

PLANET WEB PORTAL: PROVINCIAL CANCER PROFILES STAT DOCUMENTATION

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INTRODUCTION

The North American Association of Central Cancer Registries, Inc. (NAACCR) is a professional organization that develops and promotes uniform data standards for cancer registration; provides education and training; certifies population based registries; aggregates and publishes data from central cancer registries; and promotes the use of cancer surveillance data and systems for cancer control and epidemiologic research, public health programs, and patient care to reduce the burden of cancer in North America.

The 2008 release of the Provincial Cancer Profiles Website includes data from 13 central population-based registries: 10 provinces and 3 territories.

SOURCES OF DATA

Code	Province	Mortality from Statistics Canada	Population from Statistics Canada	Incidence from Statistics Canada	Incidence from Registry
AB	ALBERTA	1995-2005	1995-2005		1995-2005
BC	BRITISH COLUMBIA	1995-2005	1995-2005	1995-2005	
MB	MANITOBA	1995-2005	1995-2005		1995-2005
NB	NEW BRUNSWICK	1995-2005	1995-2005	1995-2005	
NL	NEWFOUNDLAND and LABRADOR	1995-2005	1995-2005	1995-2005	
NS	NOVA SCOTIA	1995-2005	1995-2005		2001-2005
NT	NORTHWEST TERRITORIES	1995-2005	1995-2005	1995-2005	
NU	NUNAVUT	1995-2005	1995-2005		1995-2005
ON	ONTARIO	1995-2004	1995-2005		1995-2005
PE	PRINCE EDWARD ISLAND	1995-2005	1995-2005	1995-2005	
QC	QUEBEC	1995-1999	1995-2005	1995-2004	
SK	SASKATCHEWAN	1995-2005	1995-2005	1995-2005	
YT	YUKON	1995-2005	1995-2005	1995-2005	

CANCER SITE CODING, 2001-2005

During the development of the prototype website, the Canadian Cancer Statistics, 2008 report was used as a guide to research current data display and coding practices. The report can be found here:

http://www.cancer.ca/Canada-wide/About%20cancer/Cancer%20statistics/Canadian%20Cancer%20Statistics.aspx?sc_lang=en

Incidence Data - All cancer registries use the International Classification of Diseases for Oncology, third edition (ICD-O-3) to code the anatomic site and morphology. Cancer incidence statistics include invasive cancers only, with the exception of in situ cancer of the bladder. Although tables include incidence statistics for breast cancer in situ, these cases are not included in any counts or rates of total cancer incidence.

The SEER program site recode groups were used for classifying types of cancer, using anatomic site and morphology. Using this standard ontology, only squamous and basal cell carcinomas of the lip and genital organs are included in the data reported.

Summary tables of all codes and site groups for incidence can be found on the website:

<http://cancerprofiles.ca/icdrecode.html>

Mortality Data - Underlying cause of death was coded using the International Classification of Diseases (ICD). In the United States, ICD-10 was used for all deaths from 1999 and later. In Canada, ICD-9 was used through 2000, and ICD-10 was used for 2001 and later. Cancer deaths were defined as those coded 140.0 through 208.9 in ICD-9 and C00 through C97 in ICD-10.

The SEER mortality recode scheme was used to classify cancer deaths into the groupings used on the website: <http://cancerprofiles.ca/codrecode.html>

CANCER CODING CHANGES DURING 2001-2005

Cancer Incidence - Several definitional changes occurred in some histologies and behaviours in ICD-O-3 that affected the inclusion and exclusion of reportable cancers diagnosed beginning in 2001. These changes may affect the comparability of data reported here with previous CINA monographs. The changes predominately affected leukemias, lymphomas, and cancer of the ovary. One category of change between ICD-O-2 and ICD-O-3 is the manner in which leukemias and lymphomas are classified and coded. Although conversion of histology codes from ICD-O-2 to ICD-O-3 for cases diagnosed prior to 2001 will help to minimize these differences, some minor differences may still exist, particularly with respect to some relatively rare lymphocytic cancers that can be coded to either leukemia or lymphoma. Leukemias that represent a disease progression from one of the myelodysplastic diseases or syndromes diagnosed in 2001 and forward are no longer reportable. It is unlikely that this change will have much impact on the counts or rates for leukemia in this monograph, but the effect may be larger in subsequent years.

Starting with ICD-O-3, several myelodysplastic diseases and syndromes are considered malignant, and therefore are now reportable for cases diagnosed in 2001 and later.

For pediatric cancers, differences in incidence rates from previously published rates may be due to changes between the second and third edition of the International Classification of Childhood Cancers (ICCC). For example, incidence rates on non-Hodgkin lymphoma cancers presented are much higher than those calculated using the previous version of ICCC. Two changes in the ICCC-3 classification are main contributors to this change. 1) Burkitt lymphoma and unspecified lymphoma, which were separated from non-Hodgkin lymphoma in previous monographs, are combined with non-Hodgkin lymphoma in this monograph; 2) Some lymphomas, which were grouped in the miscellaneous lymphoreticular neoplasms in previous calculation methods, are included in the non-Hodgkin lymphoma category of this monograph.

Pilocytic astrocytoma is considered to have uncertain behaviour in the published version of ICD-O-3, but is reportable as a malignant cancer in North America. Including the childhood astrocytomas in the category of malignant brain tumours may introduce differences between childhood brain cancer rates in North America compared to other areas of the world that may not include these tumours as malignant.

In addition, mesothelioma and Kaposi's sarcoma cases were reported as separate categories. This change has little or no impact on most rates for specific cancers.

Cancer Mortality - Among the many changes in ICD-10 were increases in classification detail, the shift to an alphanumeric classification system, and a number of changes in the coding rules by which a single cause of death is selected from among the multiple causes reported by physicians as causing or contributing to the death. The change from ICD-9 to ICD-10 caused discontinuities in trends for many causes of death, including cancer. The extent of these discontinuities has been measured by comparability studies in which death records are double coded using both the Ninth and Tenth Revisions, and the results compared. Overall, approximately 0.7% more deaths are assigned to cancer when ICD-10 is used than when ICD-9 is used (Anderson, et al, 2001). For some cancers, the differences are larger. Accordingly, the death rate for all cancers combined is higher when ICD-10 is used than when ICD-9 is used. This general rule does not hold for specific cancer sites, whose rates may be higher or lower using ICD-10. However, as discontinuities are small, changes in death rates across the years of the ICD-9/ICD-10 boundary are still interpretable, especially for major cancer sites.

Cancer deaths among non-residents and deaths of unknown sex or age were omitted from all calculations.

CALCULATION OF STATISTICS

Rates - Rates are per 100,000 population and are age-adjusted by five-year age groups to the 1991 Canadian standard population.

Standard Errors - Standard errors (S.E.) of the rates were calculated using the formula:

$$S.E. = \sqrt{\sum \frac{w_j^2 n_j}{p_j^2}}$$

where w_j = the fraction of the standard population in age group j , n_j = number of cases or deaths in that age group, and p_j = person years denominator (Breslow and Day, 1987). For many registries, the standard errors of the rates are small, as the population covered is large. However, for registries that cover a small population, the standard error may be substantial.

Confidence Intervals - The confidence intervals allow the user to assess the precision of the estimate and is an approximate and conservative indicator of whether a registry's rate is statistically higher or lower than the rate for the combined Canada, based on whether or not the upper or lower limit of the confidence interval overlaps the 95% confidence interval for the Canada.

Comparison of Rates - In addition to true regional variation in cancer risk, differences in cancer incidence or mortality rates between areas may be due to either differences in the demographic make up of the population or differences in data quality. In making valid comparisons of cancer incidence rates among registries, it is important to review the data quality indicators for each registry before attributing rate differences to regional variation.

Cell Suppression - Counts and rates were suppressed (indicated by “*”) in the tables if the age, gender, and site-specific number of cases or deaths was less than six. These counts are included in the calculation of all sites combined. If subtraction of the count of one statistic to another is possible to get a count of less than six, the other statistic was suppressed.

Tables

Rate/Trend Comparison - This “table” compares five year mortality rates versus the most recent mortality trend which has been calculated using joinpoint. The table can be displayed for a specific cancer or for a specific registry.

Mortality Rates - This table displayed one or five year mortality rates with the most recent mortality trend calculated using joinpoint. The table is initially sorted by mortality rate but can be sorted by average annual number of deaths or alphabetically. A link to make a map from this table is available.

Incidence Rates - This table displayed one or five year incidence rates with the most recent incidence trend calculated using joinpoint. The table is initially sorted by incidence rate but can be sorted by average annual number of cases or alphabetically. A link to make a map from this table is available.

Graphs and Maps

5-Year Rate Changes - This graph shows for a specific geographic area, the five-year incidence or mortality rate change for a selected set of cancer sites.

Historical Trends - This graph shows the observed annual cancer rate in addition to a joinpoint regression line on the data. Multiple lines can be added to the graph to compare different areas, cancer sites, sex and/or age groups. Incidence and mortality data are both available.

Comparative Data Display - This graph allows the user to show statistics side-by-side on one Web page. Data can be accessed to create a graph from rates, counts and trends.

Interactive Maps - This section of the website allows a user to create incidence and mortality rates maps while using quantiles or equal area to determine the groups. These maps can also be accessed from the incidence rate and mortality rate tables through a link.

Quick Profiles

Quick Profiles - This section of the website allows a user to see a snapshot of what the website has to offer for a selected area and cancer site. This is a good starting point for a novice user. Tables, graphs and maps from the other parts of the website are generated with the creation of this "quick profile".

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