Syndrome (FAS) at 3 (per 1,000 live births). Rates in the United States are similar. Direct costs for each person with FASD have been estimated at US\$1.5 million (Public Health Agency of Canada, 2005; Sampson et al., 1997).
- Rates of FASD are elevated in high-risk populations with some Canadian studies identifying estimates of FAS as high as 190 (per 1,000 live births; Asante & Nelms-Maztke, 1985; Chudley, Conry, Cook, et al., 2005; Robinson, Conry, & Conry, 1987; Williams, Odaibo, McGee, 1999). There are multiple complex factors to account for this higher rate.
- To obtain accurate data on prevalence in Alberta, the next steps are to establish diagnostic consistency, increase access to diagnostic services that are linked to intervention, and develop and support a common reporting database system.
- Tough, Clarke, and Hicks (2003) surveyed Alberta paediatricians, obstetrician/gynecologists, and family physicians about their attitudes, knowledge, and practice related to FAS in 1998 and 2002. They found increases in Alberta doctors' reported knowledge about FAS, in reported adherence to clinical practice guidelines, and in use of standardized screening tools. Areas showing need for improvement included physicians' feelings of preparedness to care for pregnant women abusing alcohol, and physicians' ability to access relevant resources.

Dr. Gail Andrew, Board Member, Canada Northwest FASD Research Network, Corine Frick, Director, Alberta Perinatal Health Program, and Dr. Suzanne Tough, Departments of Paediatrics and Community Health Sciences, University of Calgary and Calgary Health Region, contributed to this section.





# 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.2.1 Motor and Social Development*

*4.2.2 Cognitive Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*



## 4.2.1 Motor and Social Development

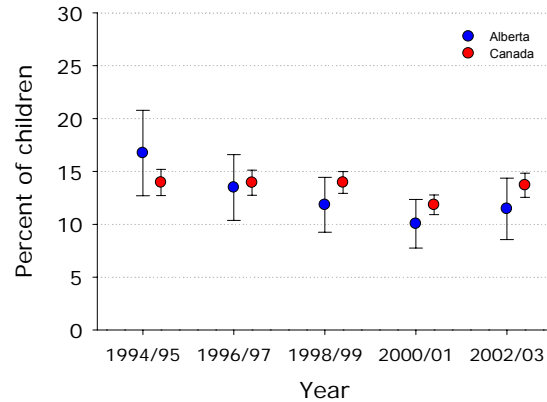
### Background

Motor and Social Development (MSD): *The MSD Scale is intended to measure the motor, social and cognitive development of children from birth to three years. Questions vary by the age of the child. MSD data came from Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY). See the Methodology Notes at the end of this section for details. Children were categorized as "delayed", "average" or "advanced" based on their scores. Data on all three categories appear in the tables, though only the delayed and advanced groups are discussed to avoid redundancy.*

Risk factors for delayed motor and social development in toddlers (2 to 3 years old) include male gender, low parental education, having a stay-at-home mother (scores were slightly lower for toddlers whose mothers were at home, compared with mothers working full-time), and having parents who had immigrated to Canada (Willms, 2002b).

### Developmentally Delayed Children (see Tables 4.2.1.1, 4.2.1.2)

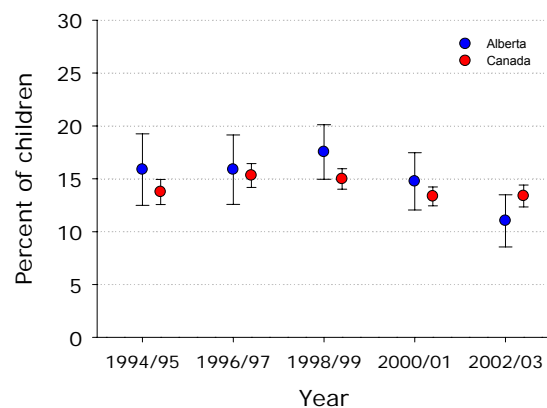
Children 0 to 3 Years with Delayed MSD Scores, Alberta and Canada, 1994/95 to 2002/03



- There were no significant effects of time on percentage of children with delayed motor and social development scores. There were also no significant Alberta/Canada differences.
- In 2002/03, an estimated 16,282 Alberta children (11.5%) aged 0 to 3 showed delayed motor and social development.

### Developmentally Advanced Children (see Tables 4.2.1.1, 4.2.1.2)

Children 0 to 3 Years with Advanced MSD Scores, Alberta and Canada, 1994/95 to 2002/03



- Percentage of children aged 0 to 3 with advanced motor and social development did not vary with time between 1994/95 and 2002/03. There were no differences between Albertan and Canadian children.
- In 2002/03, 11.0% of Alberta children had motor and social development that was advanced. This represents an estimated 15,661 children.

---

---

### Limitations and Methodology Notes

While the research and analysis in this section are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

The Motor and Social Development Scale was developed by the US National Centre for Health Statistics. 15 questions were asked of parents of NLSCY participants who were between the ages of 0 and 3. Different questions were asked for children of different ages. Each question asked whether a child was able to perform a certain task, and parents were asked to respond “yes” or “no”.

Scores were standardized by Statistics Canada so that comparisons can be made across age groups. Standardization was done for each one-month age grouping. The standardized mean for each age group was 100, with a standard deviation of 15. In this report, “advanced” scores were over 115 (more than one standard deviation above the mean), and “delayed” scores were less than 85 (more than one standard deviation below the mean). “Average” scores fell within one standard deviation of the mean (85 to 115).

Sample questions for different ages of children appear below:

- 0-3 months: Has he/she ever smiled at someone when that person talked to or smiled at (but did not touch) him/her?
- 10-18 months: Has he/she ever crawled up at least 2 stairs or steps?
- 19-47 months: Does he/she know his/her own age and sex?

The Motor and Social Development Scale was administered to parents of children between the ages of 0 and 3, for all five cycles of the NLSCY.

All data are weighted to represent the entire population, using cross-sectional weights provided by Statistics Canada. In Cycle 5, motor and social development data reported here were based on sample sizes of 637 0 to 3 year old Albertans and 6,626 0 to 3 year old Canadians.

Due to resource limitations, motor and social development measures for children over the age of three were not included in this report. It is hoped that measures for older children can be included in future reports.

## 4.2.1 Motor and Social Development

Table 4.2.1.1 Motor and Social Development (MSD) Categories, by Year, Alberta, 1994/95 to 2002/03

<b>Delayed</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with delayed MSD score</b>		24,570	20,607	17,543	13,113	16,282
<b>Total Children</b>		146,746	152,922	148,146	130,452	142,062
<b>Rate (per 100 children)</b>		16.7	13.5	11.8	10.1	11.5
<b>Standard Error (SE)</b>		2.06	1.59	1.32	1.17	1.48
<b>Average</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with average MSD score</b>		98,891	108,051	104,627	98,087	110,119
<b>Total Children</b>		146,746	152,922	148,146	130,452	142,062
<b>Rate (per 100 children)</b>		67.4	70.7	70.6	75.2	77.5
<b>Standard Error (SE)</b>		2.44	2.10	1.76	1.73	1.97
<b>Advanced</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with advanced MSD score</b>		23,285	24,264	25,976	19,253	15,661
<b>Total Children</b>		146,746	152,922	148,146	130,452	142,062
<b>Rate (per 100 children)</b>		15.9	15.9	17.5	14.8	11.0
<b>Standard Error (SE)</b>		1.72	1.68	1.32	1.38	1.26

Table 4.2.1.2 Motor and Social Development (MSD) Categories, by Year, Canada, 1994/95 to 2002/03

<b>Delayed</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with delayed MSD score</b>		198,051	206,928	192,489	138,649	177,605
<b>Total Children</b>		1,418,754	1,485,254	1,380,039	1,170,508	1,296,487
<b>Rate (per 100 children)</b>		14.0	13.9	13.9	11.8	13.7
<b>Standard Error (SE)</b>		0.63	0.61	0.52	0.47	0.58
<b>Average</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with average MSD score</b>		1,025,614	1,050,871	980,849	875,686	945,515
<b>Total Children</b>		1,418,754	1,485,254	1,380,039	1,170,508	1,296,487
<b>Rate (per 100 children)</b>		72.3	70.8	71.1	74.8	72.9
<b>Standard Error (SE)</b>		0.78	0.74	0.65	0.60	0.74
<b>Advanced</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
<b>Children with advanced MSD score</b>		195,090	227,455	206,701	156,174	173,367
<b>Total Children</b>		1,418,754	1,485,254	1,380,039	1,170,508	1,296,487
<b>Rate (per 100 children)</b>		13.8	15.3	15.0	13.3	13.4
<b>Standard Error (SE)</b>		0.60	0.57	0.49	0.45	0.53

Source: National Longitudinal Survey of Children and Youth, Cycles 1 to 5, Statistics Canada, 2003 and 2005 releases.

Notes: "Delayed"=One standard deviation below mean; "Average"=Within one standard deviation above or below mean. "Advanced"=One standard deviation above mean.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.2.2 Cognitive Development

### Background

Peabody Picture Vocabulary Test – Revised (PPVT): *The PPVT (Dunn & Dunn, 1981) is a vocabulary test, designed to measure a child’s “receptive vocabulary”, or knowledge of the meanings of words that they hear. Data on the PPVT for this report come from Statistics Canada’s National Longitudinal Survey of Children and Youth (NLSCY). In that survey, the PPVT was administered to children aged 4 to 6 years, or older if they were not yet in grade 2. Cycle 5 (2002/03) data are limited to children aged 4 and 5 years.*

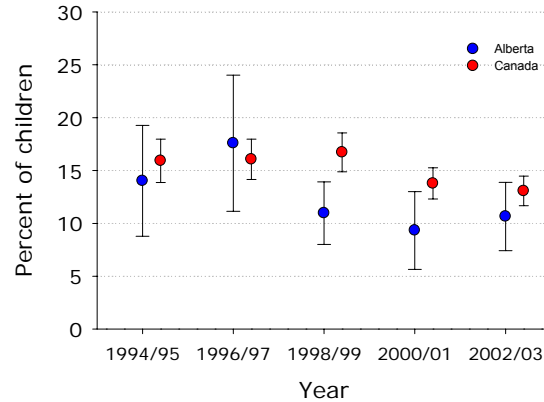
Children were categorized as “delayed”, “average” or “advanced” based on their scores. Data on all three categories appear in the tables, though only the delayed and advanced groups are discussed to avoid redundancy.

Lower PPVT scores are found in children with the following risk factors: low socio-economic status, low maternal education level, having a mother who was a teenager when the child was born, presence of several siblings, and having parents who immigrated to Canada. Boys are more likely than girls to have low PPVT scores. First-born children are much less likely to have delayed verbal skills (as measured by the PPVT) at the time of entry into school than later-born siblings. Early language development is clearly related to the quality and quantity of exposure to adult language (Willms, 2002b).

PPVT scores are predictive of intelligence test scores and academic achievement (Willms, 2002a). The PPVT is frequently used to screen people of all ages for verbal ability. For young children, it is used as a measure of school readiness.

### Cognitively Delayed Children (see Tables 4.2.2.1, 4.2.2.2)

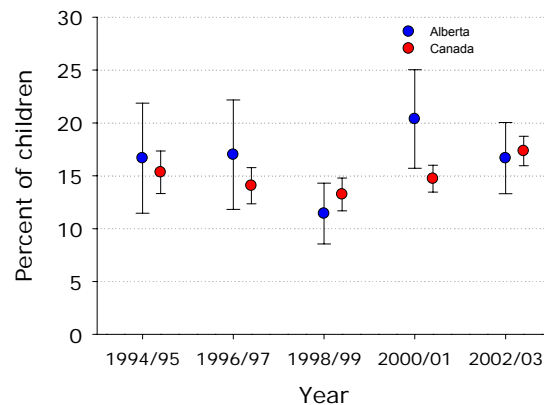
Children with Delayed PPVT Scores, Alberta and Canada, 1994/95 to 2002/03



- There were no significant time trends on percentage of children who had delayed scores on the PPVT. The only Canada/Alberta difference was a smaller percentage of children with delayed PPVT scores in Alberta in 1998/99.
- In 2002/03, an estimated 7,063 Alberta children (10.7%) had delayed receptive vocabulary development for their age, which could result in difficulties in school entry.

### Cognitively Advanced Children (see Tables 4.2.2.1, 4.2.2.2)

Children with Advanced PPVT Scores, Alberta and Canada, 1994/95 to 2002/03



- There were no significant time trends in percentage of children with advanced PPVT scores, and there were no significant differences between Albertan and Canadian children.
- In 2002/03, 16.7% of Alberta children (an estimated 11,057 children) had PPVT scores that were advanced for their age.

---

---

### Limitations and Methodology Notes

While the research and analysis in this section are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

In the PPVT, the child looks at four pictures on an easel and chooses the picture that matches the word the interviewer is saying.

Scores were standardized by Statistics Canada so that comparisons can be made across age groups. Standardization was done for each two-month age grouping. The standardized mean for each age group was 100, with a standard deviation of 15. In this report, “advanced” scores were over 115 (more than one standard deviation above the mean), and “delayed” scores were less than 85 (more than one standard deviation below the mean). “Average” scores fell within one standard deviation of the mean (85 to 115).

The test was administered to NLSCY participants who were between the ages of 4 and 6, and also older children who were not yet in Grade 2. Cycle 5 cross-sectional data are only available for children aged 0 to 5 years, so Cycle 5 PPVT data are for 4 and 5 year olds only.

Comparisons between Cycle 5 (2002/03) and earlier cycles should be interpreted with caution.

All data are weighted to represent the entire population, using cross-sectional weights provided by Statistics Canada. In Cycle 4, cognitive development data reported here were based on sample sizes of 586 Albertans and 6,844 Canadians.

Due to resource limitations, cognitive development measures for children over the age of 6 years were not included in this report. It is hoped that measures for older children can be included in future reports.

## 4.2.2 Cognitive Development



Table 4.2.2.1 Peabody Picture Vocabulary Test Categories, by Year, Alberta, 1994/95 to 2002/03

<b>Delayed</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with delayed PPVT score		10,248	18,902	9,493	9,224	7,063
Total Children		73,082	107,503	86,554	98,903	66,322
Rate (per 100 children)		14.0	17.6	11.0	9.3	10.7
Standard Error (SE)		2.68	3.29	1.51	1.87	1.65
<b>Average</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with average PPVT score		50,655	70,328	67,172	69,532	48,202
Total Children		73,082	107,503	86,554	98,903	66,322
Rate (per 100 children)		69.3	65.4	77.6	70.3	72.7
Standard Error (SE)		3.42	2.96	2.01	2.88	2.21
<b>Advanced</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with advanced PPVT score		12,180	18,274	9,888	20,147	11,057
Total Children		73,082	107,503	86,554	98,903	66,322
Rate (per 100 children)		16.7	17.0	11.4	20.4	16.7
Standard Error (SE)		2.66	2.65	1.47	2.38	1.72

Table 4.2.2.2 Peabody Picture Vocabulary Test Categories, by Year, Canada, 1994/95 to 2002/03

<b>Delayed</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with delayed PPVT score		114,146	180,594	161,932	141,627	81,879
Total Children		717,107	1,124,607	968,337	1,027,671	626,405
Rate (per 100 children)		15.9	16.1	16.7	13.8	13.1
Standard Error (SE)		1.04	0.98	0.94	0.75	0.71
<b>Average</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with average PPVT score		493,038	785,907	678,212	734,731	435,889
Total Children		717,107	1,124,607	968,337	1,027,671	626,405
Rate (per 100 children)		68.8	69.9	70.0	71.5	69.6
Standard Error (SE)		1.31	1.15	1.04	0.94	0.87
<b>Advanced</b>		<b>1994/95</b>	<b>1996/97</b>	<b>1998/99</b>	<b>2000/01</b>	<b>2002/03</b>
Children with advanced PPVT score		109,923	158,107	128,193	151,313	108,638
Total Children		717,107	1,124,607	968,337	1,027,671	626,405
Rate (per 100 children)		15.3	14.1	13.2	14.7	17.3
Standard Error (SE)		1.03	0.87	0.79	0.65	0.71

Source: National Longitudinal Survey of Children and Youth, Cycles 1 to 5, Statistics Canada, 2003 and 2005 releases.

Notes: "Delayed"=One standard deviation below mean; "Average"=Within one standard deviation above or below mean. "Advanced"=One standard deviation above mean.

Cycle 5 data include only 4 and 5 year olds.

All data are weighted, using cross-sectional weights. Standard errors were calculated using bootstrap weights.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



# 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.3.1 Attention Deficit Disorder*

*4.3.2 Anxiety and Neurotic Disorders*

*4.3.3 Depression*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*



## 4.3.1 Attention Deficit Disorder

### Background

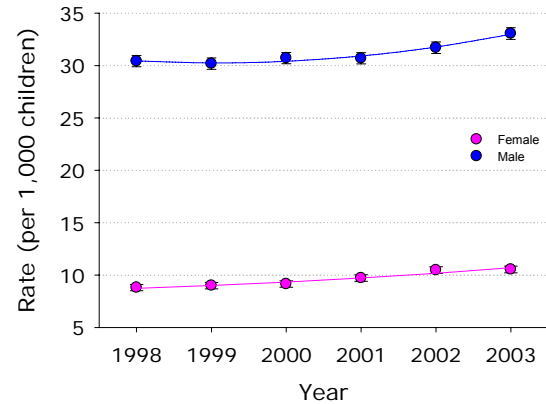
Attention Deficit Disorder (ADD) is characterized by inattention, impulsivity, motor overactivity and motor restlessness. ADD is often seen in association with other psychiatric disorders, such as conduct disorder, depression, and anxiety disorders. It is responsive to psychosocial intervention, behavior management and pharmacologic therapies (Behrman, Kliegman, & Jenson, 2004).

ADD is the most common neurobehavioral disorder of childhood and the most extensively studied mental disorder of childhood. The cause of ADD is unclear but both genetic and environmental factors have been implicated. It commonly follows traumatic or toxic (e.g. fetal alcohol spectrum disorder) damage to the central nervous system and is quite common among children with cognitive delay.

ADD is most commonly seen in the school-aged child and is three to four times more common in males than females. It affects 4 - 12% of the school-aged population (Behrman, Kliegman, & Jenson, 2004). Rates based on physician diagnosis alone likely underestimate the true rate significantly.

### Time Trends (see Tables 4.3.1.1, 4.3.1.2)

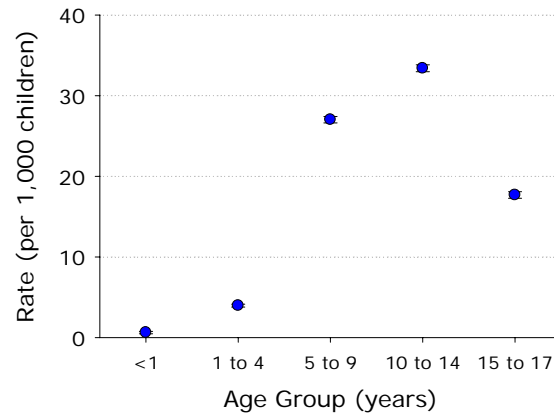
Attention Deficit Disorder Rate by Sex, Alberta, 1998 to 2003



- Attention deficit disorder (ADD) is diagnosed about three times more often in boys than in girls. In 2003, 13,093 boys (33.0 per 1,000 boys) and 3,973 girls (10.5 per 1,000 girls) were diagnosed with ADD.
- The rate of diagnosis increased slightly for both boys and girls between 1998 and 2003.

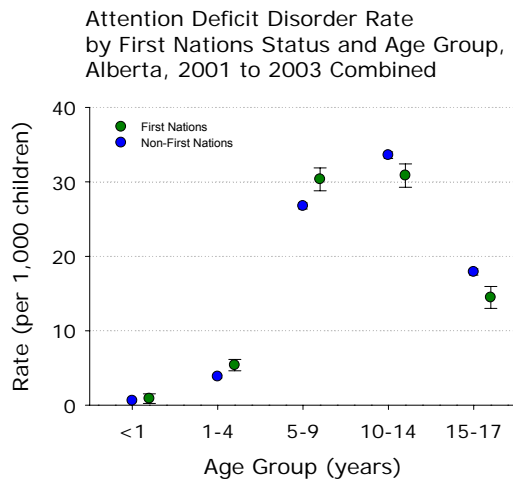
### Age Effects (see Table 4.3.1.3)

Attention Deficit Disorder Rate by Age Group, Alberta, 2001 to 2003 Combined



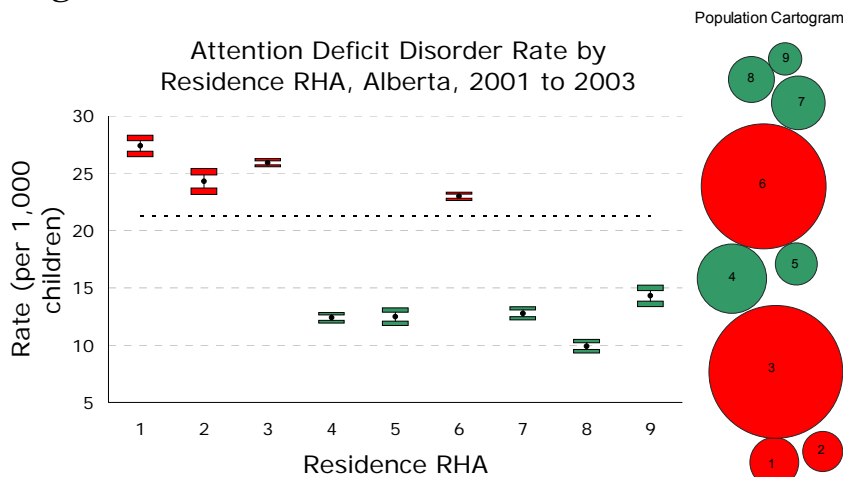
- Diagnoses of ADD peak between 10 and 14 years for Alberta children and are substantially lower for 15 to 17 year olds.
- Between 2001 and 2003, 22,963 children between the ages of 10 and 14 were diagnosed with ADD in Alberta. This is 33.4 out of every 1,000 children.

**First Nations** (see Tables 4.3.1.5, 4.3.1.6)



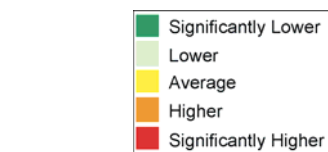
- First Nations children are more likely to be diagnosed with ADD than non-First Nations children between the ages of 1 and 9. Between the ages of 10 and 17, diagnosis rates are higher for non-First Nations children.

**Regional Data** (see Table 4.3.1.4)



- ADD was diagnosed less often than the provincial average in RHAs 4, 5, 7, 8, and 9 between 2001 and 2003. RHA 8 had the lowest rate of ADD diagnosis in the province, at 9.9 (per 1,000 children), which represents 1,111 children.
- The rate was higher than the provincial average in RHAs 1, 2, 3, and 6 for 2001 to 2003 combined. In RHA 1, 3,339 children were classified as having ADD during this time period, for a rate of 27.4. This was the highest rate in the province.

**4.3.1 Attention Deficit Disorder**



Attention Deficit Disorder 2001 to 2003



### 4.3.1 Attention Deficit Disorder

---

---

#### Limitations and Methodology Notes

Following Spady, Schopflocher, Svenson, and Thompson (2001), ADD included diagnosis of attention deficit disorder, hyperkinesis with development delay, hyperkinetic conduct disorder, and other hyperkinetic syndromes (ICD-9-CM=314).

Data were extracted from the Fee-for-Service Claims file, using primary diagnosis only.

Only those who contacted physicians for attention deficit disorder in a particular year were counted. Thus the rates likely underestimate the true underlying rates.

Age effects may reflect improved self-management with increasing age, and more acceptance of behaviours associated with ADD at older ages.

Regional effects may reflect, in part, access issues: mental health services are less available to residents of more remote areas.

Dr. Donald Spady, Pediatrician/Epidemiologist, Departments of Pediatrics and Public Health Sciences, University of Alberta, provided the Background for this section.

Table 4.3.1.1 Diagnosed Attention Deficit Disorder (ADD) and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
Number of patients	15,169	15,283	15,554	15,770	16,518	17,066
Number of services	44,425	44,438	47,175	47,719	48,787	52,824
Rate (#patients per 1,000 children)	19.9	19.8	20.2	20.5	21.4	22.1
Standard Error (SE)	0.16	0.16	0.16	0.16	0.16	0.17

Table 4.3.1.2 Diagnosed Attention Deficit Disorder (ADD) and Rate by Sex and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Female</b>						
Number of patients	3,272	3,375	3,434	3,650	3,953	3,973
Rate (#patients per 1,000 children)	8.8	9.0	9.1	9.7	10.5	10.5
Standard Error (SE)	0.15	0.15	0.16	0.16	0.17	0.17
<b>Male</b>						
Number of patients	11,897	11,908	12,120	12,120	12,565	13,093
Rate (#patients per 1,000 children)	30.4	30.2	30.7	30.7	31.7	33.0
Standard Error (SE)	0.27	0.27	0.27	0.27	0.28	0.28

Table 4.3.1.3 Diagnosed Attention Deficit Disorder (ADD) and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
Number of patients	70	1,852	17,156	22,963	7,313	49,354
Rate (#patients per 1,000 children)	0.6	4.0	27.0	33.4	17.7	21.3
Standard Error (SE)	0.07	0.09	0.20	0.22	0.20	0.09

Table 4.3.1.4 Diagnosed Attention Deficit Disorder (ADD) by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of patients	3,339	1,786	20,458	2,803	1,035	15,930	1,967	1,111	923	49,354
Rate (#patients per 1,000 children)	27.4	24.3	25.9	12.4	12.5	23.0	12.8	9.9	14.3	21.3
Standard Error (SE)	0.47	0.57	0.18	0.23	0.39	0.18	0.29	0.30	0.47	0.09

Table 4.3.1.5 Diagnosed Attention Deficit Disorder (ADD) and Rate by First Nations Status and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>First Nations</b>						
Number of patients	913	963	1,052	1,096	1,165	1,182
Rate (#patients per 1,000 children)	17.6	18.2	19.7	20.3	21.5	21.8
Standard Error (SE)	0.58	0.58	0.60	0.61	0.62	0.63
<b>Non-First Nations</b>						
Number of patients	14,256	14,320	14,502	14,674	15,353	15,884
Rate (#patients per 1,000 children)	20.0	20.0	20.2	20.5	21.3	22.1
Standard Error (SE)	0.17	0.17	0.17	0.17	0.17	0.17

Table 4.3.1.6 Diagnosed Attention Deficit Disorder (ADD) and Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>First Nations</b>						
Number of patients	7	189	1,445	1,441	361	3,443
Rate (#patients per 1,000 children)	0.9	5.4	30.3	30.8	14.5	21.2
Standard Error (SE)	0.33	0.39	0.79	0.80	0.76	0.36
<b>Non-First Nations</b>						
Number of patients	63	1,663	15,711	21,522	6,952	45,911
Rate (#patients per 1,000 children)	0.6	3.8	26.8	33.6	17.9	21.3
Standard Error (SE)	0.08	0.09	0.21	0.23	0.21	0.10

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, March 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, September 2004 release.

Notes: "ADD" includes diagnosis of attention deficit disorder, hyperkinesis with development delay, hyperkinetic conduct disorder, and other hyperkinetic syndromes. ICD-9-CM=314.

Data were based on Fee-For-Service Claims Files, primary diagnosis only.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Reference: Spady DW, Schopflocher DP, Svenson LW, Thompson A H. Prevalence of Mental Disorders in Children Living in Alberta,

Canada, as determined from Physician Billing Data. ARCH 2001, 155: 1153-1159.



## 4.3.2 Anxiety and Neurotic Disorders

### Background

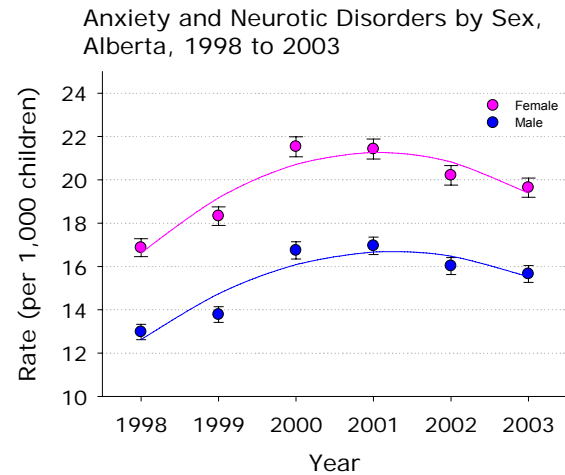
Anxiety and neurotic disorders: *Normal anxiety becomes an anxiety disorder when anxiety becomes disabling and interferes with normal social interactions and development. There are several variants of anxiety, including separation anxiety, social phobia, generalized anxiety disorder, obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and panic disorder.*

Anxiety and neurotic disorders may present at any age but are most common among 15-17 year old children, where rates are double that of children aged 10-14. Post-pubertal girls are generally more likely to be affected than boys.

The cause of anxiety and neurotic disorders is multifactorial, with genetics and life circumstances both playing a role. Some disorders, such as OCD, social phobia, and generalized anxiety appear to have more of a genetic component whereas PTSD and separation anxiety are usually responses to an adverse life effect. Anxiety and neurotic disorders can be very disabling and therapies vary in effectiveness.

Anxiety and neurotic disorders are among the most common psychiatric disorders of childhood, and, as with depression, rates derived from administrative data underestimate the rates derived from specialized surveys using appropriate diagnostic instruments.

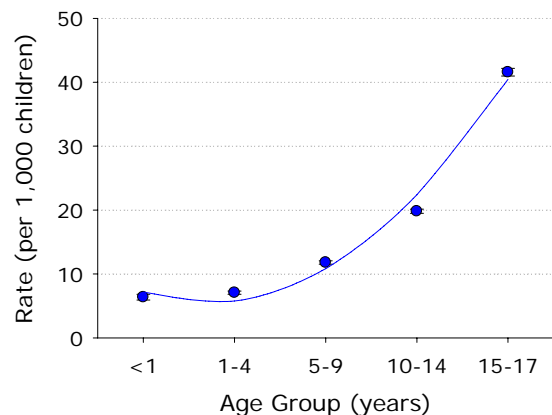
### Time Trends (see Tables 4.3.2.1, 4.3.2.2)



- Anxiety and neurotic disorders are more commonly diagnosed in girls than in boys. For both girls and boys, rates increased from 1998 to 2000, and dropped slightly in 2002 and 2003.
- In 2003, 7,404 girls and 6,200 boys were diagnosed with anxiety and neurotic disorders, for rates of 19.6 and 15.7 (per 1,000 children), respectively.

### Age Effects (see Table 4.3.2.3)

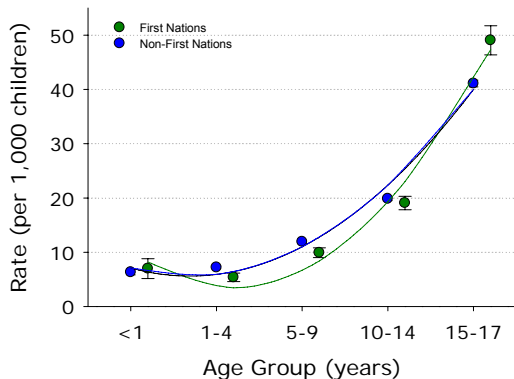
Anxiety and Neurotic Disorder Rate by Age Group, Alberta, 2001 to 2003 Combined



- Age is strongly related to the rate of anxiety and neurotic disorder diagnoses. Between 2001 and 2003, 3,308 children aged one to four were diagnosed, for a rate of 7.1 (per 1,000 children).
- In the 15 to 17 year age group, 17,193 children were diagnosed with anxiety and neurotic disorders in 2001 to 2003, for a rate of 41.6 (per 1,000 children).

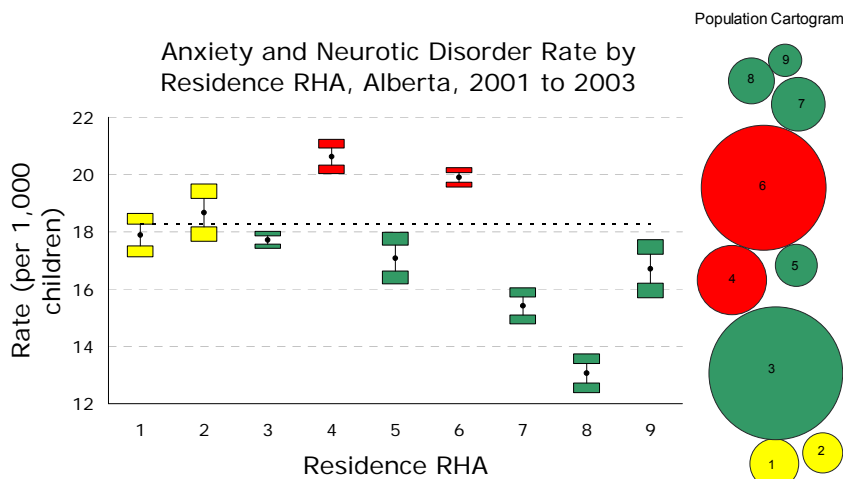
**First Nations** (see Tables 4.3.2.5, 4.3.2.6)

Anxiety and Neurotic Disorder Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 Combined



- For children aged 15 to 17, more First Nations children were diagnosed with anxiety and neurotic disorders than non-First Nations children (49.0 vs. 41.1 per 1,000 children) between 2001 and 2003.

**Regional Data** (see Table 4.3.2.4)



- The rates of anxiety and neurotic disorders in children were lower than the provincial average in RHAs 3, 5, 7, 8, and 9. The lowest rate occurred in RHA 8, where 1,464 children were diagnosed between 2001 and 2003, for a rate of 13.1.
- Anxiety and neurotic disorders were more often diagnosed in children living in RHAs 4 and 6. In RHA 4, the rate was 20.6 (per 1,000 children), with 4,664 children diagnosed. This was the highest rate in the province from 2001 to 2003.

## 4.3.2 Anxiety and Neurotic Disorders

### Background continued

Canadian data are available for hospitalizations for anxiety disorders for 1999/00. The rate for 15 to 19 year old males was about 15 (per 100,000), which is comparable to the rate for adult males in other age groups under 70 years old. For 15 to 19 year old females, however, the rate was approximately 33 (per 100,000), which is double the rate for males and considerably higher than the rate for young and middle-aged adult females (Health Canada, 2002). Note that these rates grossly underestimate the underlying rates of anxiety disorders, because most diagnosed cases of anxiety disorders do not involve hospitalization.

Anxiety and Neurotic Disorders 2001 to 2003



### 4.3.2 Anxiety and Neurotic Disorders

---

---

#### Limitations and Methodology Notes

Following Spady, Schopflocher, Svenson, and Thompson (2001), anxiety and neurotic disorders included diagnosis of anxiety state, anxiety state unspecified, panic disorder, generalized anxiety disorder, and other neurotic disorders (ICD-9-CM=300).

Data were extracted from the Fee-for-Service Claims file, using primary diagnosis only.

Only those who contacted physicians for anxiety and neurotic disorders in a particular year were counted. Thus the rates likely underestimate the true underlying rates.

Regional effects may reflect, in part, access issues: mental health services are less available to residents of more remote areas.

Dr. Donald Spady, Pediatrician/Epidemiologist, Departments of Pediatrics and Public Health Sciences, University of Alberta, provided the Background for this section.

Table 4.3.2.1 Diagnosed Anxiety and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
Number of patients	11,345	12,315	14,689	14,744	13,973	13,604
Number of services	21,811	23,221	26,722	27,424	27,121	28,081
Rate (#patients per 1,000 children)	14.9	16.0	19.1	19.1	18.1	17.6
Standard Error (SE)	0.14	0.14	0.16	0.16	0.15	0.15

Table 4.3.2.2 Diagnosed Anxiety and Rate by Sex and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Female</b>						
Number of patients	6,272	6,880	8,083	8,048	7,625	7,404
Rate (#patients per 1,000 children)	16.9	18.3	21.5	21.4	20.2	19.6
Standard Error (SE)	0.21	0.22	0.24	0.24	0.23	0.23
<b>Male</b>						
Number of patients	5,073	5,435	6,606	6,696	6,348	6,200
Rate (#patients per 1,000 children)	13.0	13.8	16.7	17.0	16.0	15.7
Standard Error (SE)	0.18	0.19	0.20	0.21	0.20	0.20

Table 4.3.2.3 Diagnosed Anxiety and Rate Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
Number of patients	721	3,308	7,481	13,618	17,193	42,321
Rate (#patients per 1,000 children)	6.4	7.1	11.8	19.8	41.6	18.3
Standard Error (SE)	0.24	0.12	0.14	0.17	0.31	0.09

Table 4.3.2.4 Diagnosed Anxiety and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of patients	2,181	1,373	13,984	4,664	1,415	13,787	2,374	1,464	1,078	42,321
Rate (#patients per 1,000 children)	17.9	18.7	17.7	20.6	17.1	19.9	15.4	13.1	16.7	18.3
Standard Error (SE)	0.38	0.50	0.15	0.30	0.45	0.17	0.31	0.34	0.50	0.09

Table 4.3.2.5 Diagnosed Anxiety and Rate by First Nations Status and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>First Nations</b>						
Number of patients	795	883	1,012	972	964	896
Rate (#patients per 1,000 children)	15.3	16.7	18.9	18.0	17.8	16.5
Standard Error (SE)	0.54	0.56	0.59	0.57	0.57	0.55
<b>Non-First Nations</b>						
Number of patients	10,550	11,432	13,677	13,772	13,009	12,708
Rate (#patients per 1,000 children)	14.8	15.9	19.1	19.2	18.1	17.7
Standard Error (SE)	0.14	0.15	0.16	0.16	0.16	0.16

Table 4.3.2.6 Diagnosed Anxiety and Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>First Nations</b>						
Number of patients	56	189	472	891	1,224	2,832
Rate (#patients per 1000 children)	7.0	5.4	9.9	19.1	49.0	17.4
Standard Error (SE)	0.93	0.39	0.45	0.63	1.37	0.32
<b>Non-First Nations</b>						
Number of patients	665	3,119	7,009	12,727	15,969	39,489
Rate (#patients per 1000 children)	6.3	7.2	11.9	19.9	41.1	18.3
Standard Error (SE)	0.24	0.13	0.14	0.17	0.32	0.09

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, March 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, September 2004 release.

Notes: "Anxiety" includes diagnosis of anxiety state, anxiety state unspecified, panic disorder, generalized anxiety disorder, and other neurotic disorders. ICD-9-CM=300.

Data were based on Fee-For-Service Claims Files, primary diagnosis only.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Reference: Spady DW, Schopflocher DP, Svenson LW, Thompson A H. Prevalence of Mental Disorders in Children Living in Alberta, Canada, as determined from Physician Billing Data. ARCH 2001, 155: 1153-1159.

### 4.3.3 Depression

#### Background

Depression: *A psychological disorder characterized by a sustained loss of interest and pleasure in usual activities. There may be associated weight changes, difficulty in sleeping, loss of energy and feelings of worthlessness or guilt.* Depression is a serious disorder requiring medical attention. It is fairly responsive to psychotherapy.

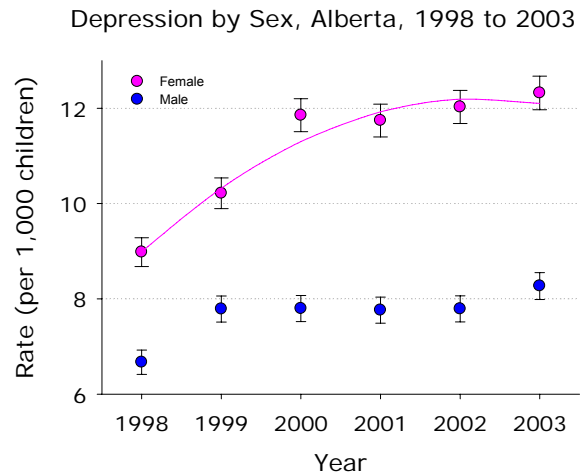
In childhood, depression can occur at any age, but it is significantly more common in adolescents and is more common in girls than boys.

The cause of depression in childhood is multifactorial. Genetics play a strong role, as do life circumstances, particularly adverse life events. There is good evidence for a biochemical basis for depression, with low levels of serotonin and norepinephrine being important genetic markers. Depression in childhood is a significant risk factor for depression in adulthood.

The prevalence of depression varies in part with the tools used to make the diagnosis. Rates based on analysis of administrative data of physician diagnoses (including those reported in this section) perhaps reflect rates among children with significant functional impairment due to depression, but are usually lower than rates determined by survey and specialized diagnostic instruments.

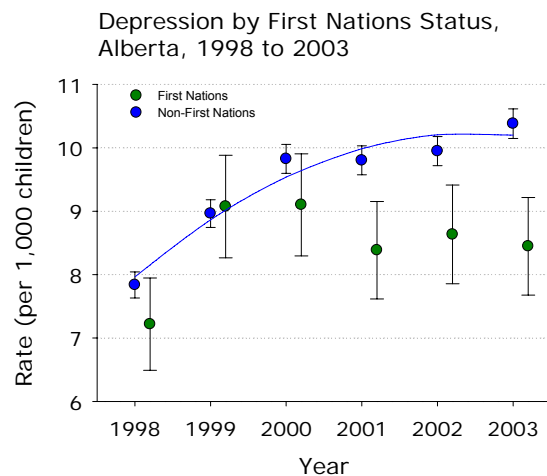
Depression is widespread among Canadian youth. In 1998, 35% of grade 10 girls and 21% of grade 10 boys reported feeling depressed once a week or more in the last 6 months. The rate for girls increased steadily from grade 6; the rate for boys remained stable across grades 6, 8, and 10 (Health Canada, 1999).

#### Time Trends (see Tables 4.3.3.1, 4.3.3.2)



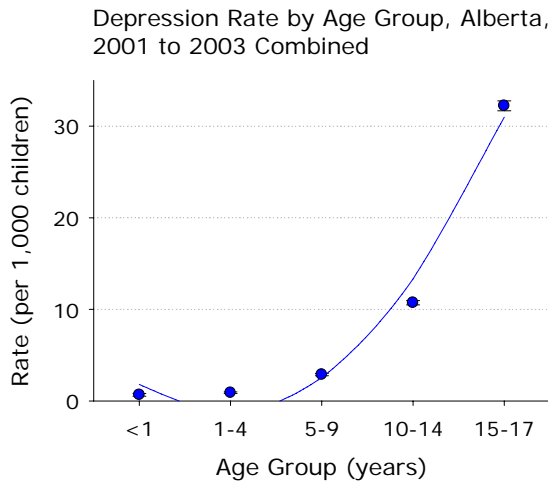
- Depression rates are higher for girls than for boys. Between 1998 and 2000, the rate for girls increased and then leveled off. In 2003, 4,646 girls (12.3 per 1,000 girls) were diagnosed with depression.
- After increasing from 1998 to 1999, the rate for boys stabilized from 1999 to 2003. There were 3,276 boys (8.3 per 1,000 boys) diagnosed in 2003.

#### First Nations (see Tables 4.3.3.5, 4.3.3.6)



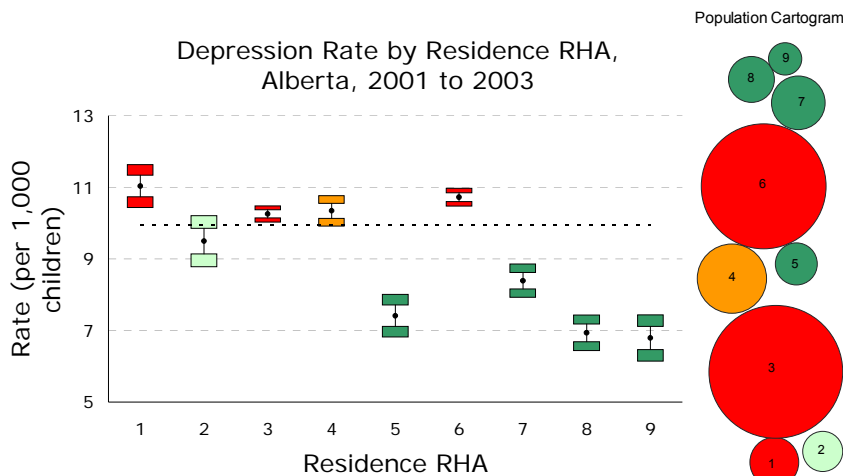
- From 1998 to 2000, diagnoses of depression among Alberta children did not vary by First Nations status. From 2001 to 2003, rates were higher among non-First Nations children.
- In 2003, the rate among First Nations children was 8.4 (per 1,000 children; 459 children). Among non-First Nations children, there were 7,463 diagnoses for a rate of 10.4.

**Age Effects** (see Table 4.3.3.3)



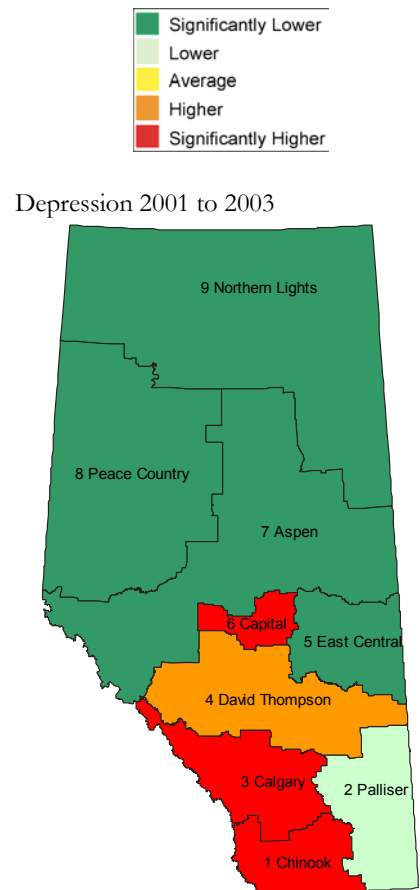
- Diagnoses of depression increase dramatically with age during childhood. For 15 to 17 year olds, the rate was 32.2, representing 13,329 children diagnosed with depression. 420 children between the ages of one and four years were diagnosed with depression between 2001 and 2003 in Alberta. This is a rate of 0.9 (per 1,000 children)

**Regional Data** (see Tables 4.3.3.4)



- In RHAs 5, 7, 8, and 9, depression rates were lower than the provincial average. The lowest rate in the province was in RHA 9, with a rate of 6.8 (per 1,000 children; 438 children).
- The depression rate was higher than the provincial average in RHAs 1, 3, and 6. The highest rate was in RHA 1, with a rate of 11.0 (1,345 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

**4.3.3 Depression**



### 4.3.3 Depression

---

---

#### Limitations and Methodology Notes

Following Spady, Schopflocher, Svenson, and Thompson (2001), depression included diagnosis of depressive disorder, depressive state and depression; brief/prolonged depressive reaction, neurotic depression, psychogenic depressive psychosis were excluded (ICD-9-CM=311).

Data were extracted from the Fee-for-Service Claims file, using primary diagnosis only.

Only those who contacted physicians for depression in a particular year were counted. Thus the rates likely underestimate the true underlying rates.

Regional effects may reflect, in part, access issues: mental health services are less available to residents of more remote areas.

Dr. Donald Spady, Pediatrician/Epidemiologist, Departments of Pediatrics and Public Health Sciences, University of Alberta, provided the Background for this section.

Table 4.3.3.1 Diagnosed Depression and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
Number of patients	5,948	6,907	7,528	7,478	7,625	7,922
Number of services	20,542	23,084	23,722	23,141	23,230	26,772
Rate (#patients per 1,000 children)	7.8	9.0	9.8	9.7	9.9	10.2
Standard Error (SE)	0.10	0.11	0.11	0.11	0.11	0.11

Table 4.3.3.2 Diagnosed Depression by Sex and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Female</b>						
Number of patients	3,340	3,835	4,451	4,412	4,538	4,646
Rate (#patients per 1,000 children)	9.0	10.2	11.9	11.7	12.0	12.3
Standard Error (SE)	0.15	0.16	0.18	0.18	0.18	0.18
<b>Male</b>						
Number of patients	2,608	3,072	3,077	3,066	3,087	3,276
Rate (#patients per 1,000 children)	6.7	7.8	7.8	7.8	7.8	8.3
Standard Error (SE)	0.13	0.14	0.14	0.14	0.14	0.14

Table 4.3.3.3 Diagnosed Depression and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
Number of patients	75	420	1,827	7,374	13,329	23,025
Rate (#patients per 1,000 children)	0.7	0.9	2.9	10.7	32.2	9.9
Standard Error (SE)	0.08	0.04	0.07	0.12	0.27	0.07

Table 4.3.3.4 Diagnosed Depression and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
Number of patients	1,345	698	8,094	2,338	614	7,429	1,292	777	438	23,025
Rate (#patients per 1,000 children)	11.0	9.5	10.3	10.3	7.4	10.7	8.4	6.9	6.8	9.9
Standard Error (SE)	0.30	0.36	0.11	0.21	0.30	0.12	0.23	0.25	0.32	0.07

Table 4.3.3.5 Diagnosed Depression and Rate by First Nations Status and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>First Nations</b>						
Number of patients	375	479	487	452	468	459
Rate (#patients per 1,000 children)	7.2	9.1	9.1	8.4	8.6	8.4
Standard Error (SE)	0.37	0.41	0.41	0.39	0.40	0.39
<b>Non-First Nations</b>						
Number of patients	5,573	6,428	7,041	7,026	7,157	7,463
Rate (#patients per 1,000 children)	7.8	9.0	9.8	9.8	9.9	10.4
Standard Error (SE)	0.10	0.11	0.12	0.12	0.12	0.12

Table 4.3.3.6 Diagnosed Depression and Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>First Nations</b>						
Number of patients	9	23	113	457	777	1,379
Rate (#patients per 1,000 children)	1.1	0.7	2.4	9.8	31.1	8.5
Standard Error (SE)	0.37	0.14	0.22	0.46	1.10	0.23
<b>Non-First Nations</b>						
Number of patients	66	397	1,714	6,917	12,552	21,646
Rate (#patients per 1,000 children)	0.6	0.9	2.9	10.8	32.3	10.0
Standard Error (SE)	0.08	0.05	0.07	0.13	0.28	0.07

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, March 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, September 2004 release.

Notes: "Depression" includes diagnosis of depressive disorder, depressive state and depression; brief/prolonged depressive reaction, neurotic depression, and psychogenic depressive psychosis were excluded. ICD-9-CM=311.

Data were based on Fee-For-Service Claims Files, primary diagnosis only.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Reference: Spady DW, Schopflocher DP, Svenson LW, Thompson A H. Prevalence of Mental Disorders in Children Living in Alberta, Canada, as determined from Physician Billing Data. ARCH 2001, 155: 1153-1159.



# 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.4.1 Asthma*

*4.4.2 Diabetes*

*4.4.3 Cancer*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*



## 4.4.1 Asthma

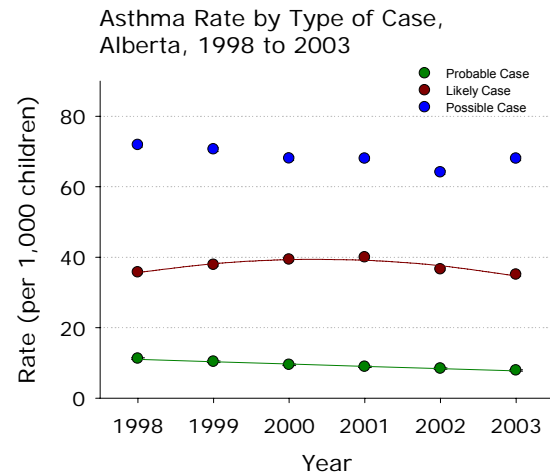
### Background

Asthma: *A chronic inflammatory disease of the airway that causes shortness of breath, tightening of the chest, coughing, and wheezing (Asthma Society of Canada, 2005). On rare occasions, an asthmatic attack may be fatal. Asthma is the most common chronic medical disorder of childhood. See the Methodology Notes at the end of this section for details of the definitions of “possible”, “likely”, and “probable” cases.*

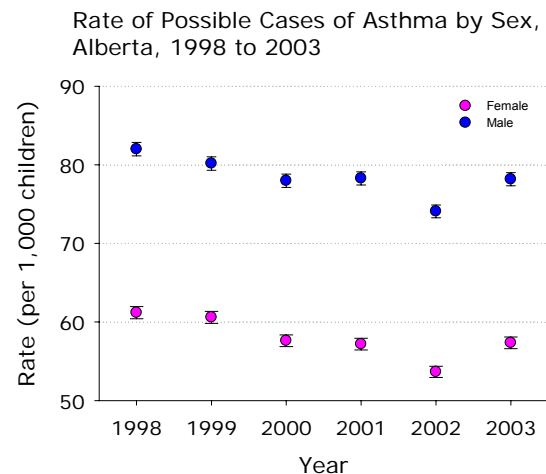
The cause of asthma is unclear, but both genetic and environmental factors play a role. Asthma attacks can be triggered by many agents including smoke, perennial allergens, air pollution (particularly ozone and sulfur dioxide), some pets, and as a sequelae of viral respiratory tract infections. Therapy is geared to avoiding trigger factors, treating the acute attack, and trying to reduce inflammation within the lungs.

Worldwide, asthma appears to be becoming more common. The rates of asthma vary considerably between communities, between countries, and between years of measurement. Some of these differences are likely due to differing diagnostic criteria but rates of asthma vary from 1.6 - 38% (Beasley, 1998). Asthma is more common in pre-pubertal boys and post-pubertal girls. It also appears to be more common in children living in urban areas compared to rural ones.

### Time Trends (see Tables 4.4.1.1, 4.4.1.2, 4.4.1.3)



- There was no significant time trend in possible cases of childhood asthma. Probable cases declined slightly between 1998 and 2003, while likely cases peaked in 2000 and 2001.
- There were 52,588 possible cases of asthma in 2003 (68.0 per 1,000 children).
- Most asthma diagnoses result from a physician's office visit. The asthma patient rate at physicians' offices declined from 1998 to 2002. The 2003 rate was 66.0 (per 1,000 children).



- The rate of possible cases of asthma was higher for boys than for girls between 1998 and 2003.
- In 2003, the rates of possible cases were 78.2 (per 1,000 boys) and 57.3 (per 1,000 girls).

### Age Effects (see Table 4.4.1.4)

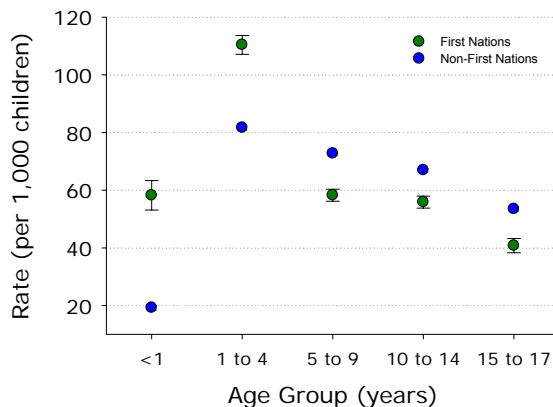
Rate of Possible Cases of Asthma by Age Group, Alberta, 2001 to 2003 Combined



- The rate of possible cases of asthma is highest for one to four year olds and declines steadily with age thereafter. In 2001 to 2003, 39,268 children between one and four had possible cases of asthma in Alberta (83.9 per 1,000 children).
- Probable and likely cases of asthma peak between 5 and 9 years of age.

### First Nations Age Effects (see Tables 4.4.1.6, 4.4.1.7)

Rate of Possible Asthma Cases by First Nations Status, Alberta, 2001 to 2003 Combined



- First Nations children and non-First Nations children had the same overall rate of possible cases of asthma between 2001 and 2003 (about 66 per 1,000 children).
- However, First Nations children were more likely than non-First Nations children to be diagnosed with asthma under the age of five, and less likely between five and 17.

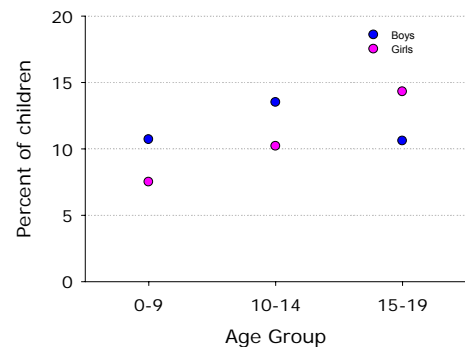
## 4.4.1 Asthma

### Background continued

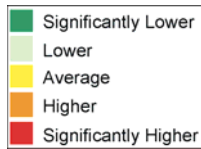
In 1998/99, between 10 and 15% of Canadian children reported having been diagnosed with asthma by a physician. The rate was higher for boys than for girls aged 0 to 14, but higher for girls between 15 and 19 years (Health Canada, 2001).

Physician-Diagnosed Asthma by Sex and Age Group, Canada, 1998/99

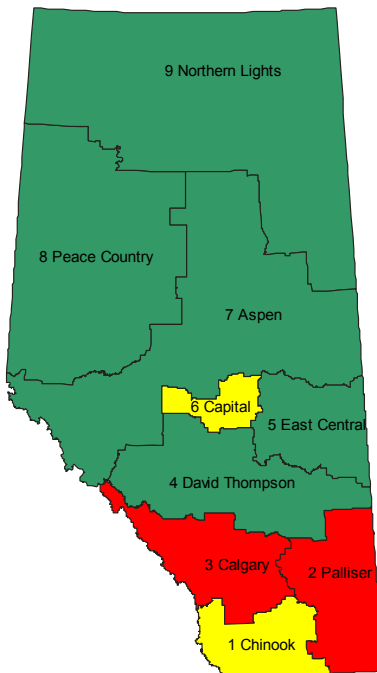
Source: Health Canada (2001)



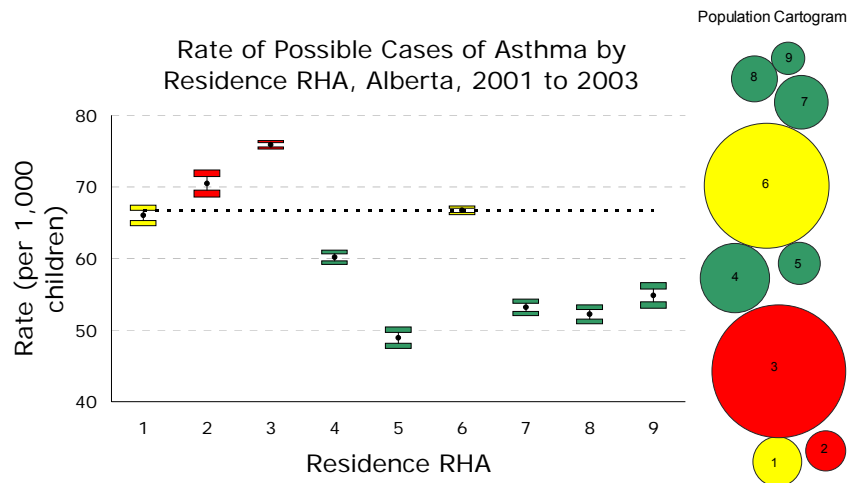
## 4.4.1 Asthma



Possible Cases of Asthma 2001 to 2003



### Regional Data (see Table 4.4.1.5)



- Rates of possible cases were lower than the provincial average in RHAs 4, 5, 7, 8, and 9 between 2001 and 2003. The lowest rate was 48.9 in RHA 5 (4,053 children).
- Rates were higher than the provincial average in RHAs 2 and 3. The highest rate in the province was in RHA 3, where 59,894 children were diagnosed (75.9 per 1,000 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

### Limitations and Methodology Notes

A child with a diagnosis of asthma may visit the health care system at a physician's office, at an emergency room, or be admitted into hospital. A single diagnosis of asthma at one of these contact points may not be indicative of a chronic case of asthma. In this report, we have classified children who have had an asthma diagnosis in three ways:

- *Probable case:* The child has had at least three visits for asthma (as described above) in a year, with 60 or more days' interval between visits, or at least one visit each year for six years, or has presented at all three possible contact points.
- *Likely case:* The child has had at least two visits for asthma (as described above) in a year, with 30 to 59 days' interval between visits, or at least one visit each year for three years, or has presented at both a physician's office and an emergency room.
- *Possible case:* The child has had at least one visit for asthma.

Most reports of asthma prevalence refer to possible cases, so most of the analyses described here refer to possible cases, although the data tables provide more information on likely and probable cases.

Dr. Donald Spady, Pediatrician/Epidemiologist, Departments of Pediatrics and Public Health Sciences, University of Alberta, provided the Background for this section.

Table 4.4.1.1 Diagnosis of Asthma by Service Setting and Year, Alberta, 1998 to 2003

Service Setting	1998	1999	2000	2001	2002	2003
<b>Hospitalization</b>						
Number of patients	2,909	2,748	2,350	2,097	2,118	2,008
Number of separations	3,500	3,293	2,747	2,396	2,392	2,267
Rate (# patient per 1,000 children)	3.8	3.6	3.1	2.7	2.7	2.6
Standard Error (SE)	0.07	0.07	0.06	0.06	0.06	0.06
<b>Emergency Room Visit</b>						
Number of patients	13,475	13,782	13,716	13,875	12,442	12,090
Number of separations	25,075	25,265	26,309	27,383	22,194	21,076
Rate (# patient per 1,000 children)	17.7	17.9	17.8	18.0	16.1	15.6
Standard Error (SE)	0.15	0.15	0.15	0.15	0.14	0.14
<b>Visit to the Fee-For-Service Physicians' Office</b>						
Number of patients	52,399	51,841	49,970	50,020	47,786	51,062
Number of separations	116,697	111,967	107,178	108,941	104,391	110,088
Rate (# patient per 1,000 children)	68.7	67.3	64.9	64.9	61.8	66.0
Standard Error (SE)	0.29	0.29	0.28	0.28	0.27	0.28

Table 4.4.1.2 Prevalence of Asthma by Case Definition and Year, Alberta, 1998 to 2003

Case Definition	1998	1999	2000	2001	2002	2003
<b>Probable case<sup>1</sup></b>						
Number of patients	8,559	7,972	7,292	6,872	6,497	6,090
Rate (per 1,000 children)	11.2	10.4	9.5	8.9	8.4	7.9
Standard Error (SE)	0.12	0.12	0.11	0.11	0.10	0.10
<b>Likely case<sup>2</sup></b>						
Number of patients	27,268	29,150	30,318	30,815	28,308	27,115
Rate (per 1,000 children)	35.7	37.9	39.4	40.0	36.6	35.1
Standard Error (SE)	0.21	0.22	0.22	0.22	0.21	0.21
<b>Possible case<sup>3</sup></b>						
Number of patients	54,824	54,372	52,403	52,401	49,605	52,588
Rate (per 1,000 children)	71.9	70.6	68.0	68.0	64.1	68.0
Standard Error (SE)	0.30	0.29	0.29	0.29	0.28	0.29

**Source:** Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.  
 Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.  
 Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.  
 Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

<sup>1</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least three visits in a year and  $\geq 60$  days of interval between each visit; or with at least one visit per year for a total of six years; or visited a physician's office and ER and been hospitalized.

<sup>2</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least two visits in a year and 30-59 days of interval between each visit; or with at least one visit per year for a total of three years; or visited a physician's office and ER.

<sup>3</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least one visit to a physician's office or ER or hospital.

Table 4.4.1.3 Diagnosis of Possible Case of Asthma by Sex and Year, Alberta, 1998 to 2003

Female		1998	1999	2000	2001	2002	2003
Number of patients		22,756	22,744	21,630	21,487	20,247	21,622
Rate (per 1,000 children)		61.2	60.6	57.6	57.2	53.7	57.3
Standard Error (SE)		0.39	0.39	0.38	0.38	0.37	0.38
Male		1998	1999	2000	2001	2002	2003
Number of patients		32,068	31,628	30,773	30,914	29,358	30,966
Rate (per 1,000 children)		82.0	80.2	78.0	78.3	74.1	78.2
Standard Error (SE)		0.44	0.43	0.43	0.43	0.42	0.43

Table 4.4.1.4 Prevalence of Asthma by Case Definition and Age Group, Alberta, 2001 to 2003 Combined

Case Definition	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Probable case<sup>1</sup></b>						
Number of patients	127	3,228	6,609	6,687	2,808	19,459
Rate (per 1,000 children)	1.1	6.9	10.4	9.7	6.8	8.4
Standard Error (SE)	0.10	0.12	0.13	0.12	0.13	0.06
<b>Likely case<sup>2</sup></b>						
Number of patients	667	18,247	27,682	27,308	12,334	86,238
Rate (per 1,000 children)	5.9	39.0	43.6	39.7	29.8	37.2
Standard Error (SE)	0.23	0.28	0.26	0.24	0.26	0.12
<b>Possible case<sup>3</sup></b>						
Number of patients	2,493	39,268	45,513	45,516	21,804	154,594
Rate (per 1,000 children)	22.0	83.9	71.7	66.2	52.7	66.7
Standard Error (SE)	0.44	0.41	0.32	0.30	0.35	0.16

Table 4.4.1.5 Prevalence of Asthma by Case Definition and Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Probable case<sup>1</sup></b>										
Number of patients	1,254	498	7,230	1,576	562	6,204	961	633	541	19,459
Rate (per 1,000 children)	10.3	6.8	9.2	7.0	6.8	9.0	6.2	5.6	8.4	8.4
Standard Error (SE)	0.29	0.30	0.11	0.17	0.29	0.11	0.20	0.22	0.36	0.06
<b>Likely case<sup>2</sup></b>										
Number of patients	4,402	2,576	32,573	7,272	2,350	27,337	4,594	3,222	1,910	86,238
Rate (per 1,000 children)	36.1	35.0	41.3	32.2	28.4	39.5	29.8	28.8	29.6	37.2
Standard Error (SE)	0.53	0.68	0.22	0.37	0.58	0.23	0.43	0.50	0.67	0.12
<b>Possible case<sup>3</sup></b>										
Number of patients	8,048	5,182	59,894	13,605	4,053	46,228	8,189	5,851	3,537	154,594
Rate (per 1,000 children)	66.0	70.5	75.9	60.2	48.9	66.7	53.2	52.2	54.8	66.7
Standard Error (SE)	0.71	0.94	0.30	0.50	0.75	0.30	0.57	0.66	0.90	0.16

**Source:** Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.  
Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.  
Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.  
Alberta Health Care Insurance Plan (AHCIIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

<sup>1</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least three visits in a year and  $\geq 60$  days of interval between each visit; or with at least one visit per year for a total of six years; or visited a physician's office and ER and been hospitalized.

<sup>2</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least two visits in a year and 30-59 days of interval between each visit; or with at least one visit per year for a total of three years; or visited a physician's office and ER.

<sup>3</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least one visit to a physician's office or ER or hospital.

Table 4.4.1.6 Diagnosis of Possible Case of Asthma by First Nations Status and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>First Nations</b>						
Number of patients	3,859	3,723	3,519	3,567	3,559	3,624
Rate (per 1,000 children)	74.3	70.5	65.8	66.2	65.7	66.7
Standard Error (SE)	1.15	1.11	1.07	1.07	1.06	1.07
<b>Non-First Nations</b>						
Number of patients	50,965	50,649	48,884	48,834	46,046	48,964
Rate (per 1,000 children)	71.7	70.6	68.2	68.1	64.0	68.1
Standard Error (SE)	0.31	0.30	0.30	0.30	0.29	0.30

Table 4.4.1.7 Diagnosis of Asthma by Case Definition, First Nations Status and Age Group, Alberta, 2001 to 2003 combined

Case Definition	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Probable case<sup>1</sup></b>						
<b>First Nations</b>						
Number of patients	38	467	487	383	130	1,505
Rate (per 1,000 children)	4.7	13.3	10.2	8.2	5.2	9.3
Standard Error (SE)	0.77	0.61	0.46	0.42	0.46	0.24
<b>Non-First Nations</b>						
Number of patients	89	2,761	6,122	6,304	2,678	17,954
Rate (per 1,000 children)	0.8	6.4	10.4	9.8	6.9	8.3
Standard Error (SE)	0.09	0.12	0.13	0.12	0.13	0.06
<b>Likely case<sup>2</sup></b>						
<b>First Nations</b>						
Number of patients	138	1,943	1,756	1,601	582	6,020
Rate (per 1,000 children)	17.2	55.3	36.9	34.3	23.3	37.1
Standard Error (SE)	1.45	1.22	0.86	0.84	0.96	0.47
<b>Non-First Nations</b>						
Number of patients	529	16,304	25,926	25,707	11,752	80,218
Rate (per 1,000 children)	5.0	37.6	44.1	40.1	30.2	37.2
Standard Error (SE)	0.22	0.29	0.27	0.25	0.27	0.13
<b>Possible case<sup>3</sup></b>						
<b>First Nations</b>						
Number of patients	467	3,879	2,775	2,611	1,018	10,750
Rate (per 1,000 children)	58.2	110.4	58.3	55.9	40.8	66.2
Standard Error (SE)	2.62	1.67	1.07	1.06	1.25	0.62
<b>Non-First Nations</b>						
Number of patients	2,026	35,389	42,738	42,905	20,786	143,844
Rate (per 1,000 children)	19.2	81.7	72.8	67.0	53.5	66.7
Standard Error (SE)	0.42	0.42	0.34	0.31	0.36	0.17

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.

Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.

Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

"Asthma" includes ICD-9 code 493 and ICD-10 code J45-J46, extracted from the primary, secondary and third diagnoses from each of the three data sources.

<sup>1</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least three visits in a year and  $\geq 60$  days of interval between each visit; or with at least one visit per year for a total of six years; or visited a physician's office and ER and been hospitalized.

<sup>2</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least two visits in a year and 30-59 days of interval between each visit; or with at least one visit per year for a total of three years; or visited a physician's office and ER.

<sup>3</sup> Between 1998 and 2003, a child has a diagnosis of asthma, with at least one visit to a physician's office or ER or hospital.



## 4.4.2 Diabetes

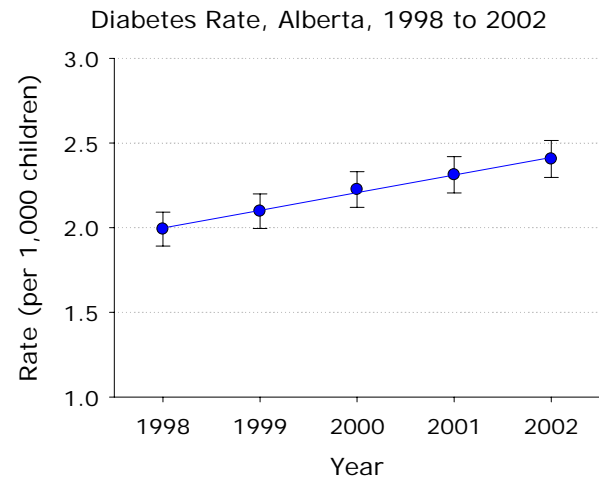
### Background

Diabetes: *A disorder in which the body's ability to produce or use insulin is impaired. Insulin is necessary for conversion of food to energy. Type I, or juvenile diabetes, occurs when islet cells in the pancreas cease to produce insulin. It usually develops during childhood or adolescence. Type II diabetes occurs when insulin is not properly used by the body. It is typically diagnosed after the age of 45, but has become more common among children recently (Health Canada, 2003b).* We define diabetes as two or more physician visits with a diagnosis of diabetes (either Type I or Type II) for children for whom fewer than five years of data are available, or three or more visits with a diabetes diagnosis if five or more years of data are available. Thus, yearly rates are derived by checking records for several preceding years.

Many long-term complications are associated with diabetes, as well as short-term complications such as coma and hypoglycemia. These include cardiovascular disease and stroke, high blood pressure, lower-limb amputations, eye disease, kidney disease, pregnancy complications, nervous system disorders, and increased susceptibility to infection. Many complications can be avoided or reduced in severity by careful management (Health Canada, 2003b).

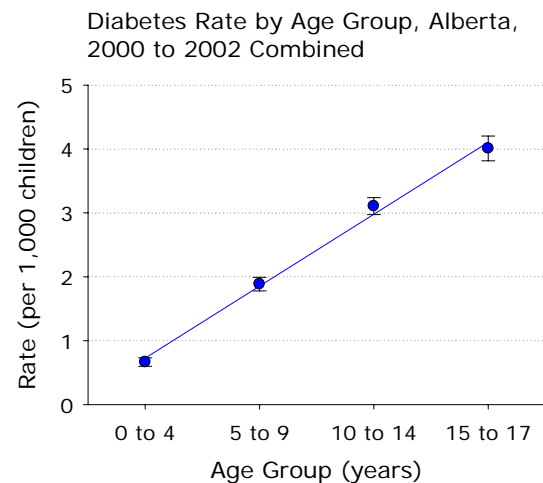
Risk factors for Type II diabetes include Aboriginal, African, Latin American, or Asian descent, family history of Type II diabetes, obesity, age (risk is higher for older people), carrying excess weight on the trunk of the body, diabetes in pregnancy, impaired glucose tolerance, high blood pressure, high blood cholesterol, and inactivity. Risk factors for Type I diabetes are not well understood (Health Canada, 2003b).

### Time Trends (see Table 4.4.2.1, 4.4.2.2, 4.4.2.5)



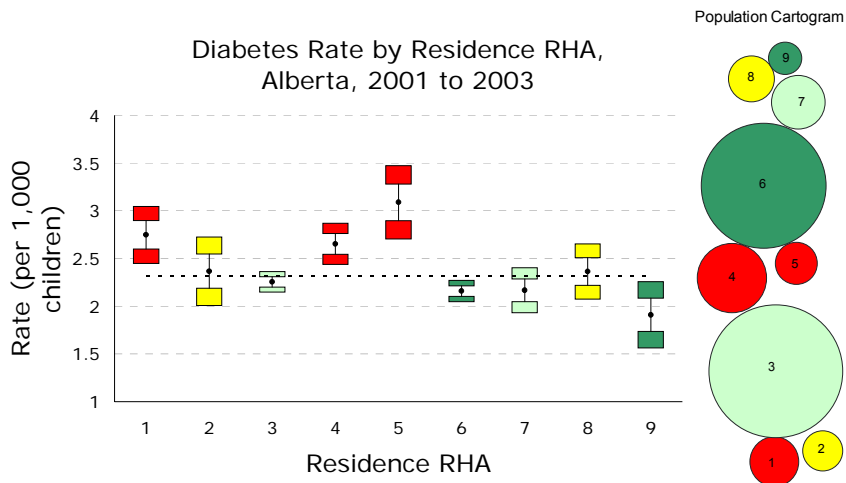
- Between 1998 and 2002, there was a small but significant increase in the rate of diabetes (Type I and Type II combined) among Alberta children, from 2.0 (per 1,000 children) in 1998 to 2.4 in 2002 (1,861 children).
- There were no rate differences between male and female children during this time period, nor between First Nations and non-First Nations children.

### Age Effects (see Table 4.4.2.3)



- Diabetes (Type I and Type II combined) increases in frequency with increasing age during childhood.
- For 2000 to 2002 combined, 387 children aged 0 to 4 years were diagnosed with diabetes, for a rate of 0.7 (per 1,000 children).
- In the 15-17 year age group, 1,644 children were diagnosed, for a rate of 4.0.

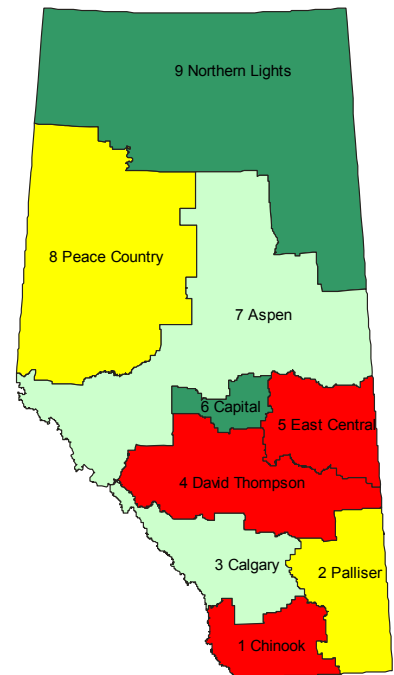
**Regional Data** (see Table 4.4.2.4)



- Diabetes rates in children were variable across the province for 2000 to 2002 data combined.
- In RHAs 6 and 9, the rate of diabetes in children was significantly lower than the provincial average. There were 121 children diagnosed with diabetes in RHA 9 between 2000 and 2002, for a rate of 1.9, the lowest rate in Alberta.
- In RHAs 1, 4, and 5, the rate of diabetes was higher than the provincial average. The highest rate was in RHA 5, in which 258 children were diagnosed in the three year period, for a rate of 3.1 (per 1,000 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

**4.4.2 Diabetes**

Diabetes 2000 to 2002



**Limitations and Methodology Notes**

Larry Svenson, Health Surveillance, Alberta Health and Wellness, contributed data analysis to this section.

Table 4.4.2.1 Diagnosed Diabetes Prevalence by Year, Alberta, 1998 to 2002

	1998	1999	2000	2001	2002
<b>Number of cases</b>	1,520	1,615	1,714	1,782	1,861
<b>Rate (per 1,000 children)</b>	2.0	2.1	2.2	2.3	2.4
<b>Standard Error (SE)</b>	0.05	0.05	0.05	0.05	0.06

Table 4.4.2.2 Diagnosed Diabetes Prevalence by Sex and Year, Alberta, 1998 to 2002

Female	1998	1999	2000	2001	2002
<b>Number of cases</b>	749	799	850	878	920
<b>Rate (per 1,000 children)</b>	2.0	2.1	2.3	2.3	2.4
<b>Standard Error (SE)</b>	0.07	0.08	0.08	0.08	0.08
Male	1998	1999	2000	2001	2002
<b>Number of cases</b>	771	816	864	904	941
<b>Rate (per 1,000 children)</b>	2.0	2.1	2.2	2.3	2.4
<b>Standard Error (SE)</b>	0.07	0.07	0.07	0.08	0.08

Table 4.4.2.3 Diagnosed Diabetes Prevalence by Age Group, Alberta, 2000 to 2002 Combined

	0 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	387	1,206	2,120	1,644	5,357
<b>Rate (per 1,000 children)</b>	0.7	1.9	3.1	4.0	2.3
<b>Standard Error (SE)</b>	0.03	0.05	0.07	0.10	0.03

Table 4.4.2.4 Diagnosed Diabetes Prevalence by Residence RHA, Alberta, 2000 to 2002 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of cases</b>	339	174	1,763	601	258	1,498	337	266	121	5,357
<b>Rate (per 1,000 children)</b>	2.7	2.4	2.3	2.7	3.1	2.2	2.2	2.4	1.9	2.3
<b>Standard Error (SE)</b>	0.15	0.18	0.05	0.11	0.19	0.06	0.12	0.14	0.17	0.03

Table 4.4.2.5 Diagnosed Diabetes Prevalence by First Nations Status, Alberta, 2000 to 2002 Combined

	First Nations	Non-First Nations
<b>Number of cases</b>	319	5,038
<b>Rate (per 1,000 children)</b>	2.0	2.3
<b>Standard Error (SE)</b>	0.11	0.03

**Source:** Fee-For-Service Claims Files, Alberta Health and Wellness, extracted September 2004.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.4.3 Cancer

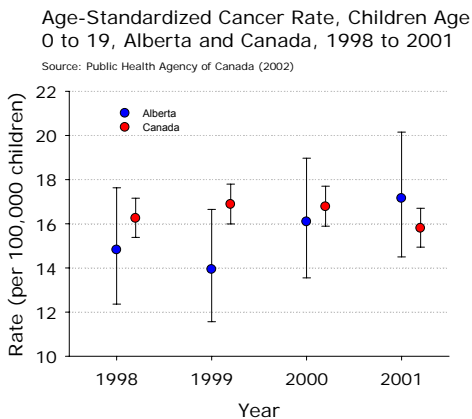
### Background

Cancer: *A group of more than 100 diseases, in which abnormal cells divide and spread. In Alberta, the most common childhood cancers are leukemia, lymphoma, brain cancer, and spinal cancer (Alberta Cancer Board, 2004). In the analyses reported here, non-melanoma skin cancer is not included.*

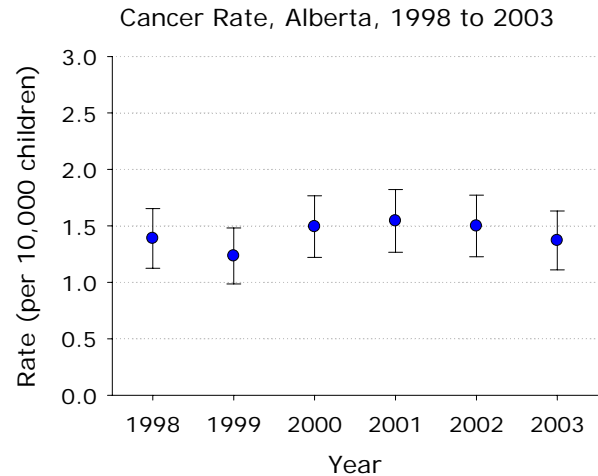
Treatment advances in the last few decades have resulted in dramatic declines in cancer mortality rates for children, in particular for leukemia and lymphoma. Approximately 27% of children with brain or spinal cancer die within five years of diagnosis, compared with 21% for leukemia and 8% for lymphoma (National Cancer Institute of Canada, 2004).

Genetic factors are more important predictors of childhood cancers than the lifestyle factors which dominate adult cancers (Alberta Cancer Board, 2004).

The figure below shows that childhood cancer rates were similar in Canada and Alberta between 1998 and 2001 (Public Health Agency of Canada, 2002).

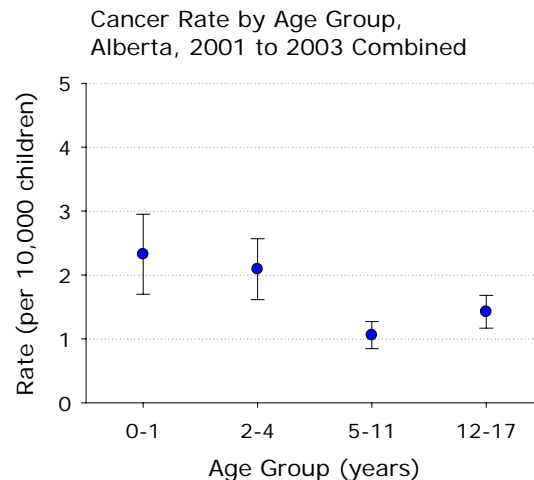


### Time Trends (see Tables 4.4.3.1, 4.4.3.2)



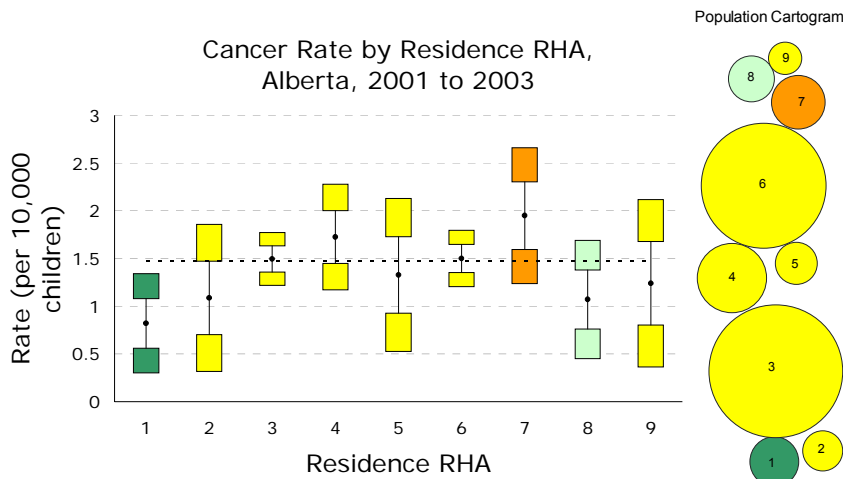
- The childhood cancer rate in Alberta did not vary over time between 1998 and 2003. The rates for boys and girls did not differ from one another during this time period.
- In 2003, 106 children were diagnosed with cancer; this is a rate of 1.4 (per 10,000 children).

### Age Effects (see Table 4.4.3.3)

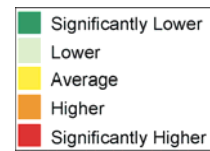
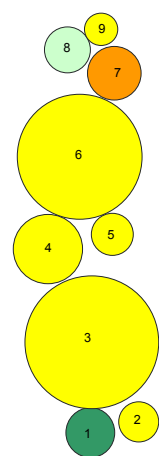


- Childhood cancer is most common in children under the age of five.
- In 2001 to 2003 combined, there were 53 Alberta children under the age of 2 who were diagnosed with cancer, for a rate of 2.3 (per 10,000 children). The rate for the 2 to 4 age group was 2.1 (74 children).
- Rates in the two older age groups ranged from 1.1 to 1.4 (per 10,000 children).

**Regional Data** (see Table 4.3.3.4)

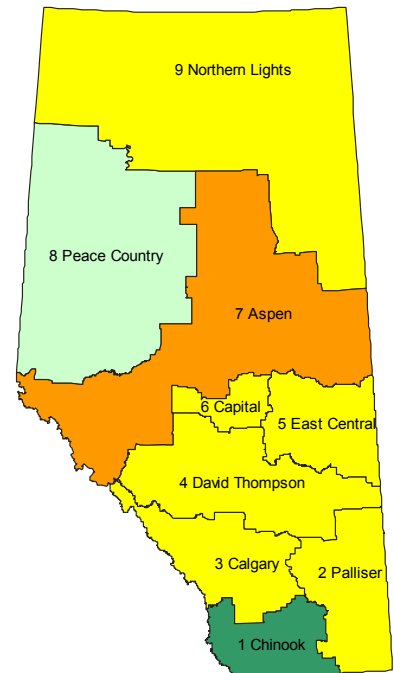


Population Cartogram



**4.4.3 Cancer**

Cancer 2001 to 2003



- RHA 1 was the only region with a childhood cancer rate that differed from the provincial mean for 2001 to 2003 combined. The cancer rate in RHA 1 was significantly lower than the provincial mean, at 0.8 (per 10,000 children; 10 cases).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms

Doug Dover, Alberta Cancer Board, provided the data for this section.

Table 4.4.3.1 Cancer Cases and Incidence Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of cases</b>	106	95	115	119	116	106
<b>Rate (per 10,000 children)</b>	1.4	1.2	1.5	1.5	1.5	1.4
<b>Standard Error (SE)</b>	0.13	0.13	0.14	0.14	0.14	0.13

Table 4.4.3.2 Cancer Cases and Incidence Rate by Sex and Year, Alberta, 1998 to 2003

Female	1998	1999	2000	2001	2002	2003
<b>Number of cases</b>	58	38	49	56	60	50
<b>Rate (per 10,000 children)</b>	1.6	1.0	1.3	1.5	1.6	1.3
<b>Standard Error (SE)</b>	0.20	0.16	0.19	0.20	0.21	0.19
Male	1998	1999	2000	2001	2002	2003
<b>Number of cases</b>	48	56	66	63	56	56
<b>Rate (per 10,000 children)</b>	1.2	1.4	1.7	1.6	1.4	1.4
<b>Standard Error (SE)</b>	0.18	0.19	0.21	0.20	0.19	0.19

Table 4.4.3.3. Cancer Cases and Incidence Rate by Age Group, Alberta, 2001 to 2003 Combined

	0 to 1	2 to 4	5 to 11	12 to 17	0 to 17
<b>Number of cases</b>	53	74	96	118	341
<b>Rate (per 10,000 children)</b>	2.3	2.1	1.1	1.4	1.5
<b>Standard Error (SE)</b>	0.32	0.24	0.11	0.13	0.08

Table 4.4.3.4 Cancer Cases and Incidence Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of cases</b>	10	8	118	39	11	104	30	12	8	341
<b>Rate (per 10,000 children)</b>	0.8	1.1	1.5	1.7	1.3	1.5	1.9	1.1	1.2	1.5
<b>Standard Error (SE)</b>	0.26	0.38	0.14	0.28	0.40	0.15	0.36	0.31	0.44	0.08

**Source:** Alberta Cancer Registry, Alberta Cancer Board.  
Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.  
Data may differ from previously published data due to differences in definitions and dates of data extraction.





# 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.5.1 Pertussis*

*4.5.2 Invasive Pneumococcal Disease*

*4.5.3 Invasive Meningococcal Disease*

*4.5.4 Other Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*



## 4.5.1 Pertussis

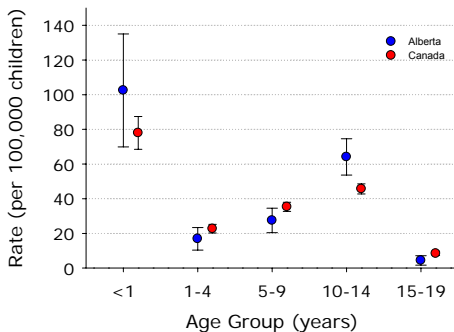
### Background

Pertussis (*whooping cough*) is a bacterial infection of the lining of the airways. It results in severe coughing that can interfere with breathing and eating. Pneumonia, convulsions, brain injury or death can result. Babies are more susceptible to complications (Alberta Health and Wellness, 2004c).

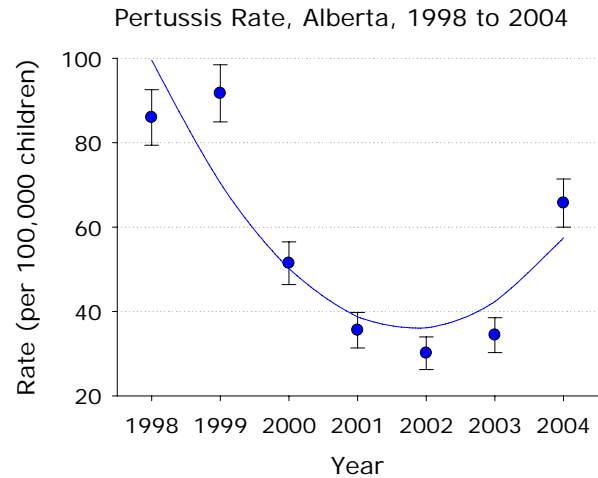
Acellular pertussis vaccine was introduced in Alberta in July 1997. Previously, whole cell vaccine was used, which decreases in effectiveness over time. In May 2004, the acellular pertussis vaccine was added to the Grade 9 immunization program.

As shown in the figure below, pertussis rate trends were similar in Canada and Alberta in 2001. The Alberta rate was slightly higher than the Canada rate for 10 to 14 year olds; otherwise rates did not differ. Rates were highest for infants (Public Health Agency of Canada, 2004b).

Pertussis Rate by Age Group, Alberta and Canada, 2001  
Source: Public Health Agency of Canada (2004b)

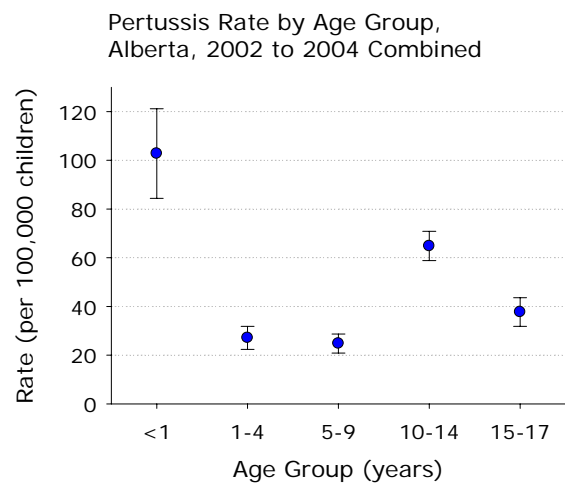


### Time Trends (see Tables 4.5.1.1, 4.5.1.2)



- Pertussis rates were elevated in 1998 and 1999, representing the tail end of a pertussis outbreak that occurred in the mid-1990s. The rate decreased in 2000 and stabilized between 2001 and 2003.
- The increase in 2004 represents another pertussis outbreak.
- The 1998 rate was 86.0 (per 100,000 children), which represents 656 reported cases of pertussis. In 2004, there were 508 cases, for a rate of 65.7.
- The rates for boys and girls did not differ significantly.

### Age Effects (see Table 4.5.1.3)

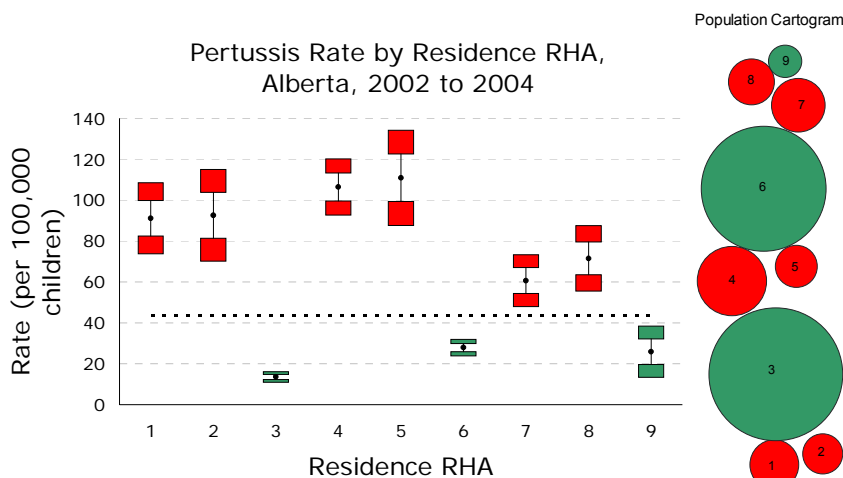


- Infants under one year of age have the highest pertussis rates in Alberta.

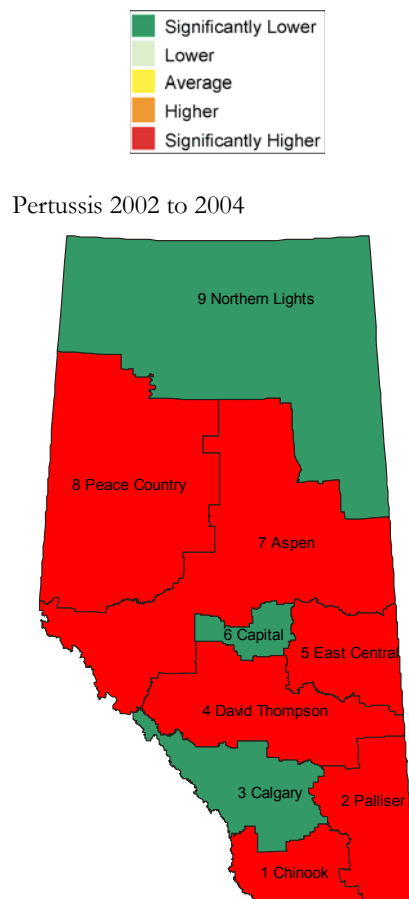
**Age Effects continued** (see Table 4.5.1.3)

- Rates for 10 to 14 year olds were elevated for 2002 to 2004 relative to other children.
  - Most children in that cohort would have received only the older, whole-cell vaccine in previous vaccinations, leaving this age group more susceptible to infection.
- For 2002 to 2004 combined, the rate for children under one year of age was 102.8 (per 100,000 children), with 120 reported cases. The rate for 10 to 14 year olds was 64.8 (447 cases). The rates in the other age groups ranged between 24.8 and 37.7.

**Regional Data** (see Table 4.5.1.4)



**4.5.1 Pertussis**



- The pertussis rate was significantly lower than the provincial average in RHAs 3, 6, and 9 for 2002 to 2004 combined. The lowest rate was in the Calgary region (108 cases, with a rate of 13.6 per 100,000 children).
- The pertussis rate was higher than the provincial average in all remaining RHAs. The highest rate was in RHA 5, with 91 cases, for a rate of 110.9 (per 100,000 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

Dr. Karen Grimsrud, Deputy Provincial Health Officer, and Dr. Shainoor Virani, Associate Provincial Health Officer, Alberta Health and Wellness, contributed to this section.

Table 4.5.1.1 Pertussis Cases and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	656	706	396	274	233	266	508
<b>Rate (per 100,000 children)</b>	86.0	91.7	51.4	35.6	30.1	34.4	65.7
<b>Standard Error (SE)</b>	3.36	3.45	2.58	2.15	1.97	2.11	2.91

Table 4.5.1.2 Pertussis Cases and Rate by Sex and Year, Alberta, 1998 to 2004

<b>Female</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		336	363	203	136	112	141	257
<b>Rate (per 100,000 children)</b>		90.3	96.7	54.1	36.2	29.7	37.4	68.2
<b>Standard Error (SE)</b>		4.93	5.07	3.79	3.10	2.80	3.15	4.25
<b>Male</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		320	343	193	138	121	117	251
<b>Rate (per 100,000 children)</b>		81.8	86.9	48.9	34.9	30.5	29.5	63.3
<b>Standard Error (SE)</b>		4.57	4.69	3.52	2.97	2.78	2.73	4.00

Table 4.5.1.3 Pertussis Cases and Rate by Age Group, Alberta, 2002 to 2004 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	120	127	156	447	157	1,007
<b>Rate (per 100,000 children)</b>	102.8	27.1	24.8	64.8	37.7	43.4
<b>Standard Error (SE)</b>	9.38	2.41	1.98	3.07	3.01	1.37

Table 4.5.1.4 Pertussis Cases and Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of cases</b>	110	68	108	240	91	193	92	80	17	1,007
<b>Rate (per 100,000 children)</b>	91.0	92.5	13.6	106.4	110.9	27.9	60.6	71.5	25.9	43.4
<b>Standard Error (SE)</b>	8.68	11.21	1.30	6.86	11.62	2.01	6.32	7.99	6.27	1.37

**Source:** Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



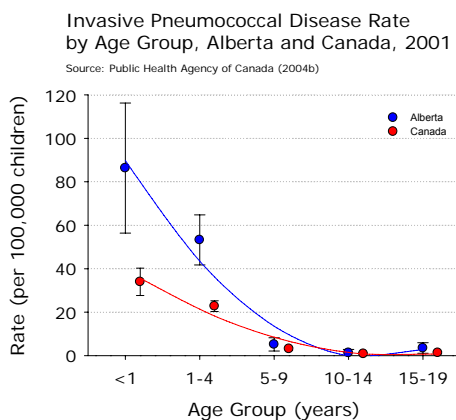
## 4.5.2 Invasive Pneumococcal Disease

### Background

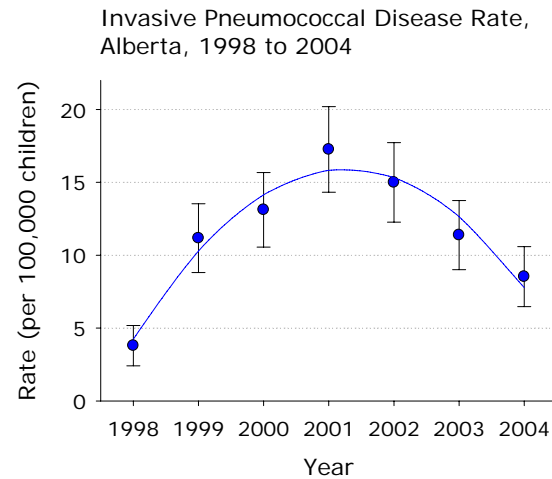
Invasive pneumococcal disease is a bacterial infection caused by *streptococcus pneumoniae*. It is the leading cause of invasive bacterial infection, meningitis, bacterial pneumonia, and ear infections. Invasive pneumococcal disease is most common in the very young, the elderly, and specific high risk groups (e.g., those who are immunocompromised).

Routine province-wide infant immunization for seven of the most common strains of streptococcus pneumoniae was initiated in September 2002. Vaccination is also offered for high-risk groups over 2 years of age.

The 2001 rate of invasive pneumococcal disease was higher in Alberta than in Canada for children under the age of five. For children over the age of five, rates were similar in Alberta and Canada (Public Health Agency of Canada, 2004b).

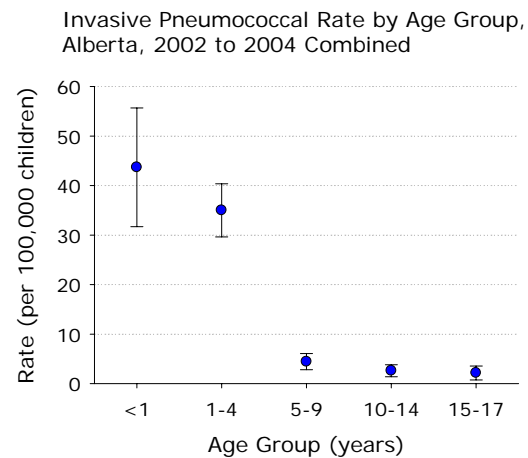


### Time Trends (see Tables 4.5.2.1, 4.5.2.2)



- The rate of invasive pneumococcal disease was relatively low in 1998 and peaked in 2001 at 17.3 (per 100,000 children, with 133 cases).
- The rate began declining in 2002, when routine infant vaccination was introduced. The 2004 rate was 8.5 (66 cases).
- Although rates for boys tended to be higher than those for girls, there was no significant sex difference.

### Age Effects (see Table 4.5.2.3)

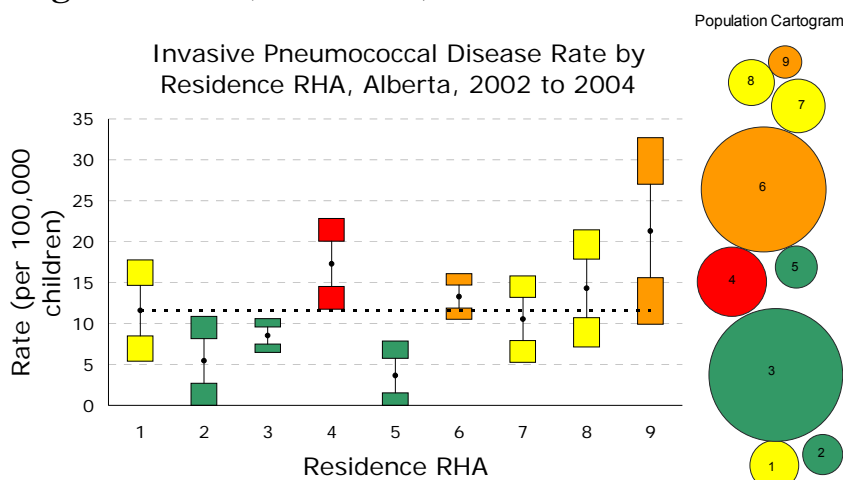


- Invasive pneumococcal disease is most common in infants and preschool children.

**Age Effects Continued** (see Table 4.5.2.3)

- From 2002 to 2004, there were 51 cases of invasive pneumococcal diseases in children less than one year of age (43.7 per 100,000 children). There were 164 cases in children aged 1 to 4 years (35.0 per 100,000 children).
  - The infant rate fell dramatically after implementation of routine infant immunization in September 2002.
- The rates in older age groups were all less than 5 per 100,000 children for 2002 to 2004 combined.

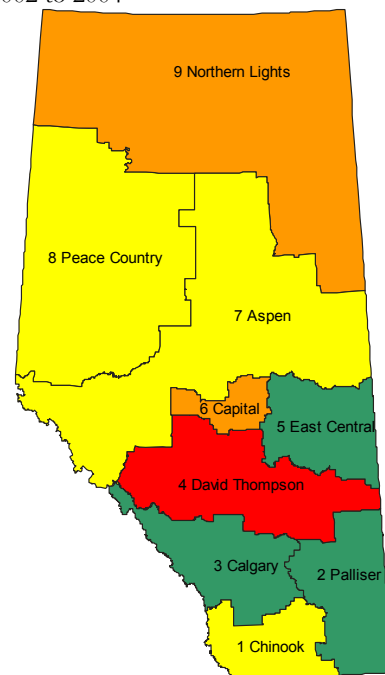
**Regional Data** (see Table 4.5.2.4)



- The rate of invasive pneumococcal disease was significantly lower than the provincial average in RHAs 2, 3, and 5 in 2002 to 2004 combined. The lowest rate was 3.7 (per 100,000 children) in RHA 5 (3 cases).
- The rate in RHA 4 was significantly higher than the provincial average during that time period. There were 39 cases in RHA 4 between 2002 and 2004, for a rate of 17.3 (per 100,000 children).
- In the other RHAs, the rate of invasive pneumococcal disease did not differ significantly from the provincial average.
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

## 4.5.2 Invasive Pneumococcal Disease

Invasive Pneumococcal Disease 2002 to 2004



Dr. Karen Grimsrud, Deputy Provincial Health Officer, and Dr. Shainoor Virani, Associate Provincial Health Officer, Alberta Health and Wellness, contributed to this section.



Table 4.5.2.1 Invasive Pneumococcal Disease Cases and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	29	86	101	133	116	88	66
<b>Rate (per 100,000 children)</b>	3.8	11.2	13.1	17.3	15.0	11.4	8.5
<b>Standard Error (SE)</b>	0.71	1.20	1.30	1.50	1.39	1.21	1.05

Table 4.5.2.2 Invasive Pneumococcal Disease Cases and Rate by Sex and Year, Alberta, 1998 to 2004

<b>Female</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		8	36	47	61	46	39	28
<b>Rate (per 100,000 children)</b>		2.2	9.6	12.5	16.2	12.2	10.3	7.4
<b>Standard Error (SE)</b>		0.76	1.60	1.83	2.08	1.80	1.66	1.40
<b>Male</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		21	50	54	71	70	48	38
<b>Rate (per 100,000 children)</b>		5.4	12.7	13.7	18.0	17.7	12.1	9.6
<b>Standard Error (SE)</b>		1.17	1.79	1.86	2.13	2.11	1.75	1.56

Table 4.5.2.3 Invasive Pneumococcal Disease Cases and Rate by Age Group, Alberta, 2002 to 2004 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	51	164	28	18	9	270
<b>Rate (per 100,000 children)</b>	43.7	35.0	4.4	2.6	2.2	11.6
<b>Standard Error (SE)</b>	6.12	2.73	0.84	0.62	0.72	0.71

Table 4.5.2.4 Invasive Pneumococcal Disease Cases and Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of cases</b>	14	4	68	39	3	92	16	16	14	270
<b>Rate (per 100,000 children)</b>	11.6	5.4	8.5	17.3	3.7	13.3	10.5	14.3	21.3	11.6
<b>Standard Error (SE)</b>	3.10	2.72	1.04	2.77	2.11	1.39	2.64	3.57	5.69	0.71

**Source:** Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.5.3 Invasive Meningococcal Disease

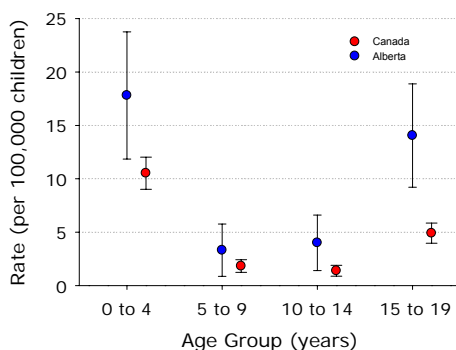
### Background

Invasive meningococcal disease: infection with *Neisseria meningitidis*, causing serious diseases, including meningitis (an infection of the lining of the brain and spinal cord) and meningococemia (a widespread infection of the blood and other organs). The bacteria may be present in the nose and throat without causing disease (Alberta Health and Wellness, 2004d, 2005a).

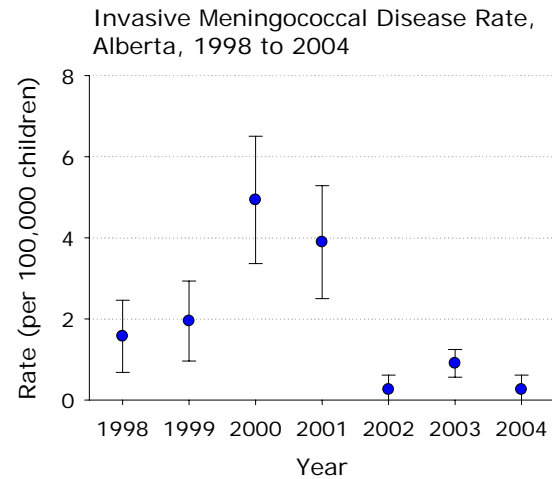
A vaccine to protect against one of the most common strains of *N. meningitidis* (serogroup C) was added to Alberta's routine childhood immunization schedule in 2002.

An invasive meningococcal disease outbreak occurred in Alberta in 2000 and 2001, resulting in nine deaths (out of 140 adult and child cases). Serious long-term complications among survivors included deafness, loss of limbs, and marked scarring. A province-wide mass immunization campaign ensued (Alberta Health and Wellness, 2004a). Increased incidence was mainly among 15 to 19 year olds, as seen in the 2001 Canada/Alberta comparison below (Public Health Agency of Canada, 2004b).

Invasive Meningococcal Disease Rate by Age Group, Alberta and Canada, 2001  
Source: Public Health Agency of Canada (2004b)



### Time Trends (see Tables 4.5.3.1, 4.5.3.2)



- Meningococcal rates are generally below 2 (per 100,000 children). In 2000 and 2001, rates were elevated (4.9 and 3.9, respectively), with 38 and 30 cases occurring in those years.
- Following mass immunization, the rate fell dramatically, with only 11 cases reported from 2002 to 2004. In 2004, there were 2 cases of invasive meningococcal disease reported in Alberta, for a rate of 0.3 (per 100,000 children). Both of these cases were infected with the serogroup B strain, which is not included in the meningococcal vaccine.
- There were no significant sex effects.

### Age Effects (see Table 4.5.3.3)

- There were too few cases from 2002 to 2004 for significant age group effects to appear in meningococcal disease rates.
- In infants, there were 4 cases of meningococcal disease for 2002 to 2004. The rate for infants showed a large decline in 2003, following introduction of routine immunization in 2002.

Dr. Karen Grimsrud, Deputy Provincial Health Officer, and Dr. Shainoor Virani, Associate Provincial Health Officer, Alberta Health and Wellness, contributed to this section.

Table 4.5.3.1 Invasive Meningococcal Disease Cases and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	12	15	38	30	2	7	2
<b>Rate (per 100,000 children)</b>	1.6	1.9	4.9	3.9	0.3	0.9	0.3
<b>Standard Error (SE)</b>	0.45	0.50	0.80	0.71	0.18	0.34	0.18

Table 4.5.3.2 Invasive Meningococcal Disease Cases and Rate by Sex and Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Female</b>							
<b>Number of cases</b>	2	8	21	12	0	2	1
<b>Rate (per 100,000 children)</b>	0.5	2.1	5.6	3.2	0.0	0.5	0.3
<b>Standard Error (SE)</b>	0.38	0.75	1.22	0.92	0.00	0.38	0.27
<b>Male</b>							
<b>Number of cases</b>	10	7	17	18	2	5	1
<b>Rate (per 100,000 children)</b>	2.6	1.8	4.3	4.6	0.5	1.3	0.3
<b>Standard Error (SE)</b>	0.81	0.67	1.04	1.07	0.36	0.56	0.25

Table 4.5.3.3 Invasive Meningococcal Disease Cases and Rate by Age Group, Alberta, 2002 to 2004 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	4	5	1	0	1	11
<b>Rate (per 100,000 children)</b>	3.4	1.1	0.2	0.0	0.2	0.5
<b>Standard Error (SE)</b>	1.71	0.48	0.16	0.00	0.24	0.14

**Source:** Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.  
Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.  
Data may differ from previously published data due to differences in definitions and dates of data extraction.

## 4.5.4 Other Vaccine-Preventable Diseases

### Background

Hib (*Haemophilus influenzae* type b) is a bacterial infection that can result in meningitis, pneumonia, epiglottitis, infections in the blood, joints, bones, body tissues, or in the outer covering of the heart. (Alberta Health and Wellness, 2004c).

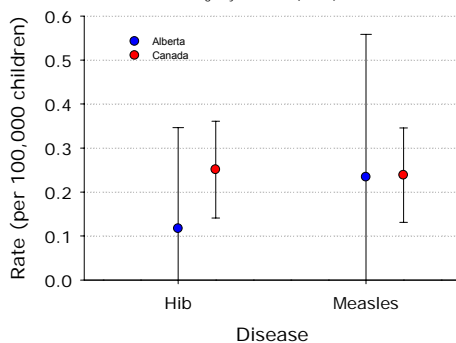
Before the introduction of Hib conjugate vaccines in Canada in 1998, approximately 2000 cases of Hib disease were reported annually. It was the most common cause of bacterial meningitis. The fatality rate was 5% for children under 5 with Hib, and 25% of children with meningitis had permanent brain injury or deafness (Alberta Health and Wellness, 2004c). Since 1998, the overall incidence has declined by more than 99%.

Measles is a highly contagious viral infection that results in a rash, high fever, cough, runny nose and red eyes. In ten percent of children, an ear infection or pneumonia results. Rarely, encephalitis occurs, potentially causing convulsions, deafness, mental disability or death (Alberta Health and Wellness, 2004e).

Rates of Hib and measles did not differ between Canada and Alberta in 2001 (Public Health Agency of Canada, 2004b).

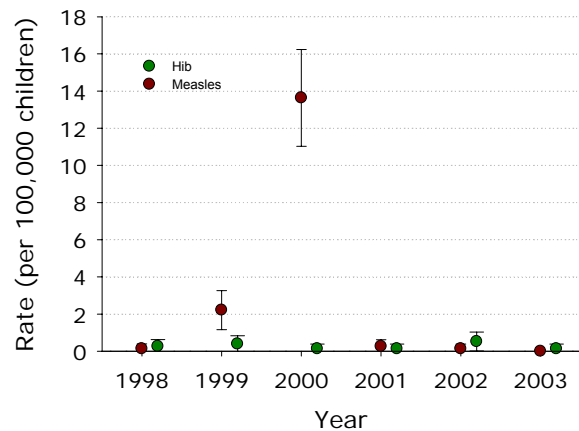
Hib and Measles Rates, Children Age 0 to 19, Alberta and Canada, 2001

Source: Public Health Agency of Canada (2004b)



### Time Trends (see Tables 4.5.4.1, 4.5.4.2, 4.5.4.4, 4.5.4.5)

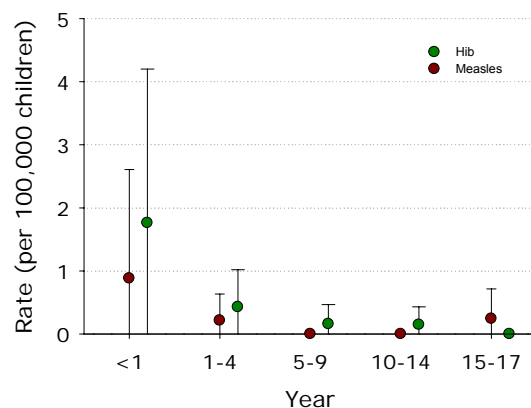
Hib and Measles Rates, Alberta, 1998 to 2003



- Hib rates are low in Alberta, ranging from 0.0 to 0.5 (per 100,000 children) between 1998 and 2004, with between 0 and 4 cases per year. There were no cases reported in 2004.
- Measles rates were elevated in 2000, with 105 cases and a rate of 13.6 (per 100,000 children). This was due to an outbreak amongst un-immunized persons. There were only 3 cases between 2001 and 2002, and no cases were reported in 2003 and 2004.

### Age Effects (see Table 4.5.4.3, 4.5.4.6)

Hib and Measles Rates by Age Group, Alberta, 2002 to 2004 Combined



- There were too few cases for significant age group effects to appear in Hib and measles disease rates for 2002 to 2004 combined.

Dr. Karen Grimsrud, Deputy Provincial Health Officer, and Dr. Shainoor Virani, Associate Provincial Health Officer, Alberta Health and Wellness, contributed to this section.

Table 4.5.4.1 Invasive Haemophilus Influenzae Type B (Hib) Disease Cases and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	3	2	1	1	4	1	0
<b>Rate (per 100,000 children)</b>	0.4	0.3	0.1	0.1	0.5	0.1	0.0
<b>Standard Error (SE)</b>	0.23	0.18	0.13	0.13	0.26	0.13	0.00

Table 4.5.4.2 Invasive Haemophilus Influenzae Type B (Hib) Disease Cases and Rate by Sex and Year, Alberta, 1998 to 2004

<b>Female</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		2	0	0	0	0	1	0
<b>Rate (per 100,000 children)</b>		0.5	0.0	0.0	0.0	0.0	0.3	0.0
<b>Standard Error (SE)</b>		0.38	0.00	0.00	0.00	0.00	0.27	0.00
<b>Male</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		1	2	1	1	4	0	0
<b>Rate (per 100,000 children)</b>		0.3	0.5	0.3	0.3	1.0	0.0	0.0
<b>Standard Error (SE)</b>		0.26	0.36	0.25	0.25	0.50	0.00	0.00

Table 4.5.4.3 Invasive Haemophilus Influenzae Type B (Hib) Disease Cases and Rate by Age Group, Alberta, 2002 to 2004 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	2	1	1	1	0	5
<b>Rate (per 100,000 children)</b>	1.7	0.2	0.2	0.1	0.0	0.2
<b>Standard Error (SE)</b>	1.21	0.21	0.16	0.15	0.00	0.10

Table 4.5.4.4 Measles/Rubeola Cases and Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	1	17	105	2	1	0	0
<b>Rate (per 100,000 children)</b>	0.1	2.2	13.6	0.3	0.1	0.0	0.0
<b>Standard Error (SE)</b>	0.13	0.54	1.33	0.18	0.13	0.00	0.00

Table 4.5.4.5 Measles/Rubeola and Rate by Sex and Year, Alberta, 1998 to 2004

<b>Female</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		0	9	45	1	0	0	0
<b>Rate (per 100,000 children)</b>		0.0	2.4	12.0	0.3	0.0	0.0	0.0
<b>Standard Error (SE)</b>		0.00	0.80	1.79	0.27	0.00	0.00	0.00
<b>Male</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		1	8	60	1	1	0	0
<b>Rate (per 100,000 children)</b>		0.3	2.0	15.2	0.3	0.3	0.0	0.0
<b>Standard Error (SE)</b>		0.26	0.72	1.96	0.25	0.25	0.00	0.00

Table 4.5.4.6 Measles/Rubeola and Rate by Age Group, Alberta, 2002 to 2004 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of cases</b>	0	1	0	0	0	0
<b>Rate (per 100,000 children)</b>	0.0	0.2	0.0	0.0	0.0	0.0
<b>Standard Error (SE)</b>	0.00	0.21	0.00	0.00	0.00	0.00

Source: Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.

Alberta Health Care Insurance Plan (AHCIIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

# 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.6.1 Chlamydia*

*4.6.2 Gonorrhoea*

*4.6.3 Human Immuno-Deficiency Virus*

*4.6.4 Teenage Pregnancy*

*4.7 Injuries*

*4.8 Mortality*





## 4.6.1 Chlamydia

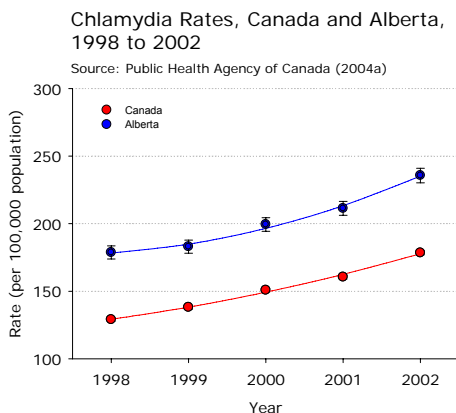
### Background

Chlamydia: *Chlamydia infections are confirmed by the detection of Chlamydia trachomatis in approved laboratory tests from any body site.*

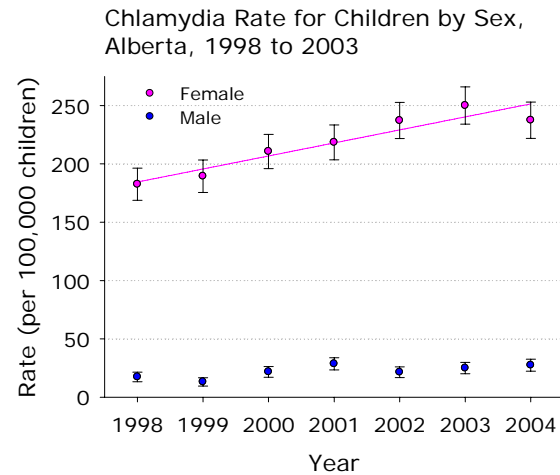
Chlamydia infections in females may result in pelvic inflammatory disease, infertility and ectopic pregnancy. In males, chlamydia may result in epididymo-orchitis and, rarely, infertility. HIV transmission and acquisition are increased in the presence of chlamydia co-infection. Transmission to newborns may result in infections of the eye, nasopharynx and lung (Peipert, 2003).

Chlamydia infections are associated with the following risk factors: age under 25 years, early age at first sexual intercourse, new or more than two sexual partners, presence of cervical ectopy, history of or coexistent sexually transmitted infections, and inconsistent use of barrier contraceptives (Peipert, 2003).

Shown below are Canada and Alberta rates for Chlamydia (adults and children included) for 1998 to 2002. The rate rose in both Canada and Alberta, and Alberta rates were consistently higher than the national average (Public Health Agency of Canada, 2004a).

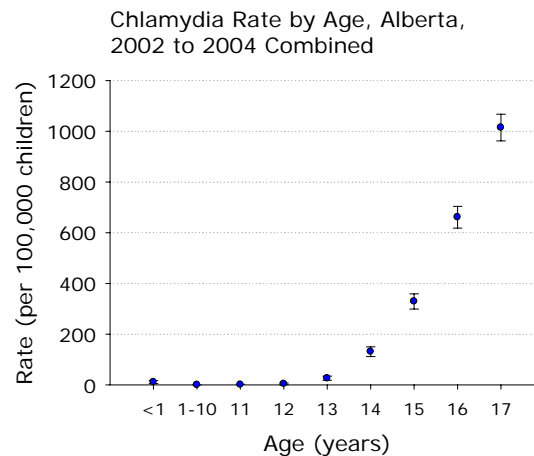


### Time Trends (see Tables 4.6.1.1, 4.6.1.2)



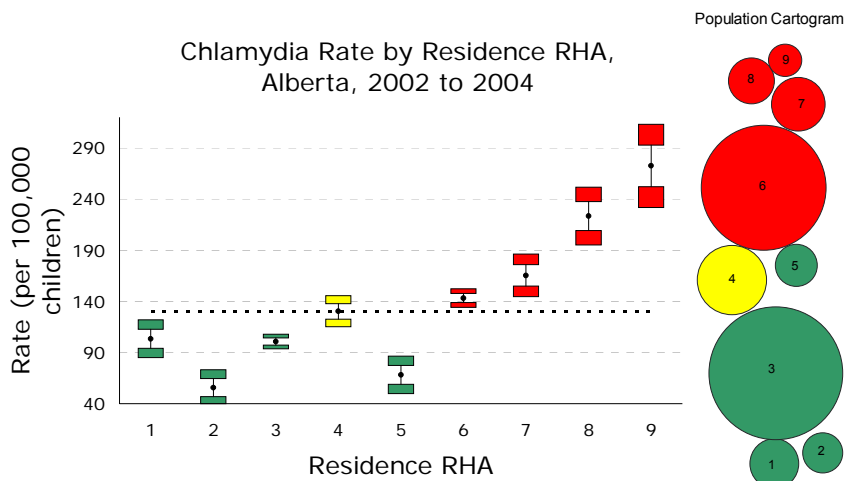
- Rates of newly reported Chlamydia cases for girls are as much as ten times (and higher) that of boys in Alberta.
- The rate for girls increased linearly between 1998 and 2004. In 2004, 895 new cases of Chlamydia (237.5 per 100,000) were reported among female children in Alberta.
- The rate for boys showed no time trend. In 2004, 109 new Chlamydia cases in boys were reported (27.5 per 100,000).

### Age Effects (see Table 4.6.1.3)



- The rate of newly reported cases of Chlamydia increased dramatically with increasing age for 2002 to 2004 combined.
- The rate varied from 0.1 (per 100,000 children) for children age 1 to 10, to 1,014.5 at age 17. Between 2002 and 2004, 1,416 17 year olds contracted Chlamydia. 92% of childhood cases occurred between the ages of 15 and 17 years.

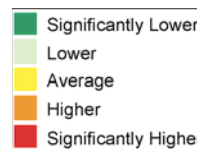
**Regional Data** (see Table 4.6.1.4)



- The rate of newly reported Chlamydia infections (per 100,000 children) for 2002 to 2004 combined was lower than the provincial average in RHAs 1, 2, 3, and 5. The lowest rate was in RHA 2 (55.8; 41 cases).
- The rate was higher than the provincial average in RHAs 6, 7, 8, and 9. The highest rate was 272.5, in RHA 9 (179 cases).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

Dr. Ameeta Singh, Infectious Diseases Medical Consultant, Alberta Health and Wellness, and Elaine Benjamin, Senior Team Lead, Disease Control and Prevention, Alberta Health and Wellness, contributed to this section.

### 4.6.1 Chlamydia



Chlamydia 2002 to 2004

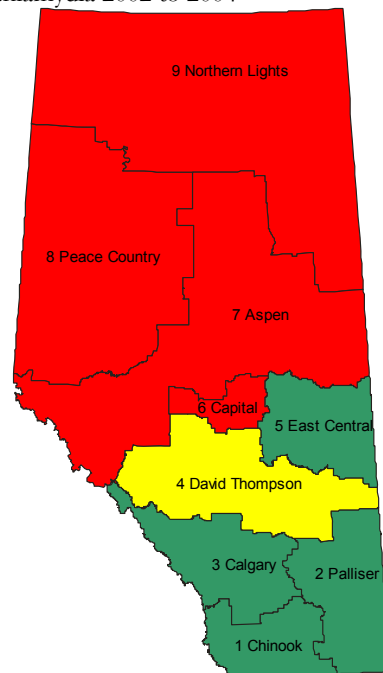


Table 4.6.1.1 Reported Chlamydia Cases and Incidence Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	747	763	877	934	980	1,042	1,004
<b>Rate (per 100,000 children)</b>	97.9	99.1	113.9	121.2	126.7	134.8	129.8
<b>Standard Error (SE)</b>	3.58	3.59	3.84	3.96	4.04	4.17	4.10

Table 4.6.1.2 Reported Chlamydia Cases and Incidence Rate by Sex, Alberta, 1998 to 2004

<b>Female</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		679	711	791	821	895	943	895
<b>Rate (per 100,000 children)</b>		182.6	189.4	210.7	218.5	237.2	250.1	237.5
<b>Standard Error (SE)</b>		7.00	7.10	7.48	7.62	7.92	8.13	7.93
<b>Male</b>		1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>		68	52	86	113	85	99	109
<b>Rate (per 100,000 children)</b>		17.4	13.2	21.8	28.6	21.4	25.0	27.5
<b>Standard Error (SE)</b>		2.11	1.83	2.35	2.69	2.33	2.51	2.63

Table 4.6.1.3 Reported Chlamydia Cases and Incidence Rate by Age Group, Alberta, 2002 to 2004 Combined

	0	1 to 10	11	12	13	14	15	16	17	0 to 17
<b>Number of cases</b>	13	1	1	6	37	183	455	914	1,416	3,026
<b>Rate (per 100,000 children)</b>	11.1	0.1	0.7	4.3	26.3	131.0	328.9	661.0	1,014.5	130.4
<b>Standard Error (SE)</b>	3.09	0.08	0.73	1.76	4.33	9.68	15.39	21.79	26.82	2.37

Table 4.6.1.4 Reported Chlamydia Cases and Incidence Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David	East	Capital	Aspen	Peace	Northern	Alberta
<b>Number of cases</b>	125	41	803	294	56	991	251	250	179	3,026
<b>Rate (per 100,000 children)</b>	103.4	55.8	100.8	130.3	68.2	143.2	165.4	223.4	272.5	130.4
<b>Standard Error (SE)</b>	9.25	8.71	3.56	7.59	9.11	4.55	10.43	14.11	20.34	2.37

**Source:** Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.

Alberta Health Care Insurance Plan (AHCIIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data include chlamydia cases reported to Alberta Health and Wellness only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4.6.2 Gonorrhoea

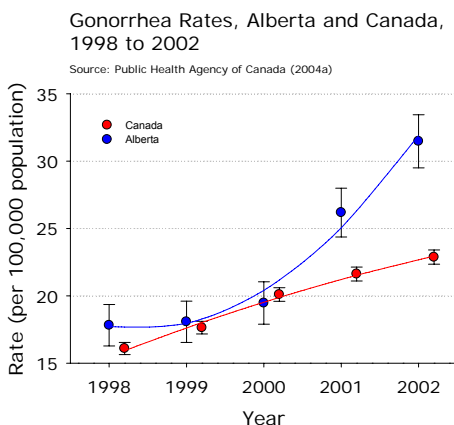
### Background

Gonorrhoea: *Gonococcal infections are confirmed by the detection of *Neisseria gonorrhoeae* by approved laboratory tests from any body site.*

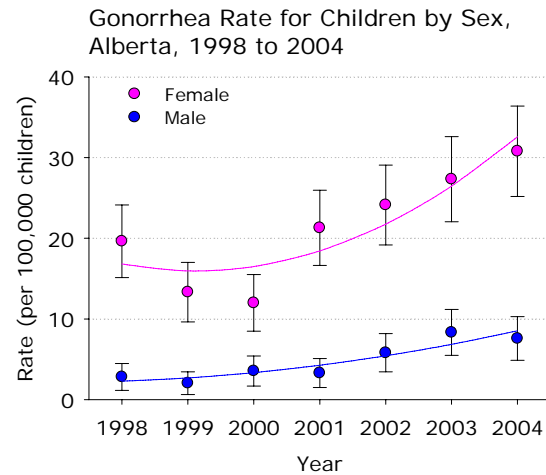
Gonococcal infections in females may result in pelvic inflammatory disease, ectopic pregnancy, and infertility. Infections in males may cause epididymo-orchitis and, rarely, infertility. Systemic infections may occur in both sexes. Transmission to newborns may result in sight-threatening eye infection or other systemic infection such as bacteremia or meningitis (Beagan & Wang, 1994; Hook & Handsfield, 1999).

Gonorrhoea infections are associated with the following risk factors: age under 30 years, early onset of sexual activity, multiple sexual partners, men who have sex with men, low socioeconomic status, and past gonorrhoea infection (Beagan & Wang, 1994; Hook & Handsfield, 1999).

Canada and Alberta rates for gonorrhoea for 1998 to 2002 (adults and children included) are below. Rates were similar until 2000. Alberta's rate increased noticeably in 2001 and 2002 (Public Health Agency of Canada, 2004a).

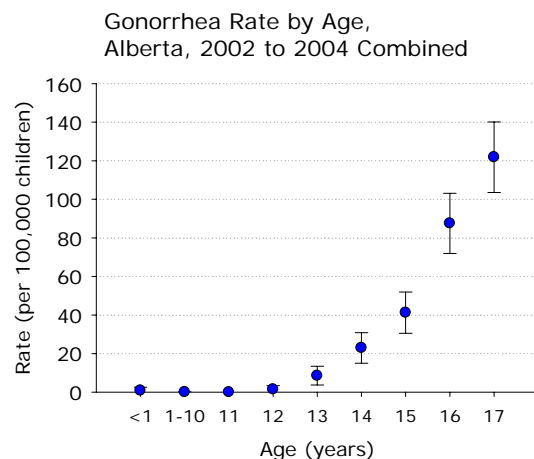


### Time Trends (see Tables 4.6.2.1, 4.6.2.2)



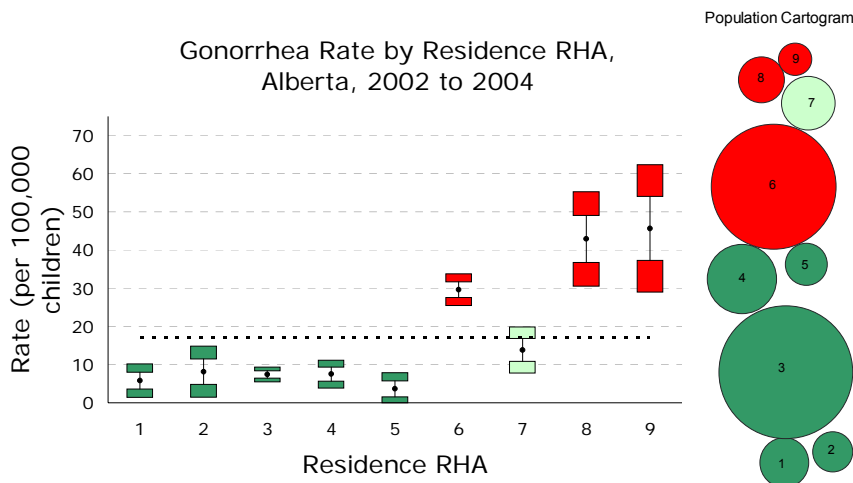
- The rate of newly reported cases of gonorrhoea was much higher for girls than for boys in Alberta from 2002 to 2004.
- The rate for girls increased after 2000, following a dip in 1999 and 2000. In 2004, there were 116 newly reported cases (30.8 per 100,000 girls).
- The rate for boys showed an overall increase between 1998 and 2004. There were 30 new cases of gonorrhoea in boys in 2004 (7.6 per 100,000 boys).

### Age Effects (see Table 4.6.2.3)



- 88% of newly reported cases of gonorrhoea in Alberta children occurred in 15 to 17 year olds from 2002 to 2004.
- During this time period, there were two cases in children aged 0 to 12. The highest rate was in 17 year olds (121.8 per 100,000), representing 170 17 year olds who contracted the disease over three years.

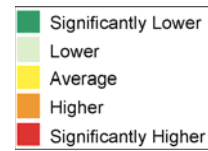
**Regional Data** (see Table 4.6.2.4)



- The rate of newly reported gonorrhea infections (per 100,000 children) for 2002 to 2004 combined was lower than the provincial average in RHAs 1, 2, 3, 4, and 5. The rates in these regions varied from 3.7 to 8.2.
- The rate was significantly higher than the provincial average in RHAs 6, 8, and 9. A similar north/south division across the province was seen in the Chlamydia rate.
- Rates ranged from 3.7 in RHA 5 (3 cases) to 45.7 in RHA 9 (30 cases).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

Dr. Ameeta Singh, Infectious Diseases Medical Consultant, Alberta Health and Wellness, and Elaine Benjamin, Senior Team Lead, Disease Control and Prevention, Alberta Health and Wellness, contributed to this section.

**4.6.2 Gonorrhea**



Gonorrhea 2002 to 2004

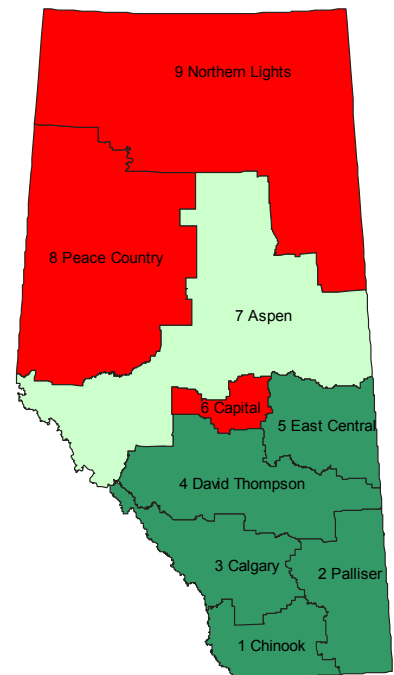


Table 4.6.2.1 Reported Gonorrhoea Cases and Incidence Rate by Year, Alberta, 1998 to 2004

	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	84	58	59	93	114	136	146
<b>Rate (per 100,000 children)</b>	11.0	7.5	7.7	12.1	14.7	17.6	18.9
<b>Standard Error (SE)</b>	1.20	0.99	1.00	1.25	1.38	1.51	1.56

Table 4.6.2.2 Reported Gonorrhoea Cases and Incidence Rate by Sex, Alberta, 1998 to 2004

Female	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	73	50	45	80	91	103	116
<b>Rate (per 100,000 children)</b>	19.6	13.3	12.0	21.3	24.1	27.3	30.8
<b>Standard Error (SE)</b>	2.30	1.88	1.79	2.38	2.53	2.69	2.86
Male	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	11	8	14	13	23	33	30
<b>Rate (per 100,000 children)</b>	2.8	2.0	3.5	3.3	5.8	8.3	7.6
<b>Standard Error (SE)</b>	0.85	0.72	0.95	0.91	1.21	1.45	1.38

Table 4.6.2.3 Reported Gonorrhoea Cases and Incidence Rate by Age Group, Alberta, 2002 to 2004 Combined

	0	1 to 10	11	12	13	14	15	16	17	0 to 17
<b>Number of cases</b>	1	1	0	2	12	32	57	121	170	396
<b>Rate (per 100,000 children)</b>	0.9	0.1	0.0	1.4	8.5	22.9	41.2	87.5	121.8	17.1
<b>Standard Error (SE)</b>	0.86	0.08	0.00	1.01	2.47	4.05	5.46	7.95	9.34	0.86

Table 4.6.2.4 Reported Gonorrhoea Cases and Incidence Rate by Residence RHA, Alberta, 2002 to 2004 Combined

	Chinook	Palliser	Calgary	David	East	Capital	Aspen	Peace	Northern	Alberta
<b>Number of cases</b>	7	6	59	17	3	205	21	48	30	396
<b>Rate (per 100,000 children)</b>	5.8	8.2	7.4	7.5	3.7	29.6	13.8	42.9	45.7	17.1
<b>Standard Error (SE)</b>	2.19	3.33	0.96	1.83	2.11	2.07	3.02	6.19	8.33	0.86

**Source:** Communicable Disease Reporting System, Alberta Health and Wellness, extracted July 2005.  
Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.  
Data include Gonorrhoea cases reported to Alberta Health and Wellness only.  
Data may differ from previously published data due to differences in definitions and dates of data extraction.





### 4.6.3 Human Immuno- deficiency Virus

#### Background

Human Immunodeficiency Virus (HIV): *HIV attacks the immune system, making patients susceptible to opportunistic infections and tumours. After infection and without treatment, the chronic stage of HIV infection may last 7 to 11 years with no clinical symptoms or very mild illnesses. The final stage of HIV infection is the development of Acquired Immune Deficiency Syndrome (AIDS)* (Alberta Blood-borne Pathogens Surveillance Working Group, 2003).

In children, HIV is transmitted perinatally from mother to child, or in older children by intravenous drug use or sexual contact with an infected person. In Alberta, post-exposure prophylaxis is offered to infants born to mothers with HIV infection. All pregnant women who present for prenatal care are screened for HIV infection unless the women decline testing (Alberta Blood-borne Pathogens Surveillance Working Group, 2003).

#### Alberta Data

- There were seven cases of HIV reported in children between 1998 and 2003.
  - Two were perinatal cases, one case was in the category of males who have sex with males, two cases were categorized as heterosexual transmission, and two cases were intravenous drug users.
  - In both perinatal cases, the HIV status of the mother was unknown until several months after the birth of the child.
  - The non-perinatal cases were all diagnosed between the ages of 15 and 17 years.
- No cases were diagnosed in children in 2003, and the most recent perinatal case was diagnosed in 1999.

Dr. Ameeta Singh, Infectious Diseases Medical Consultant, Alberta Health and Wellness, contributed to this section.



## 4.6.4 Teenage Pregnancy

### Background

Teenage Pregnancy: *Estimated number of pregnancies (summing live births, stillbirths, and induced abortions) in girls aged 10 to 17 (per 1,000 girls).*

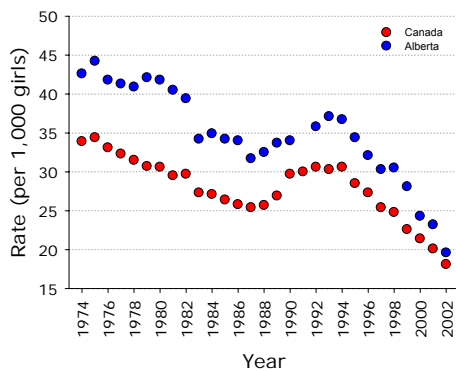
Spontaneous abortions are excluded, so the rate is an underestimate. About 10% of pregnancies end in spontaneous abortions.

Adolescent mothers are more likely to live in poverty and to belong to minority groups, and pregnancies during adolescence are associated with increased risk of pregnancy complications and poor neonatal outcomes. In particular, teenage mothers are more likely to have low birth weight or preterm infants. Teenage mothers also tend to be under-educated and under-employed relative to the general population, and often lack a partner to contribute to household income (Dryburgh, 2000; Koniak-Griffin & Turner-Pluta, 2001; Tough, Svenson, & Schopflocher, 1999).

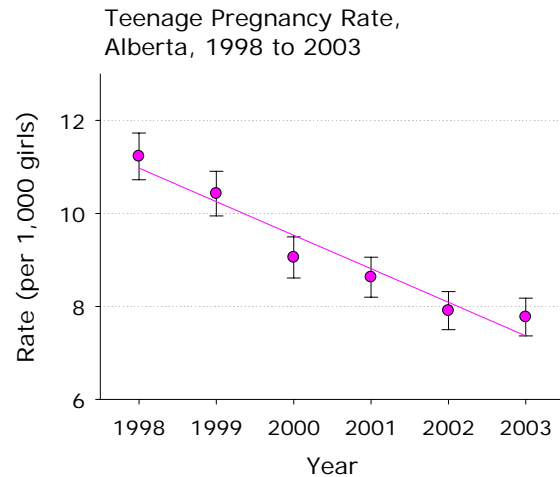
The pregnancy rate for 15 to 17 year olds was higher in Alberta than in Canada between 1974 and 2002. The rate declined markedly from 1995 on, and the Alberta-Canada difference decreased in size over time (Statistics Canada, 2005d).

Teenage Pregnancy (15 to 17 year olds), Alberta and Canada, 1974 to 2002

Source: Statistics Canada (2005d)

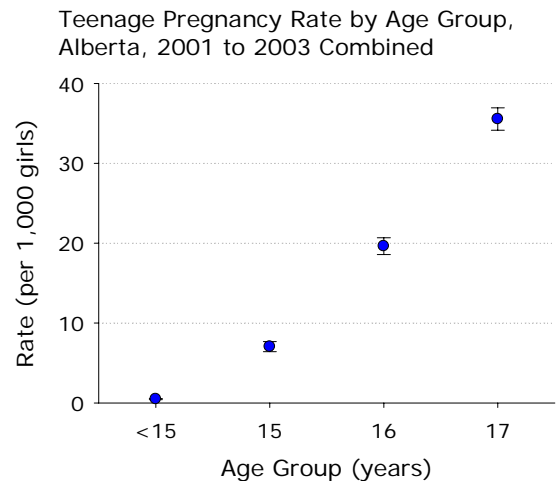


### Time Trends (see Table 4.6.4.1)



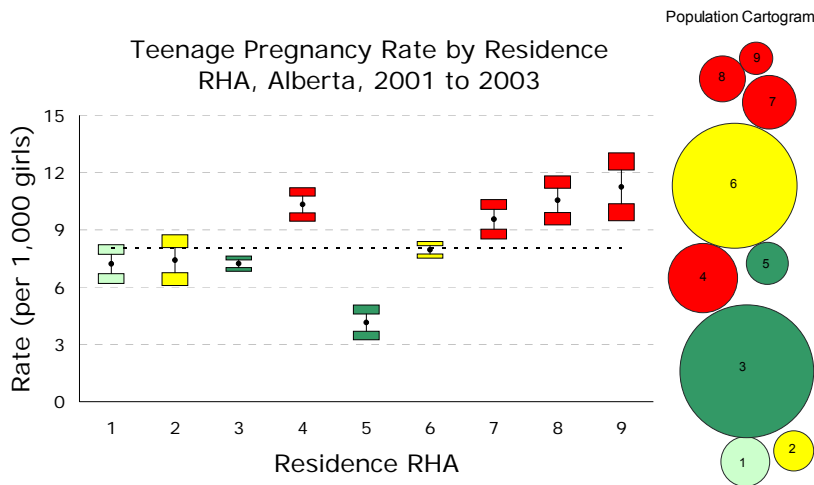
- Teenage pregnancy rates declined between 1998 and 2003.
- In 2003, there were an estimated 1,398 teenage pregnancies in Alberta, for a rate of 7.8 (per 1,000 girls aged 10 to 17).

### Age Effects (see Table 4.6.4.2)



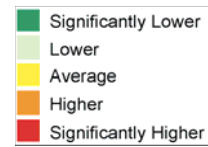
- Rates were highest for older teenagers. The highest rate for 2001 to 2003 was for 17 year olds (35.5 per 1,000 girls), with 2,395 estimated pregnancies.
- 96.3% of teenage pregnancies occurred in girls between 15 and 17. 161 estimated teen pregnancies occurred in girls younger than 15 between 2001 and 2003.

**Regional Data** (see Table 4.6.4.3)

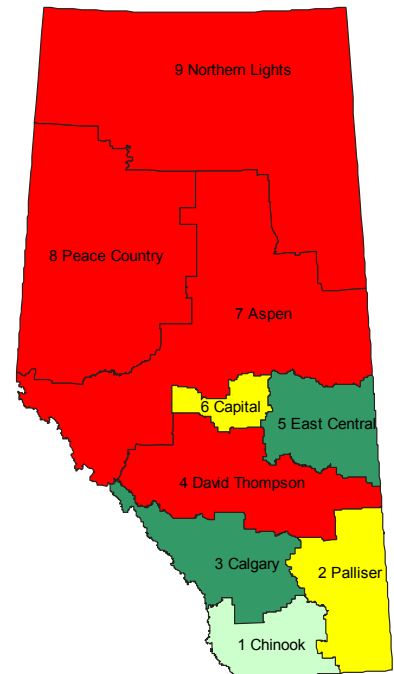


- The teenage pregnancy rate was lower than the provincial average in RHAs 3 and 5. The rate in RHA 5 was lowest, with 83 estimated pregnancies between 2001 and 2003, for a rate of 4.1 (per 1,000 girls).
- In RHAs 4, 7, 8, and 9, the rate was higher than the provincial average in RHAs 4, 7, 8, and 9, with RHA 9 having the highest rate during this time period (11.2 per 1,000 girls; 159 estimated pregnancies).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

### 4.6.4 Teenage Pregnancy



Teenage Pregnancy 2001 to 2003



**Limitations and Methodology Notes**

The total by RHA differs from that for time trends and age effects because a different data source is used.

The under 15 rate is calculated relative to the population of girls aged 10 to 14.

Gary Gilham, Information Analyst, Quality and Accountability, Alberta Health and Wellness, provided induced abortion data for this section.

Table 4.6.4.1 Estimated Teen Pregnancy and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of pregnancies</b>	1,904	1,807	1,590	1,531	1,419	1,398
<b>Rate per 1,000 population (aged 10 to 17)</b>	11.2	10.4	9.1	8.6	7.9	7.8
<b>Standard Error (SE)</b>	0.26	0.24	0.23	0.22	0.21	0.21

Table 4.6.4.2 Estimated Teen Pregnancy and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<15	15	16	17	15 to 17	0 to 17
<b>Number of pregnancies</b>	161	471	1,321	2,395	4,187	4,348
<b>Rate per 1,000 population</b>	0.5	7.0	19.6	35.5	20.8	8.1
<b>Standard Error (SE)</b>	0.04	0.32	0.53	0.71	0.32	0.12

Table 4.6.4.3 Estimated Pregnancy and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of pregnancies</b>	202	124	1,305	553	83	1,293	342	267	159	4,331
<b>Rate per 1,000 population (aged 10 to 17)</b>	7.2	7.4	7.2	10.3	4.1	8.0	9.6	10.5	11.2	8.1
<b>Standard Error (SE)</b>	0.51	0.66	0.20	0.44	0.45	0.22	0.51	0.64	0.89	0.12

**Sources:** Vital Statistics, Birth File, Department of Government Services, May 2005 Release

Vital Statistics, Stillbirth File, Department of Government Services, May 2005 release.

Clinics Files, Alberta Health and Wellness, extracted May 2005.

Fee-for-Services Claims Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Alberta total includes unknown RHA cases.

Estimated pregnancy rate for <15 is based on 10 to 14 year female population.

Number of pregnancies is estimated using live births + stillbirths + induced abortions.



## 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*





## 4.7.1 Injuries

### Background

Injuries are a serious public health issue in Canada, and Alberta is no exception. In 1998/99, more than three Albertans died each day as a result of injury. Intentional injuries (suicide and homicide) accounted for 37% of these injury deaths. In 2001, there were 27,154 hospital admissions and 366,332 emergency department visits for injuries in Alberta.

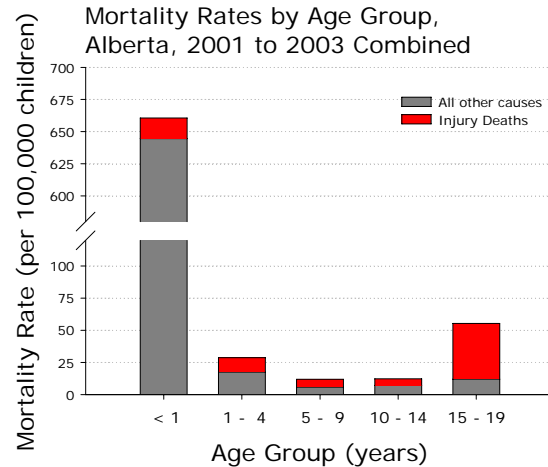
Unintentional injuries cost Albertans \$1.8 billion in 1997 (Alberta Centre for Injury Control and Research, 2004).

Childhood injuries are a significant concern. In 1997, 59.2% of all deaths among persons between the ages of 0 and 19 years in Alberta were due to injury. For every person between 0 and 19 years who died from injuries in Alberta, nearly 30 children were hospitalized with injuries and 715 children were treated in an emergency department for injuries (Alberta Centre for Injury Control and Research, 2001).

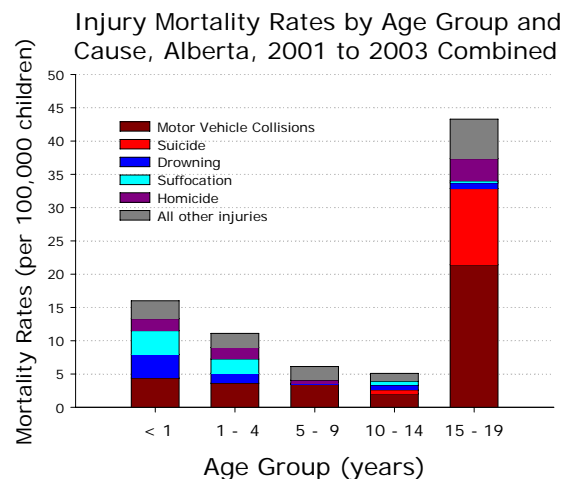
Deaths due to injury, hospitalizations due to injury, and emergency room visits for injuries are included in this section.

## Mortalities due to Injuries

### Mortality Age Effects (see Table 4.7.1.1)



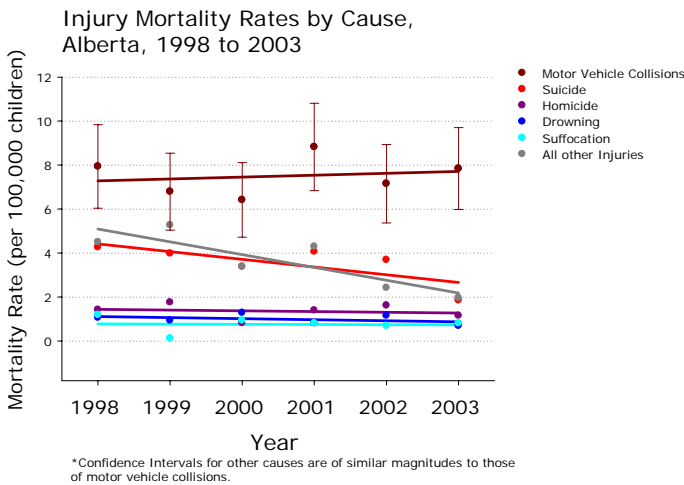
- Though death rates are very low for children over age 1, injuries are the leading cause of mortality.
- This is particularly true for teenagers, especially after they become eligible to drive.



- The five leading causes of injury death over all ages of children are presented above, by age ranges.
- Motor vehicle collisions are the leading cause of injury death in all age groups. Mortality due to motor vehicle collisions rises markedly in the teenage years, and into the 20s.
- Suicide is a major cause of injury death in the teenage years.
- Suffocation and drowning are major causes of injury death for infants and pre-schoolers.

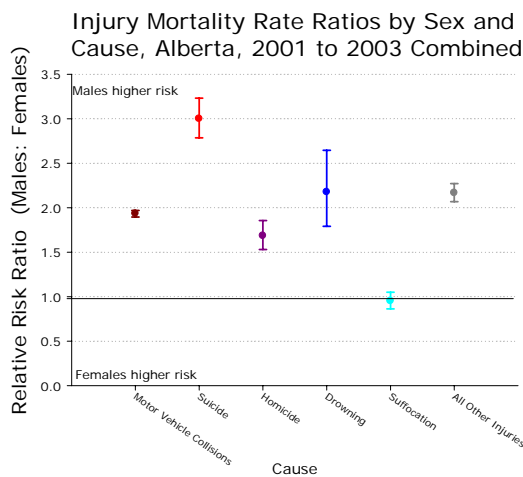
## 4.7.1 Injuries

### Mortality Time Trends (see Table 4.7.1.2)



- Child and youth mortality rates due to injury decreased between 1998 and 2003. This is most marked in youth and teen suicide.
- While other causes of injury death have declined in frequency, deaths due to motor vehicle collisions, homicides, drowning, and suffocation have not.

### Mortality Sex Effects (see Table 4.7.1.3)

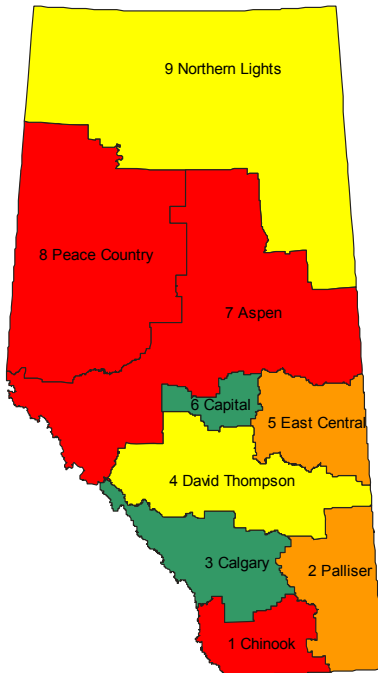


- Males are more likely to die from an injury than are females in most injury categories.
- Young males are 3 times more likely to die of suicide than are young females, even though females are almost three times more likely to be hospitalized for a suicide attempt. Young males tend to use more lethal methods (such as firearms or hanging) than females (who tend to overdose on drugs).

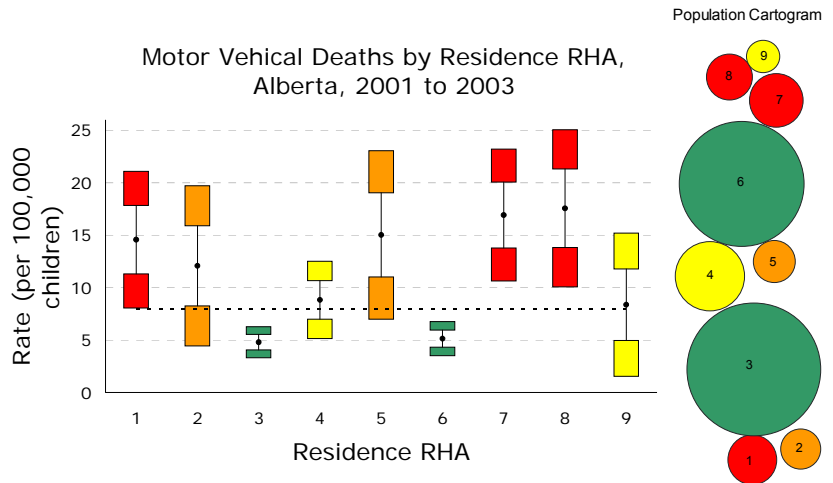
### 4.7.1 Injuries



Motor Vehicle Deaths 2001 to 2003



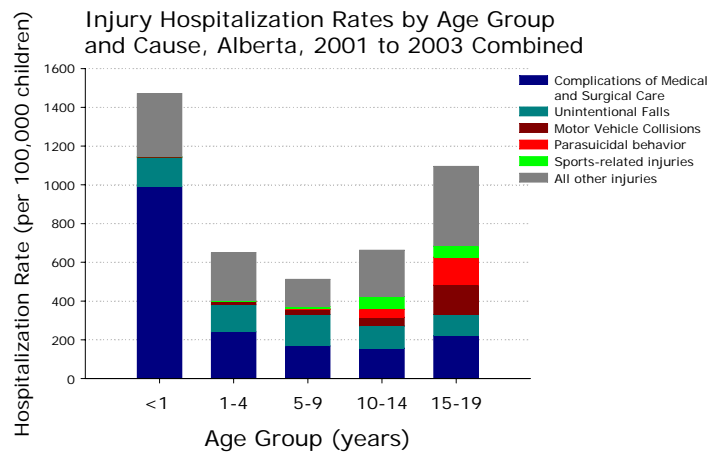
### Motor Vehicle Mortality Regional Data (see Table 4.7.1.4)



- Motor vehicle death rates were lower than the provincial average in RHAs 3 and 6.
- In RHAs 1, 7, and 8, the rate of motor vehicle deaths in children was higher than the provincial average.

### Hospitalizations Due to Injuries

#### Hospitalization Age Effects

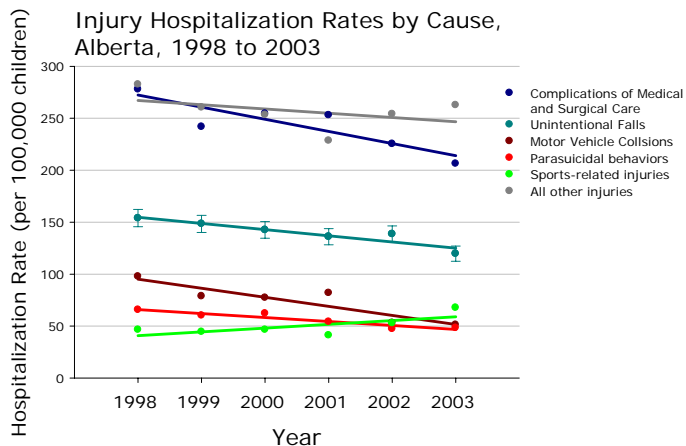


- The five leading causes of injury hospitalization over all ages of children are presented above, by age groups.
- Complications of medical care and unintentional falls are the leading causes of injury hospitalization. From the leading causes of injury death, only Motor Vehicle Collisions and Suicidal Behavior remain as leading causes of hospitalization.

### Hospitalization Age Effects continued

- Sports-related injuries become a major source of injury hospitalization in school age children, and adolescents become increasingly likely to be hospitalized for injuries suffered in a motor vehicle collision, or for parasuicidal (deliberate self-harming) behaviour.

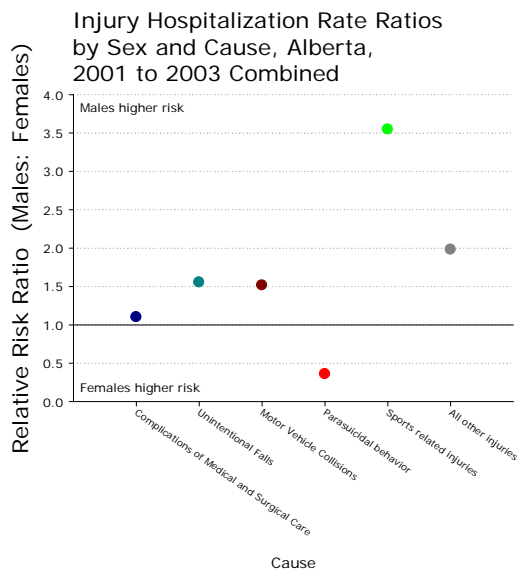
### Hospitalization Time Trends



\*Sports-related injuries are estimated for 1998 to 2001.  
 \*Confidence Intervals for other causes are of similar magnitudes to those for Falls.

- Hospitalization rates for almost all forms of injury declined between 1998 and 2003.
- Hospitalization for sports injuries appears to be rising. However, this category was introduced in the ICD-10 classification system and was not present in the ICD-9 CM classification system (in use until 2001). Therefore sports injuries for 1998 to 2001 are estimates.

### Hospitalization Sex Effects



### 4.7.1 Injuries

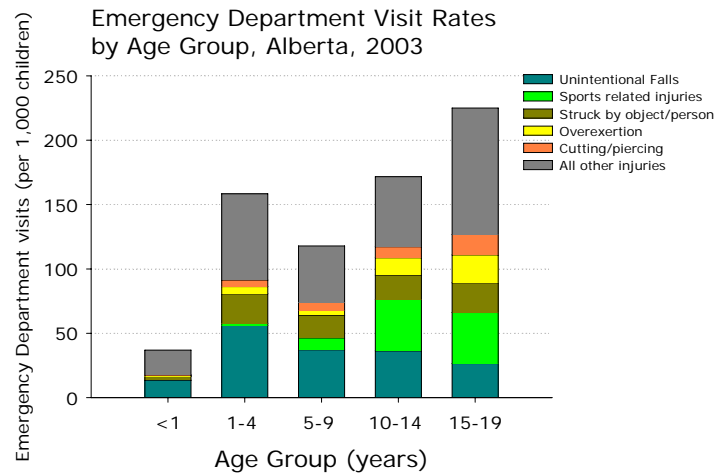
## 4.7.1 Injuries

### Hospitalization Sex Effects continued

- Injury hospitalizations are more likely to occur for young males, especially for sports-related injuries.
- The major exception is for suicide or parasuicidal behaviour, for which young females are almost 3 times more likely to be hospitalized than young males.

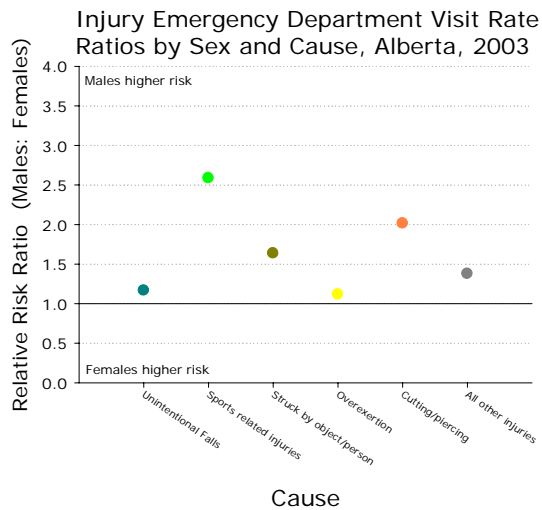
### Emergency Department Visits due to Injuries

#### Emergency Department Age Effects



- The five leading causes of injury emergency department visits are presented above, by age groups.
- None of the top five causes of injury death are among the leading causes of emergency department visits, and only unintentional falls and sports-related injuries from the list of causes of injury hospitalization are among the leading causes of emergency department visits.

## Emergency Department Sex Effects



- Young males are more likely than young females to be treated at an emergency department for an injury, again most notably for sports-related injuries.

---

### Limitations and Methodology Notes

Data in this section include children up to 19 years of age.

Data in this section were extracted from the Alberta Injury Database (preliminary 2005 version).

Complications of medical and surgical care (ICD-9 Codes E870-879 and E930-949, and ICD-10 Codes Y40 to Y84) were included in this section.

Motor vehicle traffic injuries were combined with vehicle incidents not otherwise reported (to deal with inconsistencies between ICD9 and ICD10 code ranges). Death data from 2000 and later were coded with ICD10. Hospitalization and emergency room data were coded with ICD10 from April 2002 and later.

For each data source (mortalities, hospitalizations, and emergency departments), injury causes were rank ordered. The top five were highlighted and all others were combined into the residual category “other”.

Regional data are presented only for motor vehicle deaths because the number of cases is too small in other categories to enable reliable regional comparisons.

Emergency department injury data are available only for 2003 since there have been difficulties in data collection and validation for previous years.

## 4.7.1 Injuries

## 4.7.1 Injuries

A detailed Injury Report will be developed by Alberta Center for Injury Control and Research using the Alberta Injury Database. That report will include a more comprehensive and in-depth analysis of childhood injuries, as well as injuries among adults.

Dr. Donald Schopflocher, Senior Biostatistician /Senior Manager, Health Surveillance, Alberta Health and Wellness, provided this section.

Table 4.7.1.1 Child Injury Death Rates, by Age Group and Cause, Alberta, 1986 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 19
<b>Motor vehicle traffic</b>	4.39	3.63	3.46	2.03	21.41
<b>Suicide and self-inflicted injury</b>	0.00	0.00	0.00	0.58	11.44
<b>Drowning</b>	3.58	1.50	0.16	0.73	0.87
<b>Suffocation/foreign body/choking</b>	3.55	2.14	0.00	0.58	0.29
<b>Violence and injury purposely inflicted</b>	1.79	1.71	0.47	0.00	3.33
<b>All other Injuries</b>	2.70	2.13	2.04	1.17	5.94

Table 4.7.1.2 Child Injury Death Rates, by Year and Cause, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Motor vehicle traffic</b>	7.94	6.79	6.42	8.82	7.15	7.84
<b>Suicide and self-inflicted injury</b>	4.27	3.98	3.38	4.06	3.69	1.84
<b>Violence and injury purposely inflicted</b>	1.42	1.76	0.82	1.39	1.61	1.15
<b>Drowning</b>	1.07	0.94	1.28	0.81	1.15	0.69
<b>Suffocation/foreign body/choking</b>	1.18	0.12	0.93	0.81	0.69	0.81
<b>All other Injuries</b>	4.50	5.27	3.38	4.30	2.42	1.96

Table 4.7.1.3 Child Injury Death Rate Ratios (Male: Female), by Cause, Alberta, 2001 to 2003 Combined

	Ratio
<b>Motor vehicle traffic</b>	1.93
<b>Suicide and self-inflicted injury</b>	3.00
<b>Violence and injury purposely inflicted</b>	1.68
<b>Drowning</b>	2.18
<b>Suffocation/foreign body/choking</b>	0.95
<b>All other Injuries</b>	2.17

Table 4.7.1.4 Child Motor Vehicle Traffic Death Rates by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Cases</b>	20	10	42	23	14	40	29	22	6	206
<b>Number of children</b>	137,213	82,812	874,982	260,528	93,181	778,555	171,436	125,247	71,720	2,595,674
<b>Rate (# cases per 100,000 children)</b>	14.6	12.1	4.8	8.8	15.0	5.1	16.9	17.6	8.4	7.9
<b>Standard Error (SE)</b>	3.3	3.8	0.7	1.8	4.0	0.8	3.1	3.7	3.4	0.6

**Source:** Alberta Injury Database (2005 Preliminary).

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



## 4. Child Health Status

*4.1 Birth Outcomes*

*4.2 Child Development*

*4.3 Mental Health*

*4.4 Chronic Conditions*

*4.5 Vaccine-Preventable Diseases*

*4.6 Sexual Health*

*4.7 Injuries*

*4.8 Mortality*



## 4.8.1 Mortality

### Background

Child Mortality: *Number of deaths of children aged 0 to 17 per 100,000 children.*

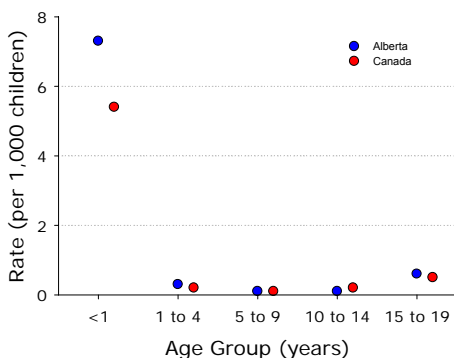
Worldwide, infections cause the most deaths in children under the age of 5. In Canada, however, perinatal conditions are the leading cause of death under one year, and injuries are the leading cause after the age of one. The rate of death due to unintentional injury has declined substantially over the last 20 years for children under five (deaths due to fire and motor vehicle collisions have decreased), but the homicide rate for this age group has not changed (McCourt, Paquette, Pelletier, & Reyes, 2005). Suicide is a significant cause of death for 15 to 17 year olds.

Children of low socio-economic status have increased risk of dying from injuries (MacKay, Reid, Moher, & Klassen, 1999), and death rates for males are higher than for females. First Nations infants have increased risk of death (Luo, Kierans, Wilkins, Liston, Uh, & Kramer, 2004).

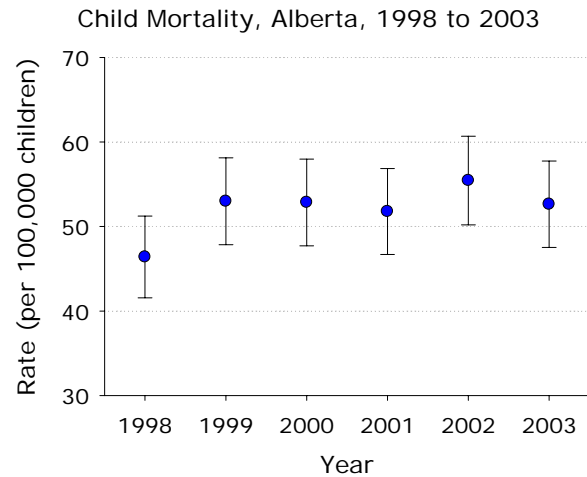
The mortality rate for children under one year of age was higher in Alberta (7.3 per 1,000 children) than in Canada (5.4) in 2002. The Canada and Alberta rates were similar in older age groups (Statistics Canada, 2004).

Child Mortality by Age Group, Alberta and Canada, 2002

Source: Statistics Canada (2004)



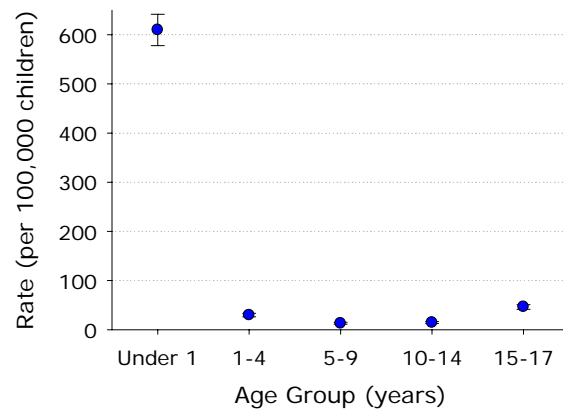
### Time Trends (see Tables 4.8.1.1, 4.8.1.2)



- Child deaths are relatively rare in Alberta. The child mortality rate did not change with time between 1998 and 2003.
- In 2003, there were 407 deaths of children aged 0 to 17, for a rate of 52.6 (per 100,000 children).
- The mortality rate tended to be lower for girls than for boys, but there were no statistically significant sex differences.

### Age Effects (see Table 4.8.1.3)

Child Mortality by Age Group, Alberta, 1998 to 2003 Combined

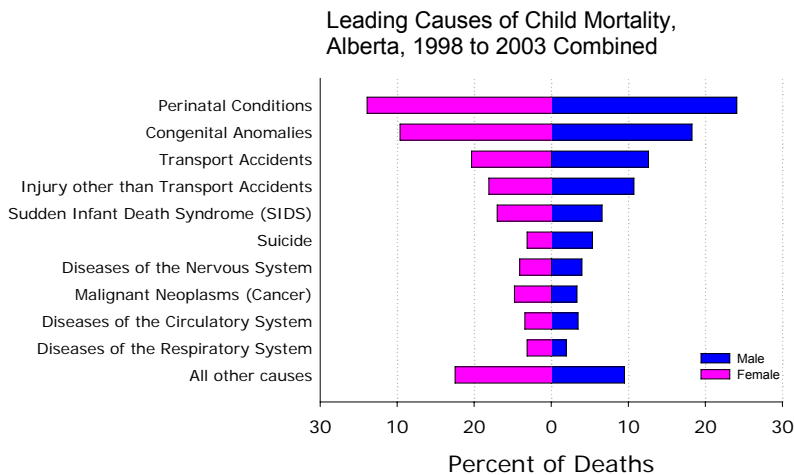


- Child mortality is highest for infants, largely due to congenital anomalies and perinatal conditions. Between 1998 and 2003, 1,385 infants died in Alberta (609.8 per 100,000).
- The lowest rates occur between the age of 5 and 14. In the 15-17 year age group, rates are higher. The rate for 15 to 17 year olds was 46.2 for 1998 to 2003 (374 deaths).

## 4.8.1 Mortality

### Leading Causes (see Tables 4.8.1.5, 4.8.1.6, 4.8.1.7)

- For 1998 to 2003 combined, the leading cause of child mortality was conditions originating in the perinatal period (e.g., birth complications; 24.0% of deaths). Congenital anomalies accounted for a further 18.8% of child deaths, and transport accidents were the third leading cause (11.6%).

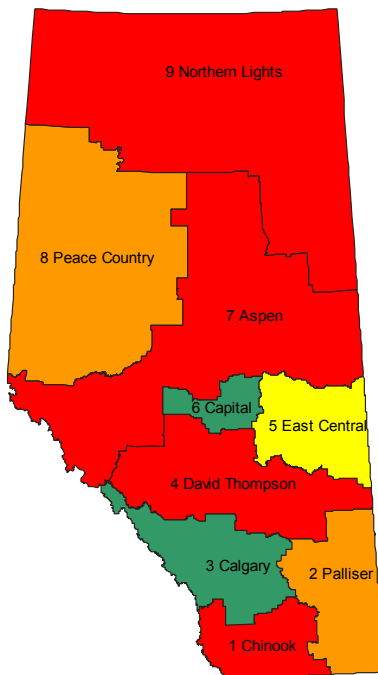


- Sex differences were fairly small in terms of leading causes of death for 1998 to 2003 (see figure above).
  - Deaths due to injuries (including transport accidents, other injuries, and suicide) were more common for male children (28.7% of deaths) than female (21.6%).
  - Deaths due to cancer, congenital anomalies, and diseases of the respiratory system were slightly more common for female children than for male children.
- In infants, perinatal conditions were the leading cause of death (41.5% of deaths), followed by congenital anomalies (28.0%), and Sudden Infant Death Syndrome (SIDS; 11.8%).
- For children over one year of age, transport accidents were the leading cause of death in all age groups. “Other injuries” were among the top three causes for all age groups over one year as well.
- Cancer was the second most common cause of death for 5 to 9 year olds (13.8% of deaths). For 10 to 14 year olds, diseases of the nervous system ranked second (11.1%). Suicide was the second leading cause of death for 15 to 17 year olds in Alberta (23.3%).

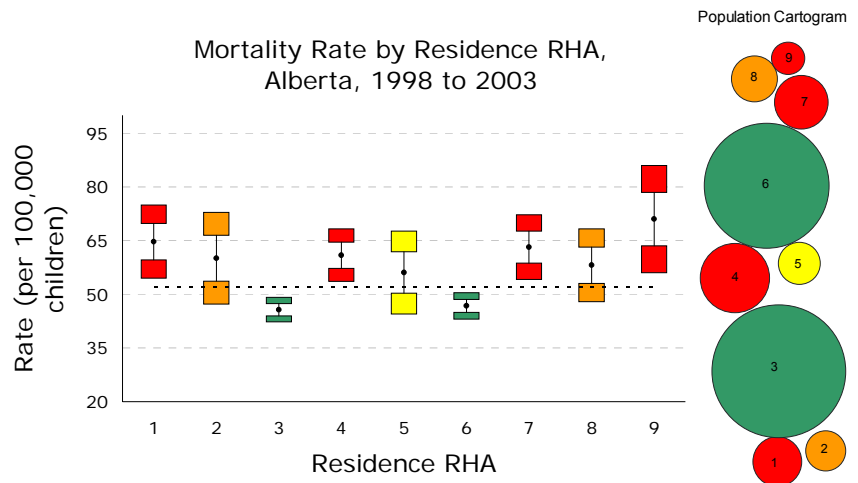
## 4.8.1 Mortality



Mortality 1998 to 2003



### Regional Data (see Table 4.8.1.4)



- Child mortality rates show regional differences in Alberta.
- Mortality rates were lowest in the major metropolitan areas (Capital and Calgary regions). The lowest rate was in the Calgary region, where the rate for 1998 to 2003 combined was 45.7 (per 100,000 children), with 710 deaths during this period.
- Mortality rates were significantly higher than the provincial average in RHAs 1, 4, 7, and 9. In RHA 9, the rate was highest (71.0), with 90 deaths between 1998 and 2003.
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

---

### Limitations and Methodology Notes

Six years of combined data (1998 to 2003) for analysis of leading causes and regional effects were used due to the small number of child deaths occurring each year. This increases the reliability of the calculated rates.

For mortalities, ICD 10 has been used since 2000. For other areas, ICD 10-CA has been used since April 2002 (see General Methodology section).

Table 4.8.1.1 Mortality Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of deaths</b>	354	408	407	399	429	407
<b>Rate (per 100,000 children)</b>	46.4	53.0	52.8	51.8	55.5	52.6
<b>Standard Error (SE)</b>	2.47	2.62	2.62	2.59	2.68	2.61

Table 4.8.1.2 Mortality Rate by Sex and Year, Alberta, 1998 to 2003

<b>Female</b>		1998	1999	2000	2001	2002	2003
<b>Number of deaths</b>		150	175	179	157	192	172
<b>Rate (per 100,000 children)</b>		40.3	46.6	47.7	41.8	50.9	45.6
<b>Standard Error (SE)</b>		3.29	3.52	3.56	3.33	3.67	3.48
<b>Male</b>		1998	1999	2000	2001	2002	2003
<b>Number of deaths</b>		204	233	228	242	237	234
<b>Rate (per 100,000 children)</b>		52.2	59.1	57.8	61.3	59.8	59.1
<b>Standard Error (SE)</b>		3.65	3.87	3.82	3.94	3.88	3.86

Table 4.8.1.3 Mortality Rate by Age Group, Alberta, 1998 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of deaths</b>	1,385	280	167	198	374	2,404
<b>Rate (per 100,000 children)</b>	609.8	29.7	13.0	14.6	46.2	52.0
<b>Standard Error (SE)</b>	16.33	1.77	1.01	1.04	2.39	1.06

Table 4.8.1.4 Mortality Rate by Residence RHA, Alberta, 1998 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of deaths</b>	160	88	710	276	94	649	197	131	90	2,404
<b>Rate (per 100,000 children)</b>	64.7	60.0	45.7	60.9	56.1	46.8	63.2	58.1	71.0	52.0
<b>Standard Error (SE)</b>	5.11	6.40	1.71	3.67	5.78	1.84	4.50	5.08	7.48	1.06

Source: Vital Statistics, Death File, Department of Government Services, May 2005 release.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: One death in 2003 did not have sex coded. That case was excluded from the female/male breakdown only.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.8.1.5 Top 10 Leading Causes of Death, Age 0 to 17, Alberta, 1998 to 2003 Combined

Rank	Cause of Death	ICD-9	ICD-10	Deaths	Percent
1	Certain Conditions Originating in the Perinatal Period (includes Birth Complications)	760-779	P00-P96	578	24.0%
2	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	ICD-10: Q00-Q99	453	18.8%
3	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V01-V99, Y85	280	11.6%
4	External Causes (Injury) - Other than Transport or Suicide	E850-E928, E929.2-E949, E960-E999	W00-X59, X85-Y84, Y86, Y87.1-Y98	231	9.6%
5	Sudden Infant Death Syndrome (SIDS)	798.0	R95	163	6.8%
6	External Causes (Injury) - Intentional Self-Harm (Suicide)	E950-E959	X60-X84, Y87.0	106	4.4%
7	Diseases of the Nervous System (includes Infantile Cerebral Palsy)	320-359, 435	G00-G98	97	4.0%
8	Malignant Neoplasms (Cancer)	140-208	C00-C97	95	4.0%
9	Diseases of the Circulatory System (includes Cardiomyopathy)	390-434, 436-459	I00-I99	83	3.5%
10	Diseases of the Respiratory System (includes Pneumonia)	460-519	J00-J98	59	2.5%
...	All other causes/uncoded	Residual	Residual	259	10.8%
<b>Total</b>				<b>2,404</b>	<b>100.0%</b>

Table 4.8.1.6 Top 10 Leading Causes of Death by Sex, Age 0 to 17, Alberta, 1998 to 2003 Combined

Rank	Cause of Death	ICD-9	ICD-10	Deaths	Percent
<b>Female</b>					
1	Certain Conditions Originating in the Perinatal Period (includes Birth Complications)	760-779	P00-P96	245	23.9%
2	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	ICD-10: Q00-Q99	201	19.6%
3	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V01-V99, Y85	106	10.3%
4	External Causes (Injury) - Other than Transport or Suicide	E850-E928, E929.2-E949, E960-E999	W00-X59, X85-Y84, Y86, Y87.1-Y98	83	8.1%
5	Sudden Infant Death Syndrome (SIDS)	798.0	R95	72	7.0%
6	Malignant Neoplasms (Cancer)	140-208	C00-C97	49	4.8%
7	Diseases of the Nervous System (includes Infantile Cerebral Palsy)	320-359, 435	G00-G98	42	4.1%
8	Diseases of the Circulatory System (includes Cardiomyopathy)	390-434, 436-459	I00-I99	35	3.4%
9	Diseases of the Respiratory System (includes Pneumonia)	460-519	J00-J98	32	3.1%
10	External Causes (Injury) - Intentional Self-Harm (Suicide)	E950-E959	X60-X84, Y87.0	32	3.1%
...	All other causes/uncoded	Residual	Residual	128	12.5%
<b>Total</b>				<b>1,025</b>	<b>100.0%</b>
<b>Male</b>					
1	Certain Conditions Originating in the Perinatal Period (includes Birth Complications)	760-779	P00-P96	332	24.1%
2	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	ICD-10: Q00-Q99	252	18.3%
3	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V01-V99, Y85	174	12.6%
4	External Causes (Injury) - Other than Transport or Suicide	E850-E928, E929.2-E949, E960-E999	W00-X59, X85-Y84, Y86, Y87.1-Y98	148	10.7%
5	Sudden Infant Death Syndrome (SIDS)	798.0	R95	91	6.6%
6	External Causes (Injury) - Intentional Self-Harm (Suicide)	E950-E959	X60-X84, Y87.0	74	5.4%
7	Diseases of the Nervous System (includes Infantile Cerebral Palsy)	320-359, 435	G00-G98	55	4.0%
8	Diseases of the Circulatory System (includes Cardiomyopathy)	390-434, 436-459	I00-I99	48	3.5%
9	Malignant Neoplasms (Cancer)	140-208	C00-C97	46	3.3%
10	Diseases of the Respiratory System (includes Pneumonia)	460-519	J00-J98	27	2.0%
...	All other causes/uncoded	Residual	Residual	131	9.5%
<b>Total</b>				<b>1,378</b>	<b>100.0%</b>

Source: Vital Statistics, Death File, Department of Government Services, May 2005 release.

Notes: One death in 2003 did not have sex coded. That case was excluded from the female/male breakdown.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.8.1.7 Top 10 Leading Causes of Death by Age Group, Alberta, 1998 to 2003 Combined

Rank	Cause of Death	ICD-9	ICD-10	Deaths	Percent
<b>Age Group &lt;1</b>					
1	Certain Conditions Originating in the Perinatal Period (includes birth complications)	760-779	P00-P96	575	41.5%
2	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	ICD-10: Q00-Q99	388	28.0%
3	Sudden Infant Death Syndrome (SIDS)	798.0	R95	163	11.8%
4	Diseases of the Circulatory System	390-434, 436-459	I00-I99	44	3.2%
5	External Causes (Injury)	E800-E999	V01-Y89	39	2.8%
6	Other Ill-defined and Unspecified Causes of Mortality	799	R99	27	1.9%
7	Diseases of the Respiratory System	460-519	J00-J98	26	1.9%
8	Diseases of the Digestive System	520-579	K00-K92	26	1.9%
9	Certain Infectious and Parasitic Diseases	001-139	A00-B99	25	1.8%
10	Diseases of the Nervous System	320-359, 435	G00-G98	25	1.8%
...	All other causes/uncoded	Residual	Residual	47	3.4%
<b>Total</b>				<b>1,385</b>	<b>100.0%</b>
<b>Age Group 1-4</b>					
1	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V00-V99, Y85	42	15.0%
2	External Causes (Injury) - Other	E850-E909, E911-E928, E929.2-E929.9, E930-E949, E970-E999	W00-W64, W75-X59, Y10-Y84, Y86, Y87.2, Y88-Y98	40	14.3%
3	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	Q00-Q99	30	10.7%
4	Malignant Neoplasms (Cancer)	140-208	C00-C97	27	9.6%
5	Diseases of the Nervous System	320-359, 435	G00-G98	25	8.9%
6	Endocrine, Nutritional, and Metabolic Diseases	240-279	E00-E90	17	6.1%
7	External Causes (Injury) - Assault (Homicide)	E960-E969	X85-Y09, Y87.1	14	5.0%
8	Diseases of the Circulatory System	390-434, 436-459	I00-I99	13	4.6%
9	External Causes (Injury) - Drowning and Submersion	E910	W65-W74	12	4.3%
10	Certain Infectious and Parasitic Diseases	001-139	A00-B99	9	3.2%
...	All other causes/uncoded	Residual	Residual	51	18.2%
<b>Total</b>				<b>280</b>	<b>100.0%</b>
<b>Age Group 5-9</b>					
1	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V00-V99, Y85	51	30.5%
2	Malignant Neoplasms (Cancer)	140-208	C00-C97	23	13.8%
3	External Causes (Injury) - Other	E850-E909, E911-E928, E929.2-E929.9, E930-E949, E970-E999	W00-W64, W75-X59, Y10-Y84, Y86, Y87.2, Y88-Y98	20	12.0%
4	Diseases of the Nervous System	320-359, 435	G00-G98	11	6.6%
5	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	Q00-Q99	11	6.6%
6	Certain Infectious and Parasitic Diseases	001-139	A00-B99	8	4.8%
7	Diseases of the Circulatory System	390-434, 436-459	I00-I99	8	4.8%
8	External Causes (Injury) - Drowning and Submersion	E910	W65-W74	8	4.8%
9	Endocrine, Nutritional, and Metabolic Diseases	240-279	E00-E90	7	4.2%
10	External Causes (Injury) - Assault (Homicide)	E960-E969	X85-Y09, Y87.1	5	3.0%
...	All other causes/uncoded	Residual	Residual	15	9.0%
<b>Total</b>				<b>167</b>	<b>100.0%</b>
<b>Age Group 10-14</b>					
1	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V00-V99, Y85	39	19.7%
2	Diseases of the Nervous System	320-359, 435	G00-G98	22	11.1%
3	External Causes (Injury) - Other	E850-E909, E911-E928, E929.2-E929.9, E930-E949, E970-E999	W00-W64, W75-X59, Y10-Y84, Y86, Y87.2, Y88-Y98	22	11.1%
4	External Causes (Injury) - Intentional Self-Harm (Suicide)	E950-E959	X60-X84, Y87.0	19	9.6%
5	Malignant Neoplasms (Cancer)	140-208	C00-C97	16	8.1%
6	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	Q00-Q99	14	7.1%
7	External Causes (Injury) - Drowning and Submersion	E910	W65-W74	13	6.6%
8	Diseases of the Circulatory System	390-434, 436-459	I00-I99	11	5.6%
9	External Causes (Injury) - Assault (Homicide)	E960-E969	X85-Y09, Y87.1	5	2.5%
10	Certain Infectious and Parasitic Diseases	001-139	A00-B99	3	1.5%
...	Endocrine, Nutritional, and Metabolic Diseases	240-279	E00-E90	3	1.5%
...	All other causes/uncoded	Residual	Residual	31	15.7%
<b>Total</b>				<b>198</b>	<b>100.0%</b>
<b>Age Group 15-17</b>					
1	External Causes (Injury) - Transport Accident	E800-E848, E929.0, E929.1	V00-V99, Y85	141	37.7%
2	External Causes (Injury) - Intentional Self-Harm (Suicide)	E950-E959	X60-X84, Y87.0	87	23.3%
3	External Causes (Injury) - Other	E850-E909, E911-E928, E929.2-E929.9, E930-E949, E970-E999	W00-W64, W75-X59, Y10-Y84, Y86, Y87.2, Y88-Y98	37	9.9%
4	Malignant Neoplasms (Cancer)	140-208	C00-C97	23	6.1%
5	External Causes (Injury) - Assault (Homicide)	E960-E969	X85-Y09, Y87.1	19	5.1%
6	Diseases of the Nervous System	320-359, 435	G00-G98	14	3.7%
7	Congenital Malformations, Deformations and Chromosomal Abnormalities	740-759	Q00-Q99	10	2.7%
8	Diseases of the Circulatory System	390-434, 436-459	I00-I99	7	1.9%
9	Certain Infectious and Parasitic Diseases	001-139	A00-B99	6	1.6%
10	External Causes (Injury) - Drowning and Submersion	E910	W65-W74	4	1.1%
...	All other causes/uncoded	Residual	Residual	26	7.0%
<b>Total</b>				<b>374</b>	<b>100.0%</b>

Source: Vital Statistics, Death File, Department of Government Services, May 2005 release.

Notes: One death in 2003 did not have sex coded. That case was excluded from the female/male breakdown.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



# 5. Health Service Utilization

*5.1 Immunization*

*5.2 Hospitalization*

*5.3 Emergency Room Use*

*5.4 Physician's Office Visits*



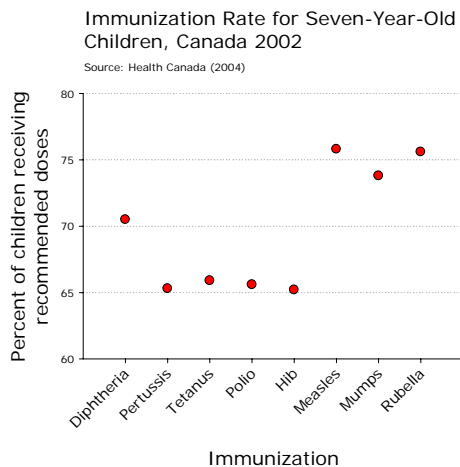
## 5.1.1 Immunization

### Background

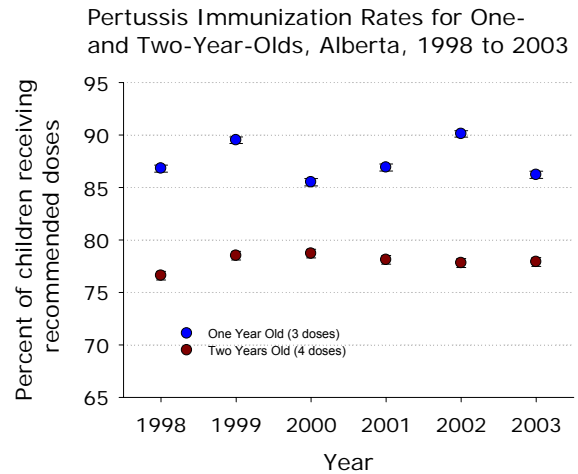
Immunization is often cited as the most cost-beneficial health intervention. Immunizations have saved millions from illness, disability, and death, at low cost.

The Alberta Routine Immunization Schedule is in Appendix 7.3.1. Immunization for diphtheria, tetanus, pertussis, polio, Hib, measles, mumps, and rubella has been available to at least a generation of children. Hepatitis B immunization has been routine in grade 5 since 1995, and varicella (chickenpox) immunization since 2001. Since 2002, meningococcal and pneumococcal vaccines have been routinely available to children in Alberta.

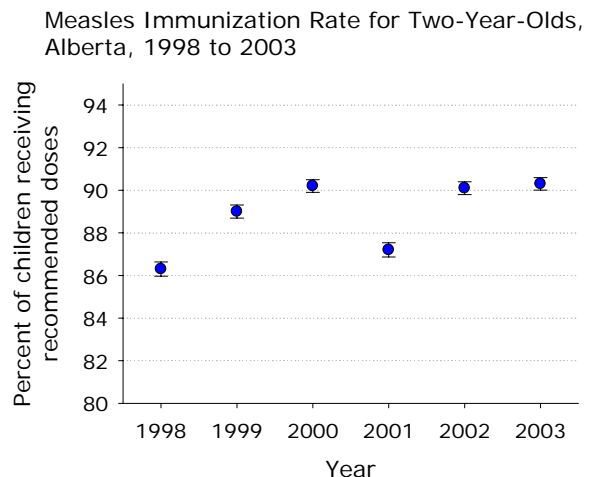
Health Canada asked parents whether their seven year olds had received all recommended immunizations. Parents reported that about one third of seven year olds were not completely immunized for diphtheria, pertussis, tetanus, polio, and Hib, while about one quarter were not completely immunized for measles, mumps, and rubella (Health Canada, 2004; see figure below). Note that these rates are subject to parental recall and record-keeping issues.



### Time Trends (see Tables 5.1.1.1, 5.1.1.2)



- Immunization rates for diphtheria, pertussis, tetanus, polio, and Hib were very similar between 1998 and 2003 (they are usually administered together); only pertussis is shown.
- The percentage of children receiving recommended doses at one year of age was a little higher in 1999 and 2002 than in other years. In 2003, 86.2% of one year olds had received 3 doses of pertussis vaccine.
- Only about 78% of children received the recommended four doses for each disease by two years of age. There was little variability with time.



- Measles, mumps, and rubella (MMR) immunization rates are virtually identical (they are combined in one vaccine). Only measles is shown in the figure above. Rates were lower in 1998, 1999, and 2001. In 2003, 90.3% of two year olds had received their MMR immunization.

## 5.1.1 Immunization

---

---

### Limitations and Methodology Notes

The Alberta immunization goals state that by two years of age, 97% of children will have received 4 doses of diphtheria, pertussis, tetanus, polio, and Hib vaccines. By two years of age, the goal is that 98% of children will have received measles, mumps, and rubella vaccines.

Many factors may contribute to low immunization rates, including lack of public health resources, refusals for religious or other reasons (about 2-3% of the population), temporary medical contraindications, parents who are too busy or forget about upcoming immunizations, accessibility issues (wait lists, lack of convenient appointments, lack of transportation, etc.), and reporting errors.

Roxanne Hamm, Nurse Consultant, Disease Control and Prevention, Alberta Health and Wellness, contributed to the Background of this section.

Elaine Sartison, Senior Manager, Disease Control and Prevention, Alberta Health and Wellness, contributed to the Methodology Notes.

Jill Svenson, Business Analyst, Health Surveillance, Alberta Health and Wellness, provided the data for this section.

Table 5.1.1.1 Proportion of Population Reaching One and Two Years of Age Receiving 3rd and 4th Dose of Diphtheria, Pertussis, Tetanus, Polio, and Hemophilus Influenzae Type b (DTaP-IPV-Hib), Alberta, 1998 to 2003

		1998	1999	2000	2001	2002	2003
<b>Diphtheria</b>	<b>3 doses by one year</b>	87.0%	89.6%	85.5%	86.9%	90.1%	86.2%
	<b>4 doses by two years</b>	76.8%	78.6%	78.7%	78.2%	77.8%	77.9%
<b>Pertussis</b>	<b>3 doses by one year</b>	86.8%	89.5%	85.5%	86.9%	90.1%	86.2%
	<b>4 doses by two years</b>	76.6%	78.5%	78.7%	78.1%	77.8%	77.9%
<b>Tetanus</b>	<b>3 doses by one year</b>	86.8%	89.6%	85.5%	86.9%	90.1%	86.2%
	<b>4 doses by two years</b>	76.8%	78.5%	78.7%	78.2%	77.8%	77.9%
<b>Polio</b>	<b>3 doses by one year</b>	86.8%	89.4%	86.6%	88.0%	91.4%	86.2%
	<b>4 doses by two years</b>	76.7%	78.4%	79.0%	78.7%	78.1%	77.9%
<b>Hib</b>	<b>3 doses by one year</b>	86.7%	89.0%	85.4%	86.6%	89.7%	86.2%
	<b>4 doses by two years</b>	76.9%	78.9%	79.7%	78.6%	78.2%	77.8%

**Source:** Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Immunization data for 1998 to 2003 were taken from data submitted to Alberta Health and Wellness by RHAs.

The provincial immunization total includes immunizations given by First Nations and Inuit Health Branch, Health Canada.

**Notes:** aP: Only acellular pertussis vaccine has been used in Alberta since July 1997.

IPV: Inactivated Polio Vaccine has been used in Alberta since 1994

Hib (PRPT) refers to the current type of Hemophilus influenzae type b vaccine used in Alberta

Alberta goal: by two years of age, 97% of children will have received 4 doses of diphtheria, pertussis, tetanus, polio, and Hib vaccines.

Table 5.1.1.2 Proportion of Population Reaching Two Years of Age Receiving Immunization for Measles, Mumps, and Rubella (MMR), Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Measles</b>	86.3%	89.0%	90.2%	87.2%	90.1%	90.3%
<b>Mumps</b>	86.3%	88.8%	90.1%	87.1%	90.1%	90.3%
<b>Rubella</b>	86.3%	88.9%	90.1%	87.1%	90.1%	90.3%

**Source:** Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Immunization data for 1998 to 2003 were taken from data submitted to Alberta Health and Wellness by RHAs.

The provincial immunization total includes immunizations given by First Nations and Inuit Health Branch, Health Canada.

**Notes:** Alberta goal: by two years of age, 98% of children will have received measles, mumps, and rubella vaccines.



# 5. Health Service Utilization

*5.1 Immunization*

*5.2 Hospitalization*

*5.3 Emergency Room Use*

*5.4 Physician's Office Visits*





## 5.2.1 Hospitalization

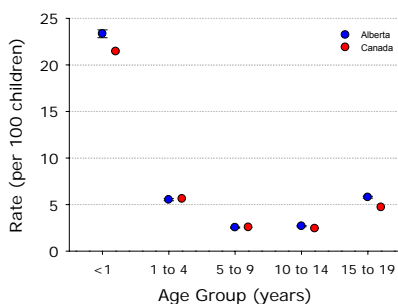
### Background

Hospitalization: *Admission of a child to an Alberta hospital for treatment or observation.* Time trends, age effects, First Nations data, and regional data are based on number of patients seen (“hospital patient rate”), while leading causes are based on number of hospital visits (also called separations). Hospital deliveries of a newborn are excluded.

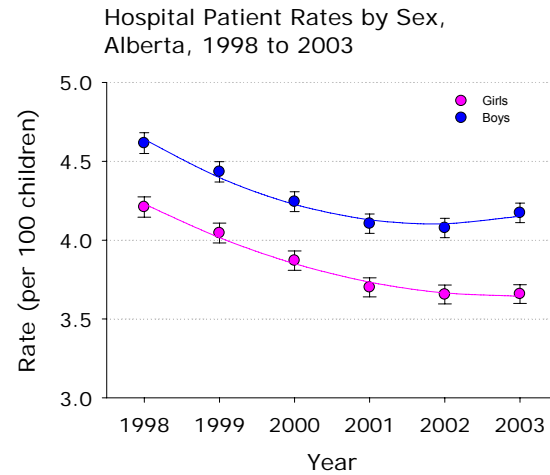
Many factors are associated with increased hospitalization and health system resource utilization. Some examples are decreased access, increased disease severity, younger age, lower maternal age, larger numbers of children in the family, low household income, and maternal smoking during pregnancy (Danielsson, Ericsson, Eriksson, Kallen, and Zetterstrom 2003; Keenan, Foster, and Bratton, 2002; Pollack, Wilkinson, and Glass, 1987).

Hospitalization rates were higher in Alberta than in Canada for infants and for children aged 15 to 19 in 1999 (see figure below). Note that these data are limited to inpatient/acute admissions and are by location of facility (rather than residence of patients). Alberta and Canada rates were similar for children between the ages of one and 14 (Canadian Institute for Health Information, 2005).

Inpatient/Acute Admission Rate by Age Group, Alberta and Canada (location of facility), 1999  
Source: Canadian Institute for Health Information (2005)

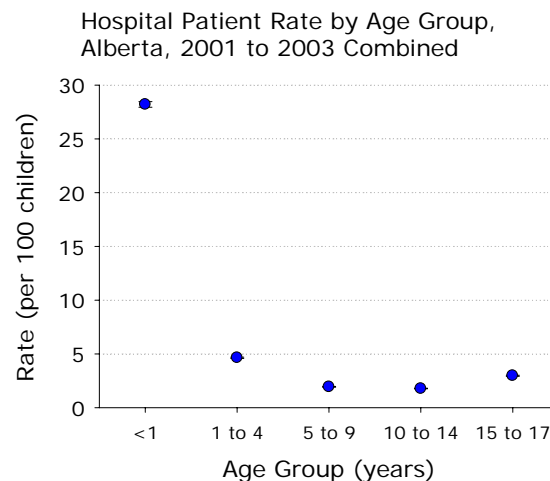


### Time Trends (see Tables 5.2.1.1, 5.2.1.2)



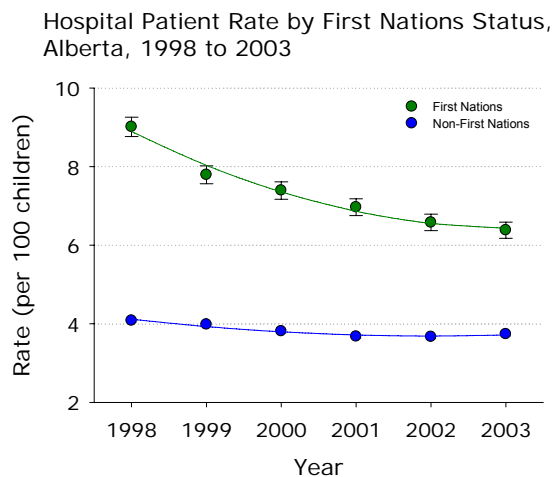
- The hospital patient rate (number of hospital patients per 100 children) is higher for boys than for girls. The rate decreased from 1998 to 2001 and then stabilized for both boys and girls. The average number of hospital separations was similar for boys and girls, and over time, at about 1.3.
- There were 13,793 girls who were hospital patients in 2003, for a rate of 3.7 (per 100 children). The rate for boys was 4.2 (16,531 patients).

### Age Effects (see Table 5.2.1.3)



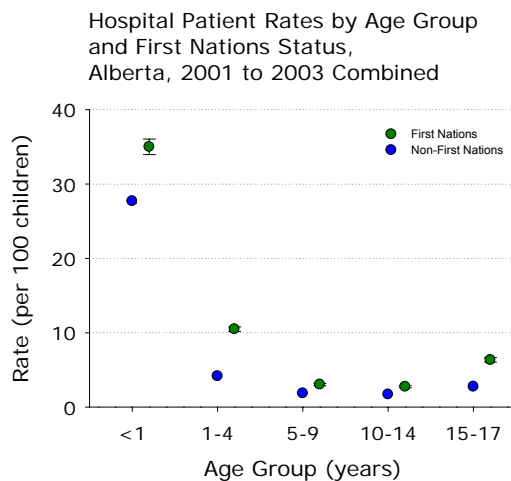
- Infants had the highest hospitalization rate in Alberta for 2001 to 2003 combined (in spite of the exclusion of birth-related hospitalizations). There were 31,947 infant hospital patients during this time period (28.2 per 100 infants), with an average of 1.3 separations per infant.
- The rate declined with age group between the ages of 1 and 14, and increased somewhat for 15 to 17 year-olds.

### First Nations Time Trends (see Table 5.2.1.5)



- The rate of hospitalization was consistently higher for First Nations children than non-First Nations children in Alberta.
- The hospital patient rate decreased from 9.0 to 6.4 (per 100 children) between 1998 and 2003 for First Nations children. For non-First Nations children, the rate decreased between 1998 and 2001 and then stabilized.
- In 2003, 3,468 First Nations and 26,856 non-First Nations children were hospitalized in Alberta, for rates of 6.4 and 3.7.

### First Nations Age Effects (see Table 5.2.1.6)

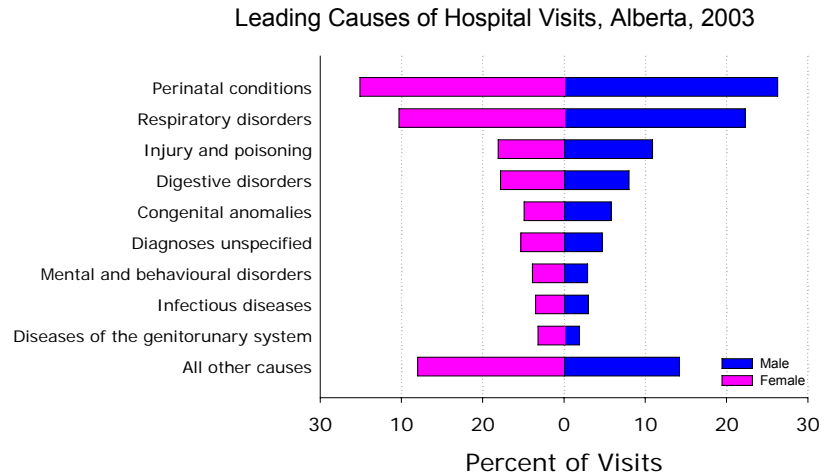


- Hospitalization rates were higher for First Nations children than non-First Nations children in all age groups for 2001 to 2003 combined.
- For 1 to 4 year olds and 15 to 17 year olds, the First Nations rate was more than twice that of the non-First Nations rate.

## 5.2.1 Hospitalization

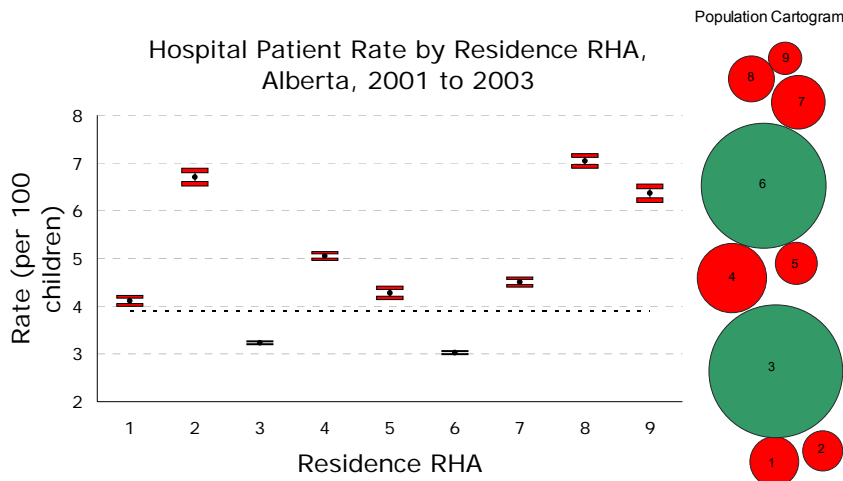
## 5.2.1 Hospitalization

### Leading Causes (see Tables 5.2.1.7, 5.2.1.8, 5.2.1.9, 5.2.1.10)



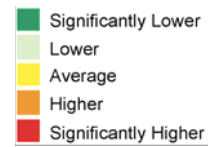
- The top two reasons for hospital visits were perinatal conditions (e.g., slow fetal growth, prematurity, respiratory distress) and respiratory disorders (e.g., asthma, bronchitis, pneumonia, tonsils). These accounted for 47.1% of all childhood hospitalizations in Alberta in 2003. Injuries and digestive disorders accounted for a further 17.5% of child hospitalizations in 2003. Sex differences were minimal.
- For infants, perinatal conditions (70.5%), congenital anomalies (9.2%), and respiratory disorders (7.1%) were the three leading causes.
- For preschool children (1 to 4 years), respiratory disorders (47.0%), digestive disorders (8.5%), and diagnoses unspecified (7.2%) were the three leading causes.
- Respiratory disorders (30.8%), injury and poisoning (15.7%), and digestive disorders (10.1%) led for 5 to 9 year olds.
- Injury and poisoning (21.8%), respiratory disorders (16.1%), and digestive disorders (14.4%) led for 10 to 14 year olds.
- For 15 to 17 year olds, the top three causes of hospitalization were injury and poisoning (21.4%), mental and behavioural disorders (14.8%), and digestive disorders (11.8%).
- Notable differences between First Nations and non-First Nations children in leading causes of hospitalization included respiratory disorders (35.0% and 19.4%, respectively), and perinatal conditions (15.1% and 27.2%). Pregnancy and childbirth was the 6<sup>th</sup> leading cause (4.3%) for First Nations children, but did not make the Top 10 for non-First Nations children.

**Regional Data** (see Table 5.2.1.4)

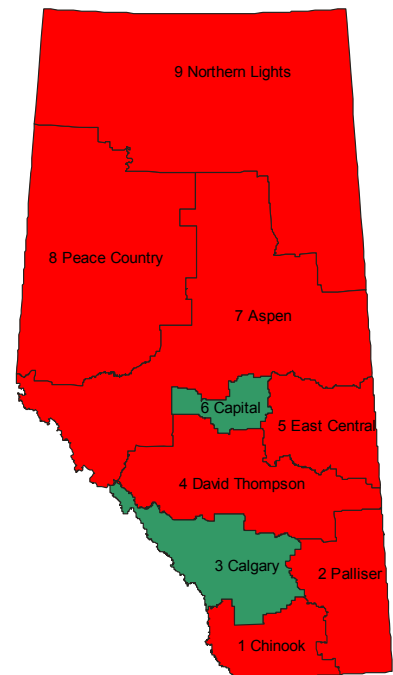


- The patient rate was significantly lower than the provincial average in RHAs 3 and 6, the major metropolitan areas. RHA 6 had 20,970 children who were hospital patients in 2001 to 2003 combined, for a rate of 3.0 (per 100 children).
- Child patient rates were higher than the provincial average in all other RHAs. The highest rate occurred in RHA 8, with 7,892 children hospitalized (7.0 per 100 children).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

**5.2.1 Hospitalization**



Hospital Patient Rate 2001 to 2003



**Limitations and Methodology Notes**

Primary diagnosis only was used for leading causes analyses.

Health services may be less available in more remote regions of the province. Patients may even move to larger centres to gain access to services. Discrepancies in access should be taken into consideration when interpreting regional rates.

Rates for health services utilization represent only those patients seeking care.

Table 5.2.1.1 Hospital Separations and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	33,707	32,676	31,278	30,114	29,950	30,324
<b>Number of hospital separations</b>	43,895	42,292	40,577	38,832	38,675	38,882
<b>Rate (# patients per 100 children)</b>	4.4	4.2	4.1	3.9	3.9	3.9
<b>Standard Error (SE)</b>	0.02	0.02	0.02	0.02	0.02	0.02
<b>Average # of separations per patient</b>	1.30	1.29	1.30	1.29	1.29	1.28

Table 5.2.1.2 Hospital Separations and Rate by Sex and Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Female</b>						
<b>Number of patients</b>	15,657	15,185	14,531	13,904	13,792	13,793
<b>Number of hospital separations</b>	20,466	19,676	18,745	17,905	17,736	17,601
<b>Rate (# of patients per 100 children)</b>	4.2	4.0	3.9	3.7	3.7	3.7
<b>Standard Error (SE)</b>	0.03	0.03	0.03	0.03	0.03	0.03
<b>Average # of separations per patient</b>	1.31	1.30	1.29	1.29	1.29	1.28
<b>Male</b>						
<b>Number of patients</b>	18,050	17,491	16,747	16,210	16,158	16,531
<b>Number of hospital separations</b>	23,429	22,616	21,832	20,927	20,939	21,281
<b>Rate (# of patients per 100 children)</b>	4.6	4.4	4.2	4.1	4.1	4.2
<b>Standard Error (SE)</b>	0.03	0.03	0.03	0.03	0.03	0.03
<b>Average # of separations per patient</b>	1.30	1.29	1.30	1.29	1.30	1.29

Table 5.2.1.3 Hospital Separations and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of patients</b>	31,947	21,721	12,260	12,184	12,276	90,388
<b>Number of hospital separations</b>	41,595	28,842	15,024	15,240	15,688	116,389
<b>Rate (# patients per 100 children)</b>	28.2	4.6	1.9	1.8	3.0	3.9
<b>Standard Error (SE)</b>	0.13	0.03	0.02	0.02	0.03	0.01
<b>Average # of separations per patient</b>	1.30	1.33	1.23	1.25	1.28	1.29

Table 5.2.1.4 Hospital Separations and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of patients</b>	5,011	4,930	25,530	11,426	3,545	20,970	6,939	7,892	4,107	90,388
<b>Number of hospital separations</b>	6,410	6,161	32,377	14,960	4,541	26,875	9,231	10,184	5,595	116,389
<b>Rate (# patients per 100 children)</b>	4.1	6.7	3.2	5.1	4.3	3.0	4.5	7.0	6.4	3.9
<b>Standard Error (SE)</b>	0.06	0.09	0.02	0.05	0.07	0.02	0.05	0.08	0.10	0.01
<b>Average # of separations per patient</b>	1.28	1.25	1.27	1.31	1.28	1.28	1.33	1.29	1.36	1.29

**Source:** Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Hospital births (ICD-9-CM=V30-V39, ICD-10=Z38) were excluded from analyses.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.2.1.5 Hospital Separations and Rate by First Nations Status and Year, Alberta, 1998 to 2003

<b>First Nations</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Number of patients</b>	4,683	4,114	3,957	3,757	3,567	3,468
<b>Number of hospital separations</b>	7,064	5,962	5,882	5,402	5,094	4,835
<b>Rate (# of patients per 100 children)</b>	9.0	7.8	7.4	7.0	6.6	6.4
<b>Standard Error (SE)</b>	0.13	0.12	0.11	0.11	0.11	0.10
<b>Average # of separations per patient</b>	1.51	1.45	1.49	1.44	1.43	1.39

<b>Non-First Nations</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Number of patients</b>	29,024	28,562	27,321	26,357	26,383	26,856
<b>Number of hospital separations</b>	36,831	36,330	34,695	33,430	33,581	34,047
<b>Rate (# of patients per 100 children)</b>	4.1	4.0	3.8	3.7	3.7	3.7
<b>Standard Error (SE)</b>	0.02	0.02	0.02	0.02	0.02	0.02
<b>Average # of separations per patient</b>	1.27	1.27	1.27	1.27	1.27	1.27

Table 5.2.1.6 Hospital Separations and Rate by First Nations Status and Age Group, Alberta, 2001-2003 Combined

<b>First Nations</b>	<b>&lt;1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 17</b>	<b>0 to 17</b>
<b>Number of patients</b>	2,806	3,681	1,443	1,280	1,582	10,792
<b>Number of hospital separations</b>	4,277	5,558	1,797	1,601	2,098	15,331
<b>Rate (# of patients per 100 children)</b>	35.0	10.5	3.0	2.7	6.3	6.6
<b>Standard Error (SE)</b>	0.53	0.16	0.08	0.08	0.15	0.06
<b>Average # of separations per patient</b>	1.52	1.51	1.25	1.25	1.33	1.42

<b>Non-First Nations</b>	<b>&lt;1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 17</b>	<b>0 to 17</b>
<b>Number of patients</b>	29,141	18,040	10,817	10,904	10,694	79,596
<b>Number of hospital separations</b>	37,318	23,284	13,227	13,639	13,590	101,058
<b>Rate (# of patients per 100 children)</b>	27.7	4.2	1.8	1.7	2.8	3.7
<b>Standard Error (SE)</b>	0.14	0.03	0.02	0.02	0.03	0.01
<b>Average # of separations per patient</b>	1.28	1.29	1.22	1.25	1.27	1.27

**Source:** Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Hospital births (ICD-9-CM=V30-V39, ICD-10=Z38) were excluded from analyses.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.2.1.7 Top 10 Disease Groups Leading to Hospitalization, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit	
<b>Both Sexes</b>						
1	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	8,579	9,998	25.7%	
2	Respiratory disorders (bronchitis/bronchiolitis, pneumonia, asthma, tonsils and adenoids, etc.)	J00-J99	7,190	8,309	21.4%	
3	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, intracranial, poisoning)	S00-T98	3,500	3,748	9.6%	
4	Digestive disorders (intestine & peritoneum, appendix, oesophagus & stomach/duodenum)	K00-K93	2,810	3,059	7.9%	
5	Congenital anomalies (circulatory, digestive, musculoskeletal, genito-urinary, cleft lip/palate, nervous)	Q00-Q99	1,759	2,110	5.4%	
6	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	1,767	1,932	5.0%	
7	Mental and behavioural disorders (Other, mood affective, neurotic/somatoform disorders)	F00-F99	1,028	1,296	3.3%	
8	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	1,206	1,258	3.2%	
9	Diseases of the genitourinary system (renal tubulo-interstitial, other, male genital organs, glomerular)	N00-N99	861	965	2.5%	
10	Nervous system diseases (epilepsy, other, inflammatory diseases)	G00-G99	619	737	1.9%	
		All other diseases	Residual	4,346	5,470	14.1%
<b>Total</b>				33,665	38,882	100.0%

Table 5.2.1.8 Top 10 Disease Groups Leading to Hospitalization by Sex, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit	
<b>Females</b>						
1	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	3,827	4,410	25.1%	
2	Respiratory disorders (bronchitis/bronchiolitis, pneumonia, asthma, tonsils and adenoids, etc.)	J00-J99	3,145	3,567	20.3%	
3	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, intracranial, poisoning)	S00-T98	1,316	1,421	8.1%	
4	Digestive disorders (intestine & peritoneum, appendix, oesophagus & stomach/duodenum)	K00-K93	1,252	1,367	7.8%	
5	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	851	940	5.3%	
6	Congenital anomalies (circulatory, digestive, musculoskeletal, genito-urinary, cleft lip/palate, nervous)	Q00-Q99	711	867	4.9%	
7	Mental and behavioural disorders (Other, mood affective, neurotic/somatoform disorders)	F00-F99	522	678	3.9%	
8	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	581	612	3.5%	
9	Diseases of the genitourinary system (renal tubulo-interstitial, other, female genital organs, glomerular)	N00-N99	494	564	3.2%	
10	Pregnancy and childbirth (other complications, maternal care-foetus-amniotic, spontaneous abortion)	O00-O99	443	560	3.2%	
		All other diseases	Residual	2,081	2,615	14.9%
<b>Total</b>				15,223	17,601	100.0%

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit	
<b>Male</b>						
1	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	4,752	5,588	26.3%	
2	Respiratory disorders (bronchitis/bronchiolitis, pneumonia, asthma, tonsils and adenoids, etc.)	J00-J99	4,045	4,742	22.3%	
3	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, intracranial, poisoning)	S00-T98	2,184	2,327	10.9%	
4	Digestive disorders (intestine & peritoneum, appendix, oesophagus & stomach/duodenum)	K00-K93	1,558	1,692	8.0%	
5	Congenital anomalies (circulatory, digestive, musculoskeletal, genito-urinary, cleft lip/palate, nervous)	Q00-Q99	1,048	1,243	5.8%	
6	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	916	992	4.7%	
7	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	625	646	3.0%	
8	Mental and behavioural disorders (Other, mood affective, neurotic/somatoform disorders)	F00-F99	506	618	2.9%	
9	Nervous system diseases (epilepsy, other, inflammatory diseases)	G00-G99	345	405	1.9%	
10	Diseases of the genitourinary system (renal tubulo-interstitial, other, male genital organs, glomerular)	N00-N99	367	401	1.9%	
		All other diseases	Residual	2,096	2,627	12.3%
<b>Total</b>				18,442	21,281	100.0%

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted in March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted in May 2005.

Notes: Data include Alberta residents only.

Hospital births (ICD-9-CM=V30-V39, ICD-10=Z38) were excluded from analysis.

Table 5.2.1.9 Top 10 Disease Groups Leading to Hospitalization by Age Group, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>Age group &lt;1</b>					
1	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	8,419	9,795	70.5%
2	Congenital anomalies (circulatory, digestive, musculoskeletal, genito-urinary, cleft lip/palate, chromosomal)	Q00-Q99	1,019	1,275	9.2%
3	Respiratory disorders (bronchitis/bronchiolitis, upper resp. infection, pneumonia, influenza, asthma)	J00-J99	799	992	7.1%
4	Digestive disorders (intestine & peritoneum, oesophagus & stomach/duodenum, inguinal hernia)	K00-K93	342	380	2.7%
5	Diagnoses unspecified (other, fever, abdominal and pelvic pain, etc)	R00-R99	329	358	2.6%
6	Infectious diseases (Intestinal infections, viral infections, septicemia, whooping cough)	A00-B99	178	184	1.3%
7	Diseases of the genitourinary system (other, renal tubulo-interstitial disease)	N00-N99	148	162	1.2%
8	Injury and poisoning (complications of trauma/surgical and medical care, multiple regions, foreign body, maltreatment syndromes)	S00-T98	74	80	0.6%
9	Nervous system diseases (other, inflammatory diseases, epilepsy)	G00-G99	46	55	0.4%
10	Endocrine, nutritional and metabolic diseases (None Specified disorders, volume depletion)	E00-E90	44	55	0.4%
<b>Total</b>		All other diseases Residual	516 11,914	566 13,902	4.1% 100.0%
<b>Age group 1-4</b>					
1	Respiratory disorders (bronchitis/bronchiolitis, pneumonia, upper resp. infection, asthma)	J00-J99	3,795	4,501	47.0%
2	Digestive disorders (intestine & peritoneum, oesophagus & stomach/duodenum, inguinal hernia)	K00-K93	752	816	8.5%
3	Diagnoses unspecified (other, fever, abdominal and pelvic pain, etc)	R00-R99	609	688	7.2%
4	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, foreign body, poisoning)	S00-T98	593	643	6.7%
5	Infectious diseases (Intestinal infections, viral infections, herpesviral infections, septicemia)	A00-B99	538	561	5.9%
6	Congenital anomalies (circulatory, musculoskeletal, genito-urinary, cleft lip/palate, digestive)	Q00-Q99	393	462	4.8%
7	Nervous system diseases (epilepsy, other, inflammatory diseases)	G00-G99	211	257	2.7%
8	Diseases of the genitourinary system (renal tubulo-interstitial, other, redundant prepuce/phimosis and paraphimosis, glomerular)	N00-N99	215	247	2.6%
9	Certain conditions of the perinatal period	P00-P96	157	200	2.1%
10	Diseases of the blood and immune disorders (haemorrhagic conditions, other anemias, iron deficiency anemia)	D50-D89	102	169	1.8%
<b>Total</b>		All other diseases Residual	855 8,220	1,033 9,577	10.8% 100.0%
<b>Age group 5-9</b>					
1	Respiratory disorders (tonsils and adenoids, asthma, pneumonia, upper resp. infection)	J00-J99	1,436	1,559	30.5%
2	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, multiple regions, intracranial, foreign body)	S00-T98	754	800	15.7%
3	Digestive disorders (intestine & peritoneum, oesophagus & stomach/duodenum, mouth/teeth/jaw)	K00-K93	480	514	10.1%
4	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	297	318	6.2%
5	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	223	233	4.6%
6	Congenital anomalies (circulatory, cleft lip/palate, musculoskeletal, genito-urinary, nervous)	Q00-Q99	176	193	3.8%
7	Diseases of the genitourinary system (renal tubulo-interstitial, other, glomerular, male genital organs)	N00-N99	165	185	3.6%
8	Nervous system diseases (epilepsy, other, migraine, cerebral palsy)	G00-G99	147	173	3.4%
9	Musculoskeletal system diseases (connective/soft tissue disorders, joint, limb deformities)	M00-M99	112	117	2.3%
10	Endocrine, nutritional and metabolic diseases (Diabetes, volume depletion, others)	E00-E90	106	115	2.3%
<b>Total</b>		All other diseases Residual	649 4,545	904 5,111	17.7% 100.0%
<b>Age group 10-14</b>					
1	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, intracranial, internal organs, poisoning)	S00-T98	1,034	1,096	21.8%
2	Respiratory disorders (tonsils and adenoids, asthma, pneumonia, pharyngitis/tonsillitis)	J00-J99	746	809	16.1%
3	Digestive disorders (appendix, intestine & peritoneum, Crohn's disease and ulcerative colitis)	K00-K93	672	726	14.4%
4	Mental and behavioural disorders (Other, mood affective, neurotic/somatiform disorders)	F00-F99	344	405	8.1%
5	Diagnoses unspecified (abdominal and pelvic pain, other, fever, etc)	R00-R99	308	331	6.6%
6	Musculoskeletal system diseases (joint, dorsopathies, limb deformities, bone density & structure)	M00-M99	195	208	4.1%
7	Nervous system diseases (epilepsy, other, migraine, cerebral palsy)	G00-G99	149	175	3.5%
8	Endocrine, nutritional and metabolic diseases (Diabetes, other disorders, volume depletion)	E00-E90	135	170	3.4%
9	Diseases of the genitourinary system (renal tubulo-interstitial, male genital organs, glomerular, other)	N00-N99	141	158	3.1%
10	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	135	143	2.8%
<b>Total</b>		All other diseases Residual	607 4,466	804 5,025	16.0% 100.0%
<b>Age group 15-17</b>					
1	Injury and poisoning (limb fractures, poisoning, complications of trauma/surgical and medical care, ntracranial, internal organs)	S00-T98	1,045	1,129	21.4%
2	Mental and behavioural disorders (mood affective, other, neurotic/somatiform disorders, schizophrenia)	F00-F99	598	782	14.8%
3	Digestive disorders (appendix, intestine & peritoneum, teeth, Crohn's disease and ulcerative colitis)	K00-K93	564	623	11.8%
4	Pregnancy and childbirth (other complications, maternal care-foetus-amniotic, spontaneous abortion)	O00-O99	439	555	10.5%
5	Respiratory disorders (tonsils and adenoids, asthma, pharyngitis/tonsillitis, pneumonia)	J00-J99	414	448	8.5%
6	Diagnoses unspecified (abdominal and pelvic pain, other, fever, etc)	R00-R99	224	237	4.5%
7	Musculoskeletal system diseases (joint, dorsopathies, bone density & structure, soft tissue disorders)	M00-M99	216	231	4.4%
8	Diseases of the genitourinary system (renal tubulo-interstitial, pelvic noninflammatory disorders, male genital organs)	N00-N99	192	213	4.0%
9	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	132	137	2.6%
10	Endocrine, nutritional and metabolic diseases (Diabetes, other disorders, volume depletion)	E00-E90	89	118	2.2%
<b>Total</b>		All other diseases Residual	607 4,520	794 5,267	15.1% 100.0%

Source: Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted in March 2005.  
Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted in May 2005.

Notes: Data include Alberta residents only.  
Hospital births (ICD-9-CM=V30-V39, ICD-10=Z38) were excluded from analysis.



Table 5.2.1.10 Top 10 Disease Groups Leading to Hospitalization by First Nations Status, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>First Nations</b>					
1	Respiratory disorders (pneumonia, bronchitis/bronchiolitis, asthma, upper resp. infections, etc.)	J00-J99	1,290	1,694	35.0%
2	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	593	728	15.1%
3	Injury and poisoning (limb fractures, multiple regions, poisoning, intracranial, complications of trauma/surgical and medical care, burns and cor	S00-T98	419	449	9.3%
4	Digestive disorders (intestine & peritoneum, appendix, oesophagus & stomach/duodenum)	K00-K93	303	326	6.7%
5	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	232	275	5.7%
6	Pregnancy and childbirth (other complications, maternal care-foetus-amniotic, spontaneous abortion)	O00-O99	160	210	4.3%
7	Congenital anomalies (circulatory, cleft lip/palate, musculoskeletal, digestive, genito-urinary, nervous)	Q00-Q99	140	168	3.5%
8	Infectious diseases (viral infections, intestinal infections, septicemia)	A00-B99	154	166	3.4%
9	Mental and behavioural disorders (substance/alcohol use, mood affective, other, neurotic disorders)	F00-F99	102	123	2.5%
10	Diseases of the genitorunary system (renal tubulo-interstitial, other, glomerular)	N00-N99	84	101	2.1%
		All other diseases	501	595	12.3%
<b>Total</b>			<b>3,978</b>	<b>4,835</b>	<b>100.0%</b>
<b>Non-First Nations</b>					
1	Perinatal conditions (slow fetal growth/development, respiratory distress, other)	P00-P96	7,986	9,270	27.2%
2	Respiratory disorders (bronchitis/bronchiolitis, pneumonia, asthma, tonsils and adenoids, etc.)	J00-J99	5,900	6,615	19.4%
3	Injury and poisoning (limb fractures, complications of trauma/surgical and medical care, multiple regions, intracranial, poisoning)	S00-T98	3,081	3,299	9.7%
4	Digestive disorders (intestine & peritoneum, appendix, oesophagus & stomach/duodenum)	K00-K93	2,507	2,733	8.0%
5	Congenital anomalies (circulatory, digestive, musculoskeletal, genito-urinary, cleft lip/palate, nervous)	Q00-Q99	1,619	1,942	5.7%
6	Diagnoses unspecified (other, abdominal and pelvic pain, fever, etc)	R00-R99	1,535	1,657	4.9%
7	Mental and behavioural disorders (mood affective, other, neurotic/somatoform disorders, schizophrenia)	F00-F99	926	1,173	3.4%
8	Infectious diseases (Intestinal infections, viral infections, septicemia)	A00-B99	1,052	1,092	3.2%
9	Diseases of the genitorunary system (renal tubulo-interstitial, other, male genital organs, glomerular)	N00-N99	777	864	2.5%
10	Nervous system diseases (epilepsy, other, inflammatory diseases)	G00-G99	569	672	2.0%
		Residual	146	4,730	13.9%
<b>Total</b>			<b>29,687</b>	<b>34,047</b>	<b>100.0%</b>

**Source:** Canadian Institute of Health Information (CIHI) Hospital Inpatient Files, Alberta Health and Wellness, extracted in March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted in May 2005.

**Notes:** Data include Alberta residents only.

Hospital births (ICD-9-CM=V30-V39, ICD-10=Z38) were excluded from analysis.



# 5. Health Service Utilization

*5.1 Immunization*

*5.2 Hospitalization*

*5.3 Emergency Room Use*

*5.4 Physician's Office Visits*



## 5.3.1 Emergency Room Use

### Background

Emergency room use: *Visit to an emergency department for treatment or observation.* Both number of patients seen and number of visits made are provided in the data tables. Time trends, age effects, First Nations data, and regional data are based on number of patients seen (“emergency room patient rate”), while leading causes are based on number of emergency room visits made.

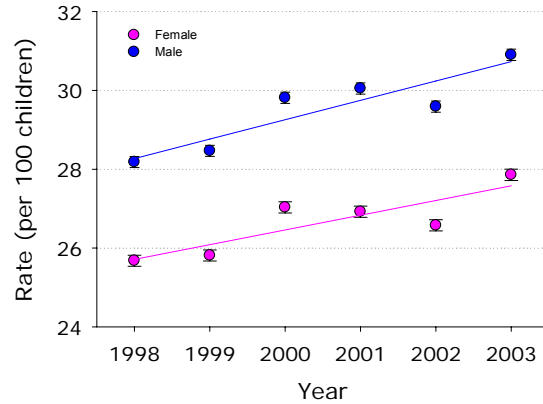
Infants under one year of age are frequent users of emergency departments in Alberta, generally second only to seniors (Alberta Health and Wellness, 2004b).

Albertans visit emergency rooms at a similar rate to the national average. In 2003, 13% of Albertans and 13% of Canadians visited an emergency room at least once (Carrière, 2004).

Males are more likely to use hospital emergency rooms than females in Canada. In 2003, 20% of boys between 15 and 17 reported visiting an emergency room at least once, compared with 18% of girls in that age group. Emergency room use also varies with income in Canada. In 2003, 18% of low-income people had received their most recent treatment in an emergency room, compared with 13% of high income people. Rural residents used emergency rooms more often than urban residents (15% and 13% of residents, respectively). Emergency room users tend to be heavy users of other medical services (Carrière, 2004).

### Time Trends (see Tables 5.3.1.1, 5.3.1.2)

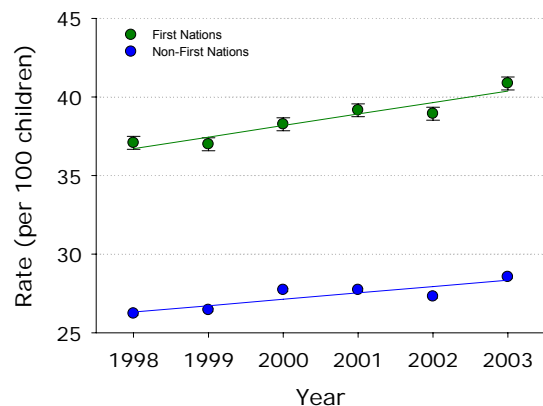
Emergency Room Patient Rate by Sex, Alberta, 1998 to 2003



- The emergency room patient rate was consistently higher for boys than for girls between 1998 and 2003. Rates for both boys and girls increased, notably in 2000 and 2003.
- In 2003, 122,423 boys visited emergency rooms in Alberta (30.9 patients per 100 boys). There were 105,047 girl patients, or 27.9 per 100 girls.
- The average number of visits per patient was 2.0 for boys and 1.9 for girls in 2003.

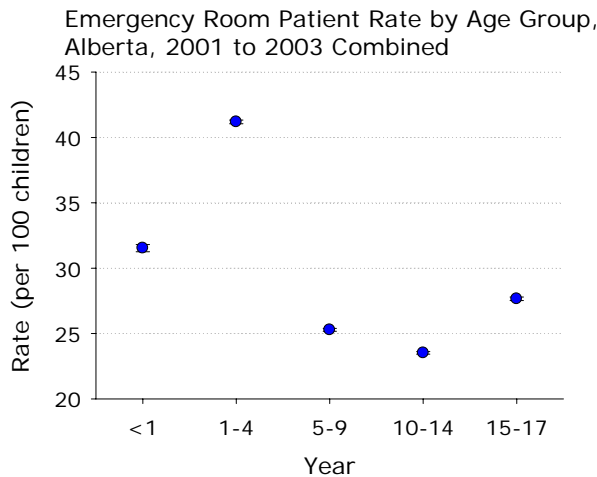
### First Nations Time Trends (see Table 5.3.1.5)

Hospital Patient Rate by First Nations Status, Alberta, 1998 to 2003



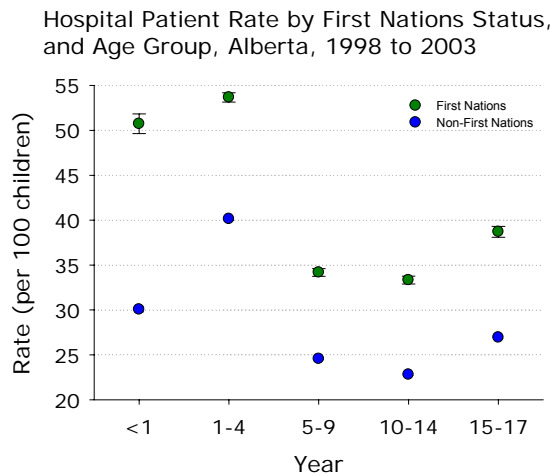
- First Nations children were more likely to be patients in emergency rooms between 1998 and 2003 than non-First Nations children.
- In 2003, the emergency room patient rate for First Nations children was 40.9, compared with 28.6 for non-First Nations children.

**Age Effects** (see Table 5.3.1.3)



- Emergency room patient rates are highest for children under the age of 5 years. The rate for children aged 1 to 4 was 41.1 (per 100 children; 192,686 patients) for 2001 to 2003 combined. The rate was 31.5 for children under one year (35,703 patients) during that time period.
- The rate for 15 to 17 year olds was elevated relative to 5 to 14 year olds, at 27.6 (per 100 children, or 114,343 patients)

**First Nations Age Effects** (see Table 5.3.1.6)



- First Nations differences appeared in all age groups, but were more marked for infants.
- The infant emergency room patient rate was 50.7 (per 100 children, or 4,068 children) for First Nations children, compared with 30.1 for non-First Nations children (31,635 children).

## 5.3.1 Emergency Room Use

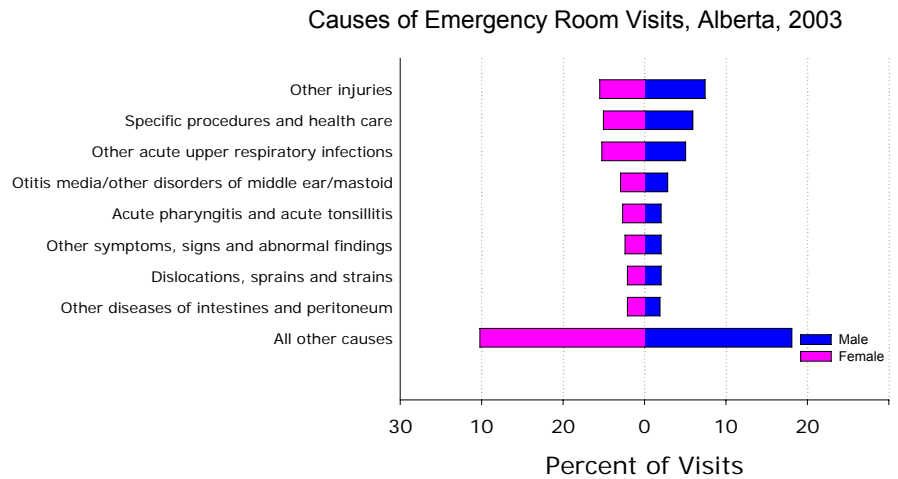
### Background continued

Alberta has two tertiary pediatric emergency departments (in Edmonton and Calgary) and emergency rooms in hospitals throughout the rest of the province (Alberta Health and Wellness, 2004b).

Not all emergency room visits are for emergencies. Emergency departments are commonly used for non-emergency care, such as after-care (e.g., cast removal), and chemotherapy (Alberta Health and Wellness, 2004b).

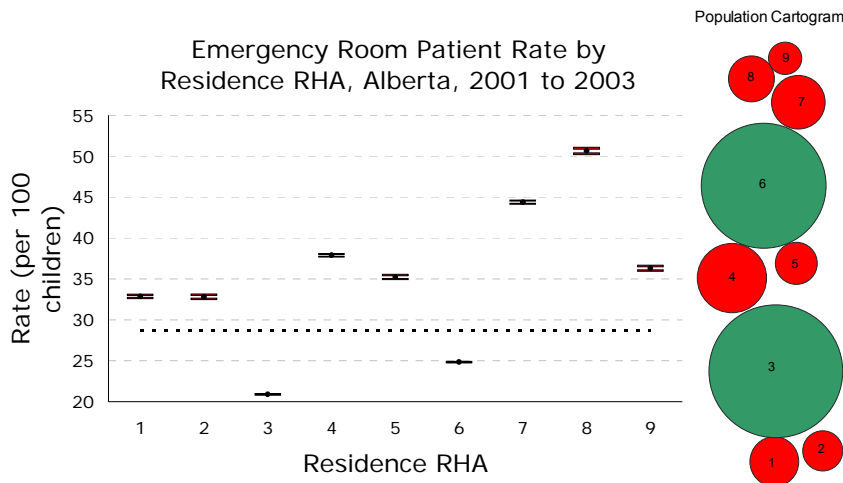
### 5.3.1 Emergency Room Use

#### Leading Causes (see Tables 5.3.1.7, 5.3.1.8, 5.3.1.9, 5.3.1.10)



- The top three causes of emergency room visits by children in 2003 were “other injuries of specified, unspecified and multiple body regions” (13.1% of visits), “persons encountering health services for specific procedures and health care” (11.1%), and “other acute upper respiratory infections” (10.2%).
- Boys’ visits were more likely to be for “other injuries” than girls’ visits were (14.9% and 11.0% of visits, respectively), but sex differences were, for the most part, small.
- The leading cause of emergency room visits for children under 5 was “other acute respiratory infections”. For children aged 6 to 17, the leading cause was “other injuries of specified, unspecified and multiple body regions”.
- Emergency room visits due to dislocations, sprains, strains, and fractures become more common as children get older, while visits due to respiratory infections and otitis media and other diseases of the middle ear and mastoid become less common.
- “Other acute respiratory infections” were a little more common among First Nations children visiting emergency rooms than among non-First Nations children (12.1% vs. 10.0%), but other differences due to First Nations status were minimal.

**Regional Data** (see Table 5.3.1.4)



- For 2001 to 2003 combined, children were patients in emergency rooms less than the provincial average in RHAs 3 and 6 (the major metropolitan areas) and more than average in the remaining RHAs.
- Rates ranged from 20.9 (per 100 children) in RHA 3 (165,064 patients) to 50.6 in RHA 8 (56,739 patients).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

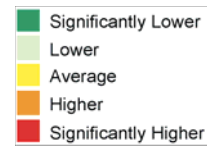
**Limitations and Methodology Notes**

Primary diagnosis only was used for leading causes analyses.

Health services may be less available in more remote regions of the province. Patients may even move to larger centres to gain access to services. Discrepancies in access should be taken into consideration when interpreting regional rates.

Rates for health services utilization represent only those patients seeking care.

**5.3.1 Emergency Room Use**



Emergency Room Patient Rate 2001 to 2003

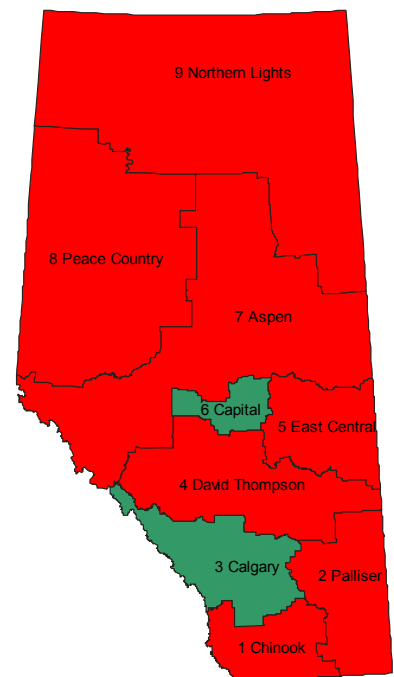




Table 5.3.1.1 Emergency Room Patients and Visits and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	205,718	209,206	219,147	219,831	217,551	227,470
<b>Number of visits</b>	380,313	394,880	418,116	421,726	412,688	441,891
<b>Rate (# patients per 100 children)</b>	27.0	27.2	28.5	28.5	28.1	29.4
<b>Standard Error (SE)</b>	0.1	0.1	0.1	0.1	0.1	0.1
<b>Number of visits per patient</b>	1.85	1.89	1.91	1.92	1.90	1.94

Table 5.3.1.2 Emergency Room Patients and Visits and Rate by Sex and Year, Alberta, 1998 to 2003

Female	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	95,503	96,896	101,496	101,157	100,281	105,047
<b>Number of visits</b>	175,748	182,204	192,866	192,370	188,937	202,106
<b>Rate (# patients per 100 children)</b>	25.7	25.8	27.0	26.9	26.6	27.9
<b>Standard Error (SE)</b>	0.1	0.1	0.1	0.1	0.1	0.1
<b>Number of visits per patient</b>	1.84	1.88	1.90	1.90	1.88	1.92

Male	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	110,215	112,310	117,651	118,674	117,270	122,423
<b>Number of visits</b>	204,565	212,676	225,250	229,356	223,751	239,785
<b>Rate (# patients per 100 children)</b>	28.2	28.5	29.8	30.0	29.6	30.9
<b>Standard Error (SE)</b>	0.1	0.1	0.1	0.1	0.1	0.1
<b>Number of visits per patient</b>	1.86	1.89	1.91	1.93	1.91	1.96

Table 5.3.1.3 Emergency Room Patients and Visits and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of patients</b>	35,703	192,686	160,472	161,648	114,343	664,852
<b>Number of visits</b>	72,583	418,132	277,627	284,740	223,223	1,276,305
<b>Rate (# patients per 100 children)</b>	31.5	41.1	25.3	23.5	27.6	28.7
<b>Standard Error (SE)</b>	0.1	0.1	0.1	0.1	0.1	0.0
<b>Number of visits per patient</b>	2.03	2.17	1.73	1.76	1.95	1.92

Table 5.3.1.4 Emergency Room Patients and Visits and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of patients</b>	40,066	24,126	165,064	85,672	29,194	172,155	68,344	56,739	23,415	664,852
<b>Number of visits</b>	72,341	43,613	263,386	170,388	63,862	299,615	154,159	162,234	46,582	1,276,305
<b>Rate (# patients per 100 children)</b>	32.9	32.8	20.9	37.9	35.2	24.8	44.4	50.6	36.3	28.7
<b>Standard Error (SE)</b>	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.0
<b>Number of visits per patient</b>	1.81	1.81	1.60	1.99	2.19	1.74	2.26	2.86	1.99	1.92

Sources: Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.1.5 Emergency Room Patients and Visits and Rate by First Nations Status and Year, Alberta, 1998 to 2003

First Nations	1998	1999	2000	2001	2002	2003
Number of patients	19,266	19,528	20,477	21,110	21,107	22,206
Number of visits	42,925	42,712	45,560	47,166	46,787	49,439
Rate (# patients per 100 children)	37.1	37.0	38.3	39.2	38.9	40.9
Standard Error (SE) of rate	0.21	0.21	0.21	0.21	0.21	0.21
Number of visits per patient	2.23	2.19	2.22	2.23	2.22	2.23
<b>Non-First Nations</b>						
Number of patients	186,452	189,678	198,670	198,721	196,444	205,264
Number of visits	337,388	352,168	372,556	374,560	365,901	392,452
Rate (# patients per 100 children)	26.2	26.4	27.7	27.7	27.3	28.6
Standard Error (SE) of rate	0.05	0.05	0.05	0.05	0.05	0.05
Number of visits per patient	1.81	1.86	1.88	1.88	1.86	1.91

Table 5.3.1.6 Emergency Room Patients and Visits and Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 Combined

First Nations	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
Number of patients	4,068	18,851	16,278	15,568	9,658	64,423
Number of visits	11,142	51,026	31,021	29,461	20,742	143,392
Rate (# patients per 100 children)	50.7	53.7	34.2	33.3	38.7	39.7
Standard Error (SE) of rate	0.56	0.27	0.22	0.22	0.31	0.12
Number of visits per patient	2.74	2.71	1.91	1.89	2.15	2.23
<b>Non-First Nations</b>						
Number of patients	31,635	173,835	144,194	146,080	104,685	600,429
Number of visits	61,441	367,106	246,606	255,279	202,481	1,132,913
Rate (# patients per 100 children)	30.1	40.1	24.6	22.8	26.9	27.9
Standard Error (SE) of rate	0.14	0.07	0.06	0.05	0.07	0.03
Number of visits per patient	1.94	2.11	1.71	1.75	1.93	1.89

Sources: Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.1.7 Top 10 Disease Groups Leading to ER Visits, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>Both Sexes</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	51,020	57,992	13.1%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	30,944	49,010	11.1%
3	Other acute upper respiratory infections	J00-J01, J05-J06	36,868	45,272	10.2%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	21,064	25,596	5.8%
5	Acute pharyngitis and acute tonsillitis	J02-J03	17,976	20,670	4.7%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	17,223	19,619	4.4%
7	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	16,285	19,064	4.3%
8	Dislocations, sprains and strains of specified and multiple body regions	S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03	16,168	18,309	4.1%
9	Other diseases of intestines and peritoneum	K52-K55, K58-K67	15,150	17,578	4.0%
10	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	12,552	13,999	3.2%
	All other diseases	Residual	136,528	154,782	35.0%
<b>Total</b>			<b>371,778</b>	<b>441,891</b>	<b>100.0%</b>

Table 5.3.1.8 Top 10 Disease Groups Leading to ER Visits by Sex, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>Female</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	19,838	22,201	11.0%
2	Other acute upper respiratory infections	J00-J01, J05-J06	17,422	21,155	10.5%
3	Persons encountering health services for specific procedures and health care	Z40-Z54	13,070	20,506	10.1%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	9,937	11,954	5.9%
5	Acute pharyngitis and acute tonsillitis	J02-J03	9,379	10,883	5.4%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	8,524	9,733	4.8%
7	Dislocations, sprains and strains of specified and multiple body regions	S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03	7,575	8,532	4.2%
8	Other diseases of intestines and peritoneum	K52-K55, K58-K67	7,329	8,461	4.2%
9	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	6,158	6,932	3.4%
10	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	5,785	6,711	3.3%
	All other diseases	Residual	66,593	75,038	37.1%
<b>Total</b>			<b>171,610</b>	<b>202,106</b>	<b>100.0%</b>

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>Male</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	31,182	35,791	14.9%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	17,874	28,504	11.9%
3	Other acute upper respiratory infections	J00-J01, J05-J06	19,446	24,117	10.1%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	11,127	13,642	5.7%
5	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	10,500	12,353	5.2%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	8,699	9,886	4.1%
7	Acute pharyngitis and acute tonsillitis	J02-J03	8,597	9,787	4.1%
8	Dislocations, sprains and strains of specified and multiple body regions	S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03	8,593	9,777	4.1%
9	Other diseases of intestines and peritoneum	K52-K55, K58-K67	7,821	9,117	3.8%
10	Asthma	J45-J46	5,558	7,805	3.3%
	All other diseases	Residual	70,771	79,006	32.9%
<b>Total</b>			<b>200,168</b>	<b>239,785</b>	<b>100.0%</b>

Sources: Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.  
 Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted May 2005.  
 Notes: Data include Alberta residents only.  
 Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.1.9 Top 10 Disease Groups Leading to ER Visits by Age Group, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>Age group &lt;1</b>					
1	Other acute upper respiratory infections	J00-J01, J05-J06	3,222	4,114	16.2%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	1,859	2,778	11.0%
3	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	1,765	2,016	7.9%
4	Other diseases of intestines and peritoneum	K52-K55, K58-K67	1,452	1,703	6.7%
5	Other conditions originating in the perinatal period	P08-P29, P90-P54, P56-P96	1,445	1,684	6.6%
6	Acute bronchitis and acute bronchiolitis	J20-J21	932	1,245	4.9%
7	Otitis media and other disorders of middle ear and mastoid	H65-H75	812	985	3.9%
8	Persons encountering health services for examination and investigation	Z00-Z13	813	906	3.6%
9	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	812	868	3.4%
10	Persons encountering health services for other reasons	Z31-Z33, Z37, Z55-Z99	733	778	3.1%
	All other diseases	Residual	7,613	8,286	32.7%
<b>Total</b>			<b>21,463</b>	<b>25,363</b>	<b>100.0%</b>
<b>Age group &lt;1-4</b>					
1	Other acute upper respiratory infections	J00-J01, J05-J06	18,190	23,518	16.1%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	9,322	14,808	10.1%
3	Otitis media and other disorders of middle ear and mastoid	H65-H75	10,700	13,549	9.3%
4	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	12,054	13,469	9.2%
5	Other diseases of intestines and peritoneum	K52-K55, K58-K67	7,476	8,871	6.1%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	5,607	6,510	4.5%
7	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	5,504	5,942	4.1%
8	Acute bronchitis and acute bronchiolitis	J20-J21	4,625	5,845	4.0%
9	Acute pharyngitis and acute tonsillitis	J02-J03	4,754	5,461	3.7%
10	Asthma	J45-J46	3,417	4,907	3.4%
	All other diseases	Residual	39,343	43,362	29.7%
<b>Total</b>			<b>120,992</b>	<b>146,242</b>	<b>100.0%</b>
<b>Age group 5-9</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	12,078	13,278	13.8%
2	Other acute upper respiratory infections	J00-J01, J05-J06	8,339	9,740	10.1%
3	Persons encountering health services for specific procedures and health care	Z40-Z54	6,386	9,464	9.8%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	6,239	7,374	7.7%
5	Acute pharyngitis and acute tonsillitis	J02-J03	5,663	6,565	6.8%
6	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	3,543	4,184	4.3%
7	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	3,556	3,896	4.0%
8	Other diseases of intestines and peritoneum	K52-K55, K58-K67	3,247	3,638	3.8%
9	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	3,159	3,508	3.6%
10	Asthma	J45-J46	2,559	3,507	3.6%
	All other diseases	Residual	28,518	31,115	32.3%
<b>Total*</b>			<b>83,287</b>	<b>96,269</b>	<b>100.0%</b>
<b>Age group 10-14</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	15,128	17,306	17.8%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	7,481	11,859	12.2%
3	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	7,274	8,468	8.7%
4	Dislocations, sprains and strains of specified and multiple body regions	S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03	6,491	7,313	7.5%
5	Other acute upper respiratory infections	J00-J01, J05-J06	4,829	5,384	5.5%
6	Acute pharyngitis and acute tonsillitis	J02-J03	4,440	5,038	5.2%
7	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	3,442	3,902	4.0%
8	Abdominal and pelvic pain	R10	2,363	2,723	2.8%
9	Otitis media and other disorders of middle ear and mastoid	H65-H75	2,437	2,722	2.8%
10	Asthma	J45-J46	1,998	2,682	2.8%
	All other diseases	Residual	27,042	30,053	30.8%
<b>Total</b>			<b>82,925</b>	<b>97,450</b>	<b>100.0%</b>
<b>Age group 15-17</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	11,114	13,243	17.3%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	5,900	10,101	13.2%
3	Dislocations, sprains and strains of specified and multiple body regions	S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03	6,300	7,334	9.6%
4	Fractures of other limb bones	S42, S52, S62, S82, S92, T10, T12	3,772	4,477	5.8%
5	Acute pharyngitis and acute tonsillitis	J02-J03	2,902	3,373	4.4%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	2,855	3,295	4.3%
7	Other acute upper respiratory infections	J00-J01, J05-J06	2,298	2,516	3.3%
8	Abdominal and pelvic pain	R10	1,842	2,250	2.9%
9	Persons encountering health services for examination and investigation	Z00-Z13	1,246	1,406	1.8%
10	Other diseases of the skin and subcutaneous tissue	L10-L99	1,155	1,342	1.8%
	All other diseases	Residual	23,763	27,230	35.6%
<b>Total</b>			<b>63,147</b>	<b>76,567</b>	<b>100.0%</b>

Sources: Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.1.10 Top 10 Disease Groups Leading to ER Visits by First Nations Status, Alberta, 2003

Rank	Disease Group	ICD-10	# Patient	# Visit	% Visit
<b>First Nations</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	5,249	6,082	12.3%
2	Other acute upper respiratory infections	J00-J01, J05-J06	4,622	5,970	12.1%
3	Persons encountering health services for specific procedures and health care	Z40-Z54	3,157	4,815	9.7%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	2,259	2,876	5.8%
5	Acute pharyngitis and acute tonsillitis	J02-J03	2,330	2,656	5.4%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	1,736	2,013	4.1%
7	Other diseases of intestines and peritoneum	K52-K55, K58-K67	1,704	2,012	4.1%
8	Acute bronchitis and acute bronchiolitis	J20-J21	1,510	1,828	3.7%
9	Fractures of other limb bones	S42,S52, S62,S82, S92,T10, T12	1,289	1,551	3.1%
10	Dislocations, sprains and strains of specified and multiple body regions	S03,S13, S23,S33, S43,S53, S63,S73, S83,S93, T03	1,193	1,341	2.7%
	All other diseases	Residual	16,172	18,295	37.0%
<b>Total</b>			<b>41,221</b>	<b>49,439</b>	<b>100.0%</b>
<b>Non-First Nations</b>					
1	Other injuries of specified, unspecified and multiple body regions	S00-S01, S04, S09-S11, S14-S16, S19-S21, S24-S25, S29-S31, S34-S35, S39-S41, S44-S46, S49-S51, S54-S56, S59-S61, S64-S66, S69-S71, S74-S76, S79-S81, S84-S86, S89-S91, S94-S96, S99, T00-T01, T06-T07, T09, T11, T13-T14	45,771	51,910	13.2%
2	Persons encountering health services for specific procedures and health care	Z40-Z54	27,787	44,195	11.3%
3	Other acute upper respiratory infections	J00-J01, J05-J06	32,246	39,302	10.0%
4	Otitis media and other disorders of middle ear and mastoid	H65-H75	18,805	22,720	5.8%
5	Acute pharyngitis and acute tonsillitis	J02-J03	15,646	18,014	4.6%
6	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R09, R11-R49, R51-R53, R55-R99	15,487	17,606	4.5%
7	Fractures of other limb bones	S42,S52, S62,S82, S92,T10, T12	14,996	17,513	4.5%
8	Dislocations, sprains and strains of specified and multiple body regions	S03,S13, S23,S33, S43,S53, S63,S73, S83,S93, T03	14,975	16,968	4.3%
9	Other diseases of intestines and peritoneum	K52-K55, K58-K67	13,446	15,566	4.0%
10	Other viral diseases	A81, A87-A89, B03-B04, B07-B09, B25, B27-B34	11,507	12,856	3.3%
	All other diseases	Residual	146	135,802	34.6%
<b>Total</b>			<b>330,557</b>	<b>392,452</b>	<b>100.0%</b>

Sources: Ambulatory Care Classification System (ACCS), Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.



# 5. Health Service Utilization

*5.1 Immunization*

*5.2 Hospitalization*

*5.3 Emergency Room Use*

*5.4 Physician's Office Visits*





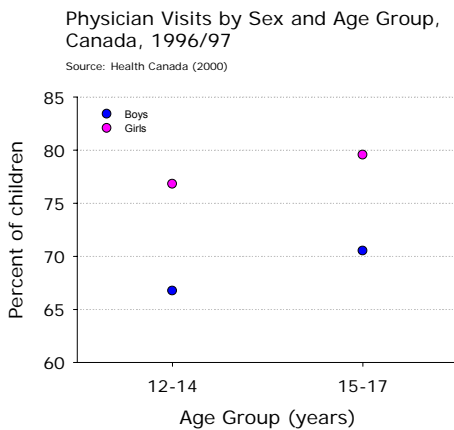
## 5.4.1 Physician's Office Visits

### Background

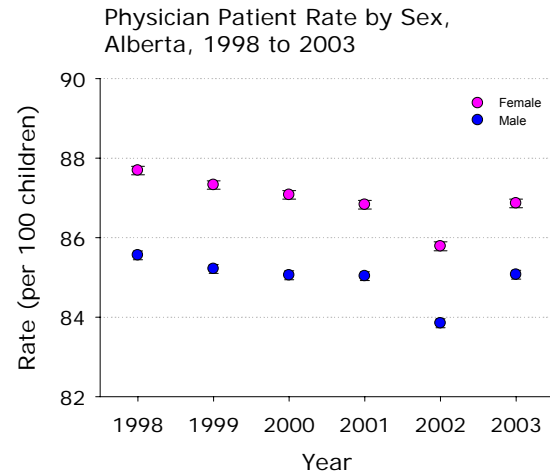
Physician Office Visit: *A fee claim made by a physician for a visit by a patient to his/ her office.* Physicians make claims for many types of services; only claims for office visits are included here. Both number of patients seen and number of visits made are provided in the data tables. Time trends, age effects, First Nations data, and regional data are based on number of patients seen ("office patient rate"), while leading causes are based on number of office visits made.

Females are more likely to visit physician's offices than males. Other predictors of physician's office visits are older age and higher income (Health Canada, 2000).

In 1996/97, girls were more likely than boys to visit physicians, and 15-17 year olds were more likely than 12 to 14 year olds to see a physician (Health Canada, 2000). Most of the visits to physicians were physician's office visits (rather than visits with physicians in medical clinics, emergency rooms, and hospital outpatient clinics).

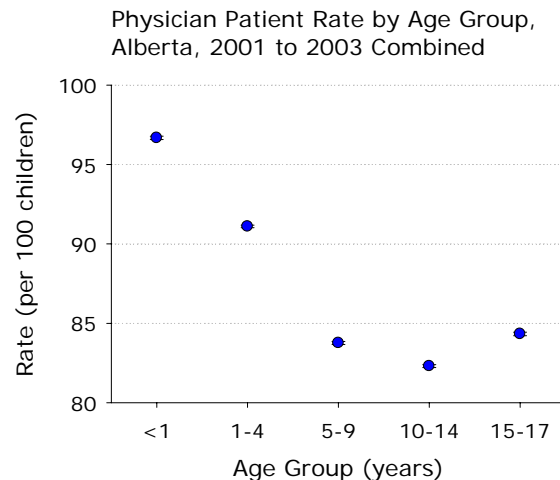


### Time Trends (see Tables 5.4.1.1, 5.4.1.2)



- The office patient rate decreased between 1998 and 2001 and dropped noticeably in 2002 before returning to the 2001 level in 2003.
- The rate was higher for girls than boys between 1998 and 2003. In 2003, 327,550 girls visited physicians' offices in Alberta, for a rate of 86.9 (per 100 girls). The rate for boys was 85.1 (337,009 boys).
- On average, each patient visited a physician's office about 4.7 times in 2003.

### Age Effects (see Table 5.4.1.3)



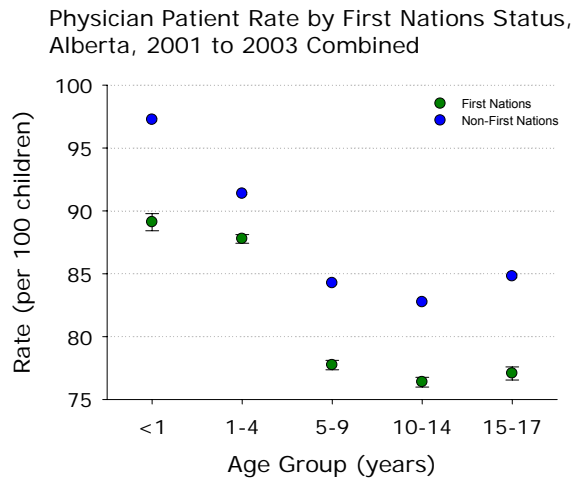
- Almost every Alberta child under the age of one saw a physician between 2001 and 2003 (96.7 per 100 children; 109,501 children).

**Age Effects continued** (see Table 5.4.1.3)

- The office patient rate declined with age group to the age of 15. For 15 to 17 year olds, the rate was 84.3 (348,795 children).
- Average number of visits per patient also decreased with age, from 5.6 for infants to 4.1 for 10 to 14 year olds, and then increased for 15 to 17 year olds to 5.0

**First Nations** (see Tables 5.4.1.5, 5.4.1.6)

- The office patient rate was higher for non-First Nations children (86.4 per 100 children; 620,936 patients) than for First Nations children (80.3; 43,623 patients) between 1998 and 2003.

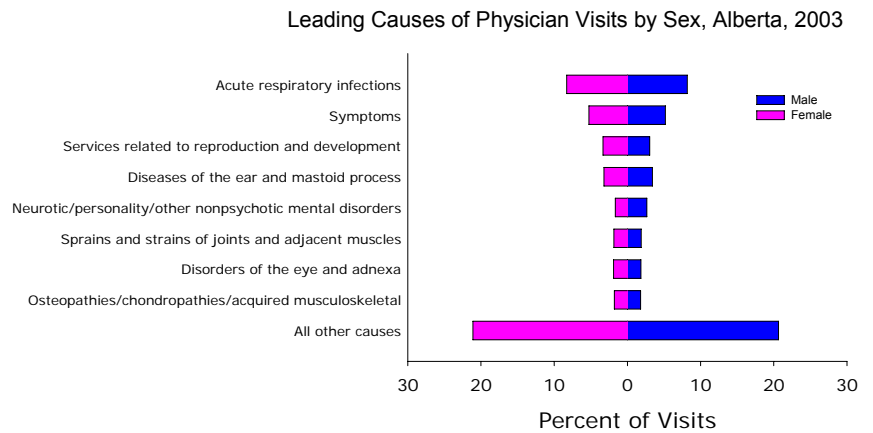


- This difference was smallest for 1 to 4 year olds, but occurred in every age group.
- This is in contrast to emergency room patient rates, which were higher for First Nations children. These differences likely reflect, in part, access issues in that physician access is lower in more remote areas, where First Nations populations are higher.

## 5.4.1 Physician's Office Visits

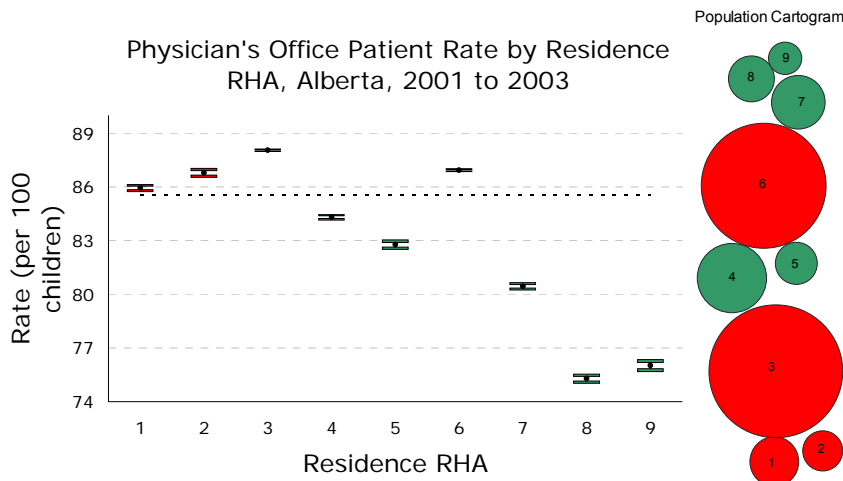
## 5.4.1 Physician's Office Visits

### Leading Causes (see Tables 5.4.1.7, 5.4.1.8, 5.4.1.9, 5.4.1.10)



- When a physician saw a patient in his/her office, one in six times the cause was an acute respiratory infection. The top four leading causes of physician's office visits included acute respiratory infections (16.6% of visits), symptoms (10.5%), services related to development (6.7%), and diseases of the ear and mastoid process (6.4%).
- Notable sex differences included neurotic disorders, personality disorders, and other non-psychotic mental disorders. This category accounted for 5.3% of boys' visits, but only 3.3% of girls' visits.
- For infants, leading causes were services related to development (36.5% of visits), symptoms (14.7%), and acute respiratory infections (10.4%).
- For children aged 1 to 17, acute respiratory infections were the leading causes of visits to physicians' offices.
- For 1 to 9 year olds, symptoms and diseases of the ear and mastoid process were second or third leading causes.
- For 10 to 17 year olds, symptoms were the second leading cause. Neurotic disorders, personality disorders, and other non-psychotic mental disorders, and sprains and strains of joints and adjacent muscles took third or fourth place.
- There was a marked difference between First Nations and non-First Nations in percentage of visits due to acute respiratory infections (23.4% vs. 16.1%, respectively).

**Regional Data** (see Table 5.4.1.4)



- The physician patient rate was lower than the provincial average in RHAs 4, 5, 7, 8, and 9. Many of these areas have lower access to physicians due to their remote locations. The lowest rate was in RHA 8, with 84,375 children seeing physicians between 2001 and 2003 (75.3 per 100 children), and an average of 3.4 visits per patient.
- In RHAs 1, 2, 3, and 6, the physician patient rate was higher than the provincial average. The highest rate was in RHA 3, where 88.0 out of every 100 children visited a physician between 2001 and 2003 (695,005 children). RHA 3 also had the highest number of visits per patient in that time period (5.0).
- See Appendix 7.2.1 for methodology and interpretation of maps, graphs, and cartograms.

**5.4.1 Physician's Office Visits**



Physician's Office Patients 2001 to 2003



**Limitations and Methodology Notes**

Primary diagnosis only was used for leading causes analyses.

Health services may be less available in more remote regions of the province. Patients may even move to larger centres to gain access to services. Discrepancies in access should be taken into consideration when interpreting regional rates.

Rates for health services utilization represent only those patients seeking care.

Table 5.4.1.1 Physician Office Patients and Visits and Rate by Year, Alberta, 1998 to 2003

	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	660,735	664,017	662,619	662,071	655,987	664,559
<b>Number of visits</b>	3,221,555	3,216,734	3,175,596	3,144,711	2,993,039	3,118,132
<b>Rate (# patients per 100 children)</b>	86.6	86.2	86.0	85.9	84.8	85.9
<b>Standard Error (SE)</b>	0.04	0.04	0.04	0.04	0.04	0.04
<b>Average visit per patient</b>	4.9	4.8	4.8	4.7	4.6	4.7

Table 5.4.1.2 Physician Office Patients and Visits and Rate by Sex and Year, Alberta, 1998 to 2003

Female	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	326,131	327,823	326,961	326,249	323,694	327,550
<b>Number of visits</b>	1,604,521	1,601,964	1,582,869	1,558,253	1,488,461	1,547,539
<b>Rate (# patients per 100 children)</b>	87.7	87.3	87.1	86.8	85.8	86.9
<b>Standard Error (SE)</b>	0.05	0.05	0.05	0.06	0.06	0.06
<b>Average visit per patient</b>	4.9	4.9	4.8	4.8	4.6	4.7

Male	1998	1999	2000	2001	2002	2003
<b>Number of patients</b>	334,604	336,194	335,658	335,822	332,293	337,009
<b>Number of visits</b>	1,617,034	1,614,770	1,592,727	1,586,458	1,504,578	1,570,593
<b>Rate (# patients per 100 children)</b>	85.6	85.2	85.1	85.0	83.8	85.1
<b>Standard Error (SE)</b>	0.06	0.06	0.06	0.06	0.06	0.06
<b>Average visit per patient</b>	4.8	4.8	4.7	4.7	4.5	4.7

Table 5.4.1.3 Physician Office Patients and Visits and Rate by Age Group, Alberta, 2001 to 2003 Combined

	<1	1 to 4	5 to 9	10 to 14	15 to 17	0 to 17
<b>Number of patients</b>	109,501	426,588	531,849	565,884	348,795	1,982,617
<b>Number of visits</b>	618,579	2,311,268	2,248,751	2,343,626	1,733,658	9,255,882
<b>Rate (# patients per 100 children)</b>	96.7	91.1	83.8	82.3	84.3	85.5
<b>Standard Error (SE)</b>	0.05	0.04	0.05	0.05	0.06	0.02
<b>Average visit per patient</b>	5.6	5.4	4.2	4.1	5.0	4.7

Table 5.4.1.4 Physician Office Patients and Visits and Rate by Residence RHA, Alberta, 2001 to 2003 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta
<b>Number of patients</b>	104,773	63,807	695,005	190,635	68,569	602,300	123,887	84,375	49,038	1,982,617
<b>Number of visits</b>	510,599	310,574	3,457,404	842,191	282,619	2,862,174	497,659	284,905	207,072	9,255,882
<b>Rate (per 100 children)</b>	85.9	86.8	88.0	84.3	82.8	86.9	80.4	75.3	76.0	85.5
<b>Standard Error (SE)</b>	0.10	0.12	0.04	0.08	0.13	0.04	0.10	0.13	0.17	0.02
<b>Average visit per patient</b>	4.9	4.9	5.0	4.4	4.1	4.8	4.0	3.4	4.2	4.7

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCHIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Unknown RHA cases are included in the provincial total.

Table 5.4.1.5 Physician Office Patients and Visits and Rate by First Nations Status and Year, Alberta, 1998 to 2003

<b>First Nations</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Number of patient</b>	42,938	43,070	43,375	43,350	42,949	43,623
<b>Number of physician visits</b>	200,841	194,436	195,292	193,027	182,684	186,771
<b>Rate (# pts per 100 children)</b>	82.7	81.6	81.1	80.4	79.2	80.3
<b>Standard Error (SE)</b>	0.17	0.17	0.17	0.17	0.17	0.17
<b>Average visit per patient</b>	4.7	4.5	4.5	4.5	4.3	4.3

<b>Non-First Nations</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Number of patient</b>	617,797	620,947	619,244	618,721	613,038	620,936
<b>Number of physician visits</b>	3,020,714	3,022,298	2,980,304	2,951,684	2,810,355	2,931,361
<b>Rate (# pts per 100 children)</b>	86.9	86.6	86.4	86.3	85.2	86.4
<b>Standard Error (SE)</b>	0.04	0.04	0.04	0.04	0.04	0.04
<b>Average visit per patient</b>	4.9	4.9	4.8	4.8	4.6	4.7

Table 5.4.1.6 Physician Office Patients and Visits and Rate by First Nations Status and Age Group, Alberta, 2001 to 2003 combined

<b>First Nations</b>	<b>&lt;1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 17</b>	<b>0 to 17</b>
<b>Number of patient</b>	7,145	30,834	37,032	35,677	19,234	129,922
<b>Number of physician visits</b>	36,771	163,514	142,918	133,123	86,156	562,482
<b>Rate (# pts per 100 children)</b>	89.1	87.8	77.7	76.4	77.1	80.0
<b>Standard Error (SE)</b>	0.35	0.17	0.19	0.20	0.27	0.10
<b>Average visit per patient</b>	5.1	5.3	3.9	3.7	4.5	4.3

<b>Non-First Nations</b>	<b>&lt;1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 17</b>	<b>0 to 17</b>
<b>Number of patient</b>	102,356	395,754	494,817	530,207	329,561	1,852,695
<b>Number of physician visits</b>	581,808	2,147,754	2,105,833	2,210,503	1,647,502	8,693,400
<b>Rate (# pts per 100 children)</b>	97.3	91.4	84.3	82.7	84.8	86.0
<b>Standard Error (SE)</b>	0.05	0.04	0.05	0.05	0.06	0.02
<b>Average visit per patient</b>	5.7	5.4	4.3	4.2	5.0	4.7

**Source:** Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

**Notes:** Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Unknown RHA cases are included in the provincial total.

Table 5.4.1.7 Top 10 Disease Groups Leading to Physician Office Visit, Alberta, 2003

Rank	Disease Group	ICD-9	# Patient	# Visit	% Visit
<b>Both Sexes</b>					
1	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute pharyngitis)	460 - 466	280,817	516,749	16.6%
2	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	780 - 789	195,092	328,432	10.5%
3	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	111,510	207,658	6.7%
4	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	104,468	200,413	6.4%
5	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (Hyperkinetic syndrome, disturbance of emotions)	300 - 316	46,658	134,461	4.3%
6	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, knee and legs)	840 - 848	48,573	116,777	3.7%
7	Disorders of the eye and adnexa (conjunctiva, refractions and accommodation, strabismus and other binocular eye movements)	360 - 379	80,079	116,727	3.7%
8	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, flat foot, curvature of spines)	730 - 739	24,935	111,410	3.6%
9	Chronic obstructive pulmonary disease and allied conditions (Asthma, bronchitis - not specified as acute or chronic, chronic bronchitis)	490 - 496	54,232	99,533	3.2%
10	Other diseases due to viruses (Chlamydiae, other/unspecified viral infection, infectious monucleosis)	070 - 079	44,013	83,261	2.7%
-	Subtotal Top 10			1,915,421	61.4%
-	All other diseases	Residual		1,202,711	38.6%
Total				3,118,132	100.0%

Table 5.4.1.8 Top 10 Disease Groups Leading to Physician Office Visit by Sex, Alberta, 2003

Rank	Disease Group	ICD-9	# Patient	# Visit	% Visit
<b>Female</b>					
1	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute pharyngitis)	460 - 466	141,348	259,787	16.8%
2	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	780 - 789	97,923	165,545	10.7%
3	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	59,440	111,811	7.2%
4	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	50,336	92,831	6.0%
5	Disorders of the eye and adnexa (conjunctiva, refractions and accommodation, strabismus and other binocular eye movements)	360 - 379	40,350	58,660	3.8%
6	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, knee and legs)	840 - 848	23,506	57,489	3.7%
7	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, flat foot, curvature of spines)	730 - 739	11,908	55,060	3.6%
8	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (Neurotic disorder, depression, hyperkinetic syndrome)	300 - 316	18,891	50,953	3.3%
9	Other diseases due to viruses (Chlamydiae, other/unspecified viral infection, infectious monucleosis)	070 - 079	22,965	44,358	2.9%
10	Other disease of skin and subcutaneous tissue (sebaceous glands, other disorders of skin and subcutaneous tissue, urticaria)	700 - 709	25,991	42,378	2.7%
-	Subtotal Top 10			938,872	60.7%
-	All other diseases	Residual		608,667	39.3%
Total				1,547,539	100.0%

Rank	Disease Group	ICD-9	# Patient	# Visit	% Visit
<b>Male</b>					
1	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute pharyngitis)	460 - 466	139,479	256,962	16.4%
2	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	780 - 789	97,172	162,887	10.4%
3	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	54,136	107,582	6.8%
4	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	52,076	95,847	6.1%
5	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (Hyperkinetic syndrome, disturbance of emotions)	300 - 316	27,767	83,508	5.3%
6	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, knee and legs)	840 - 848	25,069	59,288	3.8%
7	Chronic obstructive pulmonary disease and allied conditions (Asthma, bronchitis - not specified as acute or chronic, chronic bronchitis)	490 - 496	31,196	58,368	3.7%
8	Disorders of the eye and adnexa (conjunctiva, refractions and accommodation, strabismus and other binocular eye movements)	360 - 379	39,730	58,067	3.7%
9	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, flat foot, curvature of spines)	730 - 739	13,027	56,350	3.6%
10	Examinations (general medical examination, special investigations and examinations, evaluation for suspected conditions not found)	V70 - V82	35,375	40,973	2.6%
-	Subtotal Top 10			979,832	62.4%
-	All other diseases	Residual		590,761	37.6%
Total				1,570,593	100.0%

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

Table 5.4.1.9 Top 10 Disease Groups Leading to Physician Office Visits by Age Group, Alberta, 2003

Rank	Disease Group	ICD-9	# Patient	# Visit	% Visit
<b>Age group &lt;1</b>					
1	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	28,166	77,235	36.5%
2	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	780 - 789	14,842	31,169	14.7%
3	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute bronchitis and bronchiolitis)	460 - 466	12,445	22,020	10.4%
4	Other conditions originating in the perinatal period (Other and ill-defined, other jaundice, short gestation and unspecified low birth weight)	764 - 779	5,567	8,799	4.2%
5	Other conditions of skin and subcutaneous tissue (dermatitis and eczema, atopic dermatitis, erythematous squamous dermatosis)	690 - 698	5,054	7,142	3.4%
6	Examinations (general medical examination, special investigations and examinations, evaluation for suspected conditions not found)	V70 - V82	4,820	6,747	3.2%
7	Disorders of the eye and adnexa (Disorders of conjunctiva, disorders of lacrimal system, other retinal disorders)	360 - 379	4,654	6,337	3.0%
8	Mycoses (Candidiasis, dermatophycosis, dermatomycosis - other and unspecified)	110 - 118	4,460	6,052	2.9%
9	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	3,446	5,801	2.7%
10	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, other acquired deformity including limbs)	730 - 739	1,012	4,694	2.2%
-	Subtotal Top 10			175,996	83.1%
-	All other diseases	Residual		35,826	16.9%
Total				211,822	100.0%
<b>Age group 1-4</b>					
1	Acute respiratory infections (upper respiratory, nasopharyngitis, bronchitis and bronchiolitis)	460 - 466	81,846	177,228	22.9%
2	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	43,711	91,807	11.8%
3	Symptoms (General symptoms, B95, symptoms involving skin and other integumentary tissue)	780 - 789	51,941	91,784	11.8%
4	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	41,669	70,228	9.1%
5	Disorders of the eye and adnexa (conjunctiva, strabismus and other binocular eye movements, refractions and accommodation)	360 - 379	20,388	31,649	4.1%
6	Other conditions of skin and subcutaneous tissue (dermatitis and eczema, atopic dermatitis, erythematous squamous dermatosis)	690 - 698	20,732	29,560	3.8%
7	Chronic obstructive pulmonary disease and allied conditions (asthma, bronchitis - neither acute nor chronic, chronic airways obstruction)	490 - 496	13,577	23,797	3.1%
8	Examination (General medical examination, special investigations and examinations, special screening)	V70 - V82	19,681	23,499	3.0%
9	Intestinal infectious diseases (Ill-defined, infections due to other organisms, other protozoal intestinal diseases)	001 - 009	15,616	19,503	2.5%
10	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, other acquired deformity including limbs)	730 - 739	3,811	17,679	2.3%
-	Subtotal Top 10			576,734	74.4%
-	All other diseases	Residual		198,782	25.6%
Total				775,516	100.0%
<b>Age group 5-9</b>					
1	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute pharyngitis)	460 - 466	78,401	144,409	19.0%
2	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	780 - 789	50,162	78,918	10.4%
3	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	32,692	61,770	8.1%
4	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (hyperkinetic syndrome, development delay, emotion)	300 - 316	12,529	34,198	4.5%
5	Disorders of the eye and adnexa (conjunctiva, strabismus and other binocular eye movements, refractions and accommodation)	360 - 379	22,517	33,962	4.5%
6	Chronic obstructive pulmonary disease and allied conditions (asthma, bronchitis - not specified as acute or chronic, chronic bronchitis)	490 - 496	15,934	29,849	3.9%
7	Other diseases due to viruses (Chlamydiae, other/unspecified viral infection, infectious mononucleosis)	070 - 079	14,626	26,898	3.5%
8	Symptoms (general symptoms, respiratory and other chest, skin and other integumentary tissue)	V20 - V29	19,539	24,139	3.2%
9	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, flat foot, curvature of spines)	730 - 739	5,360	23,924	3.1%
10	Examinations (general medical examination, special investigations and examinations, evaluation for suspected conditions not found)	V70 - V82	17,722	20,008	2.6%
-	Subtotal Top 10			478,075	62.9%
-	All other diseases	Residual		281,916	37.1%
Total				759,991	100.0%
<b>Age group 10-14</b>					
1	Acute respiratory infections (upper respiratory, acute pharyngitis, acute nasopharyngitis)	460 - 466	68,682	111,215	14.1%
2	Symptoms (General symptoms, respiratory system and other chest symptoms, symptoms involving head and neck)	780 - 789	47,165	74,735	9.5%
3	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (Hyperkinetic syndrome, disturbance of emotions)	300 - 316	16,335	52,254	6.6%
4	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, wrist and hand)	840 - 848	19,621	43,088	5.5%
5	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, flat foot, curvature of spines)	730 - 739	8,442	35,315	4.5%
6	Chronic obstructive pulmonary disease and allied conditions (Asthma, bronchitis - not specified as acute or chronic, chronic bronchitis)	490 - 496	15,730	29,946	3.8%
7	Other diseases due to viruses (Chlamydiae, other/unspecified viral infection, infectious mononucleosis)	070 - 079	13,561	29,367	3.7%
8	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	17,409	29,328	3.7%
9	Disorders of the eye and adnexa (conjunctiva, refractions and accommodation, strabismus and other binocular eye movements)	360 - 379	20,539	27,701	3.5%
10	Other disease of skin and subcutaneous tissue (sebaceous glands, other skin and subcutaneous tissue, diseases of nail)	700 - 709	14,546	23,173	2.9%
-	Subtotal Top 10			456,122	57.8%
-	All other diseases	Residual		332,486	42.2%
Total				788,608	100.0%
<b>Age group 15-17</b>					
1	Acute respiratory infections (pharyngitis, upper respiratory, nasopharyngitis, )	460 - 466	39,444	61,877	10.6%
2	Symptoms (General, symptoms involving head and neck, respiratory system and other chest symptoms)	780 - 789	30,982	51,826	8.9%
3	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, of knee and legs)	840 - 848	17,365	43,647	7.5%
4	Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (Depression, neurotic disorder, hyperkinetic syndrome)	300 - 316	12,526	39,320	6.8%
5	Other disease of skin and subcutaneous tissue (sebaceous glands, other skin and subcutaneous tissue, diseases of nail)	700 - 709	19,588	38,664	6.6%
6	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, curvature of spines, flat foot)	730 - 739	6,310	29,798	5.1%
7	Services related to reproduction and development (Contraceptive management, normal pregnancy, health supervision of infant or child,)	V20 - V29	11,087	21,142	3.6%
8	Disorders of the eye and adnexa (Disorder of conjunctiva, disorder of refractions and accommodation, Inflammation of eyelids)	360 - 379	11,981	17,078	2.9%
9	Dorsopathies (Other and unspecified disorders of back, other disorders of cervical region, spondylolysis and allied disorders)	720 - 724	5,484	15,759	2.7%
10	Examinations (general medical examination, special investigations and examinations, evaluation for suspected conditions not found)	V70 - V82	13,257	14,826	2.5%
-	Subtotal Top 10			333,937	57.4%
-	All other diseases	Residual		248,258	42.6%
Total				582,195	100.0%

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.



Table 5.4.1.10 Top 10 Disease Groups Leading to Physician Office Visit by First Nations Status, Alberta, 2003

Rank	Disease Group	ICD-9	# Patient	# Visit	% Visit
<b>First Nations</b>					
1	Acute respiratory infections (Acute upper respiratory infections of multiple or unspecified sites, acute nasopharyngitis, acute pharyngitis)	460 - 466	21,753	43,767	23.4%
2	Symptoms (General symptoms, skin and other integumentary tissue, respiratory system and other chest symptoms)	780 - 789	11,412	18,199	9.7%
3	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	7,297	12,678	6.8%
4	Neurotic, personality, and other nonpsychotic mental disorders (Hyperkinetic syndrome, disturbance of emotions, neurotic disorder)	300 - 316	2,978	8,909	4.8%
5	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	4,676	8,438	4.5%
6	Chronic obstructive pulmonary disease and allied conditions (Asthma, bronchitis - not specified as acute or chronic, chronic bronchitis)	490 - 496	4,045	6,652	3.6%
7	Other conditions of skin and subcutaneous tissue (dermatitis and eczema, atopic dermatitis, erythematous squamous dermatosis)	690 - 698	4,292	6,022	3.2%
8	Disorders of the eye and adnexa (conjunctiva, refractions and accommodation, strabismus and other binocular eye movements)	360 - 379	4,212	5,530	3.0%
9	Examinations (general medical examination, special investigations and examinations, evaluation for suspected conditions not found)	V70 - V82	4,588	5,288	2.8%
10	Infection of skin and subcutaneous tissue (Impetigo, other cellulitis and abscess, other local infections)	680 - 686	3,764	4,592	2.5%
-	Subtotal Top 10			120,075	64.3%
-	All other diseases	Residual		66,696	35.7%
Total				186,771	100.0%
<b>Non-First Nations</b>					
1	Acute respiratory infections (upper respiratory, acute nasopharyngitis, acute pharyngitis)	460 - 466	259,064	472,982	16.1%
2	Symptoms (General symptoms, respiratory system and other chest symptoms, skin and other integumentary tissue symptoms)	780 - 789	183,680	310,233	10.6%
3	Services related to reproduction and development (health supervision of infant or child, contraceptive management, pregnancy)	V20 - V29	106,834	199,220	6.8%
4	Diseases of the ear and mastoid process (otitis media and Eustachian tube disorder, disorders of external ear)	380 - 389	97,171	187,735	6.4%
5	Neurotic, personality, and other nonpsychotic mental disorders (Hyperkinetic syndrome, neurotic disorder, depression)	300 - 316	43,680	125,552	4.3%
6	Sprains and strains of joints and adjacent muscles (other and unspecified parts of back, ankle and foot, wrist and hand)	840 - 848	46,467	113,079	3.9%
7	Disorders of the eye and adnexa (conjunctiva, strabismus and other binocular eye movements, refractions and accommodation)	360 - 379	75,867	111,197	3.8%
8	Osteopathies, chondropathies, and acquired musculoskeletal deformities (Nonallopathic lesions, curvature of spines, flat foot)	730 - 739	24,360	109,486	3.7%
9	Chronic obstructive pulmonary disease and allied conditions (asthma, bronchitis - neither acute nor chronic, other chronic airways obstruction)	490 - 496	50,187	92,881	3.2%
10	Other diseases due to viruses (Chlamydiae, other/unspecified viral infection, infectious monucleosis)	070 - 079	42,089	80,326	2.7%
-	Subtotal Top 10			1,802,691	61.5%
-	All other diseases	Residual		1,128,670	38.5%
Total				2,931,361	100.0%

Source: Fee-For-Service Claims Files, Alberta Health and Wellness, extracted March 2005.

Alberta Health Care Insurance Plan (AHCIP) Registration Files, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.



## 6.1.1 References

- Adlaf, E.M., Begin, P., and Sawka, E. (Eds.). (2005). *Canadian Addiction Survey (CAS): A national survey of Canadians' use of alcohol and other drugs: Prevalence of use and related harms: Detailed report*. Ottawa, ON: Canadian Centre on Substance Abuse.
- Alberta Alcohol and Drug Abuse Commission (2003a). *The Alberta Youth Experience Survey 2002: Technical Report*. Edmonton, AB: AADAC.
- Alberta Alcohol and Drug Abuse Commission (2003b). *Alcohol: The ABCs*. Web page dated 2003, accessed September 10, 2005. [http://corp.aadac.com/alcohol/the\\_basics\\_about\\_alcohol/alcohol\\_abcs.asp](http://corp.aadac.com/alcohol/the_basics_about_alcohol/alcohol_abcs.asp)
- Alberta Alcohol and Drug Abuse Commission (2004). *Risk and Protective Factors Associated with Use of Alcohol, Tobacco and Other Drugs and Gambling Participation: The Alberta Youth Experience Survey 2002*. Edmonton, AB: AADAC.
- Alberta Alcohol and Drug Abuse Commission (2005). *Preventing heavy episodic drinking among youth and young adults: A literature review*. Edmonton, AB: Canada: AADAC.
- Alberta Blood-borne Pathogens Surveillance Working Group. (2003). *Alberta Blood-borne Pathogens Surveillance Report 2003*. Edmonton, AB: Alberta Health and Wellness.
- Alberta Cancer Board (2005). *Alberta Cancer Registry*. Web page dated May 20, 2005, accessed September 12, 2005. [http://www.cancerboard.ab.ca/research/research\\_registry.html](http://www.cancerboard.ab.ca/research/research_registry.html)
- Alberta Cancer Board (2004). *Cancer in Alberta: A regional picture*. Calgary, AB: Alberta Cancer Board.
- Alberta Centre for Injury Control and Research (2001). *Alberta Child & Teen Injury Report*. Edmonton, AB: ACICR.
- Alberta Centre for Injury Control and Research (2004). *Injury control facts for Canada and Alberta*. Edmonton, AB: ACICR.
- Alberta Children's Services (2005a). *About Fetal Alcohol Spectrum Disorder*. Web page dated August, 2005, accessed September 27, 2005. <http://www.child.gov.ab.ca/whatwedo/fas/page.cfm?pg=index>
- Alberta Children's Services (2005b). *About the Child and Youth Support Program*. Web page dated August 2005, accessed September 27, 2005. <http://www.child.gov.ab.ca/whatwedo/childfinance/page.cfm?pg=index>
- Alberta Health and Wellness (2001). *Alberta Congenital Anomalies Surveillance System Fifth Report, 1980-1998*. Edmonton, AB: Alberta Health and Wellness.
- Alberta Health and Wellness (2004a). *Alberta's meningococcal immunization campaign: An Overview and Assessment*. Edmonton, AB: Alberta Health and Wellness.
- Alberta Health and Wellness (2004b). *Ambulatory care in Alberta using Ambulatory Care Classification System Data*. Edmonton, AB: Alberta Health and Wellness.
- Alberta Health and Wellness (2004c). *Diphtheria, Tetanus, Pertussis, Polio, Hib. Important information about this vaccine*. Web page dated October 27, 2004, accessed September 27, 2005. <http://www.health.gov.ab.ca/public/immunizations/CD5DPT.html>
- Alberta Health and Wellness (2004d). *Immunization*. Web page dated September 27, 2005, accessed September 27, 2004. <http://www.health.gov.ab.ca/public/immunizations/> (Immunization section background)
- Alberta Health and Wellness (2004e). *Measles, Mumps and Rubella: Important information about this vaccine*. Web page dated April 1, 2004, accessed September 27, 2005. <http://www.health.gov.ab.ca/public/immunizations/CD4MMR.html>
- Alberta Health and Wellness (2005a). *Menigococcal conjugate vaccine*. Web page dated March 22, 2005, accessed September 27, 2005. <http://www.health.gov.ab.ca/public/immunizations/CD65Meningococcal.html>
- Alberta Health and Wellness (2005b). *Self-Reported Body Mass Index and its correlates in Alberta: A portrait from survey and administrative data sources*. Edmonton, AB: Alberta Health and Wellness.

- Armstrong, I.E., Robinson, E.J., and Gray-Donald, K. (1998). Prevalence of low and high birthweight among the James Bay Cree of Northern Quebec. *Canadian Journal of Public Health*, 89, 419-420.
- Asante K.O., and Nelms-Maztke J.(1985). *Report on the survey of children with chronic handicaps and fetal alcohol syndrome in the Yukon and Northwest British Columbia*. Whitehorse: Council for Yukon Indians.
- Asthma Society of Canada (2005). *What is asthma?* Web page dated July 2005, accessed September 27, 2005. <http://www.asthma.ca/adults/about/whatIsAsthma.php>
- Baird, P., Sadovnick, A.D, and Yee, I.M. (1991). Maternal age and birth defects: a population study. *Lancet*, 337, 527-30.
- Beagan, B.L., and Wang, E.E.L. (1994). *Prevention of gonorrhoea*. In Canadian Guide to Clinical Preventive Health Care (pp. 720-729), Ottawa, ON: Health Canada.
- Beasley, I. (1998). Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema. *Lancet*, 351, 1225-32
- Behrman, R.E., Kliegman R., Jenson, R.B. (eds.) (2004). *Nelson Textbook of Pediatrics, 17th Edition*. Philadelphia, PA; W.B. Saunders, pp. 710-717. (mental health)
- Canadian Institute for Health Information (2004). *Summary Report: Improving the Health of Canadians*. Ottawa, ON: Canadian Institute for Health Information.
- Canadian Institute for Health Information (2005). Inpatient/Acute Admissions by Province of Facility Location. [http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=statistics\\_results\\_source\\_hmdb\\_e](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=statistics_results_source_hmdb_e) Web page dated, accessed September 29, 2005.
- Carrière, G. (2004). Use of hospital emergency rooms. *Health Reports*, 16(1), 35-39. Ottawa, ON: Statistics Canada. Cat. No. 82-003.
- Chen, J., Fair, M., Wilkins, R., Cyr, M. and the Fetal and Infant Mortality Study Group of the Canadian Perinatal Surveillance System (1998). Maternal education and fetal and infant mortality in Quebec. *Health Reports*, 10(2), 53-64.
- Chudley, A.E., Conry, J., Cook, J.L., Looock, C., Rosales, T. and LeBlanc, N. (2005). Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. *Canadian Medical Association Journal*, 172 (5S), S1-S21.
- Cole, T.J., Bellizzi, M.C., Flegal, K.M., and Dietz, W.H. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *British Medical Journal*, 320, 1240-1243.
- Cook, C., and Willms, J.D. (2002). Balancing work and family life. In *Vulnerable Children*, J.D. Willms (ed.), pp. 183-197. Edmonton, AB: University of Alberta Press and Human Resources Development Canada.
- Danielsson, N., Ericsson, A., Eriksson, M., Kallen, B., and Zetterstrom, R. (2003). Hospitalization in Sweden of children born to immigrants. *Acta Paediatrica*, 92(2), 228-232.
- Dryburgh, H. (2000). Teenage Pregnancy. *Health Reports*, 12(1), 9-19.
- Dunn, L.M., and Dunn, L.M. (1981). *Peabody Picture Vocabulary Test-Revised*. Circle Pines, MN: AGS Publishing.
- Ferber, A. (2000). Maternal complications of fetal macrosomia. *Clinical Obstetrics and Gynecology*, 43(2), 335-339.
- Hancox, R.J., Milne, B.J., and Poulton, R. (2004). Association between child and adolescent television viewing and adult health: a longitudinal birth cohort study. *Lancet*, 364, 257-262.
- Haram, K, Pirhonen, J., and Bergsjö, P. (2002). Suspected big baby: A difficult clinical problem in obstetrics. *Acta Obstetrica et Gynecologica Scandinavica*, 81, 185-194.
- Health Canada (1999). *Trends in the health of Canadian youth*. Ottawa, ON: Health Canada.
- Health Canada (2000). *Statistical Report on the Health of Canadians (revised version)*. Ottawa, ON: Health Canada.
- Health Canada (2001). *Respiratory Disease in Canada*. Ottawa, ON: Health Canada. (Asthma data)
- Health Canada (2002). *A Report on Mental Illnesses in Canada*. Ottawa, ON: Health Canada. (Anxiety data)
- Health Canada (2003). *Canadian Perinatal Health Report, 2003*. Ottawa: Minister of Public Works and Government Services Canada.

- Health Canada (2003). *What are the complications of diabetes?* Web page dated January 17, 2003, accessed September 27, 2005. <http://www.phac-aspc.gc.ca/ccdpc-cpcmc/diabetes-diabete/english/whatis/complications.html>
- Health Canada (2004). *Measuring Up: Results from the National Immunization Coverage Survey, 2002*. Canada Communicable Disease Report, 30(5), 37-50.
- Health Canada (2005a). Overview of health risks of smoking. Web page dated September 6, 2005, accessed September 10, 2005. [http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/res/news-nouvelles/fs-if/risques\\_risques\\_e.html](http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/res/news-nouvelles/fs-if/risques_risques_e.html)
- Health Canada (2005b). *2002 Youth Smoking Survey Technical Report*. Ottawa, ON: Minister of Supply and Services Canada. (Catalogue No. H46-1/44-2002E)
- Honein, M.A., and Rasmussen, S.A. (2000). Further evidence for an association between maternal smoking and craniosynostosis. *Teratology*, 62(3), 145-6.
- Hook III, E.W., and Handsfield, H.H. (1999). Gonococcal infections in the adult. In K.K. Holmes et al. (eds.) *Sexually Transmitted Diseases*. New York: McGraw-Hill.
- Human Resources Development Canada (2003). *Understanding the 2000 Low Income Statistics Based on the Market Basket Measure*. Hull, QC: Human Resources Development Canada. Catalogue No. RH63-1/569-03-03E.
- Keenan, H.T., Foster, C.M., and Bratton, S.L. (2002). Social factors associated with prolonged hospitalization among diabetic children. *Pediatrics*, 109(1), 40-44.
- Koniak-Griffin, D., and Turner-Pluta, C. (2001). Health risk and psychosocial outcomes of early childbearing: A review of the literature. *Journal of Perinatal and Neonatal Nursing*, 15(2), 1-17.
- Lissau, I., Burniat, W., Poskitt, E.M.E., and Cole, T. (2002). Prevention. In *Child and Adolescent Obesity: Causes and Consequences, Prevention and Management*, W. Burniat, T. Cole, I. Lissau, and Poskitt, E.M.E. (eds.). Cambridge, UK: Cambridge University Press.
- Luo, Z.C., Kierans, W.J., Wilkins R., Liston, R.M., Uh, S.H., and Kramer, M.S. (2004). Infant mortality among First Nations versus non-First Nations in British Columbia: Temporal trends in rural versus urban areas, 1981-2000. *International Journal of Epidemiology*, 33(6), 1252-59.
- MacKay, M., Reid, D.C., Moher, D., and Klassen, T. (1999). Systematic review of the relationship between childhood injury and socio-economic status. Ottawa, ON: Minister of Public Works and Government Services Canada.
- McCourt, C., Paquette, D., Pelletier, L., and Reyes, F. (2005). Make every mother and child count: Report on maternal and child health in Canada. Ottawa, ON: Public Health Agency of Canada.
- McLone, D.G. (2003). The etiology of neural tube defects: the role of folic acid. *Childs Nerv Sys*, 19(7-8), 537-539.
- Millar, W. J. and Chen, J. (1998). Maternal education and risk factors for small-for-gestational-age births. *Health Reports*, 10(2), 43-51.
- Millar, W.J., and Hill, G. (2004). Pregnancy and smoking. *Health Reports*, 15(4), 53-6.
- National Cancer Institute of Canada (2004). *Canadian Cancer Statistics 2004*. Toronto, ON: National Cancer Institute of Canada.
- Nault, F. (1997). Infant mortality and low birth weight, 1975 to 1995. *Health Reports*, 9(3), 39-46.
- Peipert, J.F. (2003). Genital Chlamydia infections. *New England Journal of Medicine*, 349, 2424-30.
- Pérez (2003). Children who become active. *Health Reports*, 14(S), 17-28.
- Pollack, H., Lantz, P. M., and Frohna, J. G. (2000). Maternal smoking and adverse birth outcomes among singletons and twins. *American Journal of Public Health*, 90(3), 395 – 400.
- Pollack, M.M., Wilkinson, J.D., Glass N.L. (1987). Long-stay pediatric intensive care unit patients: outcome and resource utilization. *Pediatrics*, 80(6), 855-860.
- Public Health Agency of Canada (1998). Alcohol and pregnancy. Web page dated November, 1998, accessed September 29, 2005. [http://www.phac-aspc.gc.ca/rhs-ssg/factshts/alcprg\\_e.html](http://www.phac-aspc.gc.ca/rhs-ssg/factshts/alcprg_e.html)

- Public Health Agency of Canada (2002). Cancer Surveillance On-Line. Web page dated 2002, accessed September 29, 2005.  
[http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cgi-bin/cancerchart2?DATA\\_TYPE=R&YEAR\\_FROM=92&YEAR\\_TO=01&CAUSE=700&AREA=48&AGE=A&AGE=B&AGE=C&AGE=D&AGE=E&SEX=3&CTIME1=View+Chart&CI=YES&SCALE=LINEAR](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cgi-bin/cancerchart2?DATA_TYPE=R&YEAR_FROM=92&YEAR_TO=01&CAUSE=700&AREA=48&AGE=A&AGE=B&AGE=C&AGE=D&AGE=E&SEX=3&CTIME1=View+Chart&CI=YES&SCALE=LINEAR)
- Public Health Agency of Canada (2003). The benefits of physical activity. Web page dated October 8, 2003, accessed September 13, 2005. <http://www.phac-aspc.gc.ca/pau-uap/fitness/benefits.html#1>
- Public Health Agency of Canada (2004a). 2002 Canadian Sexually Transmitted Infections (STI) Surveillance Report: Pre-Release. Web page dated March 18, 2004, accessed September 29, 2005. [http://www.phac-aspc.gc.ca/std-mts/stddata\\_pre06\\_04/index.html](http://www.phac-aspc.gc.ca/std-mts/stddata_pre06_04/index.html)
- Public Health Agency of Canada (2004b). Notifiable Diseases Annual Summary 2001. *Canadian Communicable Disease Report*, 30(S3).
- Public Health Agency of Canada (2005). Fetal alcohol spectrum disorder (FASD): A framework for action.. Ottawa, ON: Public Health Agency of Canada. Cat. No. C2003-906929-XE.
- Robinson G.C., Conry J.L., Conry R.F. (1987). Clinical profile and prevalence of fetal alcohol syndrome in an isolated community in British Columbia. *Canadian Medical Association Journal*, 137(3), 203-7.
- Rodrigues, S., Robinson, E.J., Kramer, M.S., and Gray-Donald, K. (2000). High rates of infant macrosomia: A comparison of a Canadian native and a non-native population. *Journal of Nutrition*. 130, 806-12.
- Reproductive Health Report Working Group (2004). *Alberta Reproductive Health: Pregnancies and Births 2004*. Edmonton, AB: Alberta Health and Wellness.
- Sampson, P.D., Streissguth, A.P., Bookstein, F.L., Little, R.E., Clarren, S.K., Dehaene, P., et al. (1997). Incidence of fetal alcohol syndrome and prevalence of alcohol-related neurodevelopmental disorder, *Teratology*, 56(5), 317-326.
- Schopflocher, D.P. (2004). First Nations Health Services Study Technical Documentation. Edmonton, AB: Alberta Health and Wellness.
- Spady, D.W., Schopflocher, D.P., Svenson, L.W., and Thompson, A.H. (2001). Prevalence of Mental Disorders in Children Living in Alberta, Canada, as determined from Physician Billing Data. *Archives of Pediatric and Adolescent Medicine*, 155, 1153-9.
- Statistics Canada (2001). *Births, 1998 (Shelf Tables)*. Ottawa, ON: Statistics Canada. Cat. No. 84F-0210-XPB.
- Statistics Canada (2002a). *2001 Census Preview of Products and Services*. Ottawa, ON: Minister of Industry. Cat. No. 92-376-XIE01000.
- Statistics Canada (2002b). *Births, 1999 (Shelf Tables)*. Ottawa, ON: Statistics Canada. Cat. No. 84F-0210-XPB.
- Statistics Canada (2003). Alberta health regions semi-custom area profile-R. Ottawa, ON: Statistics Canada.
- Statistics Canada (2004). *Deaths*. Web page dated September 27, 2004, accessed September 27, 2005. <http://www.statcan.ca/english/freepub/84F0211XIE/2002/index.htm>
- Statistics Canada (2005a). *Annual Demographic Statistics 2004*. Ottawa, ON: Minister of Industry. Cat. No. 91-213-XPB.
- Statistics Canada (2005b). *Births 2003*. Ottawa, ON: Statistics Canada. Cat. No. 84F0210XIE.
- Statistics Canada (2005c). *National Longitudinal Survey of Children and Youth (NLSCY)*. Web page dated August 12, 2005, accessed September 12, 2005. <http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4450&lang=en&db=IMDB&dbg=f&adm=8&dis=2#4>
- Statistics Canada (2005d). *Pregnancy Outcomes*. Released May 25, 2005.; web page viewed September 13, 2005. <http://www.statcan.ca:8096/bsolc/english/bsolc?catno=82-224-X>
- Statistics Canada (2005e). Canadian Tobacco Use Monitoring Survey (CTUMS) 2004. Web page dated May 1, 2005, accessed September 30, 2005. [http://www.hc-sc.gc.ca/hl-vs/pubs/tobac-tabac/ctums-esutc-2004/index\\_e.html](http://www.hc-sc.gc.ca/hl-vs/pubs/tobac-tabac/ctums-esutc-2004/index_e.html)

- Statistics Canada (2005f). *Microdata User Guide, Canadian Tobacco Use Monitoring Survey, Annual February – December 2004*. Ottawa, ON: Special Surveys Division, Statistics Canada.
- Sulik, K.K., Johnston, M.C., and Webb, M.A. (1981). Fetal alcohol syndrome: embryogenesis in a mouse model. *Science*, 214, 936–938.
- Tjepkema, M., and Shields, M. (2005). *Measured obesity: Overweight Canadian children and adolescents*. Ottawa, ON: Statistics Canada. Cat. No. 82-620-MWE2005001.
- Tough, S., Clarke, M., Hicks, M. (2003). *A comparison of Alberta physician's responses on surveys in 1998 & 2002 regarding knowledge, attitudes and clinical practice related to fetal alcohol syndrome and maternal alcohol use during pregnancy*. Edmonton, AB: Alberta Health and Wellness.
- Tough, S., Svenson, L., and Schopflocher, D. (1999). *Maternal risk factors in relationship to birth outcome*. Edmonton, AB: Alberta Health and Wellness.
- Tough, S., Tofflemire, K., Clarke, M., and Newburn-Cook, C. (2005). *Are women changing their drinking behaviours while trying to conceive? An opportunity for pre-conception counseling*. Submitted for publication.
- Tremblay, M.S., and Willms, J.D. (2000). Secular trends in the body mass index of Canadian children. *Canadian Medical Association Journal*, 163(11), 1429-1433.
- Trocmé, N., MacLaurin, B., Fallon, B., et al. (2001). *Canadian Incidence Study of Reported Child Abuse and Neglect: Final Report*. Ottawa, ON: Minister of Public Works and Government Services Canada.
- Trocmé, N., Fallon, B., MacLaurin, B., et al. (2005). *Canadian Incidence Study of Reported Child Abuse and Neglect – 2003: Major Findings*. Ottawa, ON: Minister of Public Works and Government Services Canada.
- Williams R.J., Odaibo F.S., and McGee J.M. (1999). Incidence of fetal alcohol syndrome in northeastern Manitoba. *Canadian Journal of Public Health*, 90(3), 192-4.
- Willms, J.D. (2002a). Outcome measures used in the study. In *Vulnerable Children*, J.D. Willms (ed.), pp. 381-387. Edmonton, AB: University of Alberta Press and Human Resources Development Canada.
- Willms, J.D. (2002b). Socioeconomic gradients for childhood vulnerability. In *Vulnerable Children*, J.D. Willms (ed.), pp. 71-102. Edmonton, AB: University of Alberta Press and Human Resources Development Canada.
- World Health Organization (2003). *Social Determinants of health: The solid facts (2nd ed.)*. R.Wilkinson and M. Marmot (eds.). Denmark: World Health Organization.





# 7. Appendices

*7.1 Diagnosis codes used for data extraction*

*7.2 Epidemiologic measures for maps*

*7.3 Alberta routine immunization schedule*

*7.4 Child populations*



## 7.1.1 Diagnosis Codes Used for Data Extraction

### **Congenital Anomalies**

Data for all congenital anomalies combined included codes both inside and outside ICD-9-CM Chapter 14, and ICD-10-CA Chapter 17. Details may be obtained from Health Surveillance, Alberta Health and Wellness.

### **Attention Deficit Disorder**

ICD-9-CM: 314      Hyperkinetic syndrome of childhood

### **Anxiety and Neurotic Disorders**

ICD-9-CM: 300      Neurotic disorders

### **Depression**

ICD-9-CM: 311      Depressive disorder, not elsewhere classified

### **Asthma**

ICD-9-CM: 493      Asthma  
ICD-10-CA: J45      Asthma  
ICD-10-CA: J46      Status asthmaticus

### **Diabetes**

ICD-9-CM: 250      Diabetes mellitus

### **Sexually Transmitted Infections**

#### *Diagnosis codes*

ICD-9-CM: 098      Gonorrhoea  
ICD-9-CM: 614-616      Chlamydia

### **Vaccine Preventable Diseases**

#### *Diagnosis codes*

ICD-9-CM: 320.0      Haemophilis influenzae type B (Hib)  
ICD-9-CM: 320.1      Invasive pneumococcal disease (IPD)  
ICD-9-CM: 036      Invasive meningococcal disease (IMD)  
ICD-9-CM: 055      Measles  
ICD-9-CM: 033      Pertussis

### **Injuries**

ICD-9-CM: E800-E999.9  
Injury and poisoning  
ICD-10-CA: S00-T98      Injury, poisoning and certain other consequences of external causes

### **Mortality**

Codes used are provided in the Leading Causes tables.

### **Hospitalization**

Codes used are provided in the Leading Causes tables.

### **Emergency Room Use**

Codes used are provided in the Leading Causes tables.

### **Physician's Office Visits**

Codes used are provided in the Leading Causes tables.

## **7.1.1 Diagnosis Codes Used for Data Extraction**

# 7. Appendices

*7.1 Diagnosis codes used for data extraction*

*7.2 Epidemiologic measures for maps*

*7.3 Alberta routine immunization schedule*

*7.4 Child populations*



## 7.2.1 Epidemiologic Measures for Maps

Written by Dr. Donald Schopflocher and Erik Ellehoj

All health events reported in this document are mapped according to the method described below. This method was developed to address the issue of how population sizes of health regions can affect rate stability. Specifically, rates will be less stable for RHAs with smaller populations than those for RHAs with larger populations. The mapping method used in this report is designed to address this issue and allow statistically consistent interpretations. (As an example the numbers shown in the calculations in Steps 1, 2 and 3 below are for low birth weight babies born in the Chinook, Palliser and Northern Lights health regions and compared against provincial rates from 2000 to 2002.)

The mapping method consists of the following seven steps:

1. Calculate the rates for each region. For crude rates, an example of this calculation is shown below. *Note: where sex- age standardized rates are used a more detailed calculation would be required.*

Health Region #	Low Birth Weight (LBW)	Total Live Births	Proportion LBW
1	331	5,874	0.056
2	213	3,677	0.058
.	.	.	.
.	.	.	.
.	.	.	.
9	175	3,602	0.049

2. Calculate the rate for the province. For crude rates, an example of this calculation is shown below. *Note: where sex- age standardized rates are used a more detailed calculation would be required.*

Number of low birth weight newborns: 6,999

Total number of live births: 112,133

Proportion low birth weight:  $6,999 / 112,133 = 0.062$

3. Calculate standard error of a probability of a health event for each regional rate. For crude rates the formula which follows can be used. *Note: where sex- age standardized rates are used a more detailed calculation would be required.*

$$\sqrt{\frac{p(1-p)}{n}}$$

Where: p is the proportion (estimate of probability) for the region  
n is the number of births.

Health Region #	Low Birth Weight	Total Births	Proportion LBW	Calculation	Standard Error
1	331	5,874	0.056	$\sqrt{\frac{0.056(1-0.056)}{5,874}}$	0.0030
2	213	3,677	0.058	$\sqrt{\frac{0.058(1-0.058)}{3,677}}$	0.0038
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
9	175	3,602	0.049	$\sqrt{\frac{0.049(1-0.049)}{3,602}}$	0.0036

4. Calculate the regional-specific standard scores.

Subtract the regional proportion from the provincial proportion and divide these by the standard error derived for each region in step 3. Repeat for each region.

$$\text{Score} = \frac{\text{regional proportion} - \text{provincial proportion}}{\text{regional standard error}}$$

5. Graph the regional-specific standard scores calculated in Step 4.

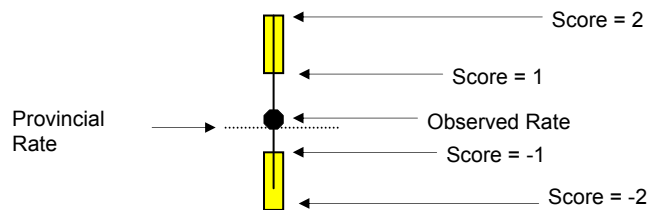
The following colour scheme is used to differentiate the rates that may differ from the provincial average.

Score	Interpretation	Colour
$\geq 2$	Higher than provincial average (significant difference in a conventional statistical test ( $p < 0.05$ ))	Red
$\geq 1$ and $< 2$	probably higher than provincial average ( $p > 0.5$ but $< 0.95$ that difference is not due to random variation)	Orange
$< 1$ and $> -1$	Not likely to differ from provincial average ( $p < 0.5$ that difference is not due to random variation)	Yellow
$\leq -1$ and $> -2$	Probably lower than provincial average ( $p > 0.5$ but $< 0.95$ that difference is not due to random variation)	Light green
$\leq -2$	Lower than provincial average (significant difference in a conventional statistical test ( $p < 0.05$ ))	Dark green



The figure below illustrates how to interpret the graphic for an individual region. The yellow bars are used to show that the provincial rate crosses between the 1 and -1 score range. The table above lists other colour possibilities by score category.

The black dot represents the value of the rate for each region. The colour of the bars above and below the dot represents the score of the region. The portion of the bar closest to the black dot represents the value for a standard score of 1 or -1, while the part of the bars farthest from the dot represent the value for a score of 2 or -2.



6. Generate maps using the same categories for each region as listed in Step 5.

The graph and map are placed in the same page. The map allows the reader to obtain a quick overview while more detailed information is presented on the graph. The colour assigned to each region is based on the colour of the bars in the graph for the same region. This provides a spatial context to the distribution patterns and consistency among the two graphic elements.

7. Generate a cartogram.

A cartogram is similar to a map. However, each region is represented by a circle that is sized proportionately to the regional population. This graphic is useful for interpreting reported rates by providing an indication of the population size of each region. Each RHA in the cartogram is coloured the same as it is on the provincial map.



# 7. Appendices

*7.1 Diagnosis codes used for data extraction*

*7.2 Epidemiologic measures for maps*

*7.3 Alberta routine immunization schedule*

*7.4 Child populations*



### 7.3.1 Alberta Routine Immunization Schedule

<u>Age</u>	<u>Vaccine</u>
2 months	DTaP-IPV-Hib <sup>1</sup> Pneumococcal conjugate Meningococcal conjugate
4 months	DTaP-IPV-Hib Pneumococcal conjugate Meningococcal conjugate
6 months	DTaP-IPV-Hib Pneumococcal conjugate Meningococcal conjugate
6 – 23 months	Influenza
12 months	MMR <sup>2</sup> Varicella (Chickenpox)
18 months	DTaP-IPV-Hib Pneumococcal conjugate
4 - 6 years	DTaP-IPV <sup>2</sup> MMR
Grade 5	Hepatitis B (3 doses) Varicella <sup>4</sup> (Chickenpox)
14 - 16 years	dTap <sup>5</sup>

Note: each bullet represents one vaccine/injection

1 Diphtheria, tetanus, acellular pertussis, polio, haemophilus influenza type b

2 Measles, mumps, rubella

3 Diphtheria, tetanus, acellular pertussis, polio

4 If no history of disease or not previously immunized

5 Diphtheria, tetanus, acellular pertussis

Source: [http://www.health.gov.ab.ca/public/immunizations/CD67\\_RoutineImmunization.html](http://www.health.gov.ab.ca/public/immunizations/CD67_RoutineImmunization.html)



# 7. Appendices

*7.1 Diagnosis codes used for data extraction*

*7.2 Epidemiologic measures for maps*

*7.3 Alberta routine immunization schedule*

*7.4 Child populations*





## 7.4.1 Child Populations

Table 7.4.1.1 Child Populations Used as Denominators in Alberta Child Health Surveillance Report 2005

Year	1998	1999	2000	2001	2002	2003	2004
<b>Year</b>							
<b>Total</b>	763,020	769,949	770,136	770,687	773,662	773,255	773,259
<b>First Nations</b>	51,951	52,791	53,516	53,910	54,208	54,341	n/a
<b>Non-First Nations</b>	711,069	717,158	716,620	716,777	719,454	718,914	n/a

SEX	1998	1999	2000	2001	2002	2003	2004
<b>Female</b>							
<b>Female Total</b>	371,920	375,412	375,487	375,743	377,344	377,092	376,874
<b>First Nations</b>	25,410	25,805	26,062	26,249	26,410	26,510	n/a
<b>Non-First Nations</b>	346,510	349,607	349,425	349,494	350,934	350,582	n/a
<b>Male</b>							
<b>Male Total</b>	391,100	394,537	394,649	394,944	396,318	396,163	396,385
<b>First Nations</b>	26,541	26,986	27,454	27,661	27,798	27,831	n/a
<b>Non-First Nations</b>	364,559	367,551	367,195	367,283	368,520	368,332	n/a

Age	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	0-17
<b>2000-2002 combined</b>																			
<b>Total</b>	112,087	114,922	116,677	117,932	120,120	122,966	125,485	127,540	130,648	133,194	136,422	137,702	137,113	135,827	135,636	136,810	137,008	136,396	2,314,485
<b>First Nations</b>	8,244	8,646	8,823	8,936	9,312	9,470	9,527	9,474	9,687	9,624	9,619	9,416	9,110	8,792	8,452	8,352	8,141	8,009	161,634
<b>Non-First Nations</b>	103,843	106,276	107,854	108,996	110,808	113,496	115,958	118,066	120,961	123,570	126,803	128,286	128,003	127,035	127,184	128,458	128,867	128,387	2,152,851
<b>2001-2003 combined</b>																			
<b>Total</b>	113,269	114,269	116,464	118,106	119,422	121,889	124,439	127,189	129,251	132,176	134,751	138,038	139,140	138,497	137,107	136,946	138,240	138,411	2,317,604
<b>First Nations</b>	8,019	8,541	8,740	8,868	8,980	9,367	9,484	9,563	9,522	9,703	9,671	9,658	9,441	9,142	8,803	8,466	8,363	8,128	162,459
<b>Non-First Nations</b>	105,250	105,728	107,724	109,238	110,442	112,522	114,955	117,626	119,729	122,473	125,080	128,380	129,699	129,355	128,304	128,480	129,877	130,283	2,155,145
<b>2002-2004* combined</b>																			
<b>Total</b>	116,730	115,560	115,831	117,653	119,406	120,975	123,188	126,015	128,688	130,643	133,570	136,177	139,393	140,439	139,719	138,352	138,266	139,571	2,320,176

Age Group	<1	1-4	5-9	10-14	15-17	0-17
<b>2000-2002 combined</b>						
<b>Total</b>	112,087	469,651	639,833	682,700	410,214	2,314,485
<b>First Nations</b>	8,244	35,717	47,782	45,389	24,502	161,634
<b>Non-First Nations</b>	103,843	433,934	592,051	637,311	385,712	2,152,851
<b>2001-2003 combined</b>						
<b>Total</b>	113,269	468,261	634,944	687,533	413,597	2,317,604
<b>First Nations</b>	8,019	35,129	47,639	46,715	24,957	162,459
<b>Non-First Nations</b>	105,250	433,132	587,305	640,818	388,640	2,155,145
<b>2002-2004* combined</b>						
<b>Total</b>	116,730	468,450	629,509	689,298	416,189	2,320,176

Residence RHA	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Unknown	Alberta
<b>2000-2002 combined</b>											
<b>Total</b>	123,378	73,539	781,796	226,517	83,551	693,979	155,500	112,555	63,363	307	2,314,485
<b>First Nations</b>	14,576	1,105	28,434	21,326	1,693	38,253	27,164	14,516	14,536	31	161,634
<b>Non-First Nations</b>	108,802	72,434	753,362	205,191	81,858	655,726	128,336	98,039	48,827	276	2,152,851
<b>2001-2003 combined</b>											
<b>Total</b>	121,921	73,530	789,393	226,126	82,847	692,879	154,006	112,069	64,508	325	2,317,604
<b>First Nations</b>	14,380	1,143	28,782	21,543	1,723	38,333	27,488	14,592	14,443	32	162,459
<b>Non-First Nations</b>	107,541	72,387	760,611	204,583	81,124	654,546	126,518	97,477	50,065	293	2,155,145
<b>2002-2004* combined</b>											
<b>Total</b>	120,832	73,503	796,619	225,645	82,078	691,851	151,739	111,913	65,700	296	2,320,176

Source: Alberta Health Care Insurance Plan (AHICIP) Registry Cumulative Files, Alberta Health and Wellness.

Alberta Health Care Insurance Plan (AHICIP) Registration Population Quarterly Files - as at June 30, Alberta Health and Wellness, extracted May 2005.

Notes: Data include Alberta residents only.

\*2004 data is preliminary.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

