

Many factors play a role in making a person healthy. These factors, referred to as the determinants of health, include those things that directly or indirectly impact health status. The health of a person or of a population is seen to be influenced by the interactions between one's genetic make-up, lifestyle, and environment and modified somewhat by health interventions.

Determinants can have positive or negative impacts on health status. For example, smoking has been linked to increased risks of lung cancer, emphysema, and heart disease, among others. Smoking would be considered a 'risk factor' working to move an individual towards ill-health. Other factors, such as eating fruits and vegetables, tend to work to improve health status. These are referred to as 'protective factors'. Evidence has been established that demonstrates that most determinants of health are related to factors outside of the traditional health care system. These determinants can be broadly grouped into 12 categories.

Income and Social Status

A person's income and social status have a significant impact on their health status. As people improve their income and move up the social hierarchy, there are improvements in overall health status. Income has an influence on living conditions, the ability to afford and acquire safe housing as well as the ability to purchase the necessities of life, such as food and clothing. Countries with the greatest differences between the richest and the poorest tend to have poorer overall health status than societies which are both prosperous and have an equitable distribution of wealth.

Social Support Networks

Social support networks include family, friends, and communities. Needed support received from the social support network is associated with better health status. These networks assist with problem solving, improve perception of control and offer a sense of mastery over problems. Caring and respect are derived from strong social networks with improve one's sense of well-being and appear to act as a buffer protecting against health problems.



Education

Education is strongly associated with socio-economic status. It also contributes to health by providing people with knowledge and skills that can be used for problem solving. This helps to create a sense of control and mastery over life events better equips people to deal with the prevention and management of health issues. Higher education improves one's ability to acquire employment and improve income providing a sense of security and satisfaction.

Employment and Working Conditions

Unemployment, underemployment, and stressful or unsafe work all have a negative impact on health status. Employment provides a sense of security and can provide opportunities to improve social well-being. Having more control over one's work situation and fewer stressful demands from their job tends to lead to healthier and longer lives.



Social Environment

The social environment goes beyond friends and family and extends to the broader community in which a person lives and works. It includes a sense of cohesiveness within society from its values to institutions to informal giving. The values within society have varying influences on the well-being of the population as a whole. Issues such as social stability, feelings of safety, good working relationships and the perceptions of a supportive community help to reduce the risks to good health.

Physical Environment

One's exposure to contaminants in our air, water, food and soil, in unsafe quantities, can lead to a variety of adverse outcomes, such as certain cancers, birth defects, respiratory illness and gastrointestinal problems. In addition to these factors, the built environment in which we live has an influence on health status. One's physical and psychological well-being is influenced by housing, indoor air quality, and the design of communities and transport systems.

Biology and Genetic Endowment

One's genetic endowment has a direct influence on health status as it determines a person's predisposition to the range of individual responses that impact health status. Genetics and biology work to determine the body's response to internal and external influences that can either protect against certain diseases or act as a risk factor for their development. While social and environmental factors have a strong influence on health, genetic endowment appears to predispose certain individuals to particular health problems.

Personal Health Practices and Coping Skills

Personal health practices and coping skills refer to those activities that can prevent diseases, cope with challenges, develop self-reliance, solve problems, and make choices that enhance health. There is increasing understanding that personal decisions are greatly influenced by the socio-economic environments in which people live, learn, work, and play. There is evidence showing that there are biochemical changes that occur within individuals based on how they cope with problems and these changes can modify one's health status.



Healthy Child Development

Healthy child development is a powerful determinant of health. How a child develops is greatly influenced by their physical and social environments. Housing, family income, parental education, access to nutritious foods, physical activity, and genetic endowment are all examples of influences that impact the child's health throughout their lifespan.

Health Services

The availability and accessibility of health services has a direct impact on the health of the population. These include those services designed specifically to prevent disease, detect disease early in its course, and to provide services to restore health and functional abilities. Health services can be viewed as a continuum of activities aimed at prevention and treatment.

Culture

Cultural values play a role influencing health status, particularly for those who are part of a cultural group that is not the dominant one in the area in which they live and work. Misunderstanding of language, values, and day to day processes can make it difficult to gain employment or may lead to marginalization and stigmatism. The loss or devaluation of language and cultural practices can lead to poor self-esteem and other problems. A lack of access to culturally appropriate or sensitive health services can be a barrier to prevention and treatment of health problems.

Gender

Gender refers to the societal roles placed on the sexes that influence behaviours, personality, attitudes, and power and influence on society that may be on a differential basis. The delivery of services, health and other, can be influenced by the gender of the person or persons delivering and receiving the services. The risk of disease and injury is different for males and females as are their needs for health services.

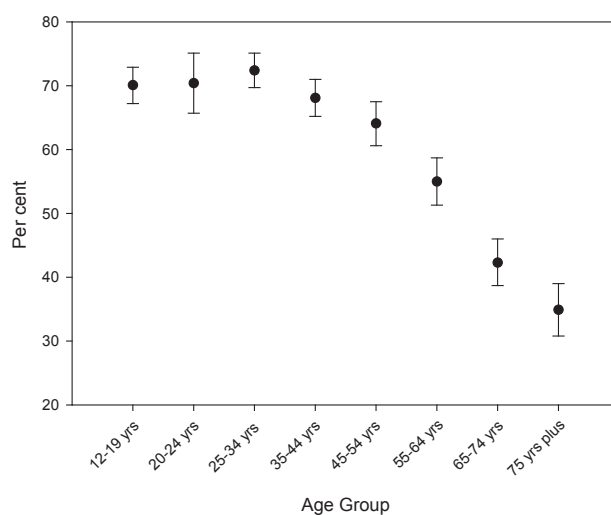
HISTORICAL EVENTS

- 1911 “Swatting the fly” campaign launched in the city of Edmonton to reduce the potential risk of disease spread from flies. Alberta’s population is 374,295. The Ponoka Asylum for the care of the mentally ill is opened.
- 1914 Canada enters the First World War.
- 1915 Prohibition legislation is passed.
- 1916 Smallpox vaccine introduced in Canada. Women in Alberta gain the right to vote.
- 1918-1919 Pandemic influenza (“Spanish Flu”) kills over 25 million people worldwide. Over 4,000 Albertans die.
- 1918 Alberta’s *Venereal Disease Prevention Act* is passed.
- 1918 The *Municipal Hospitals Act* is proclaimed.
- 1919 The Honourable A.G. MacKay is appointed as Alberta’s first Minister of Health.
- 1919 The first Alberta Vital Statistics Report is released.

Self-Perceived Health Status

Health is much more than just the absence of disease or disability. The World Health Organization has defined health as 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 indicator. **Figure 18** displays the per cent of the population that rates its health as very good or excellent by age of respondent. Approximately 70 per cent of respondents between the ages of 19 and 44 years rate their health in positive terms. As individuals age, the rating begins to steadily decline.

Figure 18 Per cent of the population rated their health as very good or excellent by age of respondent, Alberta 2003



There are sex differences in reporting one's health as very good or excellent. Males consistently are more likely to report their health as very good or excellent than are females (**Figure 19**). In addition to sex differences, there are regional differences within Alberta. Residents of the Capital and Calgary health regions tend to report being healthier while residents of the northern most regions (Aspen, Peace Country, Northern Lights) were least likely to report their health as very good or excellent.

Figure 19 Per cent of the population reporting their health to be very good or excellent, by year and sex, Alberta

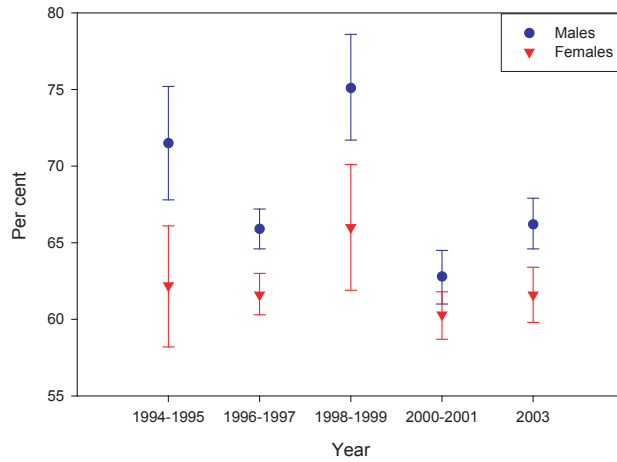
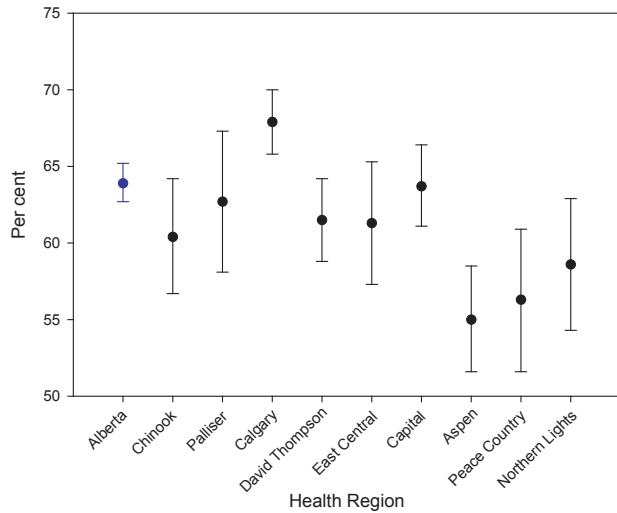


Figure 20 Per cent of the population reporting their health to be very good or excellent, regional health authority, Alberta 2003



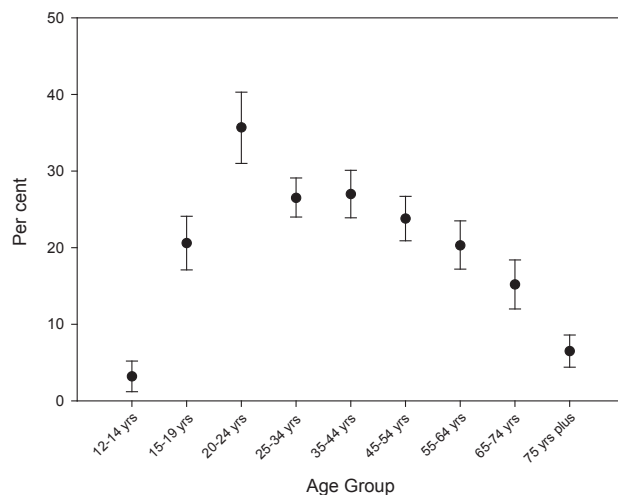
Tobacco Use

Tobacco use and smoking are addictive behaviours. Nicotine in tobacco causes chemical and biological changes in the brain. While the change is less dramatic than with drugs such as heroin or cocaine, the strength of the addiction can be just as powerful.⁵ Additionally, nicotine is a reinforcing drug, which means that users desire the drug regardless of its damaging effects.⁶

Smoking puts smokers at an increased risk of coronary heart disease, peripheral vascular disease, aortic aneurysm, high blood pressure, high cholesterol, lung cancer, cancer of the mouth, throat and voice box, cancers throughout the body, chronic obstructive pulmonary disease, and a variety of other diseases. Female smokers are at increased risk of cancer of the cervix, menstrual problems, fertility problems, and spontaneous abortion (miscarriage). Male smokers are at increased risk of erectile dysfunction (impotence) and fertility problems. Smoking also leads to premature aging.⁷

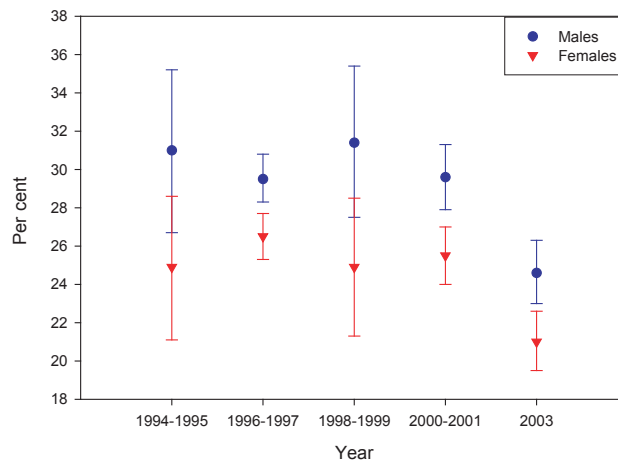
Smoking cessation has immediate health benefits. Within two days of quitting the chance of heart attack goes down, three months later circulation improves and lung function increases up to 30 per cent; within one year the chance of smoking-related heart attack is cut in half. Ten years after quitting smoking, the chance of dying of lung cancer is cut in half; within 15 years, the chance of dying of a heart attack is as low as those of individuals who had never smoked.⁸ However, the benefits of quitting are realized only if diseases due to smoking have not already taken root.

Figure 21 Self reported percentage of smokers by age, Alberta 2003



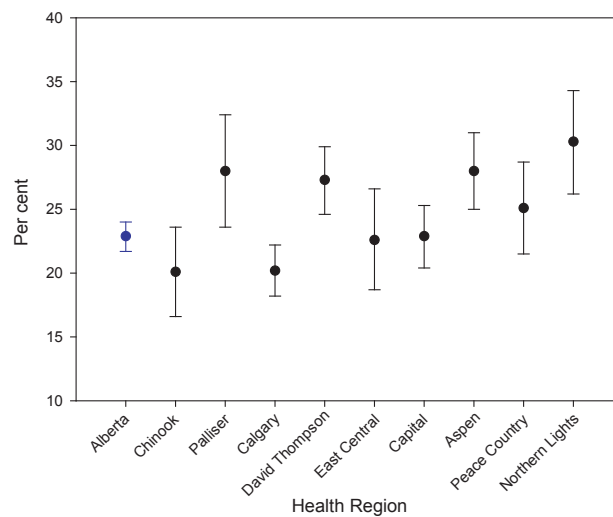
Smoking rates are highest among individuals aged 20 to 24 years and lowest in the 12 to 14 year age group. There is a steady decline in smoking rates associated with age. Overall, 23 per cent of Albertans report being either occasional or daily smokers. The overall smoking rate appears to have declined in 2003 (**Figure 22**) compared to previous years. Males are more likely to report smoking than females.

Figure 22 Per cent of the population reporting smoking either occasionally or daily, Alberta 2003



Smoking rates varied by regional health authority (**Figure 23**). The Calgary health region had the lowest smoking rates while Northern Lights had the highest.

Figure 23 Per cent of the population reporting smoking either occasionally or daily by regional health authority, Alberta 2003



Cancer Screening

Screening programs test otherwise healthy people to identify the presence of disease before symptoms begin.⁹ Screening for cancer means that diagnosis can occur at an earlier stage in the disease when treatment is often more successful. Two cancers, cervical and breast, have been shown to most greatly benefit from regular screening.

Alberta Health and Wellness is currently in the implementation stage of an Alberta Breast Cancer Screening Program.¹⁰ This program is targeting women 50 to 69 years of age. However, women in the 40 to 49 and 65 and over age groups will also be screened.¹¹ This program will provide a coordinated province-wide approach to the delivery of mammography screening services.^{12,13} An additional Breast Cancer screening program, Screen Test, is currently in place and is run by the Alberta Cancer Board. This program provides outreach services at two onsite locations, in Edmonton and Calgary, and to residents in 100 rural communities in the province of Alberta.¹⁴

Between 1996 and 2003 there was not significant difference in the number of women age 50 to 69 years who reported having had a screening mammogram (**Figure 24**). There was, however, an increase in the number reporting having had a mammogram for other reasons. Regionally, none of the regional health authorities differed significantly from the provincial average.

Figure 24 Per cent of women aged 50 to 69 years reporting they received a mammogram within the previous two years, Alberta 1996 to 2003

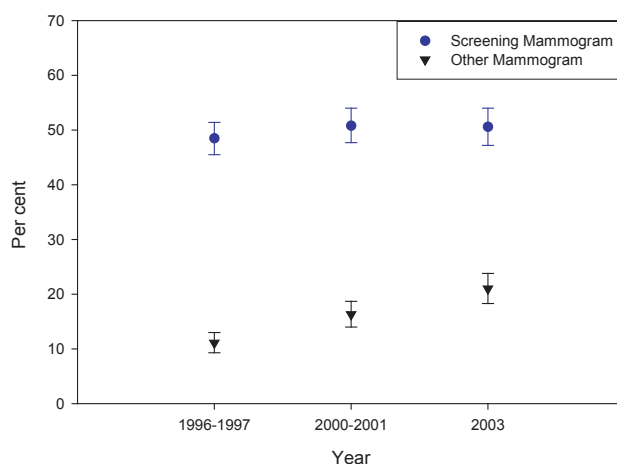
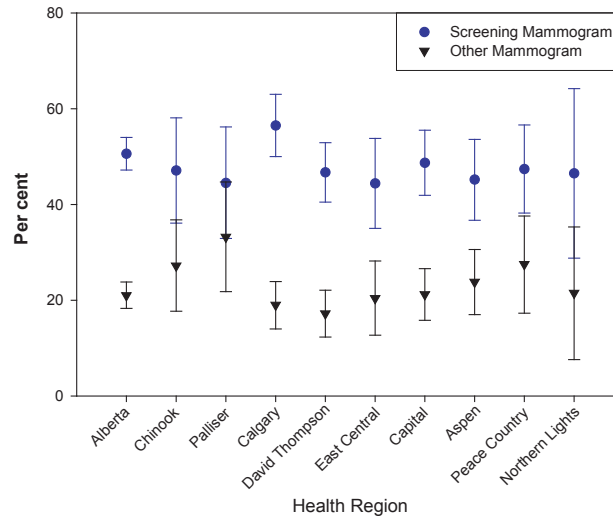


Figure 25 Per cent of women aged 50 to 69 years reporting they received a mammogram within the previous two years by regional health authority, Alberta 2003



Alberta Health and Wellness announced the Alberta Cervical Cancer Screening Program (ACCSP) in February 2000.¹⁵ This program targets women between the ages of 18 and 69 for pap-smears. Having regular Pap tests can prevent almost all cervical cancers by finding cell changes early enough to be treated and cured.¹⁶

The benefits of implementing active screening of cancers such as prostate and colorectal cancer are currently debated.¹⁷ However, as evidence is collected that proves the efficacy of specific tests for other cancers, screening programs and/or clinical practice guidelines will be developed to aid in the early detection and treatment of these cancers.¹⁸

Approximately 80 per cent of Alberta women reported having had a pap smear within the past three years. The distribution of pap smear varies by age with the lowest rates among the youngest and oldest age groups. Calgary health region had the highest per cent of women having had a pap smear while East Central had the lowest.

Figure 26 Per cent of women reporting having had a pap smear within the past three years, Alberta 1994 to 2003

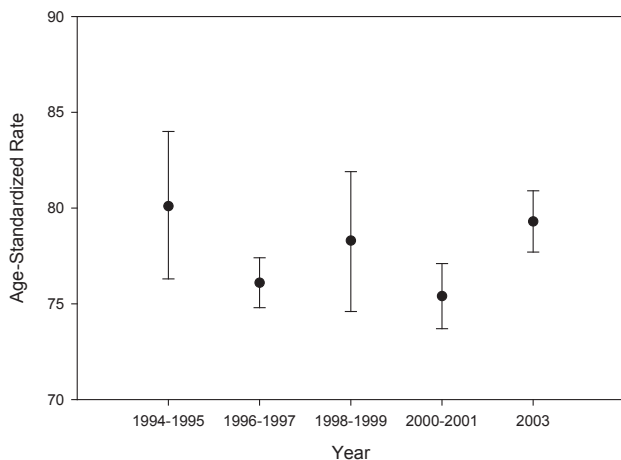


Figure 27 Per cent of women reporting having had a pap smear within the past three years by age, Alberta 2003

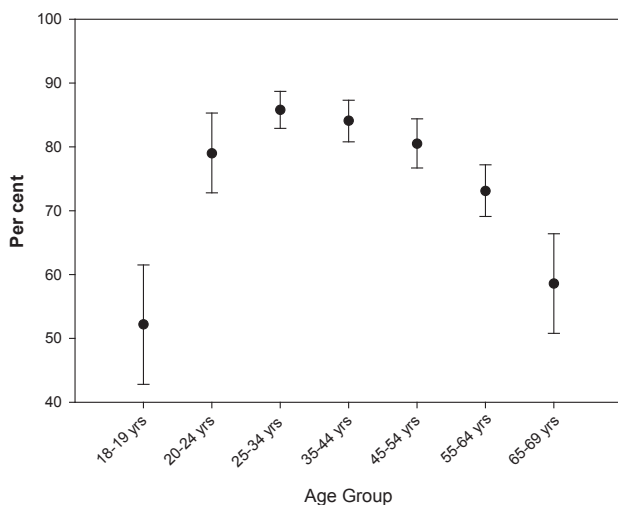
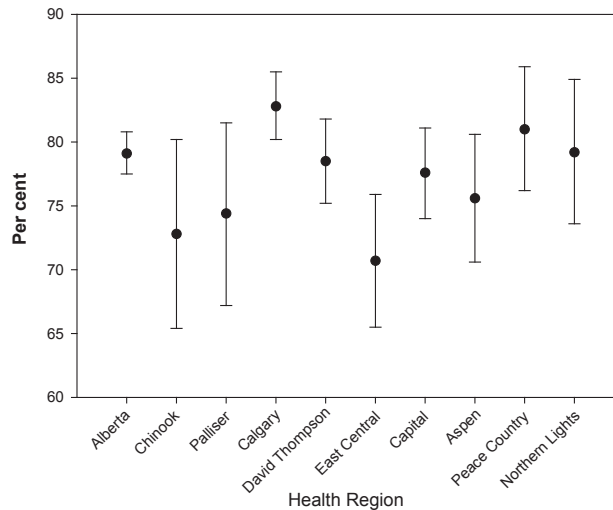


Figure 28 Per cent of women reporting having had a pap smear within the past three years by regional health authority, Alberta 2003



Birth Weight

Low birth weight, the proportion of newborns weighing less than 2,500 grams, is an internationally accepted measure of population health status.¹⁹ Low birth weight has been acknowledged as the single most important determinant of neonatal mortality.²⁰ Furthermore, low weight babies are at a much greater risk of death, disease, and disability. This can include cerebral palsy, learning disabilities, visual problems, and respiratory problems.²¹

Very low birth weight (VLBW) babies, those under 1,500 grams, are especially likely to have long-term health problems and to require higher levels of health care throughout their lives.²²

Low birth weight typically occurs in three categories of infants: those born prematurely (before 37 weeks of gestation), infants termed “small-for-dates” exhibiting intrauterine growth that was slowed but were delivered at term or later than term, and infants born prematurely who also had delayed intrauterine growth and were considered small-for-dates.

Although low birth weight may not always be prevented, a number of risk factors have been identified as increasing the probability that a baby will be born with low birth weight. Factors include both broad determinants of health and maternal factors. Broad determinants of health include maternal age, in vitro fertilization and assisted reproduction, multiple births, socio economic status, social support and the beliefs and values of society.²³ Maternal factors include smoking, alcohol and drug use.²⁴ Furthermore, younger mothers (below age 17) and older mothers (above age 35) are also at increased risk.^{25,26}

The newborns weighing less than 2,500 grams and less than 1,500 grams are displayed in **Figures 29** and **30** respectively. There has been an increasing trend to having a higher proportion of low birth weight over time. In 2004, the low birth weight rate was 6.4 per 100 live births. Over the same period there was also an increase in the number of newborns weighing under 1,500 grams. The increase in low birth weight may be attributed to a number of factors that include, delayed childbearing, in-vitro fertilization, use of alcohol, drugs and tobacco during pregnancy, and maternal age.

Figure 29 Proportion of live births weighing less than 2,500 grams, Alberta 1983 to 2004

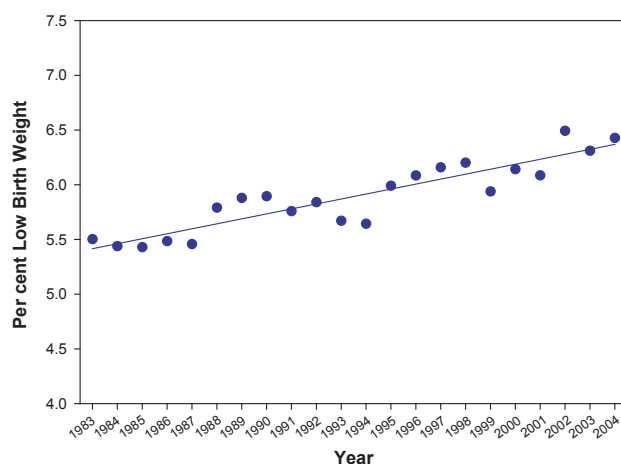
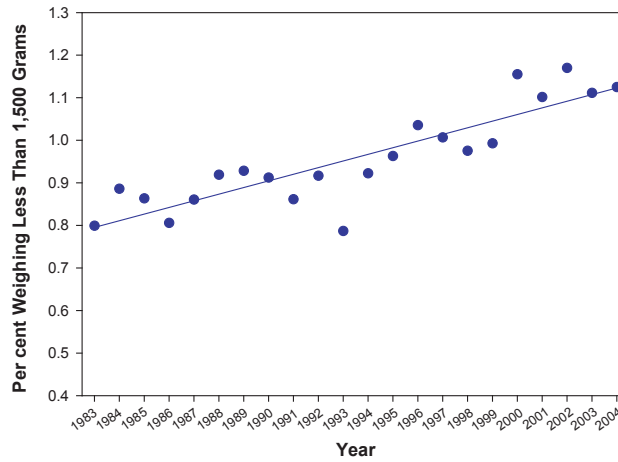


Figure 30 Proportion of live births weighing less than 1,500 grams, Alberta 1983 to 2004



HISTORICAL EVENTS

- 1921 Alberta's population grows to 588,454. One quarter of all cows in Southern Alberta tested positive for tuberculosis
- 1922 Drs. F.G. Banting, C.H. Best, J.J.R. Macleod, and J.B. Collip discover insulin. The government provides free distribution of insulin via mail to all persons with diabetes.
- 1924 Alberta's *Liquor Act* is repealed, ending eight years of prohibition.
- 1928 The *Sexual Sterilization Act* is passed. The Act was repealed in 1972.
- 1928 Alberta becomes the first province to provide special facilities for the treatment of poliomyelitis.
- 1929 Women become persons under the law.

Body Weight

Body weight depends on a number of factors including: genetics, nutrition, and the level of physical activity.²⁷ People who are overweight or obese are at increased risk for conditions and diseases such as: premature death, cardiovascular disease, high blood pressure, osteoarthritis, some cancers, and diabetes. In order to determine if an individual is overweight the Body Mass Index (BMI) calculation is often used.²⁸

BMI calculates the weight of an individual as a ratio to the individual's height.²⁹ The measure is intended for everyone except those under 18 years of age, and pregnant and/or lactating women.³⁰ BMI is calculated with the following formula: $BMI = \text{weight (kg)} / \text{height (m)}^2$. The measure achieved by this formula is then placed into one of the categories found in **Table 1** that shows the classification of the individual's weight, in addition to their risk of developing health problems, is assessed.³¹

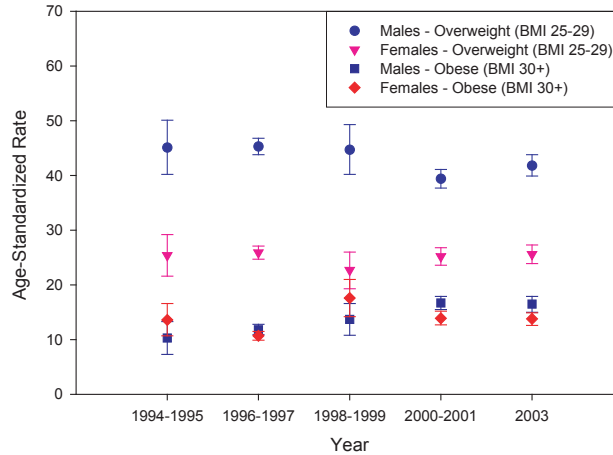
Table 1 Health risk classification according to body mass index (BMI)

Classification	BMI Category (kg/m ²)	Risk of developing health problems
Underweight	< 18.5	Increased
Normal Weight	18.5 – 24.9	Least
Overweight	25.0 – 29.9	Increased
Obese class I	30.0 – 34.9	High
Obese class II	35.0 – 39.9	Very high
Obese class III	>= 40.0	Extremely high

As indicated above, a person at normal weight is usually at an index of 18.5 to 24.9. However, this is not always the case. Because BMI relies on only an individual's weight and height, it cannot calculate body fat. Subsequently an individual with a high percentage of muscle may have the same weight and height as an individual with proportionately more fat. Both individuals will have the same BMI.³² BMI is not diagnostic,³³ and is instead one of the many tools used to assess an individual's health and risk of disease and death.³⁴

Figure 31 shows the percentage of the population with a BMI in the overweight and obese categories. The proportion of males with a BMI in the obese category has increased over the past decade, from 10.3 per cent to 16.5 per cent, while females have stayed stable at just under 14 per cent.

Figure 31 Body mass index for males and females, Alberta 1994 to 2003



The proportion of the population with a BMI in the overweight and obese categories increases with age until age 65. After age 65, the proportion overweight remains stable and the proportion obese begins to fall. One in five adults between the ages of 55 and 64 years is obese and close to 40 per cent of Albertans over the age of 45 years are overweight.

Figure 32 Percentage of the population with and body mass index in the overweight and obese categories by age, Alberta 2003

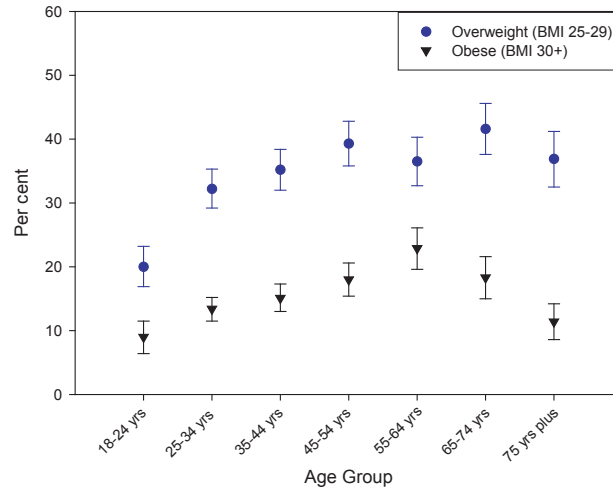
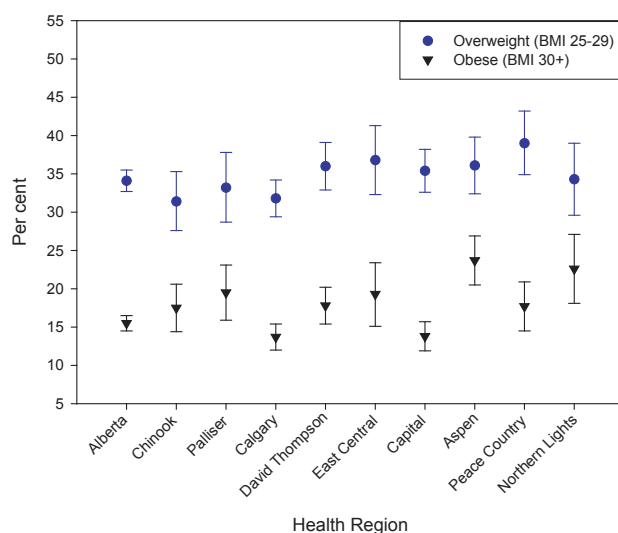


Figure 33 displays the regional differences in BMI for the overweight and obese categories. The Calgary and Capital health regions have the lowest proportions of their populations that are obese compared to other health regions. Aspen and Northern Lights reported the highest proportion of their populations in the obese category.

Figure 33 Percentage of the population with and body mass index in the overweight and obese categories by regional health authority, Alberta 2003



HISTORICAL EVENTS

- 1930** Mental health clinics are opened across Alberta.
- 1931** Alberta's population is 731,605. Life expectancy is 62.1 years for females and 60 years for males.
- 1936** The provincial government begins providing hospital care.
- 1936** The *Tuberculosis Act* comes into force providing free diagnosis and treatment.
- 1938** *Poliomyelitis Sufferers Act* provides for free medical, surgical, and hospital care for persons with the disease.
- 1939** Alberta Tuberculosis Association is formed. A twelve-day stay on a maternity ward is available for \$25.

Nutrition

Nutrition relates to the intake of food by an individual and the manner in which the food is assimilated by the human body in order to create body tissue.³⁵ Poor nutrition is a contributing factor to various diseases and conditions including being overweight and/or obese, diabetes, cardiovascular disease, high blood pressure, osteoarthritis, some cancers, and premature death.

The *Canadian Food Guide to Healthy Eating* outlines the foods that Health Canada has stipulated to be part of a good nutritional regimen. These are broken down into: Grain Products, Vegetables and Fruit, Milk Products, and Meats and Alternatives, and provides a comprehensive nutritional recommendation for Canadians.³⁶ The guide is currently in the final stages of a full review which assessed the food guide's: scientific background, changes in the food supply and food use patterns, use and understanding by intermediaries, and use and understanding by consumers.³⁷

In addition to the food guide, Health Canada recommends that individuals enjoy a variety of foods, emphasize cereals, breads, vegetables and fruit, choose low-fat dairy products, leaner meats, and food prepared with little or no fat, and limit the intake of salt, alcohol and caffeine.³⁸ The Canadian Food Guide recommends five to twelve servings of grains, five to ten servings of fruits and vegetables, two to four servings of dairy products, and two to three servings of meats and alternatives.

Less than half of all Albertans meet the recommended consumption of five or more servings of fruits and vegetables per day. Young adults (20 to 24 years) are the least likely to consume five or more servings, at only 30 per cent. Females are significantly more likely to consume the recommended amount than males. Between 2000/2001 and 2003 cycles of the Canadian Community Health Survey, the proportion of females who consumed five or more servings of fruits and vegetables daily increased while the proportion of males remained the same.

Figure 34 Percentage of Albertans reporting consuming five or more servings of fruits and vegetables per day, Alberta 2003

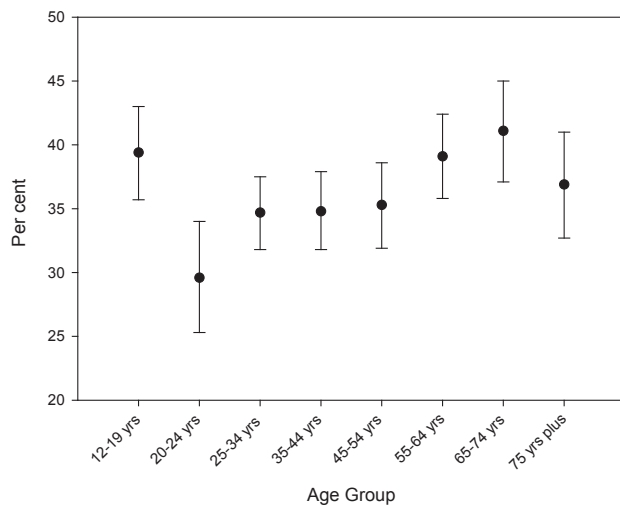
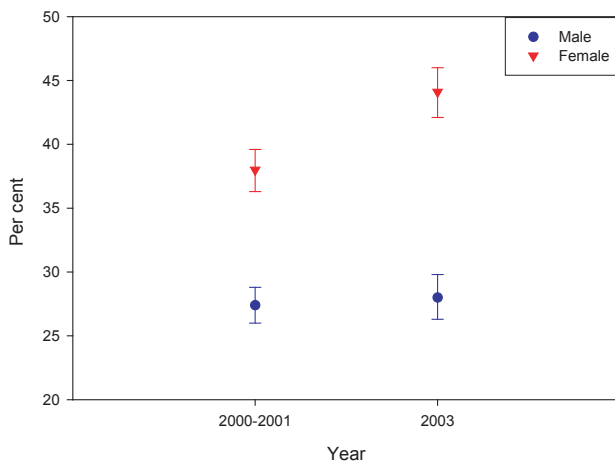
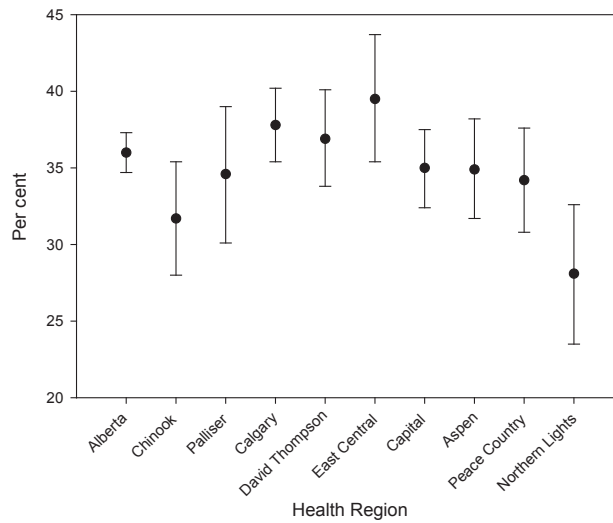


Figure 35 Percentage of Albertans reporting consuming five or more servings of fruits and vegetables per day by sex, Alberta 2003



Variations on fruit and vegetable consumption exist across health regions. Northern Lights had the lowest proportion of individuals indicating that they consumed five or more servings of fruits and vegetables; East Central reported the highest proportion.

Figure 36 Percentage of Albertans reporting consuming five or more servings of fruits and vegetables per day by regional health authority, Alberta 2003



Disability and Functional Limitations

The measure for disability and functional limitations looks at the number of Albertans who report 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.³⁹

Activity limitation increases with increasing age (Figure 37). Males are much more likely to report having limitations than are females (Figure 38). Between 1994 and 2003, the proportion of the population reporting activity limitations has increased for both males and females. Across Alberta there is variation on reported activity limitation by regional health authority. The two northern most regions (Peace Country and Northern Lights) had the lowest proportion of their populations reporting activity limitation.

Figure 37 Percentage of the population reporting activity limitation by age, Alberta 2003

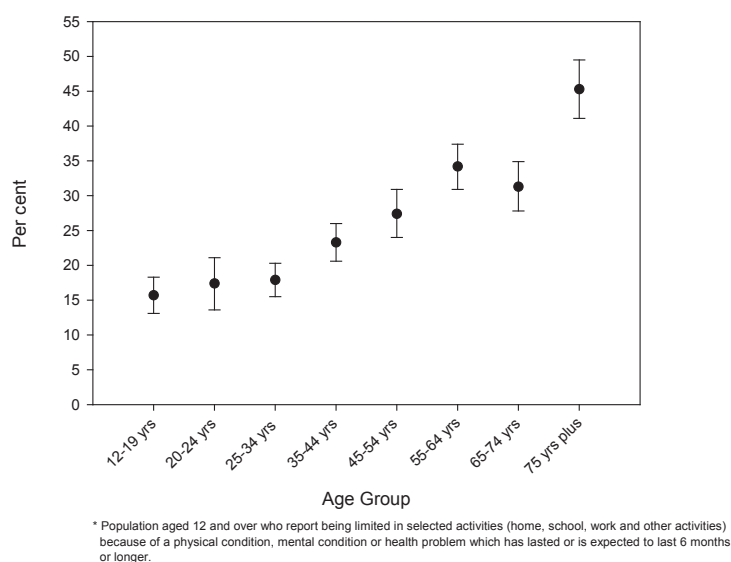
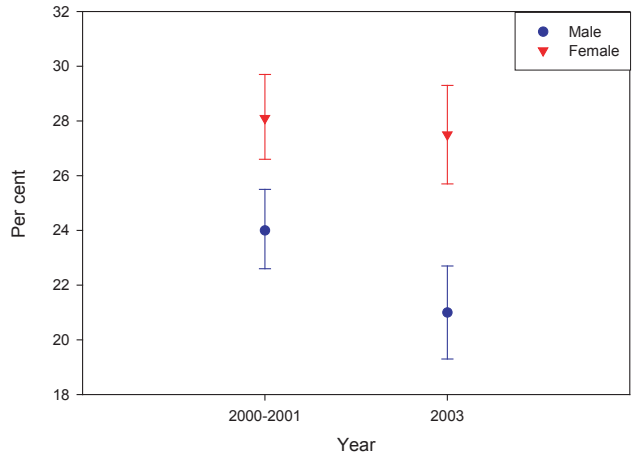
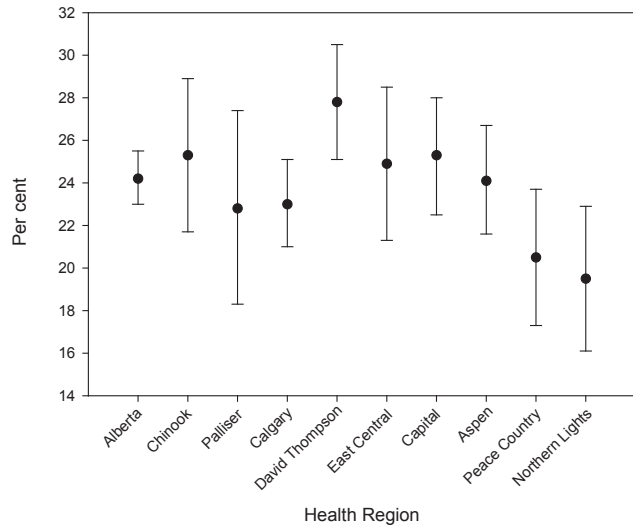


Figure 38 Percentage of the population reporting activity limitation by sex, Alberta 1994 to 2003



* Population aged 12 and over who report being limited in selected activities (home, school, work and other activities) because of a physical condition, mental condition or health problem which has lasted or is expected to last 6 months or longer.

Figure 39 Percentage of the population reporting activity limitation by regional health authority, Alberta 2003



* Population aged 12 and over who report being limited in selected activities (home, school, work and other activities) because of a physical condition, mental condition or health problem which has lasted or is expected to last 6 months or longer.

Alcohol and Drug Use

Alcohol and drug use may pose serious health problems to individuals and society at large. The effects of alcohol use can be acute, chronic or relate to the dependence itself. Alcohol use is a compounding risk factor for a variety of diseases including hypertension, stroke, coronary artery disease and cancer and increases the risk of injury. It also increases reproductive disorders and results in poor pregnancy outcomes with low birth weight or fetal alcohol spectrum disorders in newborns.⁴⁰

Drug use and abuse is becoming more widespread. Drug addiction is a compulsion to use a substance and obtain it by any means with a need to increase the dosage or amount to obtain the desired effect. Physiological and/or psychological dependence on the effects of the substance may occur. Drug addiction has a detrimental effect on individuals, families and communities through increased stress, violence and crime.⁴¹

The proportion of individuals who consume five or more drinks per occasion 12 or more times per year are more likely to be younger (**Figure 40**) and male. The pattern of heavy drinking appears to be increasing over time for both males and females (**Figure 40**). While not significantly different than the provincial average, rates of heavy drinking appear highest in the Northern Lights health region and lowest in the Aspen health region (**Figure 41**).

Figure 40 Percentage of individuals reporting consuming five or more drinks on one occasion 12 or more times per year, by age, Alberta 2003

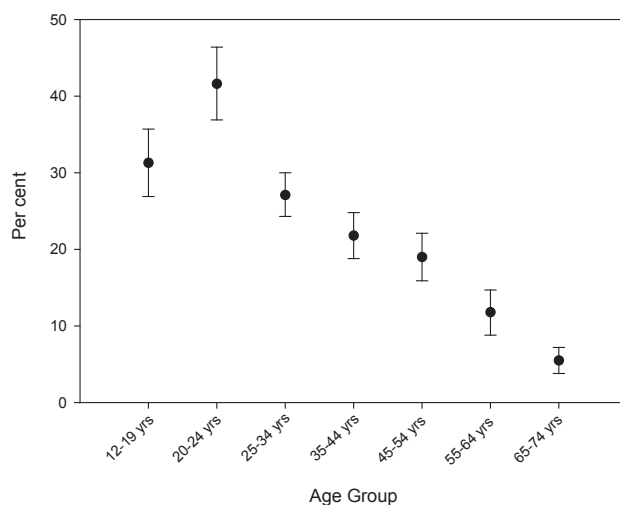


Figure 41 Percentage of individuals reporting consuming five or more drinks on one occasion 12 or more times per year, by sex, Alberta 1994 to 2003

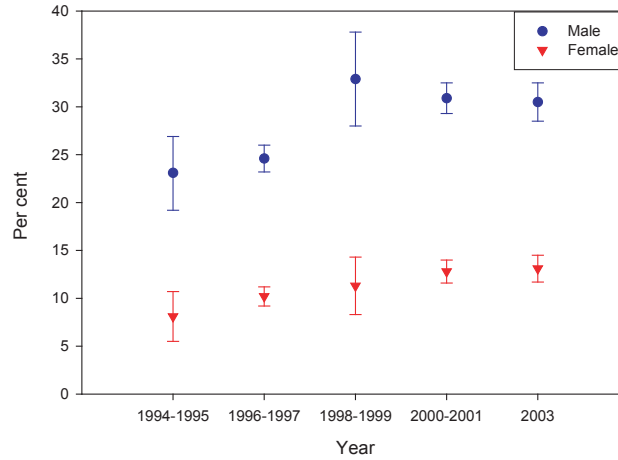
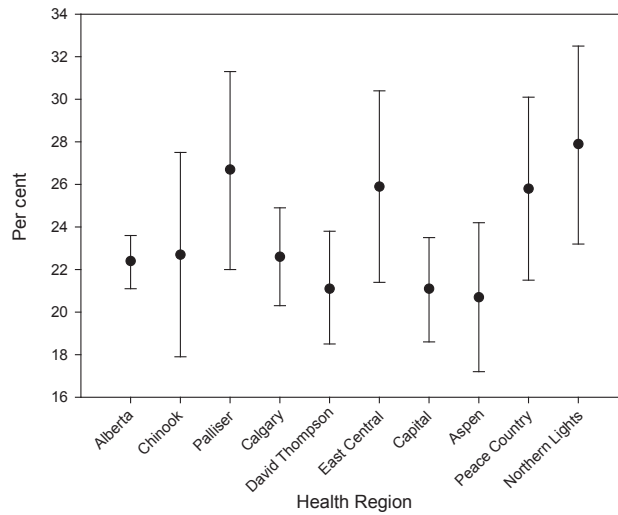


Figure 42 Percentage of individuals reporting consuming five or more drinks on one occasion 12 or more times per year, by regional health authority, Alberta 2003



Physical Activity

Physically active lifestyles have been linked to a decreased risk of many health problems including: cancer, type 2 diabetes, mental health problems, arthritis, hormonal problems, cardiovascular disease, lung disease, obesity and osteoporosis.⁴² One study has shown that middle aged people with desk jobs who do not exercise are twice as likely to have heart attacks as those who exercise regularly.⁴³ The benefits of physical activity go beyond individual health to impact the whole of the health care system.

The preventive benefits of exercise are promoted in Healthy U, an Alberta Health and Wellness initiative that provides Albertans with information on how they can stay healthy.⁴⁴ Although the benefits attained by exercising are great, the amount of exercise required for these benefits is minimal. Alberta Health and Wellness recommends an activity regimen of moderate to vigorous exercise for 20 to 30 minutes three or more times each week.⁴⁵ Furthermore the half-hour of exercise does not have to be done at once, and can be spread intermittently over the day.⁴⁶ To increase student physical activity levels, Alberta Education is introducing 30 minutes of mandatory daily physical activity in Alberta schools starting in fall 2005.⁴⁷

Figure 43 shows the percentage of Albertans who report being active or moderately active during their leisure time. The per cent has increased for both sexes since 1994 and the gap between males and females has decreased. Residents of the Calgary health region reported being the most active during leisure time, while residents of East Central reported the lowest.

Figure 43 Per cent reporting being active or moderately active during leisure time, Alberta 1994 to 2003

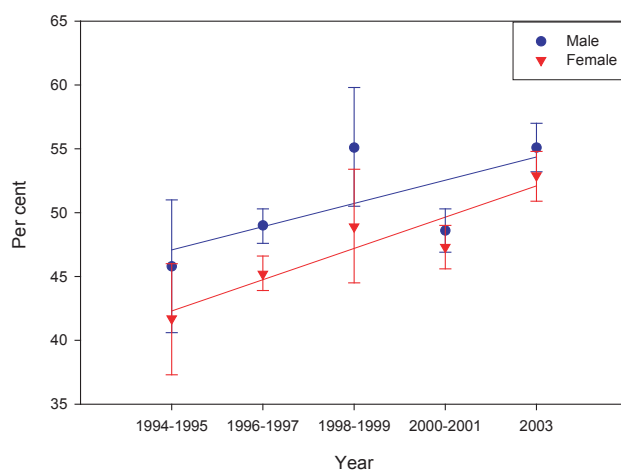
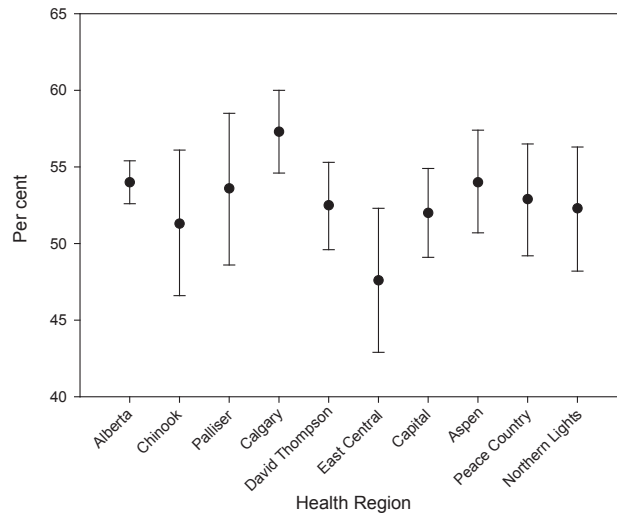


Figure 44 Per cent reporting being active or moderately active during leisure time by regional health authority, Alberta 2003



HISTORICAL EVENTS

- 1940 The *Cancer Treatment and Protection Act* is passed enabling people to receive free care.
- 1941 Alberta's population is 796,169. Life expectancy is 66.3 years for females and 63 years for males.
- 1943 Alberta's last case of smallpox is diagnosed.
- 1944 Hospital services related to childbirth are provided at no cost.
- 1945 An amendment to the *Solemnization of Marriage Act* provides for compulsory blood testing for all persons entering marriage to detect unsuspected syphilis infections as a means of preventing spread.
- 1946 Ninety-six hospitals are operating in Alberta with 5,903 active treatment beds.
- 1947 Calgary physicians claim that a shortage of trained nurses is making it difficult to manage a polio outbreak.
- 1947 The Provincial-Municipal Hospitalization Plan is proclaimed providing free hospitalization and treatment for persons receiving old age and blind pensions or mother's allowance.
- 1948 Diphtheria, Pertussis, and tetanus combined vaccine is introduced.