Alberta Health Services

Surveillance and Health Status Assessment

Cancer Surveillance

Prostate Cancer

February 2011

2008 Report on Cancer Statistics in Alberta

Acknowledgements

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Purpose of the Report

Cancer Surveillance, a specialized team within Surveillance and Health Status Assessment, Alberta Health Services actively contributes to Becoming the Best: Alberta's 5-year Health Action Plan and the goal to create the best-performing publicly funded health system in Canada. This is accomplished by conducting cancer ***surveillance*** through the collection, integration, analysis and dissemination of cancer related data and information.

The report is designed to provide comprehensive and detailed information regarding cancer in Alberta. It will help support health professionals, researchers and policy makers in the planning, monitoring and evaluation of cancer-related health programs and initiatives. 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 individual cancer types are available within separate documents. The words highlighted in ***dark blue*** are terms described in detail within the **Glossary**.

Data Notes

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 August 6, 2010.

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** males will develop invasive prostate cancer within their lifetime and **1 in 27** will die from the disease.
- In 2008, **2,972** potential years of life were lost due to prostate cancer.
- As of December 31, 2008, approximately **18,920** Albertans were alive who had previously been diagnosed with prostate cancer.
- From 2001 to 2008*, prostate cancer **incidence rates decreased**.
- From 1995 to 2008*, prostate cancer **mortality rates decreased**.
- In 2008, there were **2,177** new cases of prostate cancer in Alberta and **345** deaths due to the disease.
- If current trends continue, approximately **2,650** cases of prostate cancer are expected to be diagnosed in 2013.
- The five-year relative survival for prostate cancer in Alberta is approximately **95%** for those diagnosed between 2006 and 2008.

The five-year relative survival for prostate cancer in Alberta is approximately 95% for those diagnosed between 2006 and 2008.

* Year range represents the period over which the most recent significant trend was observed.

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 as the probabilities will be affected by the risk behaviours of the individual. 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, 2006-2008**

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 364
50 - 60	1 in 46
60 - 70	1 in 17
70 - 80	1 in 14
80+	1 in 14

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

The probability of developing prostate cancer increases with age (***Table 3-1***). Approximately 1 in 6 males will develop invasive prostate cancer in their lifetime.

On a population basis 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 are shown in the bottom eight rows of ***Table 3-1***. For instance, a prostate cancer-free male representative of the general population at age 50 has a 1 in 46 chance of developing prostate cancer by the time he is 60.

The probability of dying from prostate cancer varies by age (***Table 3-2***). Approximately 1 in 27 males will die of invasive prostate cancer.

On a population basis the probability of a cancer-free individual at the beginning of the age range dying from prostate cancer by the end of the age range are shown in the bottom eight rows of the ***Table 3-2***. For example, a cancer-free male representative of the general population at age 50 has a 1 in 1,527 chance of dying from prostate cancer by the time he is 60.

Potential Years of Life Lost

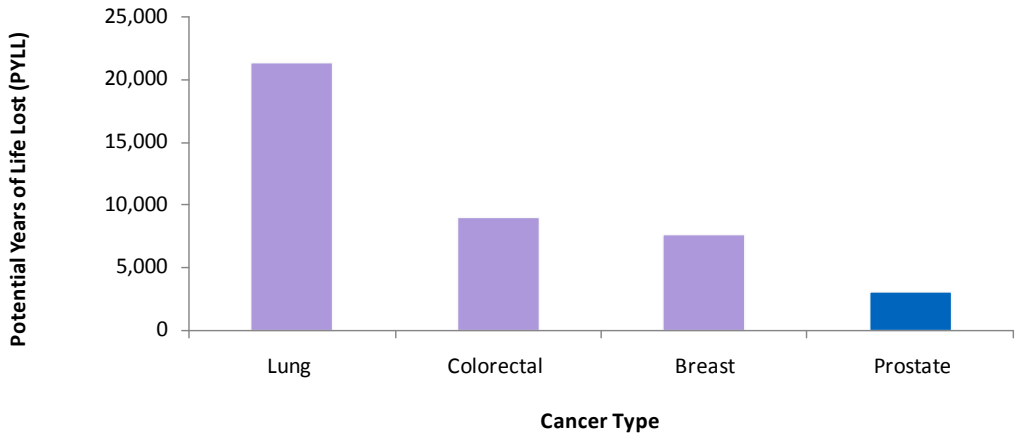
One frequently used measure of premature death is ***potential years of life lost (PYLL)***. PYLL due to cancer is an estimate of the number of years that people would have lived had they not died from cancer. PYLL due to cancer has been calculated by multiplying the number of deaths in each age group and the absolute difference between the mid-point age of an age group and the age-specific life expectancy. The age-specific 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.

Table 3-2: **Probability of Dying from Prostate Cancer by Age and Sex, Alberta, 2006-2008**

Age Group	Males
Lifetime Risk (all ages)	1 in 27
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	Less than 1 in 10,000
50 - 60	1 in 1,527
60 - 70	1 in 270
70 - 80	1 in 79
80+	1 in 23

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

Figure 3-1: **Potential Years of Life Lost (PYLL) from Prostate* Cancer Compared with Lung†, Colorectal† and Breast‡ Cancer, Alberta, 2008**



* Male only
† Male and Female
‡ Female only

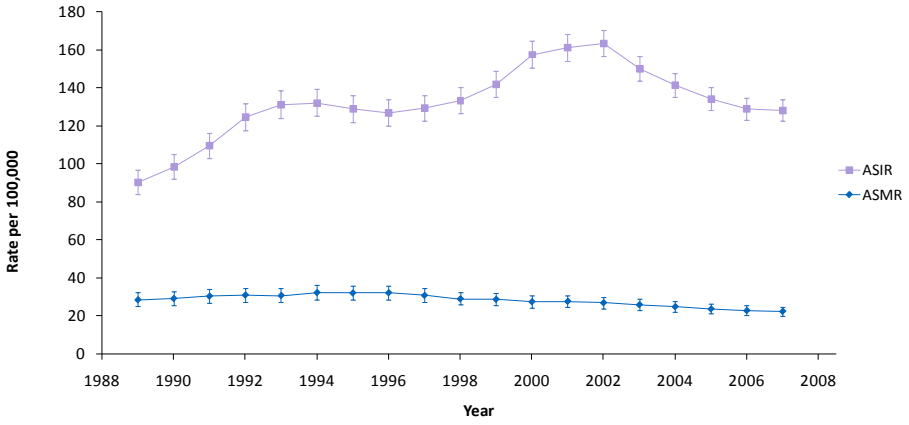
Data Source: Alberta Cancer Registry

Table 3-3: **Limited-Duration and Complete Prevalence for Prostate Cancer, Males, Alberta, 2008**

Age Group	Males
2-Year	3,949
5-Year	8,979
10-Year	15,503
20-Year	18,841
Complete	18,923

Data Source: Alberta Cancer Registry

Figure 3-2: **Age-Standardized Incidence Rates (ASIRs)[*†] and Mortality Rates (ASMRs)[*†] for Prostate Cancer, Males, Alberta, 1988-2008**



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

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

In 2008, **2,972** potential years of life were lost due to prostate cancer, which constitutes 3.4% of PYLL for all cancers (***Figure 3-1***).

Prevalence

The ***prevalence*** of a disease is defined as the number of people alive who had been previously diagnosed with that disease.

Limited-duration prostate cancer prevalence represents the number of people alive on a certain day who had previously been diagnosed with prostate cancer within a specified number of years (e.g. 2, 5, 10 or 20 years) while complete prostate cancer prevalence represents the proportion of people alive on a certain day who had previously been diagnosed with prostate cancer, regardless of how long ago the diagnosis was.[12]

In this section of the report, both limited-duration and complete prostate cancer prevalence are presented; the latter describing the number of people alive as of December 31, 2008 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, 2008, approximately **18,920** Albertans were alive who had previously been diagnosed with prostate cancer (***Table 3-3***). Approximately **3,950** Albertans were alive on the

same date who had been diagnosed with prostate cancer in the previous two years, the period during which cases receive definitive treatments.

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 among populations that differ in size, structure and/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 figures show incidence and mortality trends in Alberta. Separate analyses for both incidence and mortality are shown in subsequent sections. The statistical significance of the trends was determined by using Joinpoint[2] and is 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).

Since 1988 there have been two peaks in prostate cancer ASIRs (***Figure 3-2***). 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] Prostate cancer ASIRs significantly increased by an average annual increase of 11.0% between 1988 and 1993 and by 8.0% between 1997 and 2001. ASIRs decreased significantly from 2001 to 2008 by an average annual decrease of 4.6%. In 2008, the ASIR for prostate cancer was 126.8 per 100,000 male population.

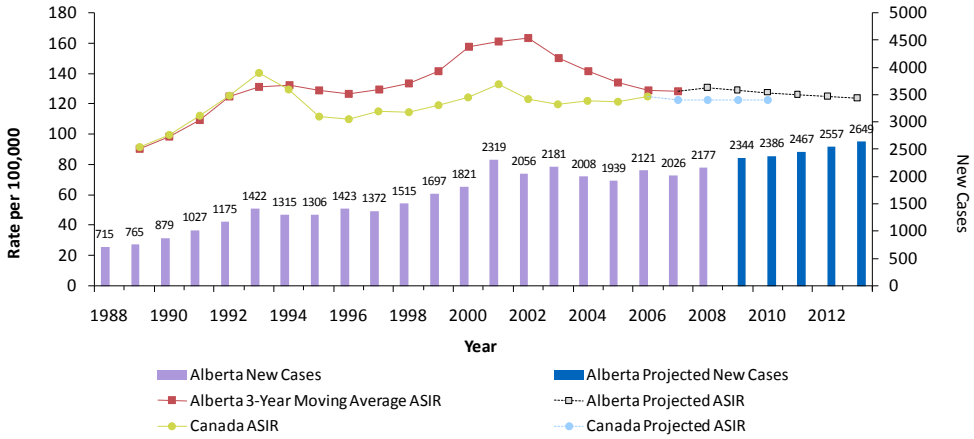
Prostate cancer mortality rates have been much lower and more stable than incidence rates. There have been two periods of significant trends in ASMRs for prostate cancer since 1988 (***Figure 3-2***). Between 1988 and 1995 prostate cancer ASMRs significantly increased by an average annual increase of 2.4%. From 1995 to 2008, prostate cancer significantly decreased by an average annual decrease of 3.1%. In 2008, the ASMR for prostate cancer was 22.2 per 100,000 male population.

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 2008-2013 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 2009-2013)

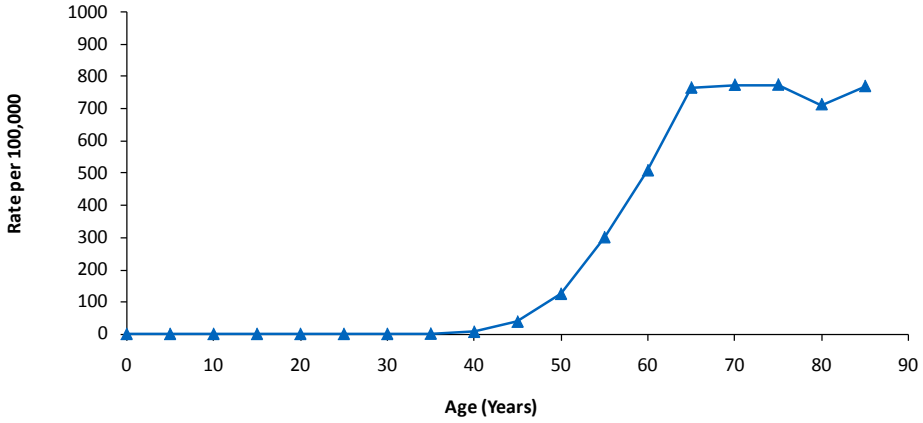
Figure 3-3: **Actual and Projected Number of New Cases and Age-Standardized Incidence Rates (ASIRs)*† for Prostate Cancer, Males, Alberta, 1988-2013**



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

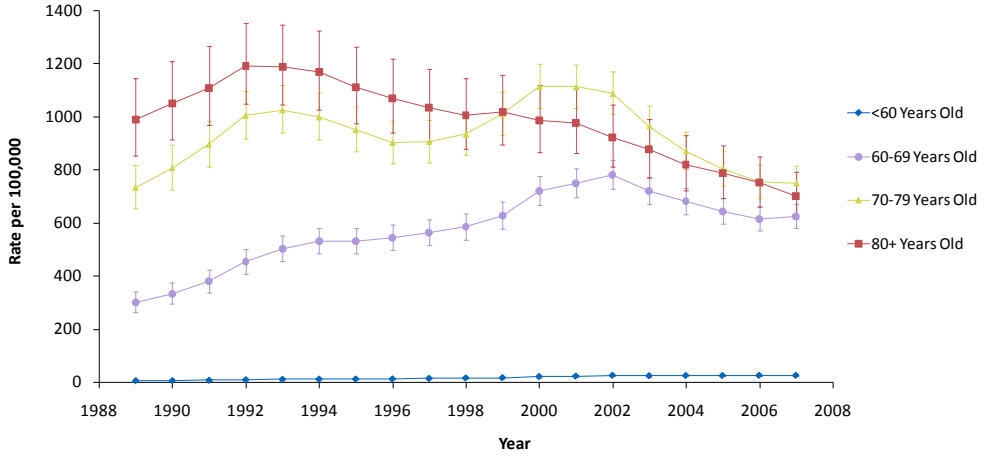
Data Source: Alberta Cancer Registry, Alberta Health and Wellness, Canadian Cancer Society

Figure 3-4: **Age-Specific Incidence Rates for Prostate Cancer, Males, Alberta, 2004-2008**



Data Source: Alberta Cancer Registry, Alberta Health and Wellness

Figure 3-5: **Age-Standardized Incidence Rates (ASIRs)*† for Prostate Cancer, Age Groups <60, 60-69, 70-79, and 80+, Males, Alberta, 1988-2008**



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

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

In 2008, 2,177 cases of prostate cancer were diagnosed in Alberta. If current trends continue, approximately 2,650 prostate cancer cases will be diagnosed in Alberta in 2013.

provided by Alberta Health and Wellness[5]. Caution should be exercised when comparing Canada and Alberta rates.

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.

In 2008, 2,177 cases of prostate cancer were diagnosed in Alberta (***Figure 3-3***). This represents approximately three times more cases than diagnosed in 1988. Overall, ASIRs for prostate cancer in Alberta were higher than ASIRs in Canada over the period 1995 to 2005. However the ASIRs peaked in the same time period for both Alberta and Canada, and currently the ASIRs are similar for the two geographies.

If current trends continue, approximately 2,650 prostate cancer cases will be diagnosed in Alberta in 2013.

Age-specific prostate cancer incidence rates remain low until the age of 40, when they begin rising rapidly and peak at approximately age 65 (***Figure 3-4***).

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

Incidence rates for prostate cancer in the <60 year age group significantly increased between 1988 and 2001 by an annual average of 13.3%, with no significant change after 2001.

Prostate cancer incidence rates for the 60-69 year age group significantly increased between 1988 and 1993 by an annual

average of 15.7%, did not significantly change between 1993 and 2001, and significantly decreased between 2001 and 2008 by an annual average of 4.1%.

Prostate cancer incidence rates for the 70-79 year age group significantly increased between 1988 and 1993 by an annual average of 10.0%, did not significantly change between 1993 and 1997, significantly increased between 1997 and 2001 by an annual average of 9.0%, significantly decreased between 2001 and 2005 by an annual average of 10.4%, and did not significantly change since 2005.

Prostate cancer incidence rates for the 80+ year age group significantly increased between 1988 and 1993 by an annual average of 5.3%, and significantly decreased between 1993 and 2008 by an annual average of 3.8%.

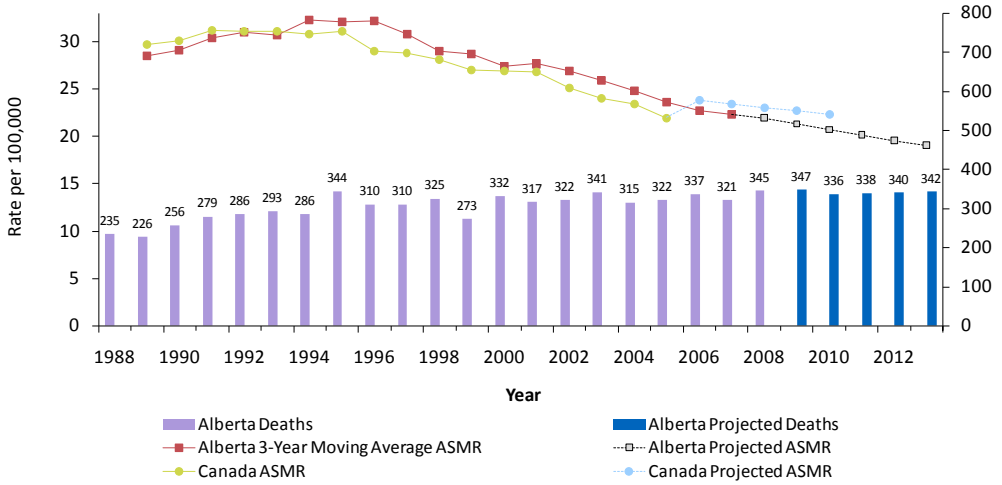
The rates for the <60 year age group were lower than those for all other age groups.

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 2007-2013 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

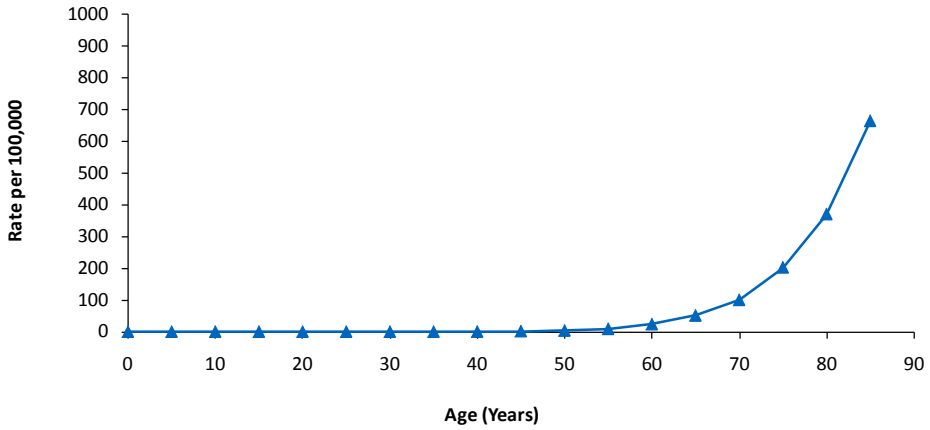
Figure 3-6: **Actual and Projected Number of Deaths and Age-Standardized Mortality Rates (ASMRs)*† for Prostate Cancer, Males, Alberta, 1988-2013**



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

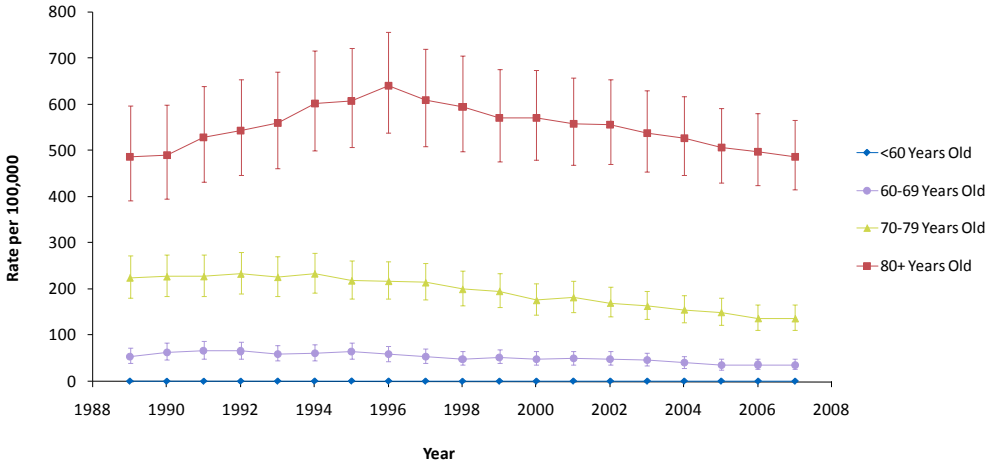
Data Source: Alberta Cancer Registry, Alberta Health and Wellness, Canadian Cancer Society

Figure 3-7: **Age-Specific Mortality Rates for Prostate Cancer, Males, Alberta, 2004-2008**



Data Source: Alberta Cancer Registry, Alberta Health and Wellness

Figure 3-8: **Age-Standardized Mortality Rates (ASMRs)*† for Prostate Cancer, Ages <60, 60-69, 70-79, and 80+, Males, Alberta, 1988-2008**



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

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

projected age specific population figures (observed up to 2008 and estimated for 2009-2013) provided by Alberta Health and Wellness[5]. Caution should be exercised when comparing Canada and Alberta rates.

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.

In 2008, 345 males died of prostate cancer in Alberta (***Figure 3-6***). ASMRs for prostate cancer in Alberta were lower than ASMRs in Canada over the period 1988-1993 and were higher than ASMRs in Canada over the period 1993-2005.

If current trends continue, approximately 350 males are expected to die from prostate cancer in Alberta in 2013.

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

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

Prostate cancer mortality rates in the age group <60 did not significantly change between 1988 and 2008.

Mortality rates for prostate cancer in the age group 60-69 did not significantly change between 1988 and 1991, but significantly decreased between 1991 and 2008 by an annual average of 3.9%.

Mortality rates for prostate cancer in the age groups 70-79 significantly decreased between 1988 and 2008 by an annual average of 3.0%.

Mortality rates for prostate cancer in the age group 80+ significantly increased between 1988 and 1995 by an annual average of 4.7%, but significantly decreased by an annual average of 2.1% between 1995 and 2008.

The older the age group, the higher the mortality rate.

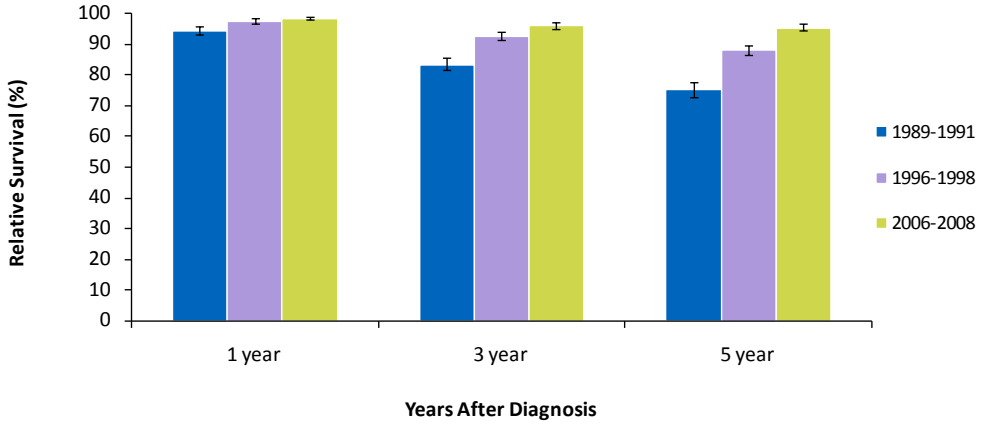
Prostate Cancer Survival

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*** (RSRs) 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 at 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. In this section of the report, RSRs are standardized by the age structure in the standard population (i.e. all persons who were diagnosed with that cancer in Canada between 1992 and 2001)

Figure 3-9: **Age-Standardized One, Three and Five-Year Relative Survival Ratios for Prostate Cancer, Males, Alberta, 1989-1991*, 1996-1998* and 2006-2008**



* Ratios calculated by cohort method, where complete follow-up data are available.
† Ratios calculated by period method, where complete follow-up data are not available.

Data Source: Alberta Cancer Registry, Statistics Canada

to permit RSRs to be compared over time, independent of differences in age distribution of cancer cases.

RSRs are estimated by the ***cohort method*** 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***. However, comparison between cohort and period RSRs should be interpreted with caution because of the two different methods used to derive the respective ratios.

The 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.

The five-year relative survival ratio for males diagnosed with prostate cancer in the period 2006-2008 is an estimated 95% indicating that out of all males diagnosed with this cancer between 2006 and 2008, around 95% are as likely to be alive five years after diagnosis as males from the general Alberta population of the same age.

The five-year relative survival ratio for males diagnosed with prostate cancer in Alberta has improved in 2006-2008 compared to those diagnosed in 1989-1991 cohort years (***Figure 3-9***).

Figure 3-10: **Five Health Zones in Alberta, 2010**

Data Source: Alberta Health Services

Geographic Variation

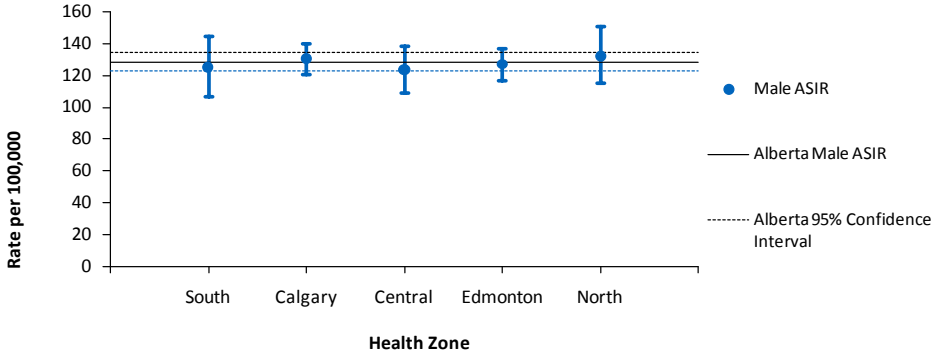
The geographic variation section illustrates how the observed rates in each health zone compare with the provincial average. These rates are three-year averages. The age standardized incidence and mortality rates for each zone are presented with their corresponding 95% ***confidence intervals***. Any 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]

There is no evidence that male prostate cancer ASIRs in the zones are higher or lower than the provincial average (***Figure 3-11***).

There is no evidence that male prostate cancer ASMRs in the zones are higher or lower than the provincial average (***Figure 3-12***).

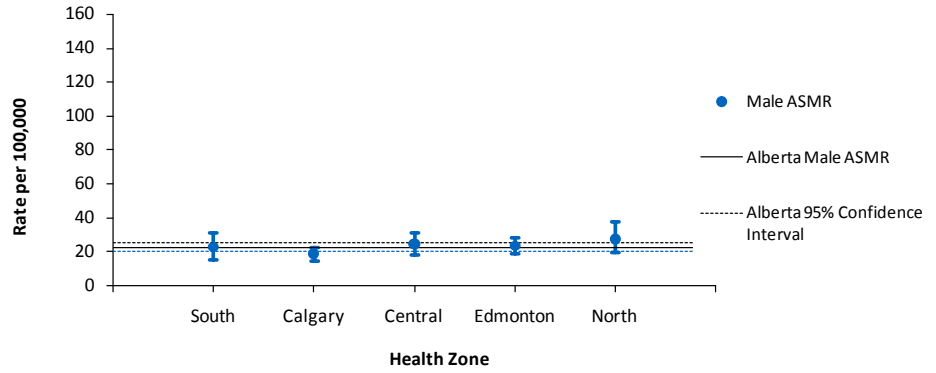
Figure 3-11: **Age-Standardized Incidence Rates (ASIRs)[*†] for Prostate Cancer by Zone, Males, Alberta, 2006-2008[‡]**



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

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

Figure 3-12: **Age-Standardized Mortality Rates (ASMRs)[*†] for Prostate Cancer by Zone, Males, Alberta, 2006-2008[‡]**



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

Data Source: Alberta Cancer Registry, Alberta Health and Wellness

Further Information

Data Sources and Quality

Most of 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 1988-2000 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 1988-2000 data and ICD-10 for 2001 onwards).

Secondly, completeness refers to the extent to which all the newly diagnosed cancers among Albertan residents 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 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 primary sites.

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; and 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]

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 and is 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. Limited-duration prevalence represents the number of people alive on a certain day who had previously been diagnosed with lung cancer within a specified number of years (e.g. 2, 5, 10 or 20 years) In this document, we report both complete and limited-duration 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. 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 2008, 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 estimates 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 2004-2008, this method considers zero to one year survival experience for cases diagnosed in 2004-2008, 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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