Health Trends in Alberta 2000

WORKING DOCUMENT

Alberta
HEALTH AND WELLNESS
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Strategic Direction

A sound understanding of trends in health is an essential part of setting goals and priorities for health systems and for publicly funded programs that support health and well being. In turn, setting goals and priorities is critical if we are to ensure accountability and continuous improvement within health systems and beyond. Across Canada and internationally, there is a move to develop indicators for measuring and reporting health trends. Within Canada, the drive to align these efforts on a national basis is led by the Canadian Institute of Health Information (CIHI) *Information Road Map Initiative*. The Health Trends Initiative, led by the Health Surveillance Branch of Alberta Health and Wellness, supports this national endeavour.

The Health Trends Initiative consists of seven integrated sub-projects designed to meet current and evolving health needs.

- This document, *Health Trends in Alberta, A Working Document* is the primary communications tool for the Health Trends Initiative. It provides technical information on a number of health and health determinant indicators.

- The *Report on the Health of Albertans* (1999) is an easily read public document about the health status of Albertans, and includes discussions of important health issues and strategies.

- The Methods initiative is developing and standardizing analytic strategies, display capacity (including graphic elements and mapping) and interpretation of the data and information that is used in this and other Alberta Health and Wellness reports.

- The Health Priorities subproject is developing and refining a model for identifying and prioritizing the most important population health issues in Alberta.

- The Health Targets subproject is exploring the feasibility of developing targets for health status measures and where appropriate will recommend targets.

- The Health Strategies subproject is identifying strategies that can be used to address high priority health issues.

- The Health Research subproject is identifying priority areas of health research to support the measurement of health status, the development of health strategies, the assessment of health strategy effectiveness, and the communication and dissemination of health status information.

This report, *Health Trends in Alberta, A Working Document*, will continue to be a health status information resource that is appropriately responsive to a variety of needs. To serve this end, the Health Surveillance Branch at Alberta Health and Wellness has sought wide-ranging participation from internal and external stakeholders.

Objectives

The main objectives of *Health Trends in Alberta, A Working Document* are to:

- Provide an overview of selected health trends — including demographics, health status, health determinants, mortality, communicable disease incidence, and environmental health concerns — from an Alberta perspective within a Canadian context;
- Estimate provincial changes in these trends over time;
- Describe the age/sex distribution and spatial variations, where appropriate, of these health issues for the province; and
- Summarize provincial targets and provincial strategies, where these have been created or implemented.

Health Trends in Alberta, A Working Document can also be viewed as an Alberta-specific complement to two major reports prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health. These reports, *Towards a Healthy Future: Second Report on the Health of Canadians* and *Statistical Report on the Health of Canadians*, present a wide range of data from a Canadian perspective, including information on many of the trends described here.

Approach

Health surveillance is "... the tracking and forecasting of any health event or health determinant through the collection of data, and its integration, analysis, and interpretation into surveillance products, and the dissemination of those surveillance products to those who need to know" (Health Canada, 1999).

Selecting health trends for monitoring is a crucial component of surveillance activity. *Health Trends in Alberta, A Working Document* includes measures which have been consistently used in the scientific and research literature, and for which Alberta Health and Wellness has national comparative data. Where possible, measures include those recommended for population health monitoring by the Canadian Institute of Health Information (CIHI) *Information Road Map Initiative*.

For each health issue selected where 'person-level' data are available, there are point-in-time comparisons between Canada, Alberta and 'best province'; trend data for Alberta (1985 to present); a distribution of the measure by age and sex; and a brief interpretation of the data presented. For measures where sufficient appropriate data are available and informative, regional comparisons are illustrated with regional maps.

Many of the trends that are identified here focus on mortality measures by disease category. Incidence data are provided by infectious disease categories. Health determinant trends have been derived primarily from survey sources. So far, measures of wellness are under-represented in the document.

Disease Categories and Data Sources

The Ninth Revision of the *International Classification of Diseases Clinical Modification* (ICD-9-CM) was used to identify diagnoses in mortality and morbidity statistics. A description of ICD-9-CM codes by disease is provided in Appendix A. Records of non-Alberta residents were excluded from all provincial level analyses.

Data were obtained from several sources:

- Mortality and birth data were obtained from Alberta Vital Statistics for the years 1985 to 1998. Comparison data for Canada and the "best province" came from *Health Indicators '99* produced by Statistics Canada.
- Health status data were obtained from the *National Population Health Survey* (1994-95, 1996-97), *the Canada Health Promotion Survey* (1985, 1990), and the *Alberta Health Survey* (1998).
- Data for incidence measures of infectious diseases were obtained from communicable diseases databases at Alberta Health and Wellness, and from the Laboratory Centre for Disease Control at Health Canada.
- Data from additional sources were also used (particularly in Section F: Mental Health and Section G: Environmental Health), and are identified where they are employed.

Epidemiologic Measures

Age- and sex-specific rates were computed for mortality measures. Only those mortality measures where sufficient cases were available to calculate stable estimates were included in this report. To allow for a comparison over time and across health regions, age-standardized mortality rates were calculated using the direct method. The 1996 Canadian population was used as the standard set of weights. This method controls for potential sources of bias resulting from variations in age distribution of populations across provinces and regions.

The incidence measures for communicable diseases have not been age- or sex-standardized. Only total counts are available for interprovincial comparisons. For some communicable disease data, including those for sexually transmitted diseases and AIDS, regional breakdowns are not available. For other communicable disease data, regional breakdowns are not provided because there are too few cases to allow stable rate estimates.

Measures based on surveys have been weighted to reflect sampling strategies and to provide accurate population estimates. These measures have not been age- or sex-standardized.

Where time trends and age-sex curves are graphed, a trend line has often also been drawn. Several different smoothing techniques were employed. Since the intention was to indicate the most general features of the data, these curves should be considered descriptive.

Epidemiologic Measures for Maps

All health events reported in this document are mapped according to the method described below. It was developed to address the issue of how population sizes of health regions can affect rate stability — specifically, rates will be less stable for regional health authorities with small populations than those for regional health authorities 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 use birth weight data for the years 1994-1996 combined to calculate a crude rate and its standard error. It should be noted that where sex-age standardized rates are used a more detailed calculation would be required for these three steps.)

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.

RHA	Low Birth Weight (LBW)	Total Births	Proportion LBW
1	189	3,453	0.05
2	183	3,069	0.06
.	.	.	.
.	.	.	.
17	65	1,557	0.04

2. Calculate the rate for the province. For crude rates, an example of this calculation is shown below.

   - Number of low birth weight newborns: 6,726
   - Total number of live births: 113,252
   - Proportion low birth weight: 6,726 / 113,252 = 0.059

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.

$$\sqrt{\frac{p(1-p)}{n}}$$

Where: *p* is the proportion (estimate of probability) for the region
n is the number of births.

RHA	LBW	Total Births	Proportion LBW	Calculation	Standard Error
1	189	3,453	0.05	$\sqrt{\frac{0.06\ (1-0.06)}{3,069}}$	0.0038
2	183	3,069	0.06	$\sqrt{\frac{0.04\ (1-0.04\ )}{1,557}}$	0.0037
.	.	.	.	.	.
.	.	.	.	.	.
17	65	1,557	0.04	$\sqrt{\frac{0.05\ (1-0.05)}{3,453}}$	0.0051

4. Calculate the regional-specific standard scores.

Subtract the regional proportion from the provincial proportion and divide these by the standard score derived for the region in step 3. Repeat for each region.

$$\frac{\text{regional proportion - provincial proportion}}{\text{regional standard error}}$$

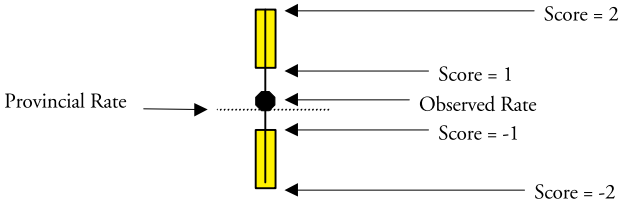
5. Graph the regional-specific standard scores calculated in Step 4.

The following colour scheme is used to differentiate the rates that may differ from the provincial average.

RHA	LBW	Total Births	Proportion LBW	Calculation	Standard Error
1	189	3,453	0.05		0.0038
2	183	3,069	0.06		0.0037
.	.	.	.	.	.
.	.	.	.	.	.
17	65	1,557	0.04		0.0051

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 on 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, a circle sized in proportion to the regional population represents each region. 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.

Provincial Business Plan Targets

Alberta Health and Wellness creates and reviews provincial targets for selected health status measures as part of its business planning process. The most recent targets are presented in the Alberta Health and Wellness *Three-Year Business Plan: 2000/2001 to 2002/2003*. Each of these targets is summarized in the most appropriate section of *Health Trends in Alberta, A Working Document.*

Provincial Strategies

Many agencies and organizations — including regional health authorities, government departments, non-governmental organizations and the corporate sector — contribute to strategies to address health issues. Regional health authorities have a major role in delivering services within their respective regions. Alberta Health and Wellness has a role in setting direction, policies and provincial standards, and in developing provincial strategies.

Responsibility for health goes beyond the health sector. In addition to health services, many factors such as personal health practices, individual capacity and coping skills, social and economic environments, and physical environments influence the health of individuals and communities. Collaboration between sectors is essential to develop and implement strategies to improve the health of Albertans.

Included in the following sections are provincial level health promotion, health protection, and disease and injury prevention strategies to address the specific health issues identified in this report. The strategies noted are examples of strategies that are planned, implemented and evaluated by Alberta Health and Wellness and other partners, or are strategies to which Alberta Health and Wellness contributes.

In addition to the specific strategies identified throughout this report, there are a number of general provincial strategies aimed at improving the capacity of Albertans to make healthy choices to promote their health. Examples of these strategies include the following:

- Action for Health — Grants are provided to regional health authorities to increase their capacity to plan, deliver and implement initiatives related to health promotion and injury/disease prevention.

- Health in Action (http://www.health-in-action.org) — This is an electronic clearinghouse accessible through the Internet that provides information on health promotion and injury/disease prevention programs, projects and research.

- Provincial health education materials — A number of educational materials such as pamphlets and posters are provided to support program delivery at the regional level. Materials are available in a number of areas such as child development, nutrition, dental health, injury prevention, immunization, STDs, and environmental health.

- Aboriginal Health Strategy — This strategy provides funding for a variety of community-based collaborative projects aimed at improving aboriginal health. In addition, the strategy funds education bursaries to aboriginal students as a means of increasing the level of workforce participation by aboriginal people within the health system. An interim evaluation report outlining the progress of the strategy is planned for release in 2000.

Updating the Working Document

This working document is intended to support planning and policy initiatives in Alberta. As some of the data are valid for a point in time, updates will be provided as new data become available. Additional sections will also be added as other needs for information and sources of information are identified or become available. New measures, such as morbidity measures for chronic diseases and injuries, may also result in the addition of new graphs.

Updates will be forwarded to those on the mailing list. To add your name to the mailing list, please contact the Health Surveillance Branch, Alberta Health and Wellness, by phone at (780) 427-4518, by fax at (780) 427-1470, or by the toll-free RITE line from within Alberta at 310-0000.

Further relevant information is available from many sources. Some of these, both print and electronic, are listed in the References section.

Section A

demographics

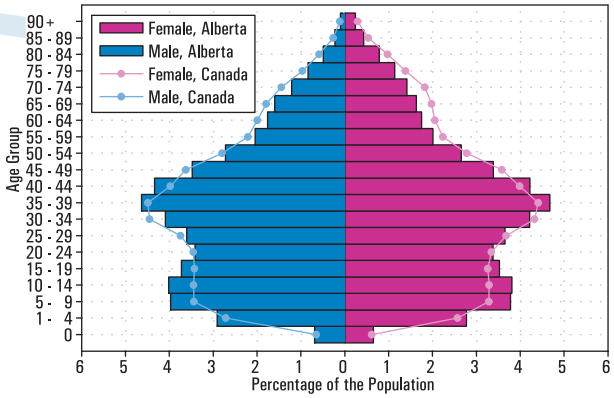
HEALTH TRENDS

A.1 Population

The Alberta Health Care Insurance Plan Stakeholder Registry File contains records for almost all individuals residing in the Province of Alberta. As a result, counts of registrants at particular points in time can function as a source for estimates of Alberta's population. (A small number of individuals, including military personnel whose health care costs are paid by the federal government, are excluded from this database.) The population of Alberta was approximately 2,791,000 in 1997.

The age distribution of Alberta's population differs slightly from the age distribution of Canada's population. Since Alberta has smaller proportions of older persons, the average age of Albertans is lower than the average age of Canadians residing outside Alberta.

Figure A.1.1
Population Distribution, Alberta and Canada, 1997

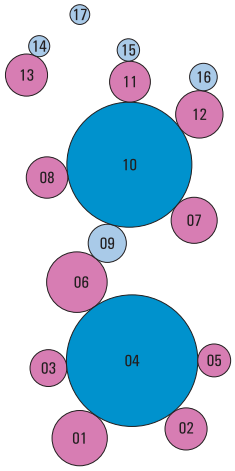


Source: AHCIP Stakeholder Registry, 1998
Statistics Canada, 1998

The populations of Alberta's regional health authorities differ dramatically as shown in the stylized map. Here, each geographic region has been redrawn with an area proportional to its 1997 population. A comparison of this cartogram with a standard map shows that many of the largest areas in Alberta are very sparsely populated.

Figure A.1.2
Population Cartogram, Alberta Health Regions, 1997

RHA	Population in 000s	
17	18.8	Northwestern
16	38.4	Northern Lights
15	25.3	Keeweetinok Lakes
14	20.0	Peace
13	86.2	Mistahia
12	106.2	Lakeland
11	80.9	Aspen
10	791.8	Capital
9	38.9	Crossroads
8	87.8	Westview
7	102.7	East Central
6	180.2	David Thompson
5	51.6	Health Region 5
4	860.6	Calgary
3	69.2	Headwaters
2	86.7	Palliser
1	145.7	Chinook

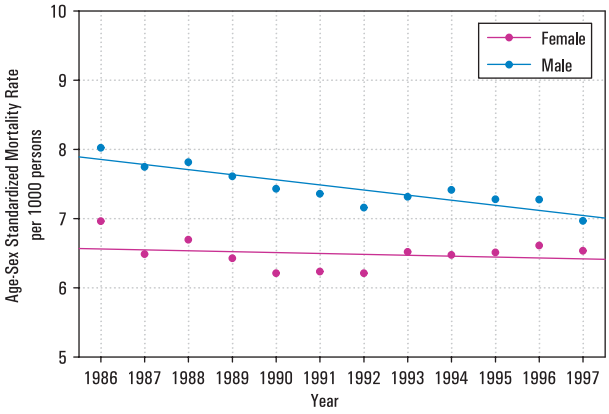


Source: AHCIP Stakeholder Registry, 1998

A.2 Mortality

The age-sex standardized mortality rate is a measure of the number of individuals per 1,000 population who die in a single year (if the population distribution by age were the same for Alberta as for Canada as a whole). Mortality rates have been decreasing in Alberta over the past decade, though this is much more apparent for males than for females.

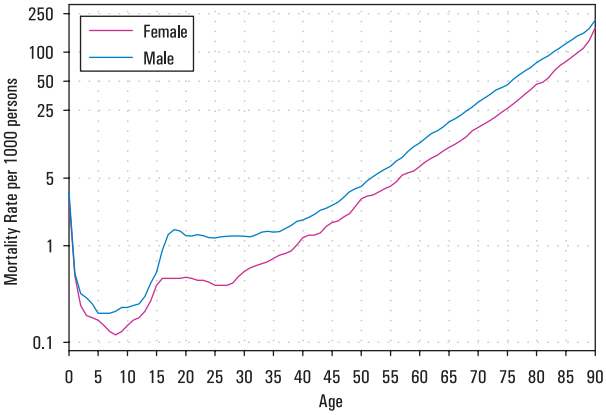
Figure A.2.1
Age-Sex Standardized Mortality Rate, Alberta, 1986 - 1997



Source: Vital Statistics Death File, 1998

The age-specific mortality rates show low rates in childhood, a rapid increase in the teenage years, a plateau during the young adult years, and a consistent increase thereafter with age. Females have lower age-specific mortality rates at all ages.

Figure A.2.2
Age-Specific Mortality Rates Alberta, 1992 - 1996 combined



Source: Vital Statistics Death File, 1998

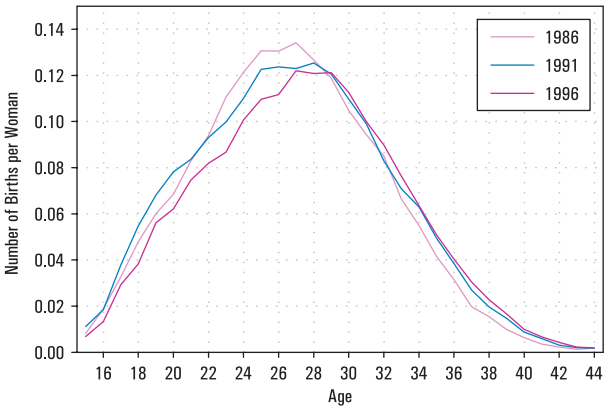
Mortality rates are often transformed and presented as life expectancies. Section C (Health Status and Determinants) of this document presents information on life expectancy. For a detailed consideration of death rates due to specific causes, see Section D (Chronic Disease and Injury).

A.3 Fertility

The age-specific fertility rate for a given period (usually one year) is the total number of live births to mothers in a specific age group, divided by the total female population in that age group. The curve formed by plotting age-specific fertility rates across all childbearing ages is considered a good descriptor of patterns of fertility within a population. Between 1986 and 1996, the fertility curve has shifted downwards, indicating decreased fertility, and to the right, indicating an increase in the mean age of fertility. From 1986 to 1996, the mean age of fertility increased from 27.2 to 27.9 years of age in Alberta.

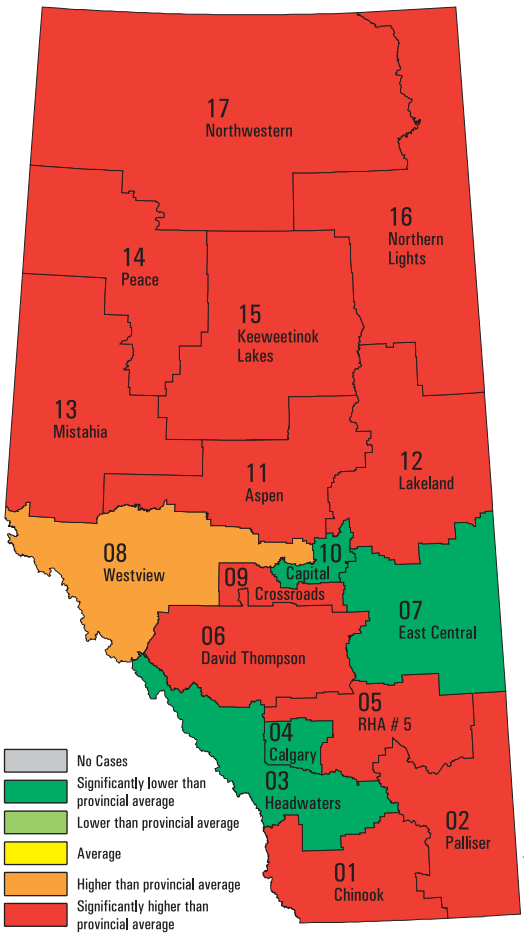
The total fertility rate (TFR) is the sum of age-specific fertility rates and is interpreted as the average number of children that would be born to each female in the population if the age-specific fertility rates did not change. The total fertility rate for Alberta was already low in 1986 and under the level of 2.1 needed to maintain a stable population size. Although there have been some fluctuations from year to year, the TFR decreased only slightly from 1.82 births per woman in 1986 to 1.76 births per woman in 1996. There is considerable variability in the TFR by region, with higher rates generally associated with northern and rural regions.

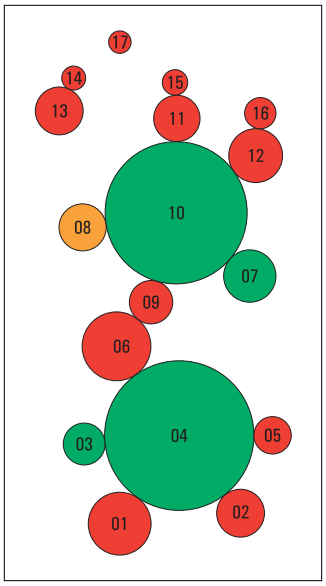
Figure A.3.1
Age-Specific Fertility Rates Alberta, 1986 - 1996



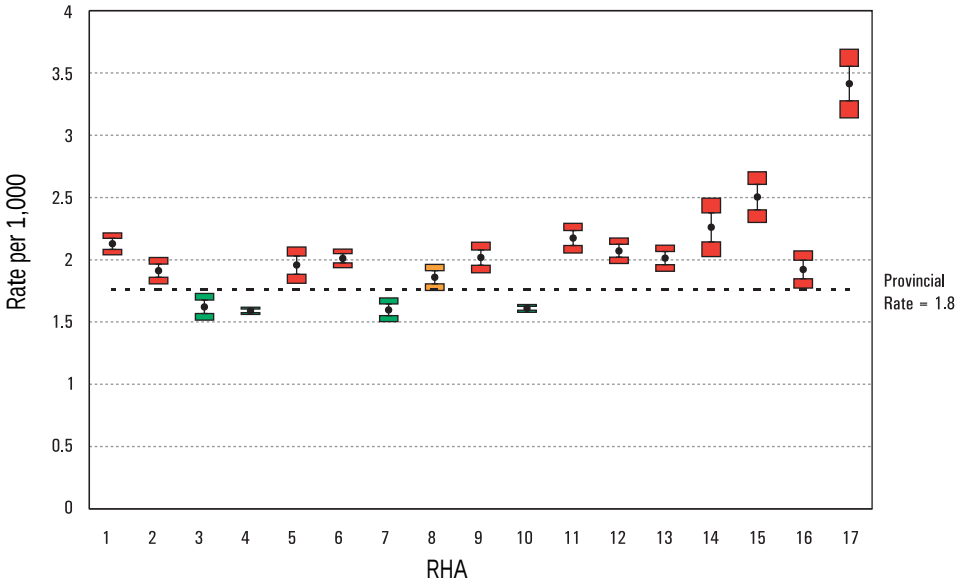
Source: Vital Statistics Birth File, 1997

Figure A.3.2
Total Fertility Rate by Region, Alberta, 1996





RHA Population Cartogram



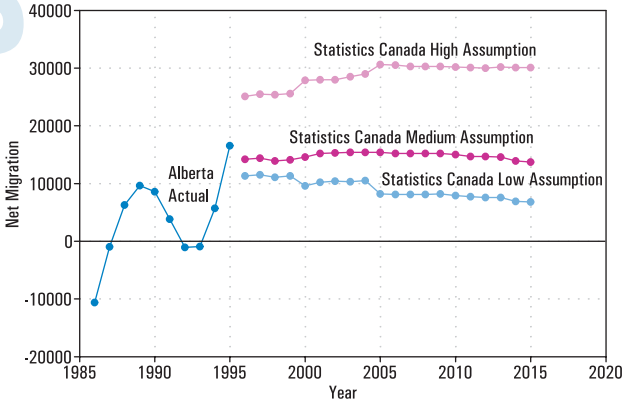
Source: Vital Statistics Birth File, 1997

A.4 Migration

Migration patterns are difficult to predict because they are often strongly influenced by short-term economic considerations. In the recent past, Alberta has shown a strong increase in net migration. Since the Alberta economy continues to perform strongly, Alberta Health and Wellness has based its population projections on the high migration scenario developed by Statistics Canada. Preliminary indications are that these projections have been accurate for 1997 and 1998.

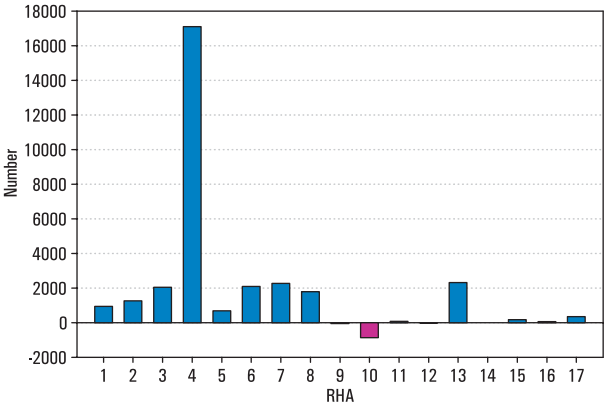
There are also differences in migration patterns between regions. For 1996, Calgary and the southern regions showed a large net influx while the Capital region and the north had a small net outflux (except for the Mistahia region). Preliminary data for 1997 and 1998 suggest that high levels of migration into Calgary continued, but that the Capital region also experienced a net influx of migrants. Oil sands development is also expected to lead to an influx to the Northern Lights region.

Figure A.4.1
Net Migration to Alberta, 1986 - 1996 and projected



Source: AHCIP Stakeholder Registry, 1998
Statistics Canada, 1998

Figure A.4.2
Net Migration by Region, Alberta, 1995 - 1996



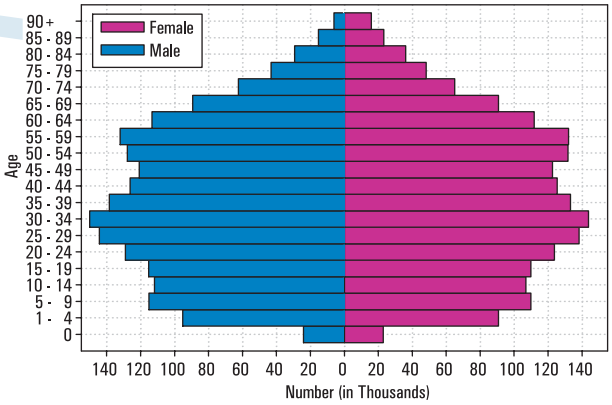
Source: Health Surveillance, 1998

A.5 Projected Population Change

In the most widely used method for developing population projections, separate projections are developed for mortality, fertility and migration, the three major components of population growth. These projections are then combined according to a statistical model. Alberta Health and Wellness' population projections are available in detail from reports entitled *Population Projections for Alberta and its Health Regions: 1996-2016*, *Population Projections for Alberta and its Health Regions: Models and Methods*, and *Population Projections for Alberta and its Health Regions: Update 1998*.

According to these projections, Alberta's population structure will change substantially over the next two decades as the 'baby boom' generation ages. There is also an indication that a second, or 'echo boom' will have reached adulthood by 2016.

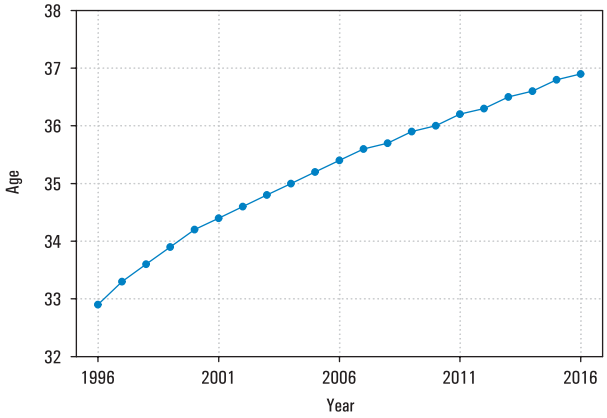
Figure A.5.1
Population Distribution Alberta, 2016 (projected)



Source: Health Surveillance, 1998

This age structure is reflected in part by a projected increase in the median age of Albertans over the next two decades.

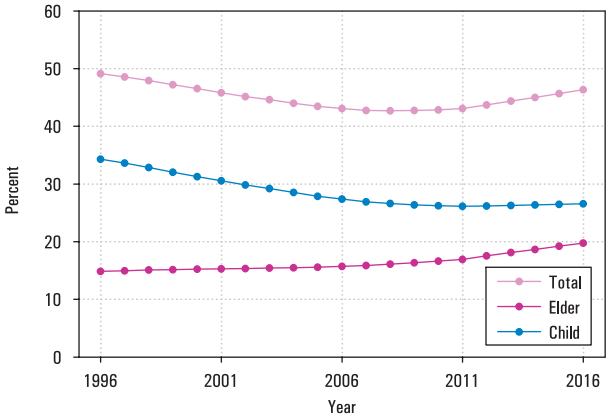
Figure A.5.2
Median Age in Alberta (projected)



Source: Health Surveillance, 1998

The proportion of older Albertans (65+) will increase and the proportion of younger Albertans (0-15) will decrease in the next millennium. The combined percentage of old and young will decrease for approximately a decade, primarily as a result of decreased fertility, before it begins to rise as the 'baby boom' generation enters old age.

Figure A.5.3
Dependency Ratios (projected)



Source: Health Surveillance, 1998

Section B

child and infant health

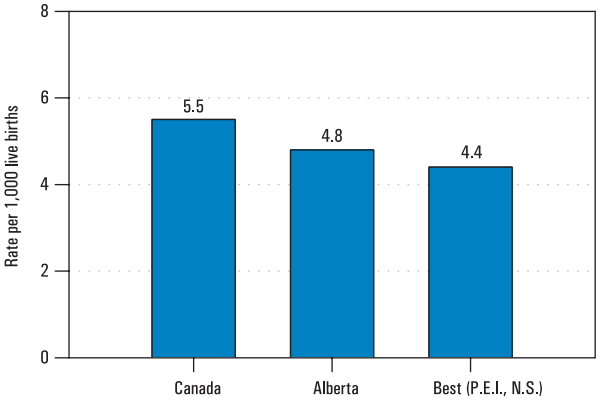
HEALTH TRENDS

B.1 Infant Mortality

Infant mortality - death in the first year of life - is recognized internationally as an indicator of population health. The infant mortality rate is defined as the number of babies, out of every 1,000 live births, who die before their first birthday.

In 1997, the infant mortality rate in Alberta was 4.8 per 1,000 live births, lower than the Canadian average of 5.5 per 1,000 live births, and similar to the best provinces, Prince Edward Island and Nova Scotia (4.4 per 1,000 live births).

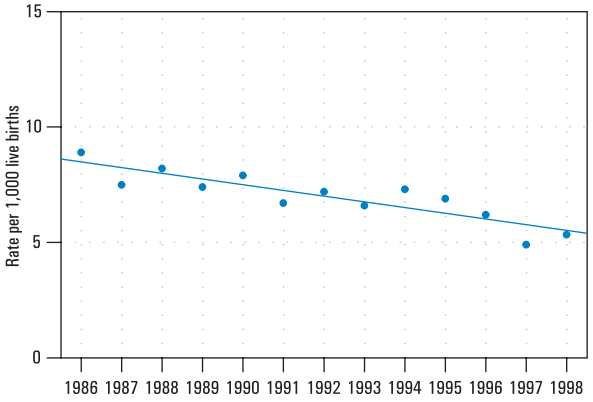
Figure B.1.1
Infant Mortality, 1997 (Canada, Alberta, Best Province)



Source: Statistics Canada, Daily News, June 16, 1999

For the past decade, the infant mortality rate has declined in Alberta.

Figure B.1.2
Trends in Infant Mortality in Alberta, 1986 - 1998



Source: Vital Statistics Death File and Birth File, December 1999 release

The infant mortality rate reflects the health of infants and their mothers. Infant mortality is closely related to congenital anomalies, premature births and low birth weight. Determinants affecting the previous factors include the mother's age, use of tobacco, alcohol, or other drugs; her access to adequate prenatal care; adequacy of nutrition and living conditions and presence of acute or chronic disease.

In the following map (Figure B.1.3), infant mortality is assigned to a region based on the mother's residence.

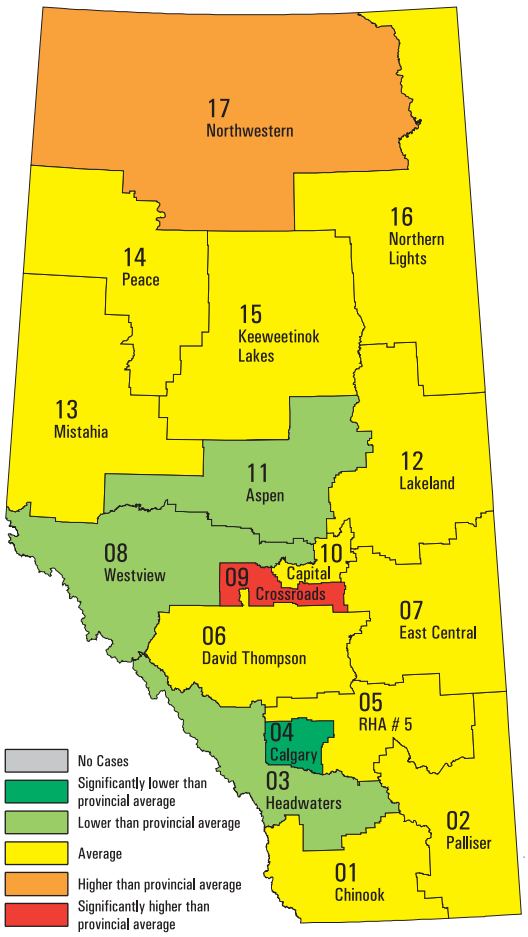
Provincial Business Plan Targets

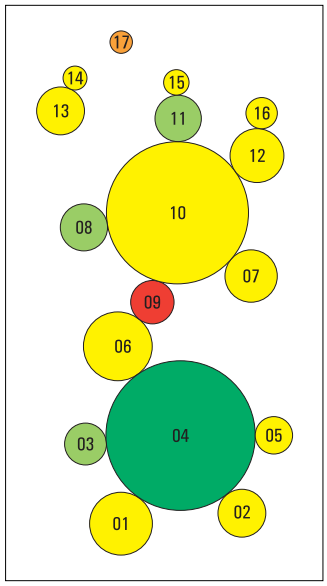
The provincial target for 2000 is that the infant mortality rate will be at most six per 1,000 live births.

Provincial Strategies

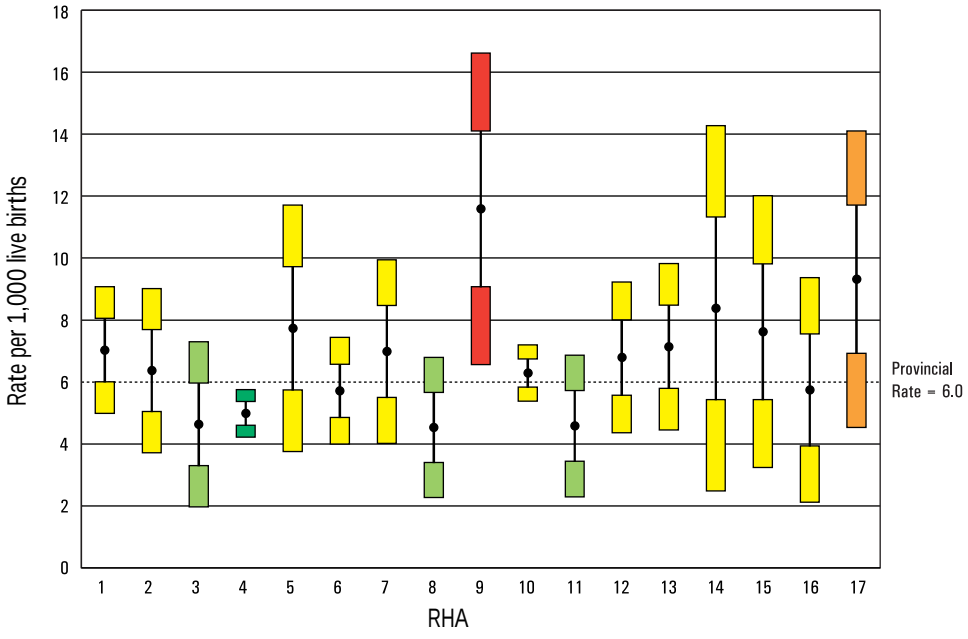
- Alberta Health and Wellness is collaborating with federal, provincial and territorial government departments on a number of initiatives related to child health. These include the National Children's Agenda (a national framework for children's strategies), the National Child Benefit (a child health benefit plan for children in low income families), the Canada Prenatal Nutrition Program and Community Action Program for Children.
- Alberta Health and Wellness is also collaborating with Alberta Learning, Human Resources and Employment, Children's Services, Justice and Attorney General, International and Intergovernmental Relations, Community Development and other partners to implement the Alberta Children's Initiative. This is a provincial business plan focused on improving the well being of children. It includes a shared vision, a policy framework, expected outcomes, and strategies to support the healthy development of all Alberta's children.

Figure B.1.3
Regional Differences in Infant Mortality Rate in Alberta, 1995 - 1997 combined





RHA Population Cartogram



Source: Vital Statistics, Death File & Birth File, April 1998 release

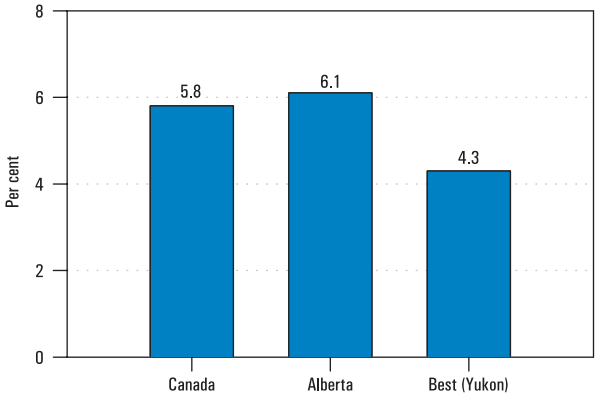
B.2 Low Birth Weight

Birth weight is an indicator of the health status of newborns. Adequate prenatal growth is essential for future growth and development. Low birth weight (LBW) babies - those who weigh less than 2,500 grams (5.5 pounds) at birth - are more likely to have birth-related complications, disabilities, and other health problems. They are also more likely to have developmental delays, learning and behavioural problems and long-term health problems. Low birth weight is a major factor in infant mortality.

Very low birth weight (VLBW) babies - those under 1,500 grams or 3.5 pounds - are especially likely to have long-term health problems and to require higher levels of health care throughout their lives.

In 1996, 6.1 per cent of all live births in Alberta were considered to be low or very low birth weight infants. This rate is somewhat higher than the Canadian average (5.8 per cent), and far higher than the best province, Saskatchewan (5.0 per cent). Yukon (4.3 per cent) has the lowest rate in Canada.

Figure B.2.1
Low Birth Weight, 1996 (Canada, Alberta, Best Province)

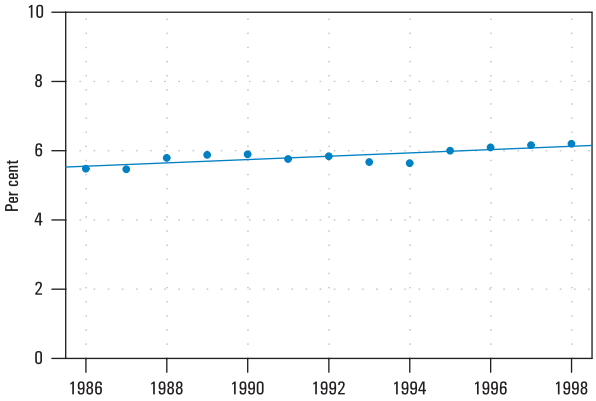


Source: Statistics Canada, Daily News, July 8, 1998

Low birth weight babies may be pre-term, small-for-gestational-age, or both. These types of low birth weight may have different underlying causes, as well as different effects on later development. Compared to pre-term, appropriate-for-gestational-age babies, pre-term, small-for-gestational-age babies have greater risk of health problems.

The incidence of low birth weight in Alberta has varied over time, with a slight but steady increase over the last five years.

Figure B.2.2
Trends in Low Birth Weight in Alberta, 1986 - 1998



Source: Vital Statistics, Birth File, July 1999 release

Factors associated with low birth weight include premature birth, congenital anomalies, multiple pregnancy, acute or chronic disease in the mother, and young or old maternal age. Alcohol consumption, smoking and drug abuse during pregnancy have also been linked to low birth weight birth. Low socioeconomic status can contribute through inadequate nutrition, poor living conditions, and a lack of prenatal care.

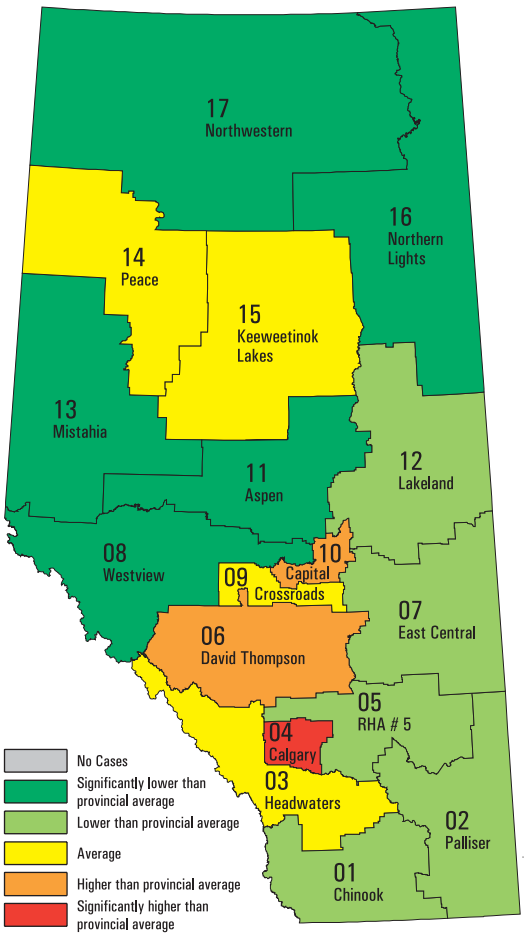
Provincial Business Plan Targets

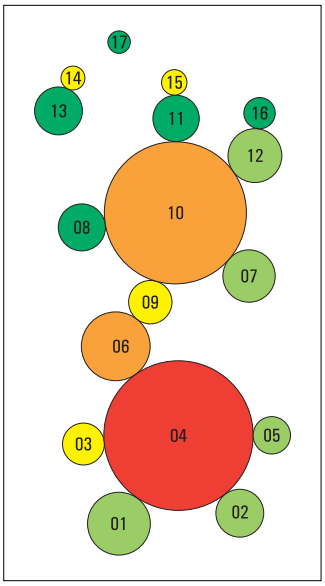
The provincial target for the year 2002 is that the percentage of newborn babies weighing less than 2,500 grams should not exceed 5.5.

Provincial Strategies

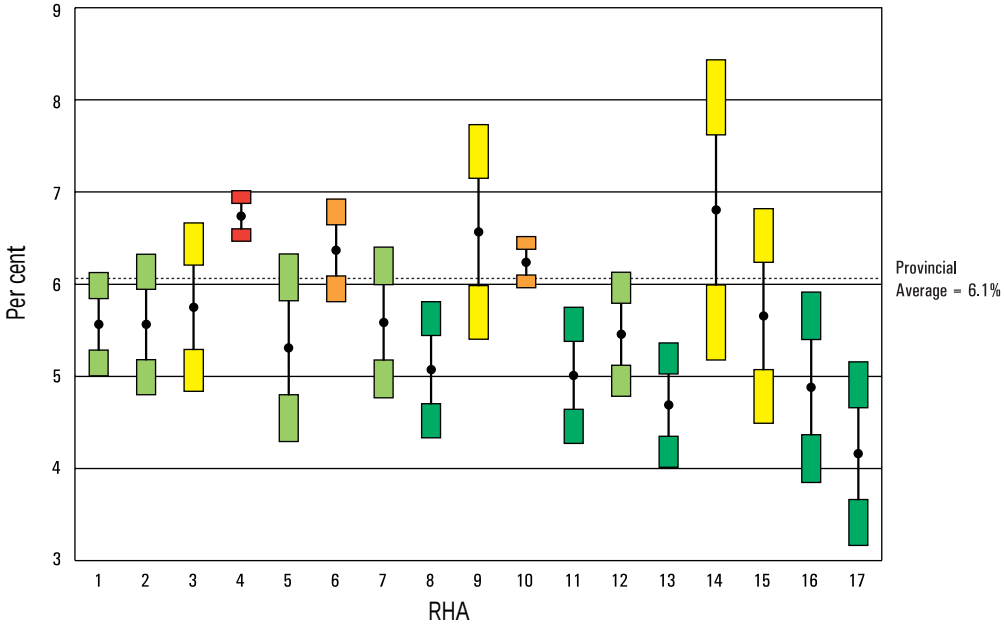
- Alberta Health and Wellness has released *Maternal Risk Factors in Relationship to Birth Outcomes (July 1999).* The report uses data from the "Notice of a Live Birth or a Stillbirth" forms to examine the influence of factors such as smoking, alcohol, drug use, maternal age and use of prenatal care on birth outcomes, including birth weight.
- The department works with regional health authorities, the Alberta Medical Association Committee on Reproductive Care and service providers to produce the annual report Alberta Reproductive Health: Pregnancy Outcomes.
- The department is also exploring the development of strategies to address low birth weight and enhance the health of infants in the province. It is also leading the Children's Health Study, which will examine the long-term impact of low birth weight on health status and the use of health services.
- Alberta Health and Wellness collaborates with Health Canada and other partners to support the Canada Prenatal Nutrition Program, which is intended to decrease the occurrence of low birth weight in babies.
- Smoking during pregnancy has been identified as a significant factor in low birth weight babies. Alberta Health and Wellness provides funds to the Alberta Tobacco Reduction Alliance (ATRA) to implement the Alberta Tobacco Reduction Plan.

Figure B.2.3
Regional Differences in Low Birth Weight in Alberta, 1995 - 1997 combined





RHA Population Cartogram



Source: Vital Statistics, Birth File, April 1998 release

B.3 Congenital Anomalies

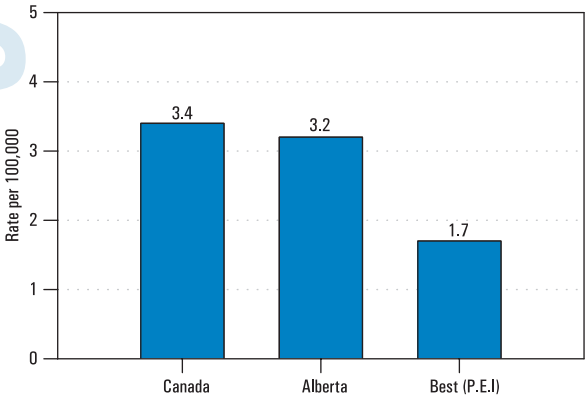
Congenital anomalies are a major contributor to infant mortality. Congenital anomalies represent a wide range of birth defects including heart malformations, skeletal deformities, and body chemistry imbalances. They range from minor to severe, and may result in debilitating disease, physical or mental disability, or early death.

Congenital anomalies may be inherited, or they may result from interference in the womb or from environmental factors such as chemicals or pollutants. Although the causes of most birth defects are unknown, several have been identified. These causes include heredity, genetic abnormalities, chromosomal abnormalities, infections, drugs and medicines, alcohol, smoking, malnutrition, and environmental effects.

Few birth defects can be attributed to a single cause; most result from the interaction between environmental factors and heredity. The outcome depends on inherited susceptibility, the degree of exposure to a hazard, and the stage of pregnancy at which exposure occurs.

In 1997, deaths due to congenital anomalies in Alberta (3.2) were slightly lower than the national average (3.4), but higher than that of the best province, Prince Edward Island (1.7) or the second best province, British Columbia (2.8).

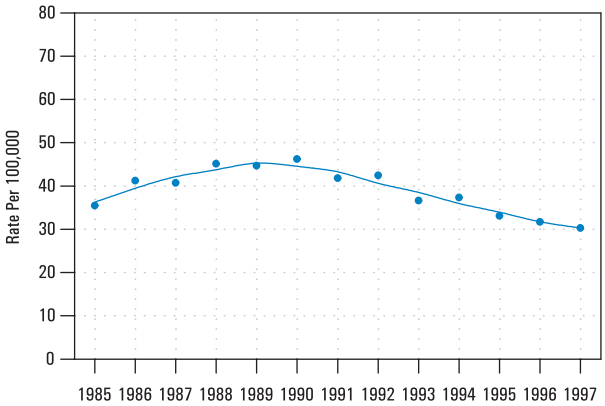
Figure B.3.1
Mortality Rate from Congenital Anomalies, 1997 (Canada, Alberta, Best Province) (Deaths per 100,000 population, age-standardized)



Source: Statistics Canada, Health Indicators Database, 1999

In Alberta there are over 1,200 babies annually diagnosed with birth defects before their first birthday. Over the past 10 years, the birth prevalence of congenital anomalies has decreased from 41 per 1,000 births in 1986 to 30 in 1997. Improvement of prenatal and neonatal care, prenatal screening programs, and other medical interventions and educational programs have likely contributed to the decline.

Figure B.3.2
Trends in Congenital Anomalies in Alberta, 1985 - 1997 (Cases* per 1,000 births)



Source: Alberta Congenital Anomalies Surveillance System (ACASS), October 1999 release

* Infants diagnosed with congenital anomalies before their first birthday.

Pre-conception screening for maternal infections and other conditions that may affect the first eight weeks of fetal development is important in preventing congenital anomalies. Establishing good health habits before conception is also important. For example, folic acid supplements taken prior to conception can help prevent neural tube defects.

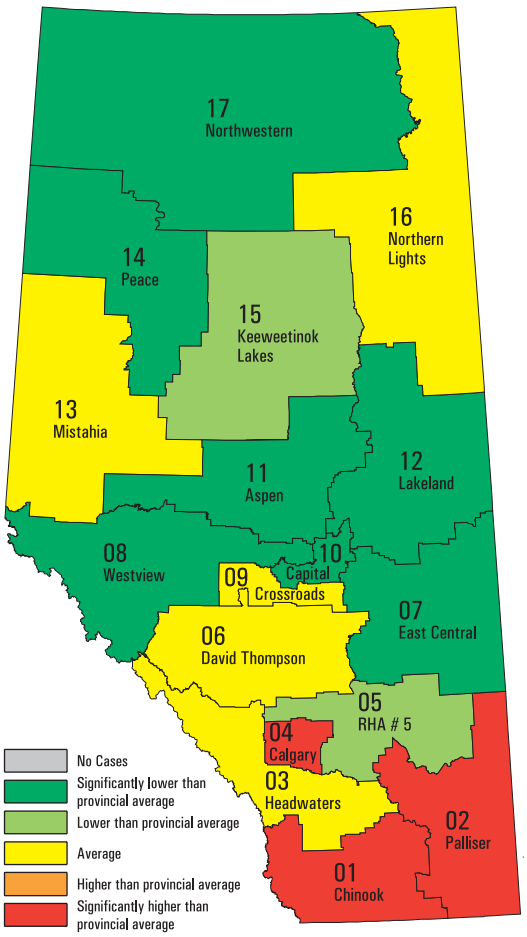
The availability of genetic services for at-risk couples can help reduce congenital anomalies. Gene analysis, chromosome studies, and biochemical analyses can be done to gather data for diagnosis and treatment of genetic disorders, and to give accurate information to those concerned. Education is also an indispensable tool in preventing congenital anomalies. Teaching prospective parents about how to have a healthy pregnancy is essential.

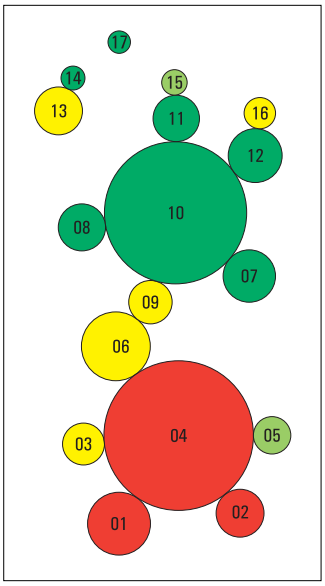
For more detailed information on specific birth defects as they pertain to the Alberta context please refer to the report entitled *Alberta Congenital Anomalies Surveillance System, 1980 - 1995*. This report will be updated on an ongoing basis.

Provincial Strategies

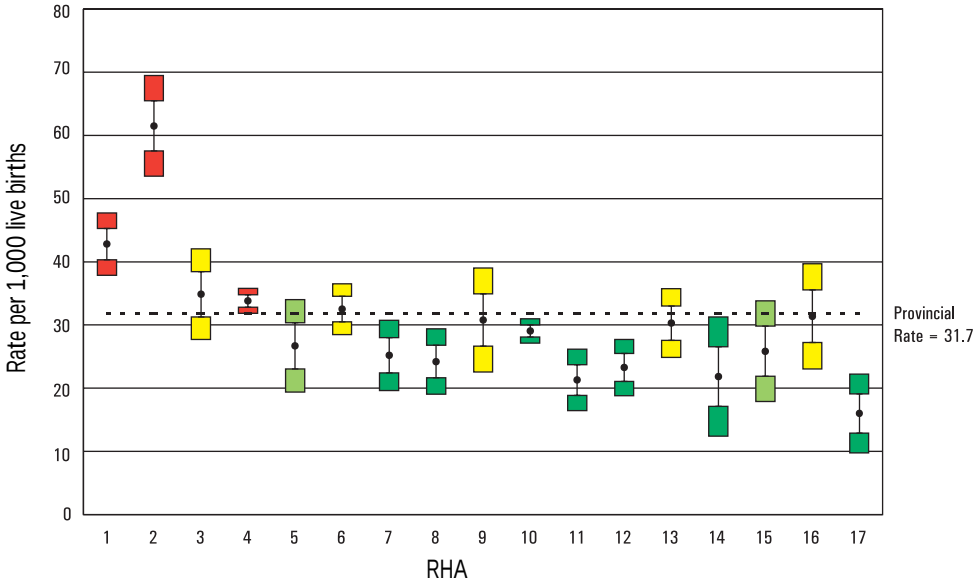
- Alberta Health and Wellness is a member of the Partnership on Fetal Alcohol Syndrome and effects (FAS/FAE) to implement initiatives focused on the prevention of FAS/FAE. Other partners include regional health authorities, the Alberta Mental Health Board, the Alberta Medical Association, AADAC, Alberta Children's Services, Alberta Justice, Alberta Learning, and Health Canada.
- Along with the regional health authorities, the department has also launched a new provincial initiative to improve screening for metabolic disorders. The goal is to have the Metabolic Screening for Newborns program in place by the spring of 2000. The purpose of the program is to ensure that all Alberta infants are screened for phenylketoneuria, congenital hypothyroidism and biotinidase deficiency at birth.
- Alberta Health and Wellness funds the Alberta Congenital Anomalies Surveillance System (ACASS) and is developing an enhanced surveillance system through the Hereditary Diseases Surveillance Program.

Figure B.3.3
Regional Differences in Congenital Anomalies in Alberta, 1995 - 1997





RHA Population Cartogram



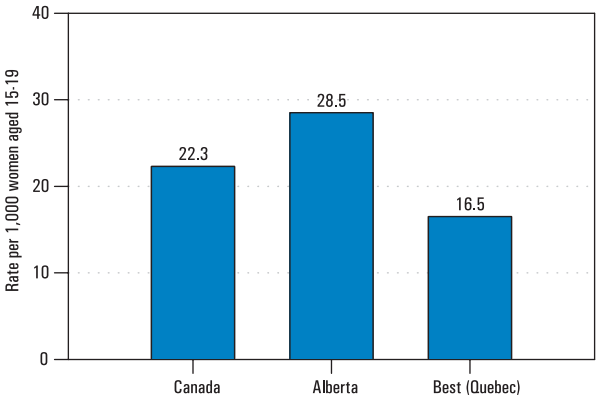
Source: Alberta Congenital Anomalies Surveillance System (ACASS), October 1999 release

B.4 Teenage Fertility

Births to teenage mothers are associated with low birth weight and pre-term birth. Very young pregnant teenagers are at an increased risk of emotional distress and complications related to pregnancy, such as pre-eclampsia and anemia. However, age alone is not a clear risk factor for poor outcomes. Mediating factors, such as poverty, lack of education, poor family support, and lack of prenatal care, are also involved in poor health outcomes.

To allow for Canadian comparisons, the rates presented here are for females 15 to19 years. In 1996, the teenage fertility rate in Alberta was 28.5 live births per 1,000 women aged 15 to 19. This rate is somewhat higher than the national average (22.3 per 1,000 females age 15 to 19), and far greater than the rate of Quebec, the province with the lowest rate (16.5 per 1,000 females aged 15 to 19).

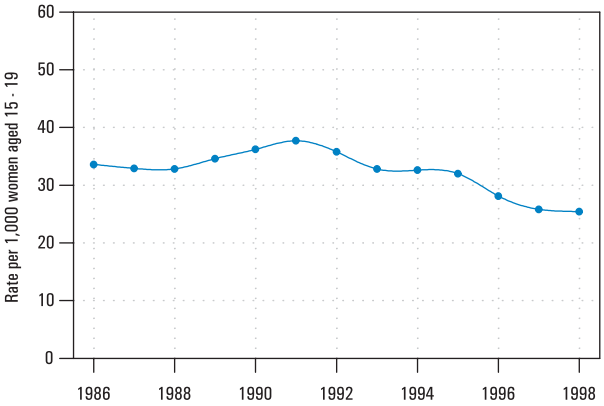
Figure B.4.1
Teenage Fertility, 1996 (Canada, Alberta, Best Province)



Source: Statistics Canada, Births and Deaths, 1996

From 1985 to 1990, the rate of births to teen mothers increased. However, since 1991, the rate in Alberta has decreased.

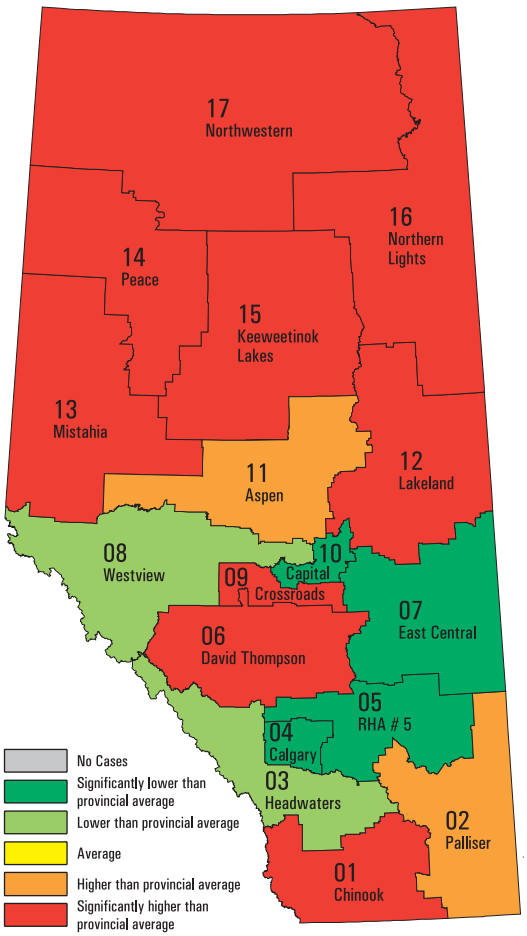
Figure B.4.2
Trends in Teenage Fertility in Alberta, 1986 - 1998

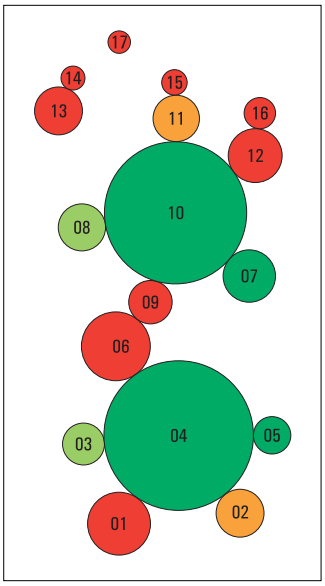


Source: Vital Statistics, Birth File, July 1999 release

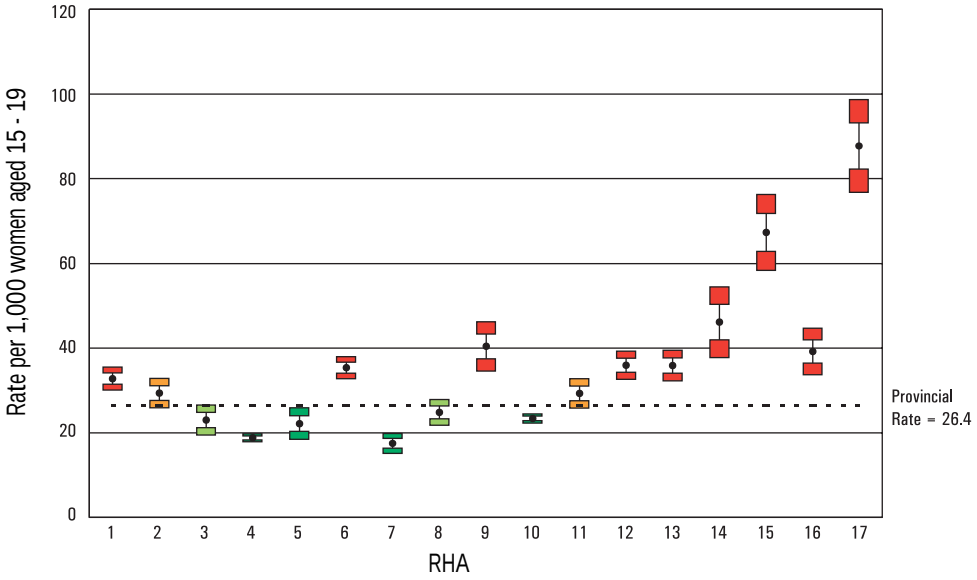
Primary prevention of adolescent pregnancy should focus on the development of responsible sexual behaviours. Family communication and peer advocacy programs aim to change attitudes toward reproductive health and childbearing, foster assertiveness, and support decision-making skills. Tertiary prevention focuses on the prevention of morbidity in young mothers and babies through appropriate prenatal care and follow-up.

Figure B.4.3
Regional Differences in Teenage Fertility in Alberta, 1996 - 1998 combined





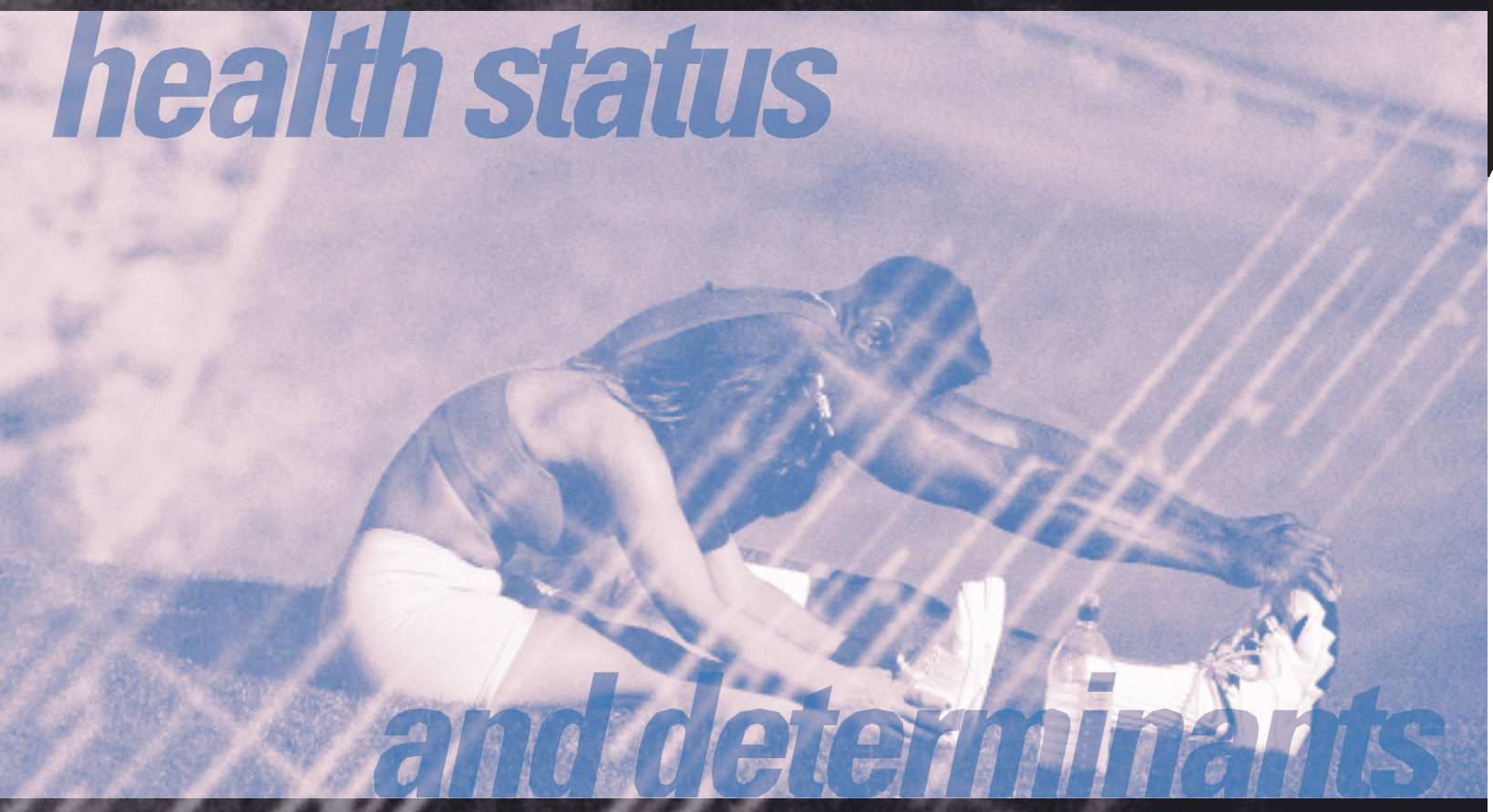
RHA Population Cartogram



Source: Vital Statistics, Birth File, July 1998 release

Section C

health status and determinants

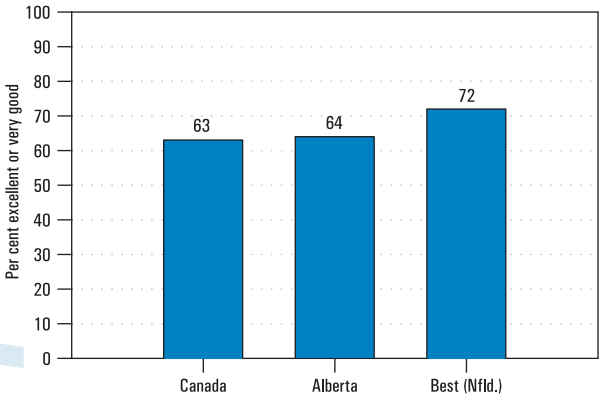


C.1 Self-Reported Health

Health is much more than just the absence of illness or disability. It is a state of physical, emotional, and social well being.

Self-reported health status — the subjective experience of how healthy a person feels — is an important health indicator. In 1996/1997, almost two out of three (64 per cent) Albertans age 15 and above reported that their health was very good or excellent. This proportion is about the same as the national average (63 per cent), but less than Newfoundland (72 per cent), the best province in terms of this measure.

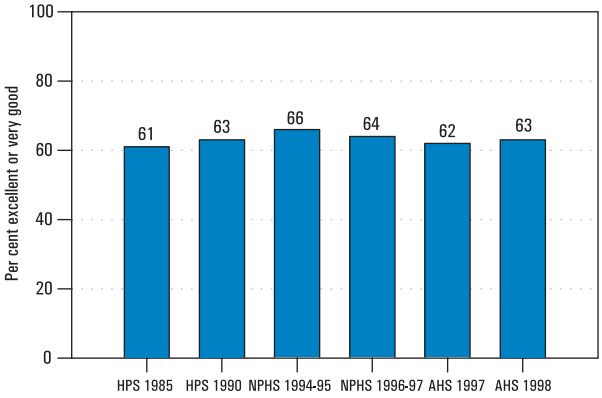
Figure C.1.1
Self-Reported Health, 1996 - 1997 (Canada, Alberta, Best Province)



Source: National Population Health Survey, 1996 - 1997 (age 15+)

Over the past 13 years, self-reported health status has been fairly constant in Alberta across various surveys. Higher results in years measured by the National Population Health Survey (NPHS) may reflect a slight difference in the wording of the question in the NPHS.

Figure C.1.2
Trends in Self-Reported Health in Alberta, 1985 - 1998



Sources: HPS: Health Promotion Survey
NPHS: National Population Health Survey (age 15+)
AHS: Alberta Health Survey (age 18+)

Provincial Business Plan Targets

The provincial target for 2000 is that at least 70 per cent of Albertans aged 18 to 64, and 75 per cent of Albertans aged 65 and over, will report excellent, very good or good health.

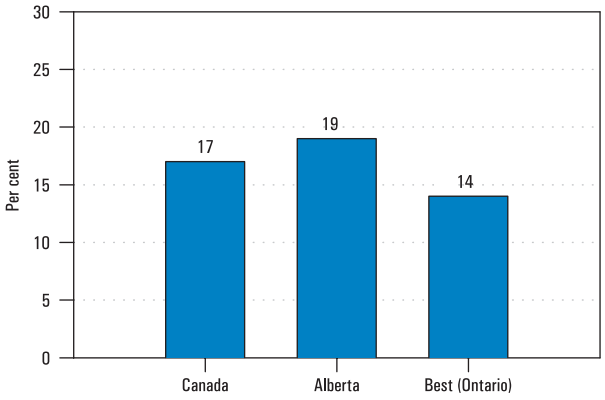
Provincial Strategies

- Action for Health — Grants are provided to RHAs to increase their capacity to plan, deliver and implement initiatives related to health promotion and injury/disease prevention.
- "You're Amazing"— Alberta Health and Wellness has concluded a two year health promotion initiative focused on health determinants and targeted at young families. An evaluation of the initiative has recently been concluded.
- Health in Action — This is an electronic clearinghouse accessible through the Internet, which provides information on health promotion and injury/disease prevention programs, projects and research.

C.2 Self-Reported Disability

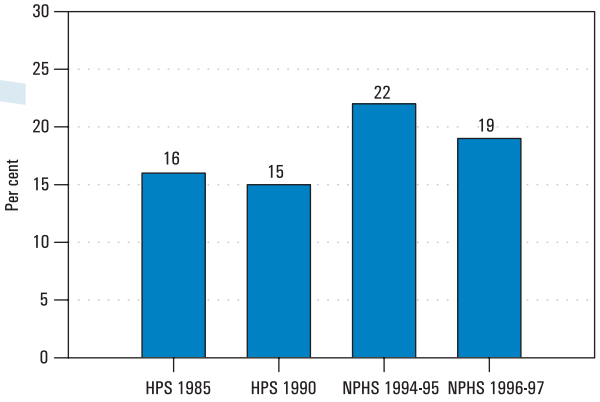
Approximately 19 per cent of Albertans age 15 and above report that their activities are limited as a result of a long-term physical or mental condition or other health problem. These limitations may affect activities in the home, school, or workplace. They can affect access to transportation, employment and leisure activities. This proportion is slightly higher than the Canadian average (17 per cent), and somewhat higher than that of the best province, Ontario (14 per cent).

Figure C.2.1
Self-Reported Disability 1996 - 1997 (Canada, Alberta, Best Province)



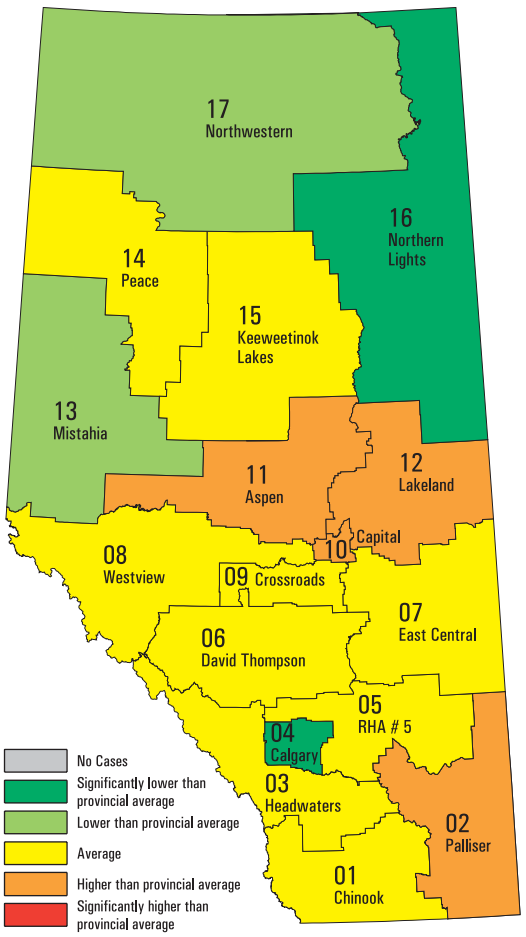
Source: National Population Health Survey, 1996 - 1997 (age 15+)

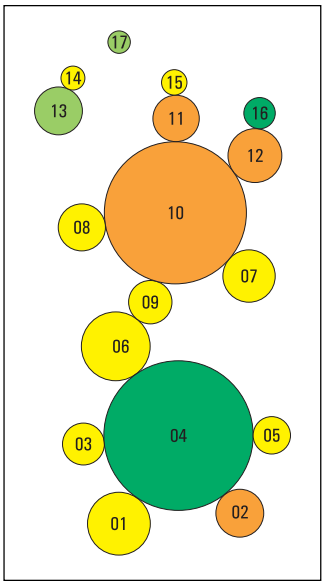
Figure C.2.2
Trends in Self-Reported Disability in Alberta, 1985, 1990, 1994-1995, 1996-1997



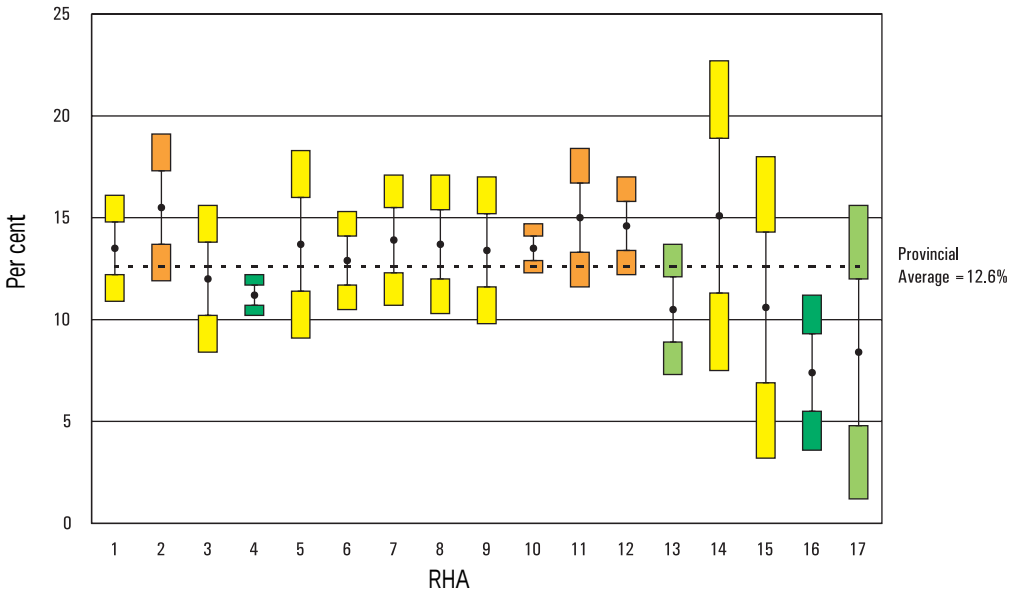
Sources: HPS: Health Promotion Survey
NPHS: National Population Health Survey (age 15+)

Figure C.2.3
Regional differences for self-reported disability in Alberta (all ages), 1996*





RHA Population Cartogram



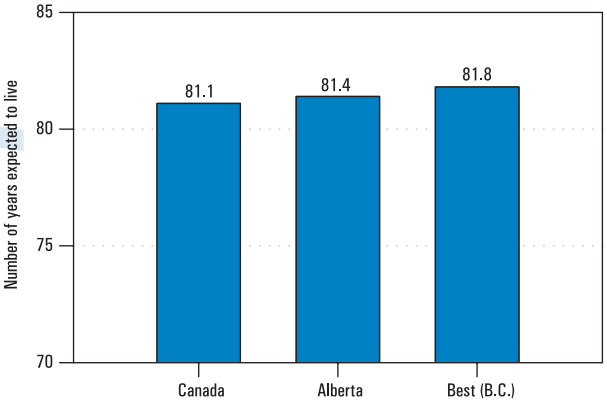
Source: National Population Health Survey, 1996 - 1997

*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

C.3 Life Expectancy

Life expectancy is "the average number of years an individual of a given age is expected to live if current mortality rates continue to apply" (Last, J. *Dictionary of Epidemiology,* 3rd edition, Oxford University Press, New York, 1995 p 59). An increasing life expectancy at birth is frequently interpreted as an indicator that a population is healthy, has adequate access to health care, has healthy diets, and is protected from the effects of environmental, workplace, or other hazards that would shorten life.

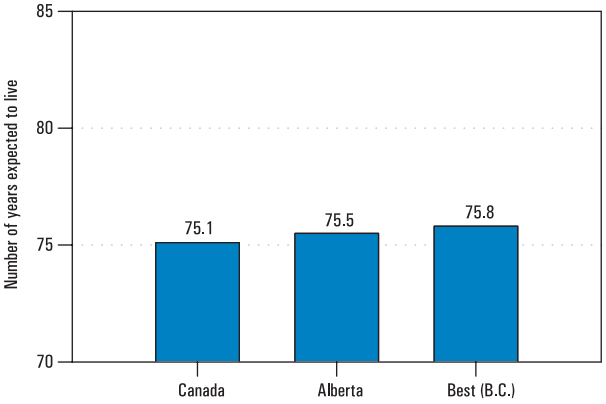
Figure C.3.1 (a)
Female Life Expectancy at Birth, 1994 (Canada, Alberta, Best Province)



Source: Current Demographic Situation in Canada: 1994, Statistics Canada

Life expectancy is calculated using estimates of age-specific mortality rates for a defined population over a circumscribed time period. Because these estimates depend upon large populations for stability, life expectancy is most often interpreted for large populations. Measures of variability should be calculated if the measure is to be employed on smaller regional populations.

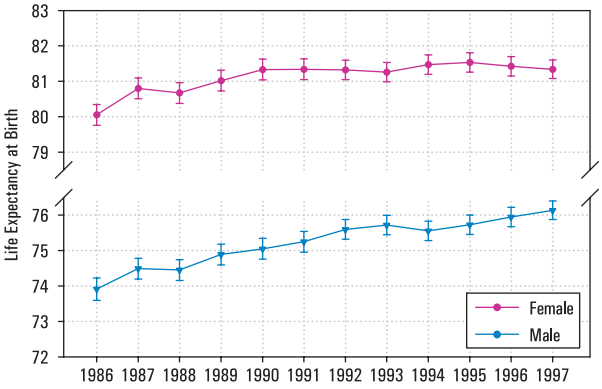
Figure C.3.1 (b)
Male Life Expectancy at Birth, 1994 (Canada, Alberta, Best Province)



Source: Current Demographic Situation in Canada: 1994, Statistics Canada

The figure below shows the life expectancy at birth (and its 95 per cent confidence interval) for Alberta males and females over the past decade. There is a general upward trend, more marked for males than for females.

Figure C.3.2
Trends in Alberta Life Expectancy at Birth 1986 - 1997

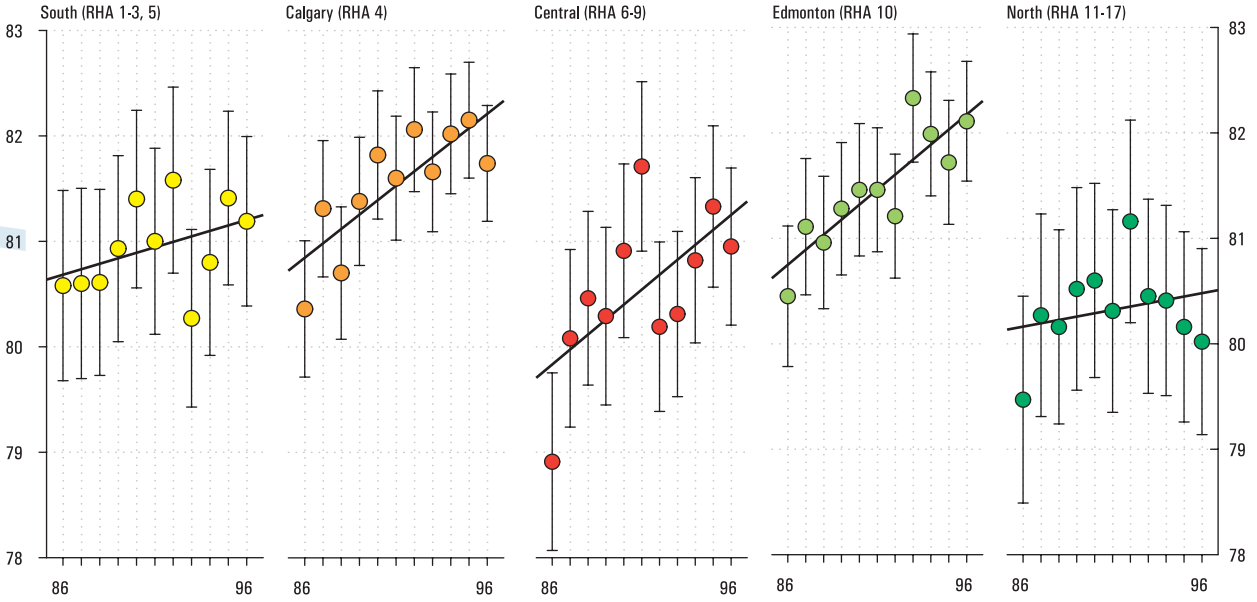


Source: Health Surveillance Branch, Alberta Health, 1997

The following figures are calculated on smaller regions and show larger variability (as indicated by width of the 95 per cent confidence around each point). For both females and males, life expectancy has increased at the regional level as indicated by the upward sloping trend lines, though for individual regions there is considerable fluctuation around this trend line. These figures also show that gains in life expectancy have been greater for the major urban areas (Calgary and Edmonton) than for the predominantly rural areas.

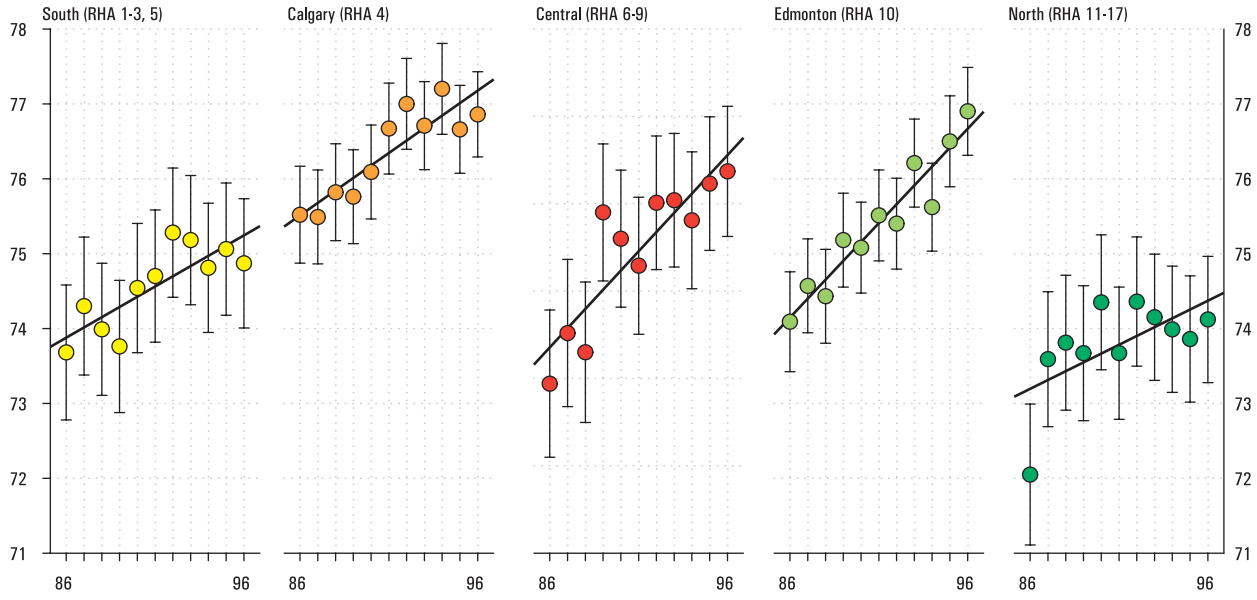
Further information can be found in two separately available reports: *Life Expectancy as a Health Indicator* and *Life Expectancy in Alberta: Socioeconomic Perspectives.*

Figure C.3.3 (a)
Female Life Expectancy at Birth by Region 1986 - 1996



Source: Health Surveillance Branch, Alberta Health, 1997

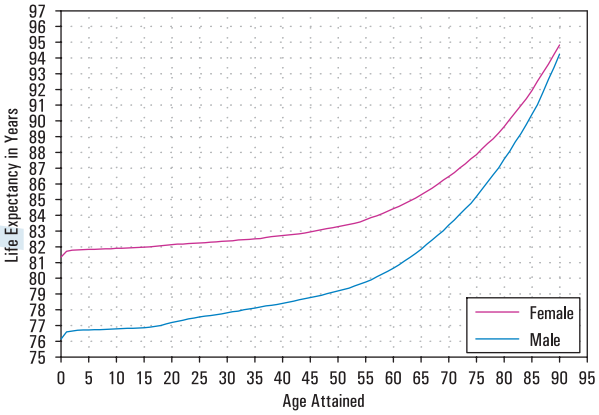
Figure C.3.3 (b)
Male Life Expectancy at Birth by Region 1986 - 1996



Source: Health Surveillance Branch, Alberta Health, 1997

As individuals continue to survive through time, their life expectancies increase as they continue to avoid premature death. For example a male who was 65 years of age in 1997 will have a life expectancy of about 81 years, while a female who was 65 years of age will have a life expectancy of about 85.2 years. These figures are of particular importance for planning the delivery of services to the ageing.

Figure C.3.4
Conditional Life Expectancy, Alberta, 1997



Source: Health Surveillance Branch, Alberta Health, 1999

Provincial Business Plan Targets

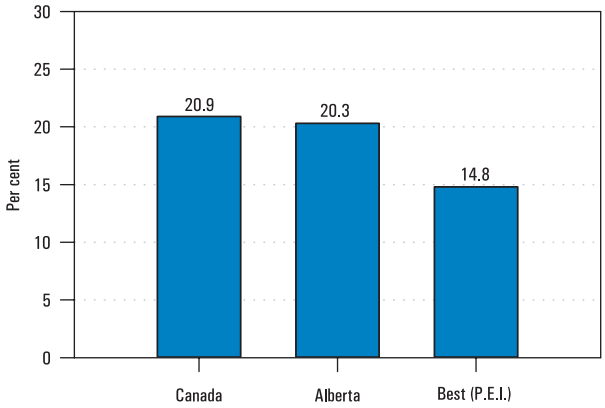
The provincial target for 2000 is that life expectancy at birth will have reached 77 years for males and 83 years for females.

C.4 Childhood Poverty

Living in poverty increases the risk of poor health and is associated with decreased life expectancy. Children living in poverty are particularly at risk. They are more likely to have poorer nutrition, increased infections, and are often not well prepared for school entry. The effects of childhood poverty can often be measured well into adulthood. For the purposes of this section, "children" are defined as those under the age of 18; "living in poverty" is defined as the situation when 56.2 per cent or more of the child's family income is being spent on shelter, food and taxes.

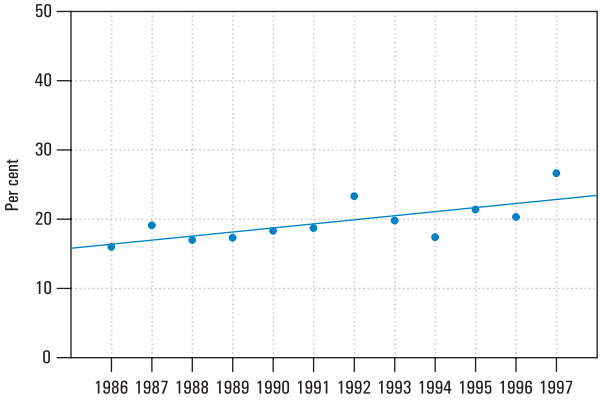
In 1996, Alberta had the fifth lowest child poverty rate in the country at 20.3 per cent. This was below the national average of 20.9 per cent and higher than the 14.8 per cent reported for Prince Edward Island, the province with the lowest rate.

Figure C.4.1
Child Poverty, 1996 (Canada, Alberta, Best Province)



Source: Poverty Profile 1996, National Council of Welfare, spring 1998

Figure C.4.2
Percentage of Children Living Below the Poverty Line, Alberta, 1986 - 1997

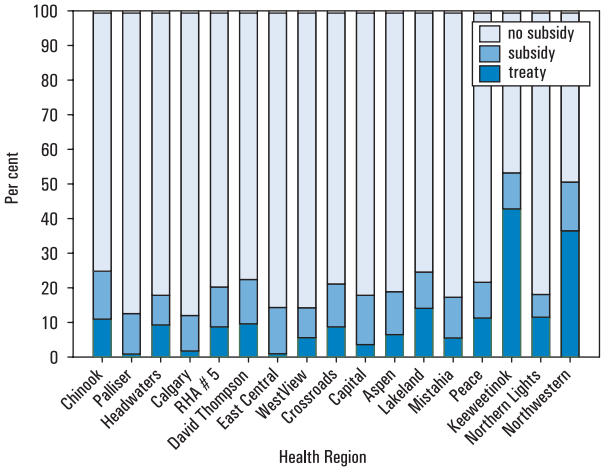


Source: Poverty Profile 1996, National Council of Welfare, spring 1998

Comparable figures for each of Alberta's 17 regional health authorities are not available. However, the Alberta Health Care Insurance Plan Stakeholder Registry offers proxies for low income. Partial subsidies and waivers of AHCIP premiums are available to families with an adjusted taxable income below $12,620. Full premium subsidies are available to families with incomes below $7,500. As of June 30, 1998, 82.4 per cent of children under the age of 18 were in families not requiring any form of relief from paying AHCIP premiums. Low income families comprised 11.9 per cent of children. More detailed information on AHCIP premiums can be found on the Alberta Health and Wellness website.

On a provincial level, 82.4 per cent of families receive no subsidy for health care premiums from Alberta Health and Wellness, but the proportion varies by RHA. Keeweetinok Lakes and Northwestern Health Regions have the highest proportion of people receiving subsidies, partly because they have a greater proportion of First Nations peoples. (Many First Nations people qualify for payment of their premiums by Health Canada).

Figure C.4.3
Percentage of Children in Families With: AHCIP Premium Subsidy; No Subsidy; or Treaty Status, 1998



Source: Alberta Health Care Insurance Plan Stakeholder Registration File, 1998

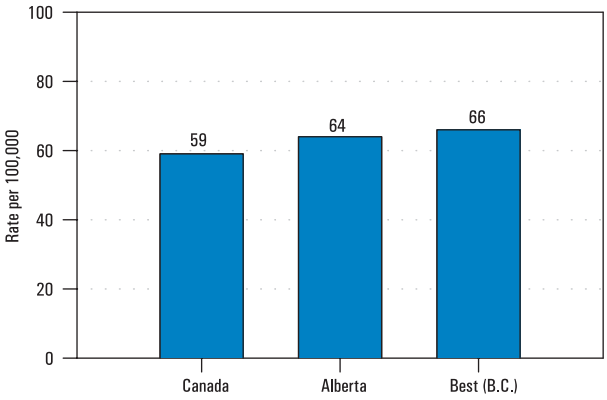
C.5 Physical Activity

physical activity

Regular physical activity relieves stress, builds strength, increases resistance to disease or injury, improves cardiovascular fitness, and helps maintain healthy weight levels.

In the 1996/1997 National Population Health Survey, 64 per cent of Albertans reported that they participated in physical activity at least three times per week. This is higher than the national average, 59 per cent, but slightly less than the best province, British Columbia, 66 per cent.

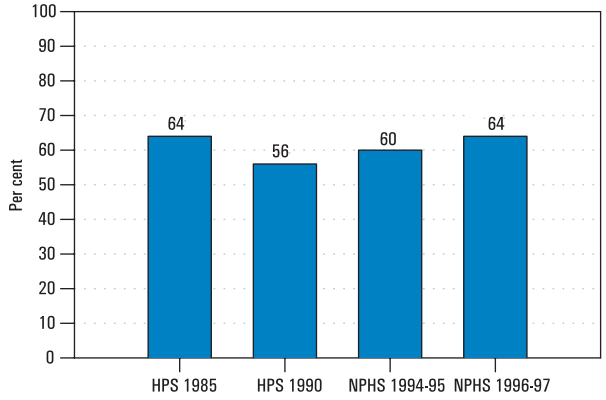
Figure C.5.1
Regular Physical Activity, 1996 - 1997 (Canada, Alberta, Best Province)



Source: National Population Health Survey (age 15+)

Over the past decade, the proportion of Albertans who are physically active has fluctuated. In 1985, 64 per cent of Albertans engaged in physical activity at least three times per week. However, by 1990 this figure had dropped to 56 per cent. Since then, there has been a resurgence back to 64 per cent.

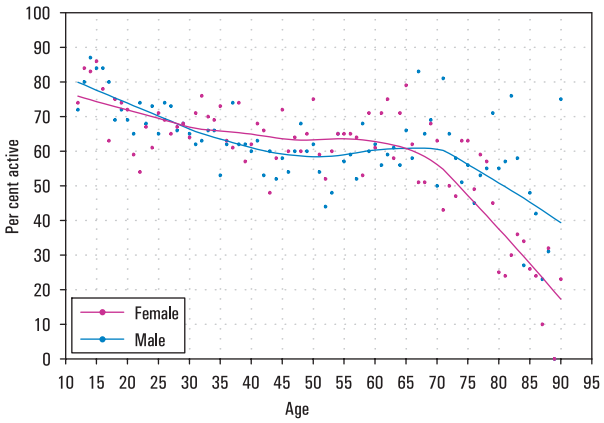
Figure C.5.2
Albertans Engaged in Regular Physical Activity, 1985, 1990, 1994 - 1995, 1996 - 1997



Source: HPS (Health Promotion Survey)
NPHS (National Population Health Survey, age 15+)

In 1996, the majority of males and females younger than 70 engaged in physical activity at least three times per week. People older than 70 were less active however, with the greater drop-off noticeable among females.

Figure C.5.3
Albertans Engaged in Regular Physical Activity, Age- and Sex-Specific Rates, 1996

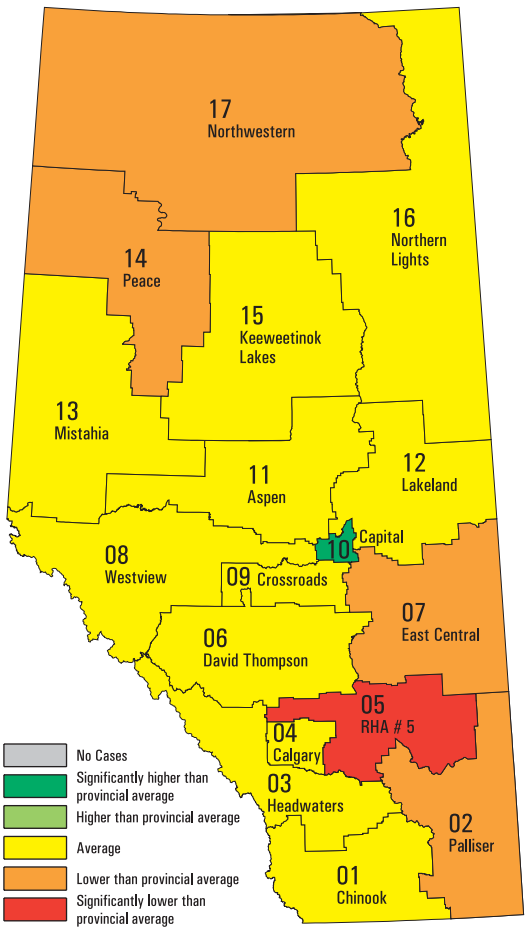


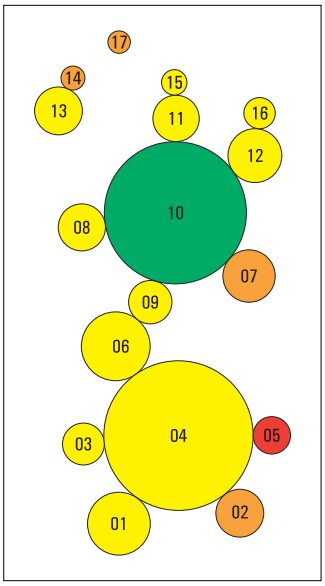
Source: National Population Health Survey, 1996-1997

Provincial Strategies

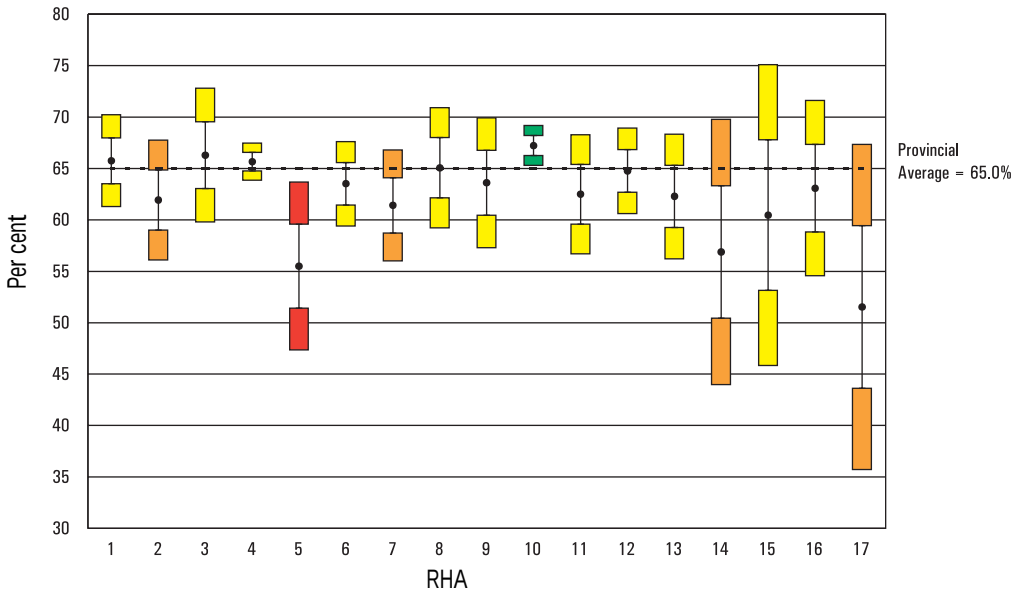
- Alberta Health and Wellness provides input into decisions regarding active living grants for community agencies from the Alberta Sport, Recreation, Parks and Wildlife Foundation.
- Alberta Health and Wellness participates as an active member of the Minister's Coordinating Council on Active Living. This council was established to examine and advise on appropriate ways to implement the Alberta Active Living Strategy recommendations as outlined by the Alberta Active Living Task Force Report. Several government departments participate in this Coordinating Council with Alberta Community Development having the lead.

Figure C.5.4
Albertans Engaged in Regular Physical Activity, Regional Differences, 1996*





RHA Population Cartogram



Source: National Population Health Survey, 1996-1997

*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

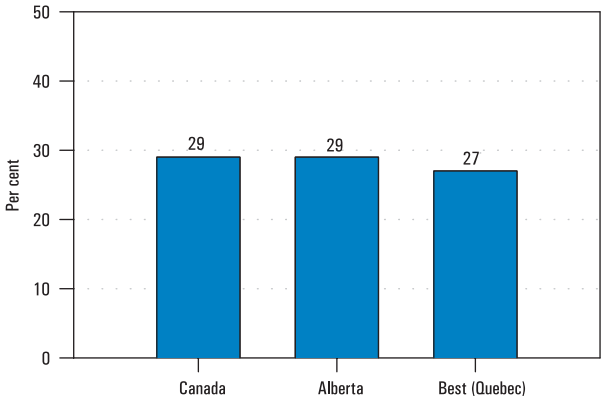
C.6 Overweight

Body weight depends on factors such as genetics, nutrition, mental health, and level of physical activity. Overweight and obesity are linked to a range of health problems, especially cardiovascular disease and diabetes.

Body mass index (BMI) is the most common measure of weight for height, and is used to determine whether a person's weight is over or under the desirable weight for their height. The BMI is calculated as 'weight in kilograms' divided by 'height in metres' squared. Adults between the ages of 20 and 64, excluding pregnant women, may be considered overweight if they have a BMI greater than 27.

In 1996/1997, 29 per cent of Albertans were overweight according to the above criteria. This is the same as the national average and slightly higher than the best province, Quebec (27 per cent).

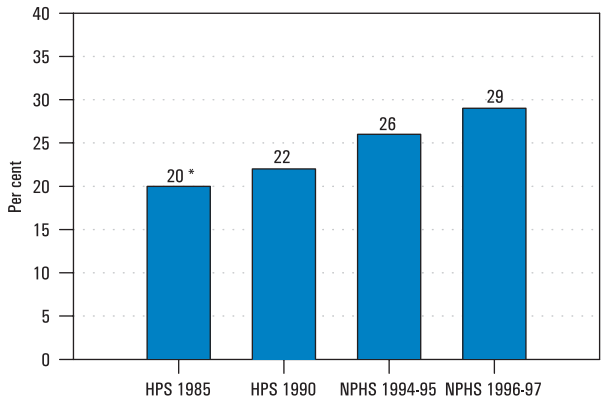
Figure C.6.1
Overweight Adults, 1996 - 1997 (Canada, Alberta, Best Province)



Source: National Population Health Survey, 1996 - 1997

Between 1985 and 1997, the proportion of overweight adults in Alberta rose steadily, from 20 per cent to 29 per cent. There was also an increase for Canada overall.

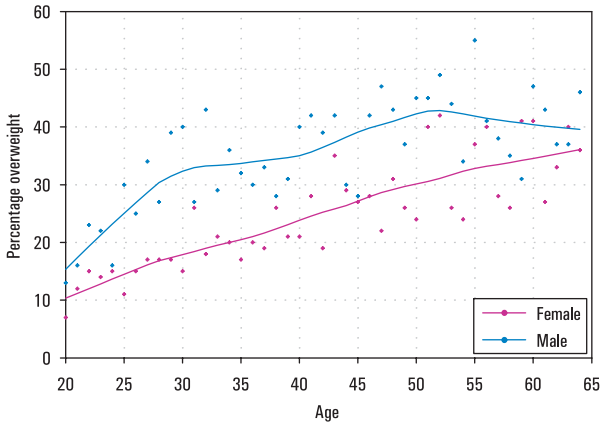
Figure C.6.2
Overweight Adults in Alberta and Canada, 1985, 1990, 1994-1995, 1996-1997



Source: Health Promotion Survey (HPS)
National Population Health Survey (NPHS)
* Updated calculation

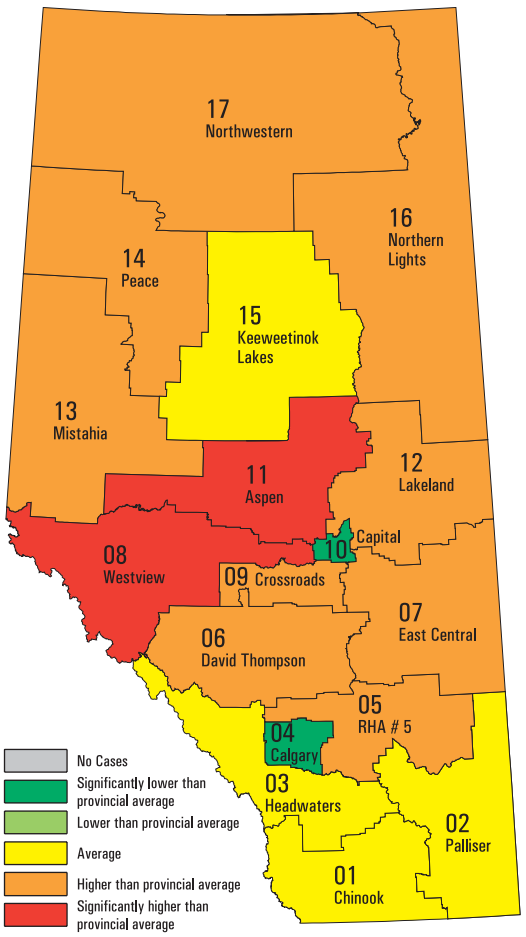
In 1996, a greater proportion of older Albertans was overweight than the proportions in younger age groups, with a larger percentage of overweight males than females. Weight appears to rise with age.

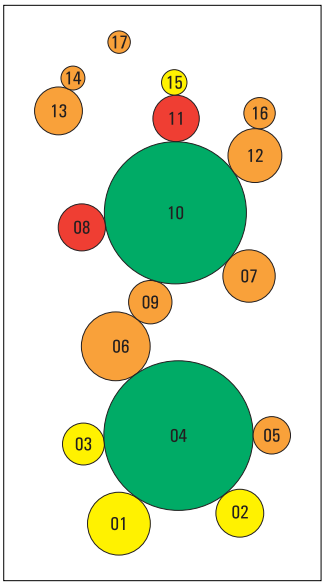
Figure C.6.3
Age- and Sex-Specific Rates for Overweight Adults in Alberta, 1996



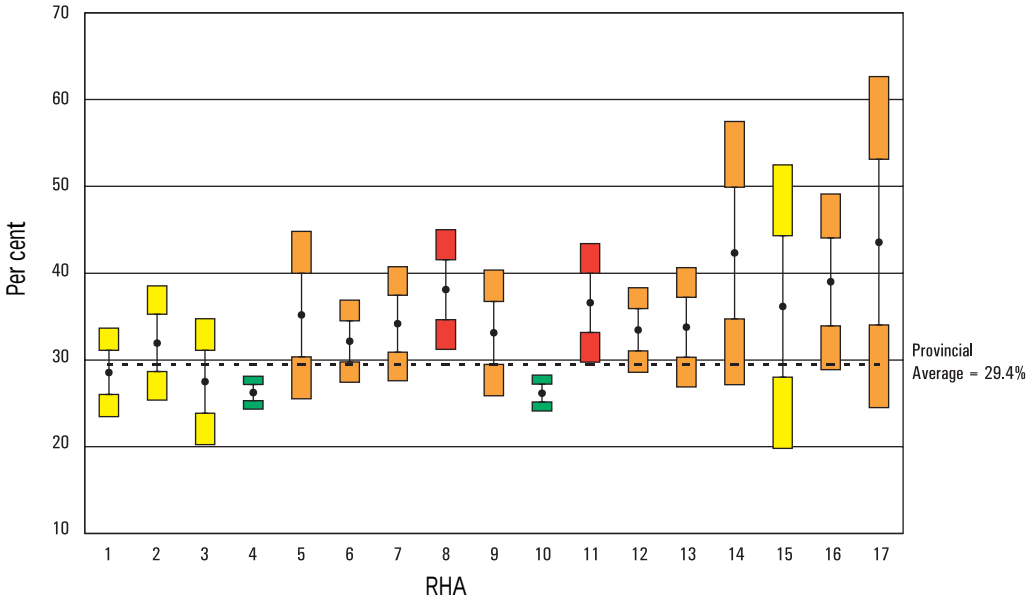
Source: National Population Health Survey, 1996 - 1997

Figure C.6.4
Regional Differences for Overweight Adults in Alberta, 1996*





RHA Population Cartogram



Source: National Population Health Survey, 1996 - 1997

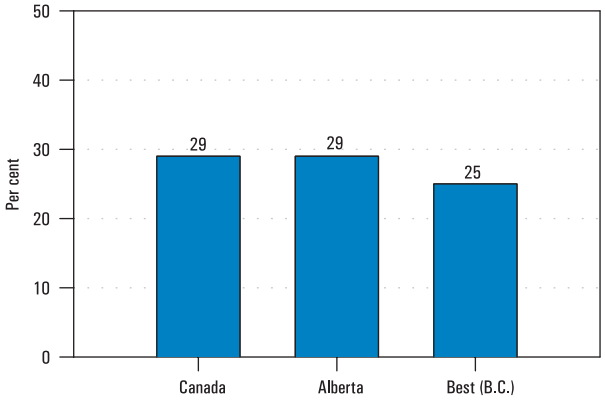
*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

C.7 Tobacco Use

There is little doubt that tobacco use is a serious threat to health. Smoking or exposure to tobacco smoke is a known cause of heart disease and lung cancer as well as emphysema and other respiratory diseases. Women who smoke during pregnancy are more likely to have small babies with increased risk of birth-related complications and chronic health problems. Children living with smokers are more prone to allergies, ear infections, coughs, and other respiratory ailments.

In 1996/1997, nearly 30 per cent of Albertans age 15 and over reported that they smoked cigarettes daily or occasionally. This is the same as the national rate and higher than the best province, British Columbia, at 25 per cent.

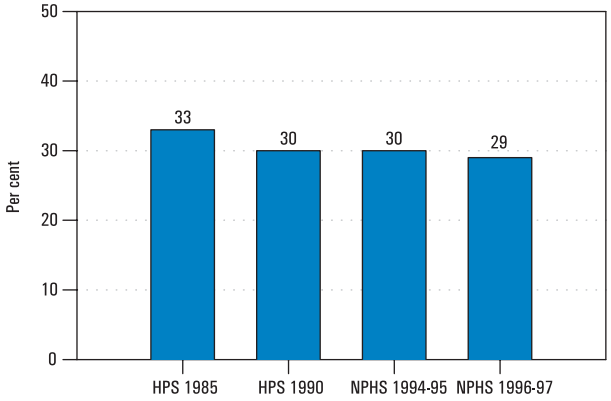
Figure C.7.1
Current Cigarette Smokers in Alberta and Canada, 1996 - 1997



Source: National Population Health Survey (age 15+)

Since the 1970s, the proportion of Albertans and Canadians who smoke cigarettes has decreased. However, there is a disturbing increase in the proportion of smokers under 25, especially females.

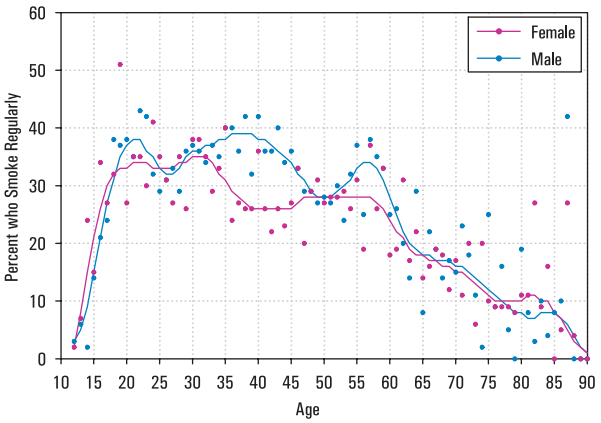
Figure C.7.2
Cigarette Smokers in Alberta, 1985, 1990, 1994-1995, 1996-1997



Sources: HPS: Health Promotion Survey
NPHS: National Population Health Survey (age 15+)

The 20-to-55 age range showed the highest proportion of smokers in 1996, although between the ages of 30 and 50 the percentage of smoking females is noticeably lower than for males.

Figure C.7.3 Age- and Sex-Specific Rates for Cigarette Smokers in Alberta, 1996



Source: National Population Health Survey, 1996 - 1997

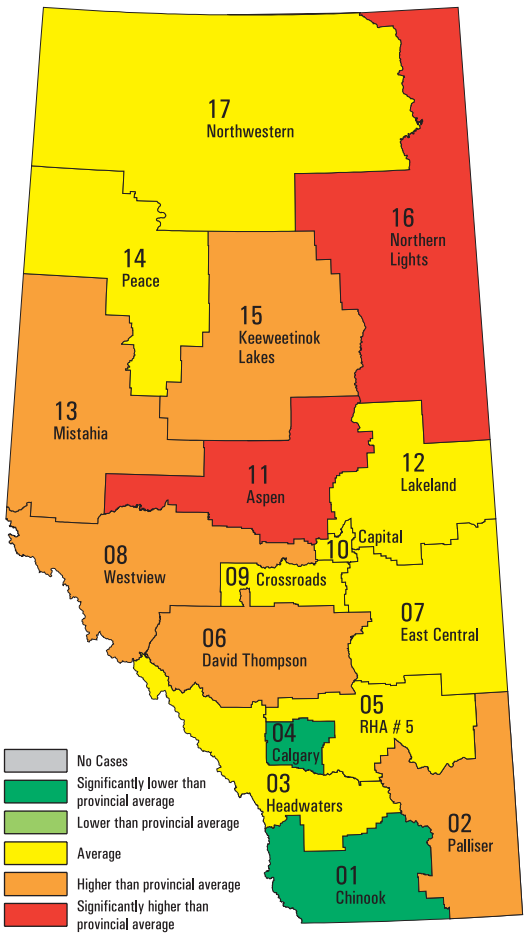
Provincial Business Plan Targets

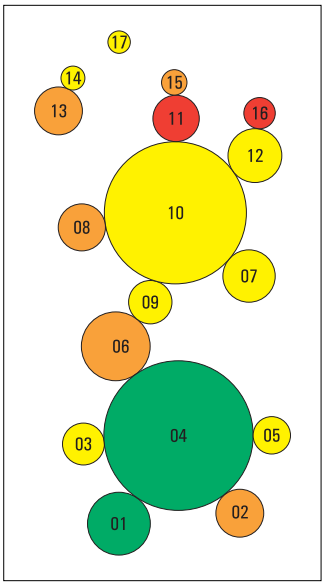
The provincial target for 2000 is that 75 per cent of Albertans (aged 12 and older) will report that they do not smoke.

Provincial Strategies

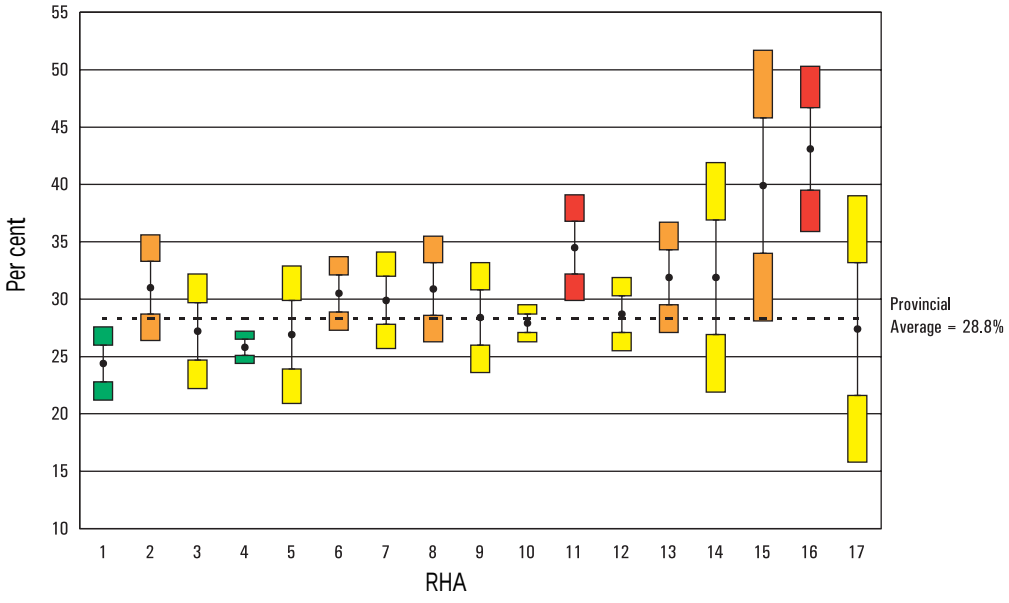
- Alberta Tobacco Reduction Plan — Funded by Alberta Health and Wellness, this collaborative, comprehensive plan has been developed in consultation with more than 50 stakeholders. The plan identifies strategies to reduce tobacco use in the province, and is being implemented by the Alberta Tobacco Reduction Alliance (ATRA), an organization with more than 70 members, including regional health authorities, other government departments, professional organizations, non-profit organizations, and the corporate sector.

Figure C.7.4
Regional Differences for Cigarette Smokers in Alberta, 1996*





RHA Population Cartogram



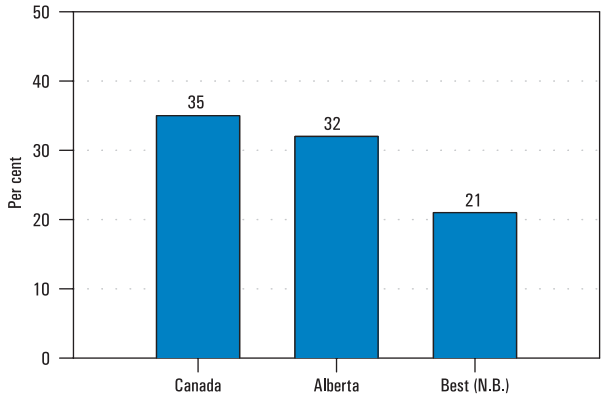
Source: National Population Health Survey, 1996 - 1997

*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

C.8 Alcohol Use

According to the 1996/1997 National Population Health Survey, about one-third of Albertans aged 15 and over drink at least once per week. This rate is slightly lower than the national average (35 per cent), and is higher than that of the best province, New Brunswick (21 per cent).

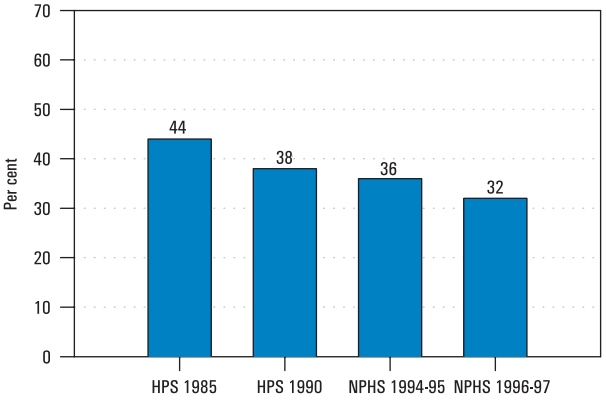
Figure C.8.1
Weekly Drinkers, 1996 - 1997 (Canada, Alberta, Best Province)



Source: National Population Health Survey
(sampled from the total population, aged 15 and over, including both drinkers and non-drinkers)

Over the past decade, the proportion of Albertans who drink at least once per week has decreased steadily, from 44 to 32 per cent.

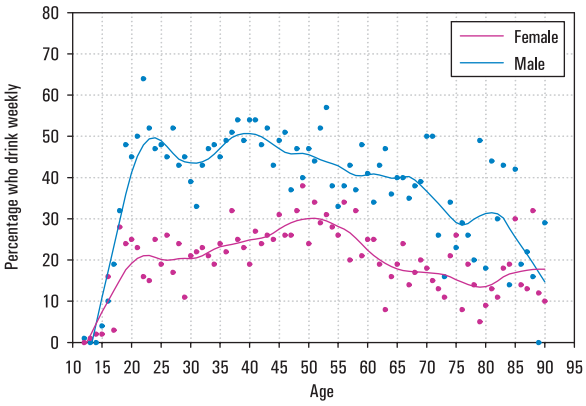
Figure C.8.2
Weekly Drinkers in Alberta, 1985, 1990, 1994-1995, 1996-1997



Sources: HPS: Health Promotion Survey
NPHS: National Population Health Survey
(sampled from the total population, aged 15 and over, including both drinkers and non-drinkers)

In 1996, almost half the males (48 per cent) in the 20-to-49 age range had at least one drink per week, while only 23 per cent of females in the same age group drank weekly.

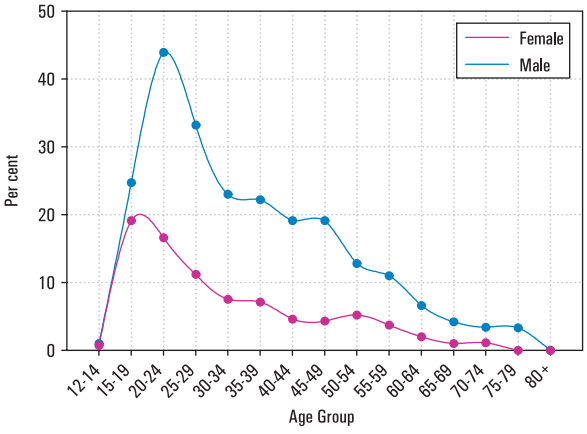
Figure C.8.3a
Age- and Sex-Specific Rates for Weekly Drinkers in Alberta, 1996



Source: National Population Health Survey, 1996 - 1997
(sampled from the total population age 15 and over including both drinkers and non-drinkers)

People who have at least five drinks at one sitting, 12 or more times per year, are considered to be problem drinkers. In 1996, 45 per cent of Alberta males in their early twenties fit this definition.

Figure C.8.3b
Age- and Sex-Specific Rates for Problem Drinkers in Alberta, 1996

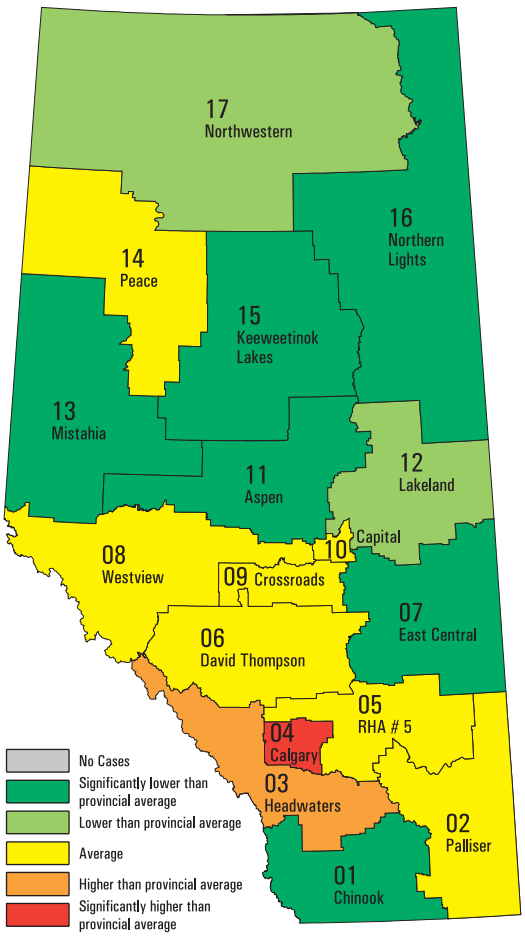


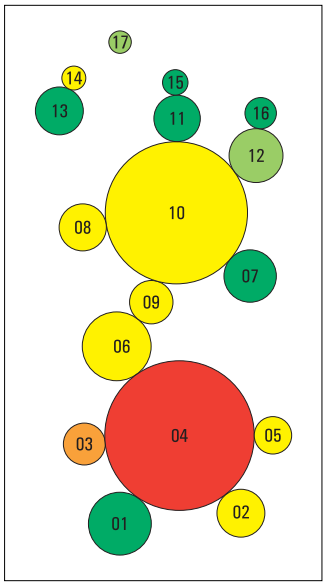
Source: National Population Health Survey, 1996 - 1997
(sampled from the total population age 15 and over including both drinkers and non-drinkers)

Provincial Strategies

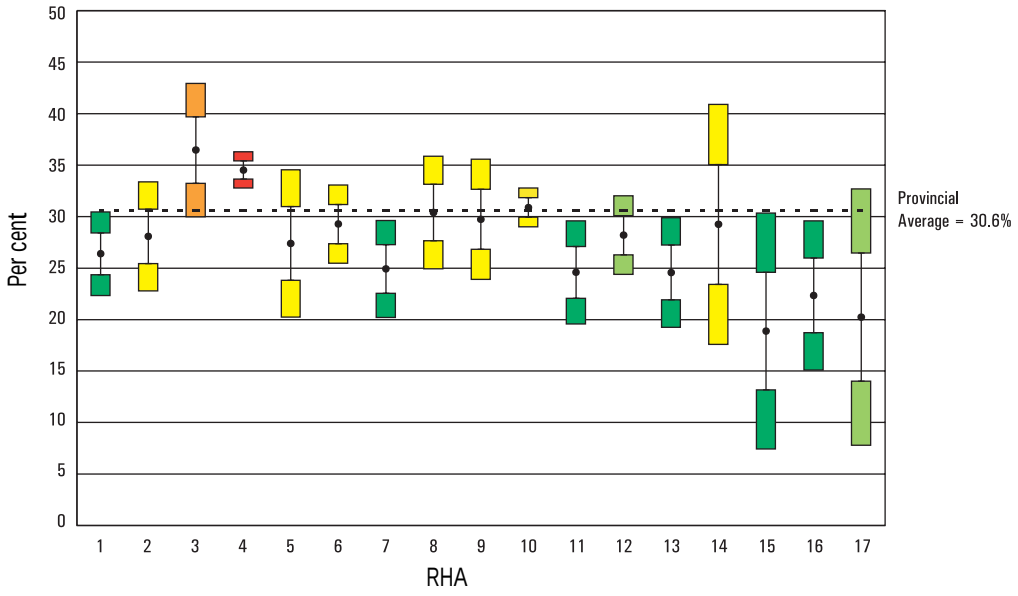
- The Alberta Alcohol and Drug Abuse Commission (AADAC) has as its mission to assist Albertans in achieving freedom from abuse of alcohol, other drugs and gambling. It provides treatment services, prevention services, and current information on trends and issues in these areas.
- Alberta Health and Wellness is a member of the Partnership on Fetal Alcohol Syndrome and effects (FAS/FAE) to implement initiatives focused on the prevention of FAS/FAE. Other partners include regional health authorities, the Alberta Mental Health Board, the Alberta Medical Association, AADAC, Alberta Children's Services, Alberta Justice, Alberta Learning, and Health Canada.

Figure C.8.4 (a)
Regional Differences for Weekly Drinkers in Alberta, 1996*





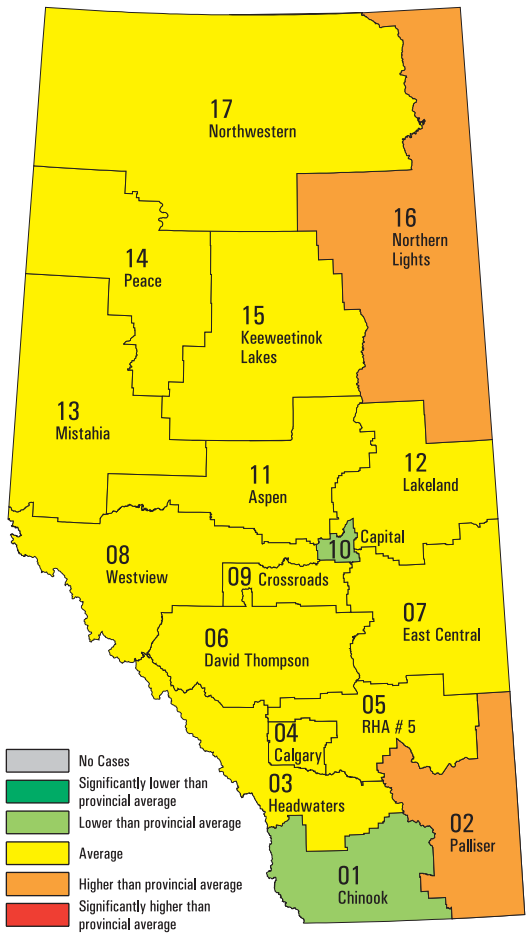
RHA Population Cartogram

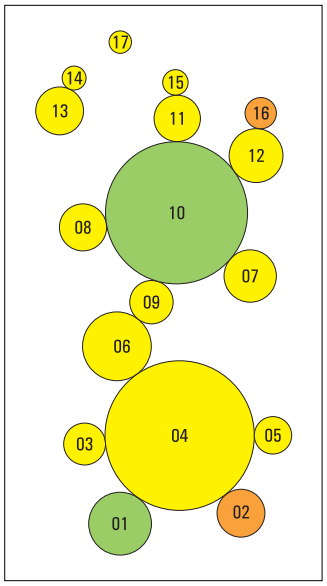


Source: National Population Health Survey, 1996 - 1997

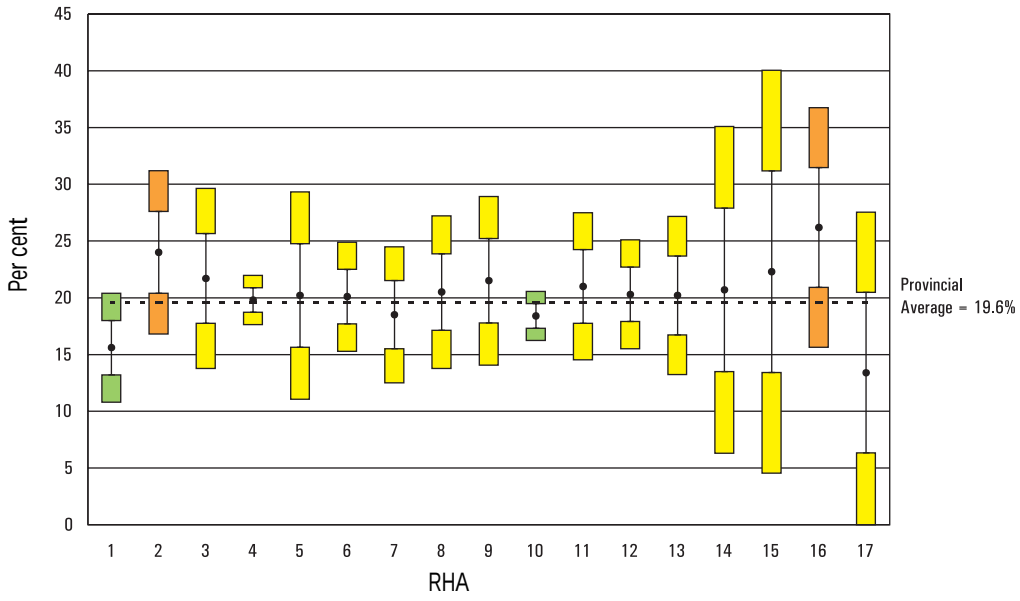
*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

Figure C.8.4 (b)
Regional Differences for Male Problem Drinkers in Alberta, 1996*





RHA Population Cartogram

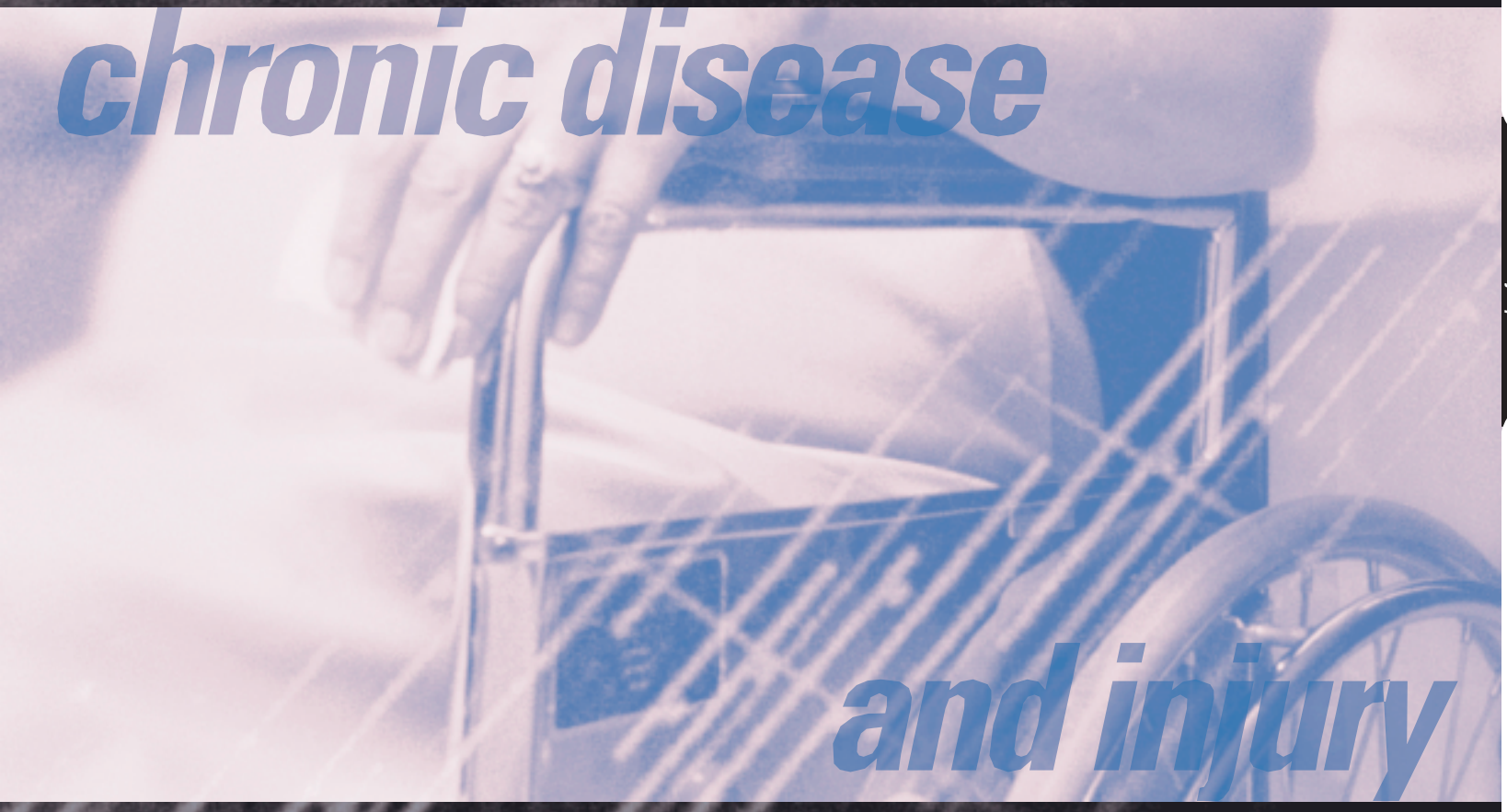


Source: National Population Health Survey, 1996 - 1997

*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

Section D

chronic disease and injury

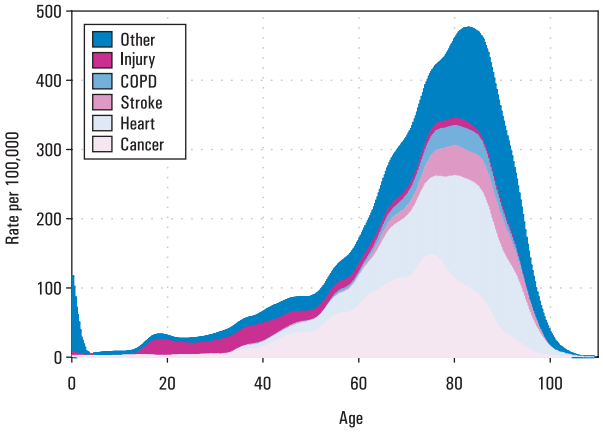


This section examines the various causes of death in Alberta and compares provincial data to those available for the rest of Canada. Comparisons are possible because there is a common coding system (ICD-9: Ninth International Classification of Diseases) used by every health jurisdiction in the country, and consistently collected data is available from Statistics Canada. Thus, this section relies on Statistics Canada's Health Indicators Database, 1999, when comparing Alberta with other provinces. When drawing comparisons within Alberta, the source is Alberta Vital Statistics. Figures pertaining to Alberta from a given year may vary slightly because of these two different sources.

Figure D.1 illustrates the distribution of deaths in Alberta by major cause (note that COPD is an abbreviation for chronic obstructive pulmonary disease) and by age group. As can be expected, the vast majority of deaths occur in the 50-and-over age categories. Deaths due to injury begin the upward curve at a much earlier age, indicating that determinants other than age are involved, which may make more of these deaths preventable.

Figure D.2 (following page) indicates how Alberta ranks in comparison with other provinces for various causes of death. While the rank is important, we must also note the actual number of deaths in Alberta to understand the impact of a particular cause.

Figure D.1
Distribution of Deaths in Alberta, 1997



Source: Vital Statistics, Death File, April 1997 release

The leading causes of death in each province are compared for 1997, the most recent year for which these data are available. The table shows the cause of death, Alberta's ranking in comparison to the other provinces, and the number of deaths in Alberta. The ranking is determined by first calculating the age- and sex-standardized rates of mortality by cause, and then ordering the provinces so that a rank of one indicates the province with the lowest rate of mortality, and a rank of ten indicates the highest rate of mortality. The territories were excluded from the analysis.

The table lists the causes of death by Alberta's ranking, from best among the provinces to poorest.

Both the number of deaths and the ranking provide important information. For example, more Albertans die from ischaemic heart disease than any other cause. The health system will need to continue to address the consequences of this disease and its prevention. In comparison with other provinces, though, Alberta had the fourth lowest rate of mortality in 1997. This indicates that we may be making progress in our fight against heart disease.

When mortality from motor vehicle collisions is examined, even though there are fewer total deaths (423) in 1997 than for ischaemic heart disease (3,214), Alberta is not doing as well. Alberta has the second highest rate of mortality in the country from motor vehicle collisions. Young Albertans are most at risk for dying in a motor vehicle collision. These deaths are potentially more preventable than those relating to chronic diseases.

Figure D.2
Number of Deaths by Cause and Alberta Ranking, 1997 (1 = lowest, 10 = highest rate of mortality among Canadian provinces)

Selected Causes of Death	Number of Deaths	Alberta Rank
Accidental Falls	140	1
Alzheimer's disease	134	1
Cardiac dysrhythmias and heart failure	486	1
Genito-urinary system other than kidney	64	1
Respiratory system other than pneumonia, influenza, and C.O.P.D.	131	1
Cancer - benign/in situ/uncertain/unspecified	79	2
Cancer of digestive organs and peritoneum	1097	2
Cancer of trachea, bronchus, and lung	1036	2
Other malignant cancer	942	2
Nephritis and nephrosis (kidney)	166	2
Endocrine/nutritional/metabolic/immunity other than diabetes	112	2
All other causes of death	260	3
Diabetes mellitus	346	3
Diseases of the blood and blood-forming organs	51	3
Certain conditions originating in the perinatal period	84	3
Digestive system other than chronic liver disease and cirrhosis	423	3
Parkinson's disease	78	3
Tuberculosis	10	3
Malignant melanoma of the skin	52	4
Congenital anomalies	90	4
Ischemic heart disease	3214	4
Cancer of cervix uteri	36	5
Cancer of lymphatic tissue/leukemia	423	5
C.O.P.D. and allied conditions (excluding asthma)	686	6
Cancer of female breast	389	6
Cancer of prostate	318	6
Homicide and injury purposely inflicted	47	6
Infectious and parasitic disease other than TB and HIV	141	6
Nervous system and sense organs other than Alzheimer's and Parkinson's	203	6
Sudden Infant Death Syndrome (SIDS)	21	6
Asthma	39	7
Human Immunodeficiency Virus (HIV)	38	7
Mental Disorders	412	7
Pneumonia and influenza	652	7
Diseases of arteries, arterioles, and capillaries	454	8
Injury other than motor vehicle collisions, falls, suicide, and homicide	375	8
Cerebrovascular disease (stroke)	1311	9
Chronic liver disease and cirrhosis	179	9
Motor vehicle collisions	423	9
Circulatory system other than ischemic, dysrhythmias, heart failure, stroke, and arteries	907	9
Suicide and self-inflicted injury	403	9
Total	16,452	

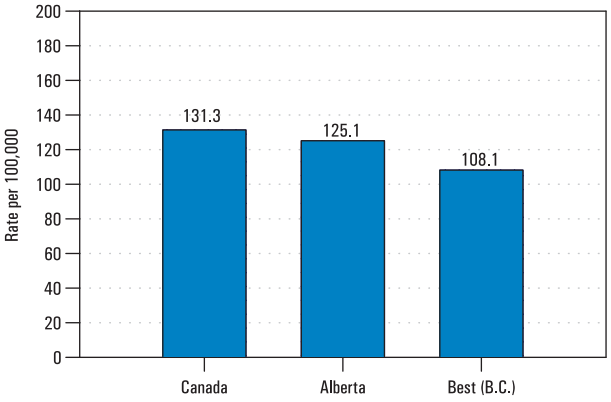
Source: Statistics Canada, Health Indicators Database, 1999

D.1A Ischaemic Heart Disease

Ischaemic heart disease (or coronary artery disease) can cause angina (chest pain), heart failure, or heart attack (acute coronary thrombosis or myocardial infarction).

In Alberta in 1997, the mortality rate for ischaemic heart disease was 125.1 per 100,000 population. This is lower than the national rate of 131.3 per 100,000, but higher than the best province, British Columbia, (108.1 per 100,000 population).

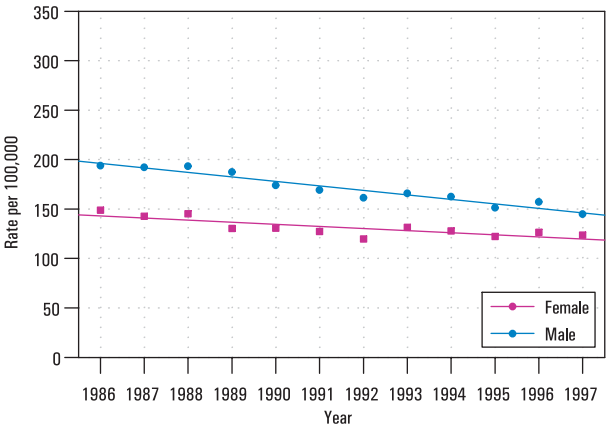
Figure D.1A.1
Mortality Rates for Ischaemic Heart Disease, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

For the past decade in Alberta, the mortality rate for ischaemic heart disease has decreased for both males and females.

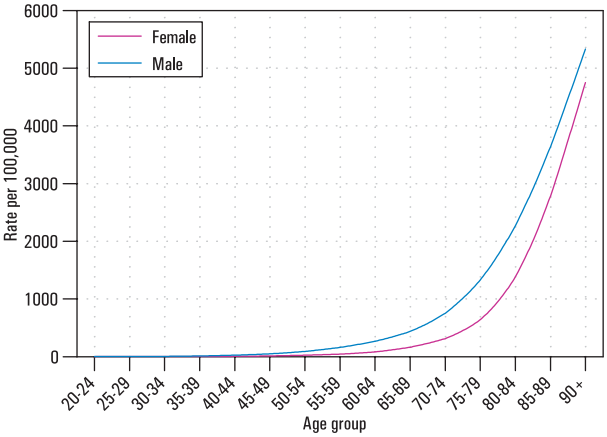
Figure D.1A.2
Mortality Rates for Ischaemic Heart Disease in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

The vast majority of deaths due to ischaemic heart disease occur in Albertans 60 and older. This trend is slightly more pronounced among males than females.

Figure D.1A.3
Age-Specific Death Rates for Ischaemic Heart Disease in Alberta, 1995 - 1997



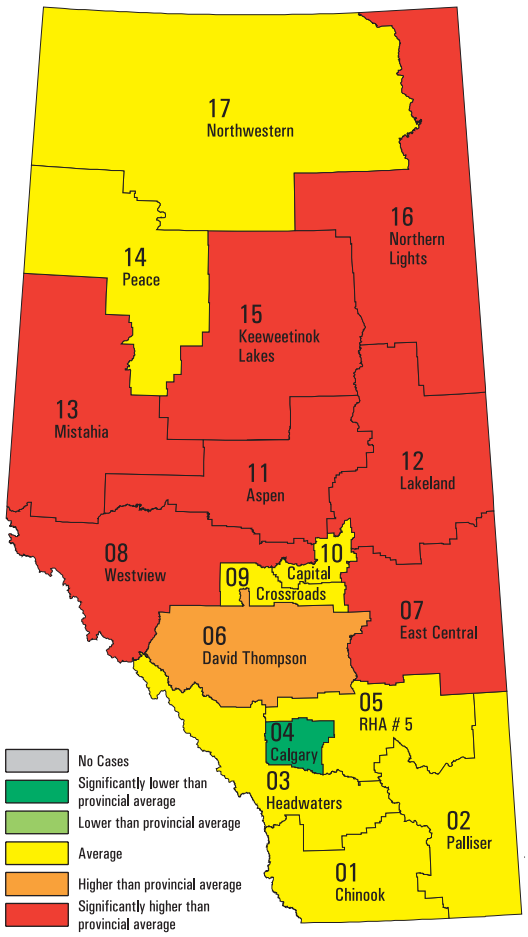
Source: Alberta Vital Statistics, Death File, May 1999 release

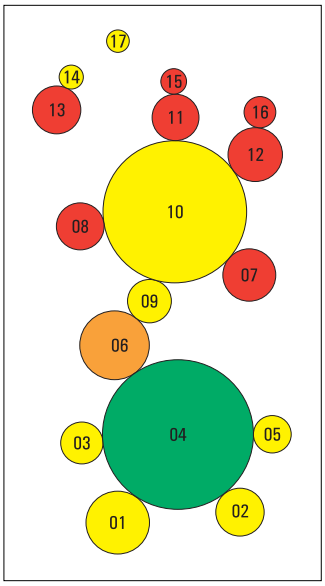
Provincial Strategies

Alberta Heart Health Project

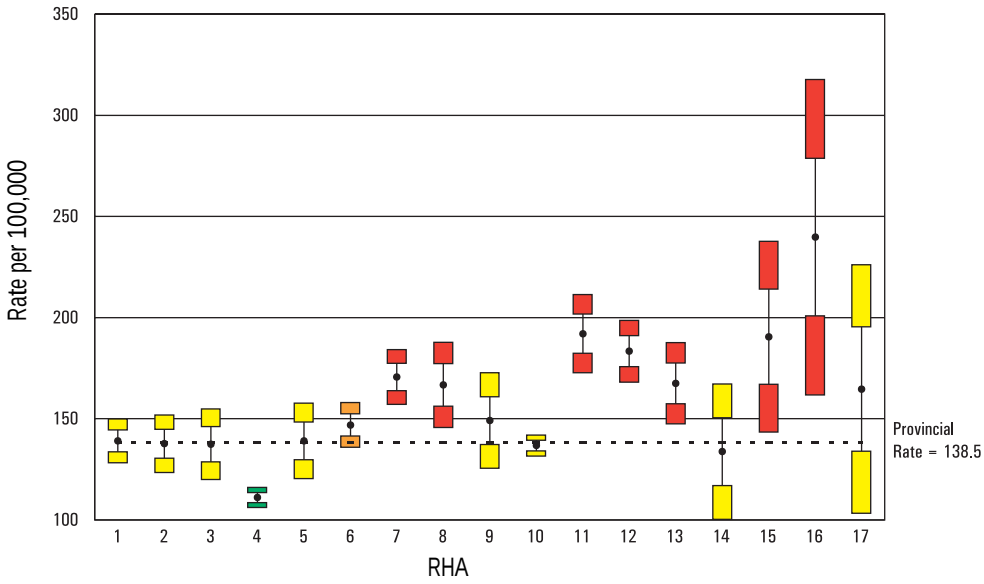
- Demonstration phase (1993 - 1997) — Four demonstration projects were implemented in the province. The main objectives were to demonstrate the effectiveness of the community mobilization/ development approach in heart health promotion, to document how innovative heart health initiatives can be integrated into a diversity of community settings, and to identify successful implementation strategies.
- Dissemination research phase (1999 - 2004) — This phase will investigate the development of health promotion capacity, collaborating with several regional health authorities to use the knowledge and learning gained from the demonstration phase.

Figure D.1A.4
Regional Differences in Ischaemic Heart Disease Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram



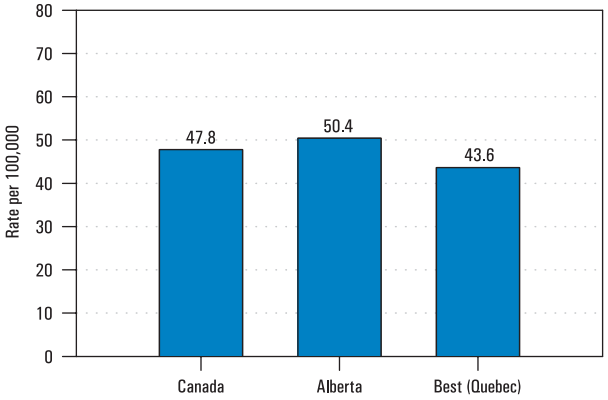
Source: Alberta Vital Statistics, Death File, May 1999 release

D.1B Stroke

Stroke (also known as cerebrovascular disease or a cerebrovascular accident) refers to the death of brain cells resulting from a lack of blood flow to the brain. Inadequate blood flow reduces the flow of oxygen and other nutrients needed for proper brain function. Major risk factors for stroke include high blood pressure, smoking, physical inactivity, atrial fibrillation, heart attack, and diabetes mellitus.

In Alberta, the mortality rate for stroke in 1997 was 50.4 per 100,000 population. This is somewhat higher than the national rate for that year, 47.8 per 100,000. Quebec, at 43.6 per 100,000, had the lowest rate in Canada.

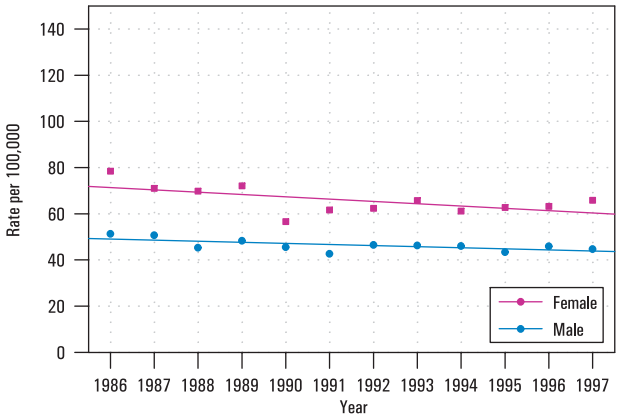
Figure D.1B.1
Mortality Rates for Stroke, 1997 (Alberta, Canada, Best Province)
(Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

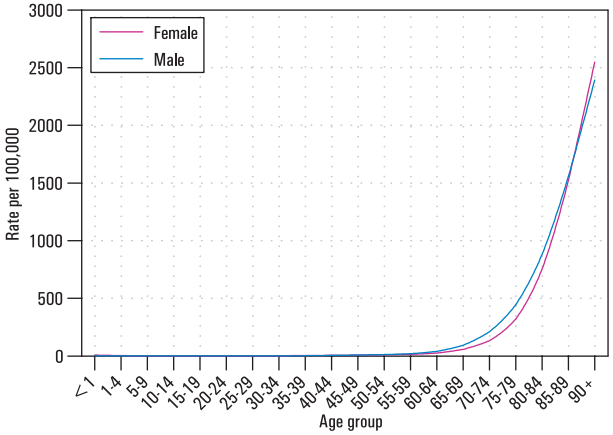
Over the past decade, the mortality rate for stroke has gradually declined in Alberta. This decline was slightly more noticeable for women than for men.

Figure D.1B.2
Mortality Rates for Stroke in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.1B.3
Age-Specific Death Rates for Stroke in Alberta, 1995 - 1997

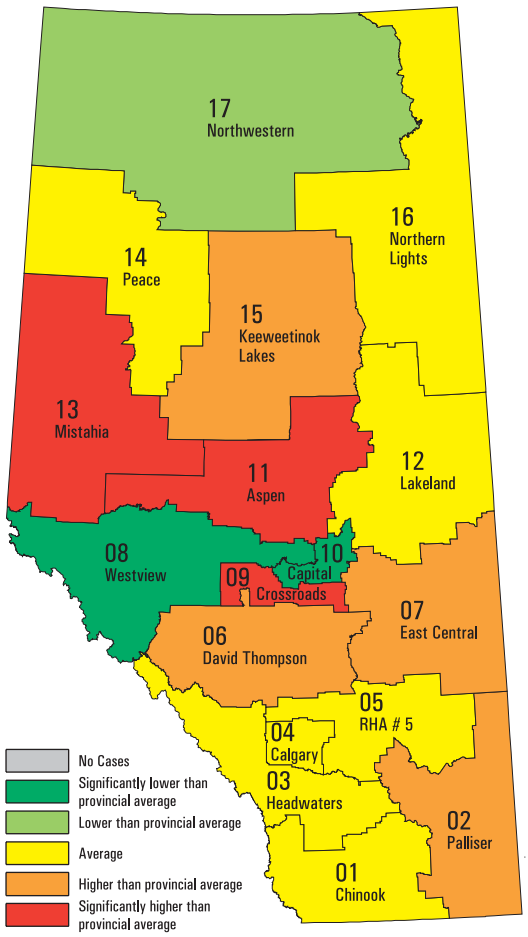


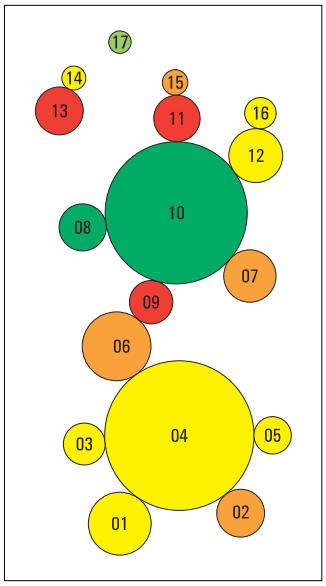
Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Strategies

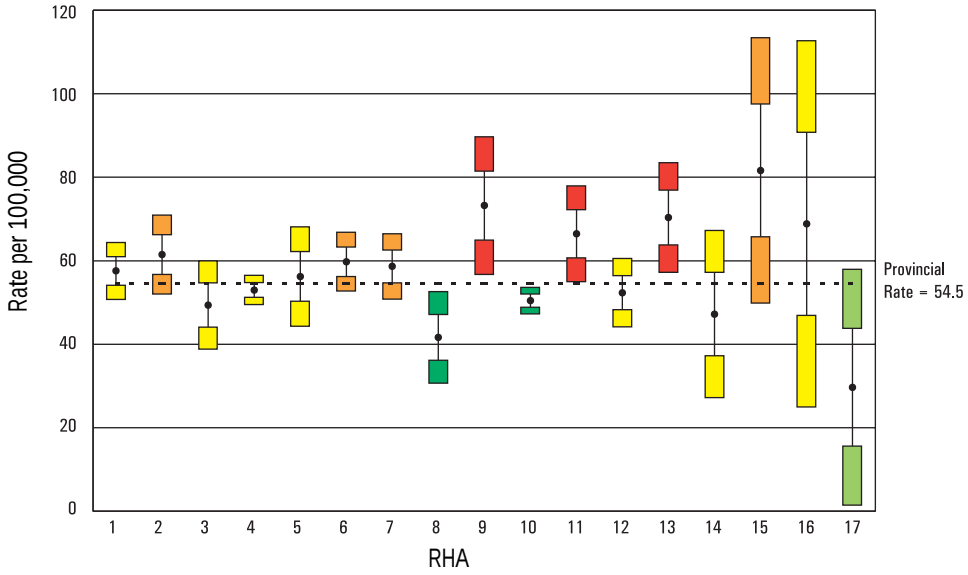
- The Alberta Heart Health Project was described in section D.1A.

Figure D. 1B.4
Regional Differences in Stroke Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram

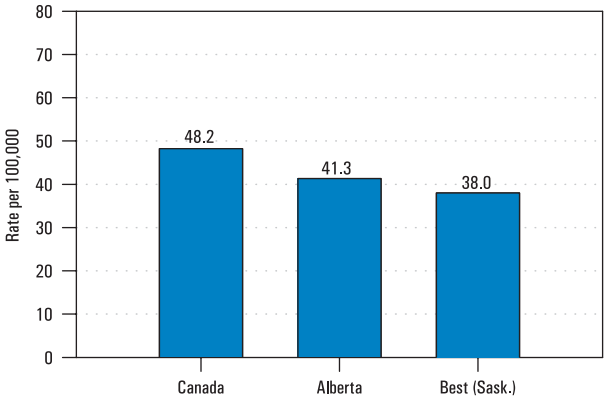


Source: Alberta Vital Statistics, Death File, May 1999 release

D.2A Lung Cancer

Lung cancers are the single leading cause of death among all cancers in Alberta. In 1997, Alberta's mortality rate for lung cancer was the second lowest in Canada at 41.3 per 100,000 (Saskatchewan had the lowest rate at 38.0). The national rate was 48.2.

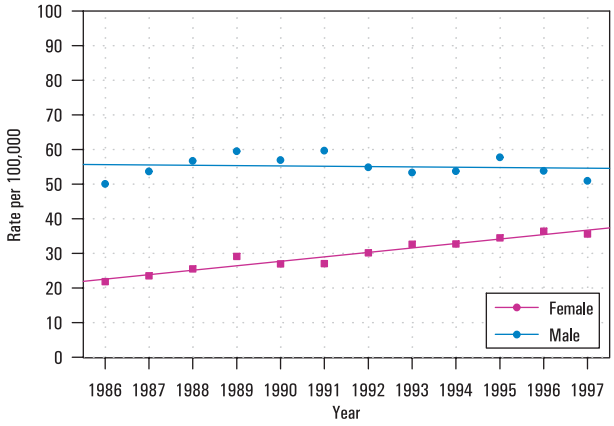
Figure D.2A.1
Mortality Rates for Lung Cancer, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

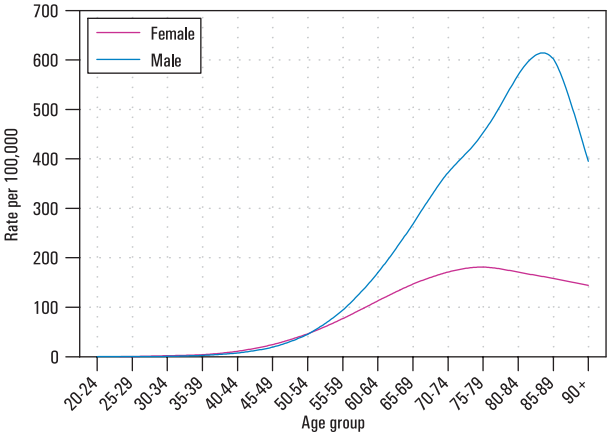
While there has been a marked difference between male and female mortality from lung cancer, the gap is now narrowing — the rate for men is stabilizing while increasing for women. Most deaths from lung cancer occur in men and women over 55.

Figure D.2A.2
Mortality Rates for Lung Cancer in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.2A.3
Age-Specific Mortality Rates for Lung Cancer in Alberta, 1995 - 1997

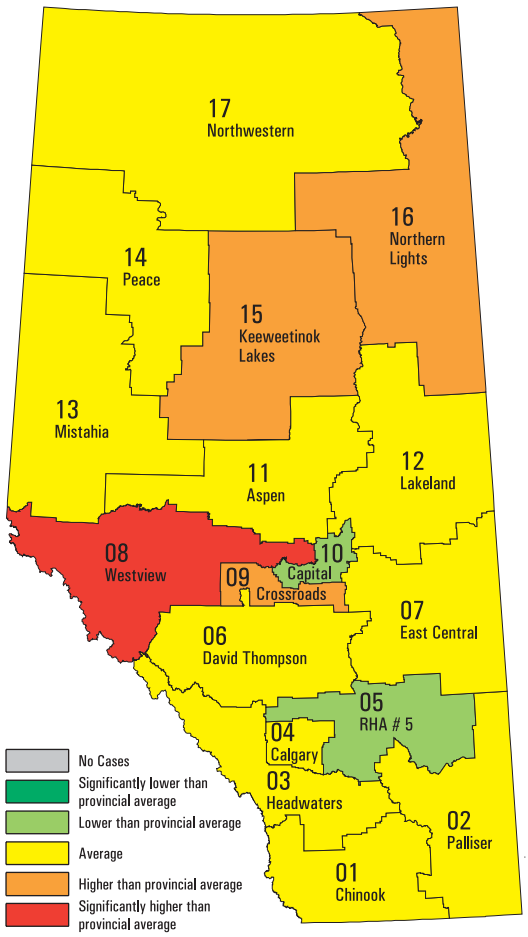


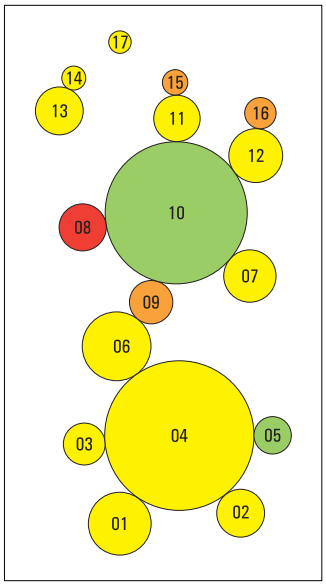
Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Strategies

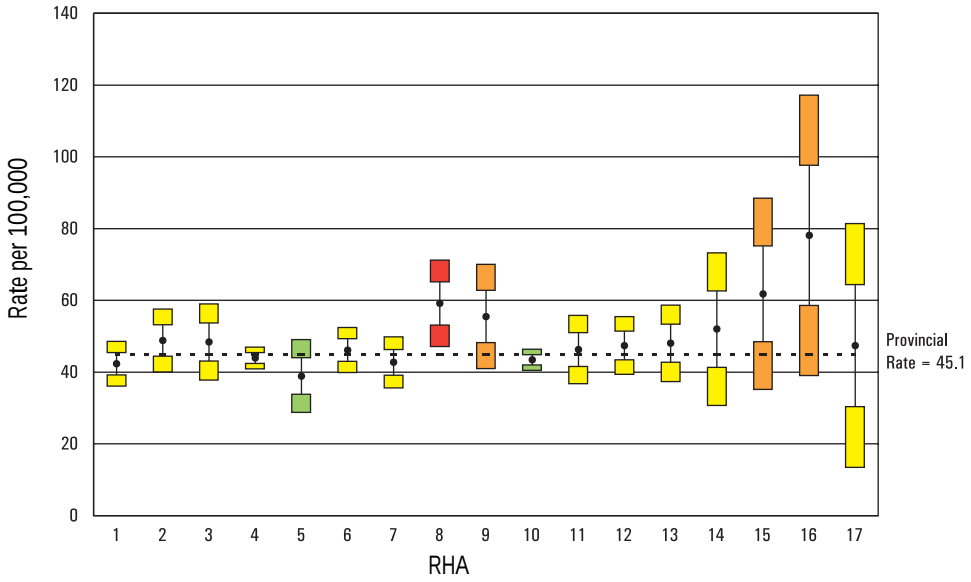
- The Alberta Tobacco Reduction Plan was described in section C.7.

Figure D.2A.4
Regional Differences in Lung Cancer Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram

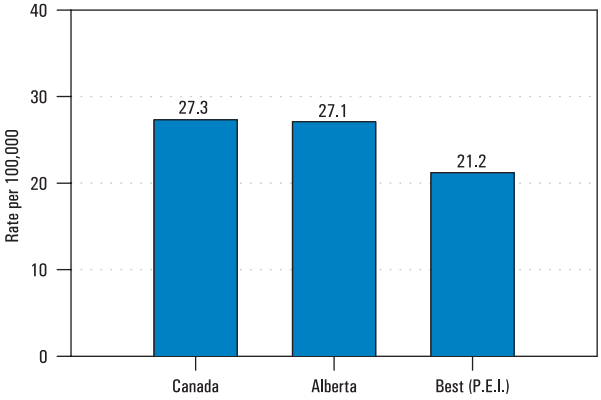


Source: Alberta Vital Statistics, Death File, May 1999 release

D.2B Breast Cancer

Breast cancer continues to be the most common form of cancer in women, and the leading cause of cancer deaths in women. In Alberta, the female mortality rate for breast cancer was 27.1 per 100,000 in 1997, almost identical to the national rate of 27.3. Prince Edward Island, with a rate of 21.2 per 100,000, had the lowest mortality rate from breast cancer.

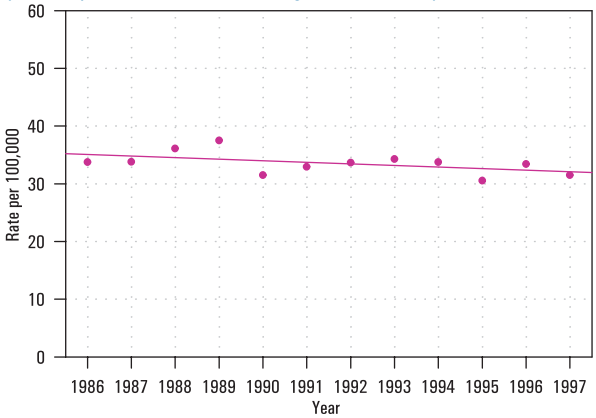
Figure D.2B.1
Mortality Rates for Breast Cancer, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999
Note: Statistics Canada standardizes to the weight of both sexes together.

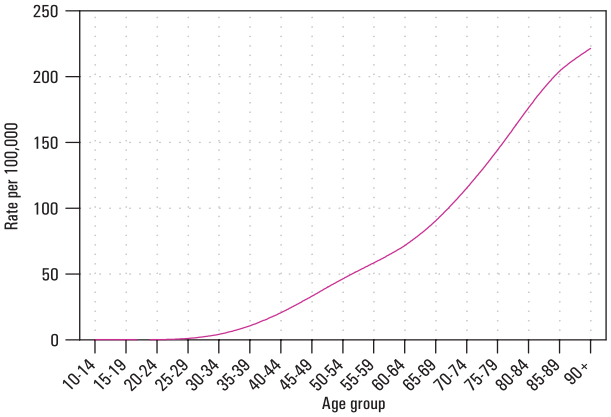
Over the past decade, the mortality rate for breast cancer for women in Alberta has remained fairly constant, although a slight decrease in the trend in recent years can be noted.

Figure D.2B.2
Mortality Rates for Breast Cancer in Alberta, 1986 - 1997 (Deaths per 100,000 females, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.2B.3
Age - Specific Mortality Rates for Breast Cancer in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

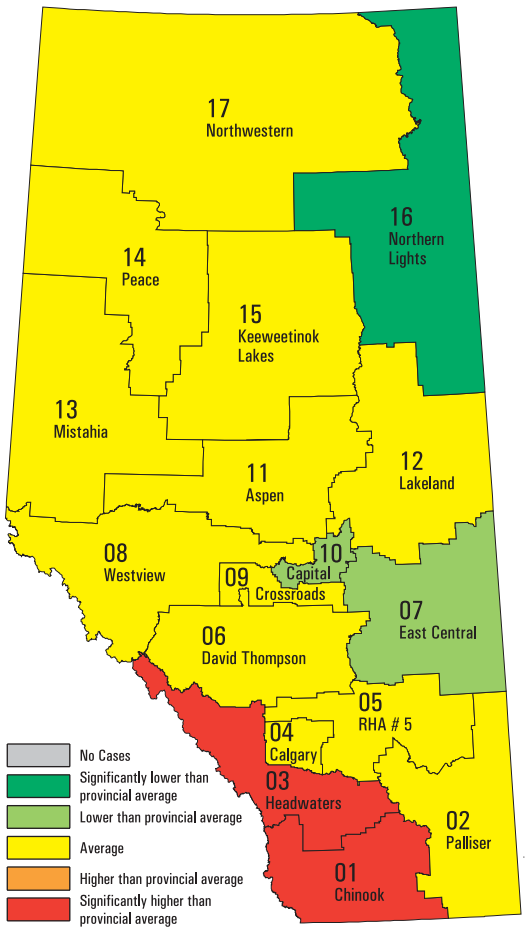
Provincial Business Plan Targets

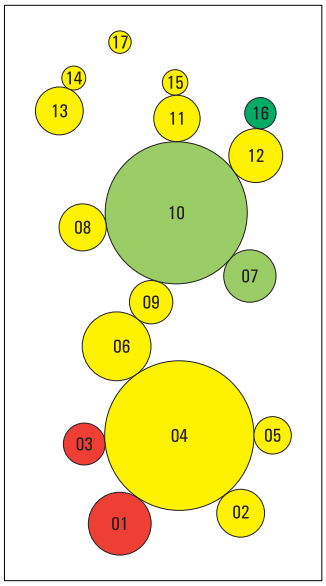
Mammograms are recommended for breast cancer screening for women between the ages of 50 and 69. The provincial target for 2000 is that 75 per cent of women between the ages of 50 and 69 will report receiving mammograms every two years.

Provincial Strategies

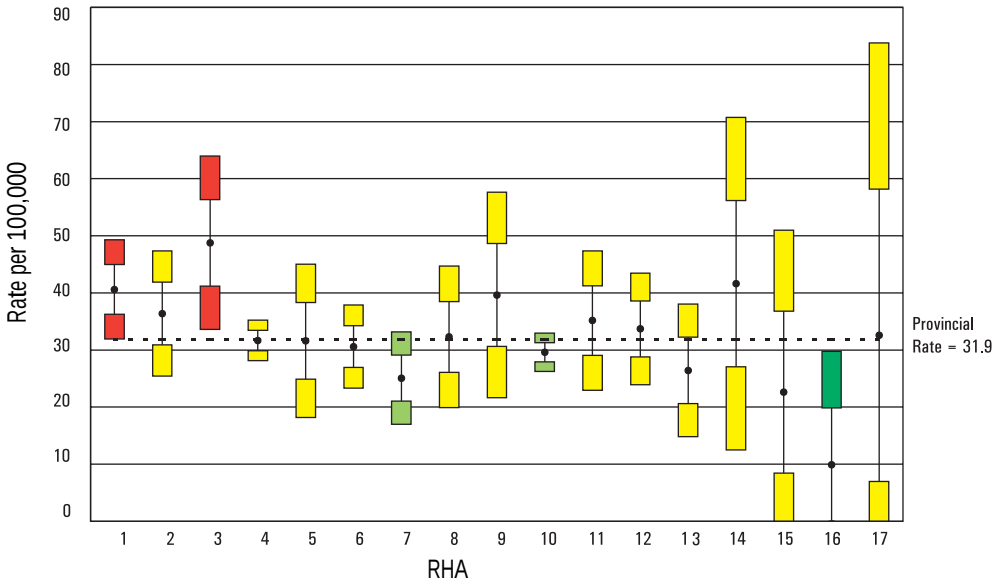
- Screening mammography is available to women aged 50 to 69 years through the Alberta Cancer Board. The Alberta Cancer Board Screen Test Program offers the service through two fixed sites and three mobile units serving rural Alberta. Screening mammography is also available through private radiology clinics and through a number of regional health authorities.

Figure D.2B.4
Regional Differences in Breast Cancer Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram

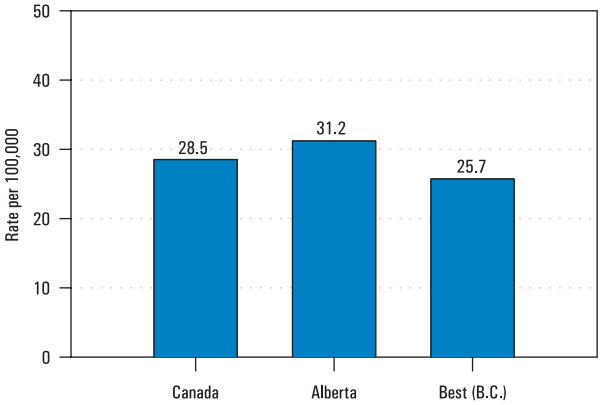


Source: Alberta Vital Statistics, Death File, May 1999 release

D.2C Prostate Cancer

Prostate cancer is the most frequently occurring tumor in males. It is most commonly found in older men. In 1997, the male mortality rate from prostate cancer in Alberta was 31.2 per 100,000. Alberta's rate is higher than the Canadian average of 28.5 and the rate of the best province, British Columbia (25.7).

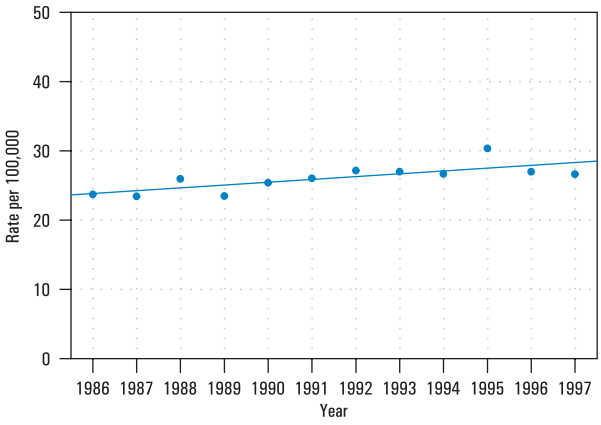
Figure D.2C.1
Mortality Rates for Prostate Cancer, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized).



Source: Statistics Canada, Health Indicators Database, 1999
Note: Statistics Canada standardizes to the weight of both sexes together.

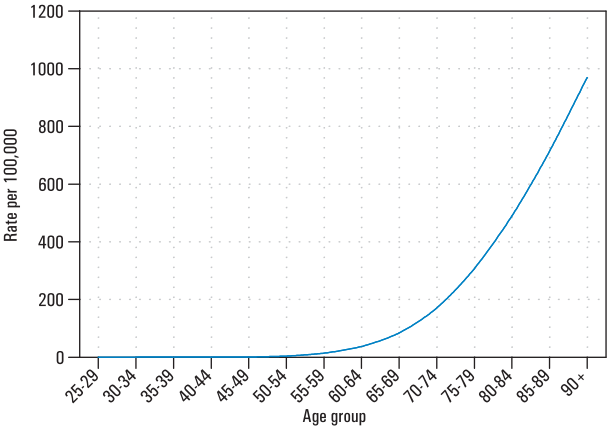
Over the past decade, the mortality rate for prostate cancer for men in Alberta has increased slightly.

Figure D.2C.2
Mortality Rates for Prostate Cancer in Alberta, 1986 - 1997 (Deaths per 100,000 males, age standardized)



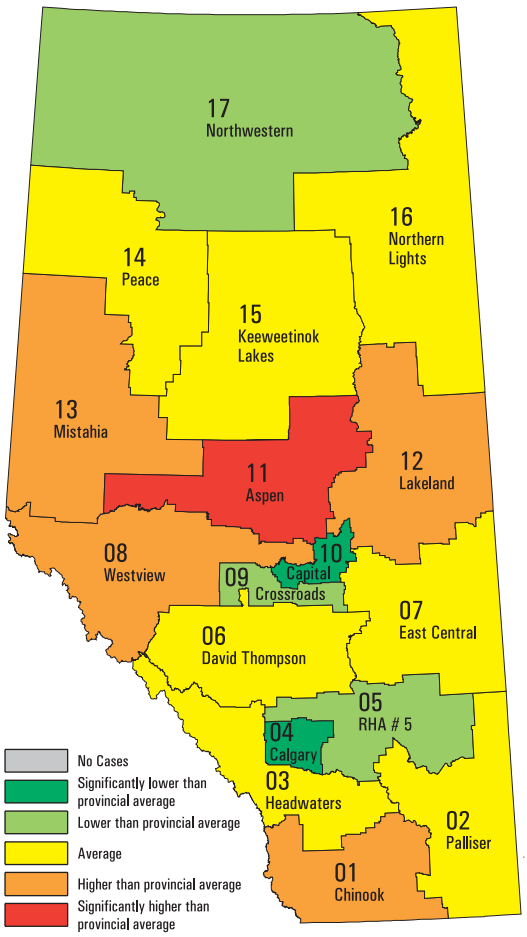
Source: Alberta Vital Statistics, Death File, May 1999 release

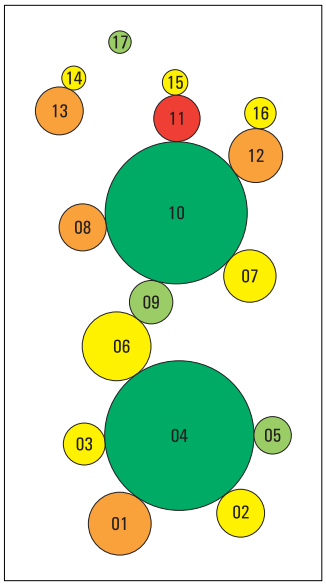
Figure D.2C.3
Age - Specific Mortality Rates for Prostate Cancer in Alberta, 1995 - 1997



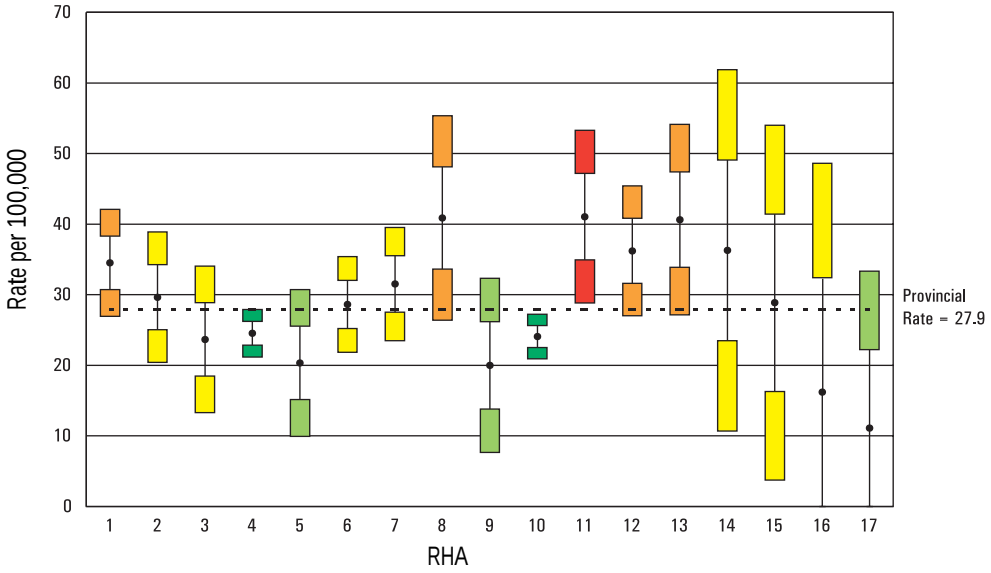
Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.2C.4
Regional Differences in Prostate Cancer Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram

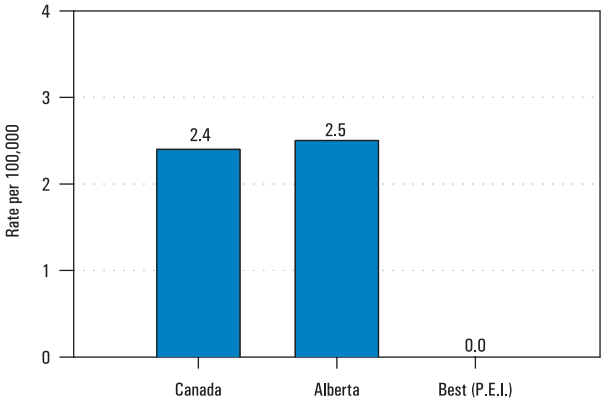


Source: Alberta Vital Statistics, Death File, May 1999 release

D.2D Cervical Cancer

Considering that mortality from invasive cancers of the cervix is largely preventable through early detection and treatment, the mortality rate from cervical cancer is unacceptably high. Far too many women in Alberta are dying from this disease. In 1997, the mortality rate from cervical cancer in Alberta was 2.5 per 100,000. This is slightly higher than the Canadian rate of 2.4. There were no cases of cervical cancer reported in Prince Edward Island in 1997.

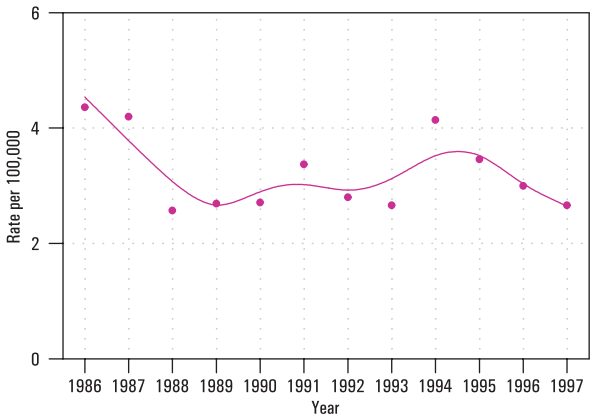
Figure D.2D.1
Mortality Rates for Cervical Cancer, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized).



Source: Statistics Canada, Health Indicators Database, 1999
Note: Statistics Canada standardizes to the weight of both sexes together.

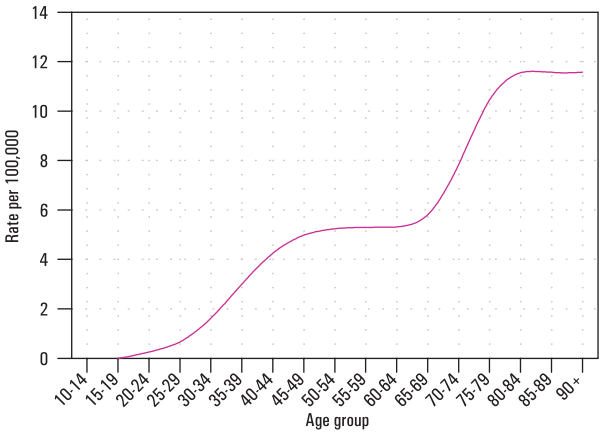
Over the past decade, despite large year-to-year fluctuations, the mortality rate for cervical cancer for women in Alberta has remained fairly constant.

Figure D.2D.2
Mortality Rates for Cervical Cancer in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.2D.3
Age - Specific Mortality Rates for Cervical Cancer in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Business Plan Targets

The PAP test is an excellent screening test for pre-cancerous conditions. The provincial target for the year 2000 is that 90 per cent of women (age 15 and older) will report having had a PAP test in the previous three years.

A provincial target has also been set for the year 2000 to limit the number of deaths in Alberta due to cervical cancer to 15 or fewer. This represents a rate of less than one per 100,000.

Provincial Strategies

- A provincial strategy framework for cervical cancer is currently being developed.

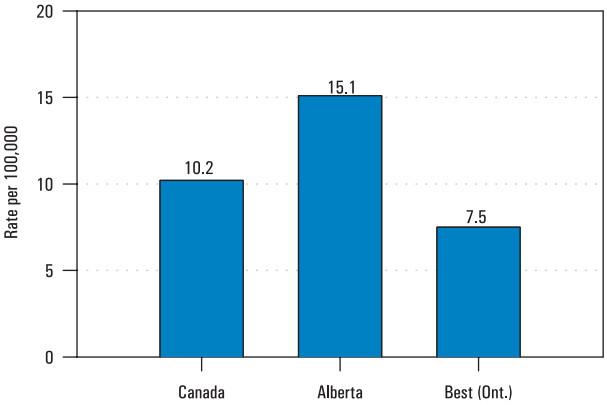
Provincial rates are so low that regional comparisons are unstable and have not been shown in a map.

D.3A Motor Vehicle Collisions

(Please note that the Motor Vehicle Collisions category for this update reflects a different ICD-9-CM grouping than that used in the 1998 edition of the report.)

The rate of deaths due to injuries from motor vehicle collisions was 15.1 per 100,000 in Alberta in 1997. The national average for that year was 10.2. Alberta's rate is second highest in Canada and double that of the best province, Ontario (7.5 per 100,000).

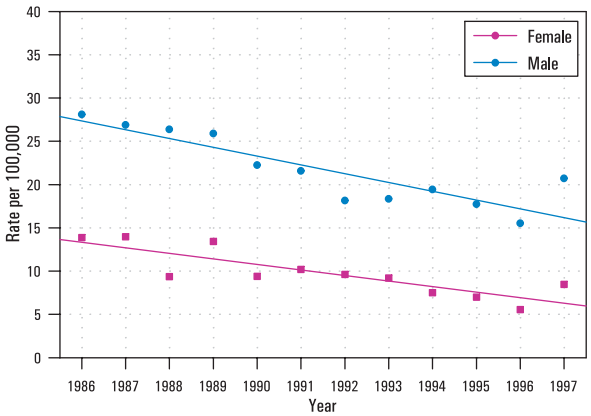
Figure D.3A.1
Mortality Rates for Injury in Motor Vehicle Collisions, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized).



Source: Statistics Canada, Health Indicators Database, 1999

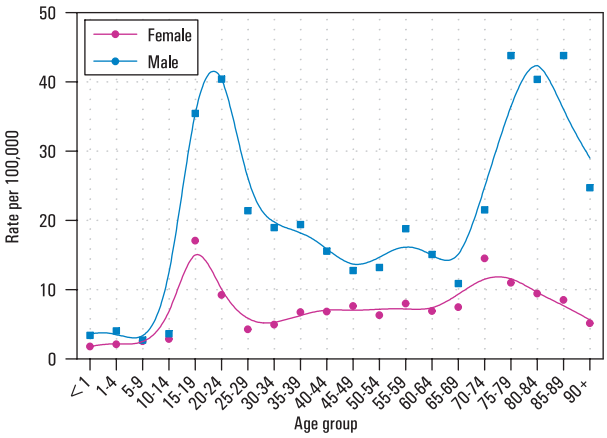
In Alberta, male and female mortality rates due to motor vehicle collisions decreased between 1986 and 1997.

Figure D.3.A.2
Mortality Rates for Injury in Motor Vehicle Collisions in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.3A.3
Age-Specific Mortality Rates for Motor Vehicle Collisions in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Most motor vehicle collision deaths involve teenage and young adult males. Seatbelt legislation in Alberta has increased the use of seatbelts by drivers and has, in turn, resulted in decreased numbers of deaths. Still, there is great concern that while motor vehicle collision mortality rates are continually decreasing in the rest of Canada, Alberta's rates are beginning to increase again. There is also a concern that while motor vehicle collision-related mortality is decreasing, there may be increases in morbidity.

In 1997, 423 people died in motor vehicle collisions in Alberta. Most of these deaths happened on Saturdays. Alcohol is a well-documented risk factor for motor vehicle collisions; in many cases, however, alcohol is not involved. Initiatives such as the Alberta Motor Association's "Mission Possible" are alerting the public to the number of collisions that occur in Alberta and their economic impact.

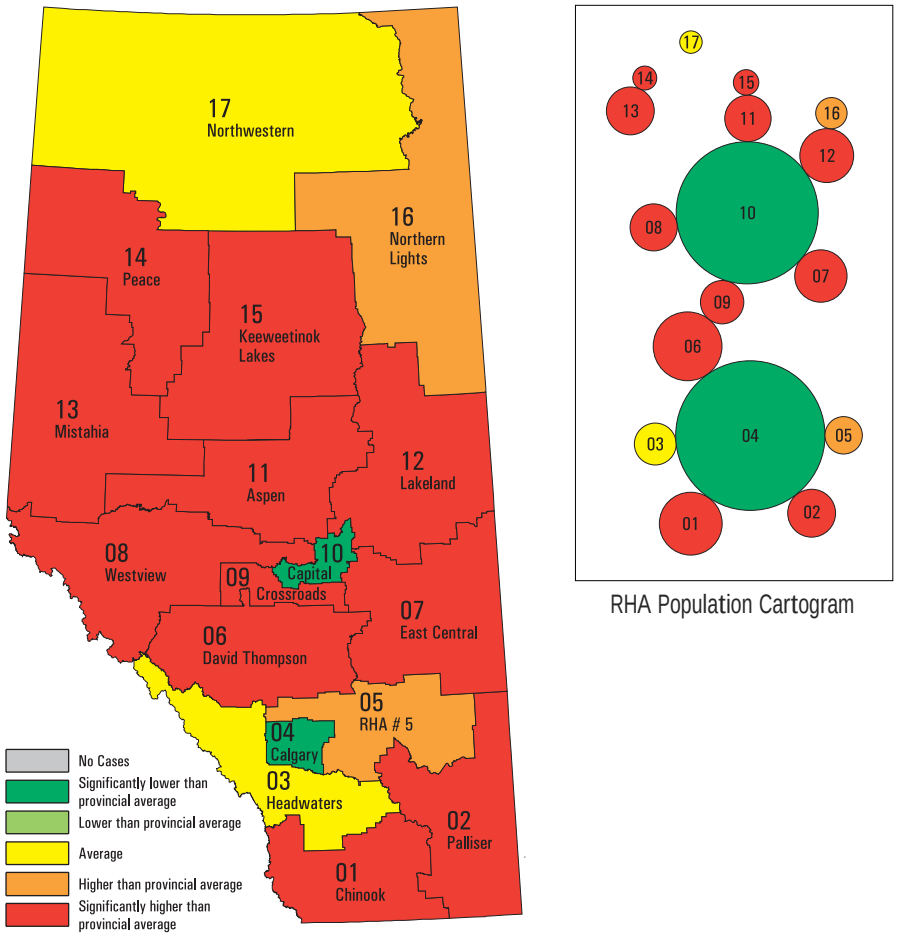
Provincial Business Plan Targets

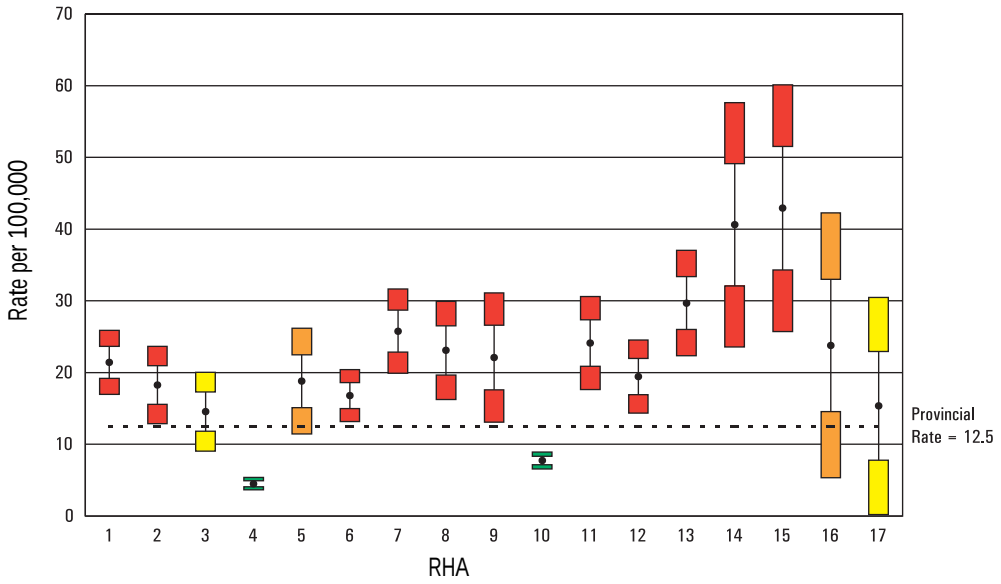
The provincial target for 2002 is that the age-standardized rate of deaths due to all injury (including homicide and suicide) will be at or below 45 per 100,000 population.

Provincial Strategies

- Alberta Health and Wellness provides funding to support the Alberta Centre for Injury Control and Research (ACICR). It addresses intentional and non-intentional injuries within the contexts of prevention, the emergency medical system, acute care, rehabilitation and research.
- A number of partnership-based initiatives are underway related to the prevention of motor vehicle injuries. The Alberta Occupant Restraint Program uses a combination of enforcement and the provision of education to address nonuse and misuse of passenger restraints. "Think and Drive" and "Mission Possible" are provincial traffic related initiatives to prevent motor vehicle collisions.

Figure D.3A.4
Regional Differences in Motor Vehicle Collision Mortality Rates, Alberta, 1995 - 1997





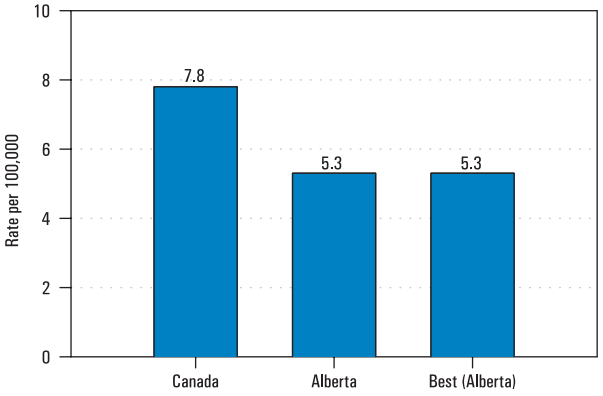
Source: Alberta Vital Statistics, Death File, May 1999 release

D.3B Falls

Alberta's mortality rate for injury due to falls is the lowest in Canada. Most deaths due to falls occur in old age, and are slightly more frequent in females.

In 1997, the rate was 5.3 per 100,000, substantially lower than the national average (7.8 per 100,000).

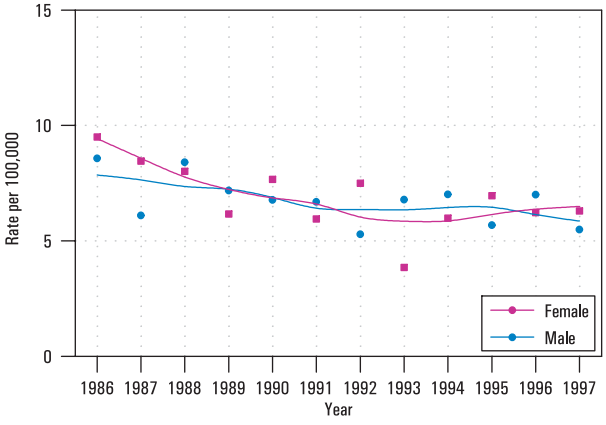
Figure D.3B.1
Mortality Rates for Falls, 1997 (Alberta, Canada, Best Province)
(Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

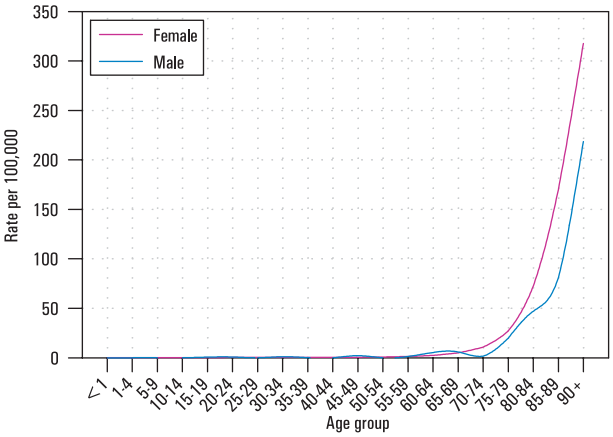
Between 1986 and 1997, male and female mortality rates for deaths due to falls decreased in Alberta. Falls are classified in three types: anticipated physiological; unanticipated physiological; and accidental. It is important that falls be categorized correctly, as there are different prevention strategies for each type.

Figure D.3B.2
Mortality Rates for Falls in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.3B.3
Age - Specific Mortality Rates for Falls in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

One prevention strategy involves the Morse Fall Scale, a quick and simple method of assessing patients to determine their likelihood of falling. Approximately three-quarters of all falls occur with patients who have been identified by the Morse Fall Scale as "at risk of falling."

Coordination of administrative support, environmental safety, monitoring systems, and staff preparation in health care facilities will contribute to effective fall prevention programs.

In younger age groups, many deaths from falls are farm or work related. Prevention strategies involve emphasizing proper operation of farm equipment (especially tractors), ladder safety, and use of safety equipment (e.g., footwear, harness, ropes). Workers need to consider the "fall potential" of situations and take proper measures to reduce risks.

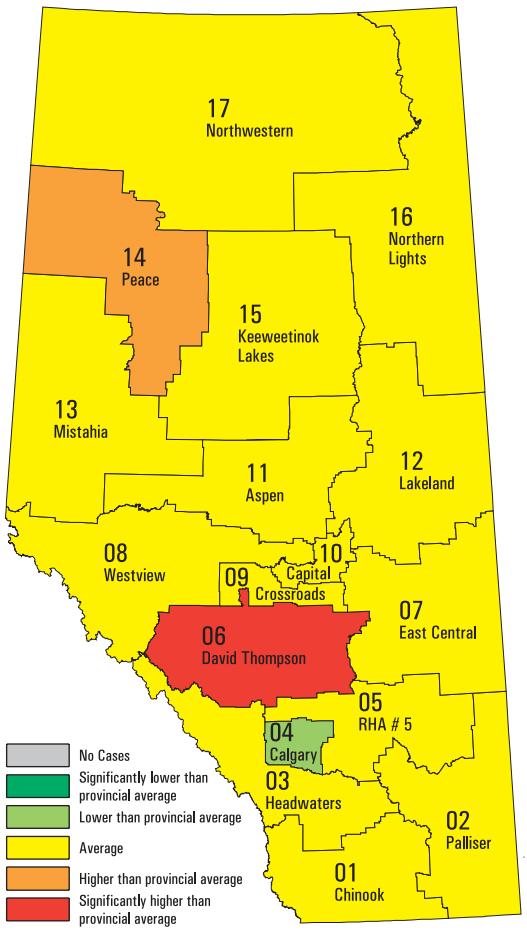
Provincial Business Plan Targets

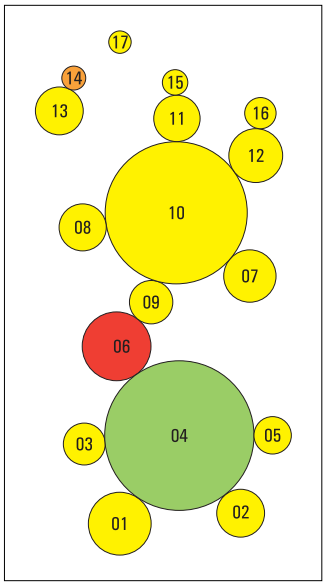
The provincial target for 2002 is that the age-standardized rate of deaths due to all injury (including homicide and suicide) will be at or below 45 per 100,000 population.

Provincial Strategies

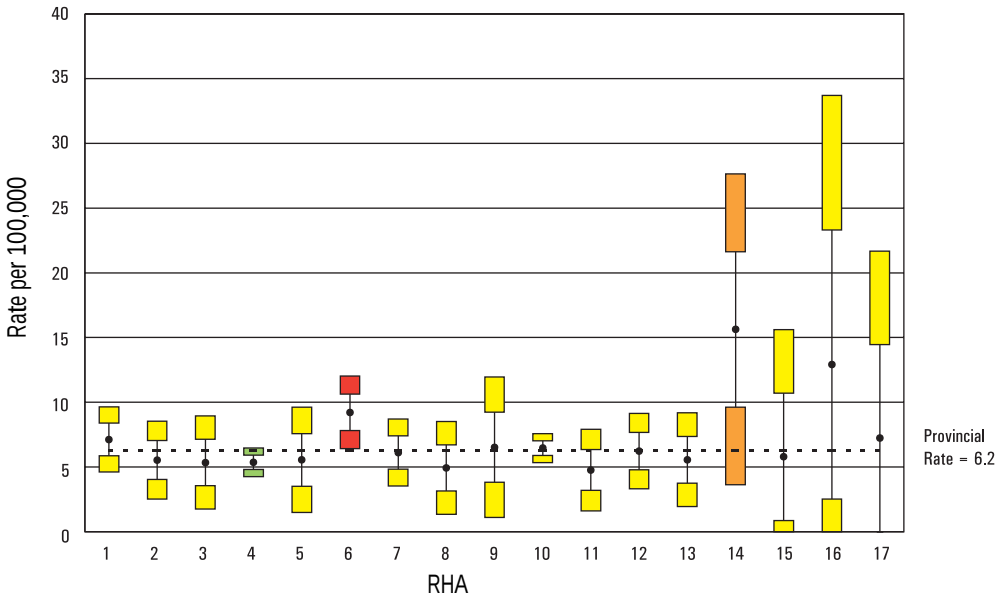
- The Alberta Centre for Injury Control and Research (ACICR) was described in section D.3A.

Figure D.3B.4
Regional Differences in Mortality Rates for Falls, Alberta, 1995 - 1997





RHA Population Cartogram

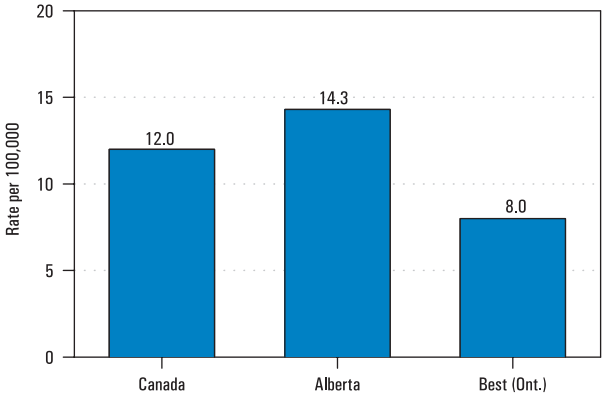


Source: Alberta Vital Statistics, Death File, May 1999 release

D.3C Suicide

The rate of deaths due to suicide was 14.3 per 100,000 in Alberta in 1997. The national average for that year was 12 per 100,000. Alberta's rate is the second highest in Canada and far higher than that of the best province, Ontario (eight per 100,000).

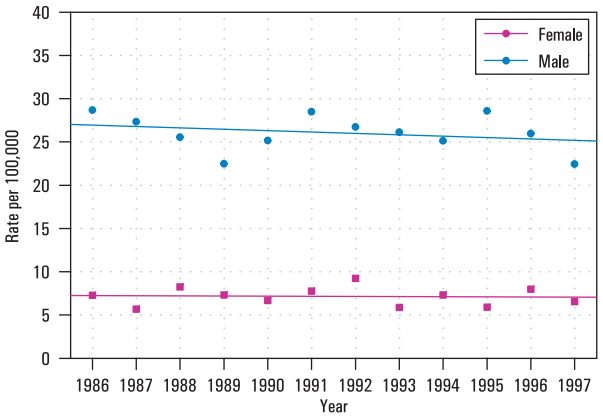
Figure D.3C.1
Mortality Rates for Suicide, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

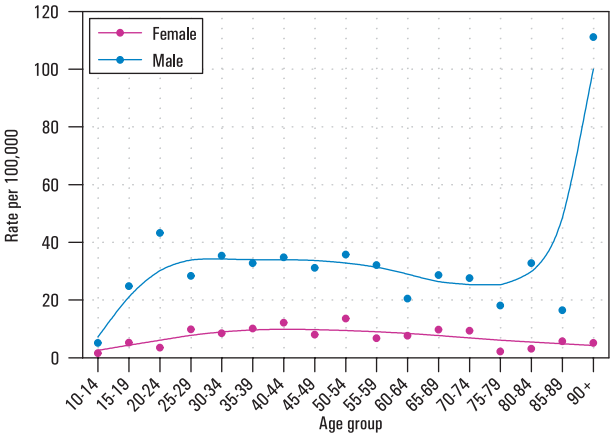
In Alberta, male and female mortality rates for deaths due to suicide remained fairly constant between 1986 and 1997.

Figure D.3C.2
Mortality Rates for Suicide in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.3C.3
Age Specific Death Rates for Suicide in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Most suicide deaths involve teenage or young adult males. However, attempted suicide (parasuicide) is more evenly distributed between the sexes. It has been suggested that young males are more likely to die because they use more violent methods (e.g., firearms, hanging, falls). Females usually attempt suicide by methods such as poisoning and are often saved. In most attempted suicides, the individual is searching for help.

The sex and age patterns of suicide rates parallel the onset and prevalence of certain mental disorders particularly in youth, making suicide a major ongoing concern for professionals in mental health.

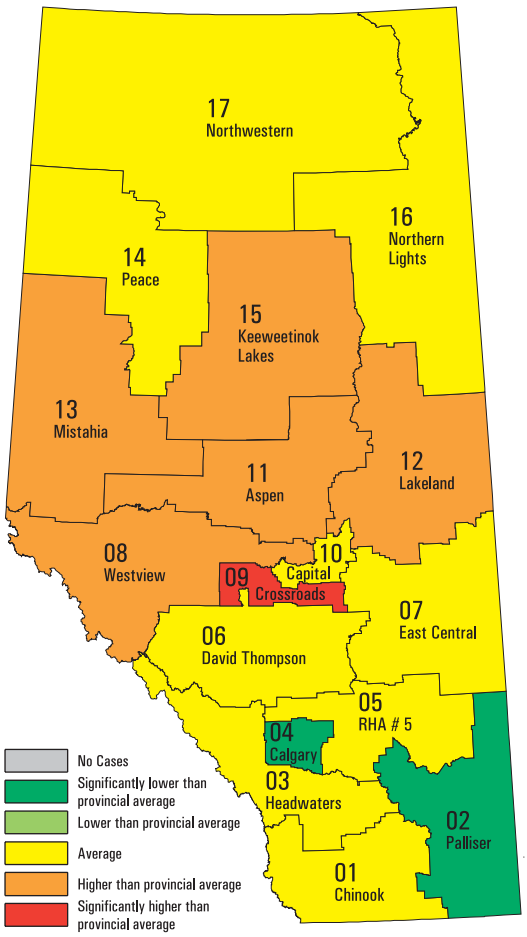
Provincial Business Plan Targets

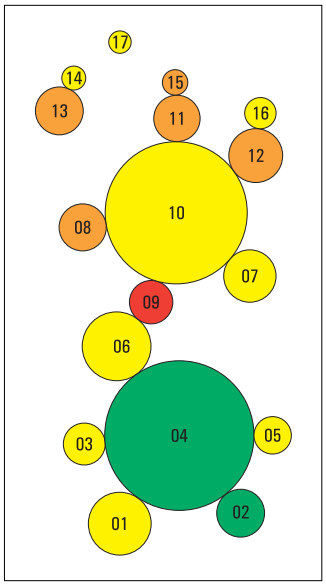
The provincial target for 2002 is that the age-standardized rate of deaths due to suicide will be at or below 13 per 100,000 population.

Provincial Strategies

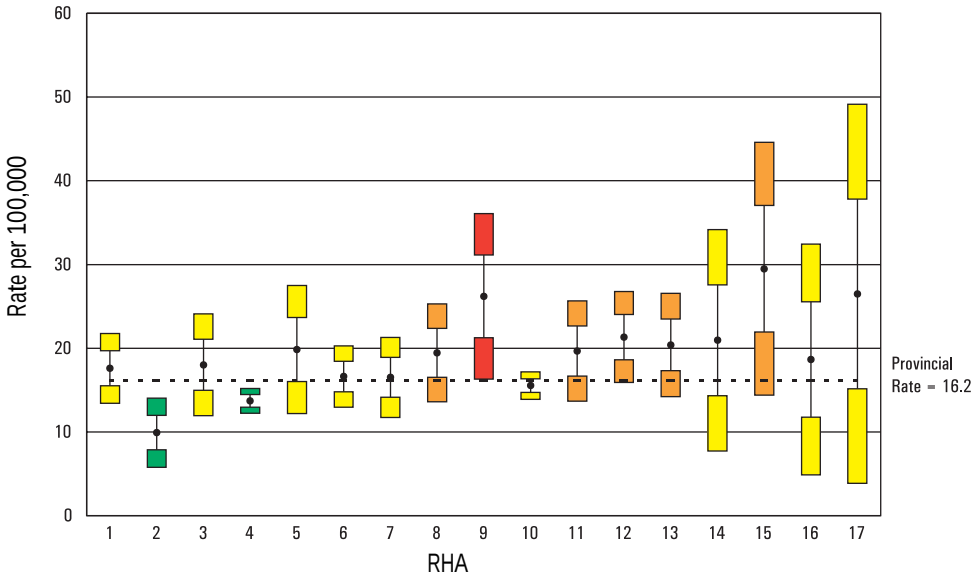
- Alberta Health and Wellness provides funding for the Suicide Prevention Training Program, which offers training in suicide awareness, intervention, bereavement counseling and other related issues.
- The department also provides funding for the Suicide Information and Education Centre, which assists and supports 11 regional suicide prevention programs as well as other individuals, agencies and organizations requesting educational materials.
- The Alberta Centre for Injury Control and Research (ACICR) was described in section D.3A.

Figure D.3C.4
Regional Differences in Mortality Rates for Suicides Alberta, 1995 -1997





RHA Population Cartogram

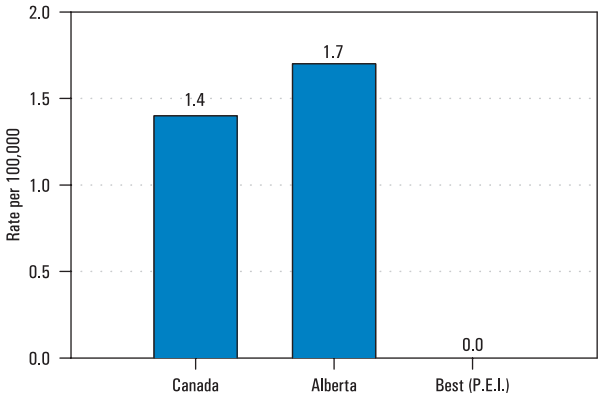


Source: Alberta Vital Statistics, Death File, May 1999 release

D.3D Homicide

The rate of deaths due to homicide was 1.7 per 100,000 in Alberta in 1997 — somewhat higher than the national average for that year (1.4 per 100,000). Prince Edward Island did not record any deaths due to homicide in 1997.

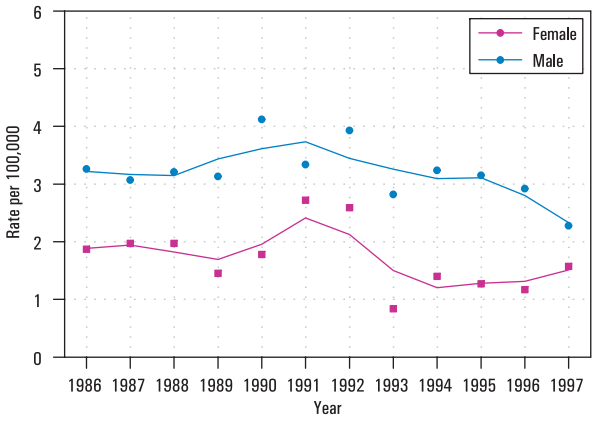
Figure D.3D.1
Mortality Rates for Homicide, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

In Alberta, male and female mortality rates for deaths due to homicide decreased slightly overall between 1986 and 1997. A total of 55 deaths (including three non-residents) were attributed to homicide in Alberta in 1997.

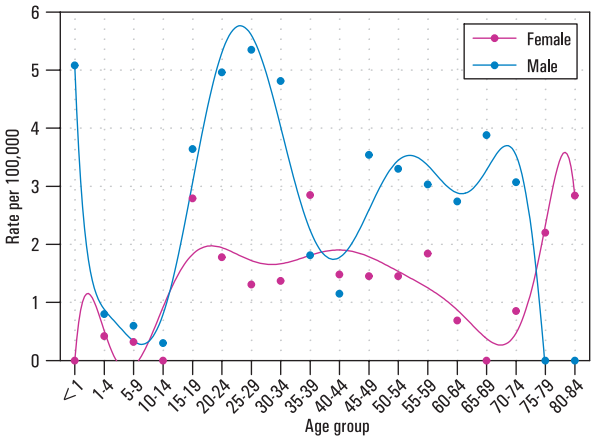
Figure D.3D.2
Mortality Rates for Homicide in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Although Alberta's homicide rate is higher than most provinces in Canada, it is lower than the lowest rates found in any part of the United States. Homicide deaths occur most frequently in young adult and middle age groups, and victims are twice as likely to be male than female. In most cases, victims know their killers.

Figure D.3D.3
Age - Specific Mortality Rates for Homicide in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Business Plan Targets

The provincial target for 2002 is that the age-standardized rate of deaths due to all injury (including homicide and suicide) will be at or below 45 per 100,000 population.

Provincial Strategies

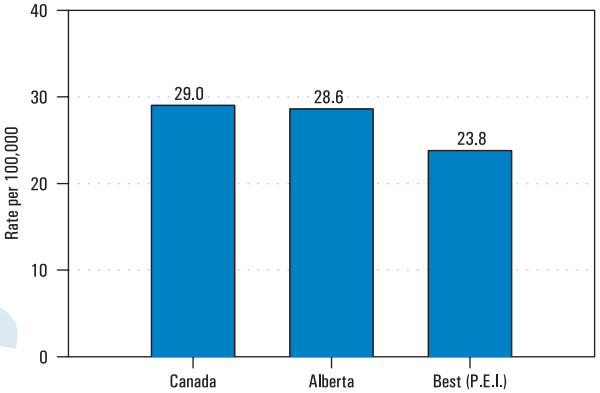
- The Alberta Centre for Injury Control and Research (ACICR) was described in section D.3A.

Provincial rates are so low that regional comparisons are unstable and have not been shown in a map.

D.4A Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease includes emphysema and chronic bronchitis. Asthma deaths have been excluded. In Alberta, the 1997 mortality rate from COPD was 28.6 per 100,000. This is slightly lower than the national average (29 per 100,000), and higher than the best province, P.E.I. (23.8 per 100,000).

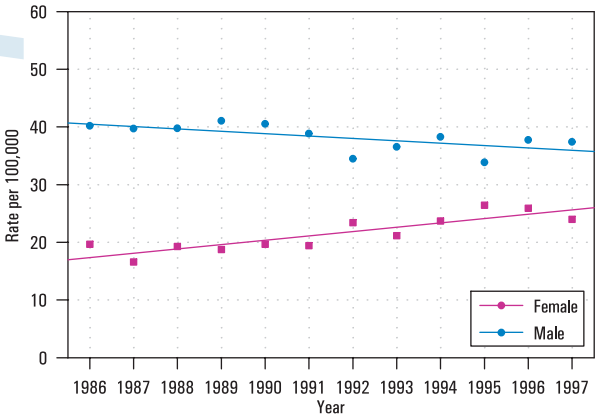
Figure D.4A.1
Mortality Rates for COPD, 1997 (Alberta, Canada, Best Province)
(Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

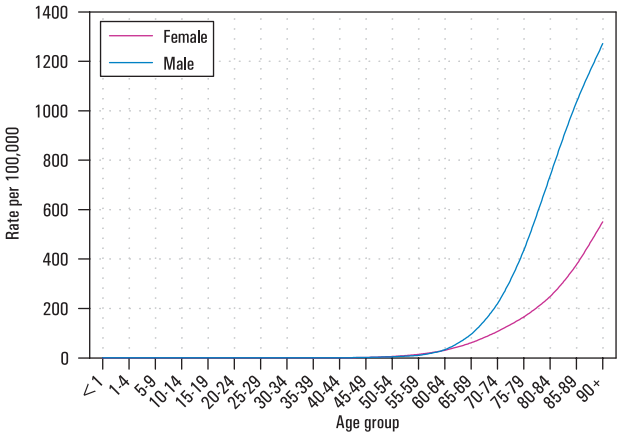
Males are at higher risk of dying from COPD than females, although this is changing. The 10-year trend shows the mortality rate decreasing for males and increasing for females. Changing patterns of smoking may account for some of this change.

Figure D.4A.2
Mortality Rates for COPD in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.4A.3
Age - Specific Mortality Rates for COPD in Alberta, 1995 - 1997

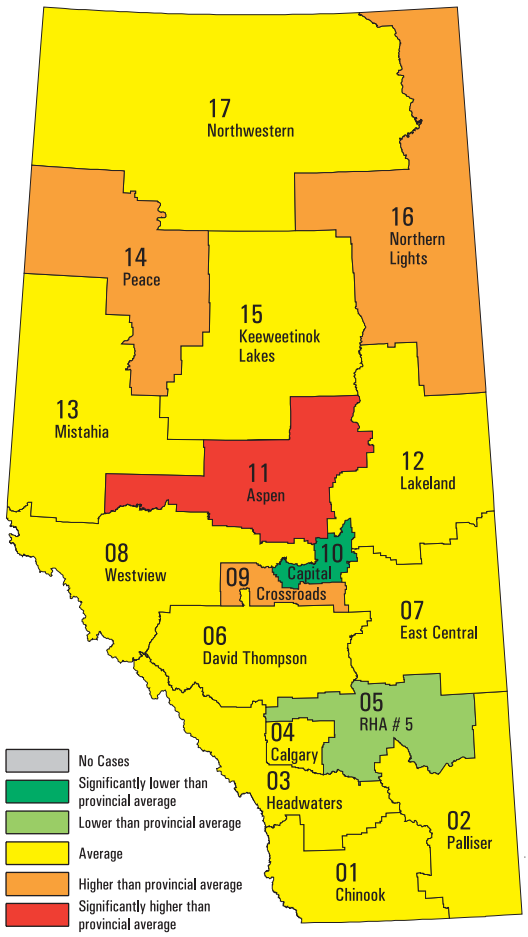


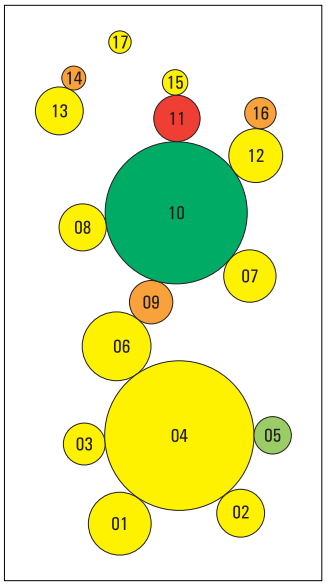
Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Strategies

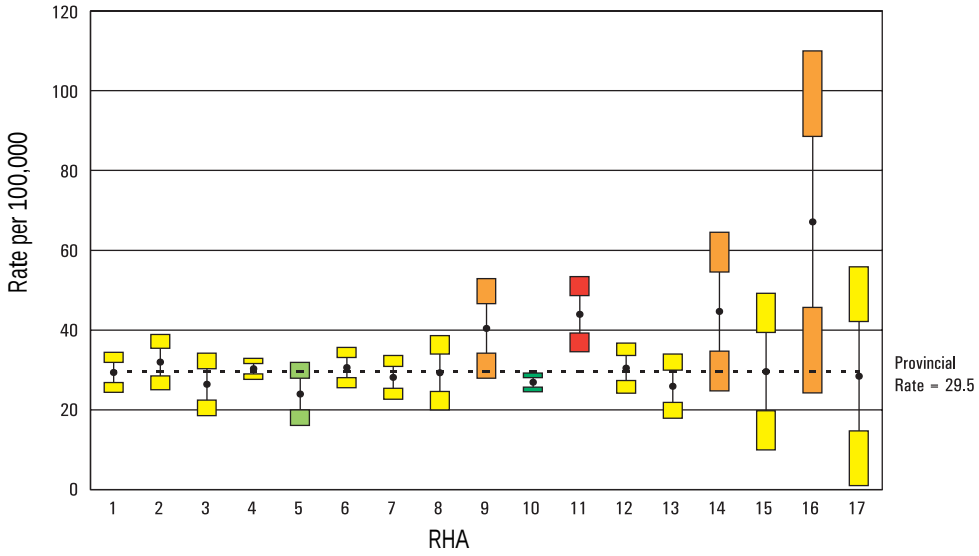
- The Alberta Tobacco Reduction Plan was described in section C.7.

Figure D.4A.4
Regional Differences in COPD Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram

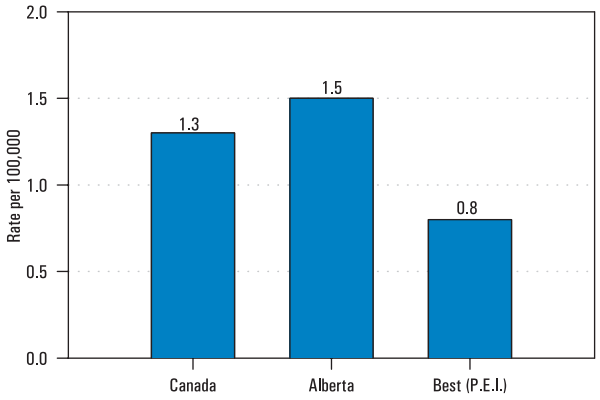


Source: Alberta Vital Statistics, Death File, May 1999 release

D.4B Asthma

Concerns have been raised frequently about rates of asthma in Alberta. This respiratory disease often first appears in childhood and can have a significant impact on physical activities.

Figure D.4B.1
Mortality Rates for Asthma, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)

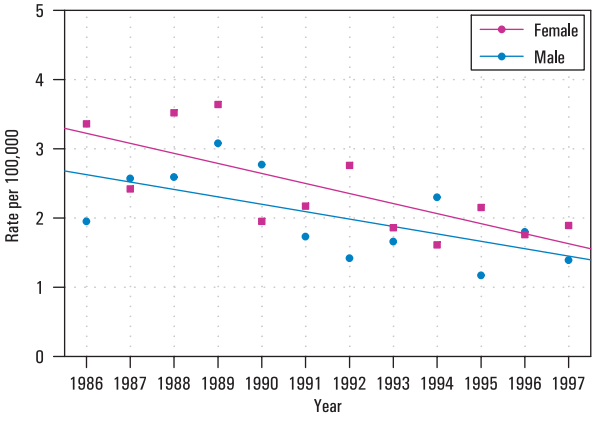


Source: Statistics Canada, Health Indicators Database, 1999

Rates of mortality, though, are generally quite low. In Alberta in 1997, the mortality rate from asthma was 1.5 per 100,000. This rate is higher than the Canadian average (1.3 per 100,000) and that of the best province, Prince Edward Island (0.8 per 100,000).

The difference between mortality rates for males and females is slight, with mortality decreasing for both sexes. Females have a slightly higher risk of dying from asthma than males. Improved medications are making it easier to live successfully with this disease.

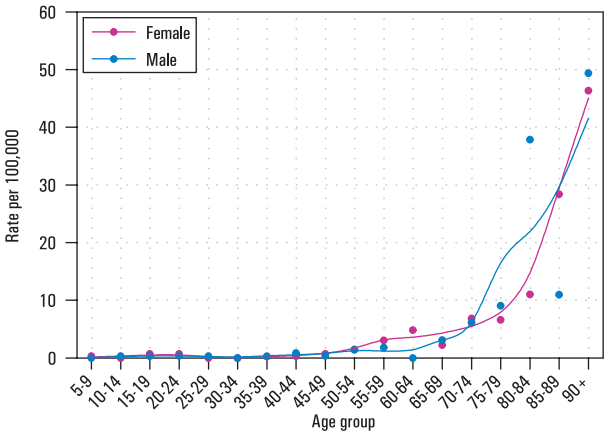
Figure D.4B.2
Mortality Rates for Asthma in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Mortality rates for males and females are comparable throughout most of the life span and increase dramatically for both groups after the age of 70.

Figure D.4B.3
Age - Specific Mortality Rates for Asthma in Alberta, 1995 -1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Provincial Strategies

- The Alberta Tobacco Reduction Plan was described in section C.7.
- Alberta Health and Wellness is a member of a provincial committee of the Clean Air Strategic Alliance (CASA), which is establishing air quality guidelines.
- Alberta Health and Wellness is a member of the Alberta Strategy to Help Manage Asthma Study (ASTHMA) led by the Division of Pulmonary Medicine, Faculty of Medicine and Dentistry, University of Alberta. ASTHMA will develop strategies to improve the management of asthma, thereby reducing complications.
- Alberta Health and Wellness participated in the development of clinical practice guidelines (CPGs) through the Alberta Clinical Practice Guidelines Program.

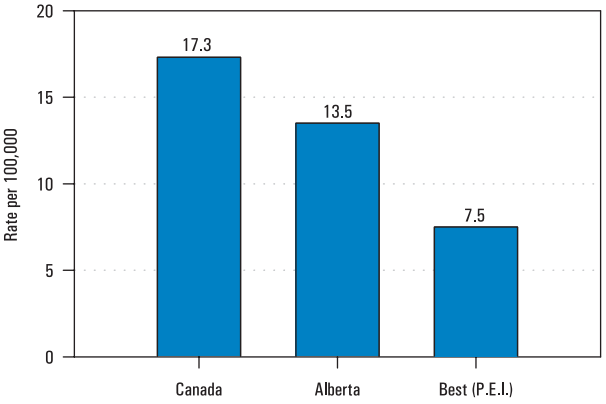
Provincial rates are so low that regional comparisons are unstable and have not been shown in a map.

D.5 Diabetes

Diabetes mellitus - involving fluctuations in blood sugar level resulting from insufficient insulin production or the inadequate use of insulin produced- has two major forms. Type 1 is insulin dependent and tends to occur in young people between the ages of 12 and 14. Type 2 is not insulin dependent and tends to affect older age groups and those who are obese.

Alberta's 1997 diabetes mortality rate was 13.5 per 100,000, lower than the Canadian average (17.3) but higher than the best province, P.E.I. (7.5). It should be noted that diabetes is likely to be underreported as a cause of death, because its complications can include heart disease, kidney failure, and stroke.

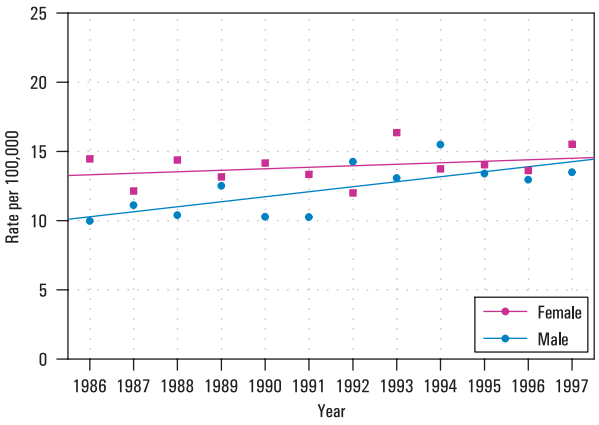
Figure D.5.1
Mortality Rates for Diabetes, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

Overall, diabetes mortality rates are relatively low. They are slightly higher for females than males over the last 10 years, but the rates for males have increased.

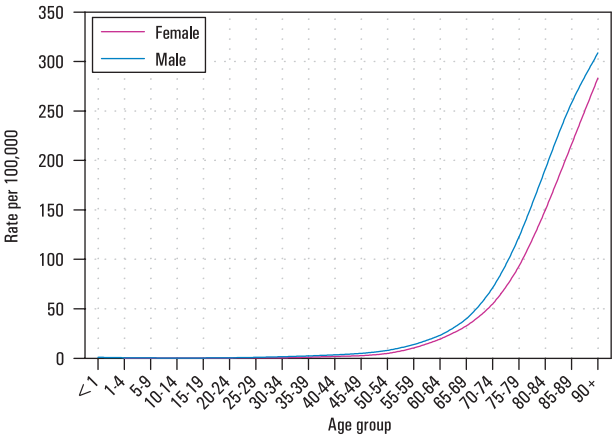
Figure D.5.2
Mortality Rates for Diabetes in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

Over the course of the human lifespan, there is very little difference between the sexes in mortality rates except at older age groups, where males are more vulnerable than females.

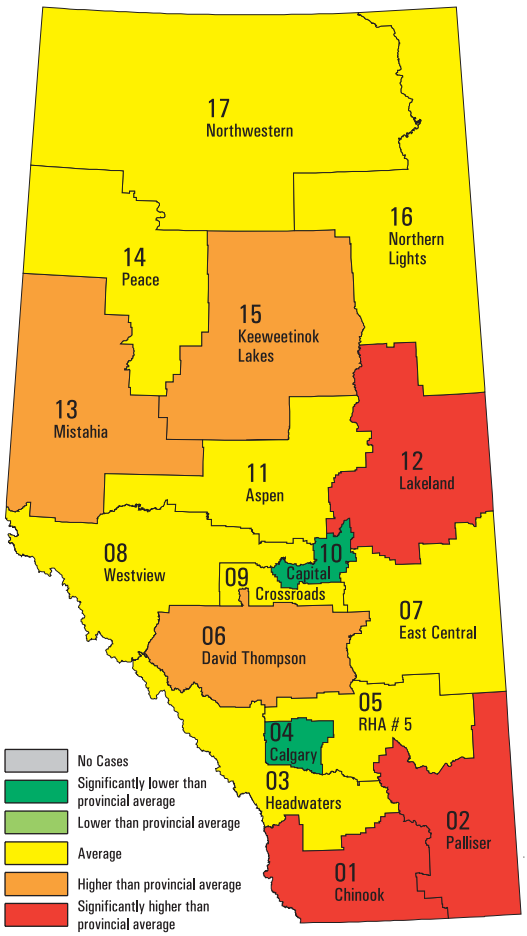
Figure D.5.3
Age-Specific Mortality Rates for Diabetes in Alberta, 1995 - 1997

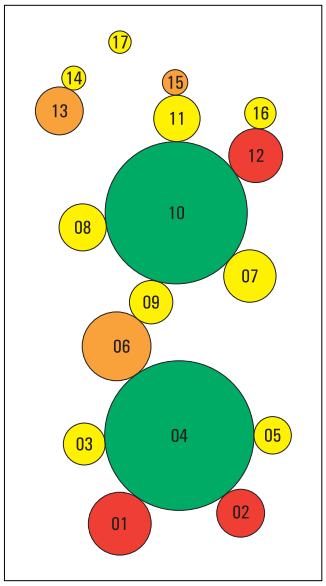


Source: Alberta Vital Statistics, Death File, May 1999 release

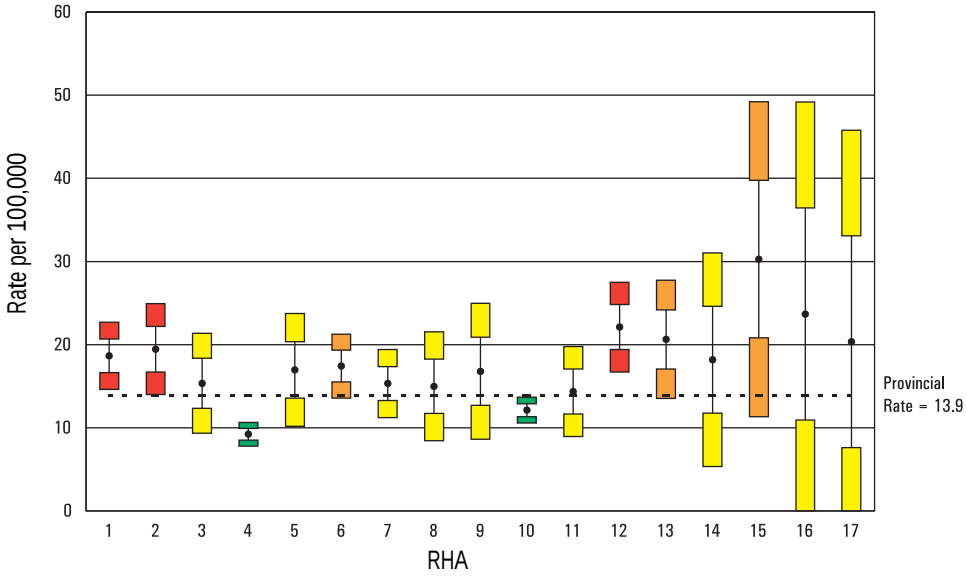
Provincial Strategies
- A provincial strategy for diabetes is in the preliminary stage of development.

Figure D.5.4
Regional Differences in Diabetes Mortality Rates, Alberta, 1995 - 1997





RHA Population Cartogram



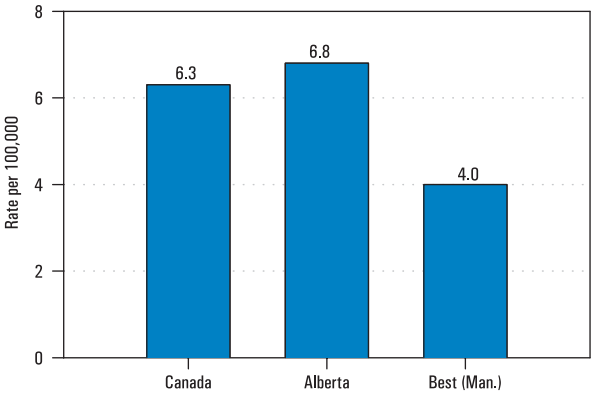
Source: Alberta Vital Statistics, Death File, May 1999 release

D.6 Chronic Liver Disease and Cirrhosis

The liver manufactures enzymes necessary for body functions and for detoxifying poisons, including alcohol, that enter the blood stream. The term cirrhosis applies when normal liver tissue is destroyed and replaced by scar tissue. This impedes the circulation of the blood through the liver and reduces its detoxifying powers. The most common cause of cirrhosis is chronic alcoholism; however, it may also be caused by hepatitis and other diseases.

The 1997 Alberta mortality rate from chronic liver disease and cirrhosis was 6.8 per 100,000 population. This was somewhat higher than the national average (6.3 per 100,000). The best province was Manitoba (four per 100,000).

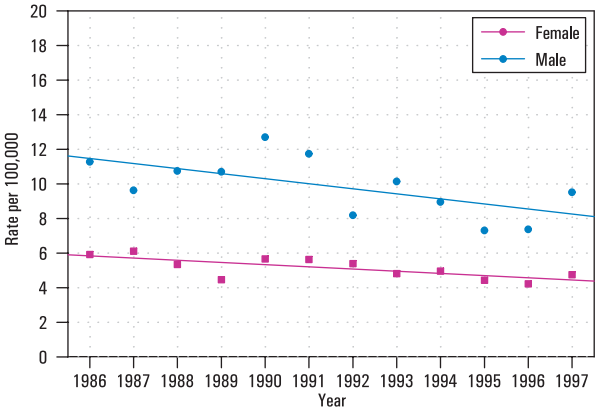
Figure D.6.1
Mortality Rates for Chronic Liver Disease and Cirrhosis, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

The actual number of deaths in Alberta from this cause is low (181, including three non-residents in 1997).

Figure D.6.2
Mortality Rates for Chronic Liver Disease and Cirrhosis in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)

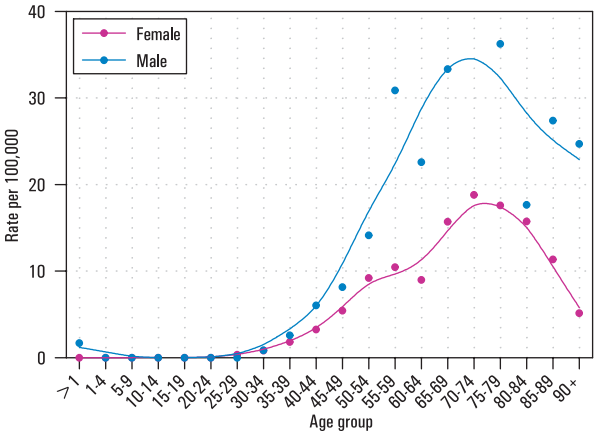


Source: Alberta Vital Statistics, Death File, May 1999 release

Rates of mortality for both males and females are decreasing slightly, but the likelihood of dying from cirrhosis and liver disease remains higher for males than for females.

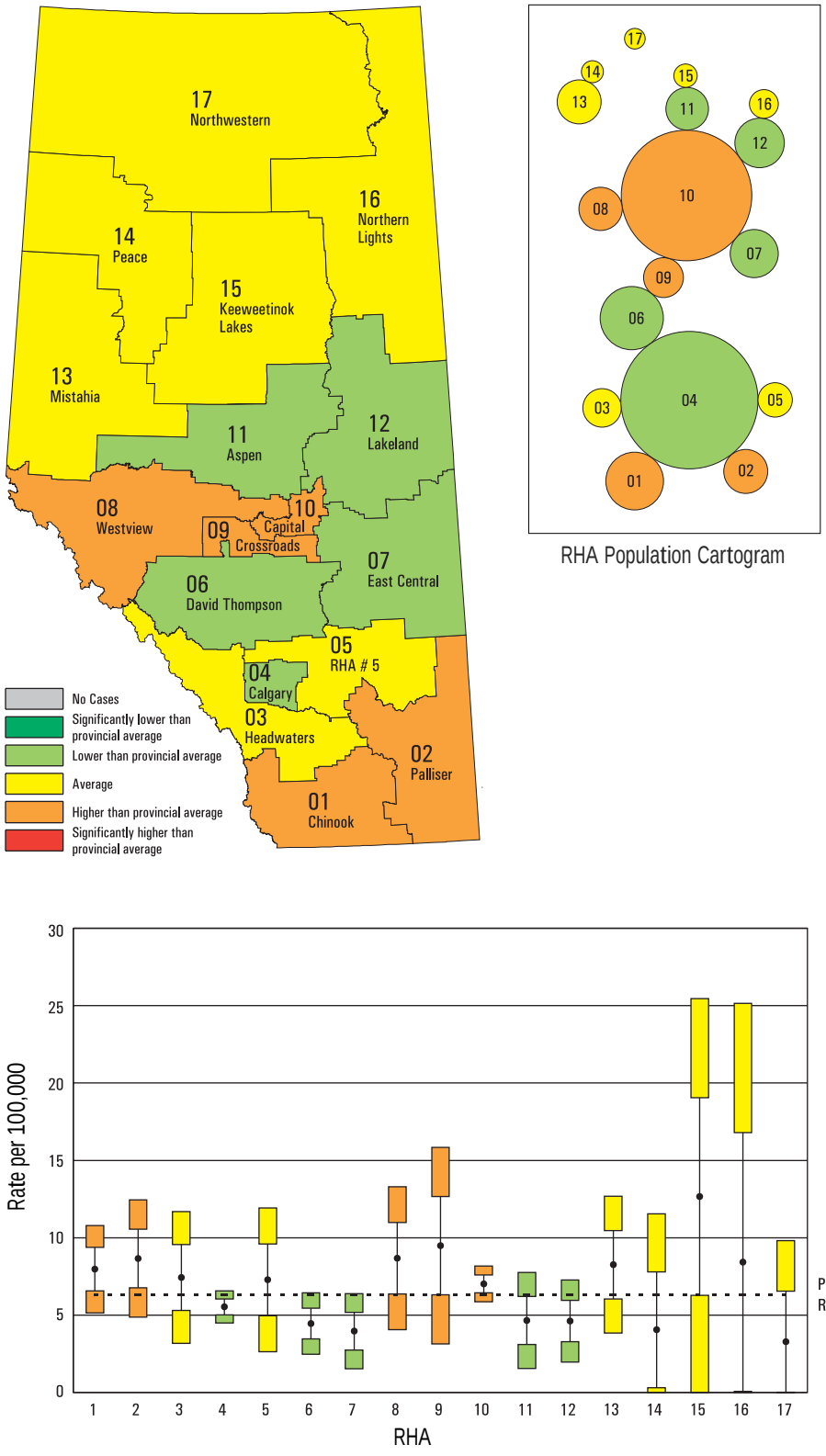
Cirrhosis and chronic liver disease attack a younger population than respiratory and circulatory diseases. Obstructive liver disease causes mortality in infants; other liver diseases begin to take their toll on people in their late 20s. Mortality from this cause peaks in the mid 70s for both males and females.

Figure D.6.3
Age-Specific Mortality Rates for Chronic Liver Disease and Cirrhosis in Alberta, 1995 - 1997



Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.6.4
Regional Differences in Chronic Liver Disease and Cirrhosis Mortality Rates, Alberta, 1995 - 1997



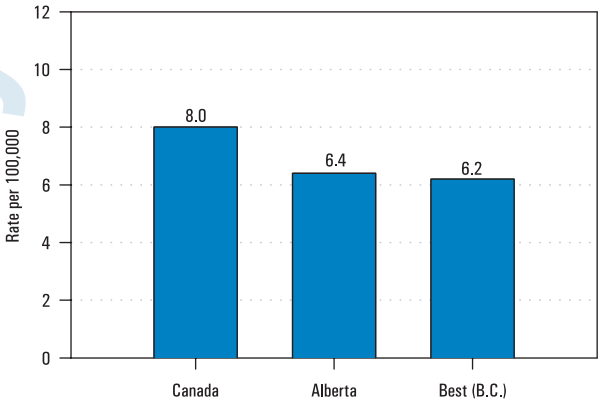
Source: Alberta Vital Statistics, Death File, May 1999 release

D.7 Kidney Disease

The most common forms of kidney disease are nephritis and nephrosis, which involve inflammation of the kidney. While kidney failure may be the end result of an infectious process, other causes include exposure to toxic substances, congenital anomalies, high blood pressure and diabetes.

In 1997, Alberta's mortality rate for nephritis and nephrosis was 6.4 per 100,000. This is less than the national average (eight per 100,000), but higher than the best province, British Columbia (6.2 per 100,000).

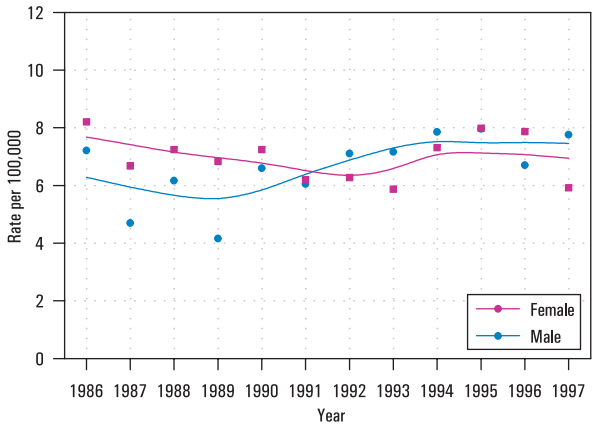
Figure D.7.1 Mortality Rates for Kidney Disease, 1997 (Alberta, Canada, Best Province) (Deaths per 100,000 population, age standardized)



Source: Statistics Canada, Health Indicators Database, 1999

Rates of mortality from this disease have remained fairly constant for both males and females, though mortality for males appears to be increasing in the last few years.

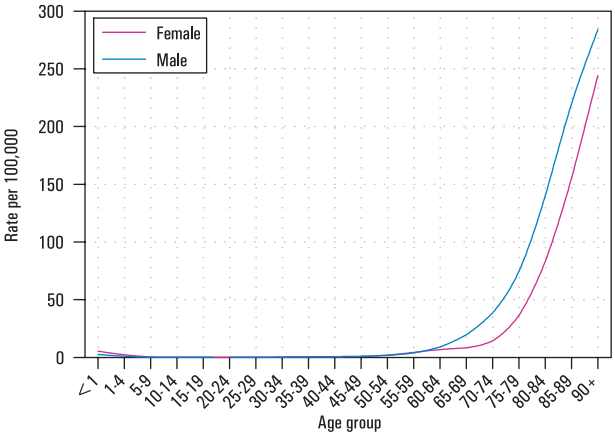
Figure D.7.2 Mortality Rates for Kidney Disease in Alberta, 1986 - 1997 (Deaths per 100,000 population, age standardized)



Source: Alberta Vital Statistics, Death File, May 1999 release

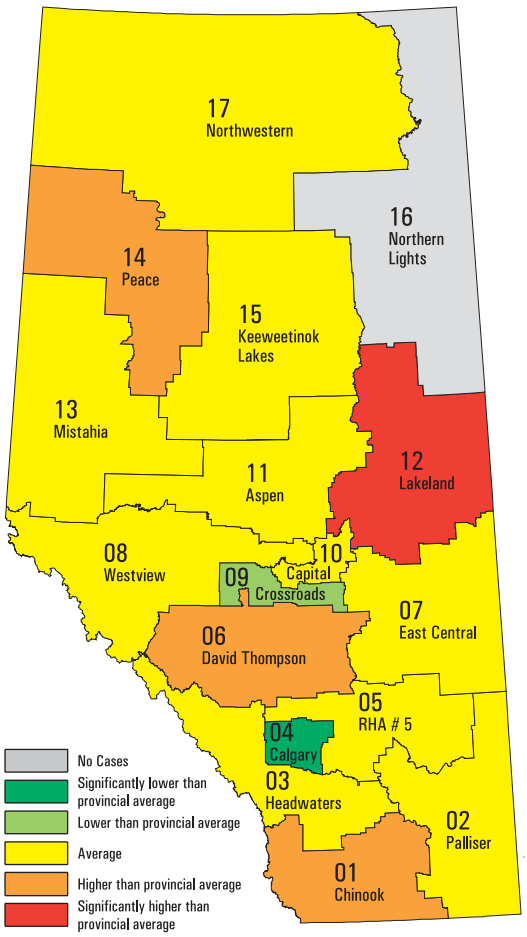
Rates are relatively constant for males and females by age group, except for the older age groups. Males are more likely than females to succumb to kidney disease after age 65.

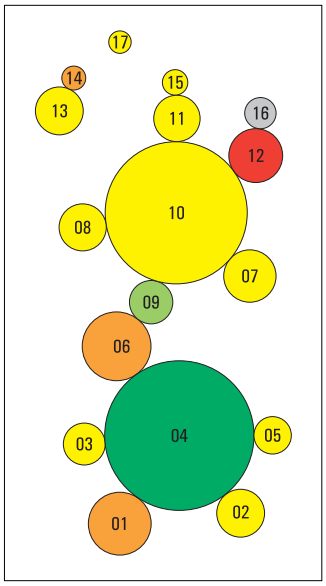
Figure D.7.3
Age-Specific Mortality Rates for Kidney Disease in Alberta, 1995 - 1997



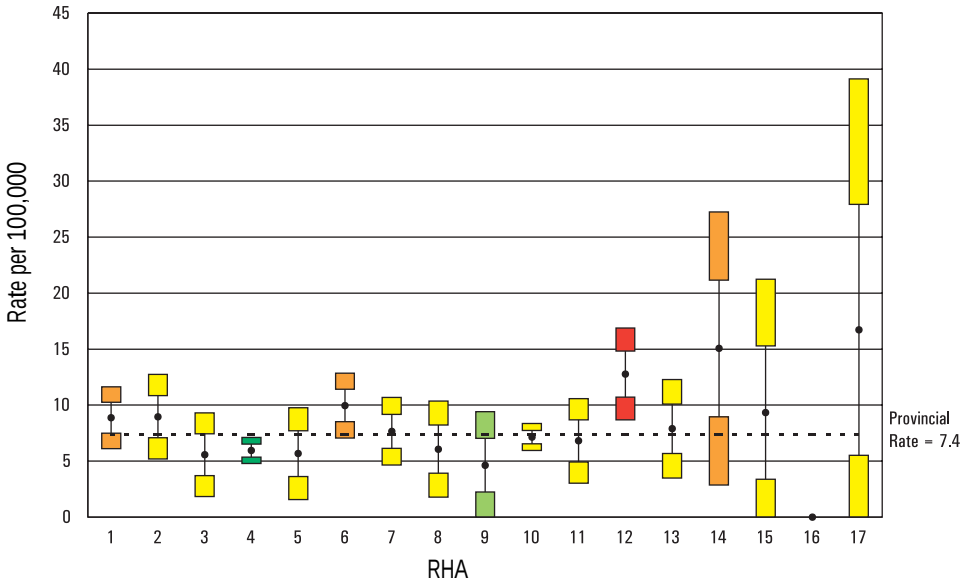
Source: Alberta Vital Statistics, Death File, May 1999 release

Figure D.7.4
Regional Difference in Kidney Disease Mortality Rates, Alberta, 1995 - 1997





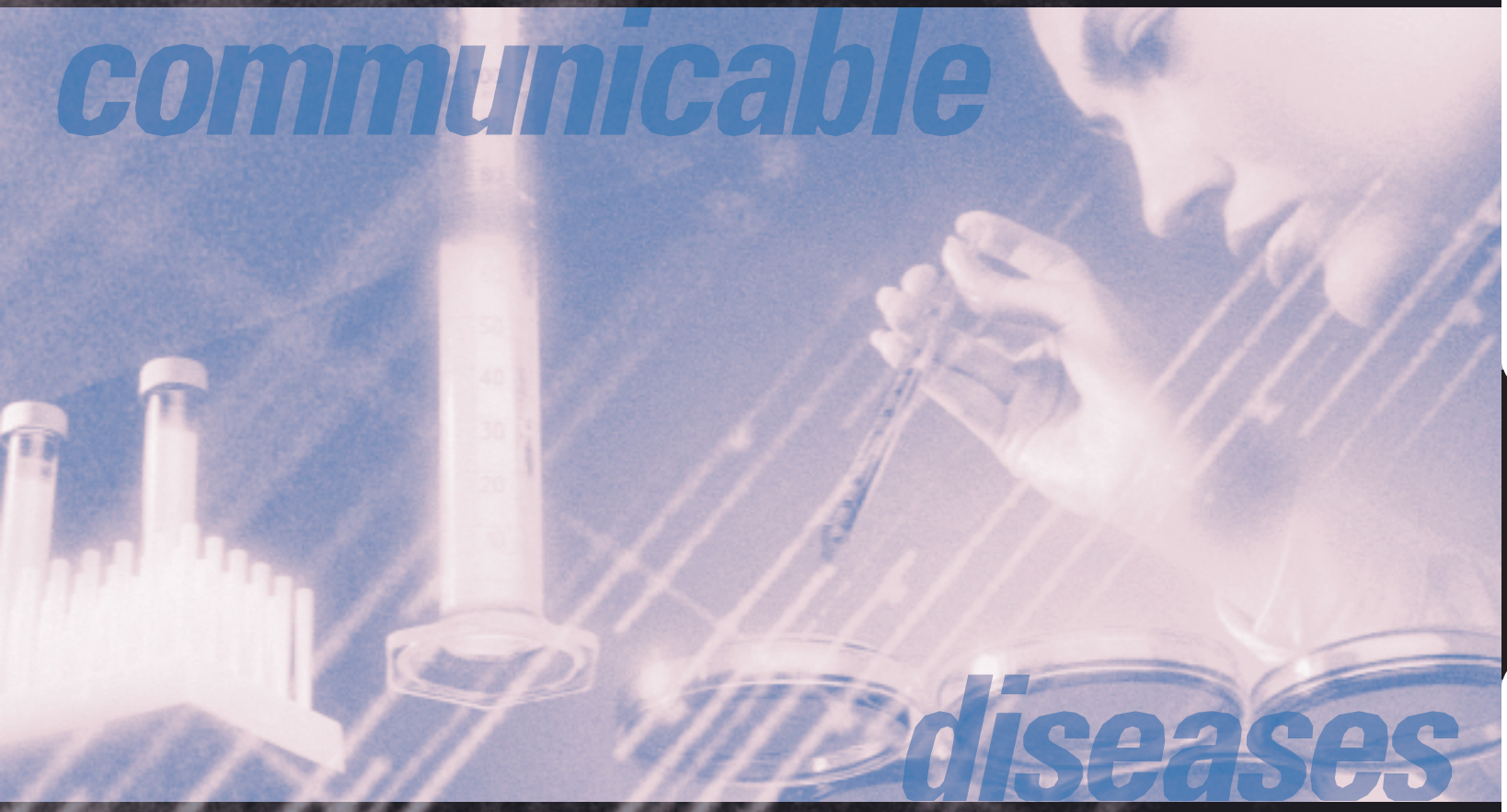
RHA Population Cartogram



Source: Alberta Vital Statistics, Death File, May 1999 release

Section E

communicable diseases

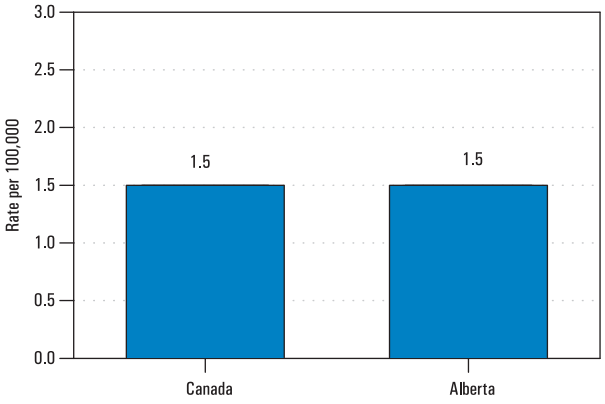


E.1 HIV and AIDS

Acquired immunodeficiency syndrome (AIDS) is caused by the human immunodeficiency virus (HIV), which continues to infect increasing numbers of Canadians. From the first report of AIDS in Canada in 1979 through 1994, there has been a fairly steady increase in cases reported, with Alberta following the same pattern. Since 1994, the number of new cases of AIDS reported and the mortality rate have declined due to improved treatment.

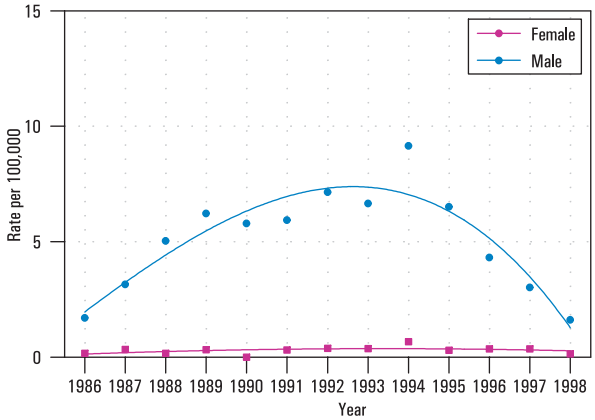
Currently, new cases of AIDS are declining in Alberta, even though HIV infections continue to occur at a fairly steady rate. In 1997, the rate for new AIDS cases in Alberta was 1.5 per 100,000, the same as the Canadian average.

Figure E.1.1
Incidence of AIDS, 1997 (Canada, Alberta) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

Figure E.1.2
Incidence of AIDS in Alberta, 1986 - 1998 (Rates per 100,000 population)

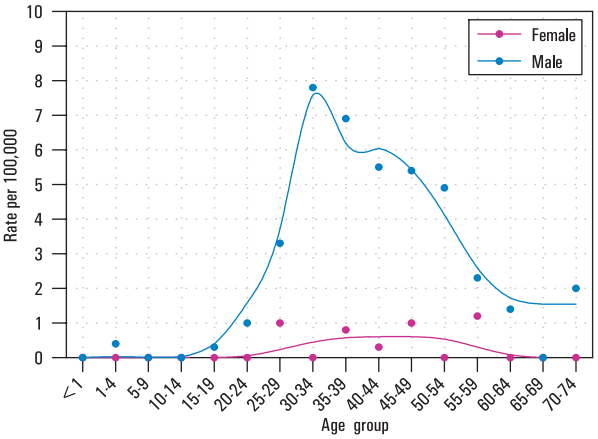


Source: Bloodborne Pathogens Database, Alberta Health and Wellness, 1986 - 1997; Communicable Disease Reporting System, 1998

Since the beginning of the epidemic, AIDS has been more prevalent among males than females. However, more recent HIV infection rates (see Figures E.1.4 and E.1.5 below) indicate an increase in the number of HIV infections among women, and subsequently, among children.

Figure E.1.3
Age-Specific Incidence of AIDS in Alberta, 1996 - 1998

Source: Bloodborne Pathogens Database, Alberta Health and Wellness, 1986-1997; Communicable Disease Reporting System, 1998

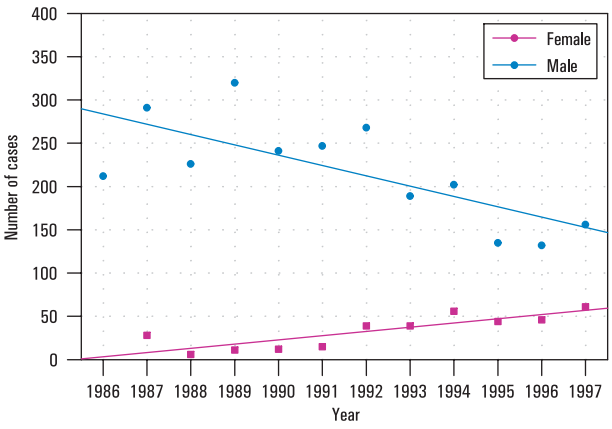


HIV was added to the list of reportable diseases in Alberta on May 1, 1998, and has been included with other screening tests offered to preganant women as part of routine pre-natal care since September 1, 1998. Prior to May 1, 1998, informal, non-nominal reports of persons who tested positive for HIV were provided in aggregate form to Alberta Health and Wellness by the Provincial Laboratories in Calgary and Edmonton. The total number of laboratory tests performed and the number of positive test results are not a true indicator of the number of persons infected with HIV, as an individual could have more than one test in a year.

From May 1 to December 31, 1998, a total of 116 reports of newly recognized cases of HIV infection were received from regional health authorities. Since the statistics apply only to the last eight months of 1998, the absolute numbers should not be compared to past calendar years.

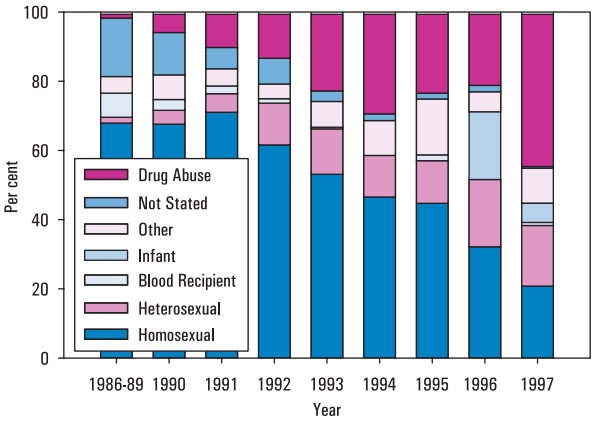
Among those who tested HIV-positive, the percentage of women has risen considerably since 1986. Women are increasingly becoming infected, representing 36 per cent of all HIV cases reported in 1998.

Figure E.1.4
HIV Cases in Alberta by Gender and Year (1986 - 1997)



Source: Bloodborne Pathogens Database, Alberta Health and Wellness, 1986 - 1997. HIV/AIDS Statistical Reports, March 1999

Figure E.1.5
Percentage Distribution of HIV Cases in Alberta by Year and Risk Factor, 1986 -1997



Source: Bloodborne Pathogens Database, Alberta Health and Wellness, 1986 - 1997. HIV/AIDS Statistical Reports, March 1999

HIV positive results due to homosexual/bisexual activity (men who have sex with other men - MSM) have decreased steadily since 1991. This category accounted for only 20 per cent of new HIV cases in 1998, a major drop from 72 per cent in 1991. The injection drug use (IDU) risk category has increased considerably since 1986. In 1998, IDU was the highest category of new infections in Alberta, comprising approximately 46 per cent (28.4 per cent men and 17.2 per cent women) compared to 10 per cent in 1991. Almost half of the women who tested positive were IDU. Intravenous drug use and heterosexual transmission have become increasingly important risk factors since 1991.

Infants were included in the "Other" category from 1986 through 1996 and were not identified separately until 1997. In 1998, approximately 31 per cent of all new HIV cases were younger people under age 30, with a number of these probably infected in their teens. There was one infant infected perinatally.

Newly recognized cases of HIV infection in 1998 continue to be high among population groups that were not prominent in the earlier years of the epidemic: IDU, women and youth. A disproportionate number of all persons with HIV infection are aboriginal, but the information is incomplete regarding the ethnic backgrounds of all new cases. Among 108 persons whose ethnic background was reported, 24 per cent were aboriginal.

Provincial Strategies

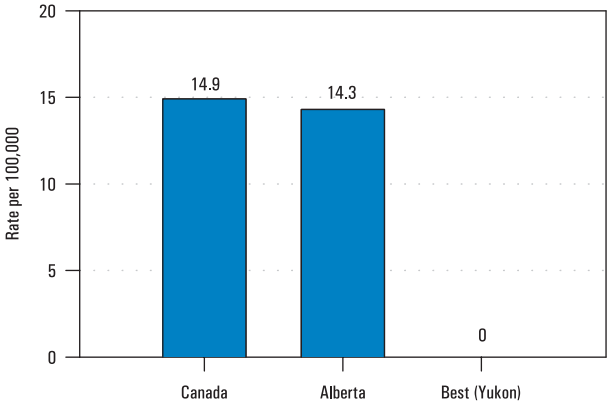
Alberta Health and Wellness' strategies are based on its roles and responsibilities, and take into consideration the work of the regional health authorities, community AIDS organizations, and Health Canada. The Alberta Health and Wellness HIV Strategy includes the following initiatives:

- Community AIDS organization grants
- HIV education for the public
- Provision of HIV clinics and anti-retroviral therapies
- Research in prevention and management of HIV infection
- Surveillance of HIV infection
- Routine prenatal screening for HIV
- HIV and families
- Young adults HIV prevention
- Aboriginal HIV strategy
- HIV offenders and ex-offenders
- Non-prescription needle use
- HIV housing issues
- HIV and mental health

E.2A Gonorrhea

Gonorrhea is a common sexually transmitted disease in Alberta that usually responds well to treatment. Complications from untreated infection can include pelvic inflammatory disease (which can lead to infertility), ectopic pregnancy and chronic pelvic pain.

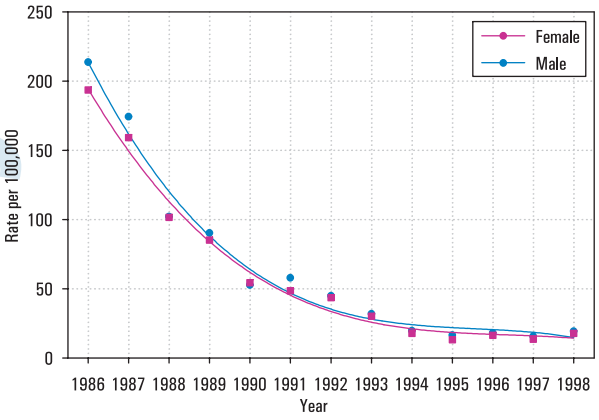
Figure E.2A.1
Incidence of Gonorrhea, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

In Alberta, the reported rate of gonorrheal infection has declined considerably over the last 10 years (Figure E.2A.2). The 1997 rate of 14.3 per 100,000 was lower than the Canadian average of 14.9. Low rates in some provinces may reflect differences in reporting practices.

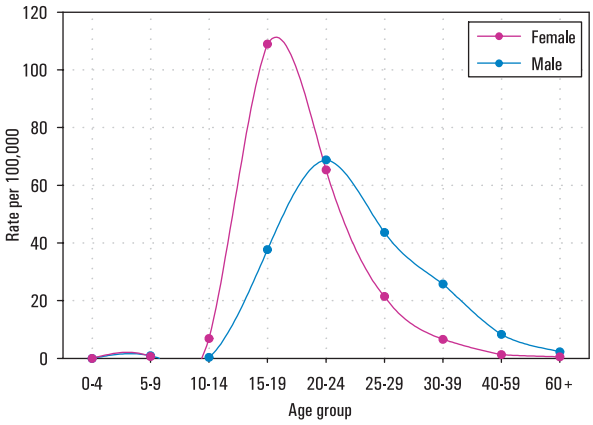
Figure E.2A.2
Incidence of Gonorrhea in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1986 - 1998

From 1996 to 1998, women aged 15 to 19 had the highest rates of infection, followed by men aged 20 to 24. Females contract the disease at a younger age than males, likely due to unprotected sexual intercourse commencing at an earlier age for females.

Figure E.2A.3
Age-Specific Incidence of Gonorrhea in Alberta, 1996 - 1998



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1986 - 1998

Provincial Strategies

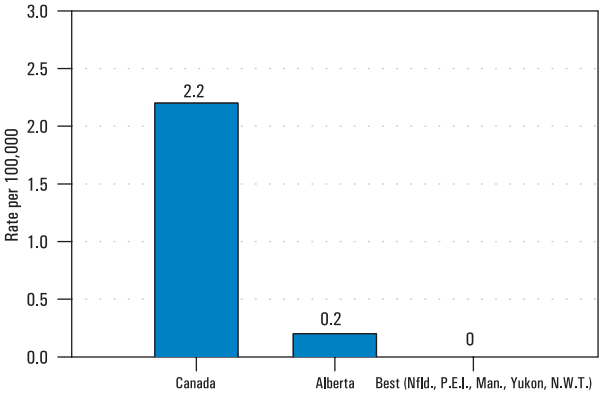
- Alberta Health and Wellness provides consultation and support to regional health authorities for the delivery of sexually transmitted disease programs. This includes the following activities:
- STD case management
- STD partner notification coordination
- development of provincial treatment and management guidelines and standards
- monitoring of program effectiveness
- STD educational support
- funding for the STD/HIV information line (1-800-772-2437)

E.2B Syphilis

Syphilis is caused by a spirochete, *Treponema pallidum*. There are few cases of syphilis reported on an annual basis, but the consequences of delaying treatment for this STD are serious. If left untreated, syphilis can affect the fetus of a pregnant woman. Also, syphilis infections can persist over a period of years, and can attack any organ system in the body. Treatment during any stage is with antibiotics. Contact tracing is important in controlling the disease.

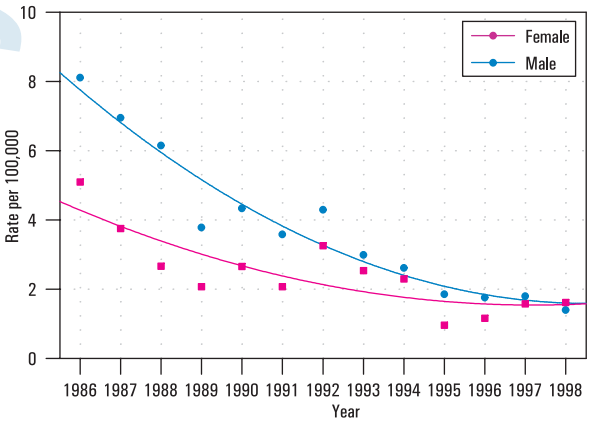
The reported rate of syphilis infection has declined in Alberta during the past decade (Figure E.2B.2). In 1997, it was 0.2 per 100,000, much lower than the Canadian average of 2.2. Newfoundland, Prince Edward Island, Manitoba, Northwest Territories and the Yukon reported no cases.

Figure E.2B.1
Incidence of Syphilis, 1997 (Canada, Alberta, Best Province)
(Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

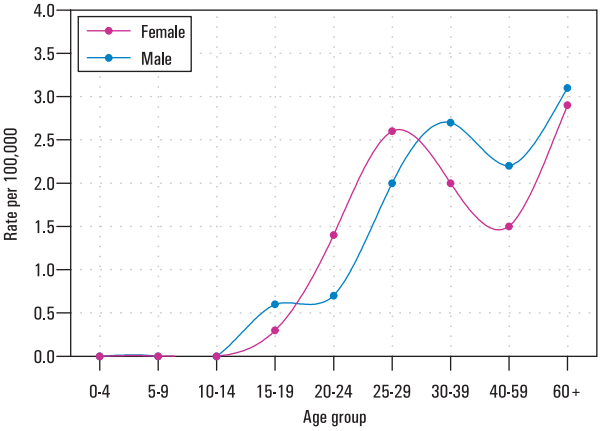
Figure E.2B.2
Incidence of Syphilis in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1986-1998

The highest rates for syphilis appear to be among men aged 30 to 39, women aged 25 to 29 and men and women aged 60 years and older. The older group is partly explained by the fact that untreated infections have gone undetected previously (latent infections). Some of the people in the older age groups may have been infected years ago.

Figure E.2B.3
Age-Specific Incidence of Syphilis in Alberta, 1996 - 1998



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1986-1998

Provincial Strategies

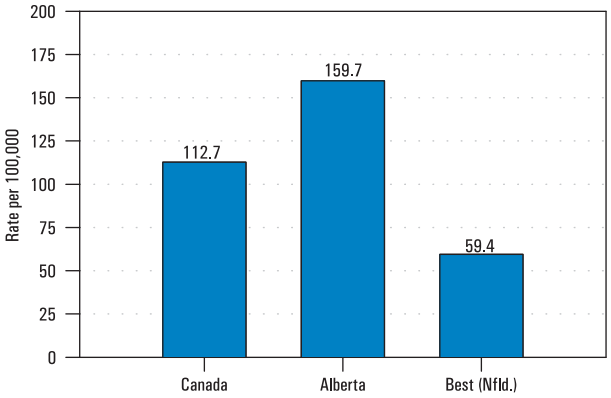
- Alberta Health and Wellness provides consultation and support to regional health authorities for the delivery of sexually transmitted disease programs. This includes the following activities:
- STD case management
- STD partner notification coordination
- Development of provincial treatment and management guidelines and standards
- Monitoring of program effectiveness
- STD educational support
- funding for the STD/HIV information line (1-800-772-2437)

E.2C Chlamydia

Chlamydia infection of the genitou-rinary tract is the most commonly reported STD in Alberta. If untreated, these infections can result in pelvic inflammatory disease, which can cause infertility and chronic pelvic pain.

While Alberta's rate appears high in comparison to the rest of the country (in 1997 it was 159.7, compared to the national average of 112.7), this reflects the current screening activity in Alberta for chlamydia among young females. Provinces with lower rates may not be actively screening for this disease.

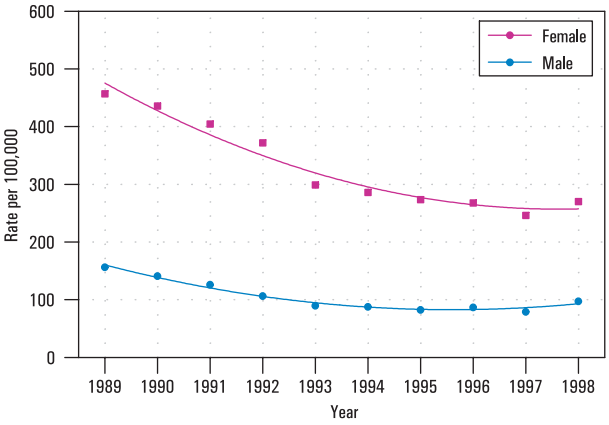
Figure E.2C.1
Incidence of Chlamydia, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

The reported rate of genito-urinary chlamydia has decreased during the past nine years. The 1998 Alberta rate was 184 per 100,000. The gradual decline since 1989 reflects the education initiatives that have been targeted at both health care workers and individuals at risk of becoming infected. It may also be attributable to partner notification, which helps with early identification and treatment.

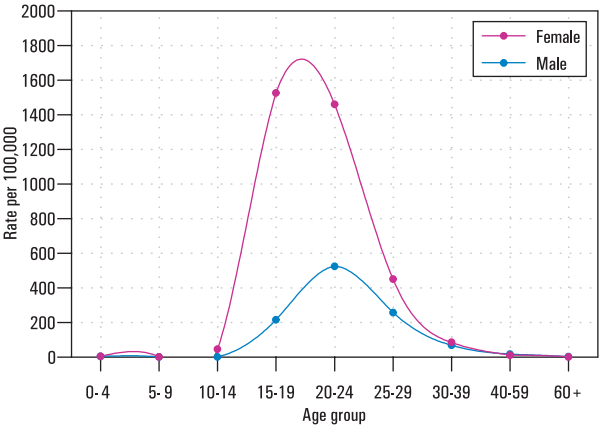
Figure E.2C.2
Incidence of Chlamydia in Alberta, 1989 - 1998 (Rates per 100,000 population)



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1989 - 1998

The reported chlamydia rate is much higher for young females than for young males. This is related to current screening and treatment practices. Increased detection has come from screening of young women who do not have symptoms. Male partners of these women are treated to prevent further spread, without having laboratory confirmation of the disease (and therefore without being reported as cases).

Figure E.2C.3
Age-Specific Incidence of Chlamydia in Alberta, 1996 - 1998



Source: Statistical Reports, STD Control, Alberta Health and Wellness, 1989 - 1998

Provincial Strategies

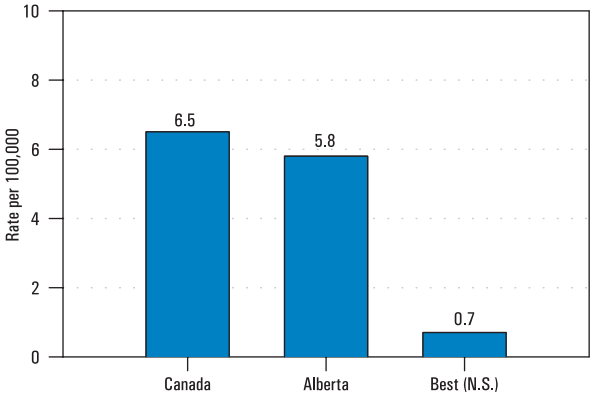
- Alberta Health and Wellness provides consultation and support to regional health authorities for the delivery of sexually transmitted disease programs. This was described in section E.2A

E.3 Tuberculosis

Tuberculosis (TB) is a disease caused by the *Mycobacterium tuberculosis* bacterium. The disease can damage the lungs and other organs. It is transmitted though the air, from one person to another

The 1997 Alberta rate was 5.8 per 100,000, lower than the Canadian average of 6.5, but higher than Canadian best province, Nova Scotia (0.7).

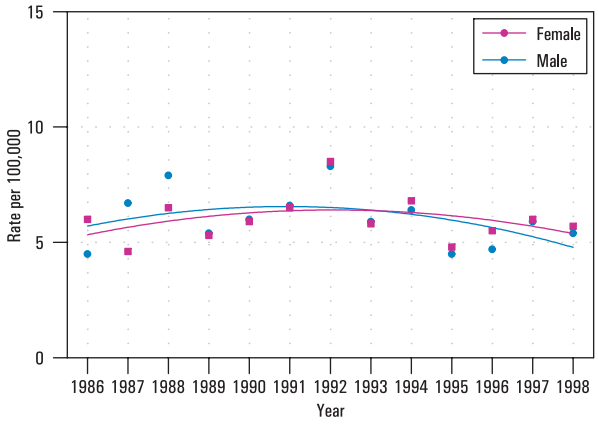
Figure E.3.1
Incidence of Tuberculosis, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

Tuberculosis was once a major cause of death in Alberta. Diligent contact tracing, treatment protocols, and monitoring have largely controlled the disease. The current rates of infection in Alberta are about five per 100,000 population.

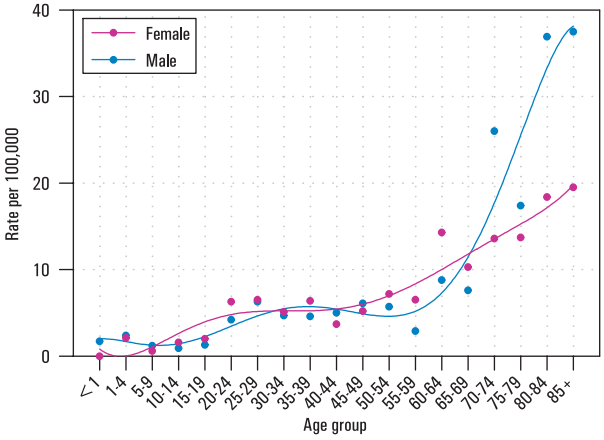
Figure E.3.2
Incidence of Tuberculosis in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Tuberculosis Database, Alberta Health and Wellness, 1986 - 1998

Not everyone who comes in contact with these bacteria develops the active disease; some may have an inactive infection that remains dormant for many years. The disease can become active if the immune system is weakened. Infants and young children, women during their childbearing years and especially male seniors have higher rates of active disease.

Figure E.3.3
Age-Specific Incidence Rates for Tuberculosis in Alberta, 1996 - 1998



Source: Tuberculosis Database, Alberta Health and Wellness, 1986 - 1998

Provincial Business Plan Targets

The provincial target for the year 2000 is that incidence of tuberculosis should not exceed 4.5 new cases per 100,000 population.

Provincial Strategies

- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of tuberculosis control programs. This includes the services of a provincial medical consultant and guidelines for professionals such as the *Tuberculosis Teaching Package* (for use in educating professionals and the public); *Guidelines for Preventing the Transmission of Tuberculosis in Health Care Facilities and Other Institutions;* and *the TB Control Manual* for public health staff.

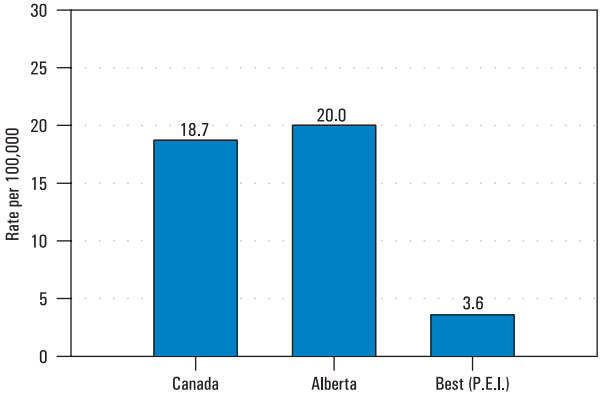
E.4A Giardiasis

Giardia lamblia is an intestinal protozoan that infects humans and other mammals. *Giardia* can persist in cyst form for months in cold water. Infection occurs from drinking contaminated water, or by person-to-person spread. Major symptoms include diarrhea, abdominal cramps and nausea. Symptoms may last for four to six weeks.

The disease is prevented in municipal water supplies through appropriate water treatment. Untreated surface water is still a common source of infection.

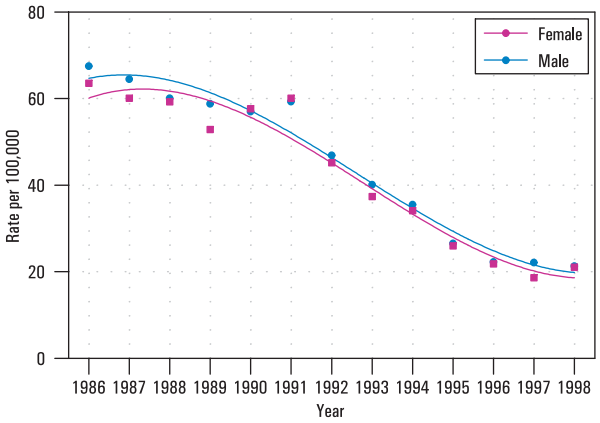
The reported rate of giardiasis has steadily declined in Alberta over the last decade. In 1997, the rate in Alberta was 20 per 100,000, which was slightly higher than the Canadian average of 18.7.

Figure E.4A.1
Incidence of Giardiasis, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

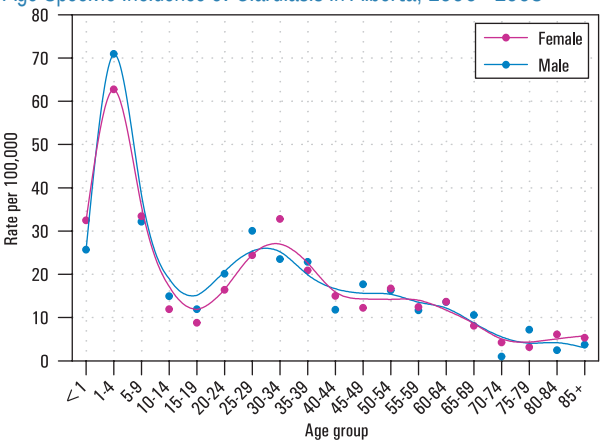
Figure E.4A.2
Incidence of Giardiasis in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

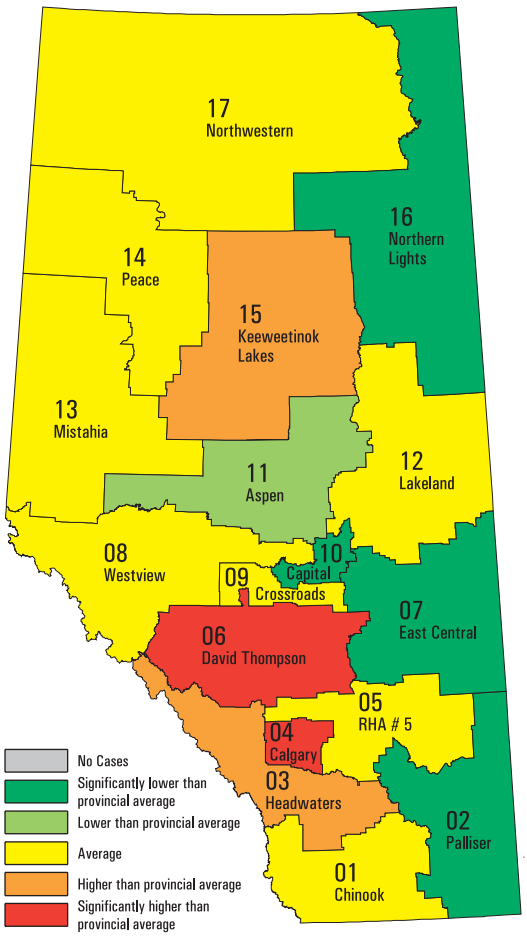
As with other enteric infections, rates are highest among children (in this case particularly among boys), where the potential for person-to-person spread is greatest.

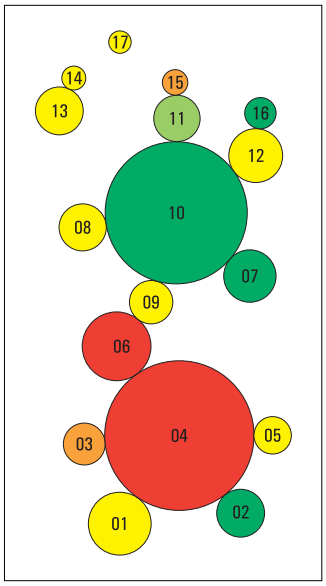
Figure E.4A.3
Age-Specific Incidence of Giardiasis in Alberta, 1996 - 1998



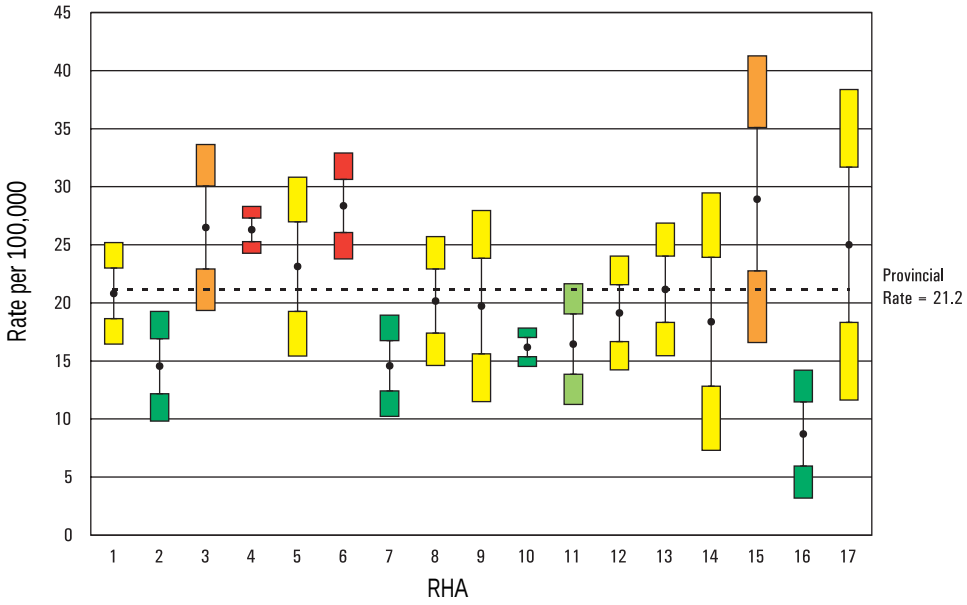
Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Figure E.4A.4
Regional Differences for Giardiasis in Alberta, 1996 - 1998





RHA Population Cartogram



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

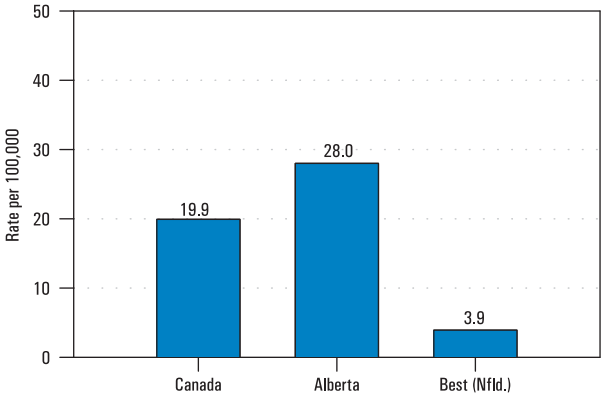
E.4B Salmonellosis

Salmonellosis is a gastrointestinal and occasionally systemic infection caused by ingesting a species of *Salmonella* in contaminated food or beverages. Transmission from infected pets to children and others can also occur.

Symptoms include fever and watery diarrhea occurring six to 48 hours after ingesting the bacteria. Nausea and vomiting are common. Symptoms usually last from two to five days, but may persist for up to two weeks. Treatment with antibiotics is usually reserved for these more serious infections.

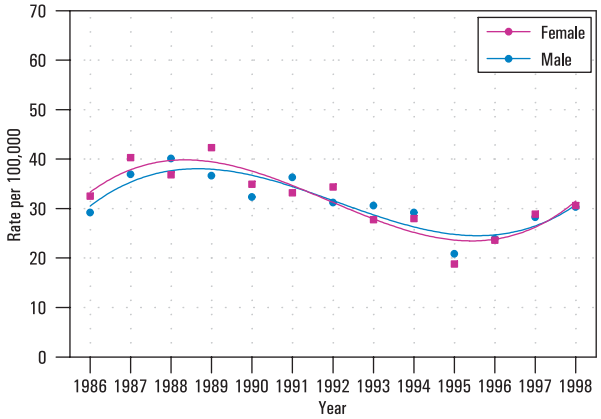
The reported rate of salmonellosis has decreased steadily during the past decade. In 1997, the Alberta rate was 28 per 100,000, higher than the Canadian average of 19.9. The lowest reported rate was in Newfoundland (3.9).

Figure E.4B.1
Incidence of Salmonellosis, 1997 (Canada, Alberta, Best Province)
(Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

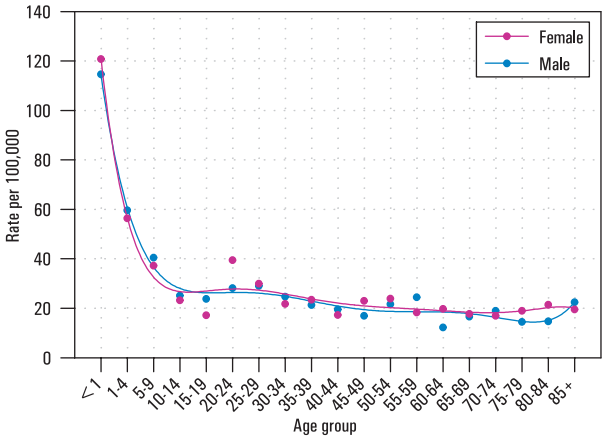
Figure E.4B.2
Incidence of Salmonellosis in Alberta, 1986 - 1998
(Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 -1998

As with other enteric infections, the potential for person-to-person spread is highest among young children.

Figure E.4B.3
Age-Specific Incidence of Salmonellosis in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

To help reduce the risk of food poisoning, Alberta Health and Wellness works with other provincial departments and the federal government to develop food safety standards and practices. Cooking food thoroughly, properly refrigerating unused food, careful hand washing, and monitoring of food facility establishments will help prevent transmission.

Provincial Strategies

- Section 43 of the food regulations mandates food handler education. Food Safe programs are delivered through regional health authorities.
- Outbreak investigation in conjunction with local and federal authorities determines sources of food borne illness and applies interventions and food protection strategies.

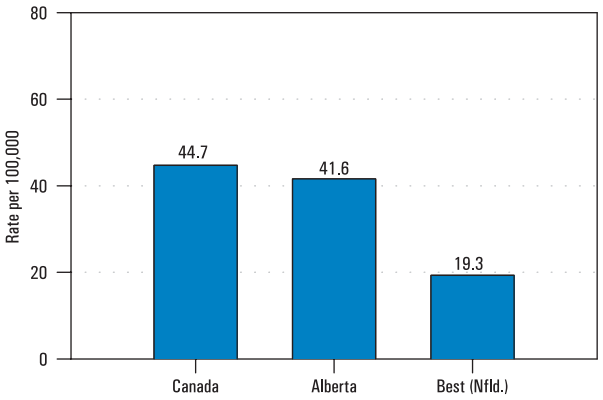
E.4C Campylobacter Enteritis

Campylobacter enteritis is an acute enteric disease caused by the *Campylobacter* bacterium. It is normally contracted by ingesting the bacteria in unpasteurized milk, in undercooked pork or chicken, or in other contaminated food and water. The disease is also passed through contact with infected pets or farm animals.

Usually lasting from two to five days, the most common symptoms of campylobacteriosis are diarrhea, abdominal pain, malaise, fever, nausea and vomiting. The most effective means of prevention are ensuring that food is thoroughly cooked, milk is pasteurized and hands are washed after contact with pets and animals.

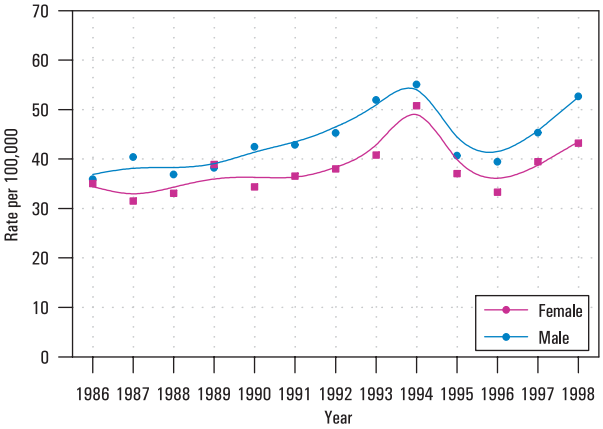
In 1997, the Alberta rate was 41.6 per 100,000, somewhat lower than the national rate of 44.7. The lowest reported rate was in Newfoundland (19.3).

Figure E.4C.1
Incidence of Campylobacter Enteritis, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

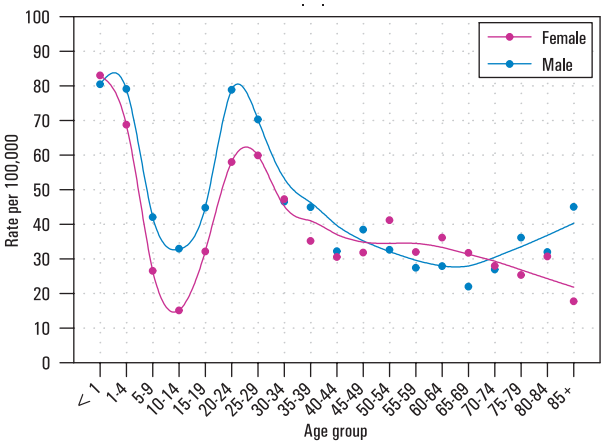
Figure E.4C.2
Incidence of Campylobacter Enteritis in Alberta, 1986 - 1998
(Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Children under five and young adults have the highest rates of infection.

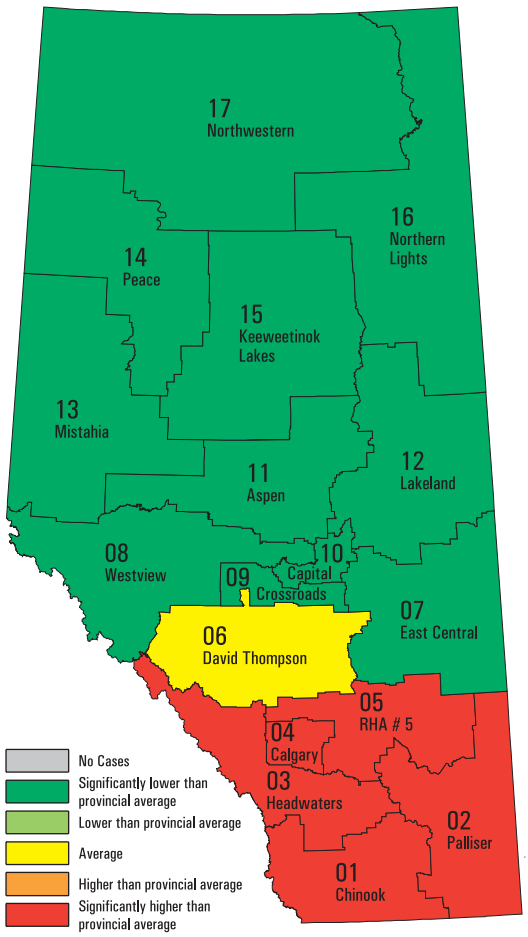
Figure E.4C.3
Age-Specific Incidence of Campylobacter Enteritis in Alberta, 1996 - 1998

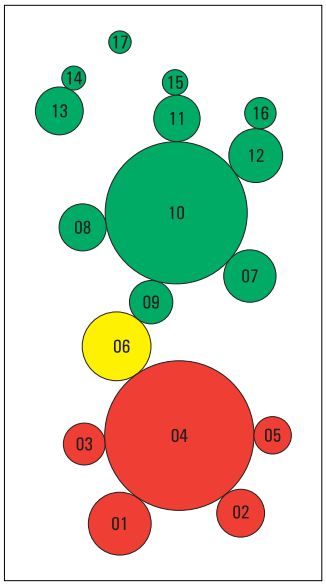


Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

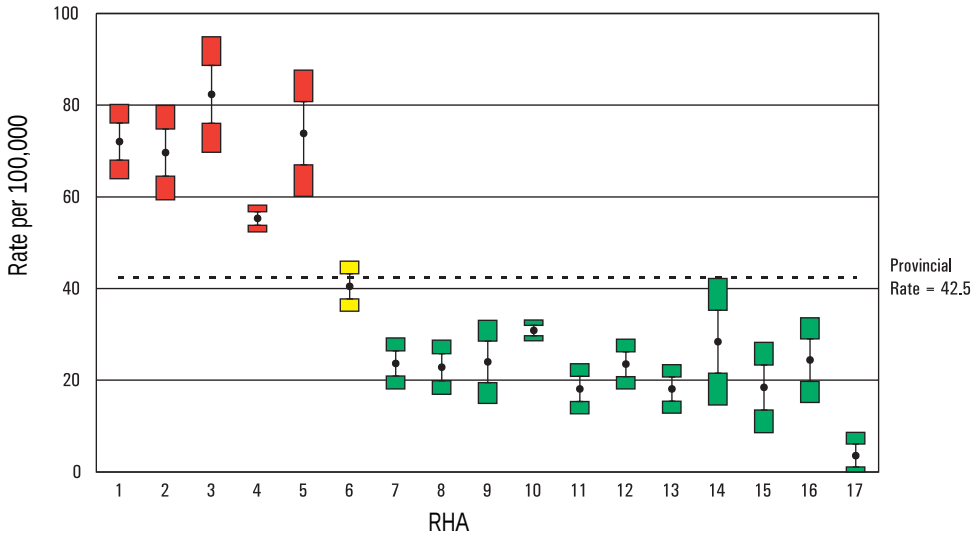
Provincial Strategies
- See section E.4B.

Figure E.4C.4
Regional Differences for Campylobacter Enteritis in Alberta, 1996 - 1998





RHA Population Cartogram



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

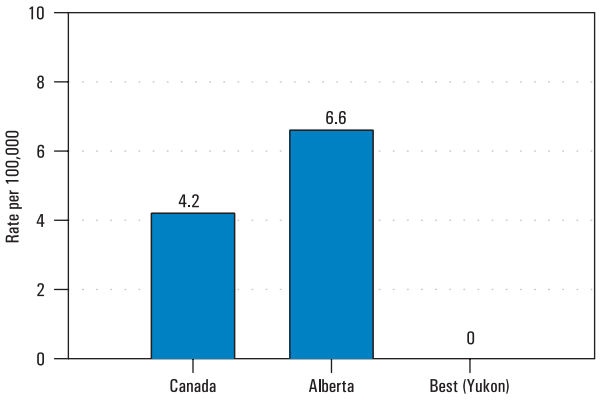
E.4D E. Coli 0157:H7

Escherichia coli (E. coli) are bacteria that normally exist in the colon without causing any disease. Some strains, however, produce gastrointestinal illness. Certain strains, most commonly 0157:H7, produce toxins that cause severe gastroenteritis and hemolytic uremic syndrome (HUS). HUS, most common in young children, can cause permanent vascular and kidney damage and can be fatal.

The presence of E. coli 0157:H7 in milk, meat products or water usually results from fecal contamination of these products. Undercooked hamburger has been the most commonly implicated food associated with E. coli 0157:H7 infection.

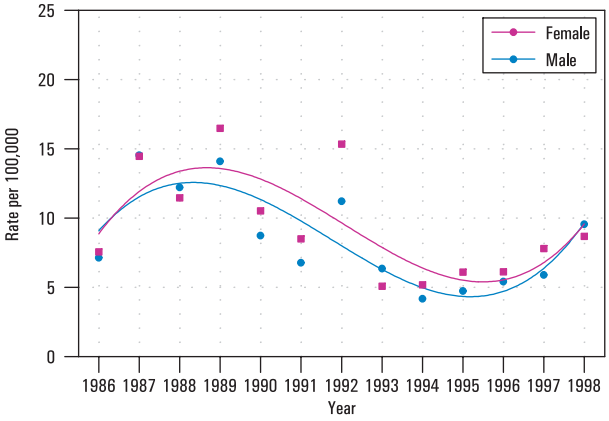
In 1997, the Alberta rate was 6.6 per 100,000, higher than the Canadian average and much higher than the Yukon, where there were no reported cases. Unlike other jurisdictions, most cases in Alberta occur as sporadic events rather than as part of an outbreak. Reported rates show a decrease in the rate of E. coli 0157:H7 over the last 10 years.

Figure E.4D.1
Incidence of E. Coli 0157:H7, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

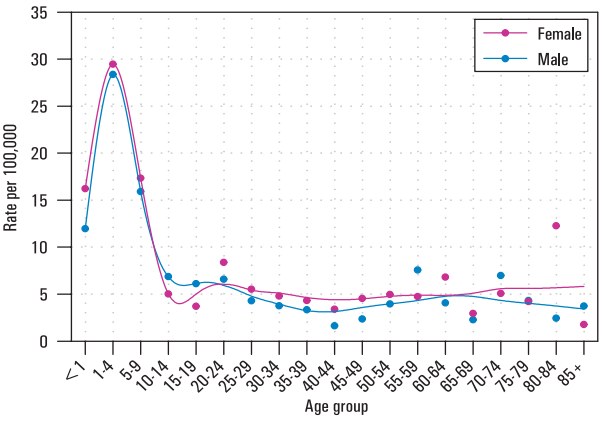
Figure E.4D.2
Incidence of E. Coli 0157:H7 in Alberta, 1986 - 1998. (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

As with other enteric infections, young children have the highest rates. There is also an increase in reported cases among older women in particular.

Figure E.4D.3
Age-Specific Incidence of E. Coli 0157:H7 in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Provincial Business Plan Targets

The provincial target for the year 2000 is that the number of new cases of E. coli infection will not exceed four cases per 100,000 population.

Provincial Strategies

- See section E.4B.

E.5A Measles

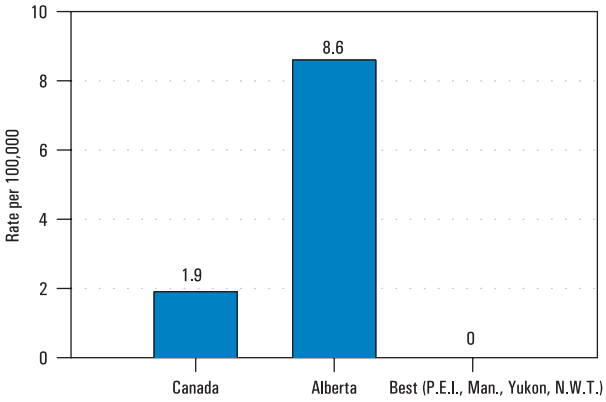
Measles is an acute, highly contagious disease caused by the measles virus. Major symptoms are a high fever, sore eyes, cough, cold-like symptoms and red rash lasting four to seven days.

Pneumonia occurs in up to six per cent of reported cases and accounts for 60 per cent of deaths attributed to measles. Other complications include middle ear infection, convulsions and encephalitis.

Measles is acquired by breathing the same air as an infected person or through direct contact with nasal or throat secretions. It is preventable with measles vaccine and permanent immunity is acquired after contracting the disease.

In 1997, the Alberta rate was 8.6 per 100,000, much higher than the Canadian average of 1.9. No cases were reported in the territories, Manitoba, and P.E.I.

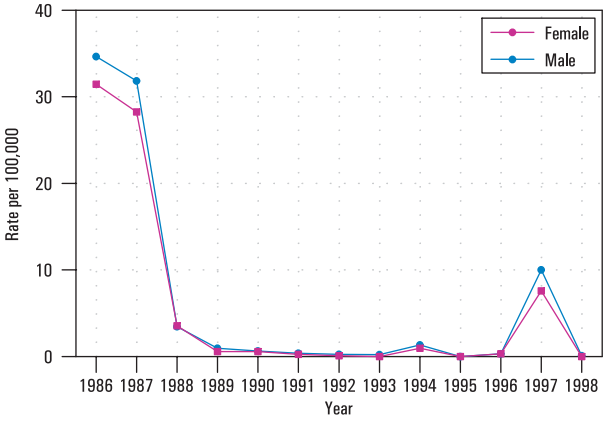
Figure E.5A.1
Incidence of Measles, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

The rate of measles has decreased during the past decade, but outbreaks are possible with a single-dose vaccine schedule (Alberta introduced a two-dose schedule in 1996).

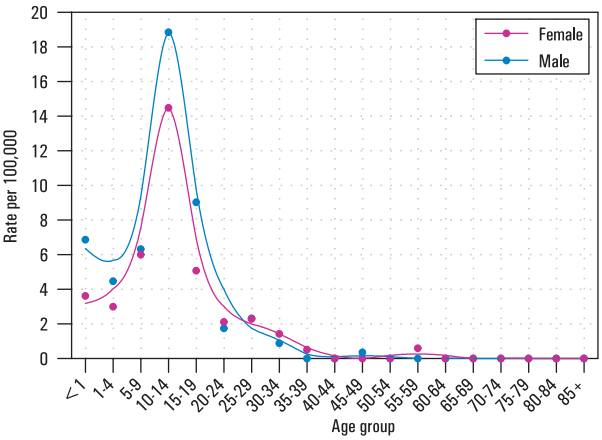
Figure E.5A.2
Incidence of Measles in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Measles is most prevalent among school-aged children, but can occur at any age. The average age of infection has increased since the advent of measles immunization programs.

Figure E.5A.3
Age-Specific Incidence of Measles in Alberta, 1996 - 1998



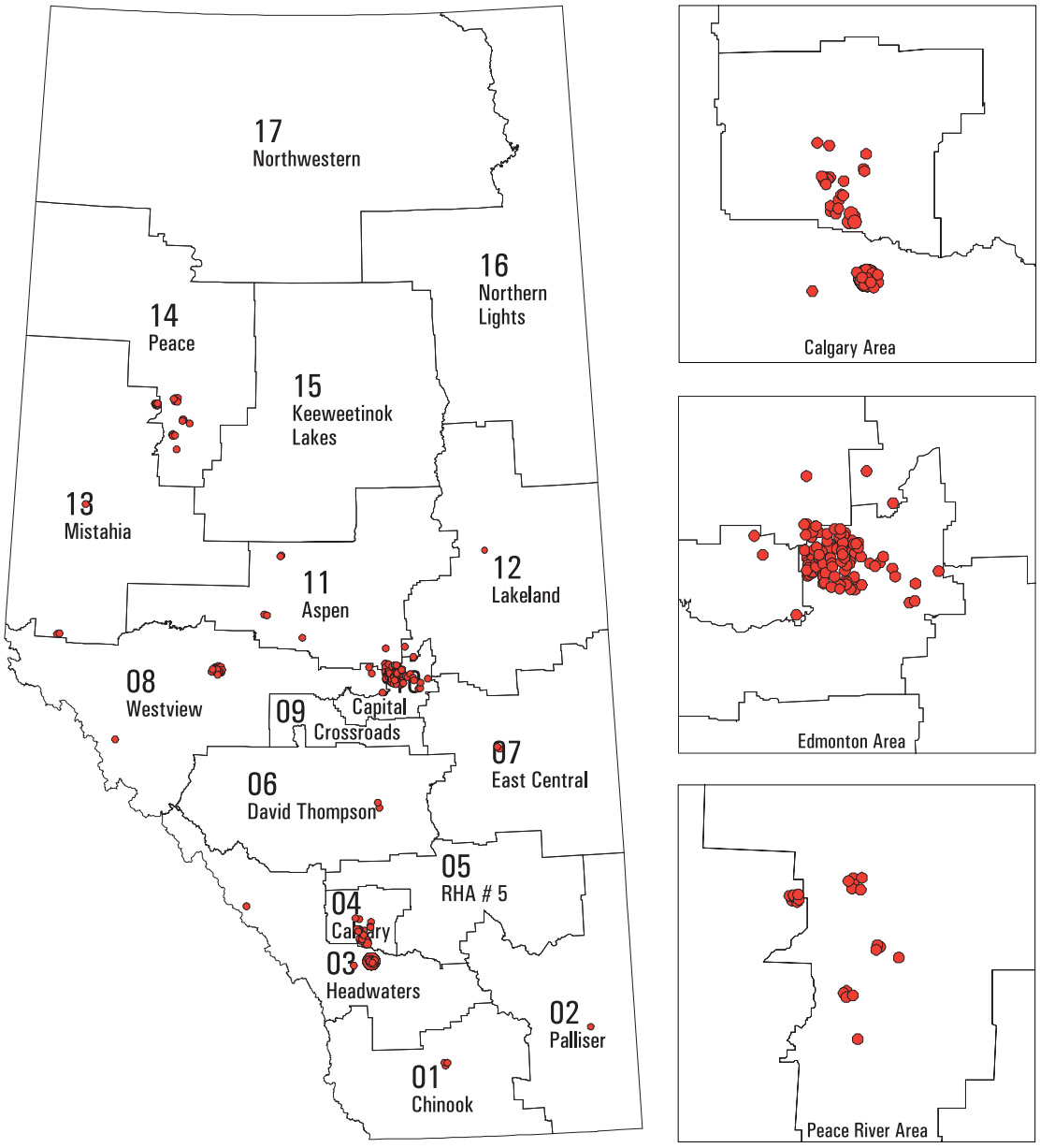
Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

In 1997, there was an outbreak of measles in Alberta (Figure E.5A.4 following page) related to the importation of the disease from another province. Cases occurred throughout Alberta but most could be traced to exposure in Edmonton and Calgary.

Provincial Strategies

- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of immunization programs.
- In addition, the department funds specialized immunization strategies, including immunization programs targeted against vaccine-preventable diseases.

Figure E.5A.4
Spot Map for Measles in Alberta, 1997



Note: Number of cases = 245

Source: Notifiable Disease Database, Alberta Health, 1986 - 1998

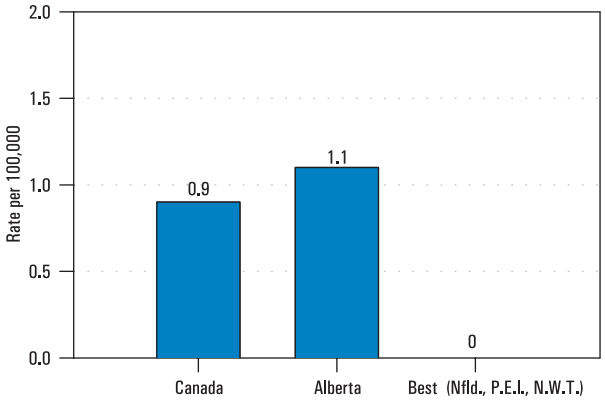
E.5B Mumps

Mumps is a disease affecting primarily school-aged children. The virus can infect many parts of the body, especially the parotid and other salivary glands. Parotid swelling is associated with fever, headache and loss of appetite. Infections frequently occur without any symptoms being present.

Internal organs can be involved. Males may develop orchitis, a painful inflammation of the testicles. Mumps in females may affect the ovaries, causing pain and tenderness in the abdomen. It is a cause of viral meningitis. Other organs can also be involved.

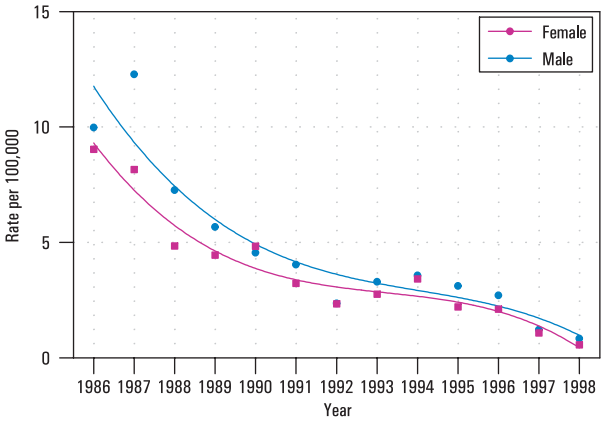
In 1997 Alberta's reported rate for mumps (1.1 per 100,000) exceeded the national average of 0.9. No cases were reported in Newfoundland, P.E.I., or the Northwest Territories. The rate of mumps infections has declined steadily in Alberta over the last decade.

Figure E.5B.1
Incidence of Mumps, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

Figure E.5B.2
Incidence of Mumps in Alberta, 1986 - 1998 (Rates per 100,000 population)

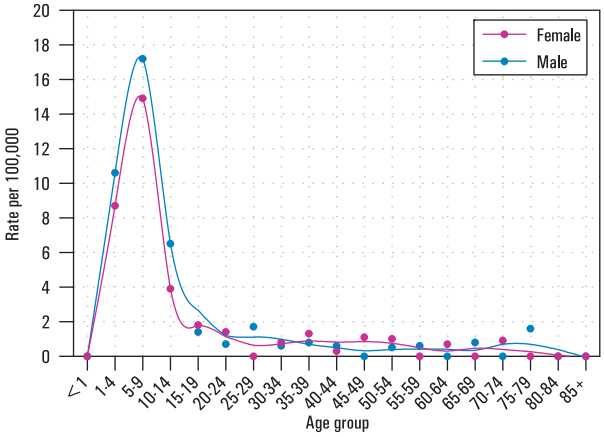


Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Immunity to mumps can be conferred by vaccine, usually administered as part of the measles-mumps-rubella (MMR) immunizations. Mumps vaccine is 75 to 95 per cent effective. Mumps infection almost always gives lifelong protection.

Symptomatic mumps infection is rare in children younger than two years, but more likely to be reported for children aged five to 14.

Figure E.5B.3
Age-Specific Incidence of Mumps in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Provincial Strategies

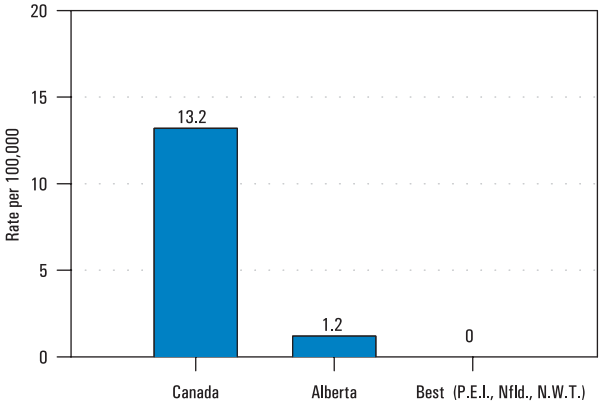
- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of immunization programs.
- In addition, the department funds specialized immunization strategies, including immunization programs targeted against vaccine-preventable diseases.

E.5C Rubella

Rubella, or German measles, is a generally mild infection in children. It causes swollen glands behind the ears and back of the neck, followed by a short-lived rash. The virus is transmitted through droplets in the air, through close personal contact and from a pregnant woman to her unborn child.

Infection during the first trimester of pregnancy can lead to congenital rubella syndrome (CRS) in up to 85 per cent of the babies of these mothers. These babies may be born with congenital heart disease, low birth weight, deafness, blindness, mental retardation and other neurological defects.

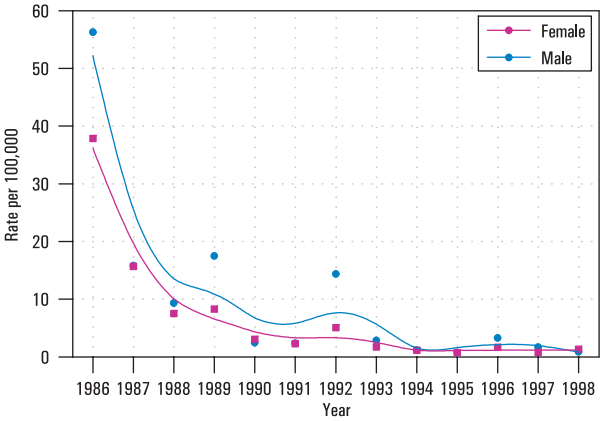
Figure E.5C.1
Incidence of Rubella, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

The reported rate of rubella infections in Alberta has decreased in the last few years. The 1997 Alberta rate of 1.2 per 100,000 is much lower than the national average of 13.2. The rate of CRS in Alberta has been significantly reduced because of the effective control of rubella.

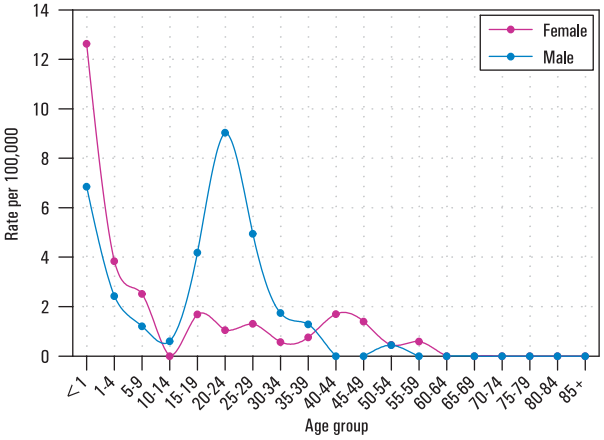
Figure E.5C.2
Incidence of Rubella in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Initially, immunization strategies were targeted at females only and for this reason, males historically had higher infection rates (Figure E.5C.2). Now, both males and females are immunized.

Figure E.5C.3
Age-Specific Incidence Rates for Rubella in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Protection is conferred by immunization against rubella. Adverse effects from the vaccine are slight, with symptoms such as fever, a mild rash or joint stiffness. The best control for rubella and CRS is to raise the immunization rate.

Provincial Strategies

- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of immunization programs.
- In addition, the department funds specialized immunization strategies, including immunization programs targeted against vaccine-preventable diseases.

E.5D Hepatitis B

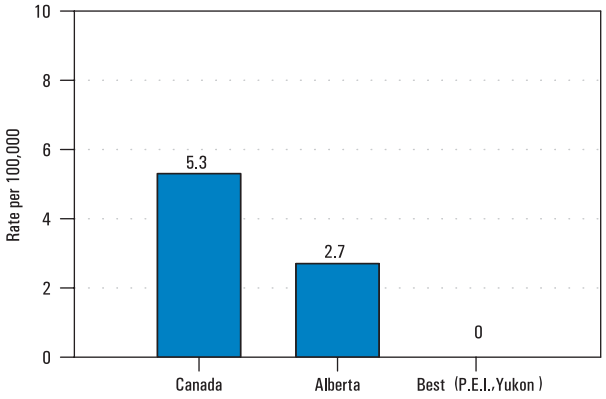
Hepatitis B virus (HBV) is a bloodborne pathogen that causes inflammation of the liver. The following symptoms may slowly emerge anywhere from 40 to 180 days after contracting the virus: lack of appetite, rash, stomach pain, nausea and vomiting, often followed by jaundice. Many people who are infected will have no symptoms.

Hepatitis B is transmitted through sexual contact; contact with infected blood (through such means as sharing needles for injection drug use, or by blood splashes to the eyes or mucous membranes); or from an infected mother to her baby at birth. Tattooing and body piercing have also been implicated. About five per cent of people with hepatitis B become carriers and can spread the disease for a lifetime. A significant proportion of carriers will go on to develop chronic active hepatitis and cirrhosis.

Most people are at low risk for contracting hepatitis B, but injection drug users (who share needles) and health care workers (who are at risk for needlestick injuries) are at increased risk. As a result, those at risk are routinely immunized for hepatitis B.

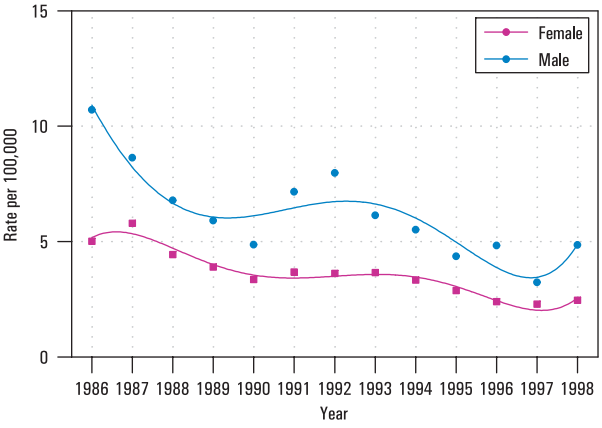
The rate of hepatitis B in Alberta has declined slightly during the past decade. In 1997, it was 2.7 per 100,000, lower than the Canadian average of 5.3 but still well above Prince Edward Island and the Yukon, at zero. (It should be noted that many cases of HBV infection represent cases acquired years previous to testing. The rates labeled incidence include chronic carriers who received a laboratory test for some reason. Most of these are likely to be completely healthy).

Figure E.5D.1
Incidence of Hepatitis B, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



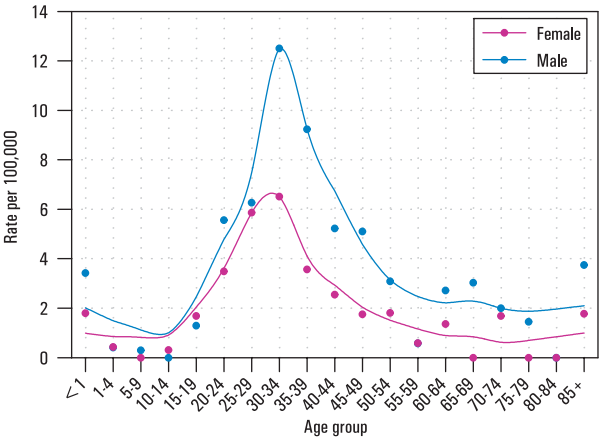
Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

Figure E.5D.2
Incidence of Hepatitis B in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Figure E.5D.3
Age-Specific Incidence of Hepatitis B in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 - 1998

Provincial Strategies

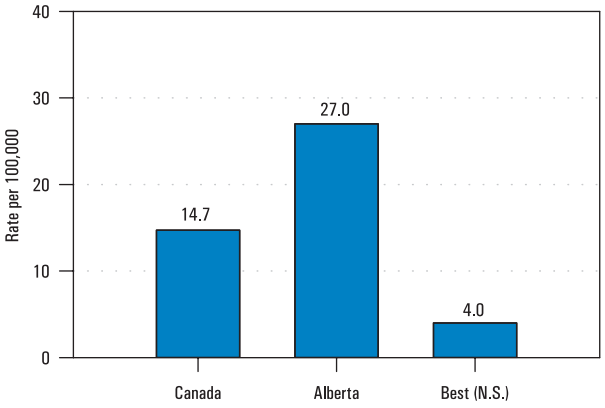
- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of immunization programs.
- A prenatal surveillance program for hepatitis B is in effect in Alberta. In addition, Alberta Health and Wellness funds specialized immunization strategies, including immunization programs targeted against vaccine-preventable diseases.

E.5E Pertussis

Pertussis, or whooping cough, is highly contagious. It is caused by the Bordetella pertussis bacterium, found in the mouth, nose and throat of an infected person. It gets its common name from the paroxysmal coughing which is followed by forced inspiration — a crowing or high pitched whoop.

In 1997, the rate of pertussis in Alberta was 27 per 100,000, much higher than the Canadian average of 14.7.

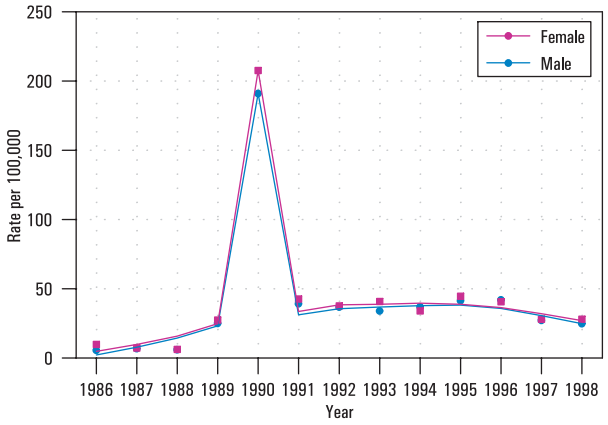
Figure E.5E.1
Incidence of Pertussis, 1997 (Canada, Alberta, Best Province) (Rates per 100,000 population)



Source: Notifiable Disease Annual Summary, 1997, Statistics Canada

The rate of pertussis in Alberta remained stable from 1991 to 1996, (following a major outbreak in 1990) and has decreased sharply since 1997. The single most effective control measure is maintaining the highest possible level of immunization.

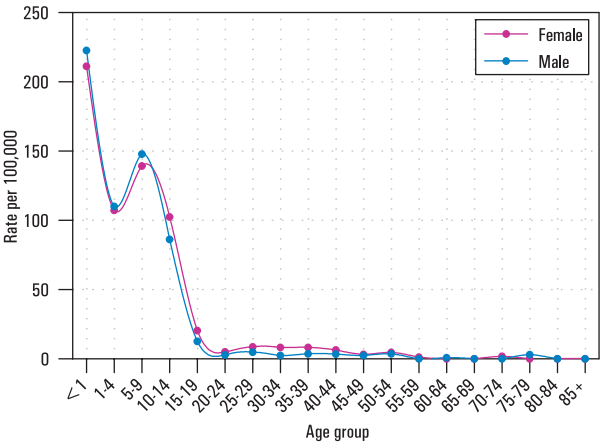
Figure E.5E.2
Trends in Incidence of Pertussis in Alberta, 1986 - 1998 (Rates per 100,000 population)



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 -1998

Pertussis can occur at any age, but severe illness is more common in young children who have not been immunized. It is spread primarily when infected people cough or sneeze. Complications may include pneumonia, middle ear infection, seizures, encephalopathy, apnea (brief cessation of breathing) and death. Eighty per cent of deaths attributed to pertussis occur in children under age one.

Figure E.5E.3
Age-Specific Incidence of Pertussis in Alberta, 1996 - 1998



Source: Notifiable Disease Database, Alberta Health and Wellness, 1986 -1998

An improved vaccine with fewer side effects was introduced in 1997. It is given at two, four, six and 18 months of age, and again between four and six years of age.

Provincial Business Plan Targets
The provincial target for the year 2000 is that reported rates of pertussis in Alberta will not exceed 18 cases per 100,000 population.

Provincial Strategies
- Alberta Health and Wellness provides expert advice and support to regional health authorities for the delivery of immunization programs.
- In addition, the department funds specialized immunization strategies, including immunization programs targeted against vaccine-preventable diseases.

Section F

mental health

HEALTH TRENDS

Sound mental health involves two factors: the presence of mental wellbeing in a personal, social and environmental context, and the absence of mental disorders or psychiatric impairment.

An assessment of an individual's mental health would include measures of subjective wellbeing, individual capacities, personal characteristics, the ability to set and achieve goals and the ability to establish and maintain meaningful relationships with others. Because such measures are generally not available, measures of the presence of psychiatric disorders are often used alone for surveillance purposes. This results in a bias towards reporting on mental illness in the population rather than on mental health.

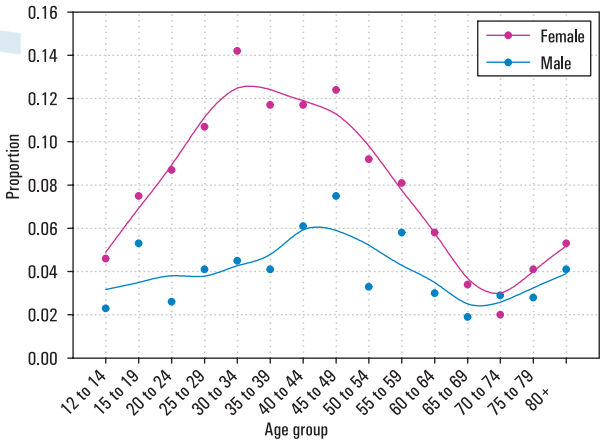
Mental illness encompasses a large number of disorders, each of which can have a significant impact on the cognitive, affective or relational abilities of an individual. Individuals may experience a variety of symptoms ranging from mild forms of anxiety or depression to extremely debilitating episodes of bizarre thought and behaviour. The presence of similar symptoms across a variety of mental illnesses or disorders poses significant challenges for accurate diagnosis and treatment. A further complication is the possible presence of a wide range of differing symptoms within a single person.

F.1 Mental Health Problems

Issues related to mental health command a significant share of overall health care expenditures. A recent Health Canada study, *The Economic Burden Of Illness In Canada* revealed that mental illness ranked fifth highest among illness categories in expenditures for physician fees, third highest in expenditures for drugs, and second highest in facility costs.

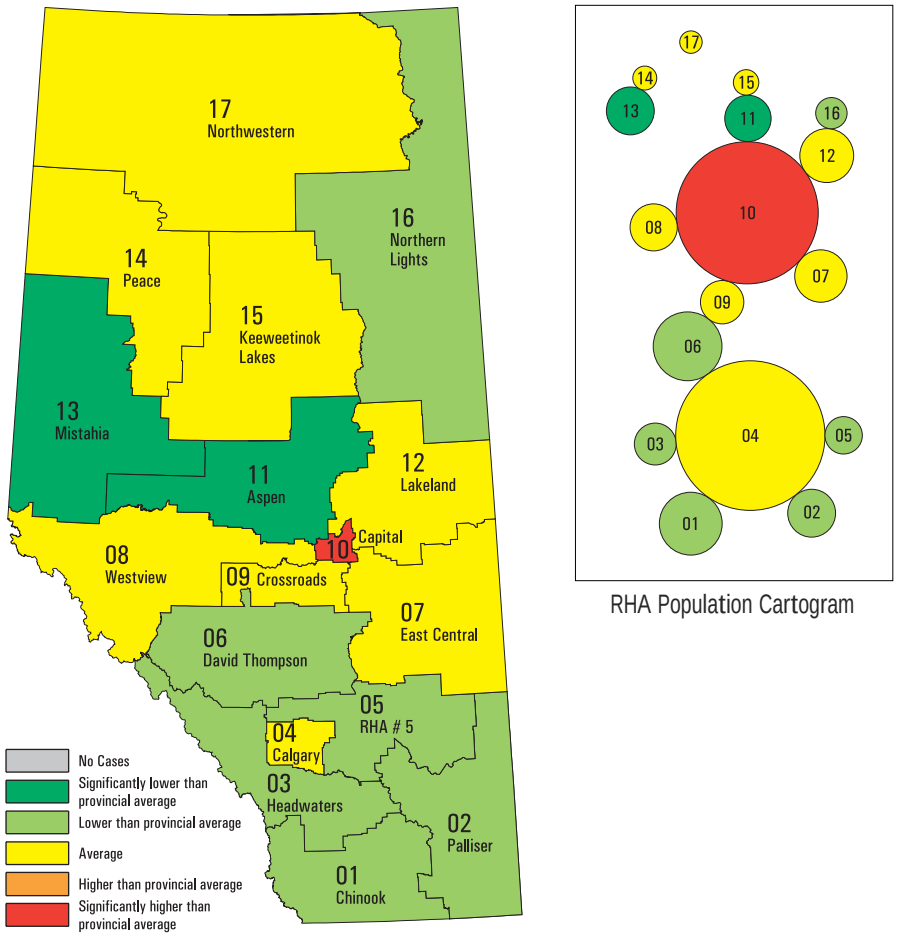
In 1996, approximately 6.9 per cent of Albertans reported consulting a medical professional for a mental health problem. Females, particularly in the adult years, are the heaviest consumers of services.

Figure F.1.1
Age- and Sex-Specific Rates of Professional Consults for a Mental Health Problem in the Previous Year, Alberta, 1996



Source: National Population Health Survey, 1996 - 1997

Figure F.1.2
Rates of Professional Consults Consult for a Mental Health Problem in the Previous Year, Alberta, 1996*



Source: National Population Health Survey, 1996 - 1997

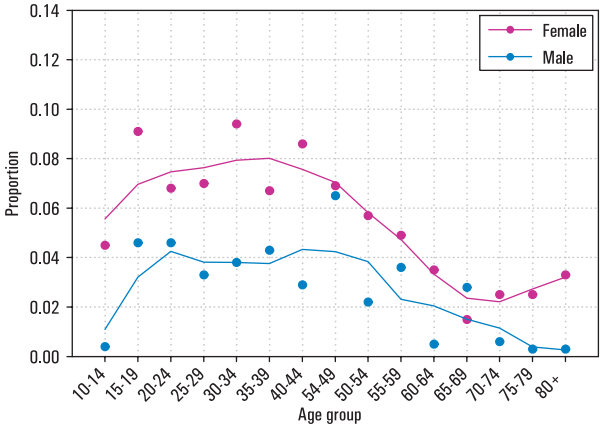
*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

F.2 Depression

The single most prevalent mental disorder world-wide is depression. Depression is characterized by an episode in which an individual experiences sadness, depressed mood or a marked inability to experience pleasure or interest in virtually any activity. This is typically accompanied by a variety of other symptoms including: changes in appetite or weight, disruption of usual sleeping patterns, variations in routine activities, a general lack of energy, decreased feeling of self-worth, difficulties in concentration or decision making and recurring thoughts of death or suicide.

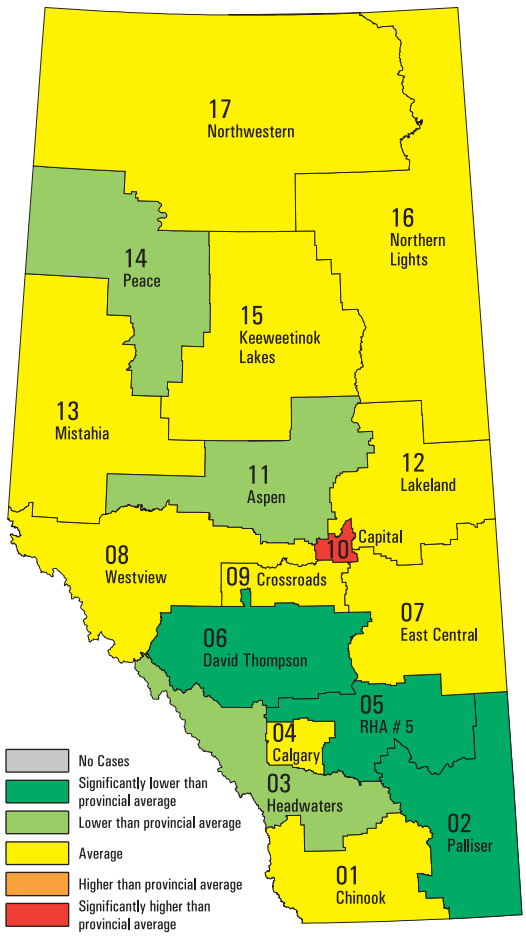
In 1996, a screening questionnaire for depression was included in the National Population Health Survey. Approximately 5.6 per cent of Albertans over age 12 scored sufficiently high enough on this scale to suggest that they were probably suffering from depression at the time of the survey. The similarity of the patterns in figures F.2.1 and F.2.2 to the patterns for self-reported consultations for a mental health problem in figures F.1.1 and F.1.2 underscore the fact that depression is the most prevalent mental illness.

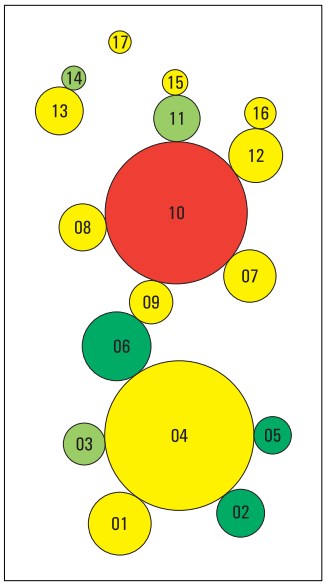
Figure F.2.1
Age- and Sex-Specific Rates for Probable Depression in Alberta, 1996



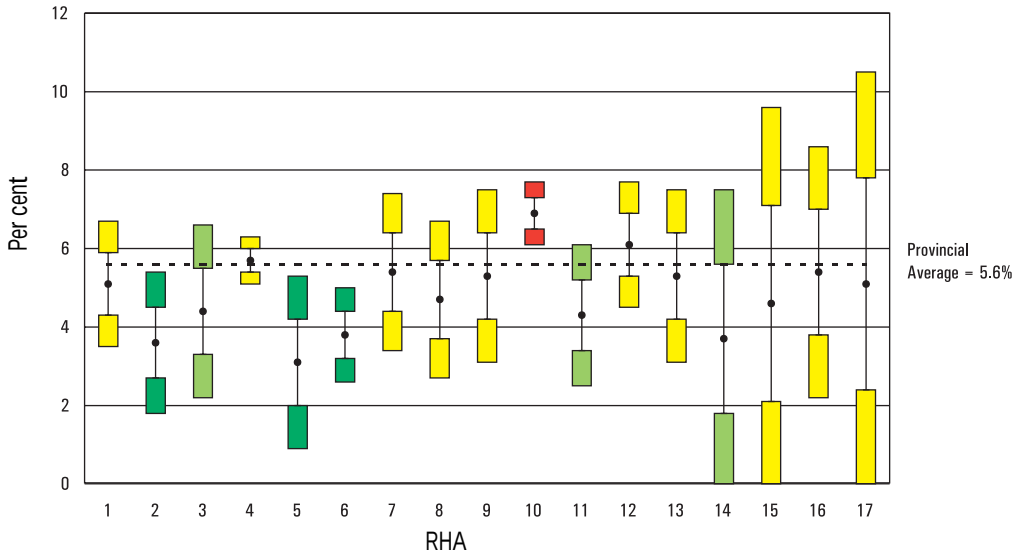
Source: National Population Health Survey, 1996 - 1997

Figure F.2.2
Rates of Probable Depression in Alberta, 1996*





RHA Population Cartogram



Source: National Population Health Survey, 1996 - 1997

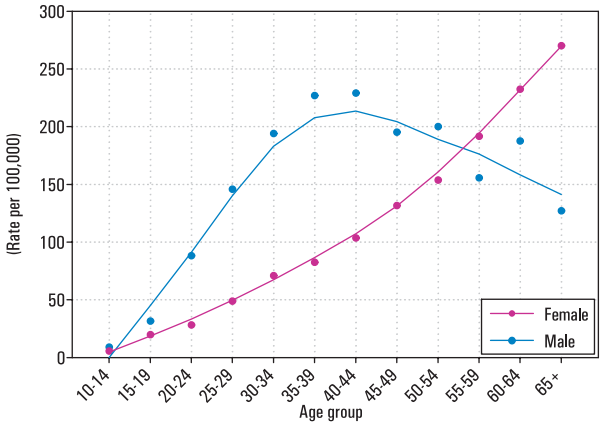
*This map is drawn on the 1996 RHA boundaries, not the current boundaries set in 1998.

F.3 Schizophrenia

Schizophrenia, although considerably less prevalent than depression, can be an extremely debilitating mental illness. This illness affects individuals in many ways and presents with a variety of symptoms. Common features of the illness include hallucinations, delusions, and thought disorders. Hallucinations can cause people to see and hear things that may not actually be present. Delusions are false perceptions of oneself as well as other people or objects. Thought disorders include irrational thoughts or thinking patterns. Schizophrenia often results in a general withdrawal from typical social and occupational activities as well as decreased intellectual functioning, communication, and motivation. While individuals who suffer from this illness may experience periods of decreased symptoms, the disease can affect a person throughout an entire lifetime.

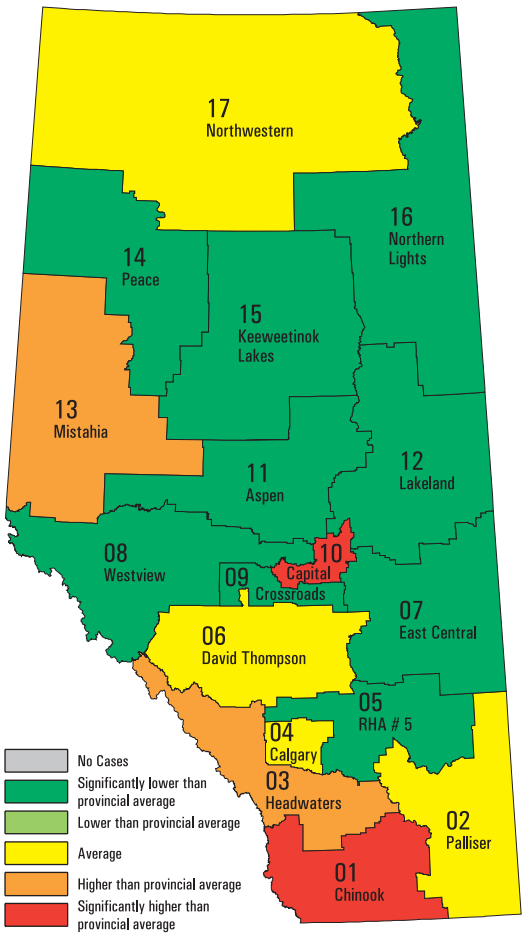
In 1994, about 0.1 per cent of the Alberta population accessed health services with a diagnosis of schizophrenia or a closely related disorder.

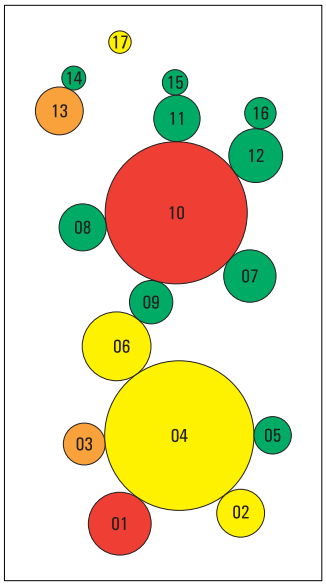
Figure F 3.1
Age- and Sex-Specific Rates of Schizophrenia and Related Disorders (for which health services were provided) in Alberta, 1994



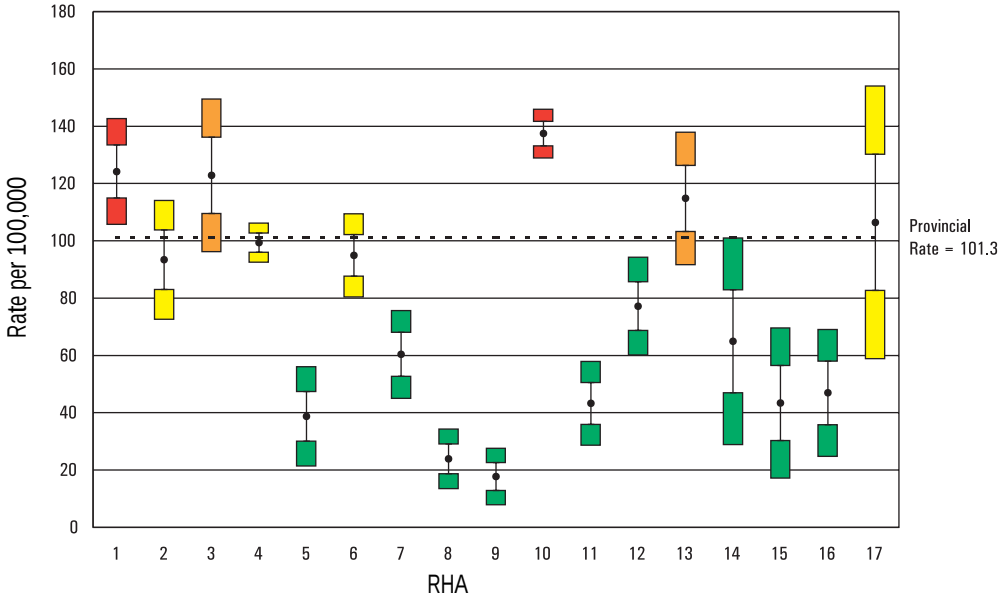
Source: AHCIP Physician Claims Files, 1994

Figure F.3.2
Rates of Schizophrenia and Related Disorders (for which health services were provided) in Alberta, 1994





RHA Population Cartogram



Source: AHCIP Physician Claims Files, 1994

F.4 Mental Health Service Delivery in Alberta

The delivery of mental health services in Alberta is unique within Canada, because a provincial board is mandated to coordinate the overall functioning of the mental health system. The Alberta Mental Health Board (AMHB) provides direct services (including long term care facilities and mental health clinics) and contracts with agencies to provide mental health services. The AMHB has recently been mandated to monitor mental health service delivery, advocate on behalf of the mentally ill, and coordinate services to ensure the equitable provision of care to all Albertans.

The primary target population for the AMHB is the severe or persistently mentally ill - those individuals experiencing recurrences of a particular illness or who suffer from illnesses that present a clinically challenging profile.

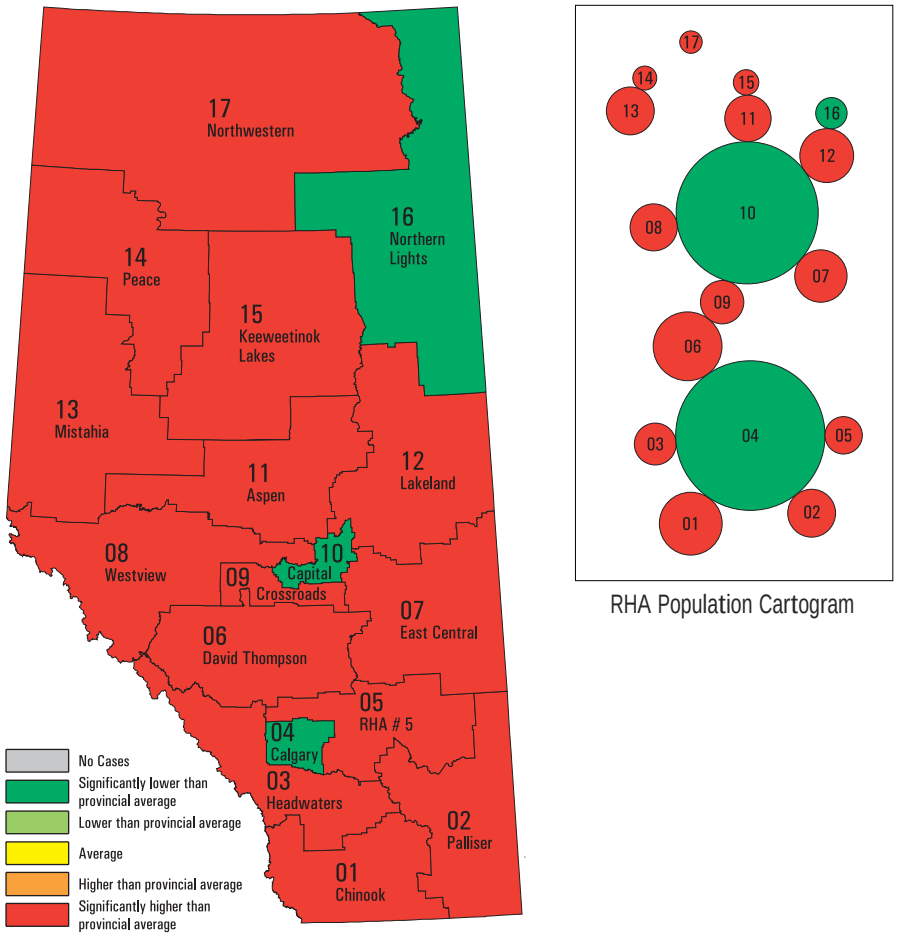
In addition to the AMHB, a variety of other agencies also provide mental health service within Alberta. The regional health authorities provide a range of services, including both acute and long-term care facilities as well as outpatient clinics and emergency rooms.

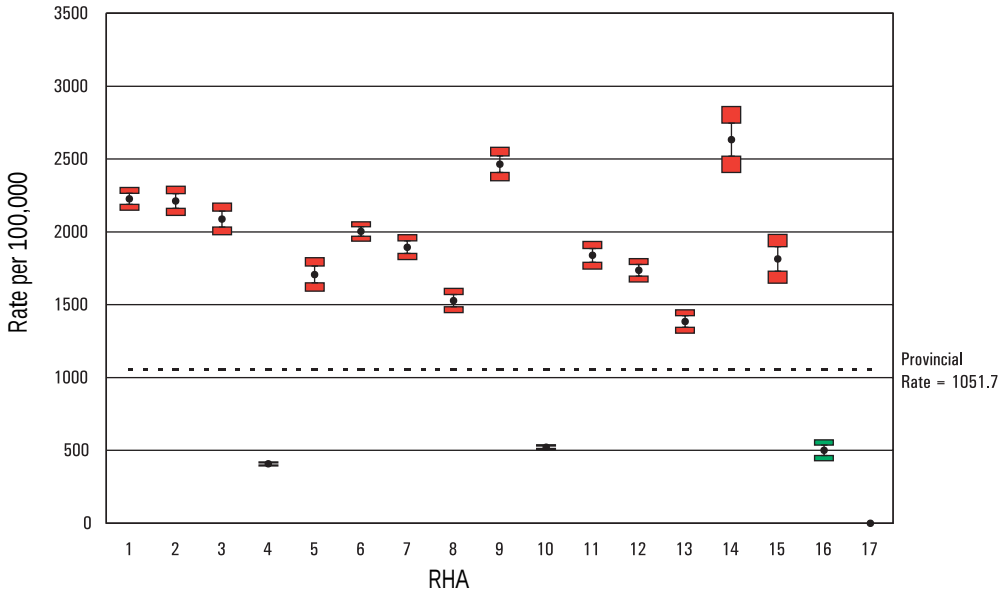
Individual physician practitioners also provide services to the mentally ill, and are often a first point of contact in the overall health care system. The Canadian Mental Health Association (CMHA) and the Alberta Alcohol and Drug Abuse Commission (AADAC) are examples of other agencies that play a role in delivering the various services required by Albertans experiencing mental health related problems and illnesses. There are also important support providers that are not part of the formal system of mental health service provision.

The patterns revealed in the maps on pages F9 and F10 very likely reflect the type of services available in various areas of the province, and how these services are delivered, rather than differences in the prevalence of mental illness across different regions in the province. Thus in urban areas, the greater availability of services provided by physicians and other funded agencies is reflected in the lower utilization rates of mental health clinics and hospitals.

Determining accountability for the different components of mental health service delivery among various stakeholders is part of the broader challenge of overall accountability for health that lies with Alberta Health and Wellness.

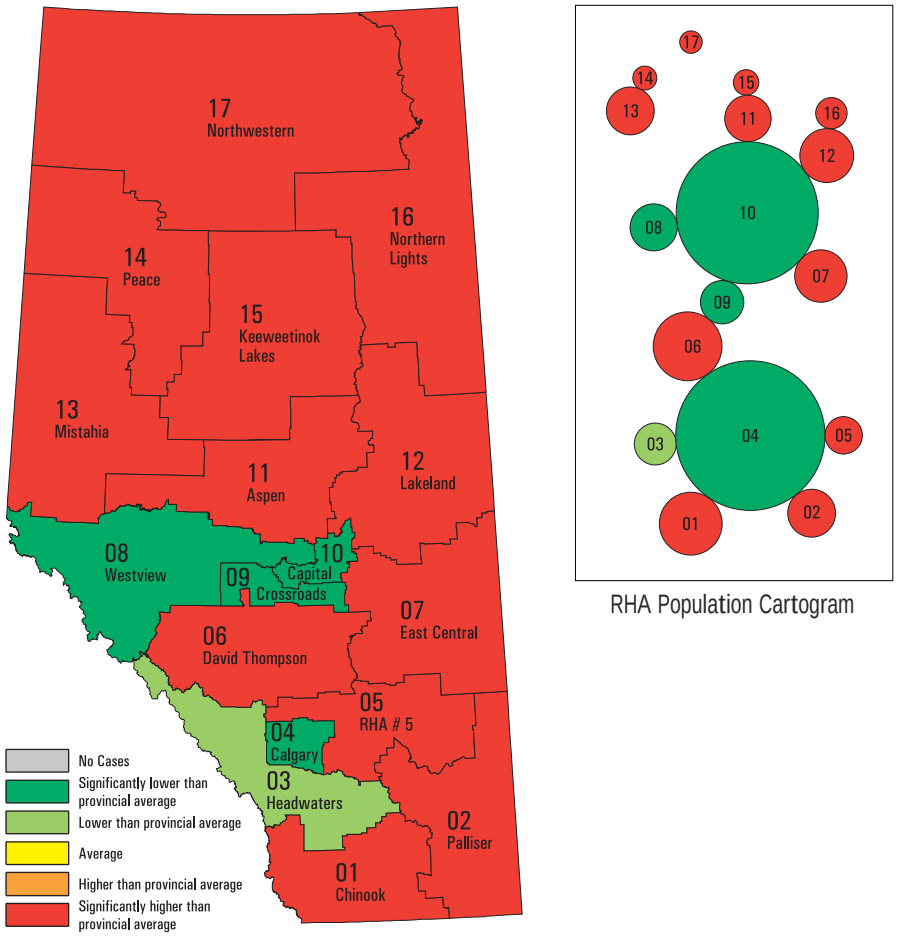
Figure F.4.1
Rates of AMHB Mental Health Clinic Consultations, Alberta, 1998

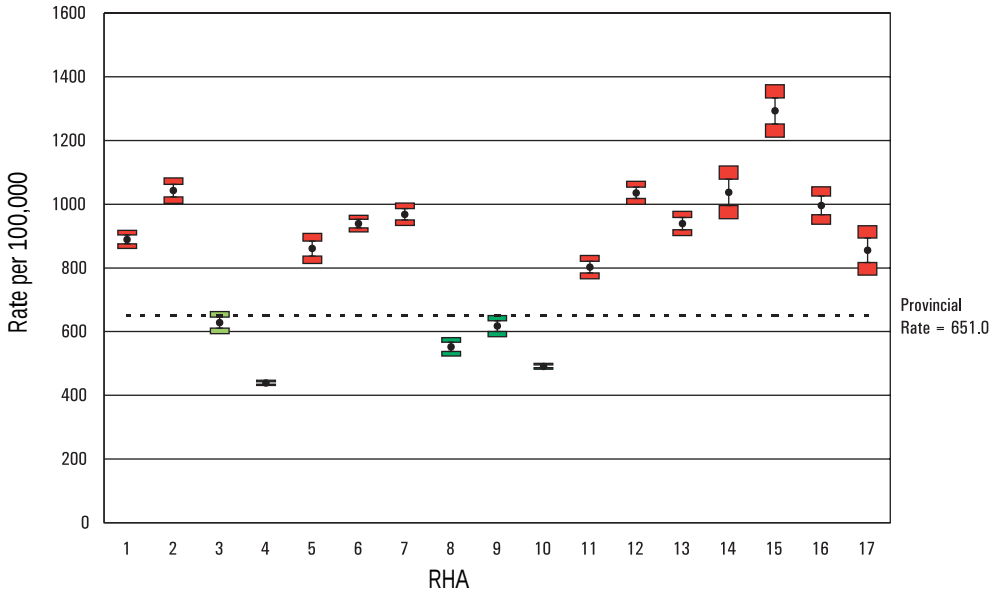




Source: AMHB Information Management, 1999

Figure F.4.2
Hospital Discharges for Mental Illness, Alberta, 1994 - 1996 combined





Source: AMHB Information Management, 1999

Section G

environmental health

The health of a human population depends upon many factors, including personal health attributes or genetic endowment; social and economic conditions; health related behaviour practices; as well as physical, chemical and biological agents in the environment.

There are three potential pathways for humans to be exposed to environmental contaminants: through ingestion (the water we drink and the food we eat), inhalation (the air we breathe) and dermal exposure (the things that come in contact with our skin).

Currently, we conduct surveillance of the environmental determinants of health using one of three different approaches:

- Surveillance of agents in the ambient environment;
- Health risk assessments (risk of exposure); and
- Surveillance of human health responses to environmental agents (health outcomes), of which this document is one example.

The goal of environmental health surveillance is to collect strategic information relevant to the link between the health of the environment and the health of the people. This includes identifying and defining priority contaminants; developing monitoring networks that include personal exposure measures; developing biomarkers of exposure and effect; and identifying biological markers for population exposure.

G.1 Agents in the Ambient Environment

A variety of agencies are responsible for monitoring agents in the environment to safeguard the health of the environment and the health of the people, and to ensure that development is sustainable. For example, Alberta Environment is responsible for licensing industrial development, and monitoring industrial agents in the environment. Alberta Environment and Environment Canada also monitor the condition of the ambient air in a variety of locations throughout the province. Environment Canada is responsible for identifying maximum allowable concentrations and determining appropriate application methods for all commercially sold pesticides, herbicides and insecticides. Results of these and other similar programs are published regularly and are not duplicated here.

G.1A Water

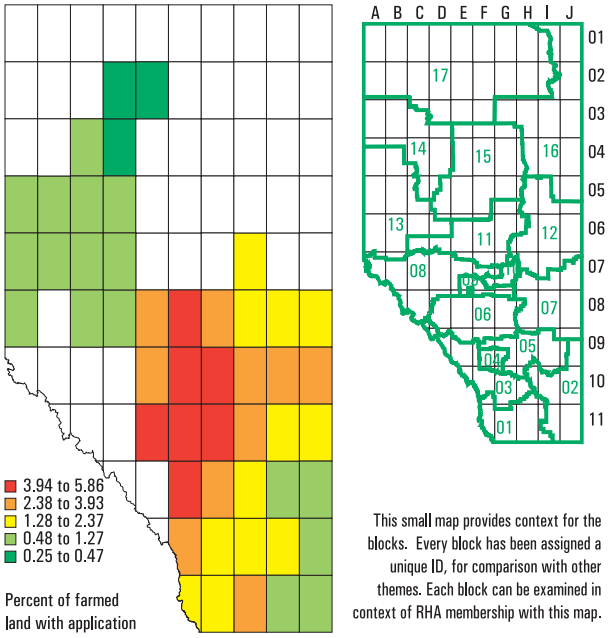
Alberta Environment has an extensive, long term, water quality monitoring network that collects information about the health of the rivers and streams in the province. Its goal is to ensure that the environment is protected and that development is sustainable.

Alberta Environment conducted a large scale evaluation of the water quality in the river basins of northern Alberta in 1996 that provided a benchmark to define the state of the Peace, Athabasca and Slave rivers as they currently exist. The study found reasons for concern about current conditions in some of the river systems and recommended immediate action. The specific river reaches where remedial action is needed illustrate the sensitivity of the river ecosystems and underline the importance of action. Even during the course of the study, technological improvements and more stringent regulations were implemented that resulted in measurable improvements in conditions in certain areas. More information about the Northern River Basins Study can be found at the Alberta Health and Wellness website.

Surface water can carry a variety of agents, including metals leached from the surrounding soil, contaminants transported into the water through drainage or rainfall, and microbial contaminants. Coliforms are bacteria that exist in all surface sources of water and are used as an indicator of microbial contamination. Water with high coliform content may contain a variety of microbial contaminants. One source of microbial contamination is mammal fecal matter. Surface water may contain fecal matter from wildlife as well as domestic animals. It may not always be possible to identify the source of fecal contamination in a water body.

Recent concerns have been raised about agricultural practices that result in higher levels of microbial contamination of the water. The application of large quantities of manure to fields may result in contamination through runoff into local streams and rivers. Allowing domestic animals to access streams for drinking water also results in increased contamination of local water sources.

Figure G.1A.1
Application of Manure, 1996



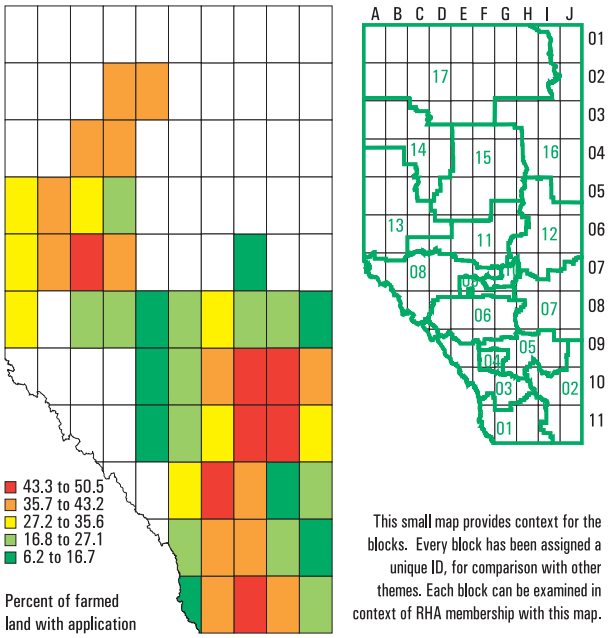
Source: Census of Agriculture, Statistics Canada, 1996

A variety of herbicides, insecticides and fungicides are applied to most of the arable land used for crop production in Alberta. These chemicals may become airborne during application and have the potential to cause respiratory problems for the local population. The chemicals may also leach into the water where they can react with other compounds and have the potential to contaminate the drinking water for those people living downstream.

Water contamination is particularly problematic in irrigated areas. Water sprayed onto fields flows back into irrigation canals, taking pesticides and herbicides with it. The water may be drawn out further down the canal system where it is reapplied to fields with additional pesticides and herbicides. The irrigation water eventually flows back into the main river system, where it may become a source of human drinking water.

The Alberta Farmstead Water Quality Survey, a 1997 study conducted under the Canada-Alberta Environmentally Sustainable Agriculture Agreement (CAESA) found that the pesticide levels in streams and irrigation canals in some areas of southern Alberta exceeded the irrigation guidelines of the Canadian Guidelines for Water Quality. The report recommended an evaluation of pesticide application volume and practice in the Alberta context.

Figure G.1A.2
Application of Pesticides, 1996



Source: Census of Agriculture, Statistics Canada, 1996

Other contaminants of concern include trihalomethanes (a contaminant that is created by chlorination when the water contains a high level of organic matter) and toxins produced by algae.

Provincial Strategies

- A joint study involving researchers from Alberta Agriculture, Food and Rural Development, Alberta Environment, Alberta Health and Wellness, and the universities of Alberta and Calgary will attempt to identify the contribution of livestock production to the levels of *giardia* and *cryptosporidium* in the North Saskatchewan River.
- The Oldman River Basin Water Quality Study will provide a detailed assessment of the quality of the water in the Oldman River basin, including levels of fecal coliforms, and E. coli, as well as pesticides, herbicides and fungicides.
- A subcommittee of the AESA Council, with support from Alberta Health and Wellness, is developing a long term water quality monitoring program to track and evaluate changes in agricultural practice and standards.
- Alberta Environment, in conjunction with Alberta Health and Wellness, Alberta Agriculture, Food and Rural Development and Health Canada is evaluating pesticide application volume and practice in the Alberta.

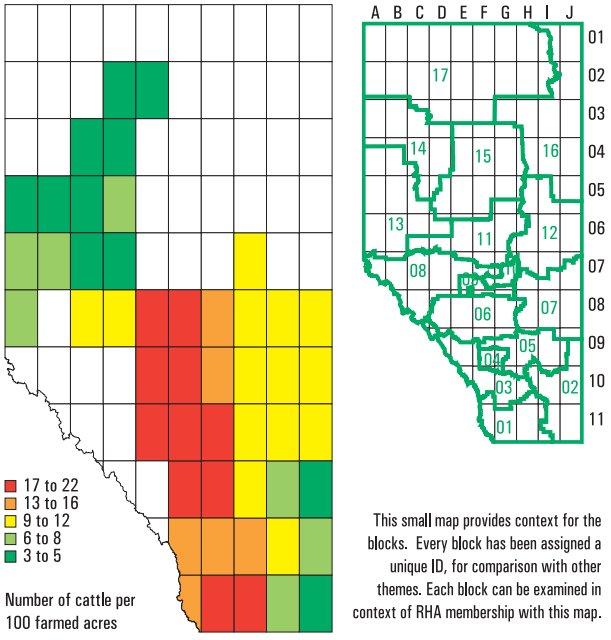
G.1B Air

Livestock produce a number of byproducts, and have been identified as the source of waterborne contaminants such as fecal coliforms, *cryptosporidium* and nitrates, as well as airborne contaminants including particulates, hydrogen sulfide (H_2S), methane and ammonia gases. In fact, livestock have been identified as one of the sources of greenhouse gases produced in Alberta. Although there are other sources of methane production in Alberta, such as oil and gas operations, the contribution from livestock is significant. Projected increases in intensive livestock production may increase the burden of methane and ammonia in Alberta by as much as three times.

In addition to the potential impact on the quality of the water discussed above, the airborne contaminants livestock may produce (such as methane, ammonia and particulates) have the potential to cause respiratory problems in humans living nearby.

The accompanying map illustrates cattle density. The majority of the large herds are located in the southern areas of the province.

Figure G.1B.1
Cattle Density, 1996



Source: Census of Agriculture, Statistics Canada, 1996

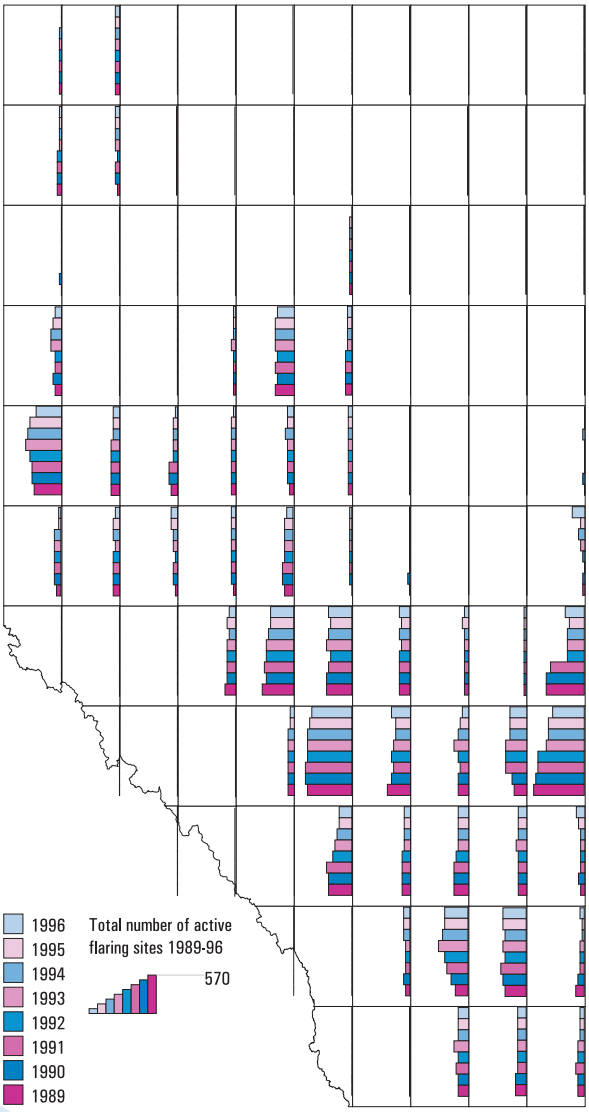
These agricultural maps were generated using the 1996 census of agriculture. The reporting units for this census are consolidated census sub-divisions (CCSDs) which are equivalent to the county, municipal district, improvement district, and special area boundaries. The reported numbers were divided by the total number of farmed hectares in order to obtain a measure of intensity of activity in areas where farming occurs. A land-use-classified satellite image was obtained for the province based on 1996 images, and the agriculture and rangeland categories were extracted.

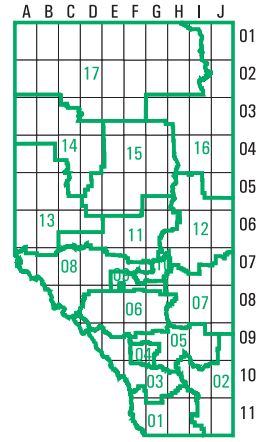
The pixels corresponding to each of these activities (each pixel has a ground size of one km^2) were extracted and converted to a point file. This point file was overlaid on the agricultural census data in order to obtain a more accurate representation of the intensity of the activity throughout the province. These data points were overlaid on the latitude-longitude blocks and the mean of all corresponding points was assigned to each corresponding block.

The impact of solution gas flaring on human health in Alberta is not known, but health concerns associated with flaring activity have been raised through the Clean Air Strategic Alliance (CASA). Solution gas flaring occurs throughout the more populated areas of the province.

The Canadian Association of Petroleum Producers commissioned the Alberta Research Council to study flare gas emissions. The study findings caused increased concern because the actual efficiency of some flares was found to be 60 to 70 per cent compared with previous estimates of over 90 per cent. The study identified compounds in the flare emissions that are identified on the priority substance list (i.e. benzene). This report has raised the previously heightened concerns of people and particularly of residents living around the flares.

Figure G.1B.2
Solution Gas Flaring Activity: Total Annual Volume of Contaminants, 1989 - 1996





This small map provides context for the blocks. Every block has been assigned a unique ID, for comparison with other themes. Each block can be examined in context of RHA membership with this map.

urce: Alberta Energy Utilization Board

The total annual volume of contaminants from solution gas flaring in Alberta increased between 1989 and 1993, but has decreased each year since.

Preliminary analysis of the correlation between flaring activities and physician claims for asthma does not indicate any relationship. The lack of a positive correlation in this study does not exclude the possibility of human health effects below the detection limit of this type of study. The study was well received by industry and non-government organizations on the CASA working group but has not completely relieved health concerns over flaring impacts.

The map was created by counting the number of active wells in each block using their geographic position and then summing the total flaring activity for each year for all wells in each block.

Provincial Strategies

- Alberta Health and Wellness will make efforts to address site-specific concerns by measuring personal exposure to the air contaminates in areas of flaring. The department will continue to develop the capability to analyze health data and seek to improve links with Alberta Environment and AEUB data.
- The CASA flaring working group is seeking consensus for a proposal to reduce flaring levels by 15 per cent by the end of 2000, 25 per cent by the end of 2001, 40 to 50 per cent by 2003, and 60 to 70 per cent by 2006. Alberta Health and Wellness supports all efforts to reduce the impacts of flaring and supports the proposal on the table at the CASA flaring working group.
- An ad-hoc steering committee is currently preparing a final draft of the proposed Western Canadian Study on Animal and Human Health Effects Associated with Exposure to Flare Emissions.

G.2 Health Risk Assessment

Health risk assessments take two main forms in Alberta: environmental impact assessments and regular monitoring programs. Environmental impact assessments (EIAs) are carried out under the authority of the Environmental Protection and Enhancement Act - 1992. Section 11 states that - "The Minister shall, in recognition of the integral relationship between human health and the environment, co-operate with and assist the Minister of Health in promoting human health through environmental protection." Section 47(g) further states that - "An environmental impact assessment report shall be prepared in accordance with the final terms of reference issued by the Director under Section 46(3) and shall include the following information unless the Director provides otherwise: an identification of issues related to human health that should be considered."

The purpose of an EIA is:

- To support the goals of environmental protection and sustainable development;
- To integrate environmental protection and economic decisions at the earliest stages of planning and activity;
- To predict the environmental, social (including human health), economic, and cultural consequences of a proposed activity and to assess plans to mitigate any adverse impacts resulting from the proposed activity; and
- To provide for the involvement of the public, proponents, the government and government agencies in the review of the proposed activities.

In addition to participation in the EIA process, there are several regular monitoring programs currently in place to evaluate the risk of exposure and prevent adverse human health problems resulting from exposure to environmental contaminants.

G.2A Drinking

Urban communities provide their residents with treated water. The type of treatment varies from community to community, and regular testing indicates that in general the water meets the guidelines for human consumption. The majority of the residents in the province obtain their drinking water from this source, including some rural residents with cisterns that are filled using water from these municipal sources. The remainder of the population relies on well water and a small proportion relies on alternative water sources, such as dugouts, canals, streams and lakes, etc. This section explores the proportion of residents with access to municipally treated water summarized to the regional health authority (RHA) level. An analysis of provincial residents with access to well water and the testing performed on these facilities is currently under way.

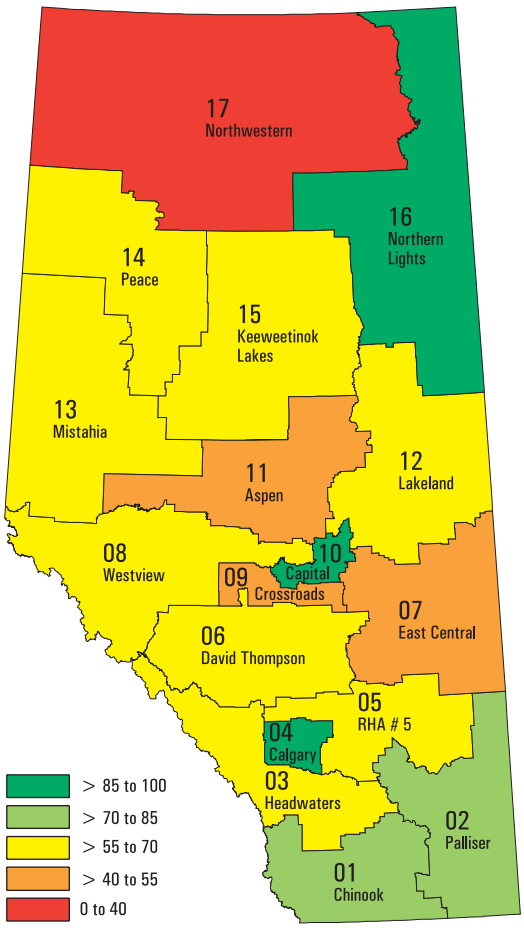
In 1996, Alberta Environment conducted a survey to determine treatment processes and the population served by each municipal water treatment facility. This information was examined along with the 1996 population census data to determine the proportion of the population with access to treated water within each of the RHAs. Each facility was assigned to an RHA, based on its geographic location and the population "served" was also assigned to the RHA. This created a figure for the total population within each RHA with access to municipally treated water. The total population for each RHA was calculated based on enumeration area populations as they appear in the 1996 census.

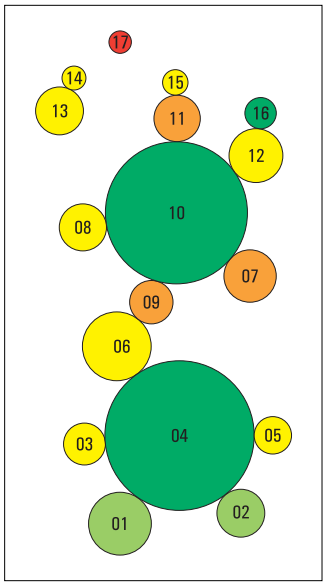
The map on page G10 illustrates that there are three RHAs with a high percentage of the population who have access to municipally treated water, namely the Calgary, Capital, and Northern Lights regions. The lowest percentage with such access is in the Northwestern region. The percentage of the population with access to municipally treated water is a function of the proportion of the population who live in urban centres.

People who do not have access to municipally treated drinking water must obtain their drinking water from alternative sources. They are responsible for ensuring that their water is safe to drink by having the water tested on a regular basis and by applying the appropriate treatment options based on the water quality reports. Water analysis, testing for routine chemistry, trace metals and microbial contamination is funded by Alberta Health and Wellness and conducted by the Provincial and Public Health Laboratories. Regional health authorities may require a handling fee.

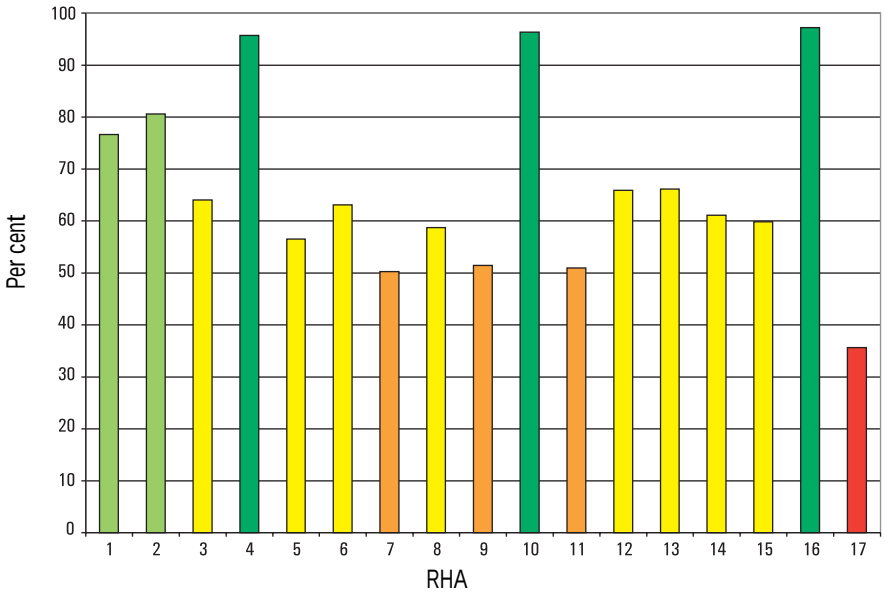
Rural populations were calculated using the 1996 population census. The urban population can be calculated by examining urban census sub-divisions (cities, towns and villages). These numbers were divided by the total RHA population calculated above to obtain percentage of urban population. This number subtracted from 100 yields the rural population for each RHA. The resulting graphic is very similar to that showing the percentage of population with access to municipally treated water. The three RHAs with the smallest rural population are the Calgary, Capital, and Northern Lights regions, and the one with the highest percentage of rural population is the Northwestern region. This pattern is similar to that indicated for access to treated water. The small differences among the graphics are mostly a result of the classification breaks.

Figure G.2A.1
Proportion of the Population With Access to Treated Drinking Water, 1996



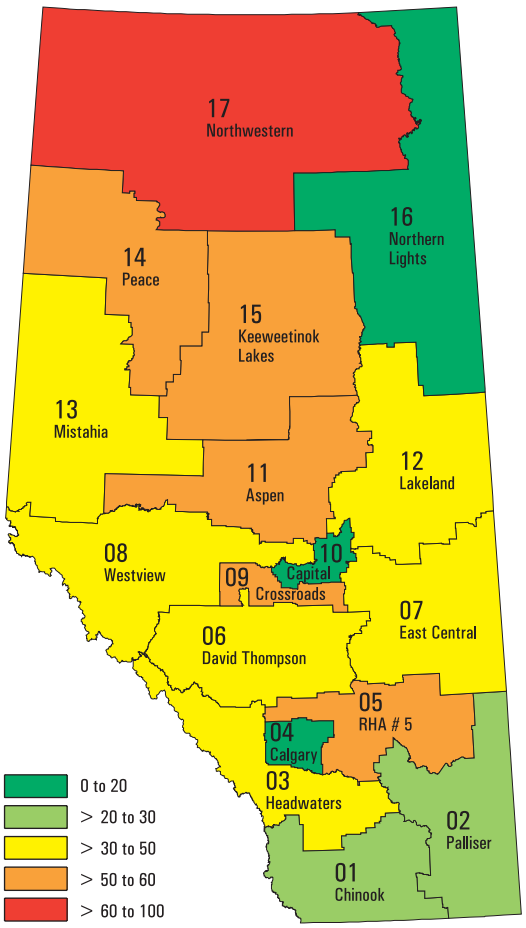


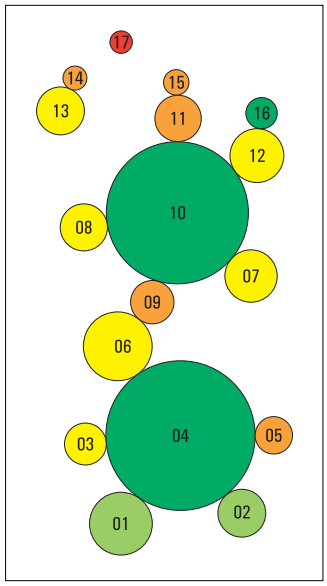
RHA Population Cartogram



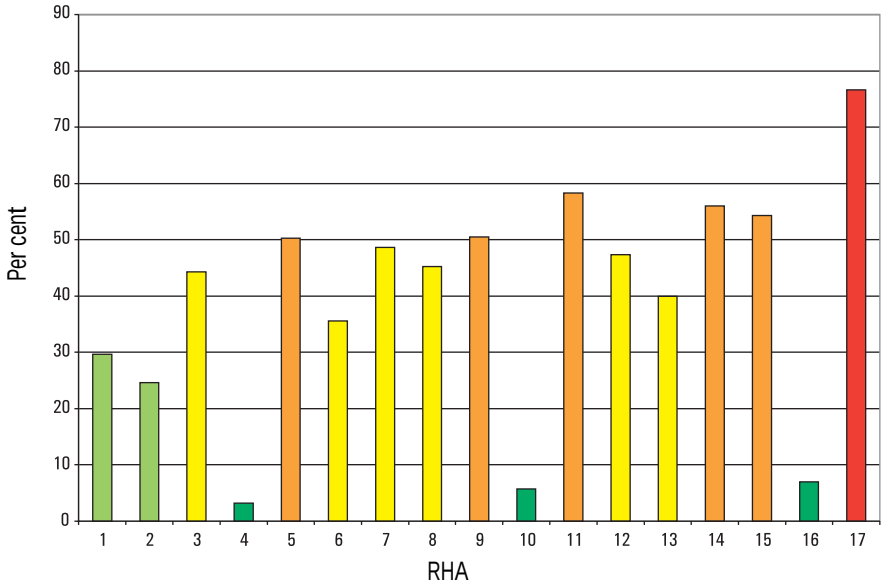
Source: Alberta Environment, 1996

Figure G.2A.2
Rural Population Density





RHA Population Cartogram



Source: Statistics Canada, 1996

Microbial contaminants are a common concern that water treatment facilities must address. Small water treatment facilities may have difficulty meeting standards for drinking water because they have to deal with lower quality water sources with fewer resources than larger systems. A number of boil-water orders were issued during 1997 because treatment facilities were unable to effectively remove all coliforms from the water.

Public health education programs have continuously emphasized the need for treatment of any surface water source used for human consumption. However, diagnostic patterns for waterborne diseases such as giardiasis and cryptosporidiosis suggest that people continue to drink untreated surface water despite these education programs.

G.2B Breathing and Eating

Breathing

The Alberta Oil Sands Community Exposure and Health Effects Assessment Program was an issue-specific risk assessment conducted by Alberta Health and Wellness in cooperation with a variety of partners. The program gathered measures of personal exposure to a number of airborne contaminants in addition to measures of biological markers of exposure. The information collected through this study is currently being analyzed.

Eating

Over 100 fish advisories exist in the province, and these are contained in the provincial Sport Fishing Guidelines.

In addition to the regular health risk assessment monitoring programs conducted in Alberta, specific studies of the risks of local environmental hazards are occasionally required. For example, the Swans Hills Community Health Risk Assessment indicated that the local environment was contaminated with PCBs from an accident at the Swan Hills Special Waste Treatment Facility. This resulted in the issue of a consumption advisory that recommended restricted consumption of wild game and fish caught within a 20-mile radius of the facility.

Provincial Strategies

- The Swan Hills Long Term Monitoring Program was developed to monitor the levels of contaminants found in wild game and wild fish in the vicinity of the Swan Hills Special Waste Treatment Facility, and will update the consumption advisories as necessary.
- As a follow-up to the Northern River Basins Study, Health Surveillance (Alberta Health and Wellness), in cooperation with Alberta Environment, regional health authorities, the University of Alberta, Environment Canada, Health Canada and industry are developing a process for the review of fish consumption advisories in the province. The proposed protocol involves the preparation of a science assessment document (SAD) by industry. A science advisory committee (SAC) will review it to validate and interpret the results, and to provide advice to a public health advisory committee (PHAC). The PHAC, which will include representation from the appropriate regional health authority, will then provide recommendations to industry on the provision of more data, or will recommend to the provincial health officer to maintain, remove or establish a fish advisory. Fish consumption advisories are a shared responsibility between Alberta Health and Wellness and Alberta Environment. A pilot project to validate the fish consumption advisory process has been established involving Weyerhaeuser Canada and the Mistahia Regional Health Authority. A pilot project to define an appropriate risk communication strategy for the fish consumption advisory process has been established involving the University of Alberta and Weldwood Canada.
- Alberta Health and Wellness leads a multidisciplinary team that conducts the required health impact assessment within the broader EIA review framework. The team makes recommendations to Alberta Environment and identifies any outstanding issues.

G.3 Surveillance of Human Health Responses

A number of diseases are caused by exposure to bacteria or viruses in the ambient environment, such as food- and waterborne diseases (E. coli, giardiasis, cryptosporidiosis, campylobacter enteritis, salmonellosis, shigellosis), and viruses contracted from wildlife such as Hantavirus. These diseases are routinely monitored to enable timely and effective management of potential sources of exposure. The distribution and frequency of these diagnoses is discussed in Section E — Communicable Diseases.

Additional examples of the surveillance of health responses include special studies evaluating priority health issues such as the Northern River Basins Human Health Monitoring Program.

The Northern River Basins Human Health Monitoring Program Report reported a slight elevation in the rate of diagnosis of certain specific subtypes of congenital anomalies in the Mistahia and Peace River regions compared to other areas of the province. As a follow-up, an evaluation of the records was conducted to determine if the higher rates should be a reason for concern. It was concluded that the higher rates were an artifact of better diagnosis and reporting, rather than an indication of change in the number of babies born with these specific conditions.

Provincial Strategies

- Alberta Health and Wellness conducts regular monitoring of a variety of chronic and acute diseases to identify potential outbreaks or problem areas.
- The Alberta Congenital Anomalies Surveillance System (ACASS) is responsible for monitoring and reporting on the diagnosis of congenital anomalies in the province.

G.4 Environmental Health Strategies

In addition to surveillance of environmental health issues, Alberta Health and Wellness provides expertise and leadership in environmental health when working with regional health authorities, provincial departments, federal agencies, and many organizations. The department is involved in policy, legislation, and regulation review and development. Achievement of integration and coordination of roles, responsibilities, policies and legislation among the many stakeholders is critical. Some examples of the key areas Alberta Health and Wellness is currently involved with include:

Legislation, Regulation and Standards Review and Development

- Biomedical wastes
- Bottled water and packaged ice
- Farmers' markets
- Facility standards
- Meat facilities
- Intensive livestock
- Barbershops and beauty parlors
- Workcamps

Integration and Coordination of Food Safety

- Canada Food Partners - education, training, labortories, emergency response, inspections
- Certification of Food Sanitation — education of food service workers

Health and Safety Reviews

- Sour gas

Publications Available from Alberta Health and Wellness

These documents may be obtained by contacting Alberta Health and Wellness, Communications Branch, at 780-427-7164 or toll free within Alberta at the RITE number 310-0000.

Many of these documents may also be obtained from the Alberta Health and Wellness website http://www.health.gov.ab.ca/

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Other Publications

References

Alberta Active Living Task Force (1998). *Towards an active and prosperous Alberta: The health and well-being advantage.*

Canadian Institute of Health Information (CIHI) (2000). *Information Road Map Initiative* (http://204.101.252.25/Roadmap/rdindex.shtml).

Canadian Institute of Health Information (CIHI) (1999). *National Consensus Conference on Population Health Indicators Final Report* (http://www.cihi.ca/wedo/phidoc.shtml).

Federal, Provincial and Territorial Advisory Committee on Population Health (1999). *Statistical Report on the Health of Canadians* (http://www.hc-sc.gc.ca/hppb/phdd/report/text_versions/english/stat/index.html).

Federal, Provincial and Territorial Advisory Committee on Population Health. (1999) *Towards a Healthy Future: Second Report on the Health of Canadians* (http://www.hc-sc.gc.ca/iacb-dgiac/nhrdp/healthofcanadians/index-e.htm).

Fitzgerald D. (1995). "Alberta Farmstead Water Quality Survey". In: *Proceedings of Western Canada Symposium on Agricultural Impacts on Water Quality.* Canada- Alberta Environmentally Sustainable Agriculture Agreement, Feb 21-22, Red Deer, Alta, p. 138-140.

Health Canada (1999). *A Network for Health Surveillance in Canada* (http://www.hc-sc.gc.ca/ohih-bsi/available/documents/pamph-4e.html).

Last, J., (1995). *Dictionary of Epidemiology,* 3rd edition, Oxford University Press, New York.

Practice Management Corporation (1996). *International Classification of Diseases 9th Revision Clinical Modification, ed. 5.*

Data Sources

In the main, data analyzed for Health Trends was obtained from Alberta Health and Wellness administrative databases, and Alberta Vital Statistics. Additional data sources included:

Alberta Health and Wellness. *The 1998 Survey About Health and the Health System in Alberta.*

Canada-Alberta Environmentally Sustainable Agriculture Agreement (CAESA) Water Quality Committee. *Alberta Farmstead Water Quality Survey.*

National Council of Welfare. *Poverty Profile 1997* (http://www.ncwcnbes.net/htmdocument/reportpovertypro/reppovertypro.htm).

Statistics Canada. *Health Indicators '99* (http://www.statcan.ca/english/IPS/Data/82F0075XCB.htm).

Statistics Canada. *Health Promotion Survey* (1985, 1990) (http://www.statcan.ca/english/IPS/Data/82M0007GPE.htm).

Statistics Canada. *National Population Health Survey* (1994-95, 1996-97) (http://www.statcan.ca/english/IPS/Data/82F0068XIE.htm).

Websites

Further information relevant to health and health trends may be obtained from the Internet:

- the Alberta Health and Wellness website http://www.health.gov.ab.ca/
- the Health in Action website http://www.health-in-action.org/
- the Alberta Environment website http://www.gov.ab.ca/env/
- the Statistics Canada website http://www.statcan.ca/
- the Canadian Institute for Health Information website http://204.101.252.25/eindex.htm
- the Health Canada website http://www.hc-sc.gc.ca/

ICD-9-CM Codes by Disease (Causes of Death)

Tuberculosis	010-018,137
Human immunodeficiency virus (HIV)	042-044
other infectious and parasitic diseases	001-009, 020-041, 045-136, 138-139
Cancers	
digestive organs, peritoneum	150-159
lung, trachea, bronchus	162
malignant melanoma of skin	172
breast (female)	174
cervical	180
prostate	185
lymphatic tissue/leukemia	200-208
other malignant cancers	140-149, 160-161, 163-171, 173, 175-179, 181-184, 186-199
Diabetes mellitus	250
other endocrine/nutritional/metabolic immunity	240-246, 251-279
Diseases of the blood and blood-forming organs	280-289
Mental disorders	290-319
Alzheimer's disease	331.0
Parkinson's disease	332
other nervous system and sense organs	320-330, 331.1-331.9, 333-389
Cardiovascular disease	
ischaemic heart disease	410-414
cardiac dysrhythmias and heart failure	427-428
cerebrovascular disease	430-438
diseases of arteries, arterioles and capillaries	440-448
other circulatory system	390-405, 415-426, 429, 451-459
Respiratory diseases	
pneumonia and influenza	480-487
COPD and allied conditions	490-492, 494-496
asthma	493
other respiratory system	460-478, 500-519
Chronic liver disease and cirrhosis	571
other digestive system	520-570, 572-579
Kidney disease (nephritis and nephrosis)	580-589
other genito-urinary system	590-629

Child and infant health (incidence)	
congenital anomalies	740-759
certain conditions originating in the perinatal period	760-779
sudden infant death syndrome (SIDS)	798.0
Injuries	
motor vehicle collisions	E810-825, E929.0
accidental falls	E833-835, E880-888
suicide	E950-959
homicide and purposely inflicted injury	E960-969
other injury	E800-E807, E826-E879, E890-E928, E929.1-E929.9, E930-949, E970-E999
All other causes	630-739, 780-797, 798.1-798.9, 799

ICD-9-CM Codes by Disease (Communicable Diseases)

HIV and AIDS	042-044
Tuberculosis	010-018,137
Food and waterborne diseases	
giardiasis	007
salmonellosis	003
campylobacteriosis	008.4
E. coli	008.0
Sexually transmitted diseases	
gonorrhea	098
syphilis	090-097, 099
chlamydia	614-616
Vaccine-preventable diseases (and immunization rates)	
measles	055
mumps	072
rubella	056
hepatitis B	070.2
pertussis	033

Standard Postcensal Population Estimates, Canada 1996

Count				Percent			
Age	Total	Male	Female	Age	Total	Male	Female
Less than 1 year	377,927	193,963	183,964	Less than 1 year	1.261%	1.307%	1.217%
1-4 years	1,582,935	811,943	770,992	1-4 years	5.283%	5.469%	5.100%
5-9 years	2,015,826	1,031,303	984,523	5-9 years	6.728%	6.947%	6.512%
10-14 years	2,019,552	1,031,869	987,683	10-14 years	6.740%	6.951%	6.533%
15-19 years	2,002,858	1,026,310	976,548	15-19 years	6.684%	6.914%	6.459%
20-24 years	2,036,326	1,033,470	1,002,856	20-24 years	6.796%	6.962%	6.633%
25-29 years	2,223,536	1,121,457	1,102,079	25-29 years	7.421%	7.554%	7.290%
30-34 years	2,631,235	1,334,035	1,297,200	30-34 years	8.781%	8.986%	8.580%
35-39 years	2,666,380	1,343,878	1,322,502	35-39 years	8.899%	9.053%	8.748%
40-44 years	2,387,502	1,191,790	1,195,712	40-44 years	7.968%	8.028%	7.909%
45-49 years	2,159,498	1,084,776	1,074,722	45-49 years	7.207%	7.307%	7.109%
50-54 years	1,672,200	838,231	833,969	50-54 years	5.581%	5.647%	5.516%
55-59 years	1,332,586	661,929	670,657	55-59 years	4.447%	4.459%	4.436%
60-64 years	1,213,101	596,190	616,911	60-64 years	4.049%	4.016%	4.080%
65-69 years	1,129,255	536,197	593,058	65-69 years	3.769%	3.612%	3.923%
70-74 years	979,902	432,814	547,088	70-74 years	3.270%	2.916%	3.619%
75-79 years	704,329	289,212	415,117	75-79 years	2.351%	1.948%	2.746%
80-84 years	467,611	174,877	292,734	80-84 years	1.561%	1.178%	1.936%
85-89 years	240,606	78,278	162,328	85-89 years	0.803%	0.527%	1.075%
90 years and over	120,466	32,491	87,975	90 years and over	0.402%	0.219%	0.582%
Total all ages	29,963,631	14,845,013	15,118,618	Total all ages	100.000%	100.000%	100.000%

Source: Statistics Canada Health Indicators Database, 1999