Alberta Health Services

Report on Cancer Statistics in Alberta

Prostate Cancer

November 2009

Surveillance - Cancer Bureau
Health Promotion, Disease and Injury Prevention

Purpose of the Report

The Surveillance Department-Cancer Bureau; Health Promotion, Disease and Injury Prevention; Alberta Health Services is dedicated to Alberta Health Services' strategic plan of quality (responsive to communities and improving population health), access (supporting research commitments) and sustainability. Specifically, the Surveillance Department contributes to the common goal of reducing the burden of cancer by conducting cancer *surveillance* through the collection, integration, analysis and dissemination of cancer related information.

This report is designed to provide comprehensive and detailed information regarding prostate cancer in Alberta. This document will help support health professionals, researchers and policy makers in the planning, monitoring and evaluation of cancer-related health programs. It will also be a useful education tool for the general public and media.

Navigating the Report

This document provides information on prostate cancer statistics in Alberta. Details about other individual cancer types are available within separate documents. The words highlighted in *dark blue* are terms described in detail within the **Glossary**.

Data Clarifications

In this document, the term "cancer" refers to *invasive cancers* unless otherwise specified. It is important to note that this document contains both actual and estimated data; distinctions are made where applicable. The numbers published in this report should be considered provisional, as a few cases and deaths may be registered in subsequent years. The data in this report reflect the state of the Alberta Cancer Registry as of June 1, 2009.

For detailed descriptions about data sources and how they affect data presented in this report, please see the **Data Sources and Quality** section.

Summary

- Approximately **1 in 6** men will develop invasive prostate cancer within their lifetime and **1 in 26** will die from the disease.
- In 2006, **3,043** potential years of life were lost due to prostate cancer.
- As of December 31, 2006, approximately **16,860** Albertans were alive who had previously been diagnosed with cancer.
- In 2006, there were **2,114** new cases of prostate cancer in Alberta and **337** deaths due to the disease.
- If current trends continue, approximately **2,500** cases of prostate cancer are expected to be diagnosed in 2011.
- The five-year relative survival for prostate cancer in Alberta is approximately **96%** for those diagnosed between 2004 and 2006.

Probability of Developing and Dying from Prostate Cancer

The ***probability of developing or dying of cancer*** measures the risk of an individual in a given age range developing or dying of cancer, and is conditional on the person being prostate cancer-free prior to the beginning of that age range.

It is important to note that the probabilities of developing and dying of cancer represent all of Alberta's population on average and should be interpreted with caution at the individual level. In addition, someone diagnosed with cancer has a higher probability of developing another cancer in the future.[1]

Table 3-1: Probability of Developing Prostate Cancer by Age and Sex, Alberta, 2006

Age Group	Males
Lifetime Risk (all ages)	1 in 6
0 - 20	Less than 1 in 10,000
20 - 30	Less than 1 in 10,000
30 - 40	Less than 1 in 10,000
40 - 50	1 in 385
50 - 60	1 in 45
60 - 70	1 in 16
70 - 80	1 in 13
80+	1 in 13

Approximately 1 in 6 males will develop invasive prostate cancer in their lifetime (**Table 3-1**).

The probability of developing prostate cancer increases with age. The bottom eight rows of the table show the probability of developing prostate cancer by the end of the age range for a prostate cancer-free individual at the beginning of the age range. For instance, a prostate cancer-free male at age 40 has a 1 in 385 chance of developing prostate cancer by the time he is 50.

**Table 3-2: Probability of Dying from Prostate Cancer by Age and Sex, Alberta, 2006**

Age Group	Males
Lifetime Risk (all ages)	1 in 26
0 - 20	Less than 1 in 10,000
20 - 30	Less than 1 in 10,000
30 - 40	Less than 1 in 10,000
40 - 50	1 in 9,174
50 - 60	1 in 1,122
60 - 70	1 in 269
70 - 80	1 in 76
80+	1 in 23

The probability of dying from prostate cancer varies by age (**Table 3-2**). Approximately 1 in 26 males will die of invasive prostate cancer. The probability of dying from prostate cancer increases with age. The bottom eight rows of the table show the probability of a prostate cancer-free individual at the beginning of the age range dying from prostate cancer by the end of the age range. For example, a prostate cancer-free male at age 40 has a 1 in 9,174 chance of dying from prostate cancer by the time he is 50.

Potential Years of Life Lost

One frequently used measure of premature death is *potential years of life lost (PYLL)*. PYLL due to cancer is an estimate of the number of years that people would have lived had they not died from cancer. PYLL was calculated by obtaining the number of deaths and the mean life expectancy of each age group. The results are a reflection of how many people died, their ages at death, and life expectancy. Life expectancy is calculated by determining the age to which an individual would have been expected to live had they not died from cancer. PYLL is one way to measure the impact, or burden, of a disease on a population.

Figure 3-1: Potential Years of Life Lost (PYLL) from Prostate[*] Cancer Compared with Lung[†], Colorectal[†] and Breast[‡] Cancer, Alberta, 2006
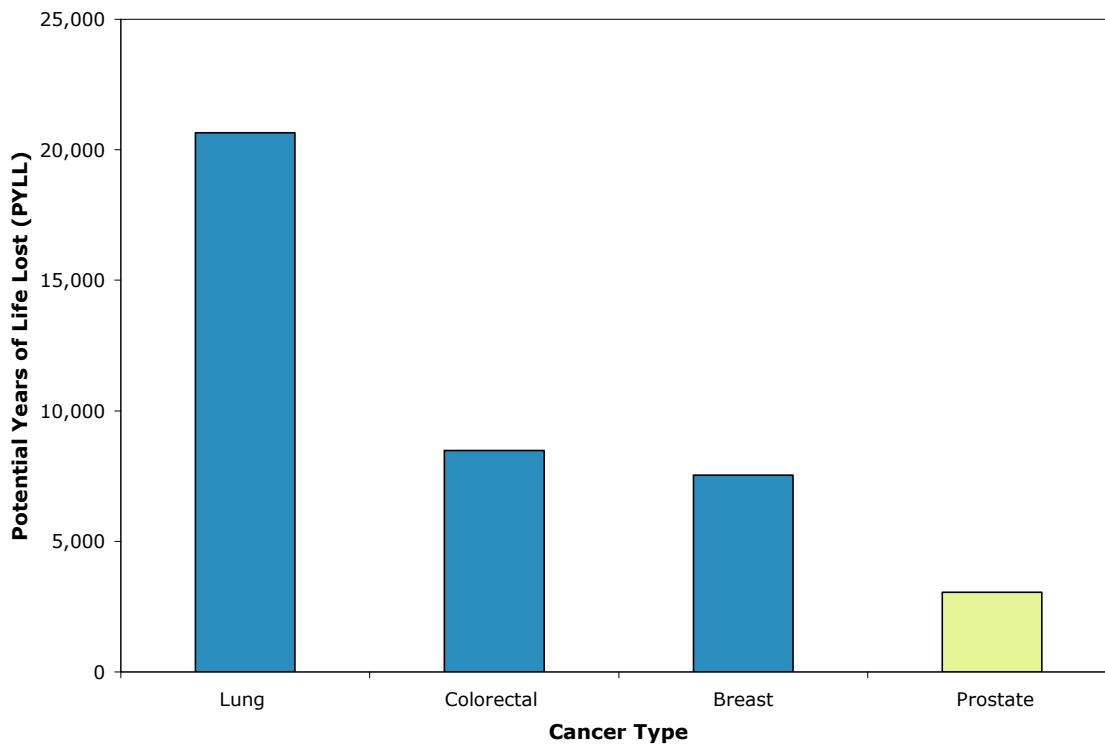
[*] Male only
[†] Male and Female
[‡] Female only

In 2006, **3,043** potential years of life were lost due to prostate cancer, which constitutes 3.6% of PYLL for all cancers (**Figure 3-1**).

Prevalence

The *prevalence* of a disease is defined as the number of people currently living with that disease. In this section of the report, the cancer prevalence presented describes the number of people alive as of December 31, 2006 who had ever been diagnosed with prostate cancer.

Prevalence is a useful indicator of the impact of cancer on individuals, the healthcare system and the community as a whole. Although many cancer survivors lead healthy and productive lives, the experience can have a strong impact on the physical and emotional well-being of individuals and their families. The cancer experience can also result in the continued use of the healthcare system through rehabilitation or support services, as well as loss of work productivity that can affect the whole community.

As of December 31, 2006, approximately **16,860** Albertans were alive who had previously been diagnosed with cancer.

Prostate Cancer Incidence and Mortality

Introduction

Incidence counts are the number of new cancer cases diagnosed during a specific time period in a specific population. In this section of the report, incidence counts refer to the number of new prostate cancer diagnoses in Alberta in a calendar year. Incidence rates are the number of new cancer cases diagnosed per 100,000 population in a specific time period.

Mortality counts describe the number of deaths attributed to cancer during a specific period of time in a specific population. In this section of the report, mortality refers to the number of deaths due to prostate cancer in Alberta in a calendar year, regardless of date of diagnosis. Mortality rates are the number of deaths per 100,000 population in a specific time period.

In order to compare cancer incidence or cancer mortality over time or between populations, *age-standardized incidence rates (ASIRs)* or *age-standardized mortality rates (ASMRs)* are presented. These are weighted averages of *age-specific rates* using a standard population. These rates are useful because they are adjusted for differences in age distributions in a population over time, which permit comparisons of cancer incidence or mortality between populations that differ in size, structure or time period. ASIRs and ASMRs give the overall incidence and mortality rates that would have occurred if the population of Alberta had been the same as the standard population. In this report the Canadian 1991 population is used as the standard population.

Three-year moving averages are used to smooth out year-to-year fluctuations so that the underlying trend may be more easily observed. They are calculated based on aggregating three years of data. Age-standardized incidence rates (ASIRs) and age-standardized mortality rates (ASMRs) are presented as three-year moving averages. This smoothing of trends is especially important when the number of cancer cases per year is relatively small, where year-to-year variability can be quite large.

Incidence and mortality can be affected by the implementation of public health prevention or screening strategies that either prevent disease or find cancer in its early *stages* when treatment is generally more successful, the development of cancer treatment programs that may impact chances of survival, and research innovations.

The following figure shows incidence and mortality trends in Alberta. Separate analyses for both incidence and mortality are shown in subsequent sections. Significant increases or decreases were detected using JoinPoint[2] and are described in the text accompanying each graph. JoinPoint models are based on yearly rates; hence there may be slight differences in the rates presented in the text (from JoinPoint model) and the graphs (where ASIRs and ASMRs are shown as three-year moving averages).

Figure 3-2: Age-Standardized Incidence Rates (ASIRs)[*†] and Mortality Rates (ASMRs)[*†] for Prostate Cancer, Males, Alberta, 1986-2006
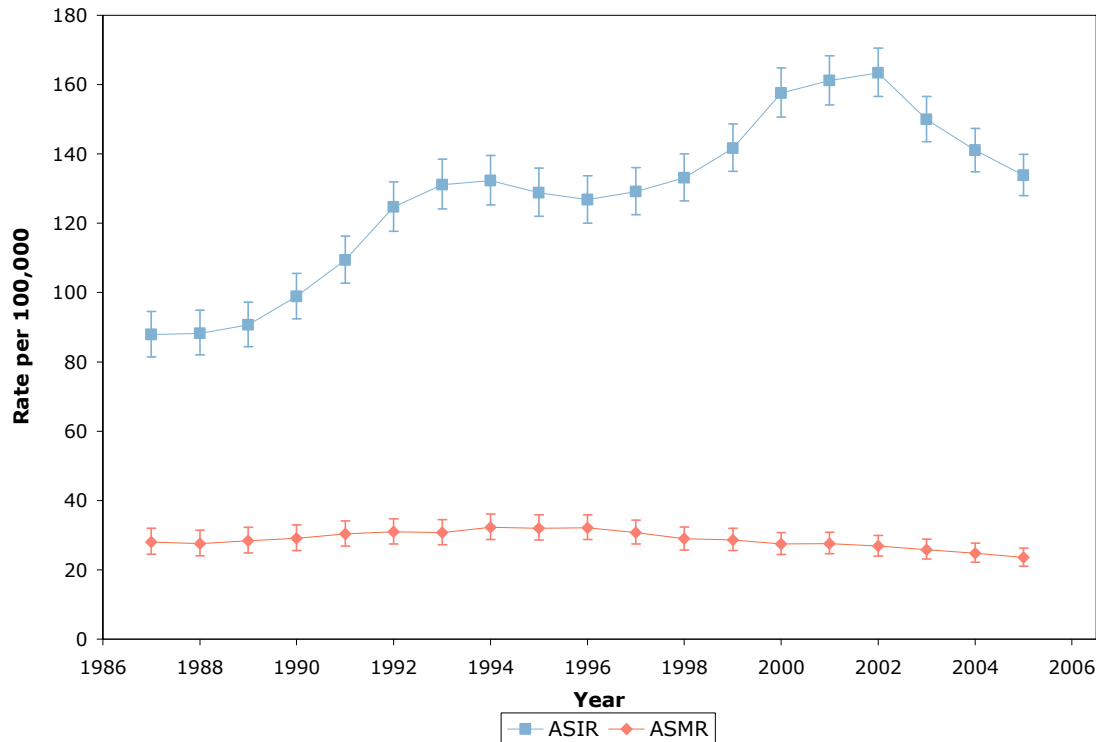
[*] Three-year moving average.
[†] Standardized to 1991 Canadian population.

Prostate cancer ASIRs have varied across the years since 1986 (**Figure 3-2**). There have been two peaks and two significant time period changes in ASIRs for prostate cancer since 1986. The peaks for prostate cancer incidence occurred in 1993 and 2001. The first peak in incidence may be attributed to the introduction of prostate specific antigen (PSA) testing for prostate cancer that occurred in the early 1990s.[3] It has also been speculated that the second peak was the result of increased PSA screening test activity after the Federal Minister of Health, Allan Rock, was diagnosed with prostate cancer in 2001.[4] The first significant time period change occurred between 1986 and 1993, in which prostate cancer ASIRs significantly increased 65% from 79.1 to 130.2 per 100,000, corresponding to an average annual increase of 7.4%. From 2001 to 2006, the second significant time period change occurred, in which ASIRs significantly decreased 25% from 170.9 to 127.7 per 100,000, an average annual decrease of 5.7%.

Prostate cancer mortality rates have been lower and more stable than incidence rates. There have been two significant time period changes in ASMRs for prostate cancer since 1986 (**Figure 3-2**). Between 1986 and 1995 prostate cancer ASMRs significantly increased 21% from 27.1 to 32.7 per 100,000, corresponding to an average annual increase of 2.1%. From 1995 to 2006, prostate cancer significantly decreased by 29% from 32.7 to 23.3 per 100,000, corresponding to an average annual decrease of 3.1%.

Prostate Cancer Incidence

The following three figures (**Figures 3-3 to 3-5**) provide information on prostate cancer incidence in Alberta. The number of new cancer cases in Alberta is affected not only by changes in the incidence rates, but also by the changes in the age structure and growth of the population. In order to compare trends over time, age-standardized incidence rates (ASIRs) are also provided.

Years 2006-2011 in **Figures 3-3** are shown as *projections*, which are estimates of new cancer cases and cancer rates that may occur in the future. The projected cancer numbers were calculated by applying the estimated five-year age-specific cancer incidence rates to the projected age-specific population figures (observed up to 2008 and estimated for 2009-2011) provided by Alberta Health and Wellness.[5] Caution should be exercised when comparing Canada[4] and Alberta rates due to minor differences between the Canadian Cancer Society and Alberta Cancer Registry classification of prostate cancer.

The estimated cancer incidence rates were calculated by extrapolating the recent trends in observed five-year age-specific rates, which were modeled using log-linear regression.[6] For those age groups where there were few cancers for most of the years, the average rates for the most recent five years were used.

Figure 3-3: Actual and Projected Number of New Cases and Age-Standardized Incidence Rates (ASIRs)[*†] for Prostate Cancer, Males, Alberta, 1986-2011
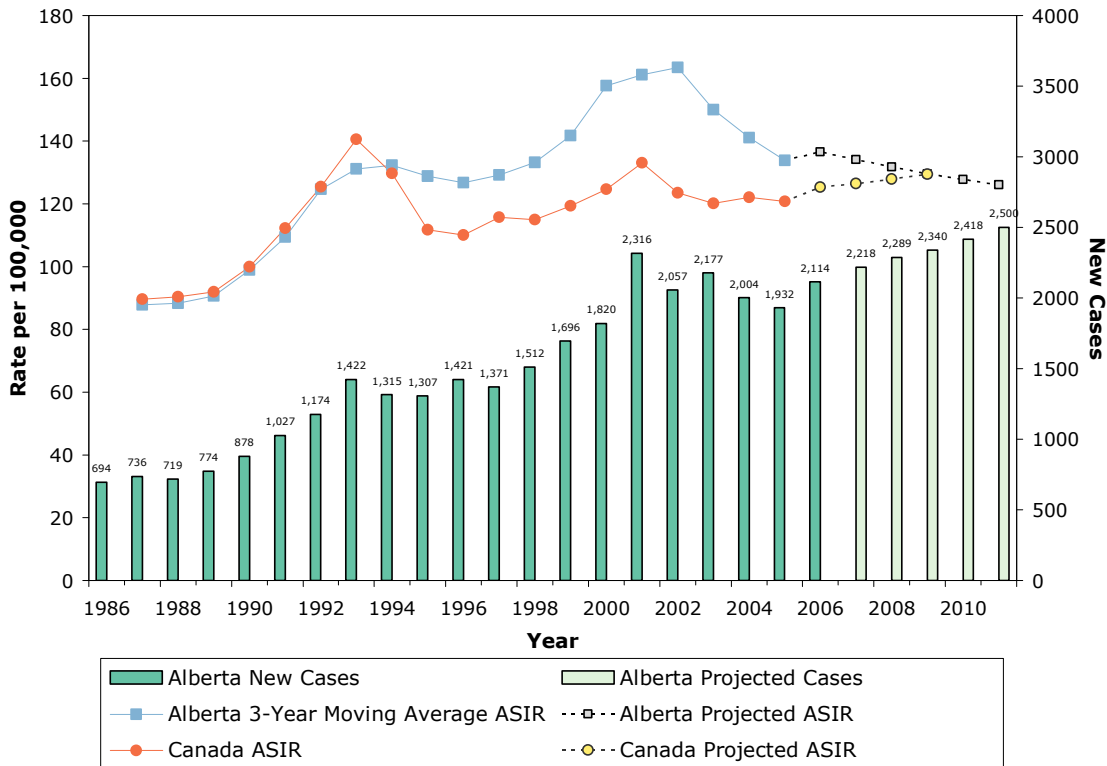

[*] Three-year moving average.
[†] Standardized to 1991 Canadian population.

In 2006, 2,114 cases of prostate cancer were diagnosed in Alberta (**Figure 3-3**). This represents approximately three times more cases than diagnosed in 1986. Overall, ASIRs for prostate cancer in Alberta were higher than ASIRs in Canada over the period 1994 to 2005.

If current trends continue, 2,500 prostate cancer cases will be expected in Alberta in 2011.

Figure 3-4: Age-Specific Incidence Rates for Prostate Cancer, Males, Alberta, 2002-2006
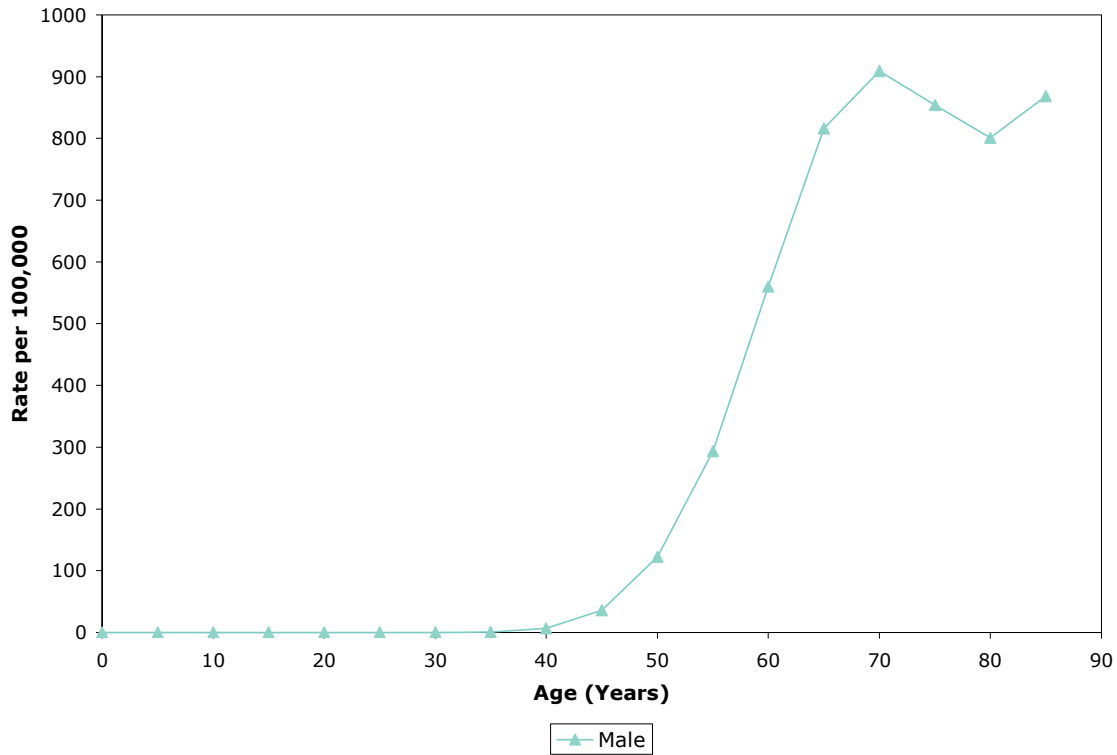
Age-specific prostate cancer incidence rates remain low until the age of 40, when they begin rising rapidly and peak at about age 70 (**Figure 3-4**).

Figure 3-5: Age-Standardized Incidence Rates (ASIRs)[*†] for Prostate Cancer, Ages <60, 60-69, 70-79, and 80+, Males, Alberta, 1986-2006
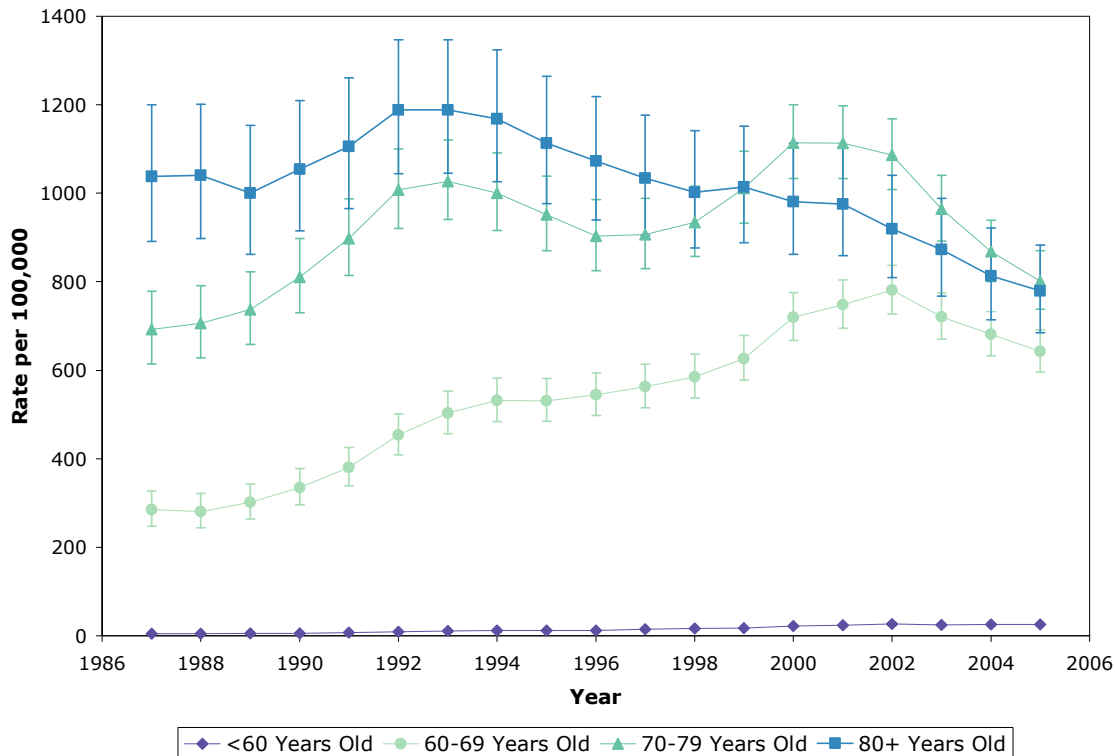
[*] Three-year moving average.
[†] Standardized to 1991 Canadian population.

Age-standardized prostate cancer incidence rates differ across age groups (**Figure 3-5**).

Incidence rates for prostate cancer in the <60 age group significantly increased between 1986 and 2001 by 510% from 4.0 to 24.4 per 100,000, corresponding to an average annual increase of 12.9%, with no significant change after 2001. Prostate cancer incidence rates for the 60-69 and 70-79 age groups both had two significant time period changes. ASIRs significantly increased 105% from 254.0 to 521.4 per 100,000 in age group 60-69 from 1988 to 1993, an average annual increase of 15.5%, whereas in the period from 1986 to 1993, ASIRs significantly increased in age group 70-79 by 69% from 625.5 to 1,054.2 per 100,000, corresponding to an average annual increase of 7.7%. For both age groups, ASIRs significantly decreased from 2001 to 2006 corresponding to an annual decrease of 5.1% in age group 60-69 and an annual decrease of 9.1% in age group 70-79. In the age group 80+, there were also two significant periods; from 1986-1993 ASIRs significantly increased by 21% from 992.0 to 1,196.8 per 100,000, corresponding to an average annual increase of 2.7% and from 1993 to 2006 ASIRs significantly decreased by 34% from 1,196.8 to 785.2 per 100,000, corresponding to an average annual decrease of 3.2%.

The older the age group, the higher the prostate cancer rate tended to be, with some exceptions. The rate for age group 70-79 took over that for age group 80 or older from 1999. The rates for the <60 age group were lower than those for all other age groups.

Prostate Cancer Mortality

The following three figures (**Figures 3-6 to 3-8**) provide information on prostate cancer mortality in Alberta. The number of deaths in Alberta is affected not only by changes in the mortality rates, but also by the changes in the age structure and growth of the population. In order to compare trends over time, age-standardized mortality rates (ASMRs) are also provided.

Years 2007-2011 in **Figures 3-6** are shown as *projections*, which are estimates of the number of cancer deaths and cancer mortality rates that may occur in the future. The projected numbers of cancer deaths were calculated by applying the estimated five-year age-specific cancer mortality rates to the projected age specific population figures (observed up to 2008 and estimated for 2009-2011) provided by Alberta Health and Wellness.[5] Caution should be exercised when comparing Canada[4] and Alberta rates due to minor differences between the Canadian Cancer Society and Alberta Cancer Registry classification of prostate cancer.

The estimated cancer mortality rates were calculated by extrapolating the recent trends in observed five-year age-specific rates, which were modeled using log-linear regression.[6] For those age groups where there were few cancers deaths for most of the years, the average rates for the most recent five years were used.

Figure 3-6: Actual and Projected Number of Deaths and Age-Standardized Mortality Rates (ASMRs)^{*†} for Prostate Cancer, Males, Alberta, 1986-2011
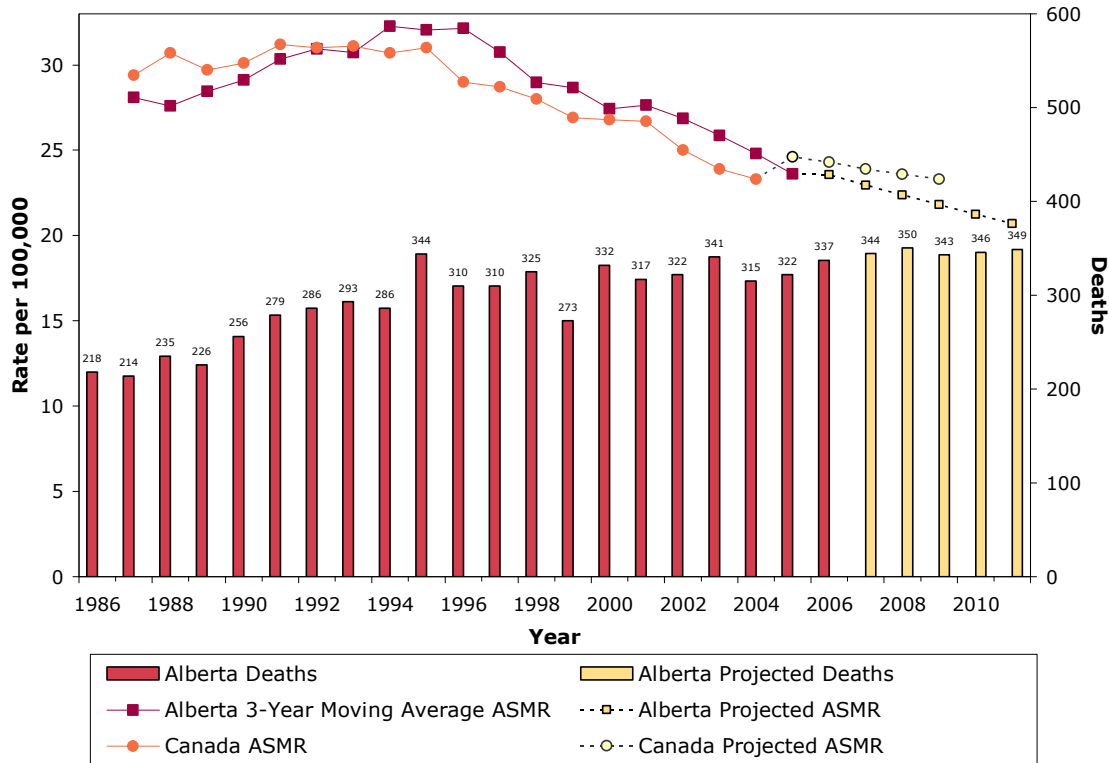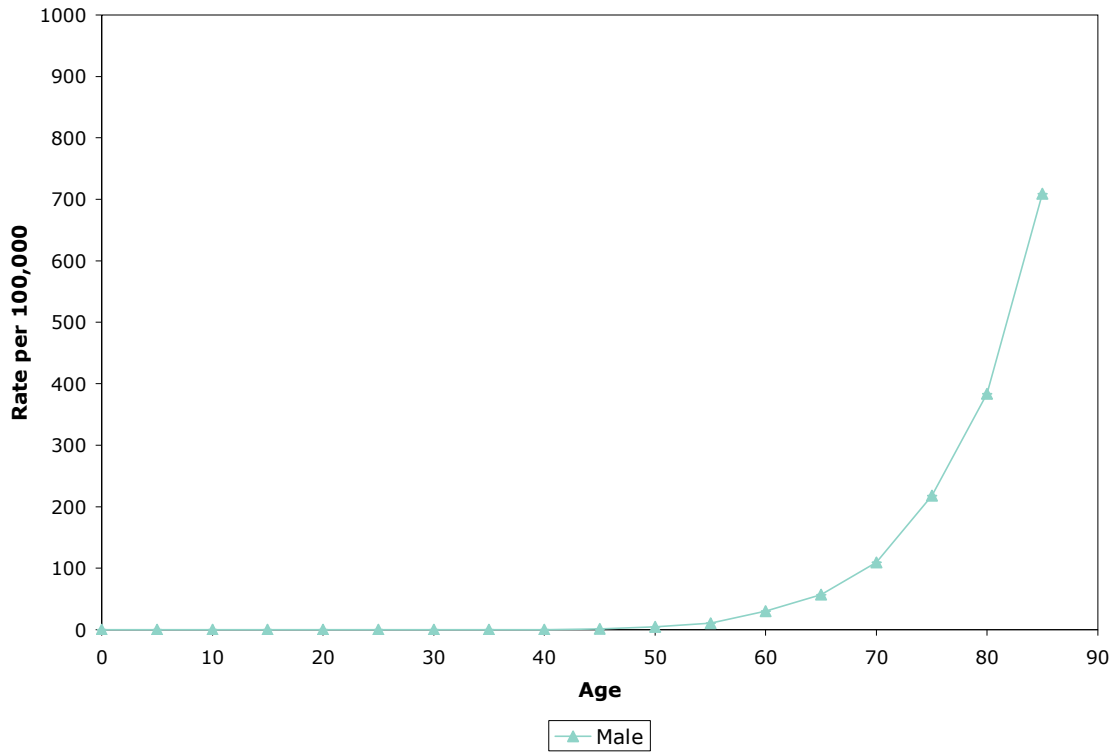

[*] Three-year moving average.
[†] Standardized to 1991 Canadian population.

In 2006, 337 males died of prostate cancer in Alberta (**Figure 3-6**). Overall, ASMRs for prostate cancer in Alberta were lower than ASMRs in Canada over the period 1986-1993 and were higher than ASMRs in Canada over the period 1993-2004.

If current trends continue, about 350 males are expected to die from prostate cancer in Alberta in 2011.

Figure 3-7: Age-Specific Rates for Prostate Cancer, Males, Alberta, 2002-2006

Prostate cancer mortality rates remain low until the age 55, when they begin to rise (**Figure 3-7**).

Figure 3-8: Age-Standardized Mortality Rates (ASMRs)[*†] for Prostate Cancer, Ages <60, 60-69, 70-79, and 80+, Males, Alberta, 1986-2006
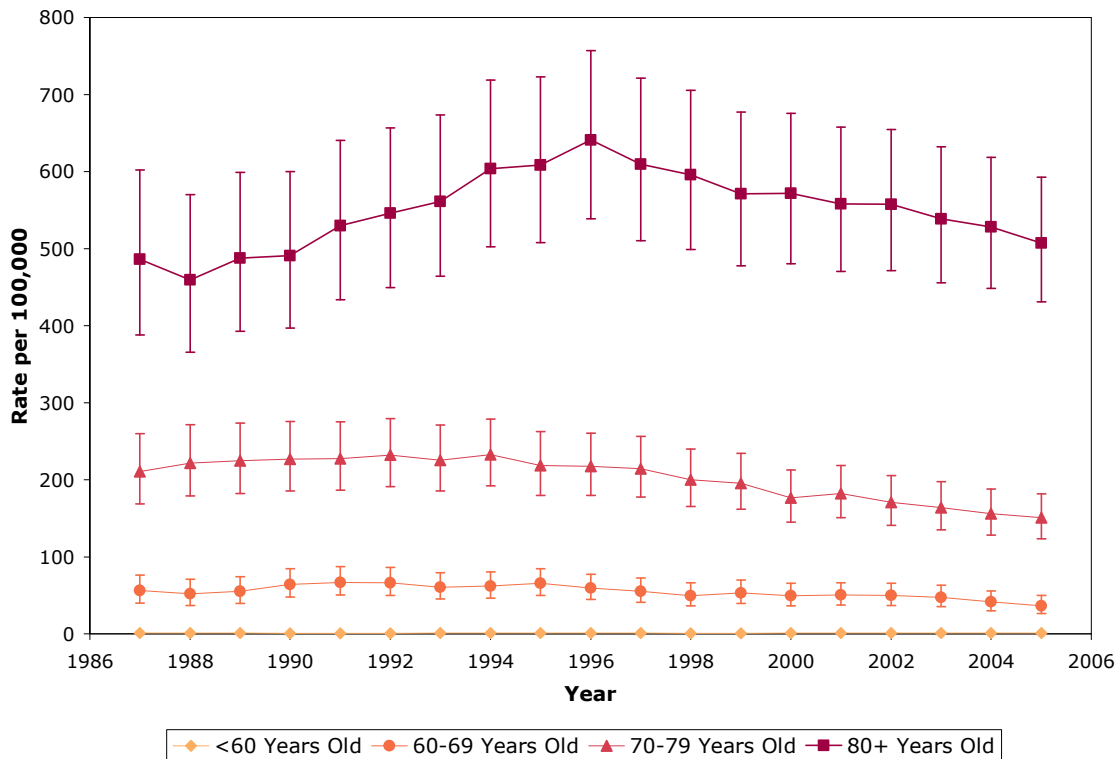
[*] Three-year moving average.
[†] Standardized to 1991 Canadian population.

Age-standardized prostate cancer mortality rates vary over time and with age (**Figure 3-8**).

Mortality rates for prostate cancer in the age groups 60-69 and 70-79 significantly decreased from 1986 to 2006. Overall decrease in ASMRs in age group 60-69 was 37% from 68.3 to 43.3 per 100,000 which corresponds to an average annual decrease of 2.3%. The overall decrease in ASMRs for age group 70-79 was 36% from 248.9 to 160.0 per 100,000, corresponding to an average annual decrease of 2.2%. There were two significant time period changes in prostate cancer ASMRs in the age group 80+; from 1986 to 1996, ASMRs significantly increased 38% from 453.4 to 627.8 per 100,000 which corresponds to an average annual increase of 3.3% and from 1996 to 2006 ASMRs significantly decreased 20% from 627.8 to 501.7 per 100,000, corresponding to an average annual decrease of 2.2%. Prostate cancer mortality rates for the age group <60 have not significantly changed over the same period. The older the age group, the higher the mortality rate.

Prostate Cancer Survival

Cancer survival ratios indicate the proportion of people who will be alive at a given time after they have been diagnosed with cancer. Survival is an important outcome measure and is used for evaluating the effectiveness of cancer control programs.

Survival depends on several factors including the cancer type (most importantly site, stage and morphology at diagnosis), sex, age at diagnosis, health status and available treatments for that cancer. While *relative survival ratios* give a general expectation of survival over the whole province, these ratios may not apply to individual cases. Individual survival outcomes depend on the stage of diagnosis, treatment and other individual circumstances.

Relative survival ratios are estimated by comparing the survival of cancer patients with that expected in the general population of Albertans of the same age, sex and in the same calendar year. Ratios are estimated by the *cohort method* (solid line) when complete follow-up data (e.g., at least five years of follow-up to estimate five-year rate) after diagnosis are available. For recently diagnosed cases, whose complete follow-up data are not available, the up-to-date estimates are computed using the *period method* (dashed line). Relative survival ratio is usually expressed as a percentage (%) and the closer the value is to 100%, the more similar the survival pattern is to the general population.

Figure 3-9: Relative Survival Trends for Prostate Cancer, Males, Alberta, (1984-1986, 1994-1996 and 2004-2006)
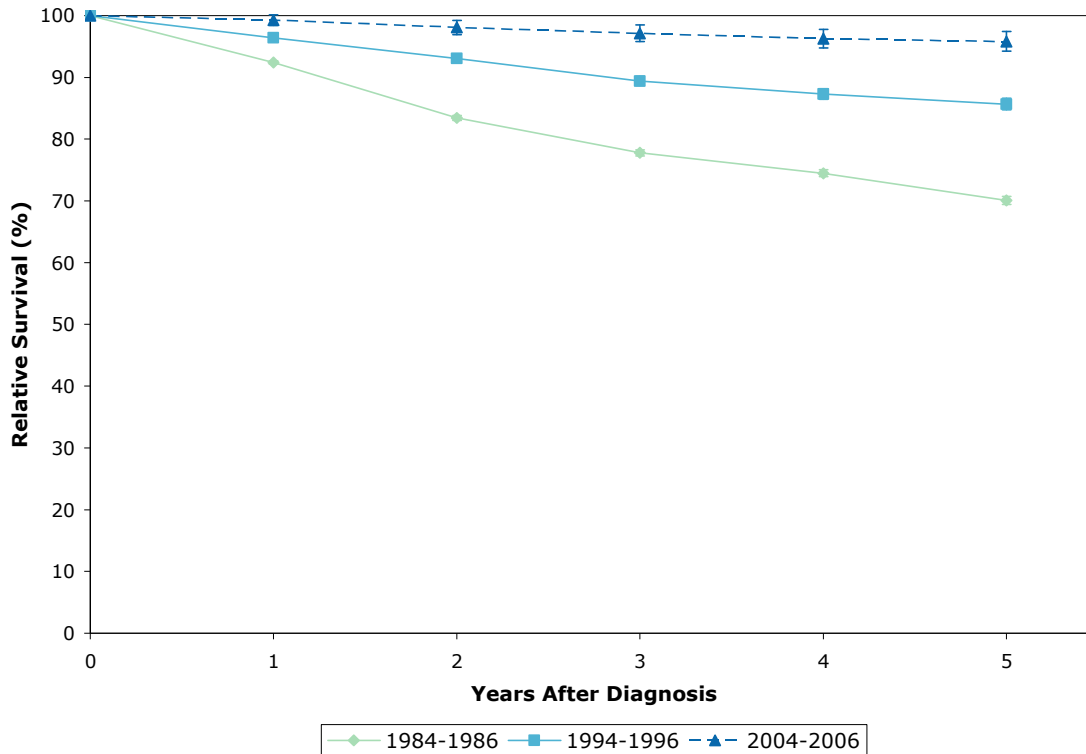
—— (solid line): Ratios calculated by cohort method, where complete follow-up data are available
------ (dashed line): Ratios calculated by period method, where complete follow-up data are not available

The five-year relative survival ratio for males diagnosed with prostate cancer in Alberta has improved by approximately 6% from 1984-1986 to 2002-2006 cohort years (**Figure 3-9**). The five-year relative survival ratio for prostate cancer cases diagnosed in the period 2004-2006 is 96% indicating that out of all males diagnosed with this cancer between 2004 and 2006, around 96% are as likely to be alive five years after diagnosis as males from the general Alberta population.

Figure 3-10: One-, Three-, and Five- Year Relative Survival Ratios for Prostate Cancer, Males, Alberta, (1987-2006)
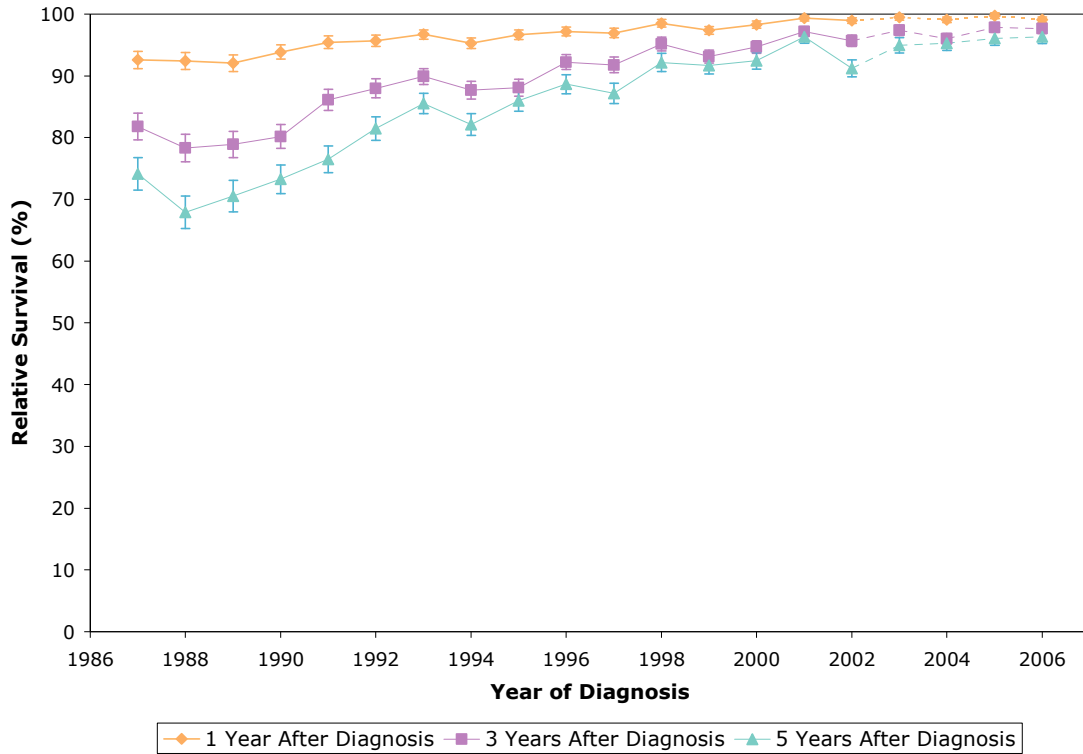
—— (solid line): Ratios calculated by cohort method, where complete follow-up data are available
------ (dashed line): Ratios calculated by period method, where complete follow-up data are not available

One-, three-, and five-year relative survival ratios have improved since 1987 (**Figure 3-10**). Five-year survival improved from around 70% to over 95% between 1987 and 2006.

Geographic Variation

The geographic variation section illustrates how the observed rates in each former regional health authority compare with the provincial average. These rates are three-year averages. The age standardized incidence and mortality rates for each former regional health authority are presented. Any observed differences in rates may be due to several factors such as regional differences in:

- risk factors such as smoking and obesity rates
- prevention efforts
- cancer screening
- diagnostic activity
- access to cancer care.[7]

Figure 3-11: Former Regional Health Authorities in Alberta
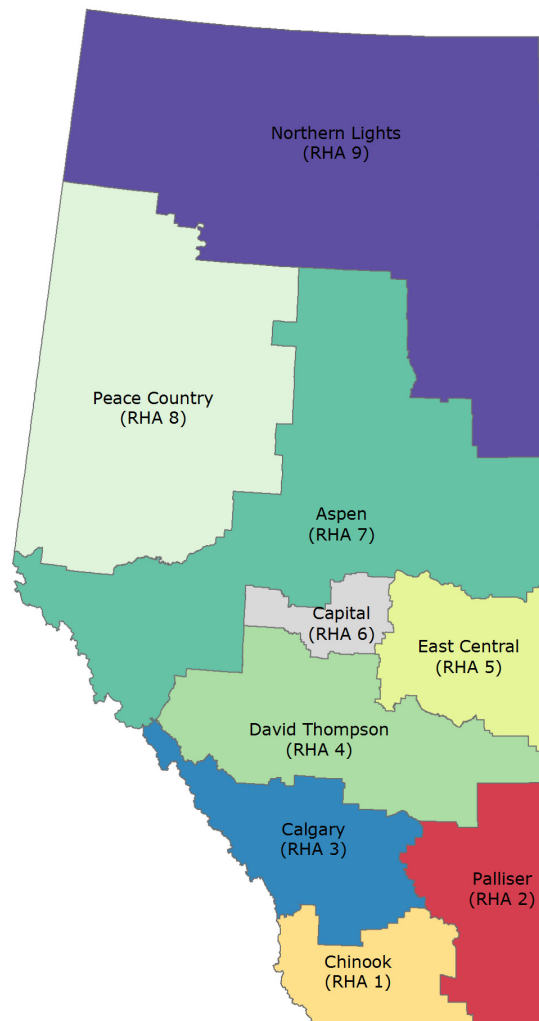
Alberta was divided into nine Regional Health Authorities (**Figure 3-11**).

Figure 3-12: Age-Standardized Incidence Rates (ASIRs)[*†] for Prostate Cancer by Former Alberta Regional Health Authority, Males, Alberta, 2004-2006[‡]
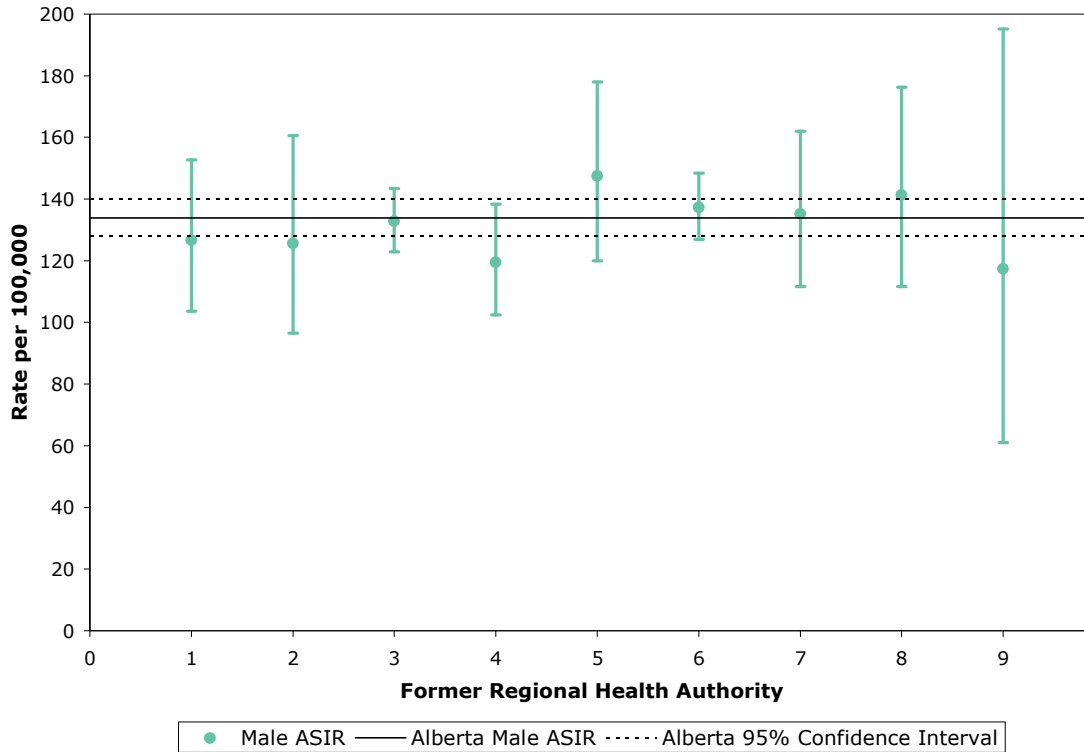
[*] Three-year average.
[†] Standardized to 1991 Canadian population.
[‡]Error bars represent 95% *confidence intervals*.

There is no evidence age-standardized prostate incidence rates in former health regions are higher or lower than the provincial average (**Figure 3-12**).

Figure 3-13: Age-Standardized Mortality Rates (ASMRs)[*†] for Prostate Cancer by Former Alberta Regional Health Authority, Males, Alberta, 2004-2006[‡]
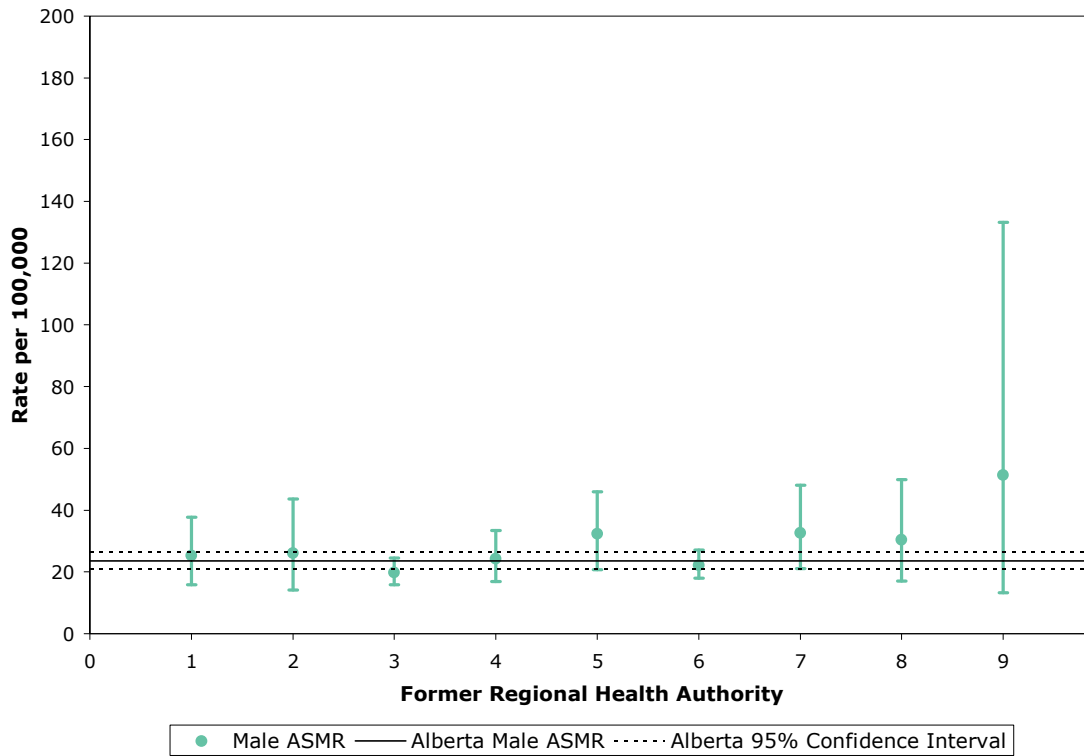

[*] Three-year average.
[†] Standardized to 1991 Canadian population.
[‡]Error bars represent 95% *confidence intervals*.

There is no evidence age-standardized mortality rates in former health regions are higher or lower than the provincial average (**Figure 3-13**).

Further Information

Data Sources and Quality

The data presented within this report are derived from the Alberta Cancer Registry (ACR). The ACR is responsible for recording and maintaining data on all new primary cancers, as well as all cancer deaths occurring within the province of Alberta, as mandated by the Regional Health Authorities (RHA) Act of Alberta.[8]

The quality of data collected by any registry is dependent on three factors: comparability, completeness and validity. Firstly, comparability is accomplished by applying standard practices regarding classification and coding of new cases and by using consistent definitions, such as the coding of multiple primaries. To achieve comparability, the ACR employs the International Classification for Oncology (ICD-O-2 for 1986-2000 data and ICD-O-3 for 2001 onwards) to classify all cancers by site and morphology. Cancer deaths are coded using the International Statistical Classification of Diseases and Related Health Problems (ICD-9 for 1986-2000 data and ICD-10 for 2001 onwards).

Secondly, completeness refers to the extent to which all the cancers in Alberta are accurately captured by the ACR. The ACR is notified of new cancers by doctors and laboratories throughout the province, who are mandated to report such information. Cancer-related deaths are recorded and validated by the ACR using registry and Alberta Vital Statistics information. Over the years, the ACR has achieved a completeness of over 95%.

Lastly, validity depends on the documentation available and the level of expertise in the abstracting, coding and recording of data within a registry. The ACR has numerous data edits to ensure all information is input as accurately as possible. For example, date of diagnosis of cancer must be after the date of birth. There are additional data quality reviews performed on ACR data by the Canadian Cancer Registry and the North American Association of Central Cancer Registries (NAACCR).

Confidentiality and security of personal information are protected by the RHA Act and the Health Information Act (HIA). The Alberta Cancer Registry maintains the trust of the public, the government, the data provider, and the general public by requiring rigorous confidentiality and security practices, in accordance with the RHA Act and HIA, to access the Registry database. Formal policies on information disclosure are available on request from the Alberta Cancer Registry.

By recording information on cancer cases and cancer-related deaths over the past few decades, the Alberta Cancer Registry has been able to compare cancer statistics in Alberta with other provinces and countries. The Registry also provides information to health care stakeholders throughout the province so that they can plan effective prevention, treatment and research programs.

For many years, the Alberta Cancer Registry has been certified by NAACCR and has achieved a Gold Standard for completeness of the data, timely reporting and other measures that judge data quality.

Glossary of Terms

Age-specific rates:
The number of new cancer cases or cancer deaths per 100,000 people per year within a given age group.

Age-standardized (incidence/mortality) rates:
A weighted average of age-specific rates using a standard population distribution. They reflect the overall rates that would be expected if the population of interest had an age structure identical to the standard population they used to compare cancer rates among populations or identify trends over time.

Benign:
A tumour that is not malignant (i.e. does not spread).

Carcinoma:
A tumour that begins in the skin or in tissues that line or cover body organs.

Confidence intervals:
An indication of the reliability of an estimate. A wide confidence interval indicates less precision and occurs when a population size is small.

Count:
Count refers to the number of cases (primaries) or deaths in a given time period. One patient may have multiple primaries.

Incidence count:
The frequency of new cancer cases during a period of time; often the number of new invasive cases diagnosed in a year.

Invasive cancer:
Cancer with the ability to spread beyond its point of origin.

Life table:
A life table estimates, for people at a certain age, what the probability is that they die before their next birthday. From this starting point, a number of statistics can be derived and thus also included in the table: a) the probability of surviving any particular year of age; b) remaining life expectancy for people at different ages; c) the proportion of the original birth cohort still alive. They are usually

constructed separately for males and females because of their substantially different mortality rates.

Lymphatic system:
A system of vessels that carry lymph between lymph nodes located throughout the body.

Malignant:
Refers to a tumour that invades and destroys surrounding tissues, may spread elsewhere in the body, and is likely to recur after removal; a cancerous tumour.

Median Age:
The age at which half of the population is older and half is younger.[9]

Metastasis:
Refers to the spread of the original tumour to other parts of the body.

Mortality count:
The number of deaths due to cancer during a period of time.

Potential years of life lost (PYLL):
PYLL is the total number of years of life lost obtained by multiplying, for each age group, the number of deaths by the life expectancy of survivors. The indicator was calculated by obtaining the number of deaths and mean life expectancy for each age group.[4]

Prevalence:
The number of people alive at a specific point in time with cancer. Complete prevalence is the number of people alive today who have *ever* been diagnosed with cancer. In this document, we report complete prevalence.

Primary Site of Cancer:
The tissue or organ in which the cancer originates.[10]

Probability of developing/dying of cancer:
The risk of an individual in a given age range developing/dying of cancer in a given time period, and is conditional on the person being cancer-free prior to the beginning of that age range.

Prognosis:
A prediction about the outcome or likelihood of recovering from a given cancer.

Projection:
An estimate of cancer incidence or mortality in the future, based on recent historical trends.

Rate:
The number of cancer cases or deaths occurring in a specified time period.

Relative survival:
The survival of cancer patients relative to that of the general population, assuming cancer was the only cause of death. It is the ratio of observed survival in a group of cancer patients relative to the expected survival of a similar group of people in the general public, matched by age and sex in Alberta.

Stage of cancer:
Refers to the degree of cancer progression and the size of tumor at the time of diagnosis. If the cancer has spread, the stage describes how far it has spread from the original site to other parts of the body.[9]

Surveillance:
Cancer surveillance includes the collection of data, and the review, analysis and dissemination of findings on incidence (new cases), prevalence, morbidity, survival and mortality. Surveillance also serves to collect information on the knowledge, attitudes and behaviours of the public with respect to practices that prevent cancer, facilitate screening, extend survival and improve quality of life.[11]

Survival - Cohort method:
The cohort method provides survival estimates of cases having complete follow-up for the number of years of survival of interest. For example, cases diagnosed in 2001, for which vital status data are available to the end of year 2006, the cohort method may be used to obtain an estimate of five-year survival. The cohort survival represents the actual survival experience of individuals.

Survival - Period analysis:
The period method provides up-to-date survival estimate of recently diagnosed cases considering the survival experience of those cases within the most recent calendar period that allows for the estimation of a given period of survival. For example, to estimate the five year survival for cases diagnosed in 2004-2006, this method considers zero to one year survival experience for cases diagnosed in 2004-2006, one to two year survival experience for cases diagnosed in 2003-2005 who survived at least one year, and so on up to four to five year survival experience for cases diagnosed in 2000-2002 who survived at least four years.

Three-year moving average:
Three-year moving averages are used to smooth out year-to-year fluctuations in age-standardized rates so that the underlying trend may be more easily observed. They are calculated based on aggregating three years of data.

Tumour:
An abnormal mass of tissue that is not inflammatory, arises without obvious cause from cells of pre-existent tissue, and possesses no physiologic function.

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