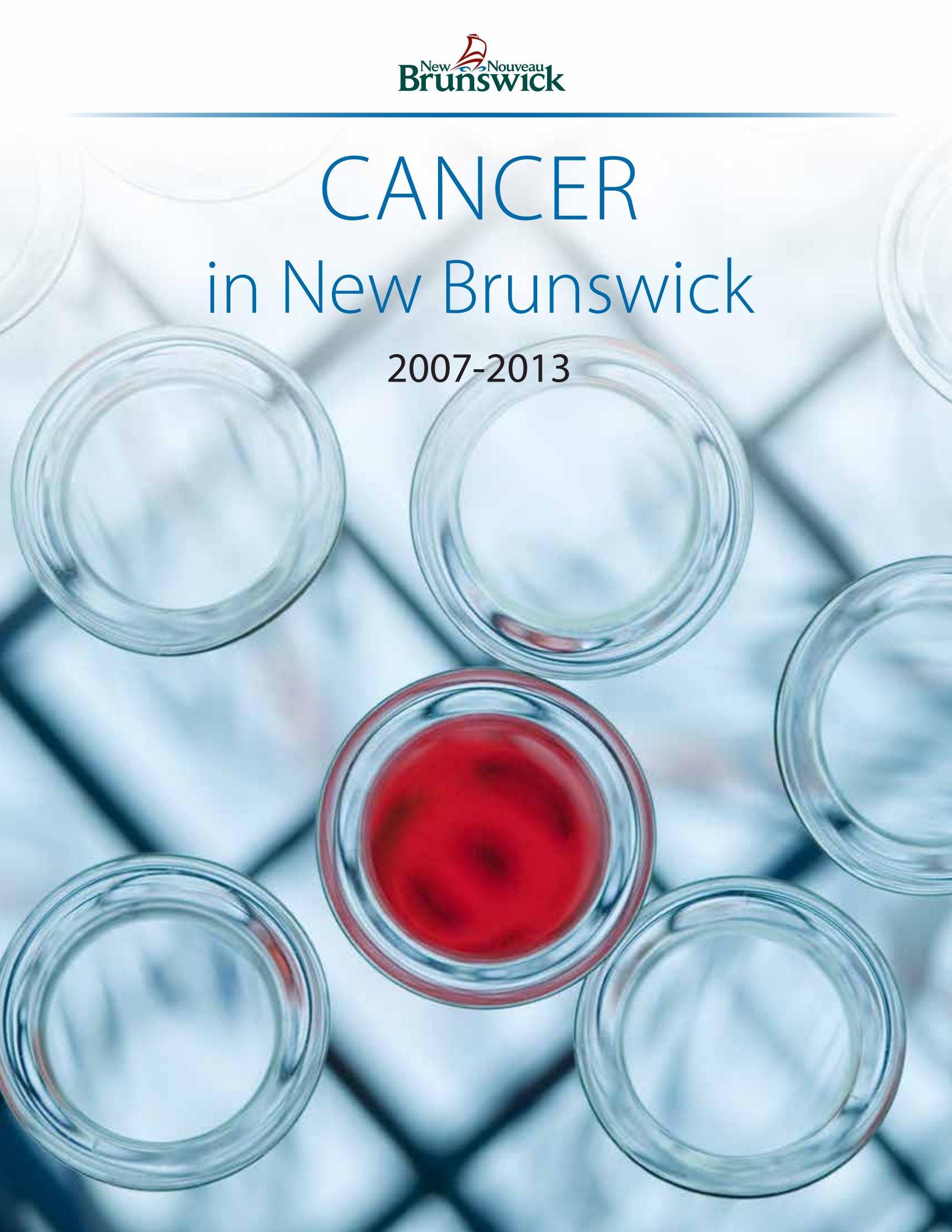
New Nouveau Brunswick

CANCER
in New Brunswick

2007-2013



To provide feedback or offer suggestions, please contact:

New Brunswick Cancer Network, Department of Health
P.O. Box 5100, HSBC Place, 2nd Floor
Fredericton, New Brunswick E3B 5G8
Phone: 1-506-453-5521
Fax: 1-506-453-5522

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Également offert en français sous le titre: Le cancer au Nouveau-Brunswick 2007-2013

www.gnb.ca/health

ISBN - 978-1-4605-1826-7 – bilingual paper
ISBN - 978-1-4605-1827-4 – English pdf

Message from the New Brunswick Cancer Network

The New Brunswick Cancer Network (NBCN), responsible for the development, implementation and evaluation of the provincial cancer strategy for all elements of cancer care, is pleased to release the *Provincial Cancer Report 2007-2013*. This is the fourth New Brunswick (NB) cancer report and the second report produced by the NBCN. The purpose of this Report is to provide updated information on cancer statistics in an effort to further our understanding of the burden of cancer in New Brunswick and support planning for health services. We trust that this information will be useful to health professionals, decision-makers, researchers and the public.

This Report expands on the previously published information with the addition of cancer prevalence, cancer survival by stage for the four top cancers and Geographic Information System (GIS) mapping of the geographical distribution for four leading cancers across NB.

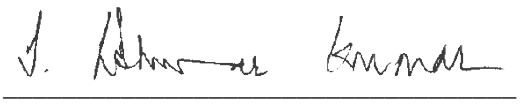
Historically, incidence and mortality data have been collected on all diagnosed cancers in New Brunswick since 1950's. As of 2007, through the National Cancer Staging and Pathology Synoptic Reporting Initiative and support from the Canadian Partnership Against Cancer, NBCN increased surveillance capabilities and is now able to collect staging, molecular, genetic and hormonal data for analysis of breast, colorectal, lung and prostate cancers. These cancers account for over 50% of newly diagnosed cancers per year in NB.

Going forward, accurate and timely cancer registration will be even more important as the number of new cases in NB is predicted to increase, primarily due to the aging of population. The annual number of newly diagnosed invasive cancer cases in 2030 is expected to be 7,128 for both sexes. Compared to the actual number of new cases in the year 2013 (4,733) this represents an increase of 50.6%.

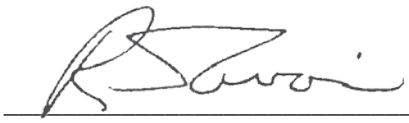
Despite an increase in the number of new cases the overall cancer mortality and survival rates for selected cancers have improved compared to the last reporting period (2002-2006). We hope to see continuation of these trends with advancements in cancer treatments as well as development of cancer screening programs to diagnose and treat cancers at an earlier stage when treatments are more effective.

We extend our sincere thanks to Dr. Bin Zhang, Senior Epidemiologist for his leadership in preparing this report and NB Provincial Cancer Registry staff for their diligent data collection efforts.

Your comments and recommendations for the future improvements of cancer burden reporting in NB are encouraged. An evaluation form is included for feedback.



Dr. S. Eshwar Kumar
Medical Officer, NBCN



Dr. Réjean Savoie
Medical Officer, NBCN

Acknowledgments

The New Brunswick Cancer Network wishes to acknowledge the contributions of the following individuals in producing this cancer report.

Cancer in New Brunswick 2007-2013 Steering Committee:

Dr. Bin Zhang
(Chair Steering Committee)
Senior Epidemiologist
Health Analytics, Department of Health, NB

Linda Varner
NB Colon Cancer Screening Program
Implementation Manager
NBCN, Department of Health, NB

Murielle Munro
Administrative Support
NBCN, Department of Health, NB

Jenna Clarkson
Business Analyst
Primary Health Care, Department of Health, NB

Shirley Koch
Coordinator of Cancer Screening
NBCN, Department of Health, NB

Suzanne Leonfellner
Coordinator of Cancer Diagnosis, Staging and Surgery and Manager of NB Cancer Registry NBCN, Department of Health, NB

NBCN would like to acknowledge the following individuals:

Dr. Grlica Bolesnikov
Director of Operations (Acting), NBCN, Department of Health, NB

Roberte Vautier
Coordinator of Palliative, Support and Primary Care, NBCN, Department of Health, NB

Erica Craig
Provincial Pharmacy Director, NBCN, Department of Health, NB

Lisa Lemieux
Administrative Support, NBCN, Department of Health, NB

NBCN would also like to thank the following individuals and organizations for providing information in the preparation of this cancer report.

New Brunswick Provincial Cancer Registry

Maurice Levesque, CTR
Supervisor - Administrative Service Officer 5

Raymonde LeBlanc Cleveland, CTR
Administrative Service Officer 3

Cynthia MacDonald
Administrative Service Officer 3

Lisa Margaris, CHIM
Administrative Service Officer 3

Sheila McCrea, CTR
Administrative Service Officer 3

Laurie Orford
Administrative Service Officer 2

Service New Brunswick

Robert Breau
Manager, Registration, Systems and Data Unit

Corporate Communications Branch, Service New Brunswick

Anne Moore
Administrative Officer

Public Health Agency of Canada

Dr. Alain Demers
Senior Epidemiologist

Dr. Dianne Zakaria
Epidemiologist / Biostatistician

Statistics Canada
Demography Division

Table of Contents

2007-2013 New Brunswick Cancer Highlights

Cancer Incidence and Mortality Profiles

Cancer Incidence

- In New Brunswick, about 4,588 new invasive cases have been diagnosed annually between 2007 and 2013. For both genders combined, on average, 12.6 new cancer cases were diagnosed per day for the period 2007-2013 compared to 10.7 new cancer cases per day between 2002 and 2006.
- The total number of new cancer cases in males increased from 10,495 in 2002-2006 to 17,362 cases in 2007-2013 and for females from 9,063 to 14,757 cases. The age-standardized incidence rate (*ASIR*) of all cancers combined for males was stable over the last decade (499.9 cases in 2002-2006[1] to 501.3 cases per 100,000 population in 2007-2013), but it was slightly increased for females (357.8 to 374.4 cases per 100,000 population; Tables 1-2).
- The four leading cancers in New Brunswick were lung (15.5%, 4,983/32,119), colorectal* (12.5%, 4,012/32,119), prostate (15.0%, 4,821/32,119) and breast cancer (12.5%, 4,017/32,119). Prostate cancer continued to be the leading site for males (27.8% 4,821/17,362) and breast cancer for females (26.9%, 3,977/14,757).
- In males, prostate, lung and colorectal cancers accounted for 57.1% (9,920/17,362) of all cancers diagnosed between 2007 and 2013. For females, a similar proportion (53.4%, 7,873/14,757) was attributed to breast, lung and colorectal cancers in this period.

Cancer Mortality

- The age-standardized mortality rates (*ASMR*) declined for all cancers combined in both males and females. For males, the ASMR declined from 229.2 deaths in 2002-2006 to 199.5 deaths per 100,000 population in 2007-2013, and for females from 148.4 to 137.2 deaths per 100,000 population (Tables 3-4).
- An improvement in mortality rates was observed in cancers such as stomach, colon and rectum, lung and bronchus, prostate and non-Hodgkin's lymphoma in males; colon and rectum, breast and cervix uteri in females.
- Lung cancer was the leading cause of cancer-related deaths (29.4%, 3,777/12,833) between 2007 and 2013 for both males and females, accounting for 32.3% (2,209/6,840) and 26.2% (1,568/5,993) of cancer deaths, respectively. Approximately one out of three cancer deaths in males and one out of four in females was due to lung cancer alone.
- Colorectal cancer was the second leading cause of cancer-related deaths (11.2%, 764/6,840) in males, followed by prostate cancer (9.6%, 658/6,840). For females, breast and colorectal cancers were the second and third leading cause of cancer-related deaths, accounting for 13.5% (812/5,993) and 11.4% (684/5,993), respectively.

Age and Sex Distribution of Cancer

- In males, 75.2% (13,049/17,362) of new cases and 84.9% (5,808/6,840) of deaths due to cancer occurred among those who were 60 years or older. In females, 67.3% (9,925/14,757) of new cases and 82.6% (4,948/5,993) of cancer deaths occurred amongst those 60 years and older.
- Leukemia (36.7%, 51/139), brain (13.7%, 19/139), lymphoma (12.2% 17/139) and soft tissue (11.5%, 16/139) cancers were major cancer sites for children less than 14 years of age. These cancer sites accounted for approximately 76.8% (53/69) of all cancers diagnosed in males and 71.4% (50/70) in females.
- Lymphoma (17.0%, 59/347), thyroid (13.8%, 48/347), melanoma of the skin (7.8%, 27/347) and testis (16.4%, 57/347) were major cancer sites for adolescents and young adults from 15 to 29 years of age. These cancer sites consisted of 59.9% (103/172) of all cancers diagnosed in male and 50.3% (88/175) in female adolescents and young adults.

* Colon and Rectum

- Lung (15.5%, 4,980/32,119), prostate (15.0%, 4,821/32,119), breast (12.5%, 4,005/32,119) and colorectal (12.5%, 4,000/32,119) were major cancer sites for adults who were 30 years or older. In total, these cancer sites constituted 58.1% (9,950/17,121) of all cancers diagnosed in males and 54.1% (7,856/14,512) in females, respectively.

Geographic Distribution of Cancer

The geographic boundaries of New Brunswick's seven health regions (HR) are illustrated on Page 16.

Leading cancers

- The distribution of leading cancers (prostate, breast, lung and colorectal) by HR is illustrated in Figures I-IV. In all health regions, the leading cancer diagnosed in males was prostate (except HR5) and in females was breast. Lung cancer was the leading cause of cancer-related deaths in males and females, and was responsible for more deaths than prostate, breast and colorectal cancers combined.

Prostate cancer

- HR7 had the highest incidence rate for prostate cancer of 215.5 cases per 100,000 population, while the lowest rate occurred in HR3 (99.1 cases). The incidence rate in HR1 (143.1 cases) and HR4 (158.7 cases) were slightly higher than the provincial rate (133.5 cases).
- A significantly higher mortality rate was observed in HR4 (27.7 deaths per 100,000) in contrast to the provincial average (19.5 deaths).

Breast cancer

- HR1 had the highest incidence rate for female breast cancer at 113.0 cases, while the lowest rate was seen in HR7 (92.6 cases), compared with the provincial rate of 101.7 cases.
- Mortality rates across the seven health regions were comparable to the provincial rate (18.5 deaths).

Lung cancer

- In males, the highest and second highest incidence and mortality rates for lung cancer occurred in HR5 (incidence: 110.3 cases; mortality: 89.5 deaths) and HR7 (incidence: 102.3 cases; mortality: 76.3 deaths). There were no significant differences in incidence and mortality rates between other health regions and the province (incidence: 82.1cases; mortality: 64.0 deaths).
- In females, the highest rates for incidence (64.0 cases) and mortality (45.0 deaths) occurred in HR2 followed by HR5 (62.2 cases for incidence) and HR4 (43.1 deaths for mortality). These rates were significantly higher than the provincial rates (incidence: 52.2 cases; mortality: 37.3 deaths).

Colorectal cancer

- In males, HR4 had the highest incidence (76.3 cases) and mortality rates (25.8 deaths). Both rates were similar to the other health regions and the provincial average (incidence: 64.9 cases; mortality: 22.3 deaths).
- In females, the highest incidence and mortality rates were seen in HR7 (50.5 cases) and HR4 (17.8 deaths), respectively. There were no significant differences in both rates between the health regions and the province.

The distributions of new cases weighted by the associated population for the four leading cancers (prostate, breast, lung and colorectal) by Census Subdivisions are illustrated on pages 33-36 (Maps 2-5).

Cancer Incidence and Mortality Trends 1986-2013

- The *ASIRs* for all cancer sites combined in New Brunswick showed a slight increase with an average annual percentage change (AAPC) of +0.2% for males and +0.7% for females. These increases were largely due to the influence of kidney and renal pelvis and melanoma of the skin cancers in males; as well as lung, thyroid and leukemia in females. The *ASMRs* for all cancer sites combined decreased significantly for both genders (AAPC for males: -1.2%; -0.4% for females).

- The *ASIRs* and *ASMRs* for lung cancer in males have significantly decreased since 1986 (AAPC for incidence: -1.2%; -2.1% for mortality). However, an increasing trend was observed for both rates in females (incidence: +1.8%; mortality: +1.3%).
- The *ASIR* for Non-Hodgkin's lymphoma (NHL) in males significantly increased by +1.6% per year; an increasing trend was also observed in females by +1.0% per year. In addition, an increasing trend was seen for melanoma of the skin in both genders with an AAPC of +2.3% for males and +2.0% for females.
- The *ASIR* of thyroid cancer for males and females increased significantly in New Brunswick with an average annual increase of +7.5% and +6.2%, respectively. This finding was similar to the national trend. This upward increase in the incidence rate may be related to changes in diagnostic practices and imaging techniques, resulting in improved detection of earlier stage and asymptomatic cancers.[2]
- Overall, decreasing trends were observed for both genders in cancer incidence rates: lung (males: -1.2%), colorectal (females: -0.7%); stomach (males: -2.2%, females: -2.5%) and ovary (females: -0.6%). Similarly, decreasing trends in mortality rates were also noted: all cancer sites (males: -1.2%; females: -0.4%), lung (males: -2.1%), colorectal (males: -1.6%; females: -2.2%); breast (females: -2.4%); prostate (males: -1.8%), pancreas (males: -0.5%), kidney and renal pelvis (females: -1.0%), ovary (females: -0.4%), brain and other nervous system (males: -0.1%, females: -0.5%), non-Hodgkin's lymphoma (males: -0.6%; females: -0.9%), leukemia (males: -0.9%; females: -0.1%), urinary bladder (males: -0.6%, females: -1.9%); and stomach (males: -4.0%; females: -2.9%).

Cancer Prevalence for Selected Cancers

- At the beginning of 2014, a total of 21,092 New Brunswickers (11,199 males and 9,893 females) had been diagnosed with cancer in the previous ten years (10-year person-based prevalence). Among these people, 24,655 (13,023 males and 11,632 females) tumours were recorded (10-year tumour-based prevalence).
- Prostate cancer accounted for 43.3% (4,846/11,199) of the 10-year person-based prevalent cases and 36.5% (3,607/9,893) for breast in females. Overall, prostate, colorectal and lung cancers represented 60.8% (6,810/11,199) of the 10-year person-based prevalent cases in males while breast, colorectal and lung cancers represented 53.2% (5,263/9,893) of the 10-year person-based prevalent in females. Similar to the person-based prevalence, the percentage of 10-year tumour-based prevalence for prostate, colorectal and lung cancers in males was 62.9% (8,194/13,023) and 55.6% (6,471/11,632) of all prevalent cases for breast, colorectal and lung cancers in females.
- The percentages of 10-year person-based and tumour-based prevalence varied regionally. For example, as of January 1, 2014, the percentages of 10-year person-based prevalence varied from 28.0% (5,914/21,092) in HR1 to HR5 with 3.9% (815/21,092). Three largest HRs (HR1, HR2 and HR3) constituted more than 69% of all prevalent cases for both person and tumour approaches.

Relative Cancer Survival Ratio

- Five-year relative survival ratio of all cancers combined for males was 64.3% and 64.8% for females.
- Five-year relative survival ratios were highest for patients diagnosed with prostate cancer (95.4%), followed by breast cancer (88.8%), colorectal cancer (males: 66.2%; females: 65.7%), and lung cancer (males: 18.4%; females: 24.5%). Relative survival ratio for lung cancer was significantly lower than for other major cancers (i.e., prostate, breast and colorectal), and survival decreased with increasing age.
- Five-year relative survival ratios for males and females diagnosed with thyroid cancer were 89.8% and 97.6%. Thyroid cancer for females had the highest estimated five-year relative survival ratio and this finding was consistent with the national observation.[3]
- Five-year relative survival ratios for males and females diagnosed with melanomas of the skin were 88.1% and 86.7%. For males, the five-year relative survival ratio of testicular cancer was 94.3%. In females, the five-year survival ratios for ovarian and cervical cancers were 35.5% and 67.0%, respectively.
- Three-year relative survival ratios were consistently higher for breast cancer patients diagnosed in the early stages (stage I: 98.4%; stage II: 89.4%; stage III: 75.1%; stage IV: 41.1% and unknown: 32.3%). It is also true for colorectal (males: stage I: 95.5%; stage II: 94.0%; stage III: 86.9%; stage IV: 23.9%; unknown:

32.8%; females: stage I: 91.9%; stage II: 86.2%; stage III: 79.3%; stage IV: 17.8%; unknown: 10.1%) and lung cancer (males: stage I: 63.1%; stage II: 40.3%; stage III: 30.7%; stage IV: 3.6%; occult: not available; females: stage I: 61.8%; stage II: 57.1%; stage III: 22.2%; stage IV: 4.9%; occult: not available). The three-year relative survival ratios for prostate cancer were as follows: stage I: 98.5%; stage II: 100%; stage III: 100%; stage IV: 31.4%; unknown: 15.3%.

Projections for Cancer Incidence

- Based on the continuation of past and current trends, males will have an estimated total of 4,020 new cases (i.e., 11 new cases per day) of cancer in 2030; for females, the estimated new cancer cases are expected to be 3,108 (9 new cases per day). These represent a 60.8% increase in incidence for males and a 39.2% increase for females when compared to the actual counts in 2013.
- Three types of cancer are expected to account for the majority of new cases in each gender between 2016 and 2030: prostate, lung and colorectal in males and breast, lung and colorectal in females.

Table 1: Number of New Cases and Associated Incidence Rates* for Males by Cancer Site, NB, 2007-2013

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**17,362**	**2,500**	**672.4**	***(662.5-682.5)***	**673.6**	**501.3**	***(493.8-509.0)***	**471.9**
Oral Cavity and Pharynx	**452**	**79**	**17.5**	***(15.9-19.2)***	**21.3**	**12.7**	***(11.5-14.0)***	**14.2**
Lip	28	6	1.1	*(0.7-1.6)*	1.6	0.8	*(0.5-1.2)*	1.1
Tongue	114	22	4.4	*(3.6-5.3)*	5.9	3.1	*(2.6-3.8)*	3.8
Salivary Gland	38	7	1.5	*(1.0-2.0)*	1.9	1.3	*(0.9-1.7)*	1.4
Floor of Mouth	25	<5	1.0	*(0.6-1.4)*	0.5	0.7	*(0.4-1.0)*	0.3
Gum and Other Mouth	47	8	1.8	*(1.3-2.4)*	2.2	1.3	*(1.0-1.8)*	1.3
Nasopharynx	16	<5	0.6	*(0.4-1.0)*	0.3	0.5	*(0.3-0.8)*	0.2
Tonsil	127	24	4.9	*(4.1-5.9)*	6.5	3.4	*(2.8-4.1)*	4.5
Oropharynx	20	5	0.8	*(0.5-1.2)*	1.3	0.5	*(0.3-0.8)*	0.9
Hypopharynx	25	<5	1.0	*(0.6-1.4)*	0.8	0.7	*(0.5-1.1)*	0.6
Other Oral Cavity and Pharynx	12	<5	0.5	*(0.2-0.8)*	0.3	0.3	*(0.2-0.6)*	0.2
Digestive System	**3,655**	**604**	**141.6**	***(137.0-146.2)***	**162.7**	**105.0**	***(101.6-108.5)***	**113.8**
Esophagus	255	30	9.9	*(8.7-11.2)*	8.1	7.2	*(6.4-8.2)*	5.5
Stomach	370	65	14.3	*(12.9-15.9)*	17.5	10.7	*(9.6-11.9)*	12.0
Small Intestine	70	17	2.7	*(2.1-3.4)*	4.6	2.0	*(1.6-2.6)*	3.3
Colon and Rectum	2,254	361	87.3	*(83.7-91.0)*	97.3	64.9	*(62.2-67.6)*	69.0
Colon Excluding Rectum	1,321	213	51.2	*(48.4-54.0)*	57.4	38.4	*(36.3-40.5)*	40.9
Cecum	330	67	12.8	*(11.4-14.2)*	18.1	9.6	*(8.6-10.7)*	12.7
Appendix	33	7	1.3	*(0.9-1.8)*	1.9	1.0	*(0.7-1.4)*	1.9
Ascending Colon	243	32	9.4	*(8.3-10.7)*	8.6	7.1	*(6.2-8.0)*	5.8
Hepatic Flexure	44	9	1.7	*(1.2-2.3)*	2.4	1.3	*(0.9-1.7)*	1.7
Transverse Colon	98	12	3.8	*(3.1-4.6)*	3.2	2.8	*(2.3-3.5)*	2.3
Splenic Flexure	39	6	1.5	*(1.1-2.1)*	1.6	1.1	*(0.8-1.6)*	1.1
Descending Colon	98	11	3.8	*(3.1-4.6)*	3.0	2.8	*(2.3-3.5)*	2.0
Sigmoid Colon	396	62	15.3	*(13.9-16.9)*	16.7	11.4	*(10.3-12.6)*	11.9
Large Intestine, NOS	40	7	1.5	*(1.1-2.1)*	1.9	1.2	*(0.8-1.6)*	1.5
Rectum and Rectosigmoid Junction	933	148	36.1	*(33.9-38.5)*	39.9	26.5	*(24.8-28.3)*	28.1
Rectosigmoid Junction	284	28	11.0	*(9.8-12.4)*	7.5	8.0	*(7.0-9.0)*	5.1
Rectum	649	120	25.1	*(23.2-27.1)*	32.3	18.5	*(17.1-20.1)*	23.0
Anus, Anal Canal and Anorectum	23	<10	0.9	*(0.6-1.3)*	1.3	0.6	*(0.4-1.0)*	0.9
Liver and Intrahepatic Bile Duct	174	28	6.7	*(5.8-7.8)*	7.5	5.0	*(4.2-5.8)*	5.0
Liver	119	19	4.6	*(3.8-5.5)*	5.1	3.4	*(2.8-4.1)*	3.4
Intrahepatic Bile Duct	55	9	2.1	*(1.6-2.8)*	2.4	1.5	*(1.2-2.0)*	1.6
Gallbladder	24	6	0.9	*(0.6-1.4)*	1.6	0.7	*(0.4-1.0)*	1.0
Other Biliary	48	10	1.9	*(1.4-2.5)*	2.7	1.4	*(1.0-1.9)*	2.1
Pancreas	414	81	16.0	*(14.5-17.7)*	21.8	11.8	*(10.7-13.0)*	14.8
Retroperitoneum	<5	0	0.2	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Peritoneum, Omentum and Mesentery	<5	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Other Digestive System	19	<5	0.7	*(0.4-1.1)*	0.3	0.6	*(0.3-0.9)*	0.2
Respiratory System	**3,044**	**453**	**117.9**	***(113.7-122.2)***	**122.1**	**87.7**	***(84.6-90.9)***	**84.0**
Nose, Nasal Cavity and Middle Ear	21	6	0.8	*(0.5-1.2)*	1.6	0.6	*(0.4-1.0)*	1.3
Larynx	172	21	6.7	*(5.7-7.7)*	5.7	4.7	*(4.1-5.5)*	3.6
Lung and Bronchus	2,845	426	110.2	*(106.2-114.3)*	114.8	82.1	*(79.1-85.2)*	79.1
Pleura	<5	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<10	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.1-0.5)*	0.0
Bones and Joints	**34**	**7**	**1.3**	***(0.9-1.8)***	**1.9**	**1.1**	***(0.8-1.6)***	**2.0**
Soft Tissue including Heart	**104**	**13**	**4.0**	***(3.3-4.9)***	**3.5**	**3.4**	***(2.8-4.2)***	**3.1**
Skin excluding Basal and Squamous	**630**	**93**	**24.4**	***(22.5-26.4)***	**25.1**	**18.8**	***(17.3-20.4)***	**18.5**
Melanomas of the Skin	567	79	22.0	*(20.2-23.8)*	21.3	16.8	*(15.4-18.3)*	15.4
Other Non-Epithelial Skin	63	14	2.4	*(1.9-3.1)*	3.8	2.0	*(1.5-2.6)*	3.0
Breast	**40**	**9**	**1.5**	***(1.1-2.1)***	**2.4**	**1.1**	***(0.8-1.5)***	**1.6**
Male Genital System	**5,005**	**525**	**193.8**	***(188.5-199.3)***	**141.5**	**141.3**	***(137.3-145.3)***	**95.8**
Prostate	4,821	504	186.7	*(181.5-192.1)*	135.8	133.5	*(129.7-137.3)*	89.9
Testis	139	12	5.4	*(4.5-6.4)*	3.2	6.5	*(5.4-7.7)*	4.3
Penis	38	9	1.5	*(1.0-2.0)*	2.4	1.1	*(0.8-1.6)*	1.6
Other Male Genital Organs	7	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Urinary System	**2,000**	**339**	**77.5**	***(74.1-80.9)***	**91.3**	**57.5**	***(55.0-60.1)***	**62.9**
Urinary Bladder	1,212	214	46.9	*(44.3-49.7)*	57.7	35.1	*(33.1-37.1)*	39.9
Kidney and Renal Pelvis	753	120	29.2	*(27.1-31.3)*	32.3	21.4	*(19.9-23.0)*	22.1
Ureter	24	5	0.9	*(0.6-1.4)*	1.3	0.7	*(0.5-1.1)*	0.9
Other Urinary Organs	11	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.2-0.6)*	0.0
Eye and Orbit	**13**	**<5**	**0.5**	***(0.3-0.9)***	**0.3**	**0.4**	***(0.2-0.7)***	**0.4**
Brain and Other Nervous System	**227**	**28**	**8.8**	***(7.7-10.0)***	**7.5**	**7.1**	***(6.2-8.2)***	**6.6**
Brain	222	28	8.6	*(7.5-9.8)*	7.5	7.0	*(6.0-8.0)*	6.6
Cranial Nerves Other Nervous System	5	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.1-0.4)*	0.0
Endocrine System	**245**	**38**	**9.5**	***(8.3-10.8)***	**10.2**	**7.5**	***(6.6-8.6)***	**7.6**
Thyroid	232	<38	9.0	*(7.9-10.2)*	9.7	7.1	*(6.2-8.1)*	7.3
Other Endocrine including Thymus	13	<5	0.5	*(0.3-0.9)*	0.5	0.4	*(0.2-0.7)*	0.3
Lymphoma	**790**	**122**	**30.6**	***(28.5-32.8)***	**32.9**	**24.3**	***(22.6-26.1)***	**24.3**
Hodgkin Lymphoma	77	16	3.0	*(2.4-3.7)*	4.3	3.1	*(2.4-3.9)*	4.2
Hodgkin – Nodal	<75	16	2.9	*(2.3-3.6)*	4.3	3.0	*(2.3-3.8)*	4.2
Hodgkin - Extranodal	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Non-Hodgkin's Lymphoma	713	106	27.6	*(25.6-29.7)*	28.6	21.2	*(19.6-22.8)*	20.1
NHL – Nodal	471	71	18.2	*(16.6-20.0)*	19.1	13.9	*(12.7-15.3)*	13.5
NHL - Extranodal	242	35	9.4	*(8.2-10.6)*	9.4	7.3	*(6.4-8.3)*	6.6
Myeloma	**229**	**36**	**8.9**	***(7.8-10.1)***	**9.7**	**6.5**	***(5.7-7.5)***	**6.5**
Leukemia	**560**	**94**	**21.7**	***(19.9-23.6)***	**25.3**	**17.0**	***(15.6-18.6)***	**19.0**
Lymphocytic Leukemia	347	52	13.4	*(12.1-14.9)*	14.0	10.4	*(9.3-11.6)*	10.1
Acute Lymphocytic Leukemia	44	<10	1.7	*(1.2-2.3)*	1.6	1.8	*(1.3-2.5)*	1.8
Chronic Lymphocytic Leukemia	283	42	11.0	*(9.7-12.3)*	11.3	8.0	*(7.1-9.1)*	7.5
Other Lymphocytic Leukemia	20	<5	0.8	*(0.5-1.2)*	1.1	0.5	*(0.3-0.8)*	0.8
Myeloid and Monocytic Leukemia	192	41	7.4	*(6.4-8.6)*	11.0	6.0	*(5.1-6.9)*	8.7
Acute Myeloid Leukemia	117	24	4.5	*(3.7-5.4)*	6.5	3.6	*(2.9-4.3)*	4.9
Acute Monocytic Leukemia	<15	<5	0.4	*(0.2-0.7)*	0.5	0.4	*(0.2-0.7)*	0.4
Chronic Myeloid Leukemia	63	<20	2.4	*(1.9-3.1)*	4.0	2.0	*(1.5-2.6)*	3.4
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Leukemia	21	<5	0.8	*(0.5-1.2)*	0.3	0.7	*(0.4-1.1)*	0.2
Other Acute Leukemia	15	0	0.6	*(0.3-1.0)*	0.0	0.5	*(0.3-0.8)*	0.0
Aleukemic, subleukemic and NOS	6	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.1-0.5)*	0.2
Mesothelioma	**74**	**12**	**2.9**	***(2.3-3.6)***	**3.2**	**2.1**	***(1.7-2.7)***	**2.3**
Kaposi Sarcoma	**7**	**<5**	**0.3**	***(0.1-0.6)***	**0.5**	**0.2**	***(0.1-0.5)***	**0.4**
Miscellaneous	**253**	**45**	**9.8**	***(8.6-11.1)***	**12.1**	**7.4**	***(6.5-8.4)***	**9.0**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 2: Number of New Cases and Associated Incidence Rates* for Females by Cancer Site, NB, 2007-2013

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**14,757**	**2,233**	**552.0**	***(543.1-560.9)***	**588.2**	**374.4**	***(368.1-380.7)***	**377.2**
Oral Cavity and Pharynx	**190**	**27**	**7.1**	***(6.1-8.2)***	**7.1**	**4.9**	***(4.2-5.7)***	**4.6**
Lip	7	<5	0.3	*(0.1-0.5)*	0.3	0.2	*(0.1-0.4)*	0.1
Tongue	55	8	2.1	*(1.5-2.7)*	2.1	1.4	*(1.0-1.9)*	1.2
Salivary Gland	27	5	1.0	*(0.7-1.5)*	1.3	0.8	*(0.5-1.2)*	1.2
Floor of Mouth	10	0	0.4	*(0.2-0.7)*	0.0	0.3	*(0.1-0.5)*	0.0
Gum and Other Mouth	31	<5	1.2	*(0.8-1.6)*	0.8	0.7	*(0.5-1.1)*	0.4
Nasopharynx	8	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.5)*	0.3
Tonsil	39	7	1.5	*(1.0-2.0)*	1.8	1.0	*(0.7-1.4)*	1.1
Oropharynx	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.2)*	0.1
Hypopharynx	7	0	0.3	*(0.1-0.5)*	0.0	0.2	*(0.1-0.4)*	0.0
Other Oral Cavity and Pharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.2)*	0.0
Digestive System	**2,792**	**435**	**104.4**	***(100.6-108.4)***	**114.6**	**65.2**	***(62.7-67.7)***	**67.8**
Esophagus	66	10	2.5	*(1.9-3.1)*	2.6	1.6	*(1.2-2.0)*	1.7
Stomach	192	26	7.2	*(6.2-8.3)*	6.8	4.6	*(3.9-5.3)*	4.0
Small Intestine	62	7	2.3	*(1.8-3.0)*	1.8	1.6	*(1.2-2.1)*	1.0
Colon and Rectum	1,758	268	65.8	*(62.7-68.9)*	70.6	40.9	*(38.9-42.9)*	41.6
Colon Excluding Rectum	1,280	207	47.9	*(45.3-50.6)*	54.5	29.3	*(27.6-31.0)*	31.6
Cecum	388	61	14.5	*(13.1-16.0)*	16.1	8.7	*(7.8-9.6)*	9.0
Appendix	20	<5	0.7	*(0.5-1.2)*	1.1	0.5	*(0.3-0.9)*	0.9
Ascending Colon	292	52	10.9	*(9.7-12.2)*	13.7	6.5	*(5.8-7.4)*	7.3
Hepatic Flexure	40	<5	1.5	*(1.1-2.0)*	0.8	0.9	*(0.7-1.3)*	0.3
Transverse Colon	103	19	3.9	*(3.1-4.7)*	5.0	2.3	*(1.9-2.9)*	3.0
Splenic Flexure	31	<5	1.2	*(0.8-1.6)*	0.3	0.7	*(0.5-1.1)*	0.2
Descending Colon	75	13	2.8	*(2.2-3.5)*	3.4	1.8	*(1.4-2.3)*	2.1
Sigmoid Colon	273	44	10.2	*(9.0-11.5)*	11.6	6.7	*(5.9-7.6)*	7.6
Large Intestine, NOS	58	10	2.2	*(1.6-2.8)*	2.6	1.0	*(0.8-1.4)*	1.3
Rectum and Rectosigmoid Junction	478	61	17.9	*(16.3-19.6)*	16.1	11.6	*(10.5-12.7)*	10.0
Rectosigmoid Junction	160	20	6.0	*(5.1-7.0)*	5.3	3.9	*(3.3-4.5)*	3.4
Rectum	318	41	11.9	*(10.6-13.3)*	10.8	7.7	*(6.9-8.7)*	6.6
Anus, Anal Canal and Anorectum	71	21	2.7	*(2.1-3.3)*	5.5	1.7	*(1.3-2.2)*	3.5
Liver and Intrahepatic Bile Duct	110	16	4.1	*(3.4-5.0)*	4.2	2.6	*(2.1-3.2)*	2.6
Liver	44	6	1.6	*(1.2-2.2)*	1.6	1.1	*(0.7-1.5)*	1.0
Intrahepatic Bile Duct	66	10	2.5	*(1.9-3.1)*	2.6	1.6	*(1.2-2.0)*	1.6
Gallbladder	49	6	1.8	*(1.4-2.4)*	1.6	1.1	*(0.8-1.5)*	1.0
Other Biliary	51	9	1.9	*(1.4-2.5)*	2.4	1.2	*(0.9-1.6)*	1.4
Pancreas	409	69	15.3	*(13.9-16.9)*	18.2	9.4	*(8.5-10.4)*	10.6
Retroperitoneum	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	12	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.1-0.5)*	0.0
Other Digestive System	<15	<5	0.4	*(0.2-0.7)*	0.8	0.2	*(0.1-0.5)*	0.5
Respiratory System	**2,183**	**<340**	**81.7**	***(78.3-85.1)***	**88.2**	**53.4**	***(51.1-55.7)***	**54.0**
Nose, Nasal Cavity and Middle Ear	19	0	0.7	*(0.4-1.1)*	0.0	0.5	*(0.3-0.8)*	0.0
Larynx	26	<5	1.0	*(0.6-1.4)*	0.3	0.7	*(0.4-1.0)*	0.2
Lung and Bronchus	2,138	334	80.0	*(76.6-83.4)*	88.0	52.2	*(50.0-54.6)*	53.9
Pleura	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Trachea, Mediastinum and Other Respiratory System	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Bones and Joints	**20**	**<5**	**0.7**	***(0.5-1.2)***	**0.8**	**0.8**	***(0.5-1.3)***	**0.8**
Soft Tissue including Heart	**83**	**11**	**3.1**	***(2.5-3.8)***	**2.9**	**2.6**	***(2.0-3.2)***	**2.7**
Skin excluding Basal and Squamous	**614**	**93**	**23.0**	***(21.2-24.9)***	**24.5**	**17.0**	***(15.6-18.5)***	**16.6**
Melanomas of the Skin	551	83	20.6	*(18.9-22.4)*	21.9	15.4	*(14.0-16.8)*	15.1
Other Non-Epithelial Skin	63	10	2.4	*(1.8-3.0)*	2.6	1.6	*(1.2-2.1)*	1.5
Breast	**3,977**	**571**	**148.8**	***(144.2-153.4)***	**150.4**	**101.7**	***(98.4-105.0)***	**98.1**

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Female Genital System	**1,564**	**250**	**58.5**	***(55.6-61.5)***	**65.8**	**40.7**	***(38.6-42.9)***	**42.7**
Cervix Uteri	198	21	7.4	*(6.4-8.5)*	5.5	6.7	*(5.8-7.8)*	5.5
Corpus and Uterus, NOS	814	142	30.4	*(28.4-32.6)*	37.4	20.3	*(18.9-21.8)*	23.7
Corpus Uteri	790	139	29.5	*(27.5-31.7)*	36.6	19.7	*(18.4-21.2)*	23.3
Uterus, NOS	24	<5	0.9	*(0.6-1.3)*	0.8	0.6	*(0.3-0.9)*	0.4
Ovary	406	60	15.2	*(13.7-16.7)*	15.8	10.2	*(9.2-11.3)*	9.4
Vagina	21	<5	0.8	*(0.5-1.2)*	0.8	0.5	*(0.3-0.8)*	0.6
Vulva	107	21	4.0	*(3.3-4.8)*	5.5	2.5	*(2.0-3.1)*	3.1
Other Female Genital Organs	18	<5	0.7	*(0.4-1.1)*	0.8	0.5	*(0.3-0.8)*	0.4
Urinary System	**904**	**129**	**33.8**	***(31.6-36.1)***	**34.0**	**22.2**	***(20.7-23.8)***	**21.8**
Urinary Bladder	389	50	14.5	*(13.1-16.1)*	13.2	9.2	*(8.3-10.2)*	7.6
Kidney and Renal Pelvis	492	74	18.4	*(16.8-20.1)*	19.5	12.5	*(11.4-13.7)*	13.4
Ureter	18	<5	0.7	*(0.4-1.1)*	1.1	0.4	*(0.2-0.7)*	0.5
Other Urinary Organs	5	<5	0.2	*(0.1-0.4)*	0.3	0.1	*(0.0-0.3)*	0.2
Eye and Orbit	**26**	**<5**	**1.0**	***(0.6-1.4)***	**0.8**	**0.7**	***(0.4-1.1)***	**0.4**
Brain and Other Nervous System	**194**	**<30**	**7.3**	***(6.3-8.4)***	**7.4**	**5.3**	***(4.5-6.1)***	**5.1**
Brain	189	27	7.1	*(6.1-8.2)*	7.1	5.1	*(4.4-6.0)*	4.9
Cranial Nerves Other Nervous System	5	<5	0.2	*(0.1-0.4)*	0.3	0.1	*(0.0-0.4)*	0.2
Endocrine System	**697**	**<95**	**26.1**	***(24.2-28.1)***	**24.5**	**21.5**	***(19.8-23.3)***	**19.5**
Thyroid	681	91	25.5	*(23.6-27.5)*	24.0	21.0	*(19.3-22.7)*	19.1
Other Endocrine including Thymus	16	<5	0.6	*(0.3-1.0)*	0.5	0.5	*(0.3-0.9)*	0.5
Lymphoma	**<660**	**112**	**24.5**	***(22.7-26.5)***	**29.5**	**17.1**	***(15.8-18.6)***	**20.1**
Hodgkin Lymphoma	<60	14	2.1	*(1.5-2.7)*	3.7	2.0	*(1.5-2.6)*	3.3
Hodgkin – Nodal	52	14	1.9	*(1.5-2.6)*	3.7	1.9	*(1.4-2.5)*	3.3
Hodgkin - Extranodal	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Non-Hodgkin's Lymphoma	601	98	22.5	*(20.7-24.4)*	25.8	15.1	*(13.9-16.5)*	16.8
NHL – Nodal	411	64	15.4	*(13.9-16.9)*	16.9	10.3	*(9.3-11.4)*	10.9
NHL - Extranodal	190	34	7.1	*(6.1-8.2)*	9.0	4.8	*(4.1-5.6)*	5.9
Myeloma	**186**	**33**	**7.0**	***(6.0-8.0)***	**8.7**	**4.2**	***(3.6-4.9)***	**4.9**
Leukemia	**<405**	**68**	**15.0**	***(13.5-16.5)***	**17.9**	**11.2**	***(10.0-12.4)***	**11.9**
Lymphocytic Leukemia	204	36	7.6	*(6.6-8.8)*	9.5	5.8	*(5.0-6.8)*	6.4
Acute Lymphocytic Leukemia	39	<5	1.5	*(1.0-2.0)*	1.1	1.8	*(1.3-2.5)*	1.3
Chronic Lymphocytic Leukemia	154	30	5.8	*(4.9-6.7)*	7.9	3.7	*(3.2-4.4)*	4.8
Other Lymphocytic Leukemia	11	<5	0.4	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.3
Myeloid and Monocytic Leukemia	<170	31	6.3	*(5.4-7.3)*	8.2	4.7	*(4.0-5.6)*	5.2
Acute Myeloid Leukemia	115	22	4.3	*(3.6-5.2)*	5.8	3.3	*(2.7-4.0)*	3.7
Acute Monocytic Leukemia	14	<5	0.5	*(0.3-0.9)*	0.5	0.4	*(0.2-0.7)*	0.3
Chronic Myeloid Leukemia	38	6	1.4	*(1.0-2.0)*	1.6	1.0	*(0.7-1.4)*	1.1
Other Myeloid/Monocytic Leukemia	<5	<5	0.1	*(0.0-0.3)*	0.3	0.1	*(0.0-0.2)*	0.1
Other Leukemia	<30	<5	1.0	*(0.7-1.5)*	0.3	0.6	*(0.4-1.0)*	0.2
Other Acute Leukemia	19	<5	0.7	*(0.4-1.1)*	0.3	0.5	*(0.3-0.8)*	0.2
Aleukemic, subleukemic and NOS	<10	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0
Mesothelioma	**19**	**6**	**0.7**	***(0.4-1.1)***	**1.6**	**0.5**	***(0.3-0.7)***	**0.8**
Kaposi Sarcoma	**<5**	**0**	**0.1**	***(0.0-0.3)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**250**	**36**	**9.4**	***(8.2-10.6)***	**9.5**	**5.5**	***(4.8-6.2)***	**5.4**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 3: Number of Deaths and Associated Mortality Rates* for Males by Cancer Site, NB, 2007-2013

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**6,840**	**974**	**264.9**	***(258.7-271.3)***	**262.4**	**199.5**	***(194.7-204.3)***	**184.0**
Oral Cavity and Pharynx	**121**	**18**	**4.7**	***(3.9-5.6)***	**4.8**	**3.5**	***(2.9-4.2)***	**3.5**
Lip	<5	0	0.2	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	26	7	1.0	*(0.7-1.5)*	1.9	0.8	*(0.5-1.1)*	1.4
Salivary Gland	12	<5	0.5	*(0.2-0.8)*	0.5	0.4	*(0.2-0.6)*	0.4
Floor of Mouth	<5	<5	0.0	*(0.0-0.2)*	0.3	0.0	*(0.0-0.2)*	0.2
Gum and Other Mouth	20	0	0.8	*(0.5-1.2)*	0.0	0.6	*(0.4-0.9)*	0.0
Nasopharynx	8	<5	0.3	*(0.1-0.6)*	0.3	0.3	*(0.1-0.5)*	0.2
Tonsil	12	<5	0.5	*(0.2-0.8)*	0.8	0.3	*(0.2-0.6)*	0.5
Oropharynx	<5	<5	0.2	*(0.0-0.4)*	0.3	0.1	*(0.0-0.3)*	0.2
Hypopharynx	8	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Other Oral Cavity and Pharynx	26	<5	1.0	*(0.7-1.5)*	0.5	0.7	*(0.5-1.1)*	0.4
Digestive System	**1,811**	**277**	**70.1**	***(66.9-73.4)***	**74.6**	**52.3**	***(49.9-54.8)***	**51.8**
Esophagus	248	35	9.6	*(8.4-10.9)*	9.4	7.1	*(6.2-8.0)*	6.5
Stomach	201	29	7.8	*(6.7-8.9)*	7.8	5.8	*(5.0-6.7)*	5.4
Small Intestine	15	5	0.6	*(0.3-1.0)*	1.3	0.4	*(0.2-0.7)*	1.0
Colon and Rectum	764	112	29.6	*(27.5-31.8)*	30.2	22.3	*(20.7-23.9)*	21.0
Colon Excluding Rectum	609	78	23.6	*(21.7-25.5)*	21.0	17.8	*(16.4-19.3)*	14.5
Rectum and Rectosigmoid Junction	155	34	6.0	*(5.1-7.0)*	9.2	4.5	*(3.8-5.2)*	6.5
Anus, Anal Canal and Anorectum	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.2)*	0.1
Liver and Intrahepatic Bile Duct	168	28	6.5	*(5.6-7.6)*	7.5	4.8	*(4.1-5.6)*	5.3
Liver	119	21	4.6	*(3.8-5.5)*	5.7	3.4	*(2.8-4.1)*	4.0
Intrahepatic Bile Duct	49	7	1.9	*(1.4-2.5)*	1.9	1.4	*(1.0-1.9)*	1.3
Gallbladder	9	<5	0.3	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.3
Other Biliary	23	<5	0.9	*(0.6-1.3)*	0.8	0.7	*(0.4-1.0)*	0.5
Pancreas	358	60	13.9	*(12.5-15.4)*	16.2	10.3	*(9.2-11.4)*	11.1
Retroperitoneum	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Peritoneum, Omentum and Mesentery	<5	<5	0.0	*(0.0-0.2)*	0.3	0.0	*(0.0-0.2)*	0.2
Other Digestive System	22	<5	0.9	*(0.5-1.3)*	0.3	0.6	*(0.4-1.0)*	0.2
Respiratory System	**2,291**	**293**	**88.7**	***(85.1-92.4)***	**78.9**	**66.4**	***(63.6-69.2)***	**54.8**
Nose, Nasal Cavity and Middle Ear	7	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.4)*	0.2
Larynx	66	10	2.6	*(2.0-3.3)*	2.7	1.9	*(1.4-2.4)*	1.9
Lung and Bronchus	2,209	280	85.6	*(82.0-89.2)*	75.4	64.0	*(61.3-66.7)*	52.3
Pleura	<5	<5	0.1	*(0.0-0.3)*	0.3	0.1	*(0.0-0.3)*	0.2
Trachea, Mediastinum and Other Respiratory System	<10	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.1-0.5)*	0.2
Bones and Joints	**15**	**6**	**0.6**	***(0.3-1.0)***	**1.6**	**0.5**	***(0.3-0.9)***	**1.3**
Soft Tissue including Heart	**48**	**7**	**1.9**	***(1.4-2.5)***	**1.9**	**1.6**	***(1.1-2.1)***	**1.2**
Skin excluding Basal and Squamous	**130**	**15**	**5.0**	***(4.2-6.0)***	**4.0**	**3.7**	***(3.1-4.5)***	**2.8**
Melanomas of the Skin	97	7	3.8	*(3.0-4.6)*	1.9	2.8	*(2.3-3.4)*	1.3
Other Non-Epithelial Skin	33	8	1.3	*(0.9-1.8)*	2.2	0.9	*(0.6-1.3)*	1.5
Breast	**12**	**<5**	**0.5**	***(0.2-0.8)***	**1.1**	**0.3**	***(0.2-0.6)***	**0.8**
Male Genital System	**675**	**95**	**26.1**	***(24.2-28.2)***	**25.6**	**20.0**	***(18.5-21.6)***	**18.2**
Prostate	658	<95	25.5	*(23.6-27.5)*	25.3	19.5	*(18.0-21.0)*	18.1
Testis	9	<5	0.3	*(0.2-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Penis	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Male Genital Organs	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Urinary System	**443**	**70**	**17.2**	***(15.6-18.8)***	**18.9**	**12.8**	***(11.7-14.1)***	**13.1**
Urinary Bladder	220	<35	8.5	*(7.4-9.7)*	8.6	6.4	*(5.6-7.4)*	6.1
Kidney and Renal Pelvis	208	37	8.1	*(7.0-9.2)*	10.0	5.9	*(5.2-6.8)*	6.8
Ureter	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Urinary Organs	7	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.4)*	0.2
Eye and Orbit	**<5**	**0**	**0.2**	***(0.0-0.4)***	**0.0**	**0.1**	***(0.0-0.3)***	**0.0**
Brain and Other Nervous System	**178**	**29**	**6.9**	***(5.9-8.0)***	**7.8**	**5.2**	***(4.5-6.1)***	**6.3**
Endocrine System	**27**	**<5**	**1.0**	***(0.7-1.5)***	**0.5**	**0.8**	***(0.5-1.2)***	**0.4**
Thyroid	18	<5	0.7	*(0.4-1.1)*	0.5	0.5	*(0.3-0.8)*	0.4
Other Endocrine including Thymus	9	0	0.3	*(0.2-0.7)*	0.0	0.3	*(0.1-0.6)*	0.0
Lymphoma	**265**	**37**	**10.3**	***(9.1-11.6)***	**10.0**	**8.0**	***(7.0-9.0)***	**7.0**
Hodgkin Lymphoma	13	<5	0.5	*(0.3-0.9)*	0.3	0.5	*(0.2-0.8)*	0.2
Non-Hodgkin's Lymphoma	252	<37	9.8	*(8.6-11.0)*	9.7	7.5	*(6.6-8.6)*	6.8

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Myeloma	**97**	**11**	**3.8**	***(3.0-4.6)***	**3.0**	**2.8**	***(2.3-3.5)***	**2.1**
Leukemia	**208**	**37**	**8.1**	***(7.0-9.2)***	**10.0**	**6.2**	***(5.4-7.2)***	**6.8**
Lymphocytic Leukemia	65	12	2.5	*(1.9-3.2)*	3.2	2.0	*(1.5-2.5)*	2.1
Acute Lymphocytic Leukemia	11	<5	0.4	*(0.2-0.8)*	0.5	0.4	*(0.2-0.7)*	0.3
Chronic Lymphocytic Leukemia	48	8	1.9	*(1.4-2.5)*	2.2	1.4	*(1.0-1.9)*	1.4
Other Lymphocytic Leukemia	6	<5	0.2	*(0.1-0.5)*	0.5	0.2	*(0.1-0.4)*	0.4
Myeloid and Monocytic Leukemia	66	11	2.6	*(2.0-3.3)*	3.0	2.0	*(1.5-2.5)*	2.0
Acute Myeloid Leukemia	55	<11	2.1	*(1.6-2.8)*	2.4	1.6	*(1.2-2.2)*	1.6
Acute Monocytic Leukemia	<5	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	7	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.4)*	0.4
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Leukemia	77	14	3.0	*(2.4-3.7)*	3.8	2.3	*(1.8-2.9)*	2.7
Other Acute Leukemia	36	7	1.4	*(1.0-1.9)*	1.9	1.1	*(0.8-1.6)*	1.4
Aleukemic, subleukemic and NOS	41	7	1.6	*(1.1-2.2)*	1.9	1.2	*(0.9-1.7)*	1.3
Mesothelioma	**51**	**8**	**2.0**	***(1.5-2.6)***	**2.2**	**1.5**	***(1.1-2.0)***	**1.5**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.1)***	**0.0**	**0.0**	***(0.0-0.1)***	**0.0**
Miscellaneous	**464**	**65**	**18.0**	***(16.4-19.7)***	**17.5**	**13.6**	***(12.4-14.9)***	**12.5**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

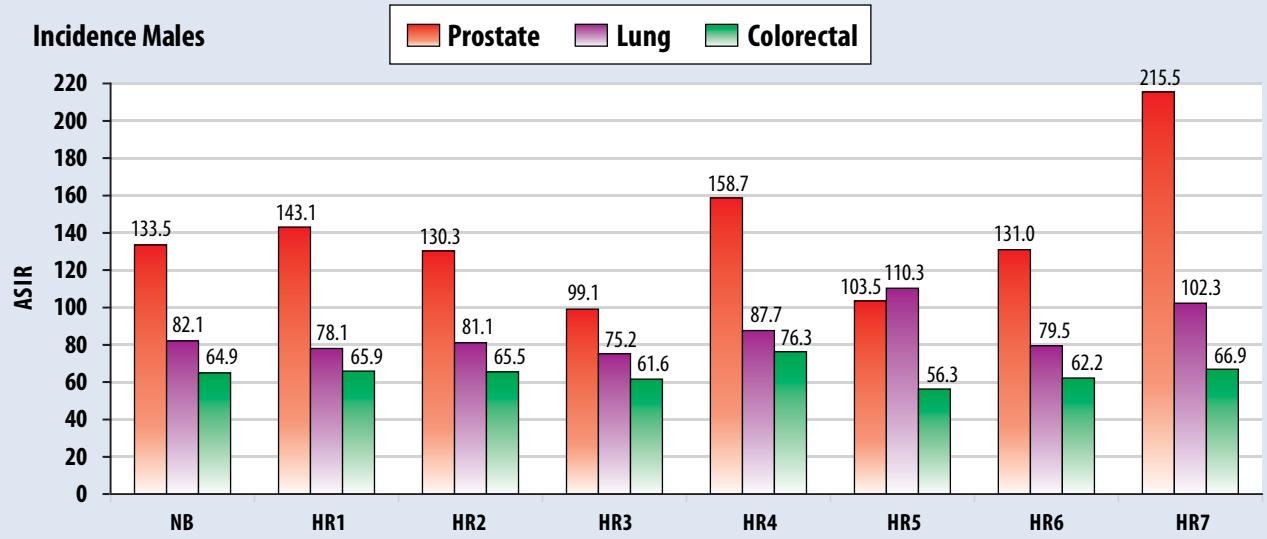
Table 4: Number of Deaths and Associated Mortality Rates* for Females by Cancer Site, NB, 2007-2013

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**5,993**	**912**	**224.2**	***(218.5-229.9)***	**240.2**	**137.2**	***(133.6-140.9)***	**138.2**
Oral Cavity and Pharynx	**56**	**8**	**2.1**	***(1.6-2.7)***	**2.1**	**1.3**	***(0.9-1.7)***	**1.1**
Lip	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	13	0	0.5	*(0.3-0.8)*	0.0	0.3	*(0.1-0.5)*	0.0
Salivary Gland	12	<5	0.4	*(0.2-0.8)*	0.8	0.3	*(0.1-0.5)*	0.5
Floor of Mouth	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Gum and Other Mouth	10	<5	0.4	*(0.2-0.7)*	0.8	0.2	*(0.1-0.4)*	0.3
Nasopharynx	5	0	0.2	*(0.1-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tonsil	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Oropharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.2)*	0.0
Hypopharynx	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Other Oral Cavity and Pharynx	5	<5	0.2	*(0.1-0.4)*	0.5	0.1	*(0.0-0.3)*	0.3
Digestive System	**1,503**	**224**	**56.2**	***(53.4-59.1)***	**59.0**	**32.9**	***(31.2-34.7)***	**33.5**
Esophagus	74	14	2.8	*(2.2-3.5)*	3.7	1.7	*(1.3-2.2)*	2.4
Stomach	137	16	5.1	*(4.3-6.1)*	4.2	3.1	*(2.6-3.7)*	2.5
Small Intestine	9	<5	0.3	*(0.2-0.6)*	0.3	0.2	*(0.1-0.4)*	0.1
Colon and Rectum	684	96	25.6	*(23.7-27.6)*	25.3	14.5	*(13.4-15.7)*	13.3
Colon Excluding Rectum	582	79	21.8	*(20.0-23.6)*	20.8	12.3	*(11.2-13.4)*	10.7
Rectum and Rectosigmoid Junction	102	17	3.8	*(3.1-4.6)*	4.5	2.2	*(1.8-2.7)*	2.6
Anus, Anal Canal and Anorectum	12	<5	0.4	*(0.2-0.8)*	0.3	0.3	*(0.1-0.5)*	0.2
Liver and Intrahepatic Bile Duct	113	21	4.2	*(3.5-5.1)*	5.5	2.6	*(2.1-3.1)*	3.2
Liver	50	8	1.9	*(1.4-2.5)*	2.1	1.1	*(0.8-1.5)*	1.1
Intrahepatic Bile Duct	63	13	2.4	*(1.8-3.0)*	3.4	1.5	*(1.1-1.9)*	2.1
Gallbladder	24	<5	0.9	*(0.6-1.3)*	1.1	0.5	*(0.3-0.8)*	0.6
Other Biliary	27	<5	1.0	*(0.7-1.5)*	0.8	0.6	*(0.4-0.9)*	0.4
Pancreas	395	64	14.8	*(13.4-16.3)*	16.9	8.9	*(8.0-9.8)*	10.0
Retroperitoneum	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Digestive System	21	<5	0.8	*(0.5-1.2)*	1.1	0.5	*(0.3-0.7)*	0.7
Respiratory System	**1,587**	**249**	**59.4**	***(56.5-62.4)***	**65.6**	**37.8**	***(35.9-39.8)***	**38.7**
Nose, Nasal Cavity and Middle Ear	5	0	0.2	*(0.1-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Larynx	10	<5	0.4	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.4
Lung and Bronchus	1,568	<249	58.6	*(55.8-61.6)*	65.1	37.3	*(35.5-39.3)*	38.3
Pleura	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Bones and Joints	**8**	**<5**	**0.3**	***(0.1-0.6)***	**0.5**	**0.2**	***(0.1-0.5)***	**0.5**
Soft Tissue including Heart	**35**	**8**	**1.3**	***(0.9-1.8)***	**2.1**	**0.9**	***(0.6-1.3)***	**1.4**
Skin excluding Basal and Squamous	**80**	**20**	**3.0**	***(2.4-3.7)***	**5.3**	**1.8**	***(1.4-2.3)***	**2.8**
Melanomas of the Skin	60	14	2.2	*(1.7-2.9)*	3.7	1.5	*(1.1-2.0)*	2.1
Other Non-Epithelial Skin	20	6	0.7	*(0.5-1.2)*	1.6	0.4	*(0.2-0.6)*	0.7
Breast	**812**	**111**	**30.4**	***(28.3-32.5)***	**29.2**	**18.5**	***(17.2-19.9)***	**16.1**
Female Genital System	**543**	**77**	**20.3**	***(18.6-22.1)***	**20.3**	**12.8**	***(11.7-14.0)***	**12.3**
Cervix Uteri	65	6	2.4	*(1.9-3.1)*	1.6	1.7	*(1.3-2.2)*	1.5
Corpus and Uterus, NOS	148	23	5.5	*(4.7-6.5)*	6.1	3.5	*(2.9-4.1)*	3.8
Corpus Uteri	81	12	3.0	*(2.4-3.8)*	3.2	1.9	*(1.5-2.4)*	2.2
Uterus, NOS	67	11	2.5	*(1.9-3.2)*	2.9	1.6	*(1.2-2.0)*	1.5
Ovary	282	42	10.5	*(9.4-11.9)*	11.1	6.6	*(5.8-7.4)*	6.3
Vagina	9	0	0.3	*(0.2-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0
Vulva	25	<5	0.9	*(0.6-1.4)*	1.1	0.5	*(0.3-0.8)*	0.5
Other Female Genital Organs	14	<5	0.5	*(0.3-0.9)*	0.5	0.3	*(0.2-0.5)*	0.2
Urinary System	**237**	**42**	**8.9**	***(7.8-10.1)***	**11.1**	**5.0**	***(4.3-5.7)***	**6.1**
Urinary Bladder	86	<15	3.2	*(2.6-4.0)*	3.4	1.6	*(1.3-2.0)*	1.8
Kidney and Renal Pelvis	140	28	5.2	*(4.4-6.2)*	7.4	3.1	*(2.6-3.8)*	4.2
Ureter	<5	<5	0.1	*(0.0-0.4)*	0.3	0.1	*(0.0-0.2)*	0.2
Other Urinary Organs	<10	0	0.3	*(0.1-0.5)*	0.0	0.1	*(0.1-0.3)*	0.0
Eye and Orbit	**5**	**<5**	**0.2**	***(0.1-0.4)***	**0.3**	**0.1**	***(0.0-0.3)***	**0.2**
Brain and Other Nervous System	**145**	**20**	**5.4**	***(4.6-6.4)***	**5.3**	**3.7**	***(3.1-4.5)***	**3.2**

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Endocrine System	**26**	**5**	**1.0**	***(0.6-1.4)***	**1.3**	**0.7**	***(0.4-1.1)***	**0.9**
Thyroid	18	<5	0.7	*(0.4-1.1)*	1.1	0.4	*(0.2-0.7)*	0.7
Other Endocrine including Thymus	8	<5	0.3	*(0.1-0.6)*	0.3	0.3	*(0.1-0.6)*	0.2
Lymphoma	**208**	**34**	**7.8**	***(6.8-8.9)***	**9.0**	**4.7**	***(4.1-5.5)***	**5.5**
Hodgkin Lymphoma	9	<5	0.3	*(0.2-0.6)*	0.8	0.3	*(0.1-0.5)*	0.5
Non-Hodgkin's Lymphoma	199	<34	7.4	*(6.4-8.6)*	8.2	4.5	*(3.8-5.2)*	5.0
Myeloma	**112**	**21**	**4.2**	***(3.4-5.0)***	**5.5**	**2.5**	***(2.0-3.0)***	**3.0**
Leukemia	**185**	**31**	**6.9**	***(6.0-8.0)***	**8.2**	**4.3**	***(3.6-5.0)***	**4.3**
Lymphocytic Leukemia	46	8	1.7	*(1.3-2.3)*	2.1	1.0	*(0.7-1.4)*	1.0
Acute Lymphocytic Leukemia	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Chronic Lymphocytic Leukemia	33	<8	1.2	*(0.8-1.7)*	1.6	0.7	*(0.5-1.0)*	0.8
Other Lymphocytic Leukemia	5	<5	0.2	*(0.1-0.4)*	0.5	0.1	*(0.0-0.2)*	0.2
Myeloid and Monocytic Leukemia	67	14	2.5	*(1.9-3.2)*	3.7	1.6	*(1.3-2.1)*	2.1
Acute Myeloid Leukemia	54	<14	2.0	*(1.5-2.6)*	3.4	1.3	*(1.0-1.8)*	2.0
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Chronic Myeloid Leukemia	<15	<5	0.4	*(0.2-0.7)*	0.3	0.2	*(0.1-0.5)*	0.1
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Other Leukemia	72	9	2.7	*(2.1-3.4)*	2.4	1.6	*(1.2-2.1)*	1.3
Other Acute Leukemia	33	<9	1.2	*(0.8-1.7)*	1.6	0.7	*(0.5-1.1)*	0.8
Aleukemic, subleukemic and NOS	39	<5	1.5	*(1.0-2.0)*	0.8	0.9	*(0.6-1.2)*	0.4
Mesothelioma	**14**	**<5**	**0.5**	***(0.3-0.9)***	**1.1**	**0.3**	***(0.2-0.6)***	**0.6**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.1)***	**0.0**	**0.0**	***(0.0-0.1)***	**0.0**
Miscellaneous	**436**	**55**	**16.3**	***(14.8-17.9)***	**14.5**	**9.6**	***(8.6-10.6)***	**8.2**

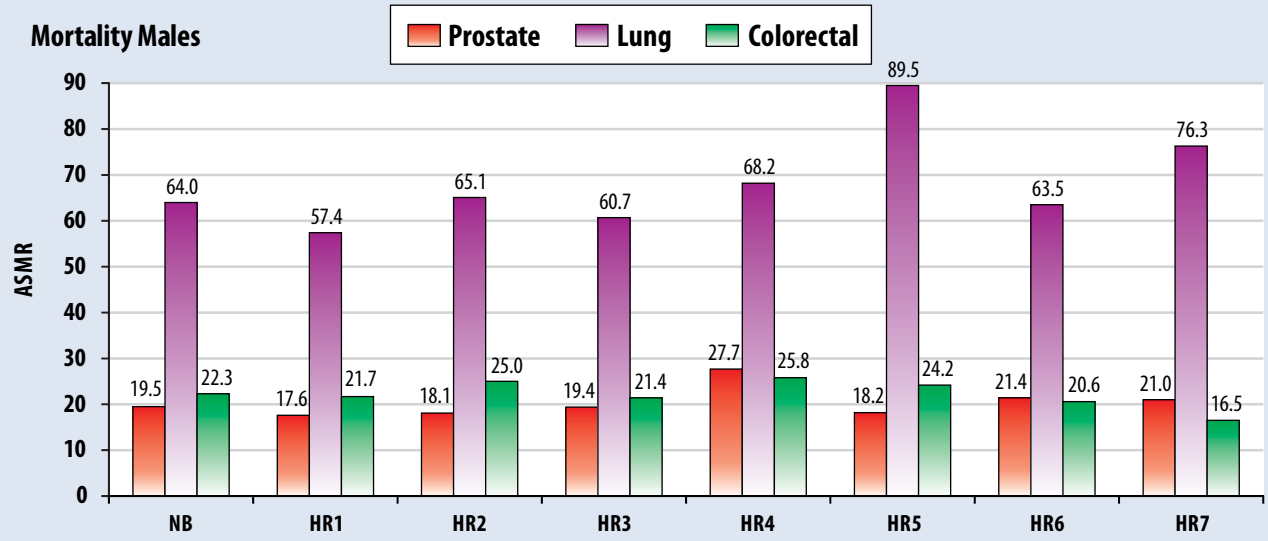
* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Figure I: Age-Standardized Incidence Rates* (per 100,000 population) in Males for Prostate, Lung, and Colorectal Cancers by Health Region (HR), NB, 2007-2013



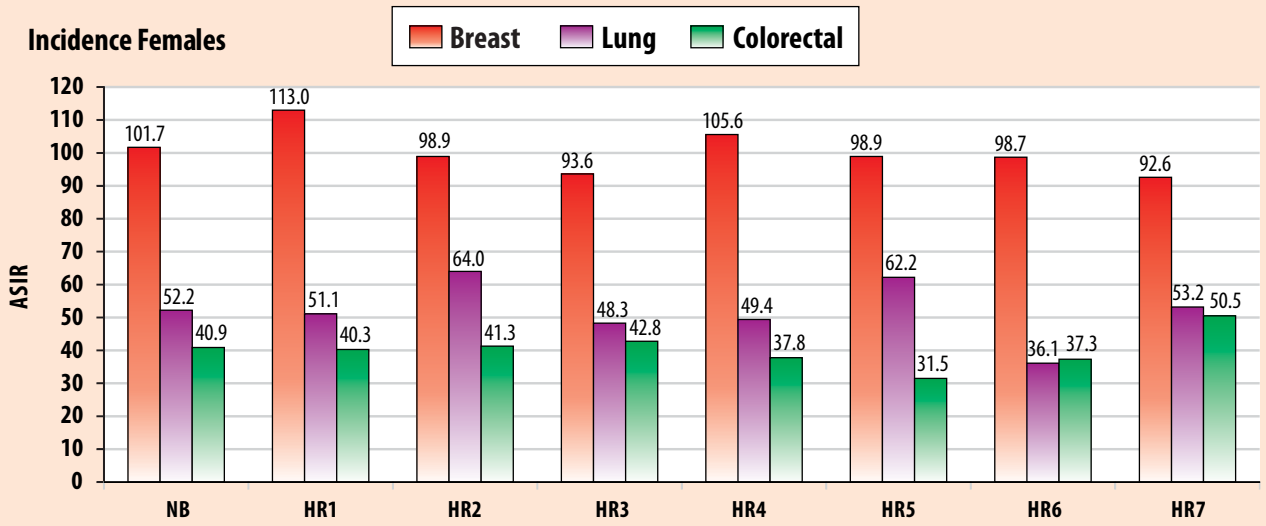
* Age-standardized to the 1991 Canadian population estimates.

Figure II: Age-Standardized Mortality Rates* (per 100,000 population) in Males for Prostate, Lung, and Colorectal Cancers by Health Region (HR), NB, 2007-2013



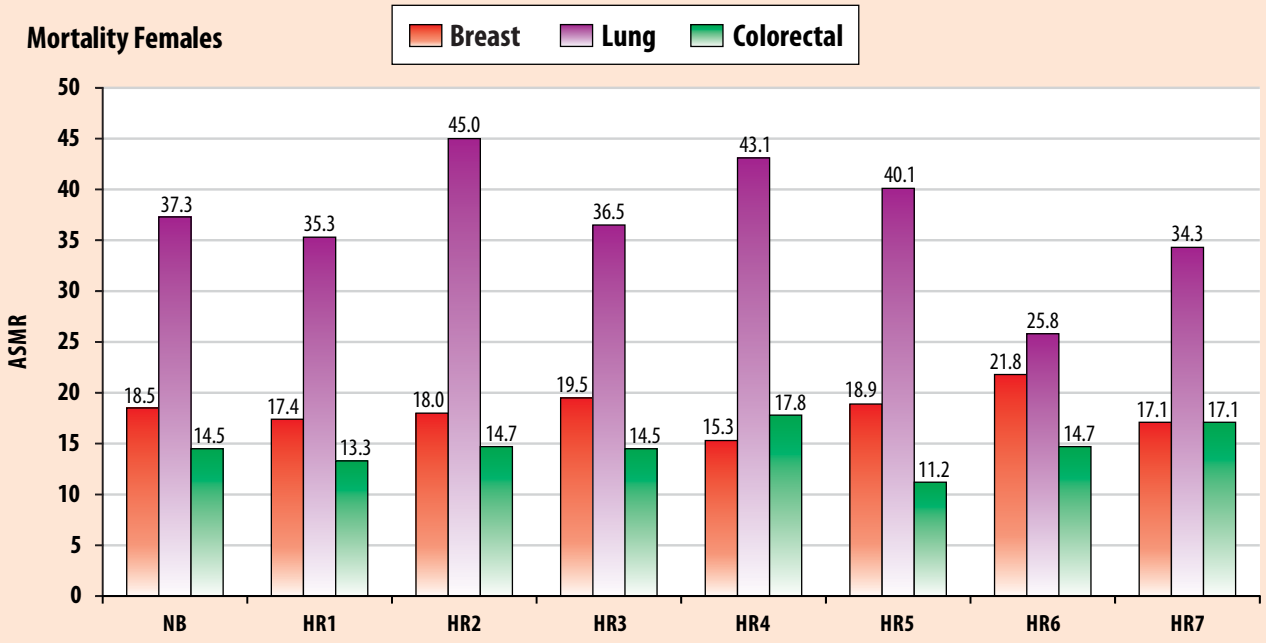
* Age-standardized to the 1991 Canadian population estimates.

Figure III: Age-Standardized Incidence Rates* (per 100,000 population) in Females for Breast, Lung, and Colorectal Cancers by Health Region (HR), NB, 2007-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure IV: Age-Standardized Mortality Rates* (per 100,000 population) in Females for Breast, Lung, and Colorectal Cancers by Health Region (HR), NB, 2007-2013



* Age-standardized to the 1991 Canadian population estimates.

List of Tables

List of Figures

Chapter 1 - Introduction

Cancer is a widespread disease which impacts a large number of New Brunswickers and it is an important driver of health care costs due to high costs of treatment and lost productivity. In order to understand the impact of cancer on our society, the NBCN operates a comprehensive cancer surveillance system that includes tracking and reporting of new cancer cases and cancer-related deaths by age, sex and geographic areas. This system is used to evaluate the effectiveness of programs aimed at reducing the burden of cancer such as prevention, screening and treatment programs.

This report provides high quality information for comparison of cancer rates, prevalence, survival, trends and projections among health regions in New Brunswick and to Canada as a whole. It provides scientific-based evidence for guidance in health planning, resource allocation, research and policy decision-making aimed at providing patient-centered health care and improving quality of life for those affected by cancer in New Brunswick.

1.1 New Brunswick Provincial Cancer Registry

The history of the *New Brunswick Provincial Cancer Registry* (hereafter referred to as the Registry) can be traced back to 1952 when records on cancer patients were initially collected. The Registry contains patient demographic and tumour information that are considered reportable by the Canadian Cancer Registry (CCR) and the North American Association of Central Cancer Registries (NAACCR). The system allows for the reporting of multiple primary tumours per person.[4]

The Registry was originally operated by the Saint John General Hospital and in July 1982, it was moved to the new Saint John Regional Hospital. In April 1992, the day-to-day responsibilities were transferred to and financed by the Department of Health and Community Services, where a new initiative was conducted to upgrade and automate the Registry in partnership with the Government of Canada. In 2008, the Registry was assigned to the New Brunswick Cancer Network of the Department of Health.

Today, patient and tumour specific information are primarily provided by the laboratories within the Regional Health Authorities (RHA). Other secondary sources of information include radiation oncology reports, autopsy reports, death certificates and information from other provincial cancer registries.

The authorization for RHA to provide patient specific information to the Department of Health is derived from section 21(1), Regulation 92-84 of the *Hospital Services Act of New Brunswick* (1992). In addition, authority to collect personal health information from RHA's and authority to disclose information to the Registry was stated in paragraph 28(I) and 37(6)(d) respectively of the *Personal Health Information Privacy and Access Act* (2010).

1.2 Purpose of Report

The purpose of this report is to provide valuable cancer information in New Brunswick to the public, health-care professionals, researchers, administrators and policy-makers.

The objectives of this report are to:

- Provide up-to-date information about cancer incidence, mortality, prevalence, survival, trends and projections in New Brunswick and it's Health Regions;
- Examine the cumulative incidence for the four leading cancers (lung, colorectal, prostate and breast) by census subdivisions (CSD) using geographic information systems (GIS);
- Evaluate cancer distribution of children less than 14 years of age and of adolescents and young adults from 15 to 29 years of age;
- Provide relative survival estimates by cancer stage for the four leading cancers; and,
- Provide projections on cancer incidence to 2030 for health planning and resource allocation.

Chapter 2 - Methods

2.1 Data Sources

The cancer incidence and mortality data used in this report were provided by the following sources:

1. New Brunswick Provincial Cancer Registry (NBPCR);*
2. New Brunswick Vital Statistics;** and,
3. Statistics Canada:
    - Population estimates for age standardization;
    - Provincial life tables for relative survival estimation; and,
    - Medium-growth population scenario in 2030 for cancer projection.

2.2 Data Quality

New Brunswick cancer data is submitted annually to the Canadian Cancer Registry (CCR) under an agreement between the Department of Health of New Brunswick and Statistics Canada (1994). The CCR provides Data Quality Reports for feedback on the quality of data submitted each year through the CCR core edit system. Data are also submitted to the North American Association of Central Cancer Registries (NAACCR) for certification and reporting. NAACCR, an organization established to enhance data quality and promote the use of cancer registry data, has awarded gold certification to the NBPCR from 2007-2009 as well as 2011-2013 and silver certification in 2010. This certification is awarded based on data quality, completeness and timeliness criteria.

2.3 Grouping Criteria

Similar to New Brunswick's previous cancer reports,[1,5,6] this report focuses on primary malignant or *invasive cancer* sites which do not include basal and squamous cell carcinomas of the skin. "Basal cell carcinomas are the most common cancer type in humans, and are four to five times more common than squamous cell carcinomas of the skin. In general, non-melanomatous skin cancers have a good prognosis and can nearly always be treated with curative intent."[7] There were approximately 8,807 basal cell carcinomas and 3,108 squamous cell carcinomas registered between 2007 and 2013. The Registry only allows one basal cell carcinoma and one squamous cell carcinoma of the skin to be registered per person per lifetime.

Incidence and mortality were grouped according to the *Surveillance, Epidemiology, and End Results* tables (Appendices A and B).[8] The new *SEER recode ICD-O-3 / WHO 2008* conversion tables were used as a reliable methodology of grouping for this report, as there have been some major changes in the morphology coding system, especially for hematology and lymphoma classifications.

2.4 Age-Standardized Incidence and Mortality

Cancer incidence and mortality rates were reported as *crude* and *age-standardized rates*. The 1991 Canadian post-censal population estimate (July 1, 1991) was used for the age standardization. Age-standardized cancer rates provide more meaningful comparisons over time and among different geographic health regions. *Variance* of the rate was calculated using Tiwari's formula for confidence interval.[9] The 95% *confidence interval* was used to indicate the accuracy of the rates.

Although the time frame for this report was 2007 to 2013, twenty-eight years of data (1986-2013) were used to calculate the age-standardized incidence for *children* (ages 0-14) and *adolescents and young adults* (ages 15-29) to achieve statistical stability. In addition, incidence and mortality rates were compared by sex as well as health regions for all cancer sites combined and the four leading cancers.

* The Registry database is dynamic, constantly being updated as new information is received. Incidence rates and figures may change slightly as a result. The data used in this report were current as of December 1, 2015.

** Vital Statistics New Brunswick updates their database for out-of-province deaths, as the information is received. When data were requested for this report, the majority of these updates had been completed up to the year 2013.

2.5 Average Annual Percent Change (AAPC) for Cancer Trends

A *joinpoint* statistical model,[10] developed by the *National Cancer Institute* (NCI), was used to determine when and how often the change(s) occurred in the age-standardized incidence and mortality rates over time. The *Annual Percentage Change* (APC) is defined as a percentage increase or decrease of the rates in a fixed pre-specified interval, where the change in rates is assumed constant. However, it is not always true that a single APC can accurately characterize the trend over an entire period of interest. The *joinpoint* model can produce a summary measure (i.e., *Average Annual Percentage Change* (AAPC)) which best fits the data and allows us to determine how long the APC remained constant, and when it changed over a period of multiple years. That is, the AAPC is computed as a weighted average of the APCs from the *joinpoint* model where the weights equal to the lengths of the APC intervals assumed.[11] In this report, the AAPCs for all cancer sites combined and the ten leading cancers were computed using the age-standardized incidence or mortality rates over the 1986-2013 period to achieve statistical stability.

2.6 Prevalence of Cancer

Prevalence is an indicator of primary interest in health planning and resource allocation because it measures the burden of cancer in the population as well as on the health care system.[12] Cancer prevalence is defined as the percent of cancer patients alive on a certain date (i.e., index date) in a population who were previously diagnosed with cancer. Estimating prevalence requires current, accurate information about both the incidence and vital status of cancer patients. In this report, the Byrne et al.[13] counting method was used to estimate prevalence from incidence and follow-up data collected by the Registry; and the calculated prevalence were reported by health region, sex and cancer type.

There are two different types of prevalence: complete prevalence and limited-duration prevalence. Complete prevalence is defined as the proportion of cancer patients alive on an index date, who were diagnosed with cancer, regardless of how long ago the diagnosis was made; however, limited-duration prevalence refers to the proportion of cancer patients alive on an index date who had a diagnosis of cancer within the past x years (e.g. x = 5, 10 or 20 years).[12] Limited-duration prevalence was used in this report.

Two different counting approaches, i.e., by person (person-based) or by tumour (tumour-based) were used to estimate prevalence. For example, a person diagnosed with two primary tumours of cancer A and one of cancer B in the 5 years preceding the index date, for the person-based prevalence, this individual would be counted once under cancer A, once under cancer B and once under all cancer sites combined. For the tumour-based prevalence, the same person would contribute twice to cancer A, once to cancer B and three times to all cancer sites combined. In contrast to person-based prevalence, tumour-based prevalence is more useful in reflecting the demand for health care, because multiple cancers in a person are usually treated independently.[14]

2.7 Relative Survival Ratio

Relative survival ratio analysis based on the Period Analysis Method[15] was applied to patients diagnosed with invasive primary cancer between 2007 and 2013. This method provides more up-to-date estimates of long-term patient survival compared to traditional methods.[16] To achieve statistical stability and reliability, a five-year relative survival ratio was produced for the following common cancer sites: lung, colorectal, prostate, testicular, thyroid, melanomas of the skin, ovarian, cervical and female breast cancers as well as for all cancer sites combined. Individual records were excluded from the analyses when: 1) the year of birth or death was unknown; 2) diagnosis was established either through autopsy or death certificate only; 3) alive with no survival time, and 4) diagnosis made prior to 2007.

The relative survival ratio is a ratio between the observed survival rate of a group of cancer patients and the expected survival rate of the general population who have the same characteristics but without cancer.[17] Expected survival time for individuals of the general population was estimated from the sex-specific provincial life tables published by Statistics Canada. In particular, Dickman et al.[18] and Ederer II[19] methods were used to estimate the expected survival time and the associated variance. The observed survival time for cancer patients was calculated as the difference in days between the date of diagnosis and the date of last observation (i.e., date of death or the end of study). The width of the confidence

interval reflects the degree of accuracy of the estimated rates. A narrower confidence interval indicates that the estimated rates have higher precision and vice versa. In general, a small number of cases often results in a wide confidence interval for the estimated survival rate.

In this report, a further investigation of survival was conducted for the four leading cancers (prostate, breast, lung and colorectal) using available cancer staging information (2008 for breast and colorectal, 2009 for prostate and 2010 for lung). The objectives were to: 1) examine cancer survival estimates by stage; and 2) understand the relationships between cancer survival estimates and age, sex and time after diagnosis. The registry used the Collaborative Staging System to derive the extent of disease at the time of diagnosis based on tumour size, extension of the primary tumour, lymph node involvement, and metastases.

2.8 Age-Period Cohort Method for Cancer Projection

The age-period-cohort method, developed by the Norway Cancer Registry, was used to project the number of new cases in 2020, 2025 and 2030. This method makes no assumption about changes in exposure or other risk factors. Rather, the projection process relies entirely on the extrapolation of past incidence rates, when taking age, period, and birth-cohort effects into consideration. Two different link functions (i.e., Power and Poisson link functions) were applied in the model fitting process. The Power link function provided more stable estimates compared with the Poisson link function, especially for those cancer sites with a significantly increasing or decreasing AAPC over time. For the projected population of New Brunswick in 2030, a medium-population growth scenario[20] was assumed as the base population to compute the number of new cancer cases in 2030. Also, data from 1986-2010 were utilized as the baseline time period in the model.

2.9 Geographic Information Systems Mapping

The Geographic Information Systems (GIS)[21] is a powerful analytical and visual tool used to differentiate results at different geographic levels. In this report, GIS was used to map the distribution of cancer incidence weighted by population across various census subdivisions in New Brunswick. Algorithms for the selection of multiple cutoff points for cumulative incidence of the four leading cancers are included in the map legends.

Chapter 3 - Results

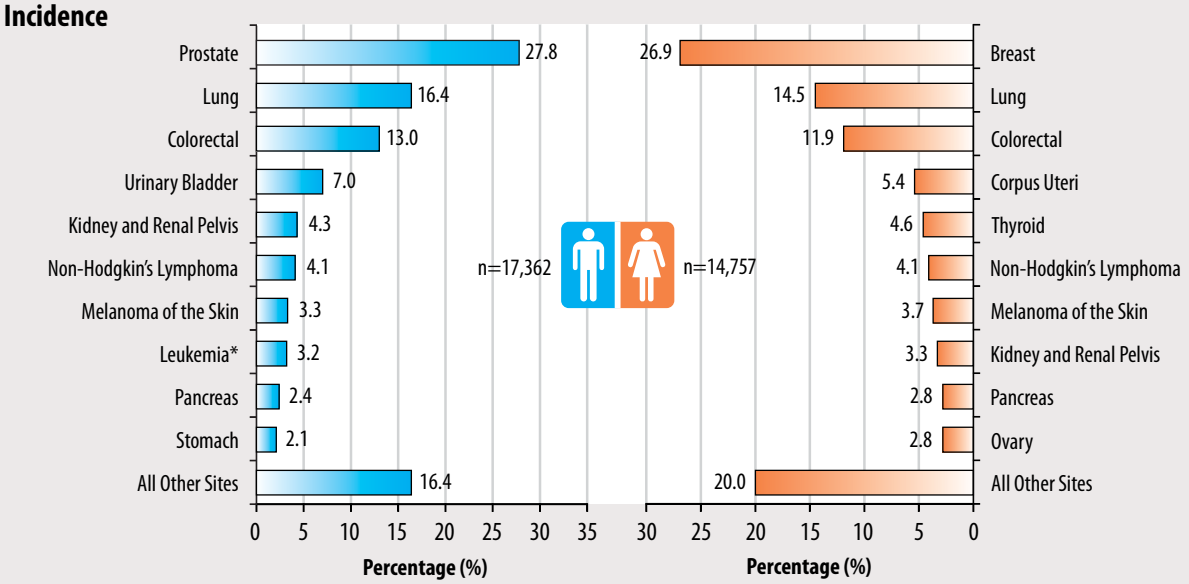
3.1 Provincial Cancer Incidence Profile

The 2015 Canadian Cancer Statistics showed that New Brunswick had the second highest estimated age-standardized incidence rates in the country for *all cancers* for males and the fifth highest for females.[3] Approximately, 4,588 individuals in New Brunswick were diagnosed with some form of invasive cancer annually during the period of 2007 to 2013 (Figure 1), which was 17.3% higher than the average of 3,912 from the previous five-year period (2002-2006).[1] Further, the number of new cases of all cancer sites combined was higher for males (17,362 cases) than for females (14,757 cases). Even when the sex-specific sites (female and male genital systems and breast) were excluded, males still had a relatively higher incidence count than females (12,317 vs. 9,216 cases). This is primarily due to the fact that males had substantially higher counts across many different cancers (i.e. *oral cavity and pharynx* males: *452 vs.* females: *190, digestive system* males: *3,655 vs.* females: *2,792, respiratory system* males*: 3,044 vs.* females: *2,183, and urinary system* males: *2,000 vs.* females: *904*) with the exception of endocrine system, where female counts were higher (697 females vs. 245 males).

In males, the six leading cancers by percentage distribution of cancer incidence for the period 2007-2013 were: *prostate* (27.8%), *lung* (16.4%), *colorectal* (13.0%), *urinary bladder* (7.0%) *cancers,* cancer of *the kidney and renal pelvis (4.3%), non-Hodgkin's lymphoma* (4.1%, Figure 1). *Melanoma of the skin* (3.3%) was the seventh leading cancer for males, followed by *leukemia* (3.2%), *pancreas* (2.4%) and *stomach* (2.1%, Figure 1). Of these, prostate, lung and colorectal cancers accounted for 57.1% of all male new cancer cases.

For females, the six leading cancers by percentage distribution of cancer incidence in this period were: *breast* (26.9%), *lung* (14.5%), *colorectal* (11.9%), cancer of *corpus uteri* (5.4%), *thyroid* (4.6%) and non-Hodgkin's lymphoma (4.1%, Figure 1). *Melanoma of the skin* (3.7%) was the seventh leading cancer followed by *kidney and renal pelvis* (3.3%), *pancreas* (2.8%) and *ovary* (2.8%, Figure 1). Of these, *breast, lung and colorectal* cancers accounted for 53.3% of all female new cancer cases in 2007-2013.

Figure 1: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, NB, 2007-2013



* Leukemia includes lymphocytic, myeloid and monocytic and other leukemia.

3.2 Provincial Cancer Mortality Profile

The 2015 Canadian Cancer Statistics also reported that New Brunswick had the seventh highest estimated age-standardized mortality rates in the country for all cancer sites combined for males and the sixth highest for females.[3] Between 2007 and 2013, about 1,833 deaths per year in New Brunswick were attributed to cancer (Figure 2), which was 3.7% higher than that in previous five-year period (1,767 deaths per year, 2002-2006).[1]

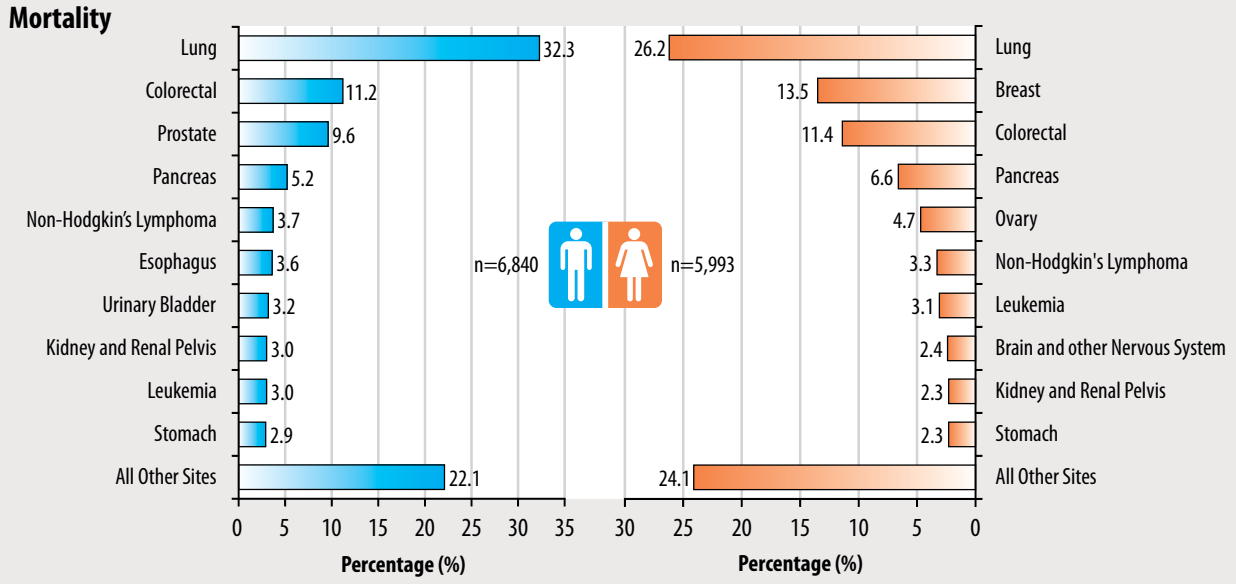
The number of deaths was higher for males (6,840 deaths) than for females (5,993 deaths). As in 2002-2006 when the sex-specific sites (female and male genital systems and breast) were excluded, the number of cancer deaths in 2007-2013 was still higher in males (males: 6,153 vs. females: 4,638). Overall, the number of deaths across multiple cancer sites in males was higher than or close to those of females. For example, respiratory system (males: 2,291 vs. females: 1,581), digestive system (males: 1,811 vs. females: 1,503) and urinary system (males: 443 vs. females: 237).

The six leading cancers for male mortality by percentage distribution in 2007-2013 were: *lung* (32.3%), *colorectal* (11.2%), *prostate* (9.6%), *pancreas* (5.2%), *non-hodgkin's lymphoma* (3.7%) and *cancer of the esophagus* (3.6%, Figure 2). *Urinary bladder* (3.2%) was in seventh place, followed by cancer of the *kidney and renal pelvis* (3.0%), *leukemia* (3.0%) and *stomach* (2.9%) for this time period. Of these, *lung, colorectal, and prostate* cancers accounted for 53.1% of all male cancer deaths between 2007 and 2013.

For females, the six leading cancers by percentage distribution in 2007-2013 were: *lung* (26.2%), *breast* (13.5%) and *colorectal* (11.4%) cancers, *pancreas* (6.6%), *ovary* (4.7%) and *non-Hodgkin's lymphoma* (3.3%, Figure 2). *Leukemia* (3.1%) was in seventh place, followed by *brain* (2.4%), *kidney and renal pelvis* (2.3%), *and stomach* (2.3%). Of these, lung, breast and colorectal cancers accounted for 51.1% of all female cancer deaths.

Lung cancer was the leading cause of cancer death for both males and females during the period of 2007-2013. As stated above, this cancer alone accounted for 32.3% of all cancer deaths for males and 26.2% for females.

Figure 2: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, NB, 2007-2013



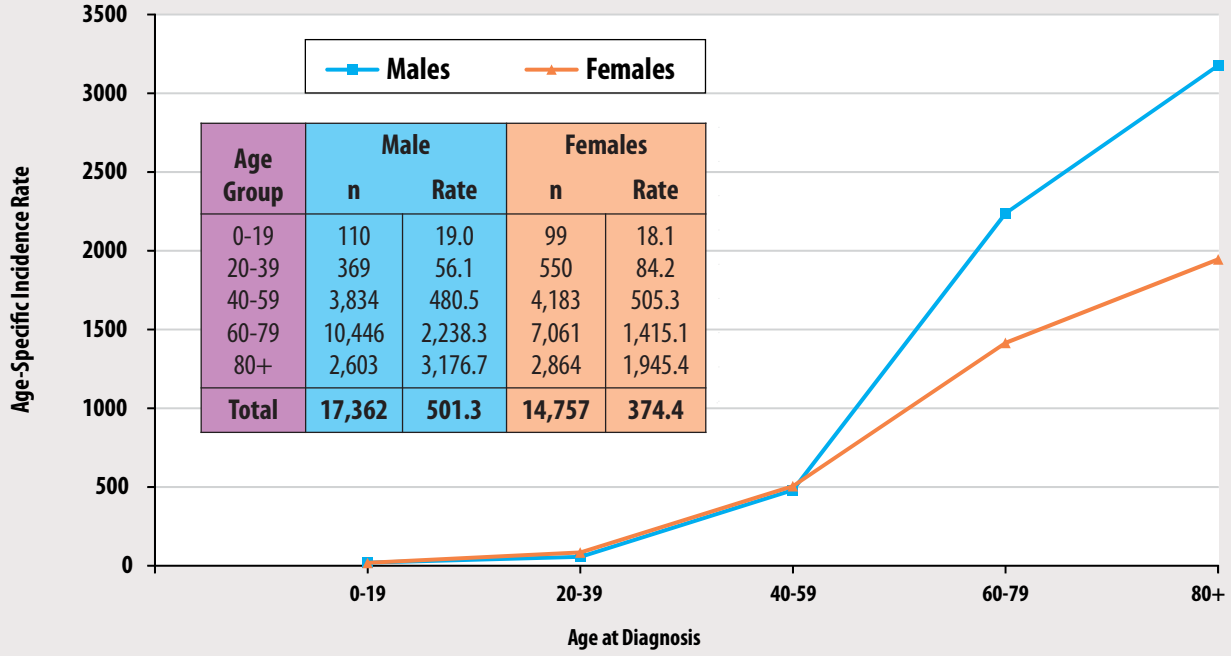
3.3 Age and Sex Distribution of Cancer

3.3.1 Age-Specific Incidence and Mortality Rates for All Cancer Sites Combined

As shown in Figures 3 and 4, cancer incidence and mortality rates for all cancer sites combined increased with age in both sexes. In males, 75.2% (13,049/17,362) of new cancer cases and 84.9% (5,808/6,840) of cancer deaths occurred among those who were sixty years or older between 2007 and 2013. Within the same time period, 67.3% (9,925/14,757) of new cancer cases and 82.6% (4,948/5,993) of cancer deaths occurred in females who were sixty years or older.

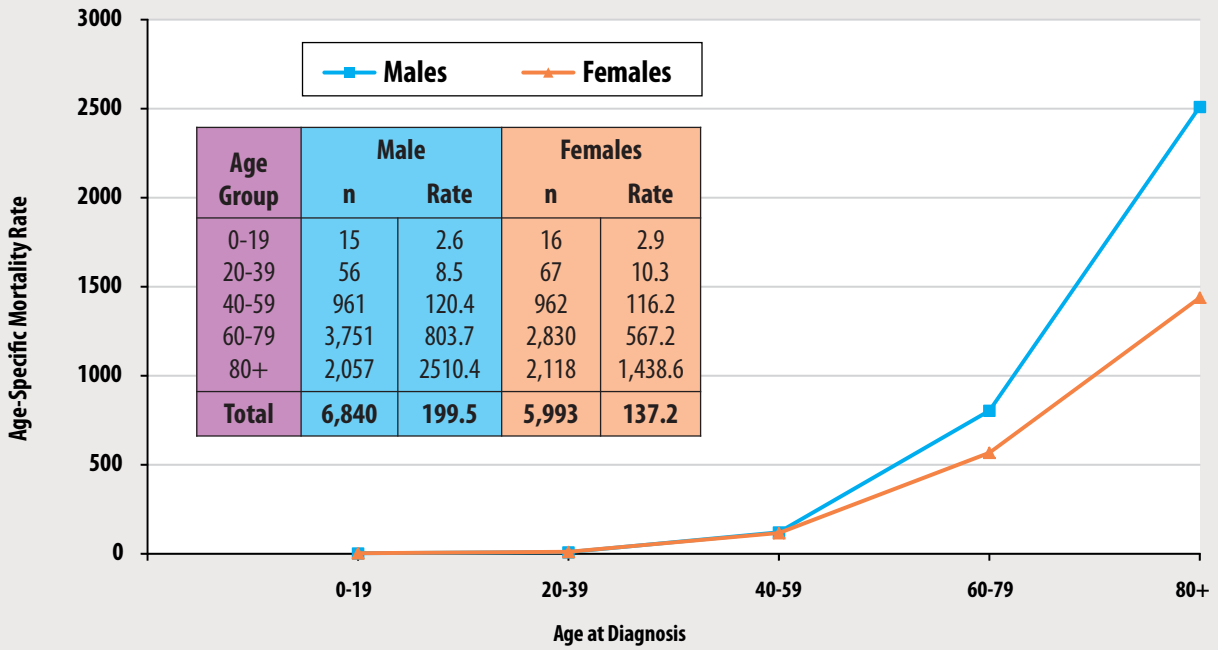
Incidence and mortality rates for all cancer sites combined were comparable between males and females in the younger age groups (0-19, 20-39 and 40-59, Figures 3 and 4). However, a more pronounced increase in both rates occurred in the elderly groups (60-79 and 80+, Figures 3 and 4). For example, males experienced higher incidence rates in the 60-79 group that was primarily due to the large numbers of prostate cancer; where 3,344 out of 4,821 new cases were diagnosed for this age group between 2007 and 2013.

Figure 3: Age-Specific Incidence Rates (per 100,000 population) for All Cancer Sites Combined by Sex, NB, 2007-2013



Age Group	Male		Females	
	n	Rate	n	Rate
0-19	110	19.0	99	18.1
20-39	369	56.1	550	84.2
40-59	3,834	480.5	4,183	505.3
60-79	10,446	2,238.3	7,061	1,415.1
80+	2,603	3,176.7	2,864	1,945.4
Total	**17,362**	**501.3**	**14,757**	**374.4**

Figure 4: Age-Specific Mortality Rates (per 100,000 population) for All Cancer Sites Combined by Sex, NB, 2007-2013



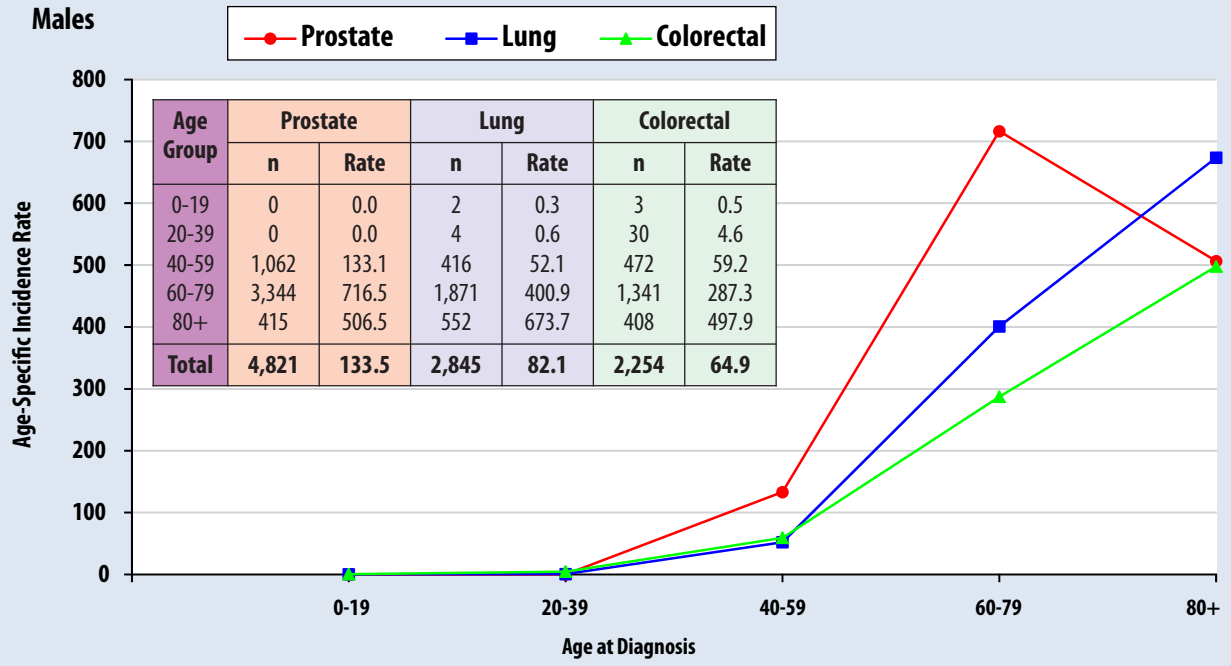
Age Group	Male		Females	
	n	Rate	n	Rate
0-19	15	2.6	16	2.9
20-39	56	8.5	67	10.3
40-59	961	120.4	962	116.2
60-79	3,751	803.7	2,830	567.2
80+	2,057	2510.4	2,118	1,438.6
Total	**6,840**	**199.5**	**5,993**	**137.2**

3.3.2 Age-Specific Incidence Rates for the Three Leading Cancers by Sex

In males, the three leading cancers (*prostate*, *lung* and *colorectal*) accounted for 57.1% (9,920/17,362) of all new cancers between 2007 and 2013. In females, the three leading cancers (*breast*, *lung* and *colorectal*) constituted 53.4% (7,873/14,757) of all new cancers in this period. The incidence patterns of these leading cancers are further examined across different age groups (0-19, 20-39, 40-59, 60-79 and 80+) in Figures 5 and 6.

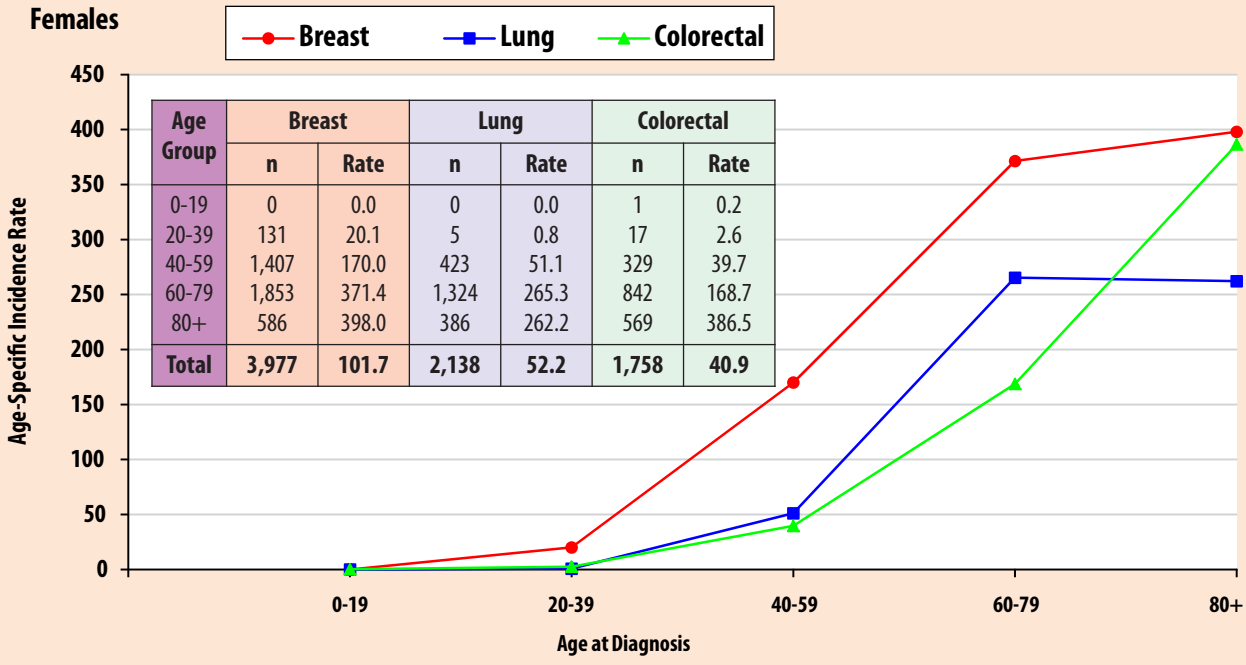
Overall, the age-specific incidence rates of *prostate, lung* and *colorectal* cancers for males increased substantially after the 40-59 age group (Figure 5). A similar pattern was seen in females for the rates of *breast*, *lung* and *colorectal* cancers after age 40-59 (Figure 6). However, a decreasing rate for *prostate* cancer was observed from 60-79 to 80+ age groups (Figure 5). This may be due to the fact that the PSA testing for prostate cancer was not frequently performed amongst those 80 years and older. Also, a slightly decreasing rate occurred in female lung cancer after age 60-79.

Figure 5: Age-Specific Incidence Rates (per 100,000 population) for the Three Leading Cancers, Males, NB, 2007-2013



Age Group	Prostate		Lung		Colorectal	
	n	Rate	n	Rate	n	Rate
0-19	0	0.0	2	0.3	3	0.5
20-39	0	0.0	4	0.6	30	4.6
40-59	1,062	133.1	416	52.1	472	59.2
60-79	3,344	716.5	1,871	400.9	1,341	287.3
80+	415	506.5	552	673.7	408	497.9
Total	**4,821**	**133.5**	**2,845**	**82.1**	**2,254**	**64.9**

Figure 6: Age-Specific Incidence Rates (per 100,000 population) for the Three Leading Cancers, Females, NB, 2007-2013

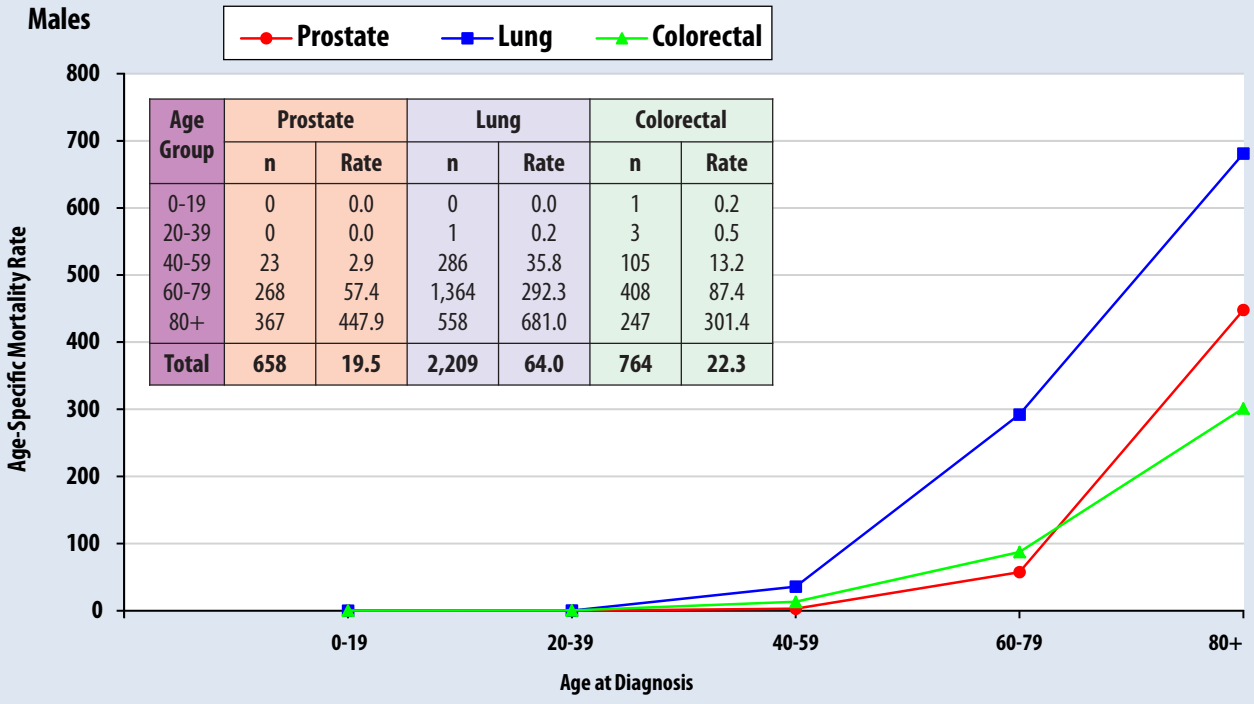


Age Group	Breast		Lung		Colorectal	
	n	Rate	n	Rate	n	Rate
0-19	0	0.0	0	0.0	1	0.2
20-39	131	20.1	5	0.8	17	2.6
40-59	1,407	170.0	423	51.1	329	39.7
60-79	1,853	371.4	1,324	265.3	842	168.7
80+	586	398.0	386	262.2	569	386.5
Total	**3,977**	**101.7**	**2,138**	**52.2**	**1,758**	**40.9**

3.3.3 Age-Specific Mortality Rates for the Three Leading Cancers by Sex

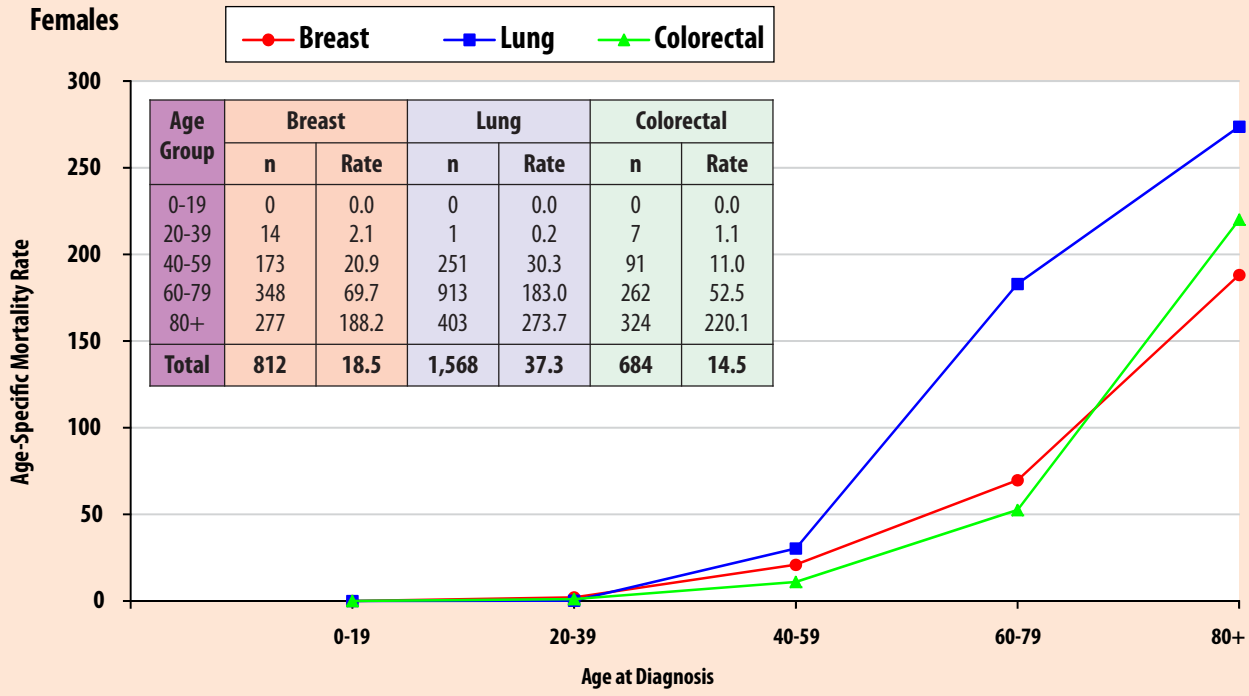
Between 2007 and 2013, *prostate*, *lung* and *colorectal* cancers combined accounted for 53.1% of all cancer-related deaths in males. In females, 51.1% of all cancer-related deaths were attributed to *breast*, *lung* and *colorectal* cancers combined. As seen in Figures 7 and 8, the age-specific mortality rates for *lung*, *colorectal*, *breast* and *prostate* cancers significantly increased with age after 40-59 and was more pronounced in the older age groups, i.e., 60-79 and 80+.

Figure 7: Age-Specific Mortality Rates (per 100,000 population) for the Three Leading Cancers, Males, NB, 2007-2013



Age Group	Prostate		Lung		Colorectal	
	n	Rate	n	Rate	n	Rate
0-19	0	0.0	0	0.0	1	0.2
20-39	0	0.0	1	0.2	3	0.5
40-59	23	2.9	286	35.8	105	13.2
60-79	268	57.4	1,364	292.3	408	87.4
80+	367	447.9	558	681.0	247	301.4
Total	**658**	**19.5**	**2,209**	**64.0**	**764**	**22.3**

Figure 8: Age-Specific Mortality Rates (per 100,000 population) for the Three Leading Cancers, Females, NB, 2007-2013



Age Group	Breast		Lung		Colorectal	
	n	Rate	n	Rate	n	Rate
0-19	0	0.0	0	0.0	0	0.0
20-39	14	2.1	1	0.2	7	1.1
40-59	173	20.9	251	30.3	91	11.0
60-79	348	69.7	913	183.0	262	52.5
80+	277	188.2	403	273.7	324	220.1
Total	**812**	**18.5**	**1,568**	**37.3**	**684**	**14.5**

3.3.4 Childhood and Adolescent and Young Adults Cancers, 1986-2006 vs. 2007-2013

Between 1986 and 2006, a total of 1,486 new cancer cases were diagnosed in children (ages 0-14 years; 445 cases) and adolescents and young adults (ages 15-29 years; 1,041 cases) in New Brunswick (Figures 9A and 9B). During the period of 2007-2013, 139 new cancer cases occurred among children less than 14 years of age and 347 among adolescents and young adults from 15 to 29 years of age. In particular, leukemia, brain cancer, lymphoma and soft tissue comprised 76.8% (53/69) of all new cancer cases diagnosed for males and 71.4% (50/70) for females from 0 to 14 years old (Figure 9C). Within the same time period, testicular, lymphoma, thyroid, and melanoma of the skin cancers constituted 59.9% (103/172) of male cancers from 15 to 29 years of age (Figure 9D). Thyroid, lymphoma, and melanoma of the skin cancers accounted for 50.3% (88/175) of female new cases in this age group (Figure 9D).

The crude and age-standardized incidence rates for all cancer sites combined as well as the four leading cancers were calculated in this report (Tables 5A to 5D). Specifically, between 2007 and 2013, the age-standardized incidence rates of females for all cancer sites combined were slightly higher than those of males (Tables 5C and 5D). The frequencies and rates within different time frames (i.e., 1986-2006 vs. 2007-2013) and age groups (ages 0-14 vs. 15-29 years) for the four leading cancers are outlined in Tables 5A to 5D.

The frequencies of cancer-related deaths for children (ages 0-14 years) and adolescents and young adults (ages 15-29 years) are also illustrated in Figures 10A to 10D.

Figure 9: Number of New Cases and Associated Percentage of Distribution of Cancer Incidence in Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29), NB, 1986-2006 vs. 2007-2013

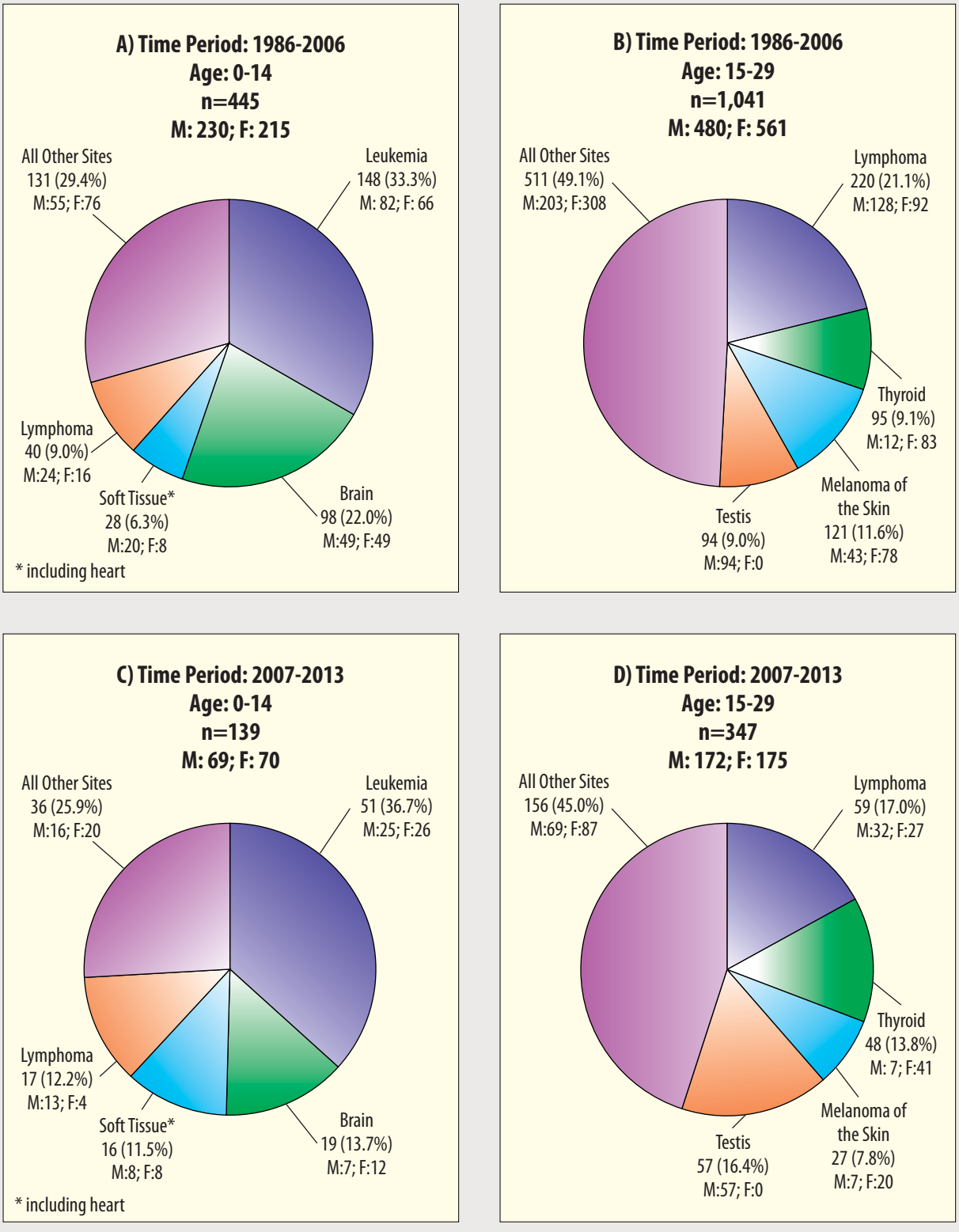


Table 5: Number of New Cases and Associated Rates for Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29) by Cancer Type and Sex, NB, 1986-2006 vs. 2007-2013

A) 1986 – 2006; Age 0-14

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	230	14.9 (13.0, 17.0)	15.2 (13.3, 17.3)	215	14.7 (12.8, 16.8)	14.9 (13.0, 17.0)
Leukemia	82	5.3 (4.2, 6.6)	5.5 (4.4, 6.9)	66	4.5 (3.5, 5.8)	4.7 (3.6, 5.9)
Brain	52	3.4 (2.5, 4.4)	3.4 (2.6, 4.5)	53	3.6 (2.7, 4.8)	3.6 (2.7, 4.8)
Lymphoma	24	1.6 (1.0, 2.3)	1.5 (1.0, 2.3)	16	1.1 (0.6, 1.8)	1.0 (0.6, 1.7)
Soft Tissue (including heart)	20	1.3 (0.8, 2.0)	1.3 (0.8, 2.0)	8	0.5 (0.2, 1.1)	0.6 (0.2, 1.1)

B) 1986 – 2006; Age 15-29

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	480	27.0 (24.6, 29.5)	27.7 (25.3, 30.3)	561	32.8 (30.2, 35.7)	34.2 (31.5, 37.2)
Lymphoma	128	7.2 (6.0, 8.6)	7.3 (6.1, 8.6)	92	5.4 (4.3, 6.6)	5.5 (4.4, 6.7)
Testis	94	5.3 (4.3, 6.5)	5.5 (4.4, 6.7)	-	-	-
Melanoma of the Skin	43	2.4 (1.8, 3.3)	2.6 (1.9, 3.5)	78	4.6 (3.6, 5.7)	4.8 (3.8, 6.0)
Thyroid	12	0.7 (0.3, 1.2)	0.7 (0.4, 1.2)	83	4.9 (3.9, 6.0)	5.1 (4.0, 6.3)

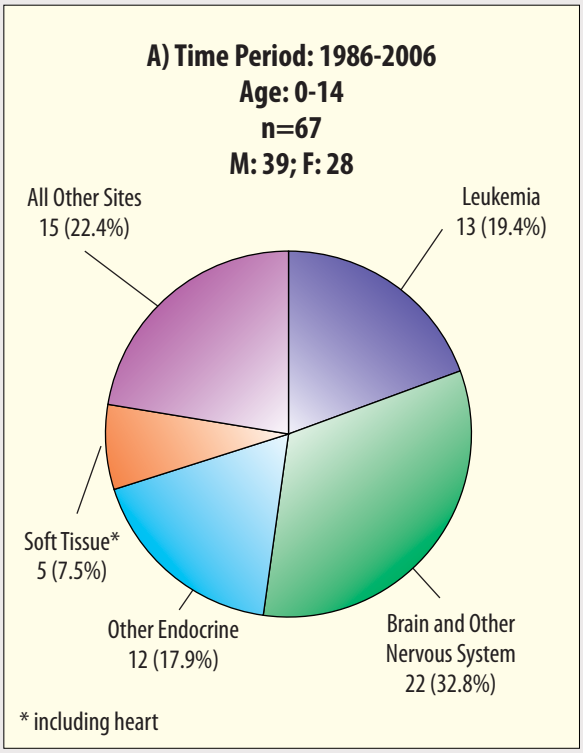
C) 2007– 2013; Age 0-14

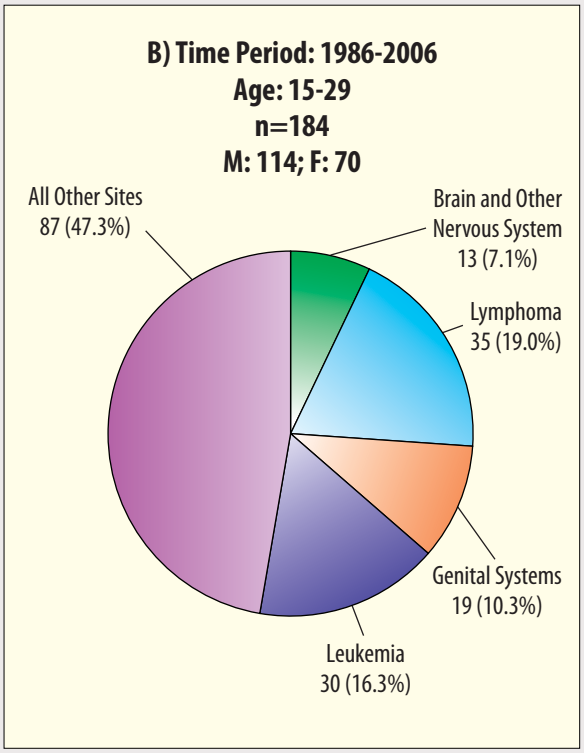
Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	69	16.8 (13.1, 21.3)	17.1 (13.3, 21.6)	70	18.1 (14.1, 22.8)	18.3 (14.3, 23.1)
Leukemia	25	6.1 (3.9, 9.0)	6.2 (4.0, 9.2)	26	6.7 (4.4, 9.8)	6.8 (4.5, 10.0)
Brain	7	1.7 (0.7, 3.5)	1.7 (0.7, 3.5)	12	3.1 (1.6, 5.4)	3.1 (1.6, 5.4)
Lymphoma	13	3.2 (1.7, 5.4)	3.1 (1.7, 5.4)	4	1.0 (0.3, 2.6)	1.0 (0.3, 2.6)
Soft Tissue (including heart)	8	2.0 (0.8, 3.8)	2.0 (0.9, 3.9)	8	2.1 (0.9, 4.1)	2.1 (0.9, 4.2)

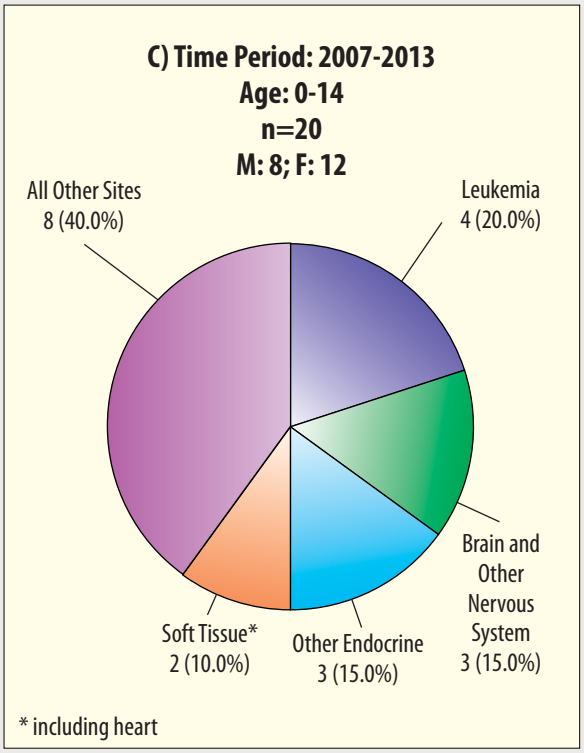
D) 2007– 2013; Age 15-29

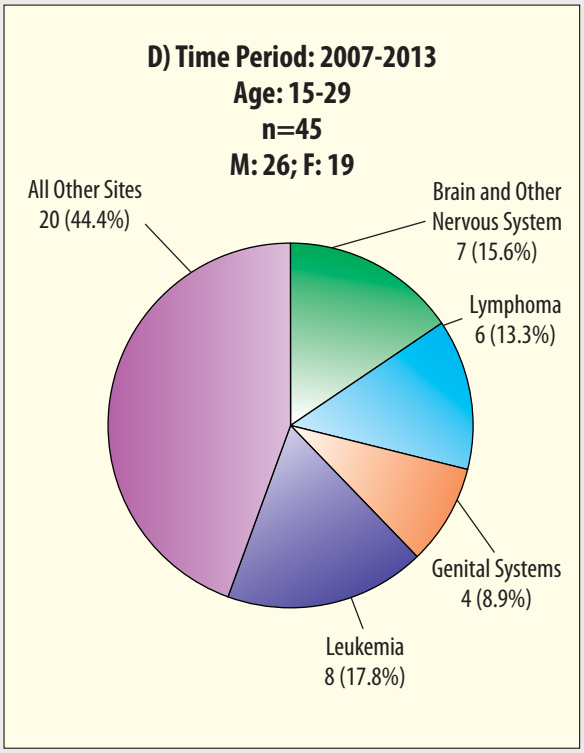
Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	172	34.4 (29.4, 39.9)	35.7 (30.5, 41.5)	175	36.7 (31.4, 42.5)	38.4 (32.9, 44.6)
Lymphoma	32	6.4 (4.4, 9.0)	6.4 (4.4, 9.1)	27	5.7 (3.7, 8.2)	5.7 (3.7, 8.3)
Testis	57	11.4 (8.6, 14.8)	12.0 (9.1, 15.6)	-	-	-
Melanoma of the Skin	7	1.4 (0.6, 2.9)	1.6 (0.7, 3.3)	20	4.2 (2.6, 6.5)	4.5 (2.7, 6.9)
Thyroid	7	1.4 (0.6, 2.9)	1.5 (0.6, 3.0)	41	8.6 (6.2, 11.7)	9.0 (6.4, 12.2)

Figure 10: Number of Deaths and Associated Percentage Distribution of Cancer Mortality in Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29), NB, 1986-2006 vs. 2007-2013









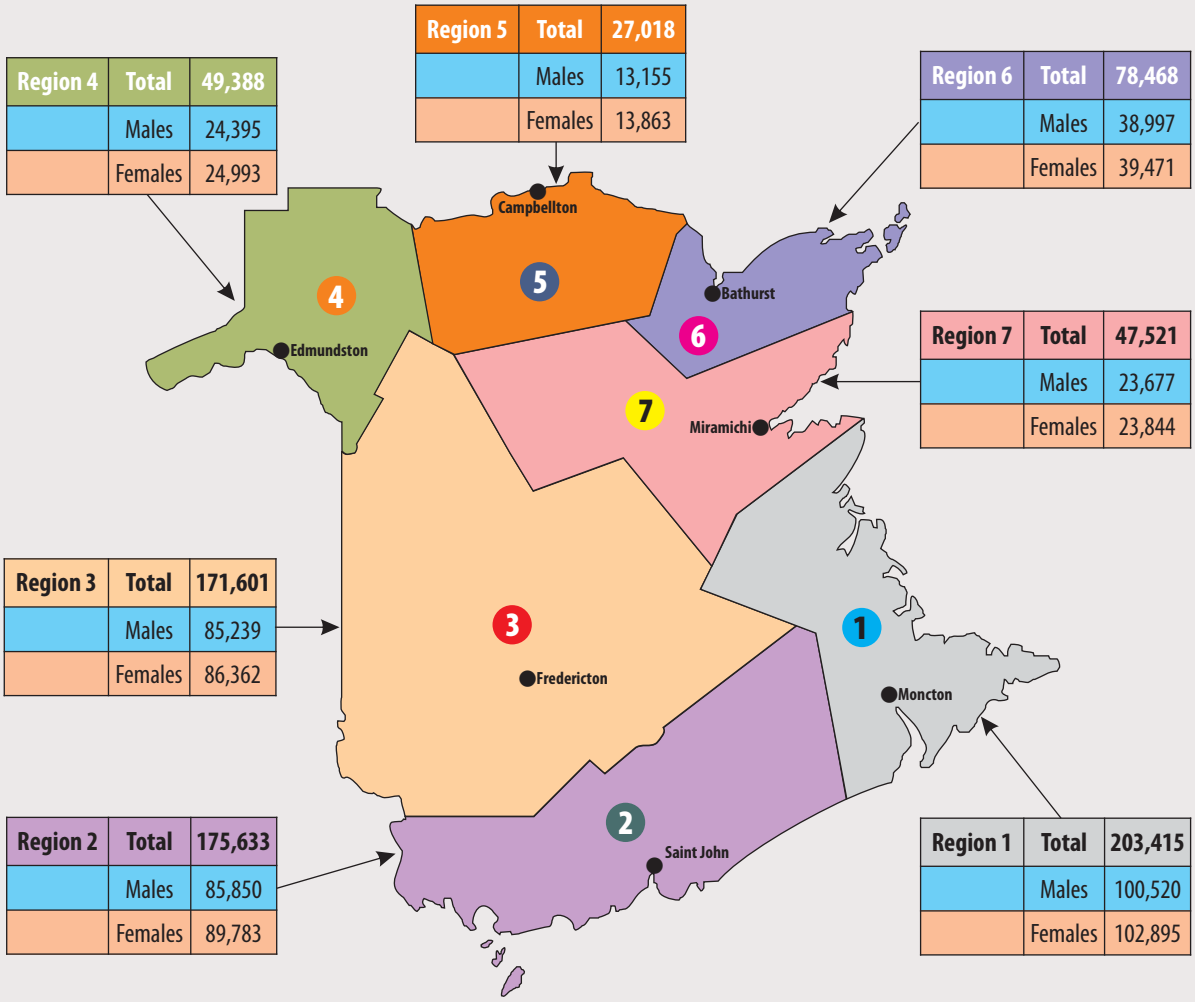
3.4 Geographic Distribution of Cancer

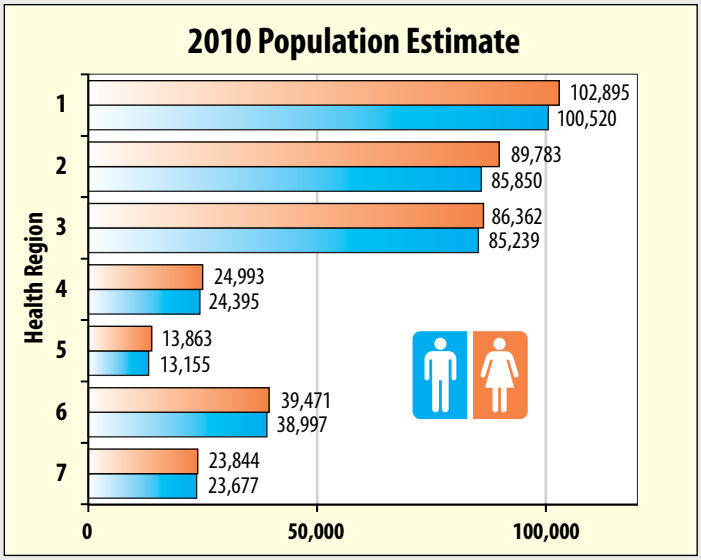
3.4.1 Health Region Population Demographics

New Brunswick is divided into two *Regional Health Authorities* which include seven different health regions (HRs). The population of each health region varies from about 27,000 in HR5 to approximately 203,400 in HR1. Of the 753,000 New Brunswickers (2010), 73.1% are located in HR1, HR2 and HR3, while 26.9% residents live in the northern areas of HR4, HR5, HR6 and HR7 (Map 1).

Given the variation in population distribution among health regions, larger health regions (HR1, HR2 and HR3) generally have more new cancer cases and deaths than smaller health regions (HR4, HR5, HR6 and HR7). Different ratios of males to females across different health regions (HR7 = 0.97 and HR5 = 0.95) also have an impact on the distribution of cancer incidence and mortality. In the next section, we examine the frequency distributions of the ten leading cancers by health region.

Map 1: NB Health Regions and Associated Population Estimates in 2010





3.4.2 Ranking of Cancers by Health Region

3.4.2.1 Ten Leading Cancers by Frequency

Regional frequency distributions of incidence and mortality for the ten leading cancers are shown in Figures 11-24. Frequency is defined as the percentage of each individual cancer in relation to the total number of cancers in each health region. In this report, the percentage was calculated based on the number of new cancer cases and deaths that occurred during the period of 2007-2013.

Prostate Cancer

Prostate cancer was the most frequently diagnosed cancer in males across all health regions except HR5, ranging from 21.4% of all cancers in HR5 to 36.7% in HR7 (Table 6). The 2015 estimated national incidence of prostate cancer was 23.9% of all cancers diagnosed in males (Canadian Cancer Statistics 2015, Table 2.4).[3] Prostate cancer was the third leading cause of cancer-related deaths across all regions, with the exception of HR4 and HR7 where it ranked in second place (Table 7). The highest percentage of prostate cancer deaths occurred in HR4 (12.2%), slightly over the provincial average of 9.6% and the national rate of 10.0% (Canadian Cancer Statistics 2015, Table 4.4).[3]

Breast Cancer

Breast cancer was the most frequently diagnosed cancer in females and constituted 22.9% of all cancers in HR7 to 29.0% in HR4 (Table 8); these estimates were comparable to the national estimated rate of 25.9% (Canadian Cancer Statistics 2015, Table 2.4).[3] Breast cancer was the second leading cause of cancer-related deaths across all regions, with the exception of HR4 and HR 7 where it ranked in third place (Table 9). The highest percentage of breast cancer deaths occurred in HR6 (17.6%) compared to the provincial average of 13.5% and the national estimated rate of 13.5% for 2015 (Canadian Cancer Statistics 2015, Table 4.4).[3]

Lung Cancer

The regional frequency distributions of *lung cancer* incidence in males ranged from 15.2% in HR1 to 22.4% in HR5 (Table 6). For females, the incidence frequencies of lung cancer varied from 10.3% in HR6 to 18.9% in HR5 (Table 8). The 2015 national estimated frequencies of lung cancer incidence were 13.5% for males and 13.5% for females (Canadian Cancer Statistics 2015, Table 2.4).[3] In New Brunswick, lung cancer was responsible for the highest percentages of deaths in both males and females. Specifically, mortality frequencies of lung cancer for males ranged from 31.2% in HR1 to 38.4% in HR5. For females, the frequencies of lung cancer deaths varied from 19.7% in HR6 to 29.8% in HR5. The provincial average frequencies of lung cancer for mortality were 32.3% for males and 26.2% for females in comparison to the national estimates (males: 26.6%; females: 27.0%, Canadian Cancer Statistics 2015, Table 4.4).[3]

Colorectal Cancer

The frequencies of the incidence of *colorectal cancer* for both sexes ranked third across all regions with the exception of HR7 in females, where it ranked second (Tables 6 and 8). Incidence percentages of colorectal cancer in males varied from 11.0% in HR7 to 14.6% in HR4 and from 10.2% in HR5 to 14.0% in HR7 for females. Mortality percentages of colorectal cancer in males ranged from 7.7% in HR7 to 11.8% in HR2 and in females, from 10.1% in HR5 to 12.8% in HR7 (Tables 7 and 9). Colorectal cancer was ranked in second place for cancer-related deaths in males (11.2%) and the third for females (11.4%) provincially and nationally (males: 12.4%; females: 11.4%, Canadian Cancer Statistics 2015, Table 4.4).[3]

Other Cancers

Bladder cancer for males was the fourth most frequently detected cancer across all regions accounting for 4.9% in HR7 to 8.7% in HR5 (Table 6). *Cancer of kidney and renal pelvis* ranked fifth for males in HR1 (4.6%), HR2 (4.2%), HR3 (4.5%), HR5 (6.2%) and HR7 (3.8%); however, *non-Hodgkin's lymphoma* was the fifth in HR4 (3.9%), and HR6 (4.7%, Table 6).

In HR1 (4.6%), HR2 (6.4%), HR3 (6.1%) and HR4 (7.1%) the incidence of *corpus uteri* was the fourth most frequently detected of all cancers for females (Table 8). In HR5 (5.3%) *thyroid cancer* was the fourth most common cancer for females. *Lung Cancer* (10.3%) and *melanoma of the skin* (4.9%) were ranked the fourth most frequently diagnosed cancers in HR6 and HR7 (Table 8).

In males, *pancreatic cancer* (5.2%) was the fourth most common cancer causing deaths across all regions except HR6 (5.1%), where *stomach cancer* (5.7%) was fourth. *Non-Hodgkin's lymphoma* was the fifth most common cancer causing deaths in HR1 (4.7%, Table 7). In HR2, HR3 and HR7, *esophageal cancer* was the fifth leading cause of cancer-related deaths and accounted for 3.9%, 4.4% and 4.9% of all cancers (Table 7), respectively.

Across all heath regions, *pancreatic cancer* for females was the fourth most frequent cause of cancer deaths accounting for 6.2% of all cancers in HR5 to 8.2% in HR7. *Ovarian cancer* was the fifth most frequent cause of cancer-related deaths in all regions with the exception of HR2 (3.4%) where it was sixth (Table 9).

Cancers of the *esophagus* and *thyroid* were identified as being among the ten leading cancers in males in several regions but not in the province (Table 6). *Brain and other nervous system* and *liver cancers* were identified as being among the ten leading causes of cancer-related deaths in males in one or more regions but not across the province (Table 7).

Urinary bladder cancer and *leukemia* were identified as being among the ten leading cancers in females in more than one region but not across the province (Table 8). Cancers of the *myeloma, corpus uteri, and cervix uteri* were identified as being among the ten leading causes of cancer-related deaths in females in one or more regions but not across the province (Table 9).

Figure 11: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 1, NB, 2007-2013

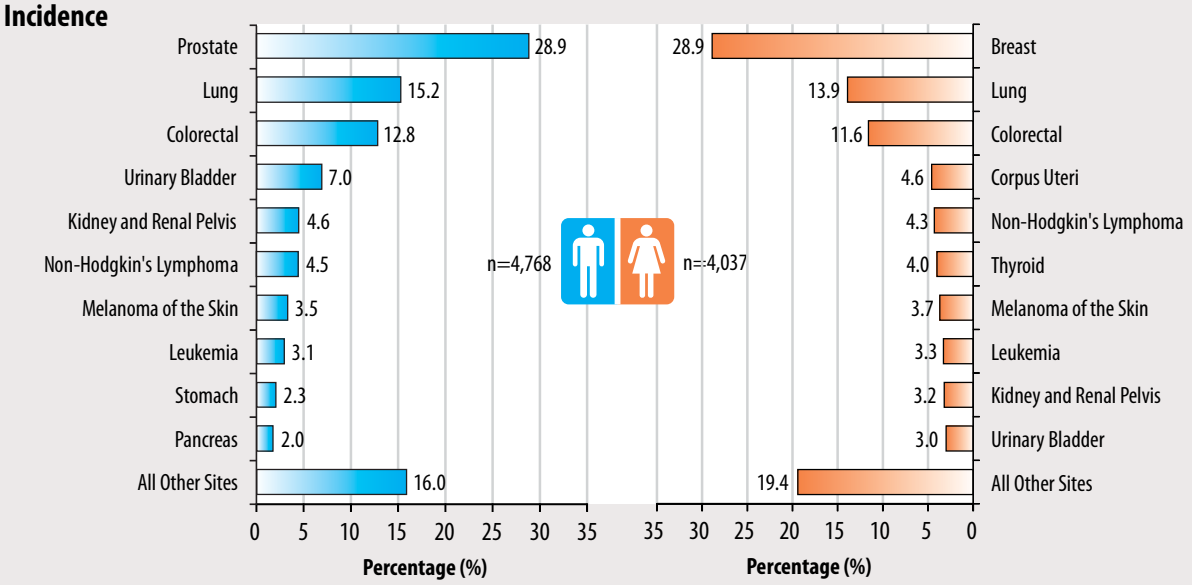


Figure 12: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 1, NB, 2007-2013

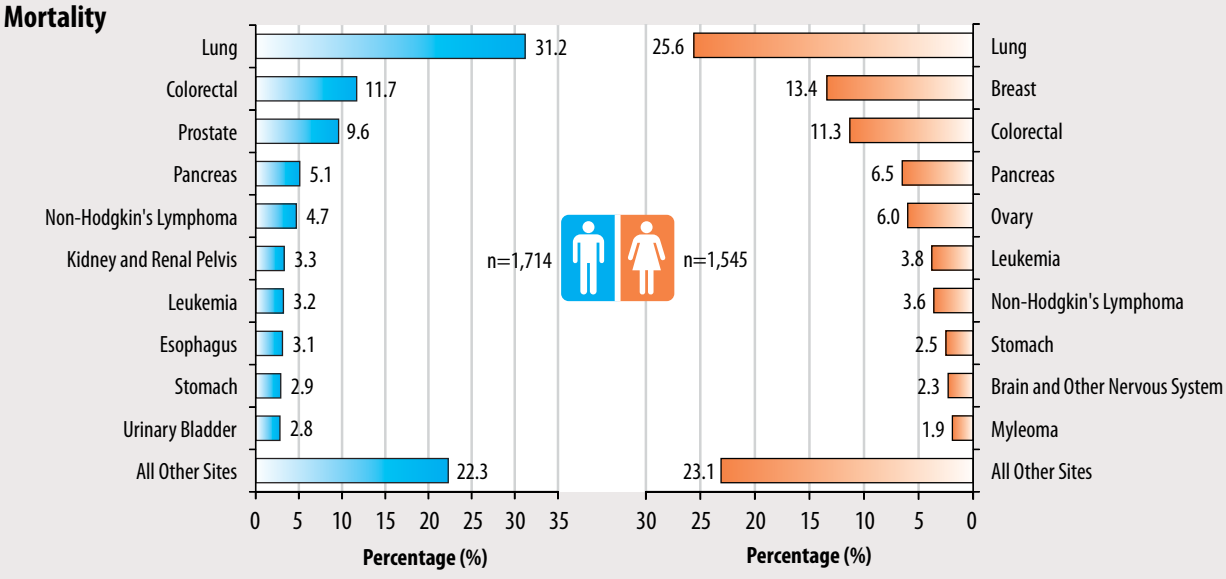


Figure 13: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 2, NB, 2007-2013

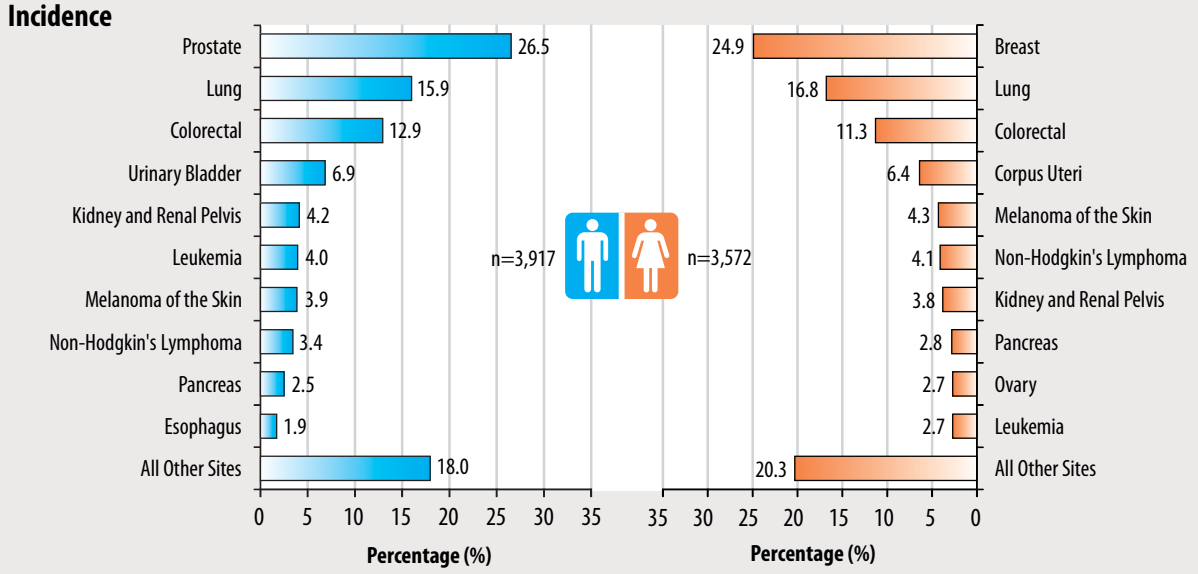


Figure 14: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 2, NB, 2007-2013

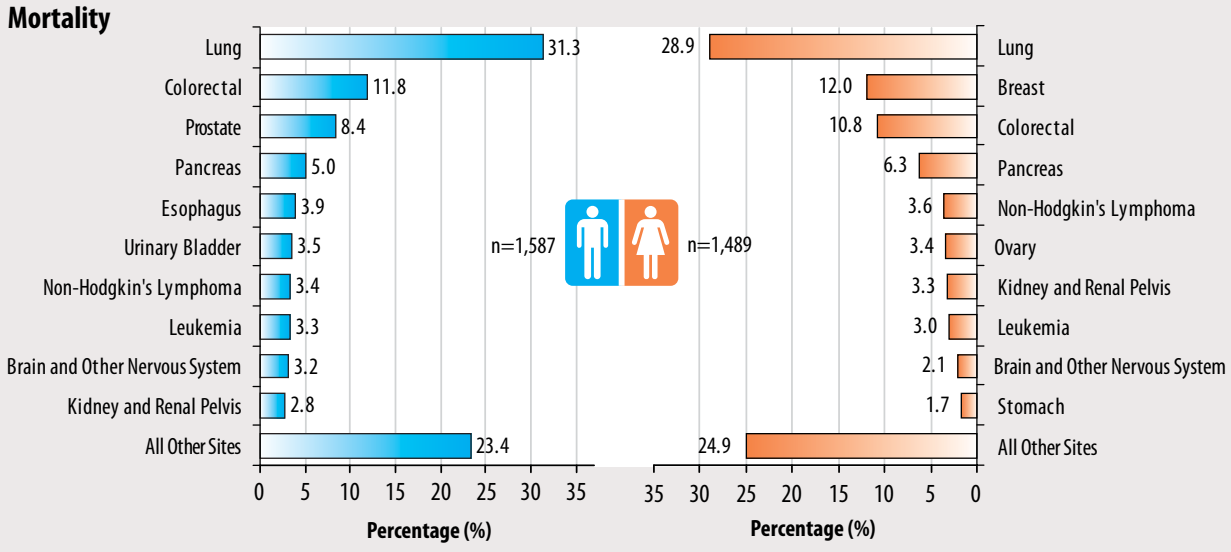


Figure 15: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 3, NB, 2007-2013

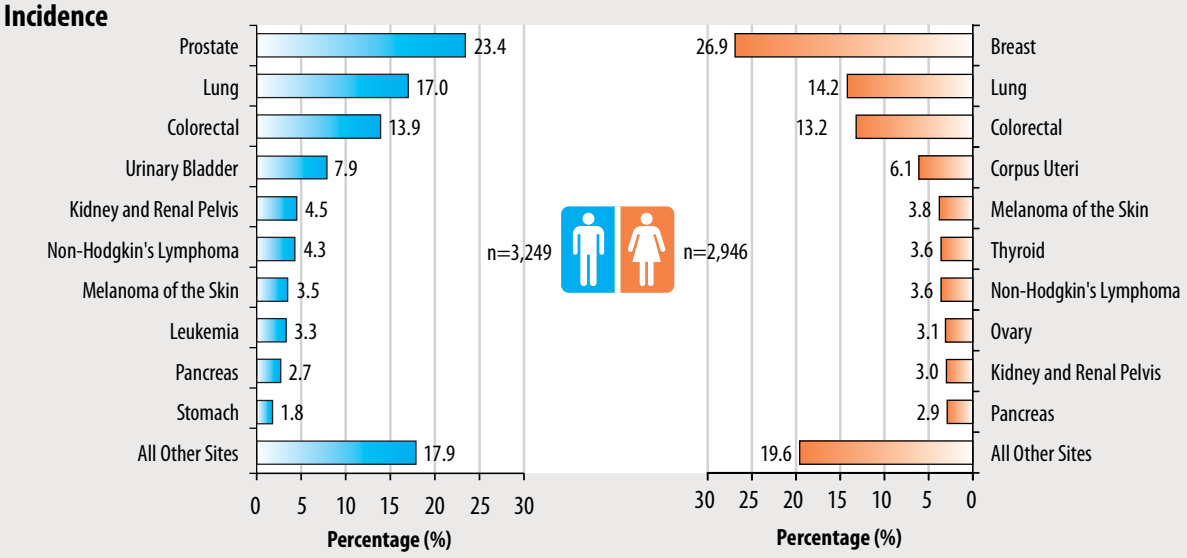


Figure 16: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 3, NB, 2007-2013

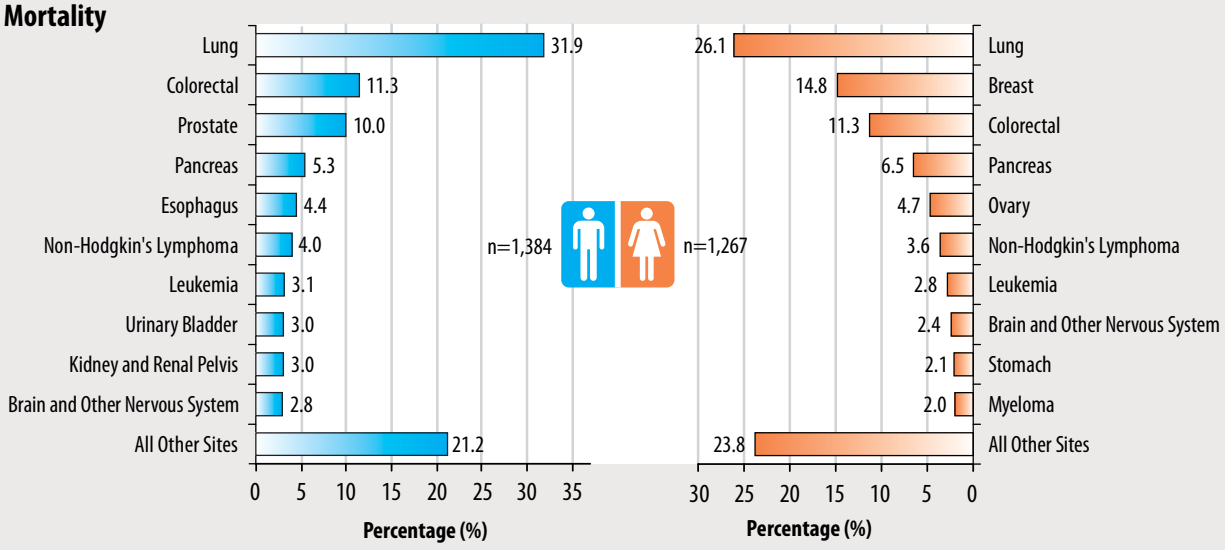


Figure 17: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 4, NB, 2007-2013

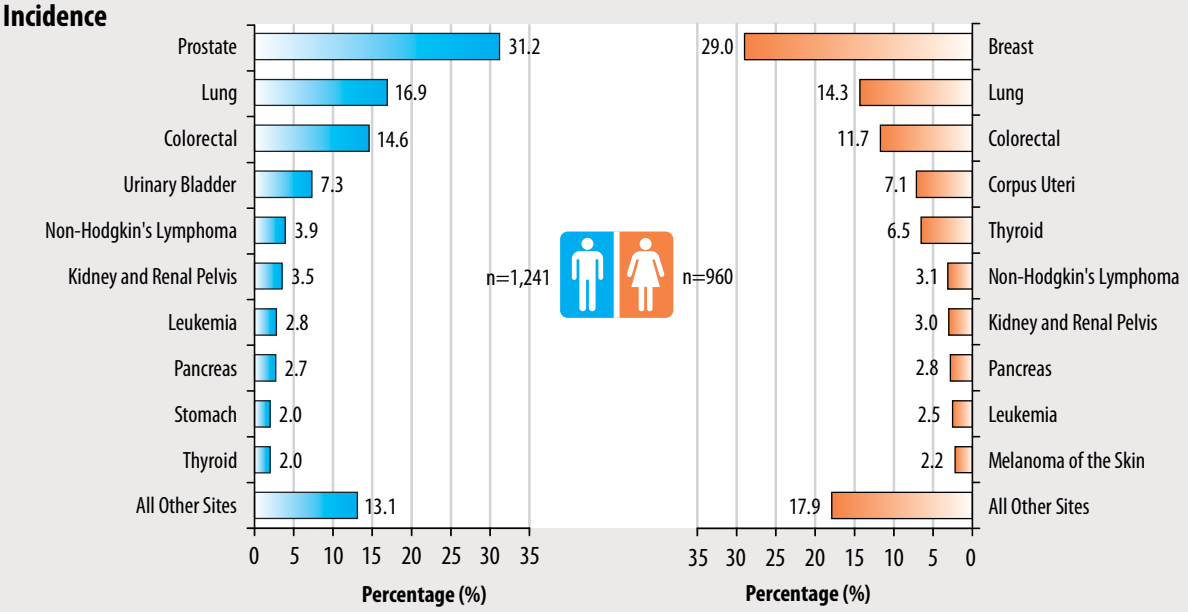


Figure 18: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 4, NB, 2007-2013

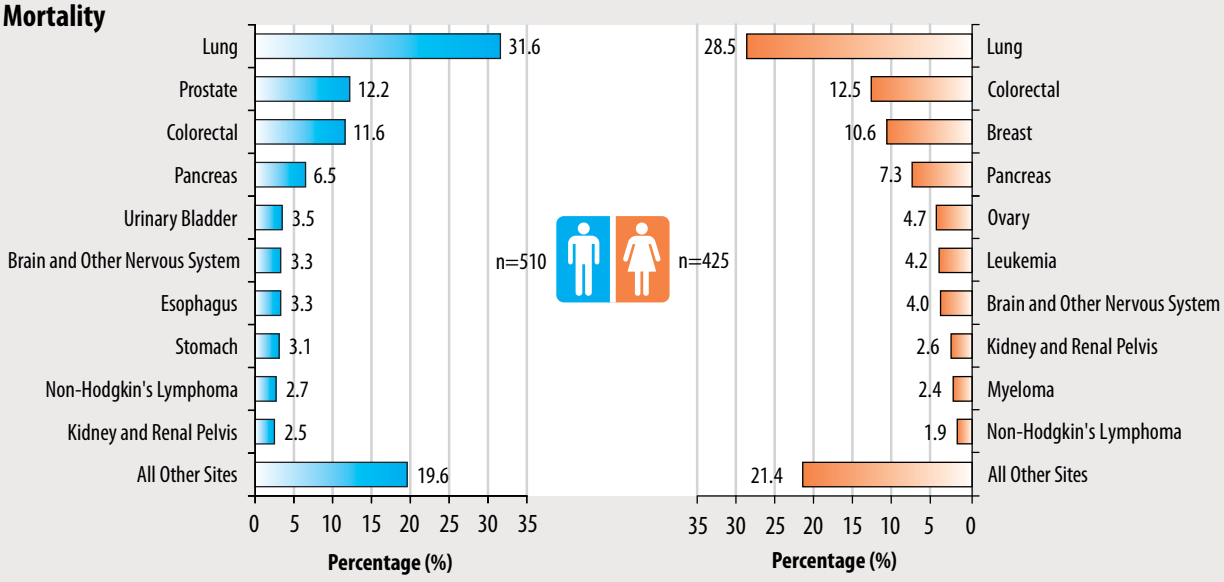


Figure 19: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 5, NB, 2007-2013

Incidence

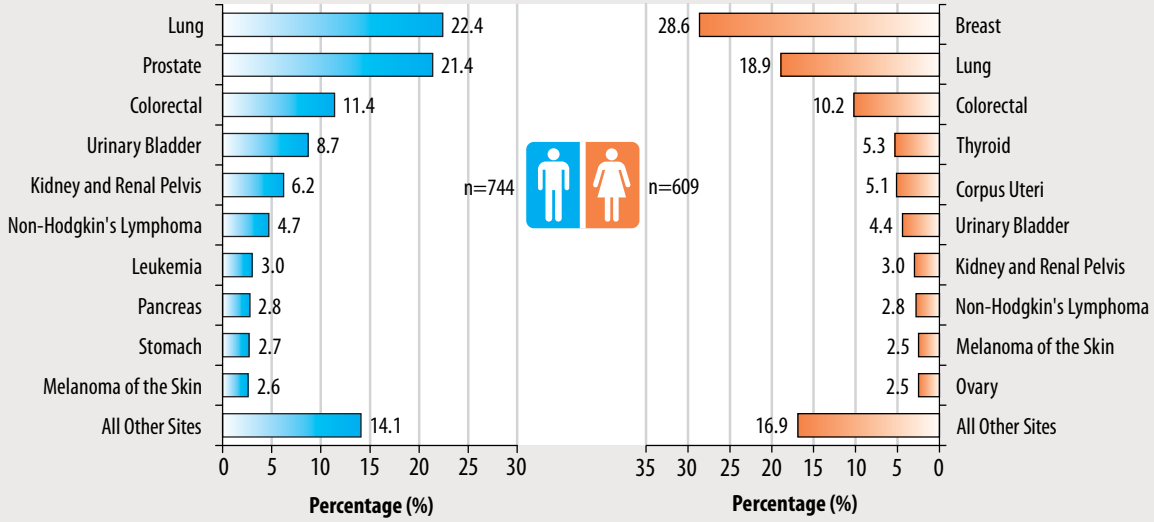


Figure 20: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 5, NB, 2007-2013

Mortality

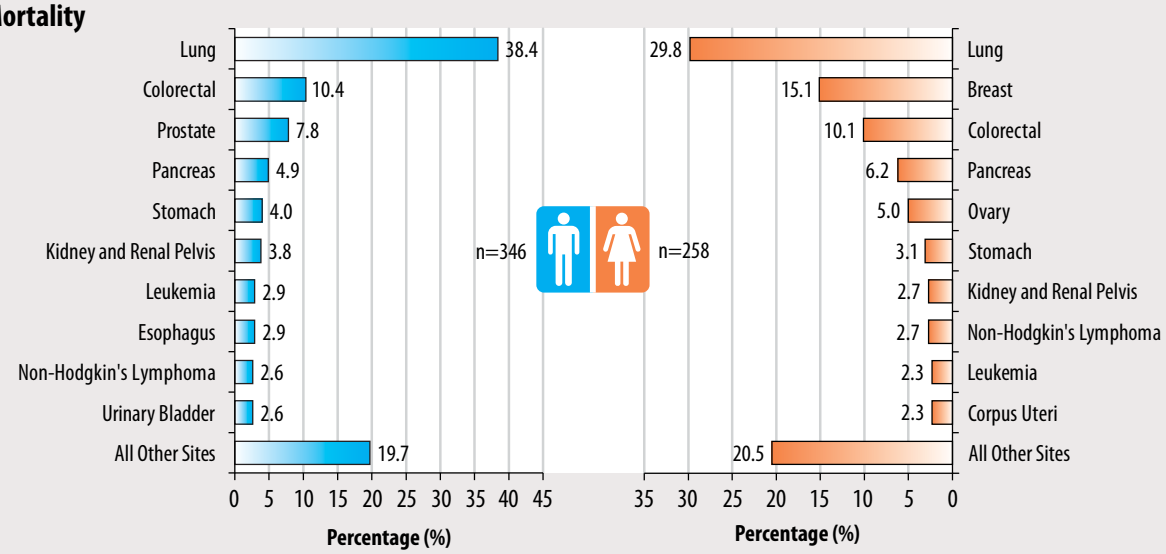


Figure 21: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 6, NB, 2007-2013

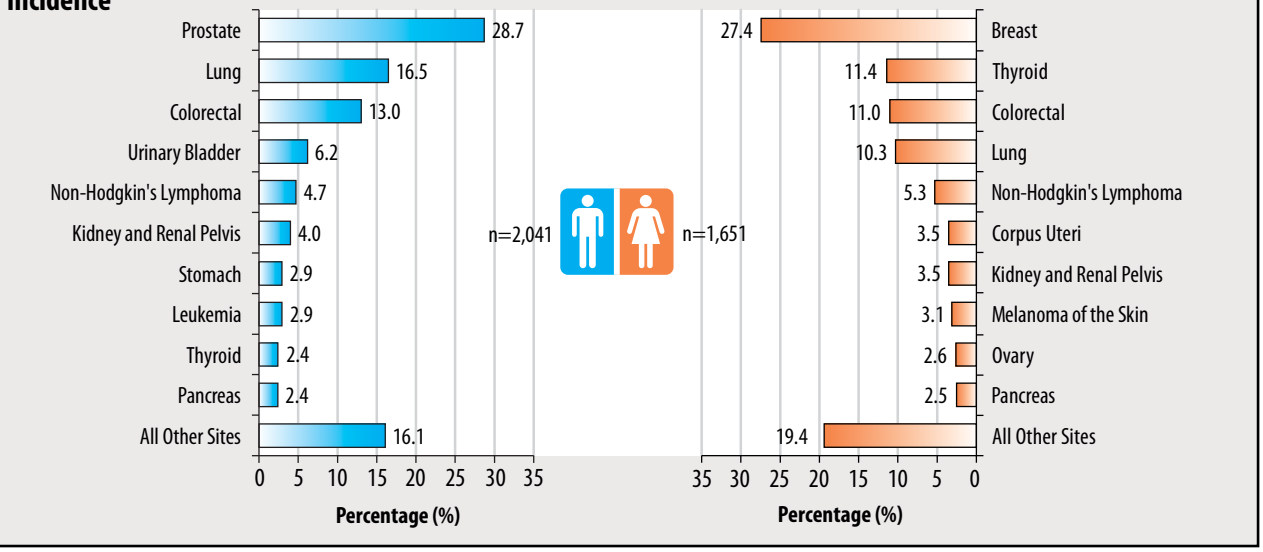


Figure 22: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 6, NB, 2007-2013

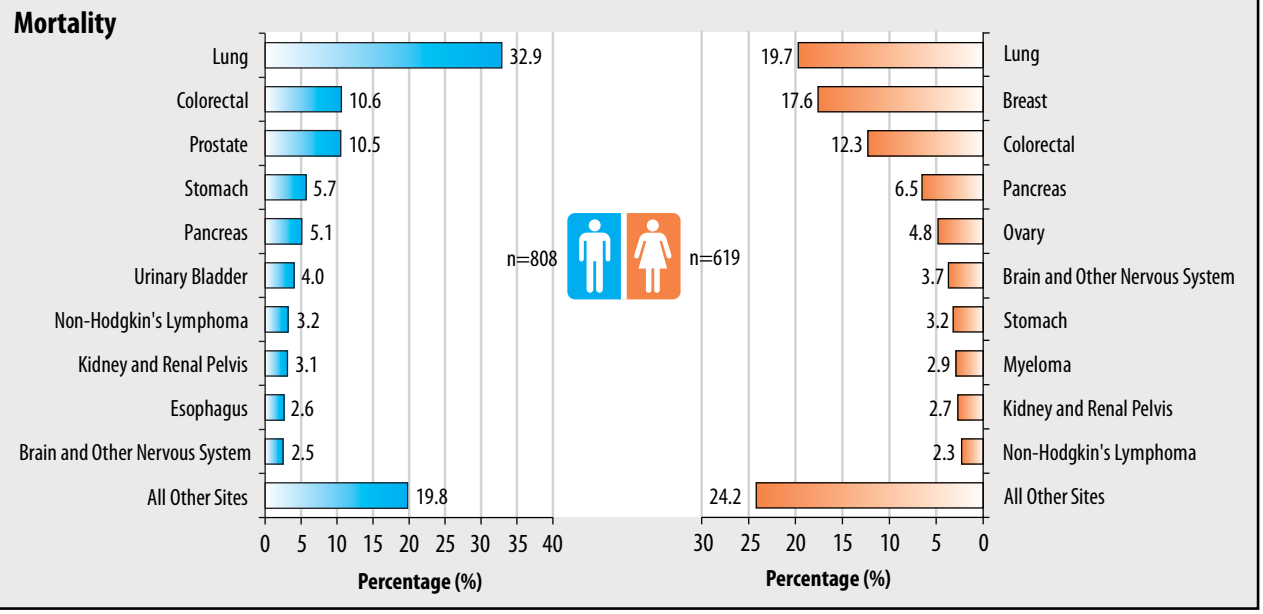


Figure 23: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 7, NB, 2007-2013

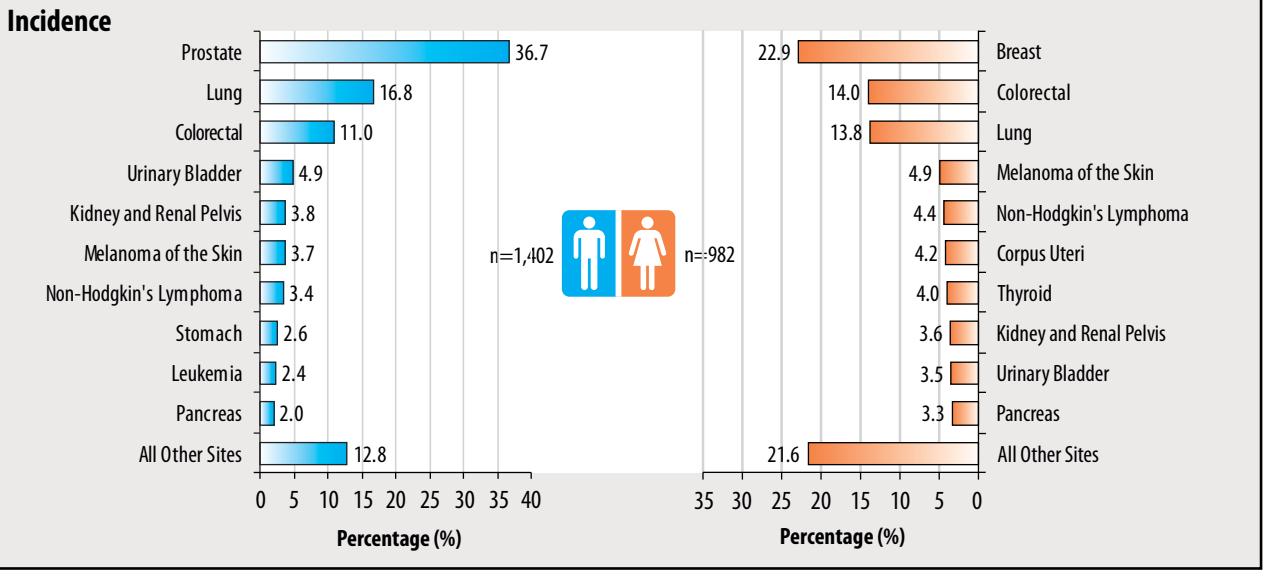
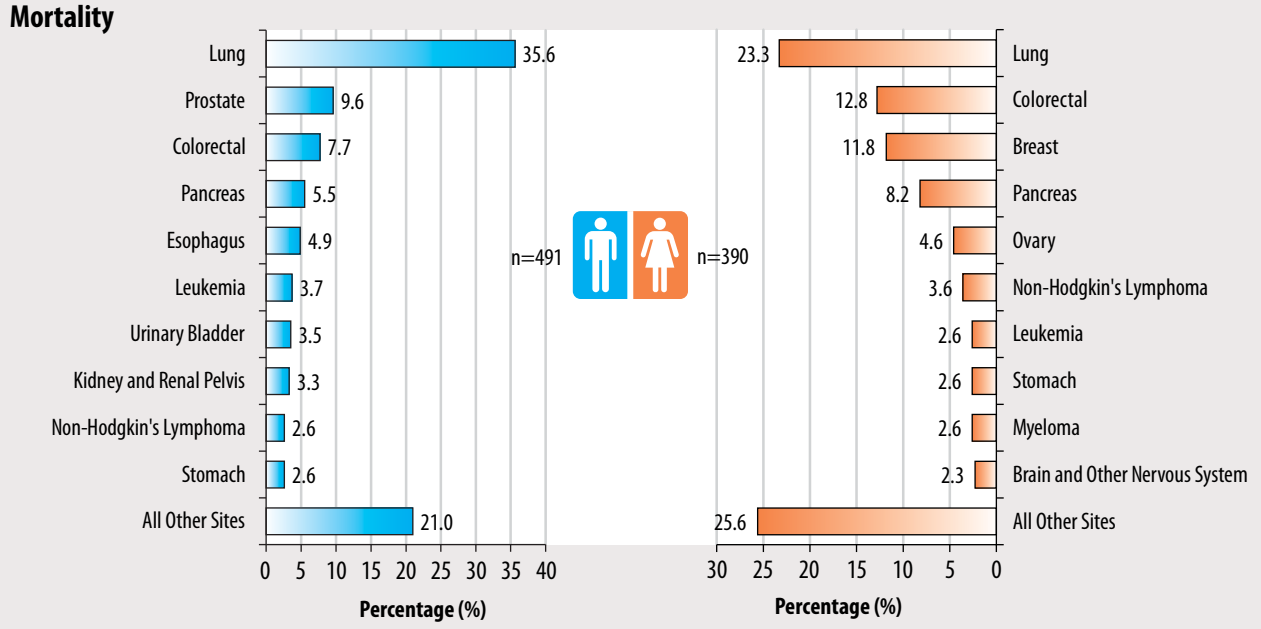


Figure 24: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 7, NB, 2007-2013



3.4.2.2 Five Leading Cancers by Rate

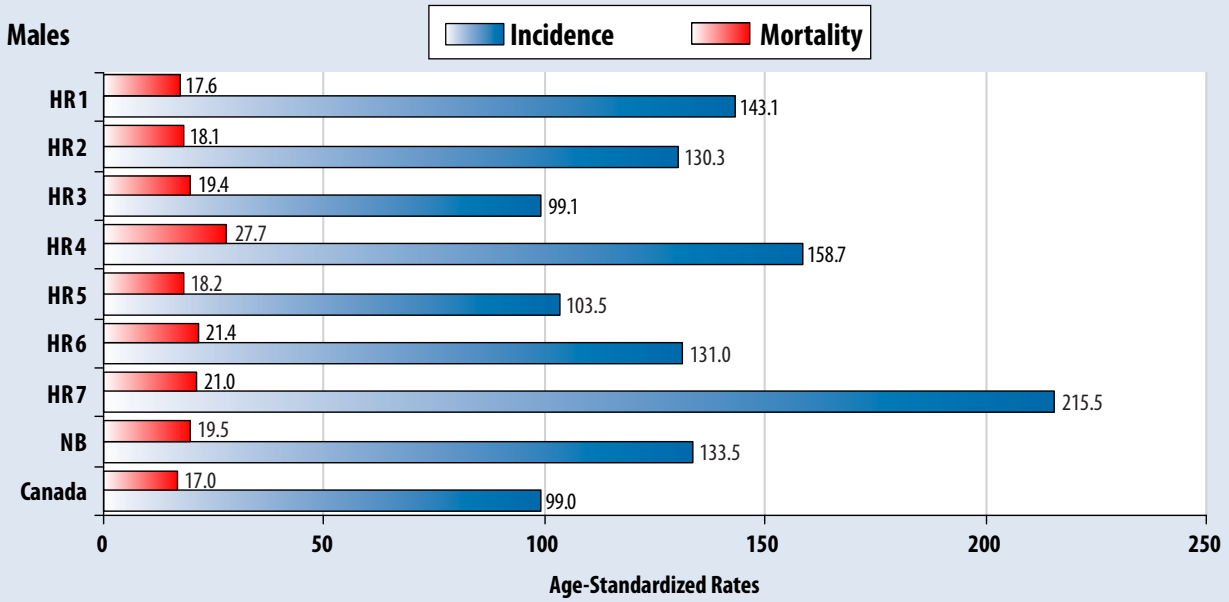
The age-standardized incidence and mortality rates (ASIR & ASMR) were used to adjust for age differences across health regions. Provincial rates were the average of the seven health regions and were used to compare the five leading cancer sites geographically (Tables 10-13). For males, the cancers with the highest incidence rates in descending order were: *prostate*, *lung, colorectal, urinary bladder and kidney and renal pelvis* cancers (Table 10). Those with the highest mortality rates were: *lung*, *colorectal*, *prostate, pancreas and non-hodgkin's lymphoma* cancers (Table 11). In females, the cancers with the highest incidence rates in descending order were: *breast*, *lung, colorectal, thyroid and corpus uteri* cancers (Table 12). The corresponding mortality rates were: *lung, breast, colorectal, pancreas and ovarian* cancers (Table 13). Further, the provincial and health region rates for these five leading cancers were compared to the estimated national rates in 2015 (Figures 25-32).[3]

Prostate Cancer

The highest incidence rates per 100,000 population for prostate cancer were seen in HR7 (215.5 cases) and in HR4 (158.7 cases, Table 10). These were significantly higher than the provincial rate of 133.5 cases and the 2015 national rate of 99 cases (Figure 25).[3]

Mortality rates per 100,000 population for prostate cancer varied from 17.6 in HR1 to 27.7 deaths in HR4 (Table 11). With the exception of HR4, rates in all other regions were similar to the provincial (19.5 deaths) and the estimated national rates (17 deaths) in 2015 (Figure 25).[3]

Figure 25: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Prostate Cancer by Health Region, NB and Canada, 2007-2013

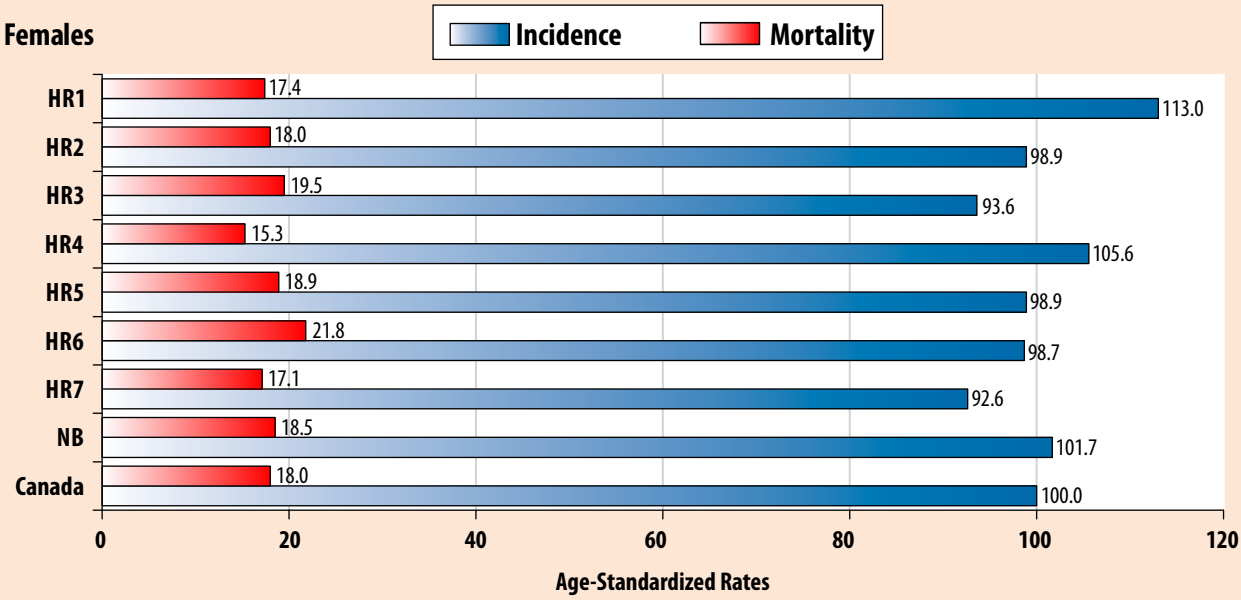


* Age-standardized to the 1991 Canadian population estimates.

Breast Cancer

In females, incidence rates per 100,000 population ranged from 92.6 in HR7 to 113.0 cases in HR1 (Table 12). Mortality rates per 100,000 population varied from 15.3 in HR4 to 21.8 deaths in HR6 (Table 13). Provincial incidence and mortality rates (incidence: 101.7 cases; mortality: 18.5 deaths) were similar to the estimated national rates (incidence: 100 cases; mortality: 18 deaths) for 2015 (Figure 26).[3]

Figure 26: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Breast Cancer by Health Region, NB and Canada, 2007-2013



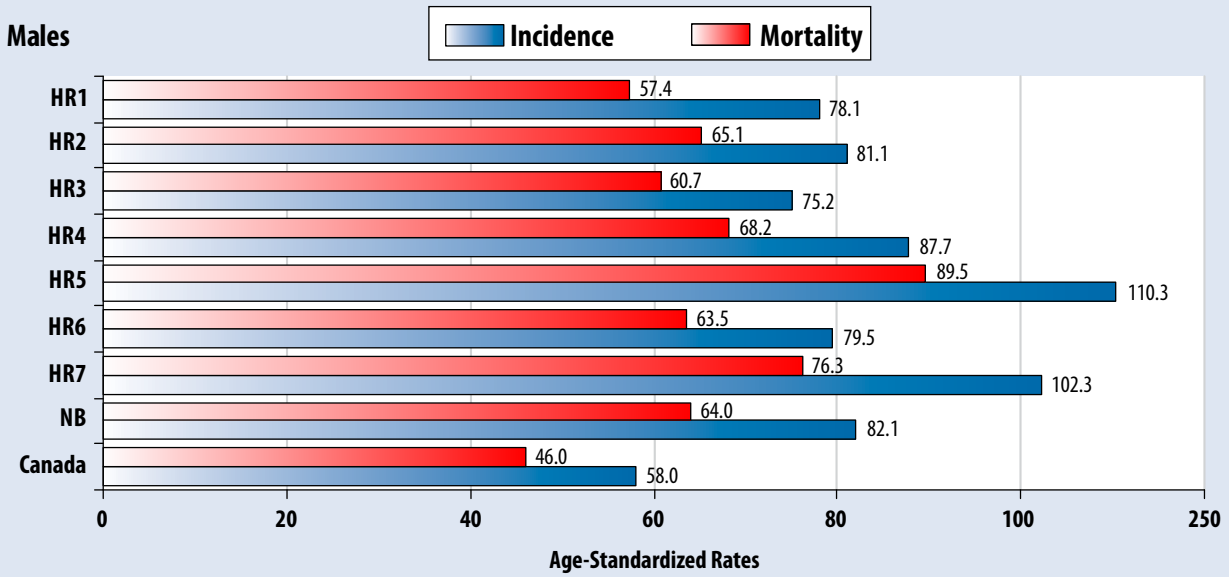
* Age-standardized to the 1991 Canadian population estimates.

Lung Cancer

In males, the incidence rates per 100,000 population for lung cancer ranged from 75.2 in HR3 to 110.3 cases in HR5 (Table 10). Mortality rates per 100,000 population ranged from 57.4 in HR1 to 89.5 deaths in HR5 (Table 11). The provincial incidence (82.1 cases) and mortality (64.0 deaths) rates of lung cancer were higher than the 2015 national rates of 58 cases and 46 deaths (Figure 27),[3] respectively.

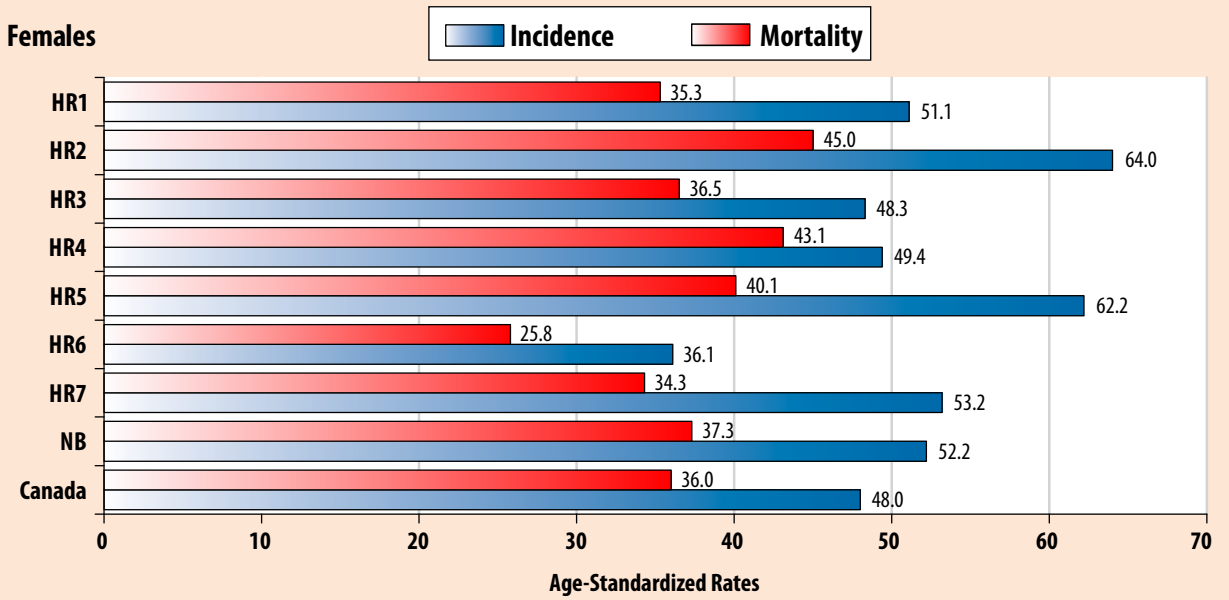
In females, the incidence rates of lung cancer varied from 36.1 in HR6 to 64.0 cases in HR2 (Table 12). Mortality rates ranged from 25.8 in HR6 to 45.0 deaths in HR2 (Table 13). In particular, HR6 was the only region to have lower incidence rates of lung cancer than the 2015 national rate (48 cases). Mortality rates in HR1 (35.3 deaths), HR6 (25.8 deaths) and HR7 (34.3 deaths) were lower than the national rate of 36.0 deaths per 100,000 population in 2015 (Figure 28).[3]

Figure 27: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Male Lung Cancer by Health Region, NB and Canada, 2007-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure 28: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Lung Cancer by Health Region, NB and Canada, 2007-2013



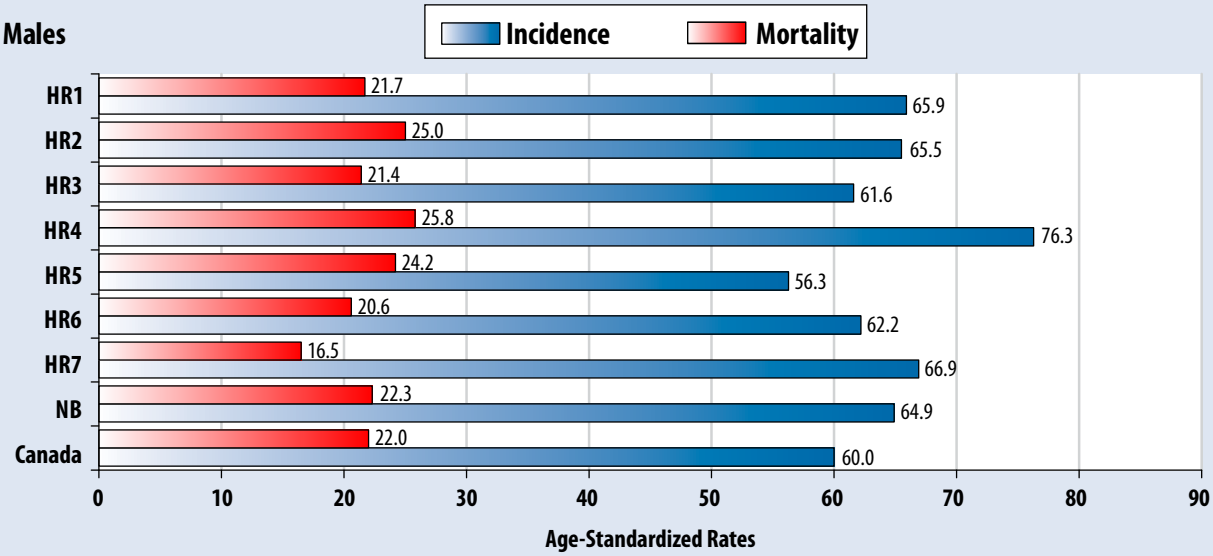
* Age-standardized to the 1991 Canadian population estimates.

Colorectal Cancer

The incidence rates per 100,000 population of colorectal cancer for males ranged from 56.3 in HR5 to 76.3 cases in HR4 (Table 10). Males in NB had slightly higher incidence rates in each HR when compared to the 2015 national rate of 60 cases[3] (Figure 29). Mortality rates per 100,000 population of colorectal cancer for males ranged from 16.5 in HR7 to 25.8 deaths in HR4 (Table 11). The rates in HR2 (25.0 deaths), HR4 (25.8 deaths) and HR5 (24.2 deaths) were higher than the 2015 national rate (22 deaths).[3]

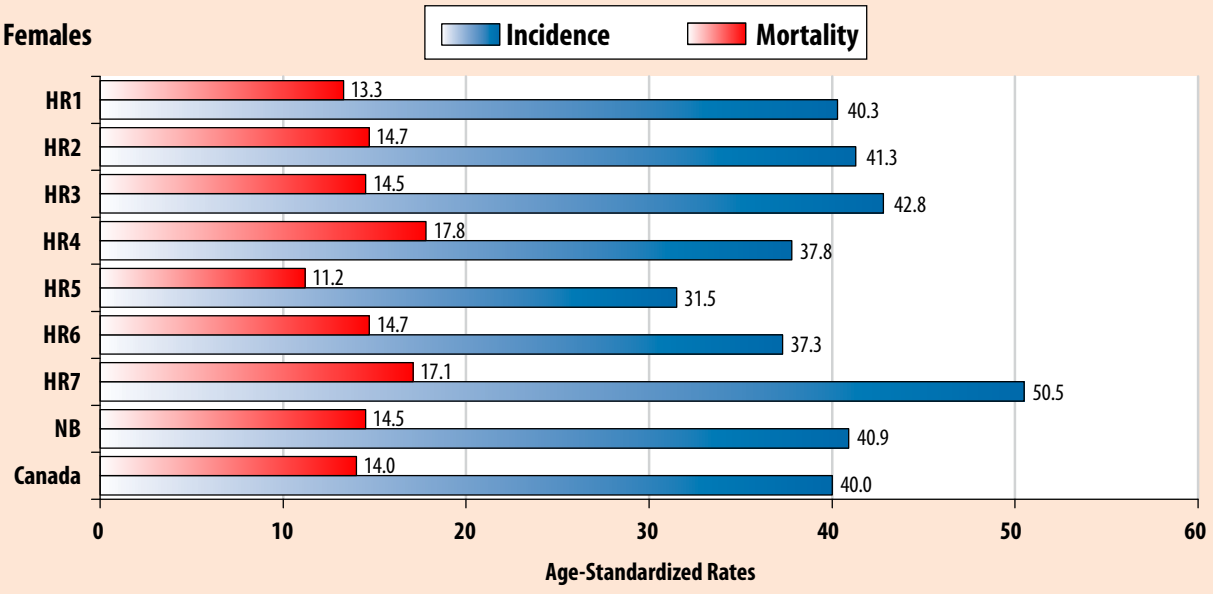
The incidence rates of colorectal cancer for females varied from 31.5 in HR5 to 50.5 cases in HR7 (Table 12). Incidence rates in HR4 (37.8 cases), HR5 (31.5 cases) and HR6 (37.3 cases) were lower than the 2015 national rate of 40 cases per 100,000 population (Figure 30).[3] Mortality rates for female colorectal cancer ranged from 11.2 in HR5 to 17.8 deaths in HR4 (Table 13). In HR4 and HR7 the mortality rates exceeded the 2015 national rate of 14 deaths per 100,000 population.[3]

Figure 29: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Male Colorectal Cancer by Health Region, NB and Canada, 2007-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure 30: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Colorectal Cancer by Health Region, NB and Canada, 2007-2013

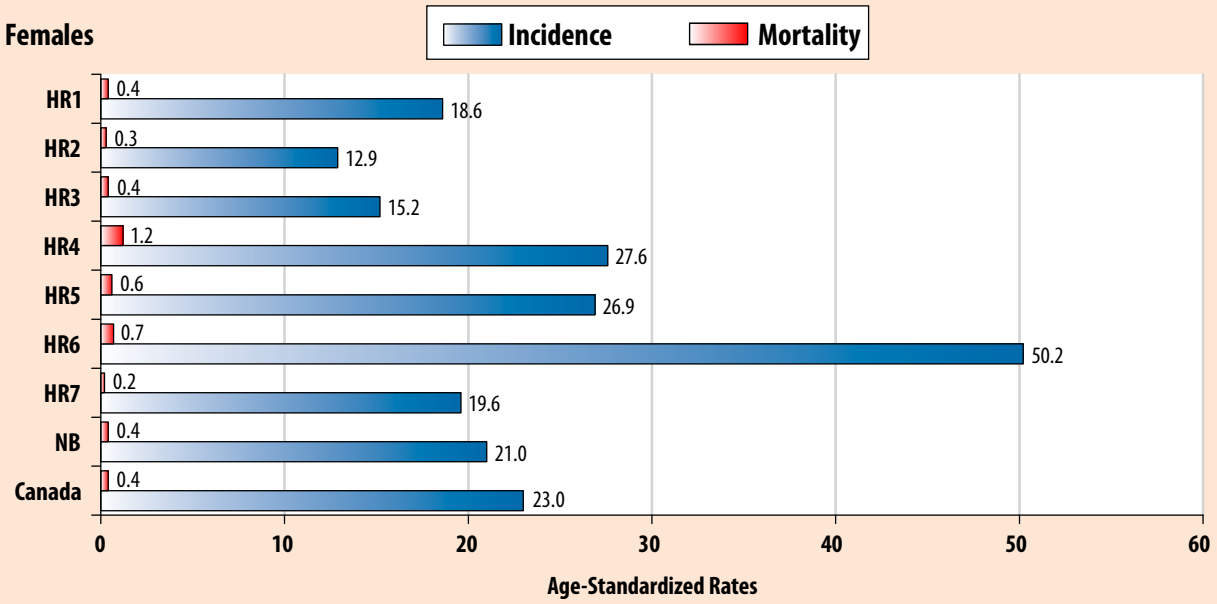


* Age-standardized to the 1991 Canadian population estimates.

Thyroid Cancer

The incidence rates per 100,000 population of thyroid cancer in females varied from 12.9 in HR2 to 50.2 cases in HR6, compared to the provincial rate of 21.0 and the national rate of 23 cases per 100,000 population in 2015 (Table 12 and Figure 31).[3] Overall, incidence rates of thyroid cancer for females ranked as the fourth highest rate in New Brunswick. As stated in the previous cancer report[1], the incidence rate of thyroid cancer between 2007 and 2013 continued to increase significantly in New Brunswick. This increasing trend was similar to national observations.[2,3] Higher incidence rates of thyroid cancer across Canada were likely due to changes in diagnostic practices and imaging techniques, resulting in improved detection of earlier stage, asymptomatic thyroid cancers.[2] Thyroid cancer was more frequently diagnosed in females than in males by a ratio of 3:1, and was most often detected in young women aged 20 to 49 in New Brunswick. During the period of 2007-2013, 913 individuals (males: 232; females: 681) were diagnosed with thyroid cancer; accounting for a 108.4% increase relative to the previous five-year observation period (438 cases in 2002-2006).

Figure 31: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Thyroid Cancer by Health Region, NB and Canada, 2007-2013

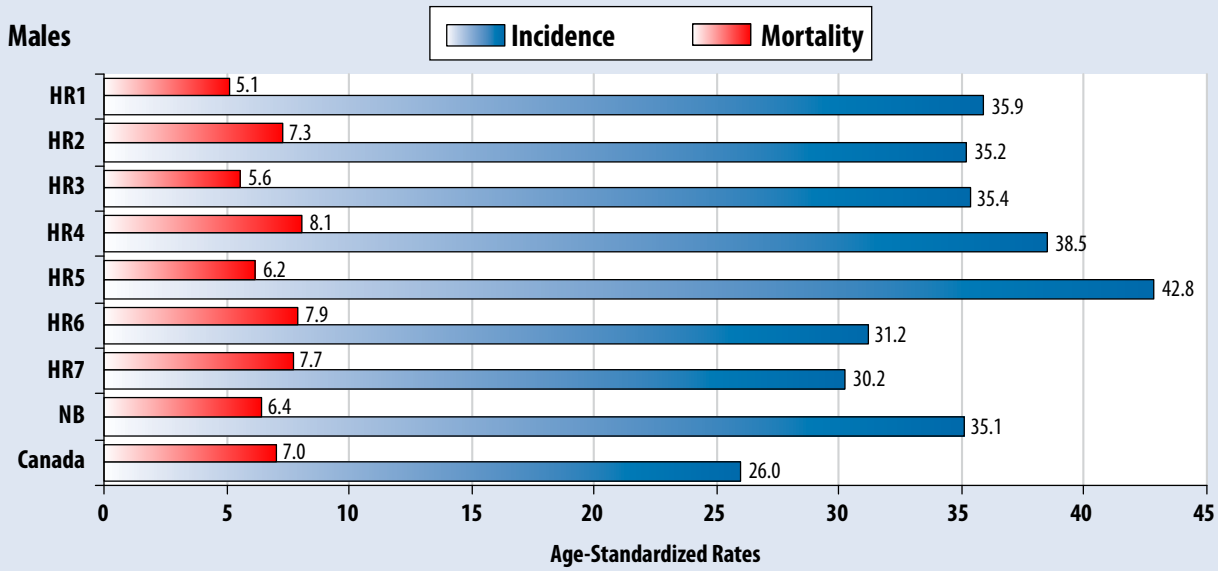


* Age-standardized to the 1991 Canadian population estimates.

Bladder Cancer

Similar to the previous provincial cancer reports,[1,5,6] bladder ranked as the fourth leading cancer for males in New Brunswick (Table 10). Incidence rates per 100,000 population of bladder cancer for males ranged from 30.2 in HR7 to 42.8 cases in HR5. The national incidence rate of bladder cancer in 2015 was 26 cases per 100,000 population (Figure 32).[3]

Figure 32: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Male Bladder Cancer by Health Region, NB and Canada, 2007-2013



* Age-standardized to the 1991 Canadian population estimates.

Kidney and Renal Pelvis

The incidence rates per 100,000 population of *kidney and renal pelvis* for males ranged from 18.8 in HR4 to 28.3 cases in HR5, which were similar to the provincial rate of 21.4 (Table 10) and the national estimated rate of 17 cases per 100,000 population in 2015.[3]

Cancer of the Corpus Uteri

In females, the incidence rates per 100,000 population of the *corpus uteri* cancer ranged from 13.1 in HR6 to 25.0 cases in HR4 (Table 12). The provincial incidence rate of cancer of the corpus uterus was 19.7 cases, which was lower than the 2015 national rate for *body of uterus** of 24 cases per 100,000 population.[3]

Pancreatic Cancer

For males, mortality rates due to pancreatic cancer ranked fourth in New Brunswick (Table 11). HR1 had the lowest mortality rate (9.5 deaths), while the highest was seen in HR4 (14.4 deaths, Table 11). For females, mortality rates of pancreatic cancer varied from 7.5 in HR5 to 11.3 deaths in HR7 (Table 13). The provincial mortality rates of pancreatic cancer for males and females were 10.3 and 8.9 deaths per 100,000 population respectively, which were slightly higher than the 2015 national rates (males: 10.0 deaths; females: 8.0 deaths).[3]

Non-Hodgkin's Lymphoma (NHL)

The mortality rates per 100,000 population of NHL for males ranged from 5.6 in HR7 to 8.9 deaths in HR1 (Table 11) compared to the provincial rate of 7.5 deaths. Overall, NHL ranked as the fifth leading cause of cancer-related deaths in males in New Brunswick. The 2015 national mortality rate of NHL for males was 6 deaths per 100,000 population.[3]

Ovarian Cancer

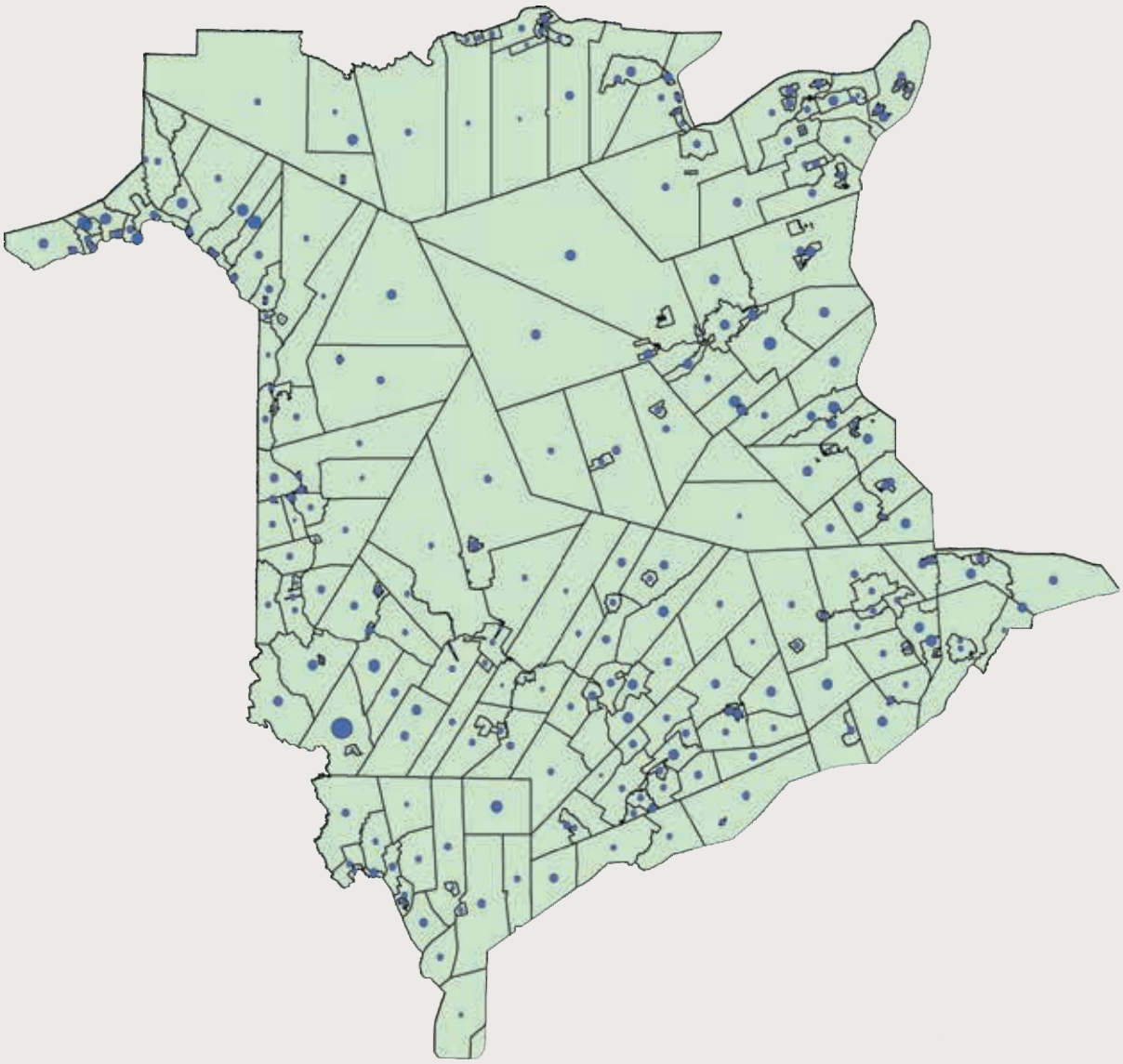
In females, mortality rates per 100,000 population for ovarian cancer were lowest in HR2 (4.6 deaths) and highest in HR1 (8.2 deaths, Table 13). Provincially, ovarian cancer ranked as the fifth most common cause of cancer-related deaths in females at 6.6 deaths which was similar to the 2015 national rate of 6.0 deaths per 100,000 population.[3]

* Body of uterus includes: Corpus Uteri and Uterus Not Otherwise Specified.

3.4.3 Crude Incidence Rates for the Four Leading Cancers by Census Subdivisions (CSD)

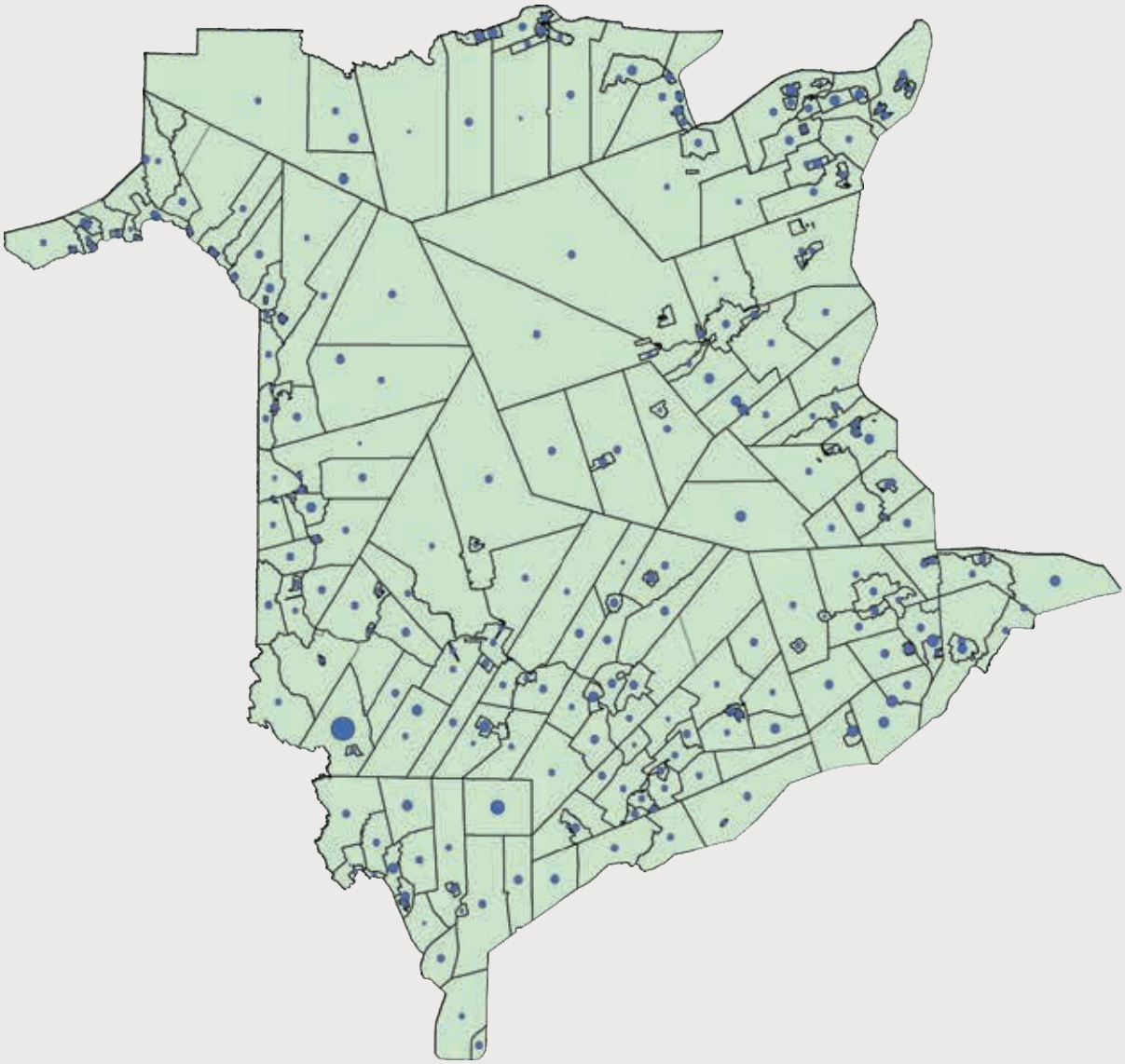
In this report, the unit of data analysis was extended from HR to CSD for a further examination of the geographic variation in cancer occurrence across New Brunswick. The Geographic Information Systems (GIS)[21] was utilized to map the distribution of cancer incidence weighted by associated population at the CSD level. The sum of new cases at the CSD level was used as a numerator to calculate the crude cancer incidence rates for the four leading cancers (lung, colorectal, prostate and breast) where the population estimates from Statistics Canada served as a denominator. As shown in Maps 2-5 and as expected, the crude rates of the four leading cancers in areas with higher population density (i.e., Fredericton city, Saint John city and Moncton city) were relatively low; however, for those areas with lower population density (i.e., McAdam parish), the corresponding rate should be interpreted with caution due to small incidence counts.

Map 2: Frequency of Prostate Cancer Cases by Census Subdivision Weighted by Population, NB, 2007-2013



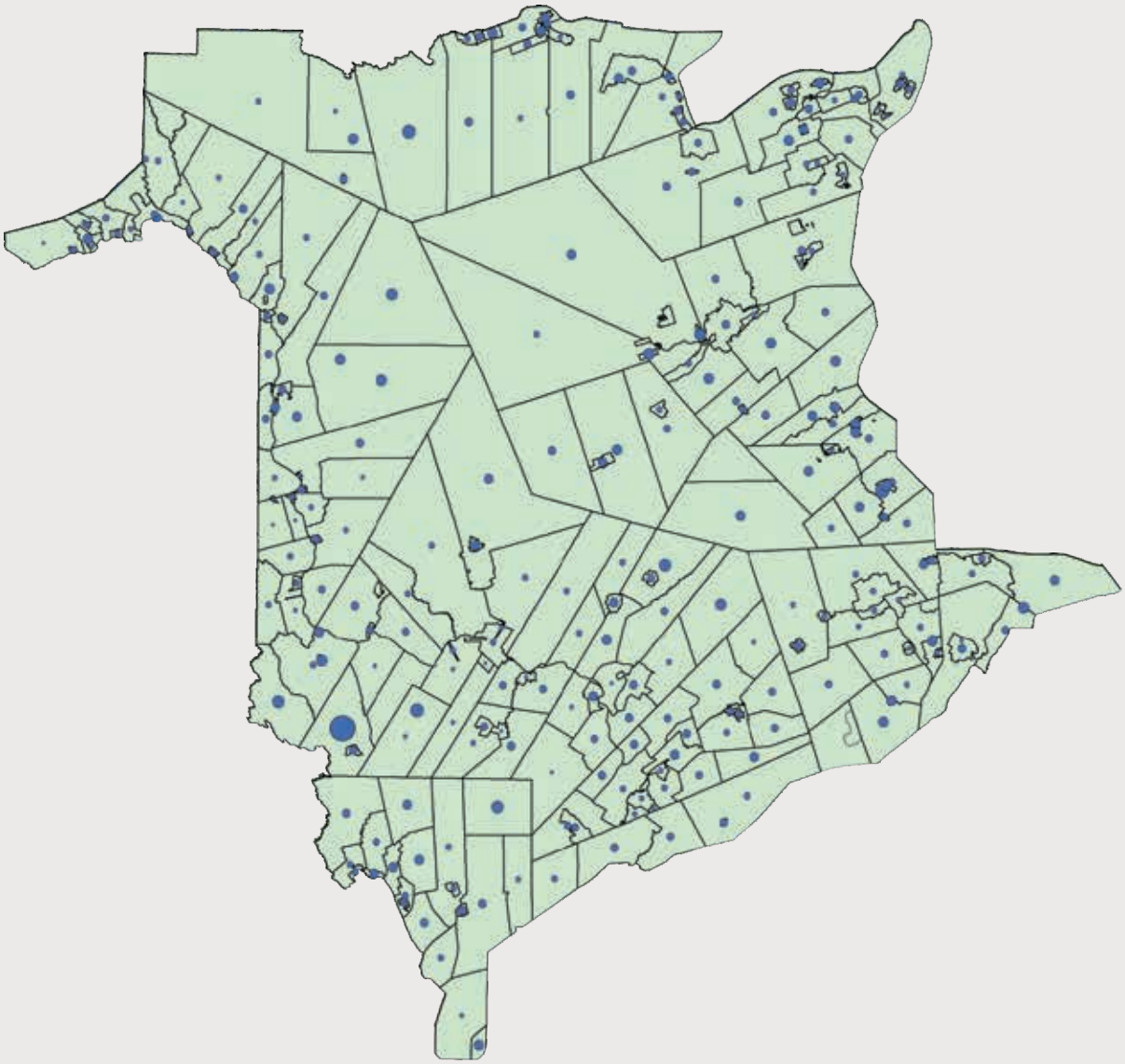
Legend
Count / Join_Output_prostate.Md_POP
0.001
0.01
0.1

Map 3: Frequency of Breast Cancer Cases by Census Subdivision Weighted by Population, NB, 2007-2013



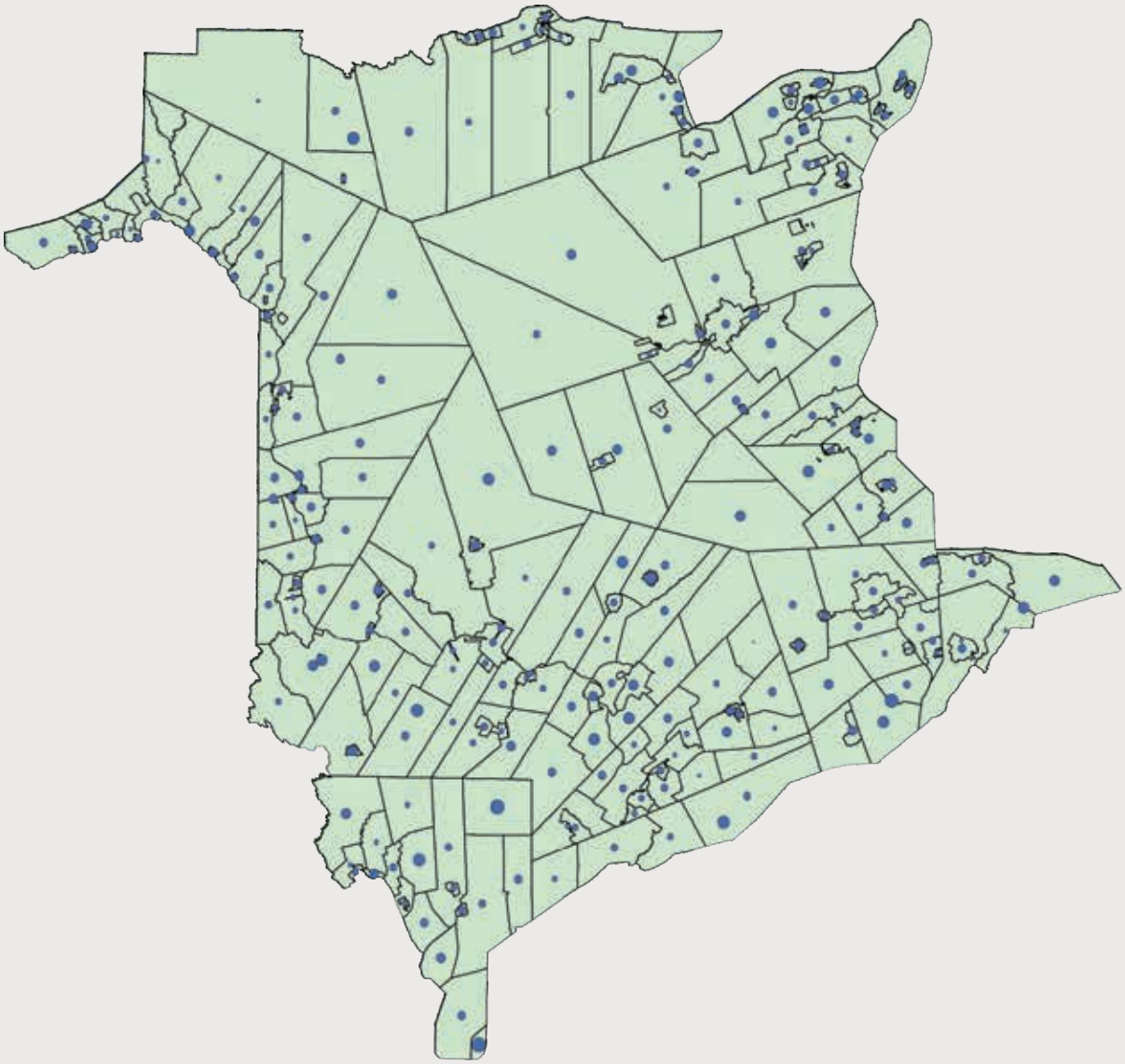
Legend
Count / Join_Output_breast.ModifyPOP
0.001
0.01
0.1

Map 4: Frequency of Lung Cancer Cases by Census Subdivision Weighted by Population, NB, 2007-2013



Legend
Count / Join_Output_lung.Mod_POP
0.001
0.01
0.1

Map 5: Frequency of Colorectal Cancer Cases by Census Subdivision Weighted by Population, NB, 2007-2013



Legend
Count / Join_Output_colorectal.ModPOP
0.001
0.005
0.01

3.5 Trends in Cancer Incidence and Mortality, 1986-2013

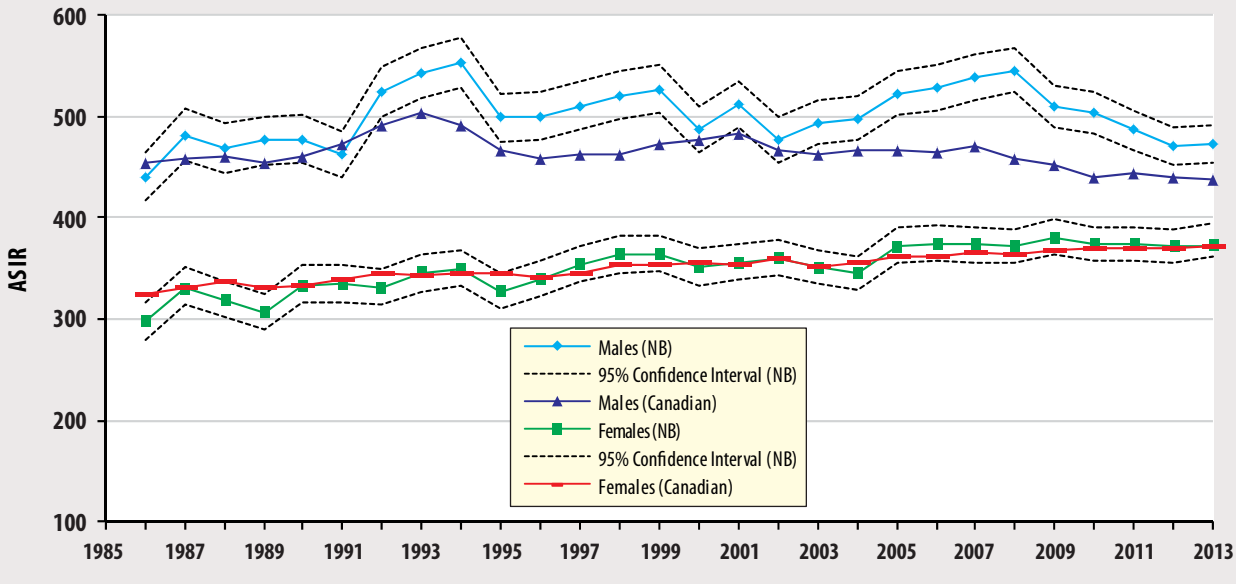
3.5.1 Trends for All Cancer Sites Combined

In this report, the average annual percentage change (AAPC) developed by the National Cancer Institute (NCI) was used to evaluate the increasing or decreasing trends in cancer incidence and mortality. Over the past 28-year period from 1986 to 2013, the incidence and mortality rates for all cancer sites combined were consistently higher in males than in females (Figures 33 and 34).

For males, the age-standardized rates per 100,000 population (501.3 cases for incidence; 199.5 deaths for mortality) for all cancer sites combined were higher than the 2015 Canadian rates (incidence: 431.3 cases; mortality: 174.2 deaths),[3] however, the patterns of cancer incidence and mortality trends were similar between New Brunswick and Canada as a whole. There has been little change in the age-standardized incidence rate for all cancer sites combined between 1986 and 2013 with an AAPC of +0.2% (95%CI: -0.7, +1.1). Mortality rates have declined significantly from a high of 260.7 in 1986 to 184.0 deaths per 100,000 population in 2013 (AAPC: -1.2%, 95%CI: -1.7, -0.8).

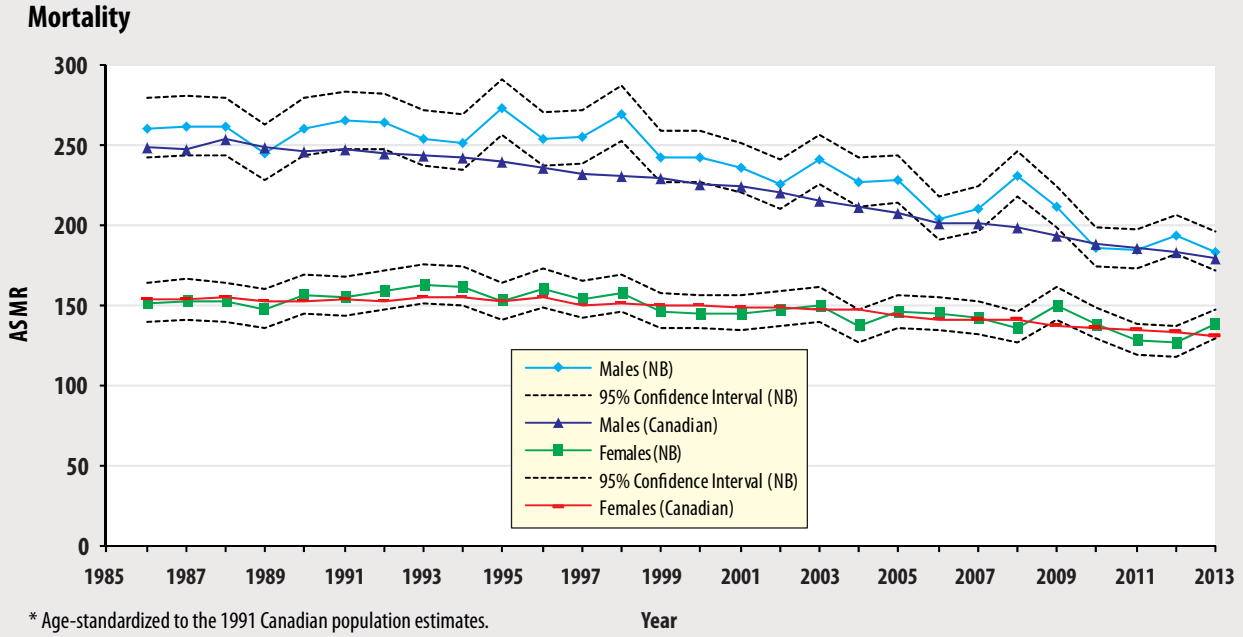
In females, the age-standardized incidence (374.4 cases) and mortality (137.2 deaths) rates for all cancer sites combined were similar to the 2015 Canadian rates (incidence: 374.3 cases; mortality: 128.2 deaths).[3] Since 1986, incidence rates for all cancer sites combined in New Brunswick females increased (AAPC: +0.7%, 95%CI: +0.5, +0.8), whereas mortality rates decreased with an AAPC of -0.4% (95%CI: -0.8, 0.0).

Figure 33: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for All Cancer Sites Combined by Sex, NB and Canada, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure 34: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for All Cancer Sites Combined by Sex, NB and Canada, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

3.5.2 Trends for Selected Cancers

Prostate Cancer

Prostate cancer is the most common cancer in males in Canada, affecting 0.6% of the male population.[3] Since 1986, the incidence rate of prostate cancer in New Brunswick has fluctuated with an AAPC of +0.6% (95%CI: -1.2, +2.3). The rate of prostate cancer has been significantly decreasing over the past five years (Figure 35). This may be due to the reduction in prostate-specific antigen (PSA) testing for early prostate cancer.[3] Also, a decreasing trend in mortality for prostate cancer -1.8% (95%CI: -2.9, -0.6) was detected in this period (Figure 36).

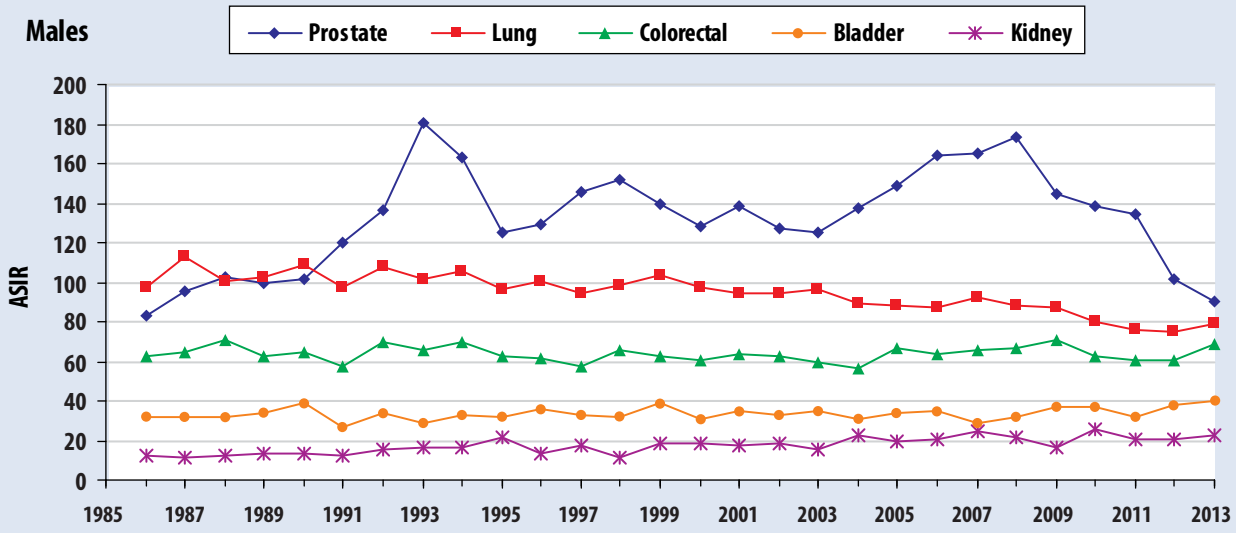
Lung Cancer

Since 1986, the age-standardized rates for male lung cancer have dropped significantly by -1.2% (95%CI: -1.7, -0.8) per year for incidence and by -2.1% (95%CI: -2.9, -1.3) per year for mortality (Figures 35 and 36). These improvements in incidence and mortality rates were similar to the trends in the Canadian rates APC 2001-2010 (incidence: -1.9%; mortality: -2.3%),[3] although the rates of lung cancer for male New Brunswickers were consistently higher. In females, incidence and mortality rates have been increasing since 1986 with an AAPC of +1.8% (95%CI: +1.1, +2.5) and +1.3% (95%CI: +0.3, +2.3; Figures 37 and 38), respectively.

Breast Cancer

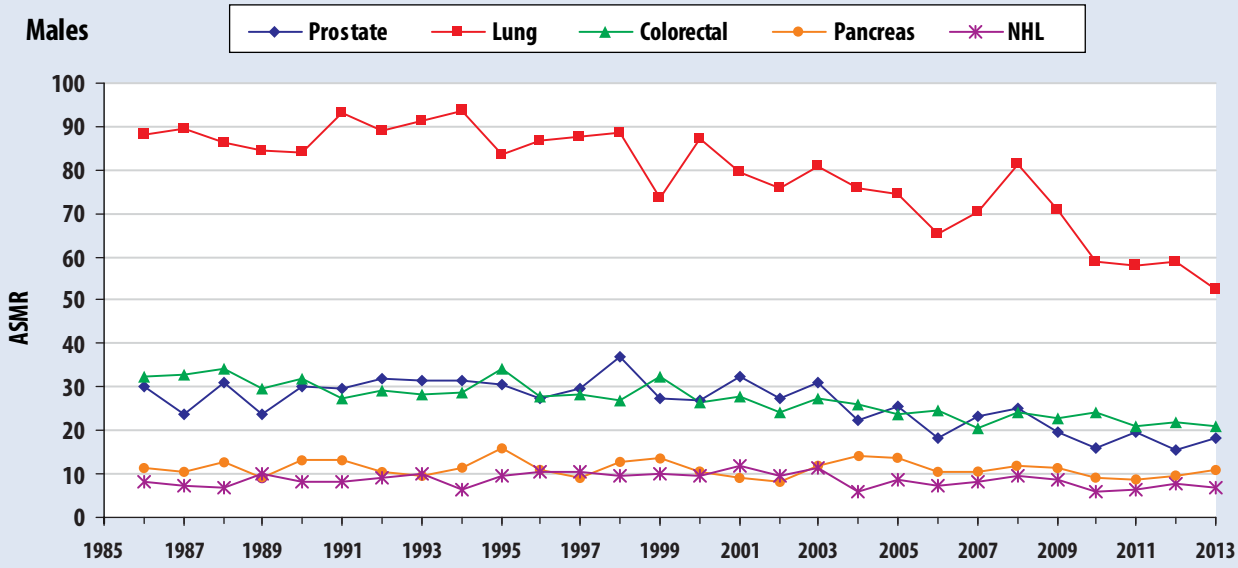
From 1986 to1992, an increasing trend was observed in female breast cancer incidence rate with an AAPC of +3.2% (95%CI: +1.2, +5.3; Figure 37) followed by a decrease with an AAPC of -0.1% (95% CI: -0.4, +0.2) between 1993 and 2013. Over the entire study period, the incidence rate of female breast cancer slightly increased (AAPC: +0.8%, 95%CI (+0.2, +1.3)), but a monotonically decreasing trend in mortality rate was seen with an AAPC of -2.4% (95%CI: -2.9, -1.9; Figure 38). This improvement in mortality was likely the result of a combination of uptake of mammography screening and the use of effective treatments following breast cancer surgery.[3] Incidence (101.7 cases) and mortality (18.5 deaths) rates per 100,000 population for New Brunswick females were similar to the 2015 Canadian rates (incidence: 99.7 cases; mortality: 17.9 deaths).[3]

Figure 35: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for the Five Leading Cancers, Males, NB, 1986-2013



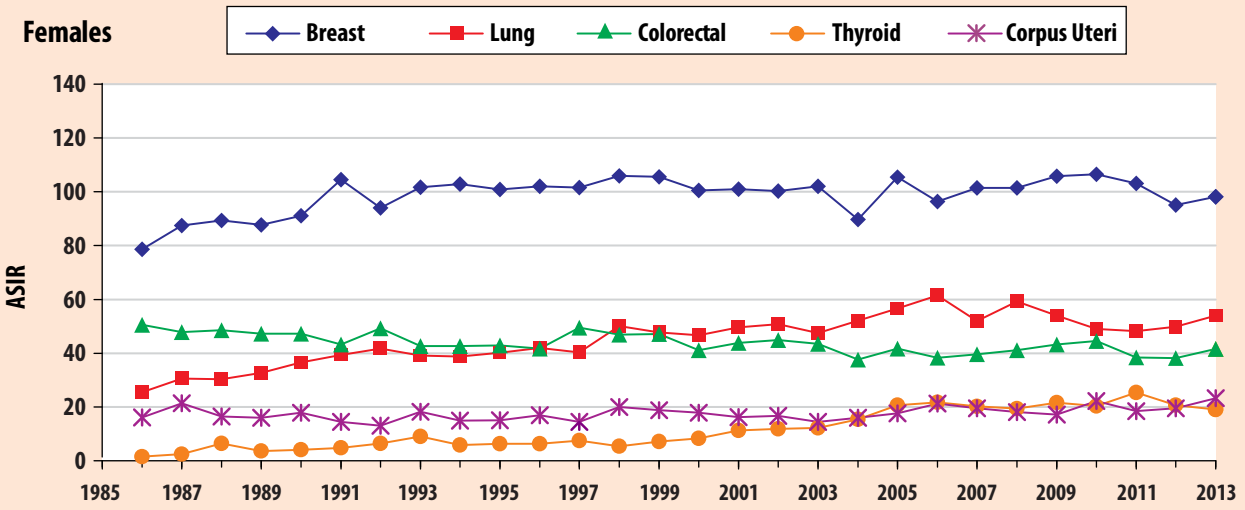
* Age-standardized to the 1991 Canadian population estimates.

Figure 36: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for the Five Leading Cancers, Males, NB, 1986-2013



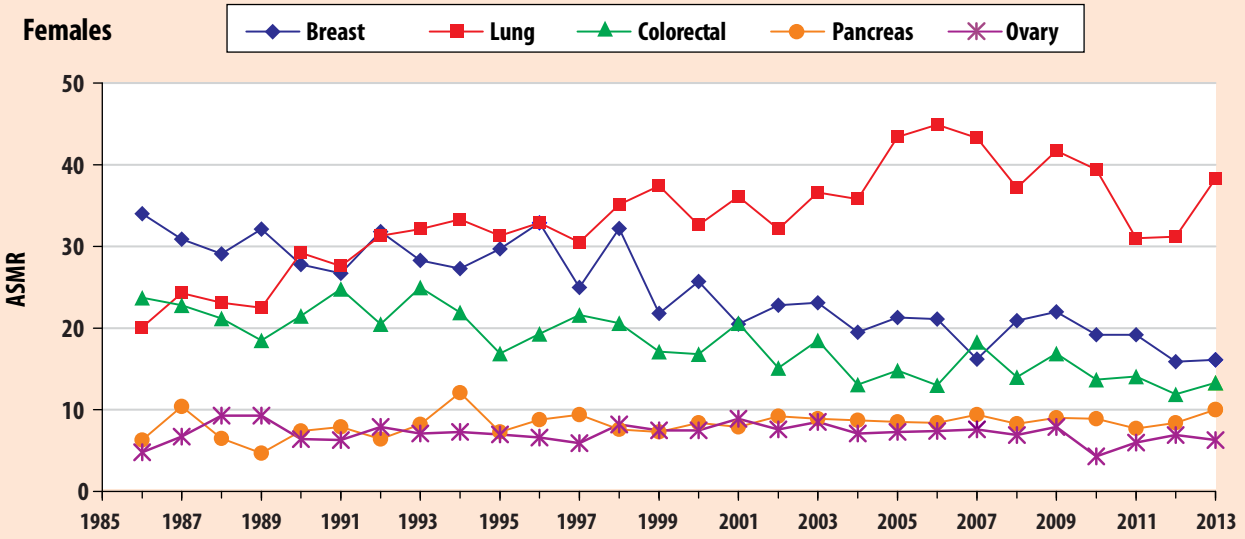
* Age-standardized to the 1991 Canadian population estimates.

Figure 37: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for the Five Leading Cancers, Females, NB, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure 38: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for the Five Leading Cancers, Females, NB, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

Colorectal Cancer

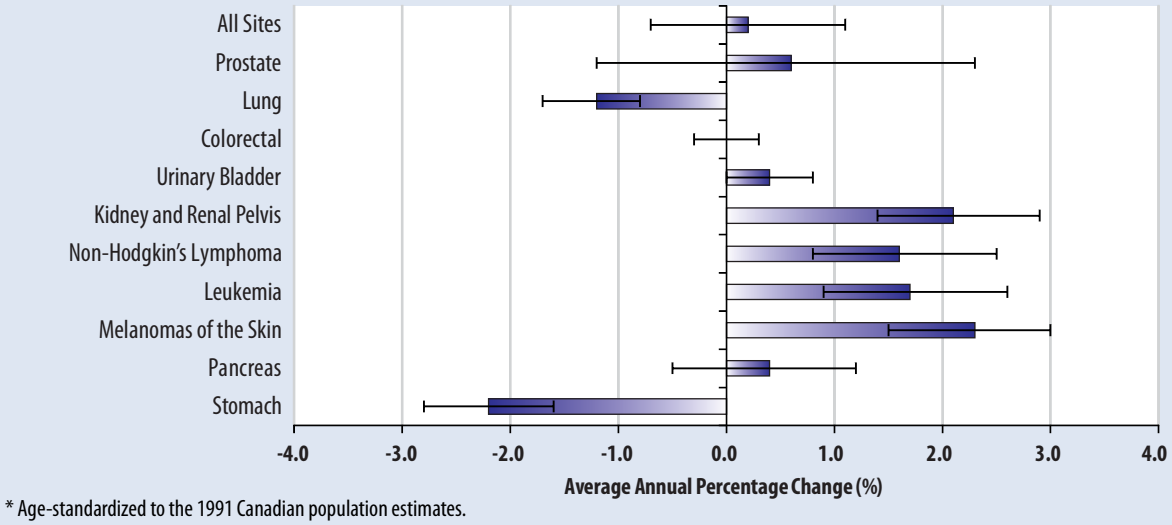
Since 1986, the incidence rate of colorectal cancer in males remained stable (AAPC: males: 0.0%), but it has declined in females (AAPC: females: -0.7%). The mortality rates of colorectal cancer for both sexes have decreased with a greater decline in females (AAPC: males: -1.6%, females: -2.2%, Figures 35-38). Mortality rates continued to significantly decline in both sexes which was likely the result of improvements in treatment, such as chemotherapy.[3] Overall, the incidence rates of colorectal cancers per 100,000 population for males and females in New Brunswick (males: 64.9 cases; females: 40.9 cases, Tables 10 and 12) were comparable to the 2015 Canadian rates (males: 59.5 cases; females: 39.7 cases)[3] while the mortality rates (males: 22.3 deaths; females: 14.5 deaths, Tables 11 and 13) were slightly higher than the Canadian rates (males: 21.5 deaths; females: 13.8 deaths) in 2015.[3]

Trends for Other Types of Cancer

Incidence trends for male urinary bladder and kidney and renal pelvis as well as for female thyroid and corpus uteri cancers are highlighted in Figures 35 and 37. Mortality trends for male non-hodgkin's lymphoma, female ovarian and pancreatic cancers for both sexes are illustrated in Figures 36 and 38.

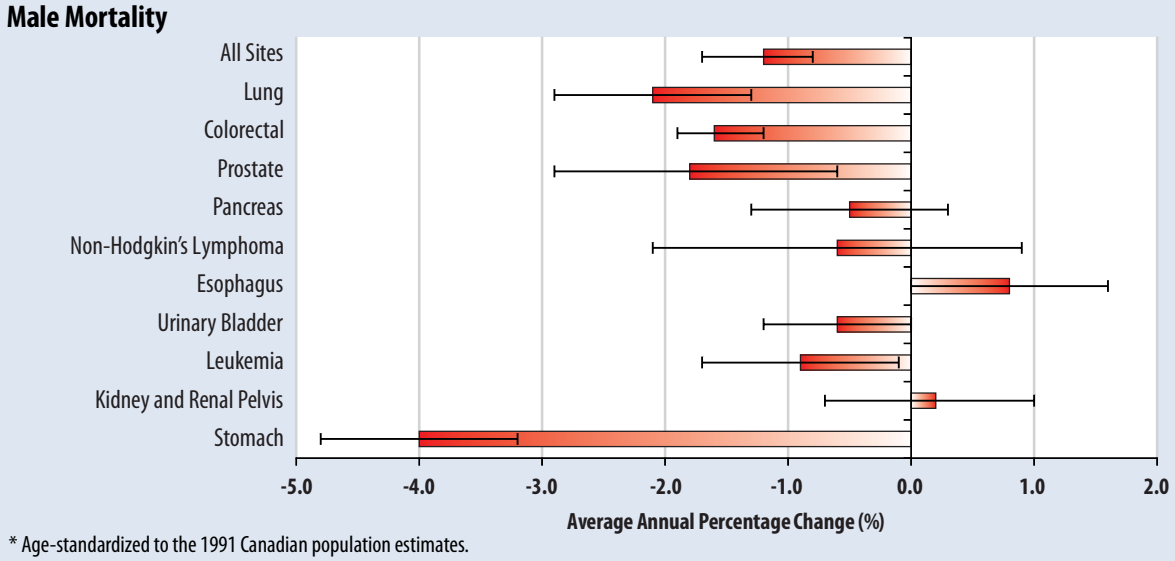
The corresponding average annual percentage changes (AAPC) and the associated 95% confidence intervals in the age-standardized incidence and mortality rates for the ten leading cancers are also presented in Figures 39-42. In summary, decreasing trends in incidence rates were observed for female colorectal (females: -0.7%) and ovarian cancers (-0.6%) as well as for male lung (-1.2%) and stomach cancers (males: -2.2%, Table 14). Similarly, decreasing trends in mortality rates were also noted: all cancer sites combined (males: -1.2%; females: -0.4%), prostate (-1.8%), lung (males: -2.1%), colorectal (males: -1.6%; females: -2.2%), breast (-2.4%); bladder (males: -0.6%); leukemia (males: -0.9%; females: -0.1%), pancreas (males: -0.5%), stomach (males: -4.0%; females: -2.9%), ovary (-0.4%), non-hodgkin's lymphoma (males: -0.6%; females: -0.9%), brain and other nervous systems (females: -0.5%) and kidney and renal pelvis (females: -1.0%, Table 15).

Figure 39: Average Annual Percentage Change (AAPC) in Age-Standardized Incidence Rates* for the Ten Leading Cancers, Males, NB, 1986-2013



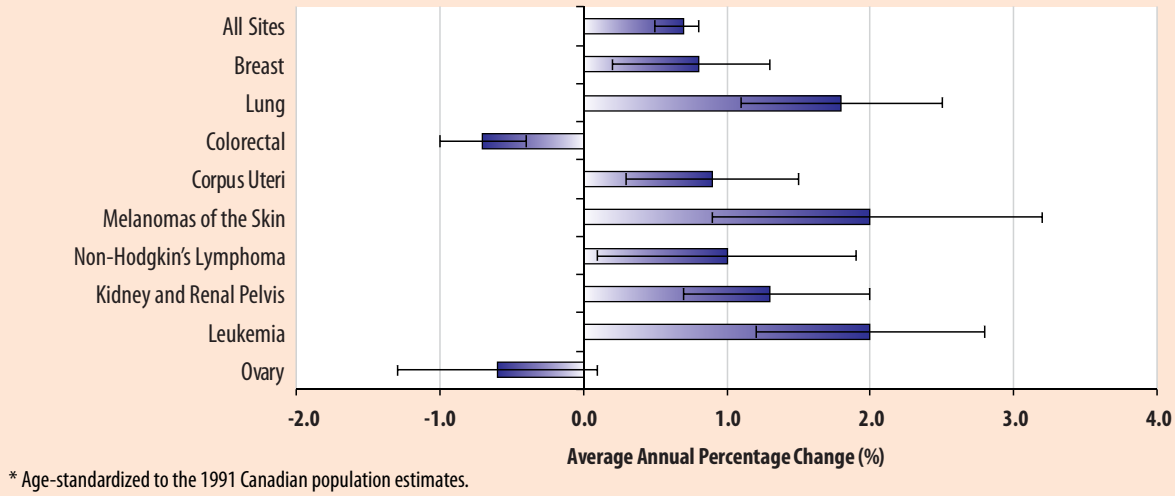
* Age-standardized to the 1991 Canadian population estimates.

Figure 40: Average Annual Percentage Change (AAPC) in Age-Standardized Mortality Rates* for the Ten Leading Cancers, Males, NB, 1986-2013



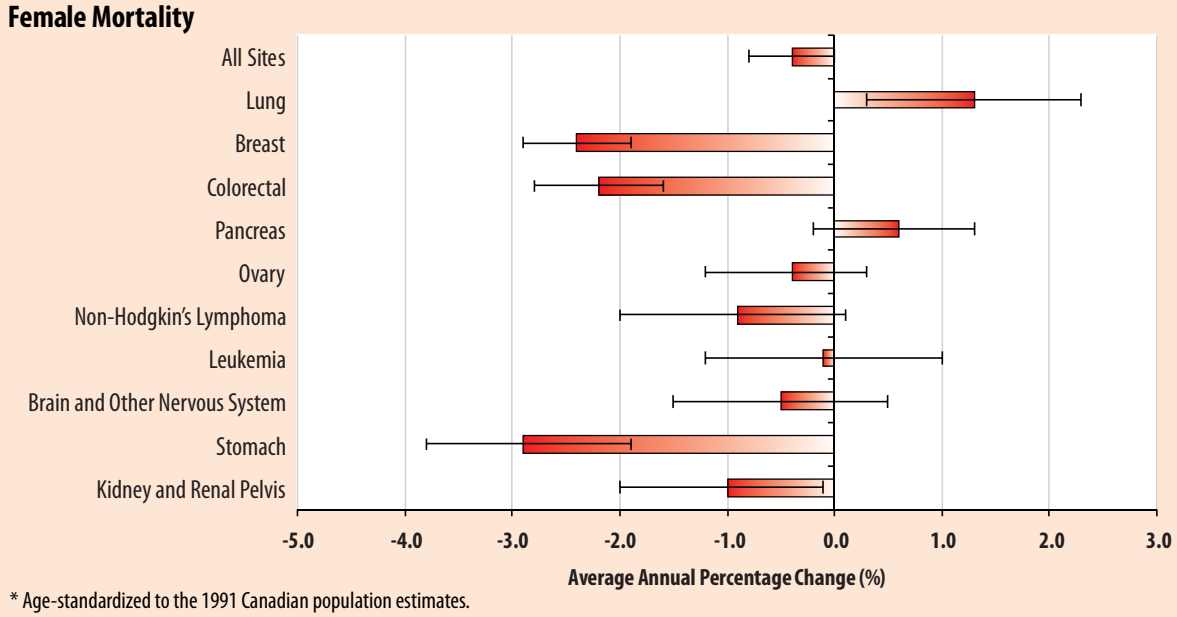
* Age-standardized to the 1991 Canadian population estimates.

Figure 41: Average Annual Percentage Change (AAPC) in Age-Standardized Incidence Rates* for the Ten Leading Cancers, Females, NB, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

Figure 42: Average Annual Percentage Change (AAPC) in Age-Standardized Mortality Rates* for the Ten Leading Cancers, Females, NB, 1986-2013



* Age-standardized to the 1991 Canadian population estimates.

3.6 Cancer Prevalence for Selected Cancers

Cancer prevalence can be described as the proportion of individuals who were previously diagnosed with cancer and who are still alive at a specific point in time (index date). Two different types of prevalence are commonly used, i.e., total prevalence and limited-duration prevalence. Total prevalence refers to prevalent cases diagnosed at any previous time, while limited-duration prevalence indicates prevalent cases diagnosed within a specified number of years prior to the index date.[14]

Cancer prevalence is a composite index of both incidence and survival from the disease. As shown in Chapter 3 (Sections 3.1: incidence and 3.7: survival), in New Brunswick, the number of newly diagnosed cases continues to rise with an improving survival, along with significant decrease in mortality for most types of cancer. Cancer prevalence becomes a key indicator for cancer-related health care services, social services and health resource allocation.

Prevalence can be computed so as to estimate the number of individuals living with cancer on the index date (person-based prevalence) or to estimate the total number of diagnoses of cancer among those alive on that date (tumour-based prevalence).[14] Person-based prevalence is relatively easier to understand than tumour-based prevalence; however, tumour-based prevalence is more reflective of the demand for health care because multiple tumours in an individual may require different treatment plans.[22] In this report, tumour-based prevalence of New Brunswick will be analyzed by cancer type, sex and health region.

3.6.1 Tumour-Based Prevalence

Among persons alive on January 1, 2014 in New Brunswick, a total of 24,655 primary cancer cases (13,023 for males and 11,632 for females) had been diagnosed in the previous ten years for all cancer sites combined (Table 16).

By cancer type:

- Around 59.5% (14,665 /24,655) of 10-year prevalent cases were either prostate (23.0%, 5,667/24,655) or breast (17.6%, 4,345/24,655), followed by colorectal (12.7%, 3,122/24,655) and lung cancers (6.2%, 1,531/24,655).
- Despite the higher incidence of lung cancer in the study period, the number of 10-year prevalent colorectal cancer cases were about 2 times greater, which reflects the poor prognosis of those diagnosed with lung cancer.

By sex:

- Prostate (43.5%, 5,667/13,023), colorectal (13.6%, 1,765/13,023) and lung cancers (5.9%, 762/13,023) accounted for 62.9% (8,194/13,023) of all prevalent cases in males.
- Breast (37.4%, 4,345/11,632), colorectal (11.7%, 1,357/11,632) and lung cancers (6.6%, 769/11,632) accounted for 55.6% (6,471/11,632) of all prevalent cases in females.

By health region:

- As of January 1, 2014, the percentages of 10-year prevalent cancer cases were as follows: HR1: 28.1% (6,927/24,655), HR2: 23.2% (5,731/24,655), HR3: 18.7% (4,599/24,655), HR4: 6.7% (1,661/24,655), HR5: 3.8% (944/24,655), HR6: 12.1% (2,976/24,655) and HR7: 7.4% (1,832/24,655). Larger HRs (HR1, HR2 and HR3) consisted of 70.0% (17,257/24,655) of all prevalent cases in New Brunswick.

3.6.2 Person-Based Prevalence

Table 17 presents the 10-year person-based prevalence for the four leading cancers (prostate, breast, lung and colorectal) for those who were alive on January 1, 2014.

By cancer type:

- More than half of the 10-year prevalent cases (57.2%, 12,073/21,092) were either prostate (23.0%, 4,846/21,092) or breast (17.1%, 3,607/21,092), followed by colorectal (11.8%, 2,498/21,092) and lung cancer (5.3%, 1,122/21,092).
- Similar to the tumour-based prevalence ratio (i.e., the number of prevalent colorectal cancer cases was about 2 times greater than that of lung cancer), the person-based ratio between these two cancers was 2.2, which again reflects the poor prognosis for those diagnosed with lung cancer.

By sex:

- Prostate (43.3%, 4,846/11,199), colorectal (12.6%, 1,414/11,199) and lung cancers (4.9%, 550/11,199) accounted for 60.8% (6,810/11,199) of all prevalent cases in males.
- Breast (36.5%, 3,607/9,893), colorectal (11.0%, 1,084/9,893) and lung cancers (5.8%, 572/9,893) accounted for 53.2% (5,263/9,893) of all prevalent cases in females.

By health region:

- As of January 1, 2014, the percentages of 10-year prevalent cancer cases were as follows: HR1: 28.0% (5,914/21,092), HR2: 22.5% (4,743/21,092), HR3: 18.8% (3,962/21,092), HR4: 7.1% (1,491/21,092), HR5: 3.9% (815/21,092), HR6: 12.4% (2,616/21,092) and HR7: 7.4% (1,551/21,092). Larger HRs (HR1, HR2 and HR3) consisted of 69.3% of all prevalent cases in New Brunswick.

3.7 Relative Survival for Selected Cancers

3.7.1 Five-Year Relative Survival for Selected Cancers

Similar to incidence and mortality rates, population-based cancer survival rate is a measure of cancer severity and prognosis. For example, when examining across cancer types by patient age and cancer stage at diagnosis, survival estimates can be used to establish priority areas for improving prognosis.[23] Examined over time and in conjunction with incidence and mortality trends, survival estimates represent an important indicator of progress in cancer control.[24] The relative survival ratio (RSR) is utilized to estimate survival time between individuals diagnosed with cancer to those who are free of cancer. Specifically, the RSR is defined as the ratio of the observed survival for a group of individuals diagnosed with cancer to the survival expected for people in the same general population.[25] A five-year relative survival ratio of 90% for a particular cancer indicates that patients with that cancer had a 90% likelihood of living for five years after diagnosis compared to similar people without cancer in the general population. It is important to realize that RSR is an "average" estimate and does not reflect an individual's survival time.

Cancer survival refers to the amount of time between first diagnosis and death of a cancer patient. It is generally influenced by many factors such as age, sex, histological subtype, cancer stage, location of disease, presence of co-morbidity, availability and quality of early detection, diagnostic and treatment services. The *stage of cancer* at diagnosis is known to be an important determinant of cancer survival. Monitoring survival by stage provides valuable information on the effectiveness of cancer detection and treatment efforts. However, it is important to note that although the RSR for breast cancer stage was computed, factors such as lead time associated with the introduction of screening programs were not investigated. Furthermore, since the age of the patient at diagnosis was observed to be an important determinant of prognosis, the RSRs for selected cancers were also examined by age at diagnosis (0-44, 45-49, 50-74 and 75+).

In this report, the five-year RSRs were calculated for the following cancer sites: all cancer sites combined, lung, colorectal, melanomas of the skin, and thyroid cancers for both sexes, prostate and testicular cancers for males and breast, ovarian, cervical, and corpus and uterus cancers for females. Overall, the five-year RSR of all cancer sites combined for males was 63.4% and 64.8% for females, respectively.

In males, the five-year RSR was highest for prostate cancer (95.4%), followed by testicular cancer (94.3%), thyroid cancer (89.8%), melanomas of the skin (88.1%), colorectal cancer (66.2%) and lung cancer (18.4%, Figure 43). In females, the highest five-year RSR was for thyroid cancer (97.6%), followed by breast cancer (88.8%), melanomas of the skin (86.7%), corpus and uterus (81.6%), cervical cancer (67.0%), colorectal cancer (65.7%), ovarian cancer (35.5%) and lung cancer (24.5%, Figure 44).

The estimated five-year RSRs (prostate: 95.4%; female thyroid: 97.6%; female breast: 88.8% and female colorectal cancer: 65.7%; Tables 18 and 19) were similar to the 2015 Canadian estimates (prostate: 96%, females thyroid: 99%, female breast: 88%, females colorectal: 65%).[3] Caution should be exercised when interpreting the estimated RSR for male thyroid cancer due to the relatively small number of new cases between 2007 and 2013, i.e., 33 cases per year.

The five-year RSRs tended to be poorer among those diagnosed at an older age (Tables 18 and 19). Lower survival at an older age may be attributed to factors such as the provision of less aggressive treatment due to high level of co-morbidity, as well as less favorable stage distribution.[26] Significant differences in the five-year RSR estimates were observed for female breast, prostate and ovarian cancers when the data analysis was conducted based on four different age groups (0-44, 45-49, 50-74 and 75+; Tables 18 and 19). For example, the five-year RSR among females with breast cancer in the 50-74 year age group was 93.2% (95%CI: 90.8, 94.9), which was statistically significantly higher than the ratio for those who were 75 years or older (73.2%, 95%CI: 66.1, 79.0).

Figure 43: Five-Year Relative Survival Ratios for Selected Cancers with 95% Confidence Intervals (I), Males, NB, 2007-2013

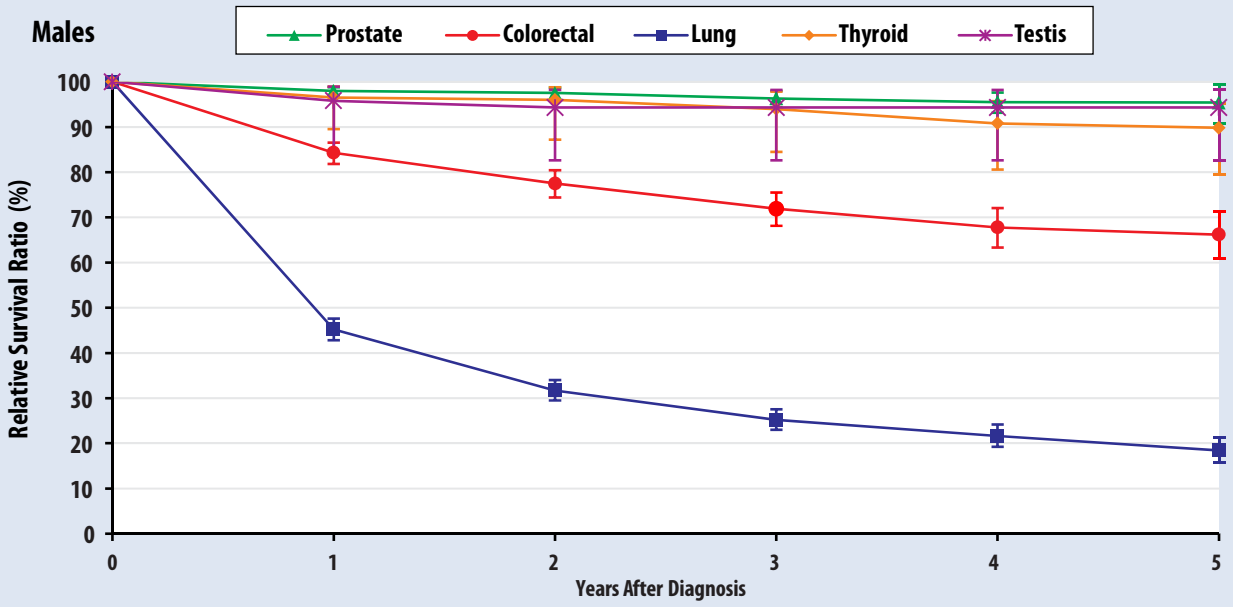
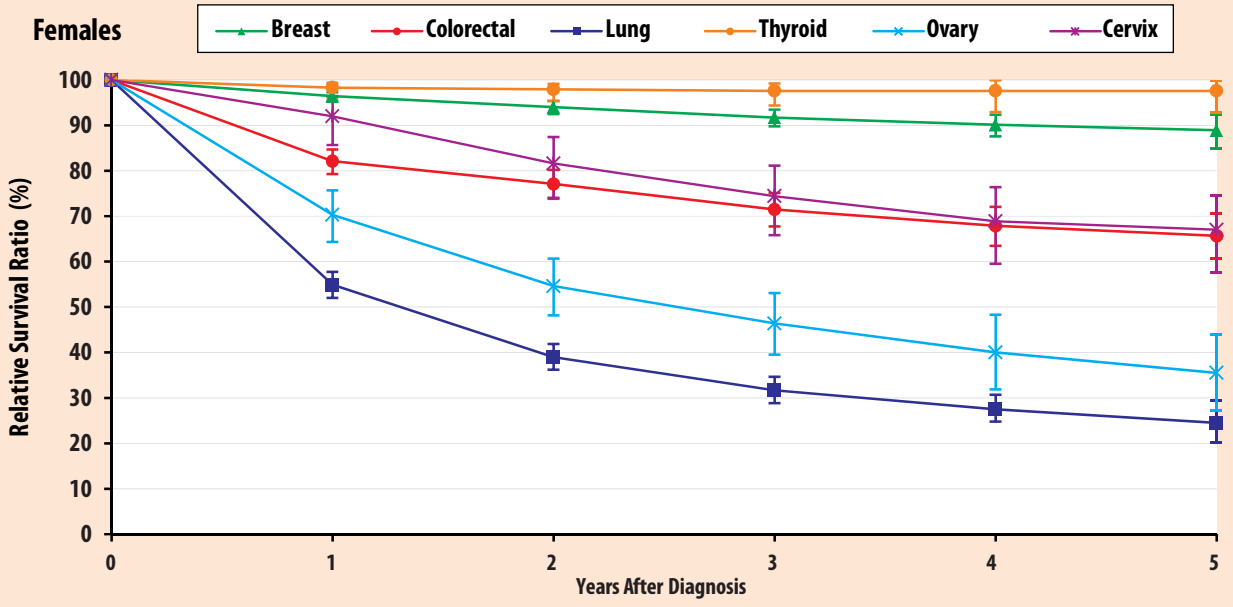


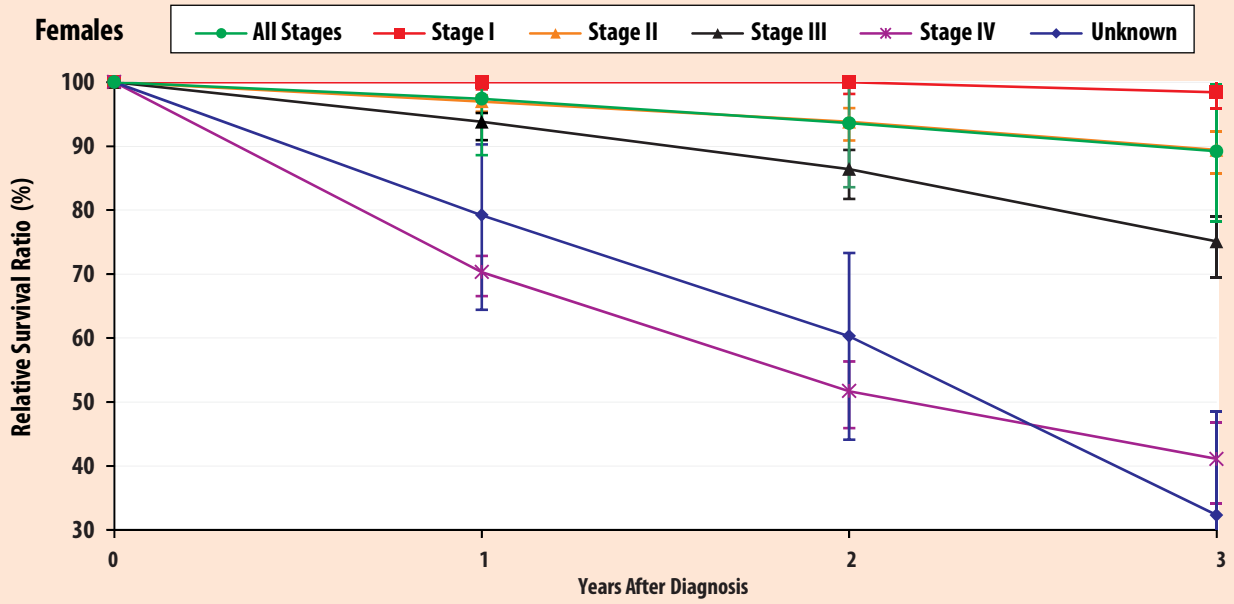
Figure 44: Five-Year Relative Survival Ratios for Selected Cancers with 95% Confidence Intervals (I), Females, NB, 2007-2013



3.7.2 Three-Year Relative Survival for Selected Cancers by Stage*

As stated previously, the stage of tumour at diagnosis was an important determinant of cancer patient survival. The results showed that both male and females had more favorable outcomes and survived longer when the cancer was detected at an early stage (Table 20). Detailed RSRs for the four leading cancers by sex and cancer stages (All stages, and Stages I, II, III and IV) are illustrated in Table 20 and Figures 45-50.

Figure 45: Three-Year Relative Survival Ratios for Female Breast Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013



*American Joint Committee on Cancer (AJCC) – Cancer Staging Manual: 6th and 7th Editions.

Figure 46: Three-Year Relative Survival Ratios for Prostate Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013

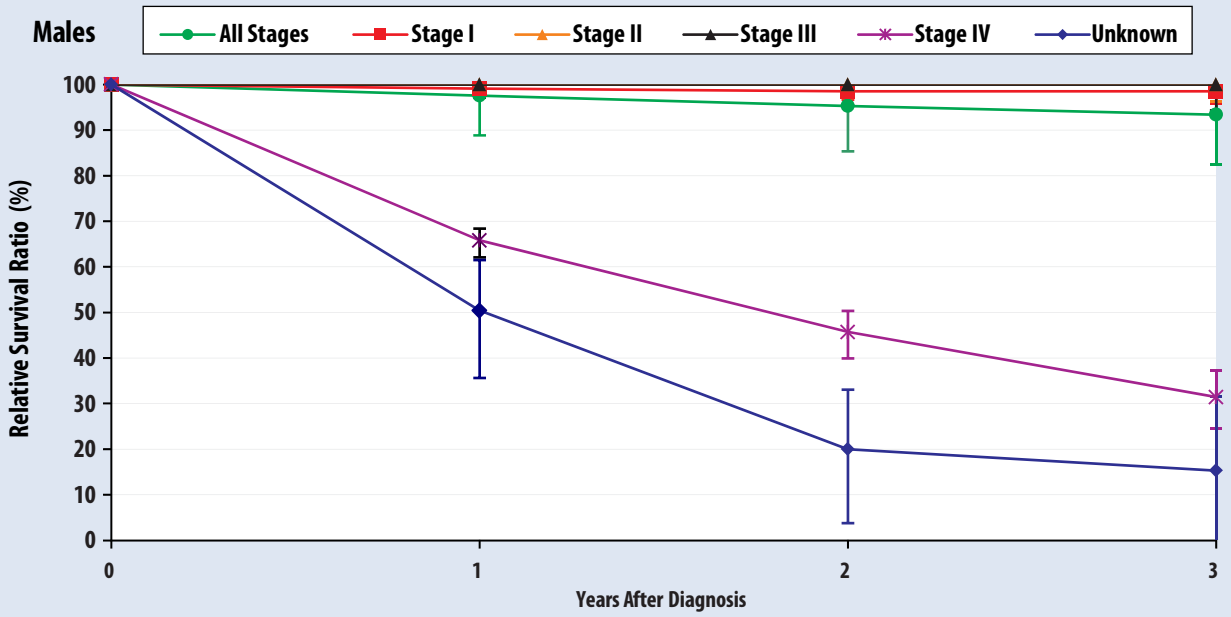


Figure 47: Three-Year Relative Survival Ratios for Male Colorectal Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013

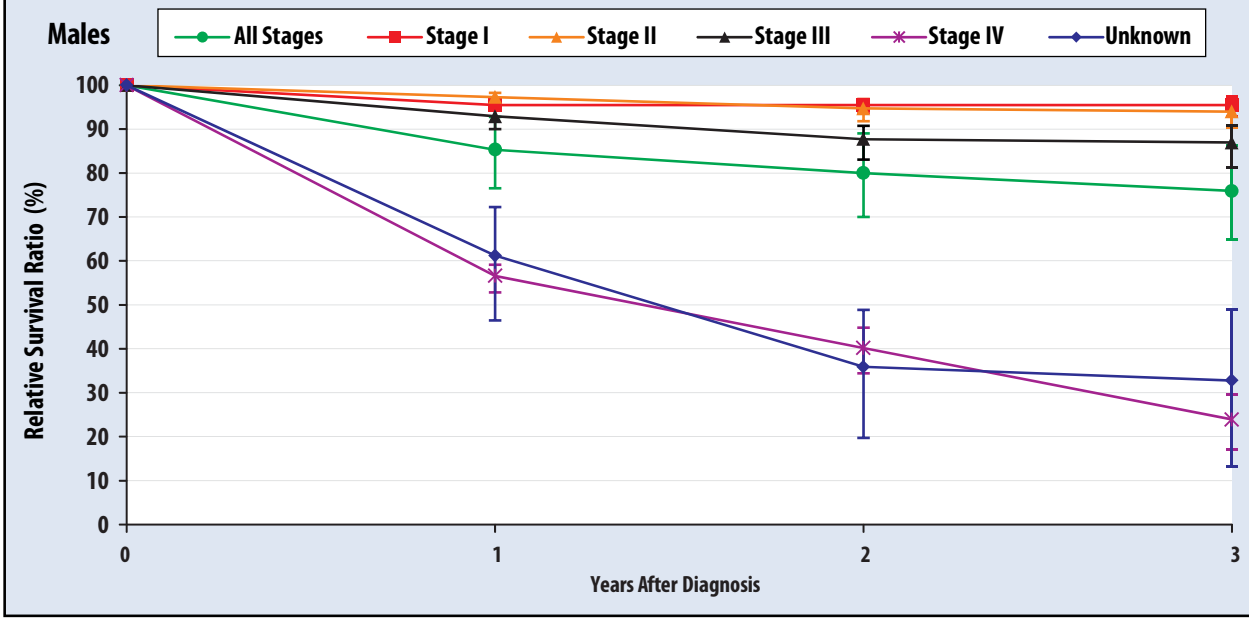


Figure 48: Three-Year Relative Survival Ratios for Female Colorectal Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013

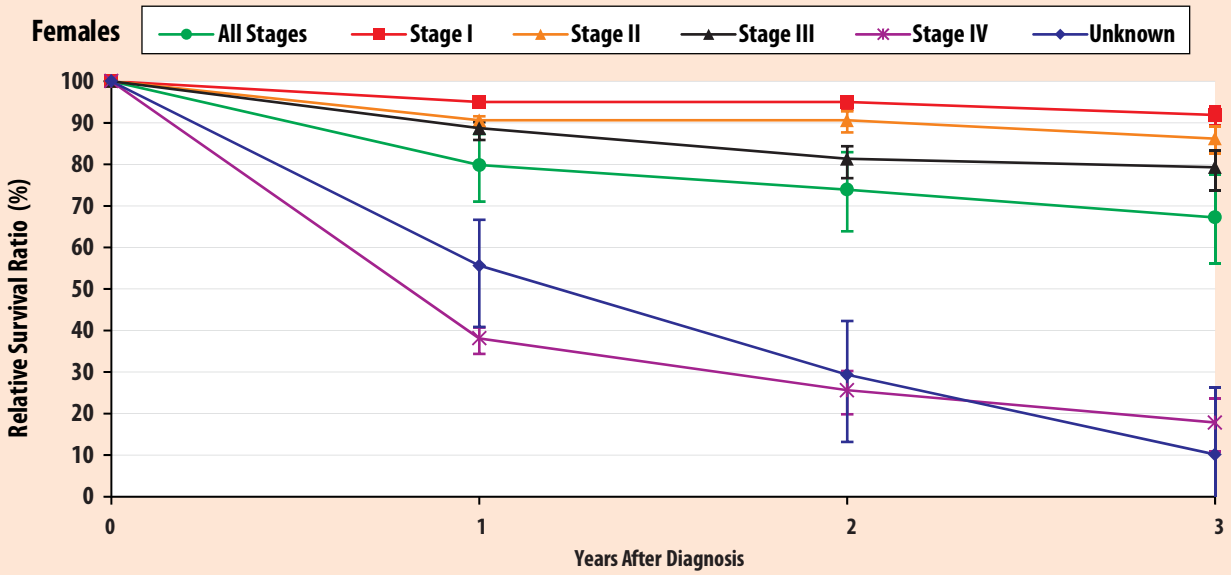


Figure 49: Three-Year Relative Survival Ratios for Male Lung Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013

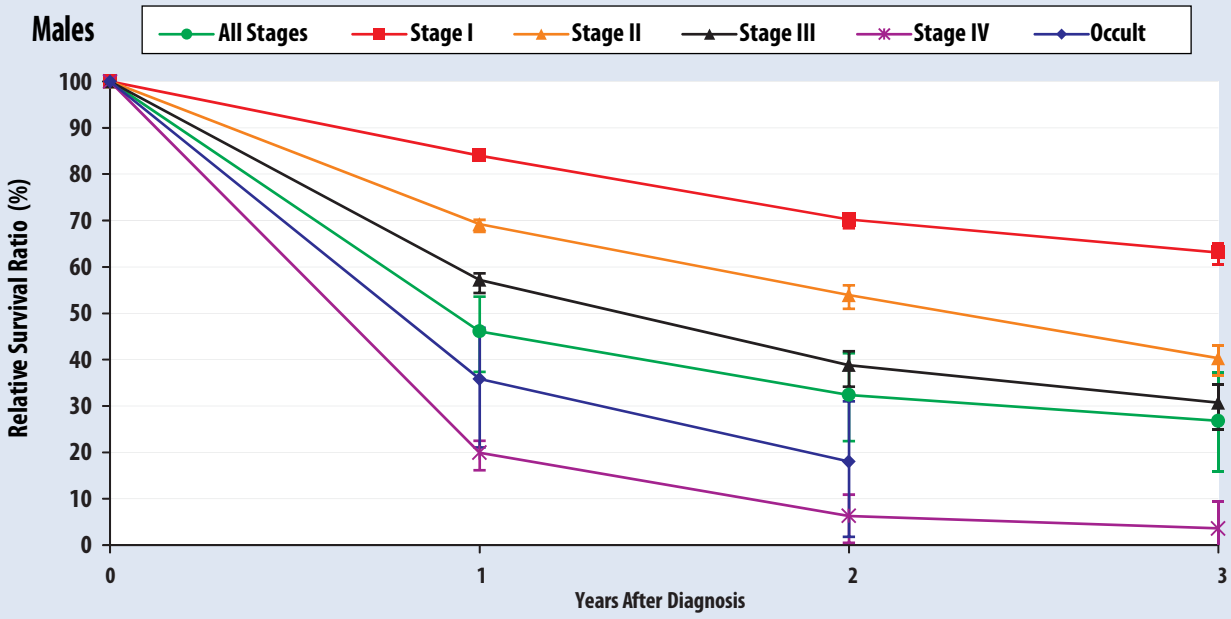
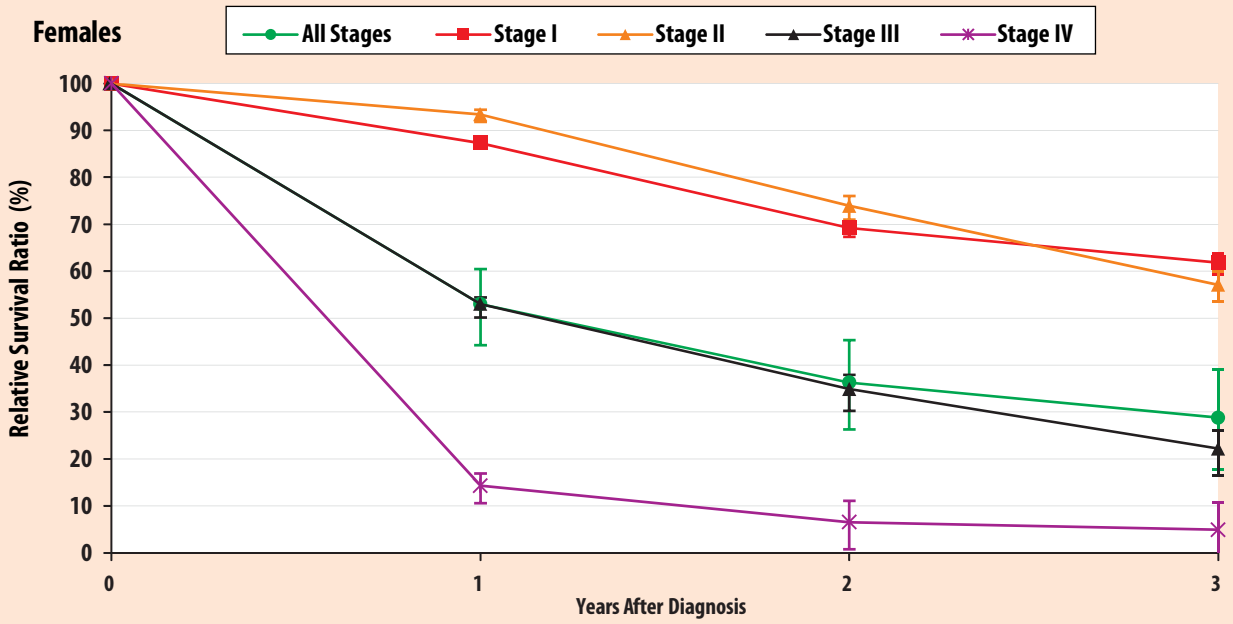


Figure 50: Three-Year Relative Survival Ratios for Female Lung Cancer by Stage with 95% Confidence Intervals (I), NB, 2007-2013



3.8 Projections for Cancer Incidence

The age-period-cohort method developed by B. Moller et al.[27] was used to project cancer incidence. The computer program "Nordpred", written by the Norwegian Cancer Registry, was applied to project incidence rates for the period 2011-2030 according to the rates in 1986-2010 using data from the Registry. This software uses five-year age groups and five-year periods, while taking age, period and birth-cohort effects into consideration. Thus, the number of cancers and population figures were grouped in five-year periods from 1986-1990 to 2006-2010, and projected incidence rates were for five-year periods from 2011-2015 to 2026-2030. The projected population figures for New Brunswick from 2016 to 2030 were obtained from Statistics Canada.[20]

The software produced predicted age-sex incidence rates for each of the five-year periods: 2016-2020, 2021-2025 and 2026-2030. To provide annual numbers, the overall figure for each five-year period was divided by five. It should be noted that these cancer incidence projections do not directly consider potential changes such as introduction of new screening modalities or improved treatments, which could alter future cancer rates, i.e., the predicted numbers can be expected to differ from the values actually observed in the future. The estimation process was entirely based on the past incidence rates between 1986 and 2010. The projected new cancer cases for the ten leading cancers are presented in Tables 21-22.

Trends in the new cancer cases and their age-standardized incidence rates for all cancer sites combined are presented in Figures 51-52, along with the projected new cases for the years of 2020, 2025 and 2030. As shown, the number of newly diagnosed cancer cases is steadily increasing over time. In total, the number of newly diagnosed invasive cancer cases is expected to be 7,128 for both sexes by the year 2030 (i.e., males: 11 cases per day; females: 9 cases per day) if the past and current cancer incidence trends continue.

Compared to the actual number of new cases in the year 2013, this would represent a 50.6% increase in new invasive cancer cases with a greater increase in males (60.8%) than in females (39.2%). The five leading cancers for males (*prostate, lung, colorectal, urinary bladder* and *kidney and pelvis*) and for females (*breast, lung, colorectal, thyroid* and *corpus uteri*) are expected to account for 48.3% and 61.6% respectively of the total number of new cancer cases in 2030.

The increase in cancer incidence will likely be driven by many factors such as the aging of the population, growth of the population, increase of exposure to potential cancer risk factors, enhancement of the ability to detect cancer at an early stage and improvement in cancer registration systems.

Figure 51: Age-Standardized Incidence Rates (ASIRs) and Number of New Cases (left scale) for All Cancer Sites Combined with Projected Estimates for the Years 2020, 2025 and 2030 (right scale), Males, NB

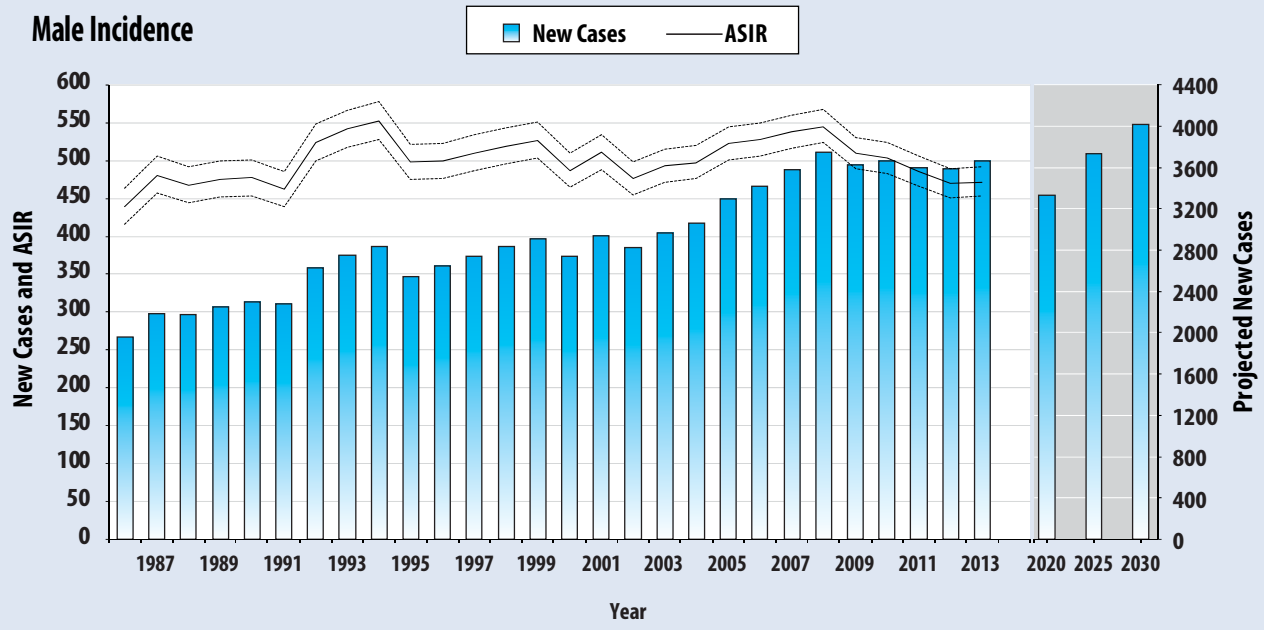
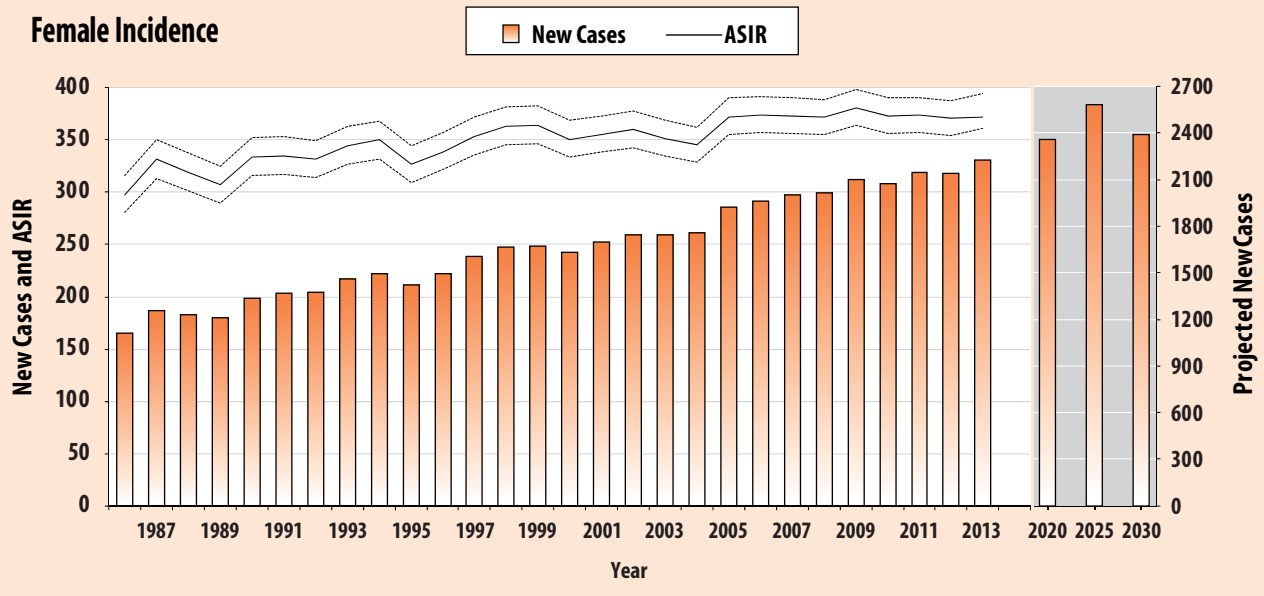


Figure 52: Age-Standardized Incidence Rates (ASIRs) and Number of New Cases (left scale) for All Cancer Sites Combined with Projected Estimates for the Years 2020, 2025 and 2030 (right scale), Females, NB



Conclusions

The current cancer statistics show continued improvements in the rates and survival for some selected cancers when compared to the last reporting period i.e., 2002-2006. As a new chapter, cancer prevalence is reported to provide useful information for health planning and health resource allocation. It is projected that there will be 7,128 new cancer cases by 2030 in New Brunswick, which represents a 50.6% increase from the 2013 actual numbers. The burden of cancer in New Brunswick will continue to grow, especially with our aging population.

One of the long-term goals of the New Brunswick Cancer Network is to reduce the incidence, morbidity, and mortality of cancer in New Brunswick. Having a robust cancer surveillance system is an effective way to achive this goal through continuous communication of the statistical evidence to the public, clinicans, researchers and policy makers to increase awareness of the magnitude of the cancer burden and support implementation of the cancer control measures in NB.

Ongoing efforts are needed to address the increase in new cancer cases and growing cancer survivor population, as shown in this report. With this inevitable increase, new strategies and services need to be developed in cancer prevention, early detection, treatment and support for cancer patients and their caregivers in the community such as cancer patient navigation and palliative care and to improve the quality of life for those affected by cancer.

Continued public-oriented awareness campaigns on the association between cancer and potential modifiable risk factors and early prevention measures such as cancer screening, tobacco cessation and healthy living are necessary.

Appendix A

SEER Site Groups for Primary Site of ICD-O-3 / WHO 2008

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)	Recode
Oral Cavity and Pharynx			
Lip	C000-C009	excluding 9050-9055, 9140, 9590-9992	20010
Tongue	C019-C029		20020
Salivary Gland	C079-C089		20030
Floor of Mouth	C040-C049		20040
Gum and Other Mouth	C030-C039, C050-C059, C060-C069		20050
Nasopharynx	C110-C119		20060
Tonsil	C090-C099		20070
Oropharynx	C100-C109		20080
Hypopharynx	C129, C130-C139		20090
Other Oral Cavity and Pharynx	C140, C142, C148		20100
Digestive System			
Esophagus	C150-C159	excluding 9050-9055, 9140, 9590-9992	21010
Stomach	C160-C169		21020
Small Intestine	C170-C179		21030
Colon and Rectum			
Colon excluding Rectum			
Cecum	C180	excluding 9050-9055, 9140, 9590-9992	21041
Appendix	C181		21042
Ascending Colon	C182		21043
Hepatic Flexure	C183		21044
Transverse Colon	C184		21045
Splenic Flexure	C185		21046
Descending Colon	C186		21047
Sigmoid Colon	C187		21048
Large Intestine, NOS	C188-C189, C260		21049
Rectum and Rectosigmoid Junction			
Rectosigmoid Junction	C199	excluding 9050-9055, 9140, 9590-9992	21051
Rectum	C209		21052
Anus, Anal Canal and Anorectum	C210-C212, C218		21060
Liver and Intrahepatic Bile Duct			
Liver	C220	excluding 9050-9055, 9140, 9590-9992	21071
Intrahepatic Bile Duct	C221		21072
Gallbladder	C239		21080
Other Biliary	C240-C249		21090
Pancreas	C250-C259		21100
Retroperitoneum	C480		21110
Peritoneum, Omentum and Mesentery	C481-C482		21120
Other Digestive Organs	C268-C269, C488		21130
Respiratory System			
Nose, Nasal Cavity and Middle Ear	C300-C301, C310-C319	excluding 9050-9055, 9140, 9590-9992	22010
Larynx	C320-C329		22020
Lung and Bronchus	C340-C349		22030
Pleura	C384		22050
Trachea, Mediastinum and Other Respiratory Organs	C339, C381-C383, C388, C390, C398, C399		22060
Bones and Joints	**C400-C419**	**excluding 9050-9055, 9140, 9590-9992**	**23000**
Soft Tissue including Heart	**C380, C470-C479, C490-C499**	**excluding 9050-9055, 9140, 9590-9992**	**24000**
Skin excluding Basal and Squamous			
Melanoma of the Skin	C440-C449	8720-8790	25010
Other Non-Epithelial Skin	C440-C449	excluding 8000-8005, 8010-8046, 8050-8084, 8090-8110, 8720-8790, 9050-9055, 9140, 9590-9992	25020
Breast	**C500-C509**	**excluding 9050-9055, 9140, 9590-9992**	**26000**
Female Genital System			
Cervix Uteri	C530-C539	excluding 9050-9055, 9140, 9590-9992	27010
Corpus and Uterus, NOS			

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)	Recode
Corpus Uteri	C540-C549	excluding 9050-9055, 9140, 9590-9992	27020
Uterus, NOS	C559		27030
Ovary	C569		27040
Vagina	C529		27050
Vulva	C510-C519		27060
Other Female Genital Organs	C570-C579, C589		27070
Male Genital System			
Prostate	C619	excluding 9050-9055, 9140, 9590-9992	28010
Testis	C620-C629		28020
Penis	C600-C609		28030
Other Male Genital Organs	C630-C639		28040
Urinary System			
Urinary Bladder	C670-C679	excluding 9050-9055, 9140, 9590-9992	29010
Kidney and Renal Pelvis	C649, C659		29020
Ureter	C669		29030
Other Urinary Organs	C680-C689		29040
Eye and Orbit	**C690-C699**	**excluding 9050-9055, 9140, 9590-9992**	**30000**
Brain and Other Nervous System			
Brain	C710-C719	excluding 9050-9055, 9140, 9530-9539, 9590-9992	31010
Cranial Nerves Other Nervous System	C710-C719	9530-9539	31040
	C700-C709, C720-C729	excluding 9050-9055, 9140, 9590-9992	
Endocrine System			
Thyroid	C739	excluding 9050-9055, 9140, 9590-9992	32010
Other Endocrine including Thymus	C379, C740-C749, C750-C759		32020
Lymphoma			
Hodgkin Lymphoma			
Hodgkin - Nodal	C024, C098-C099, C111, C142, C379, C422, C770-C779	9650-9667	33011
Hodgkin - Extranodal	All other sites		33012
Non-Hodgkin Lymphoma			
NHL - Nodal	C024, C098, C099, C111, C142, C379, C422, C770-C779	9590-9597, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687-9691, 9695, 9698-9702, 9705, 9708-9709, 9712, 9714-9719, 9724-9729, 9735, 9737-9738, 9811-9818, 9823, 9827, 9837	33041
NHL - Extranodal	All sites except C024, C098-C099, C111, C142, C379, C422, C770-C779	9590-9597, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9688, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9712, 9714-9719, 9724-9729, 9735, 9737, 9738	33042
	All sites except C024, C098-C099, C111, C142, C379, C420-C422, C424, C770-C779	9811-9818, 9823, 9827, 9837	
Myeloma		**9731-9732, 9734**	**34000**
Leukemia			
Lymphocytic Leukemia			
Acute Lymphocytic Leukemia		9826, 9835-9836	35011
	C420, C421, C424	9811-9818, 9837	
Chronic Lymphocytic Leukemia	C420, C421, C424	9823	35012
Other Lymphocytic Leukemia		9820, 9832-9834, 9940	35013
Myeloid and Monocytic Leukemia			
Acute Myeloid Leukemia		9840, 9861, 9865-9867, 9869, 9871-9874, 9895-9897, 9898, 9910-9911, 9920	35021
Acute Monocytic Leukemia		9891	35031
Chronic Myeloid Leukemia		9863, 9875-9876, 9945-9946	35022
Other Myeloid/Monocytic Leukemia		9860, 9930	35023
Other Leukemia			
Other Acute Leukemia		9801, 9805-9809, 9931	35041
Aleukemic, subleukemic and NOS		9733, 9742, 9800, 9831, 9870, 9948, 9963-9964	35043
	C420, C421, C424	9827	
Mesothelioma		**9050-9055**	**36010**
Kaposi Sarcoma		**9140**	**36020**
Miscellaneous		**9740-9741, 9750-9769, 9950, 9960-9962, 9965-9967, 9970-9971, 9975, 9980, 9982-9987, 9989, 9991-9992**	**37000**
	C760-C768, C809	**excluding 9050-9055, 9140, 9590-9992**	
	C420-C424		
	C770-C779		
Invalid	**Site or histology code not within valid range or site code not found in this table.**		**99999**

Appendix B

SEER Site Groups for Mortality Data Based on ICD-9 and ICD-10

Underlying Cause of Death		ICD-9 Codes	ICD-10 Codes
Buccal Cavity and Pharynx		140, 141, 142, 143, 144, 145, 146, 147, 148, 149	C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14
Digestive System			
	Esophagus	150	C15
	Stomach	151	C16
	Small Intestine	152	C17
	Colon and Rectum	153, 154.0-154.1, 159.0	C18-C20, C26.0
	Liver	155.0, 155.2	C22.0, C22.2-C22.4, C22.7, C22.9
	Pancreas	157	C25
	Other Digestive Organs	154.2-154.3, 154.8, 155.1, 156.0-156.2, 156.8-156.9, 158.0, 158.8-158.9, 159.8-159.9	C21, C22.1. C23, C24, C26.8-C26.9, C45.1, C48.0-48.2, C48.8
Respiratory System			
	Larynx	161	C32
	Lung	162.2-162.5, 162.8-162.9	C34
	Other Respiratory Organs	160, 162.0, 163, 164.2-164.3, 164.8-164.9, 165	C30-C31, C33, C38.1-C38.4, C38.8, C39, C45.0
Skin			
	Melanomas of the Skin	172	C43
	Other Skin	173	C44, C46
Breast		174-175	C50
Female Genital System			
	Cervix Uteri	180	C53
	Corpus Uterus, Not Otherwise Specified	179, 182	C54-C55
	Ovary	183	C56
	Other Female Genital System	181, 183.2-183.5, 183.8-183.9, 184.0-184.4, 184.8-184.9	C51-C52, C57-C58
Male Genital System			
	Prostate	185	C61
	Testis	186	C62
	Other Male Genital System	187.1-187.4, 187.5-187.9	C60, C63
Urinary System			
	Urinary Bladder	188	C67
	Kidney and Renal Pelvis	189.0-189.1	C64-C65
	Other Urinary System	189.2, 189.3-189.4, 189.8-189.9	C66, C68
Brain and Other Nervous System		191, 192	C70, C71, C72
Endocrine System			
	Thyroid	193	C73
	Other Endocrine System	164.0, 194	C37, C74-C75
Lymphomas			
	Hodgkin's Disease	201	C81
	Non-Hodgkin's Lymphomas	200, 202.0-202.2, 202.8-202.9	C82-C85, C96.3
Multiple Myeloma		203.0, 238.6	C90.0, C90.2
Leukemias		202.4, 203.1, 204.0-204.2, 204.8-204.9, 205.0-205.3, 205.8-205.9, 206.0-206.2, 206.8-206.9, 207.0-207.2, 207.8, 208.0-208.2, 208.8-208.9	C90.1, C91.0-C91.3, C91.4-C91.5, C91.7, C91.9, C92.0, C92.1-C92.3, C92.4-C92.5, C92.7, C92.9, C93.0-C93.2, C93.7, C93.9, C94.0-C94.5, C94.7, C95.0, C95.1, C95.2, C95.7, C95.9
Other, Ill-Defined and Unknown		159.1, 164.1, 170, 171, 190, 195-199, 202.3, 202.5-202.6, 203.8	C26.1, C38.0, C40-C41, C45.2, C45.7, C45.9, C47, C49, C69, C76-C80, C88, C96.0-C96.2, C96.7, C96.9, C97

Appendix C

Table 1: Number of New Cases and Associated Incidence Rates* for Males by Cancer Site, NB, 2007-2013

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**17,362**	**2,500**	**672.4**	***(662.5-682.5)***	**673.6**	**501.3**	***(493.8-509.0)***	**471.9**
Oral Cavity and Pharynx	**452**	**79**	**17.5**	***(15.9-19.2)***	**21.3**	**12.7**	***(11.5-14.0)***	**14.2**
Lip	28	6	1.1	*(0.7-1.6)*	1.6	0.8	*(0.5-1.2)*	1.1
Tongue	114	22	4.4	*(3.6-5.3)*	5.9	3.1	*(2.6-3.8)*	3.8
Salivary Gland	38	7	1.5	*(1.0-2.0)*	1.9	1.3	*(0.9-1.7)*	1.4
Floor of Mouth	25	<5	1.0	*(0.6-1.4)*	0.5	0.7	*(0.4-1.0)*	0.3
Gum and Other Mouth	47	8	1.8	*(1.3-2.4)*	2.2	1.3	*(1.0-1.8)*	1.3
Nasopharynx	16	<5	0.6	*(0.4-1.0)*	0.3	0.5	*(0.3-0.8)*	0.2
Tonsil	127	24	4.9	*(4.1-5.9)*	6.5	3.4	*(2.8-4.1)*	4.5
Oropharynx	20	5	0.8	*(0.5-1.2)*	1.3	0.5	*(0.3-0.8)*	0.9
Hypopharynx	25	<5	1.0	*(0.6-1.4)*	0.8	0.7	*(0.5-1.1)*	0.6
Other Oral Cavity and Pharynx	12	<5	0.5	*(0.2-0.8)*	0.3	0.3	*(0.2-0.6)*	0.2
Digestive System	**3,655**	**604**	**141.6**	***(137.0-146.2)***	**162.7**	**105.0**	***(101.6-108.5)***	**113.8**
Esophagus	255	30	9.9	*(8.7-11.2)*	8.1	7.2	*(6.4-8.2)*	5.5
Stomach	370	65	14.3	*(12.9-15.9)*	17.5	10.7	*(9.6-11.9)*	12.0
Small Intestine	70	17	2.7	*(2.1-3.4)*	4.6	2.0	*(1.6-2.6)*	3.3
Colon and Rectum	2,254	361	87.3	*(83.7-91.0)*	97.3	64.9	*(62.2-67.6)*	69.0
Colon Excluding Rectum	1,321	213	51.2	*(48.4-54.0)*	57.4	38.4	*(36.3-40.5)*	40.9
Cecum	330	67	12.8	*(11.4-14.2)*	18.1	9.6	*(8.6-10.7)*	12.7
Appendix	33	7	1.3	*(0.9-1.8)*	1.9	1.0	*(0.7-1.4)*	1.9
Ascending Colon	243	32	9.4	*(8.3-10.7)*	8.6	7.1	*(6.2-8.0)*	5.8
Hepatic Flexure	44	9	1.7	*(1.2-2.3)*	2.4	1.3	*(0.9-1.7)*	1.7
Transverse Colon	98	12	3.8	*(3.1-4.6)*	3.2	2.8	*(2.3-3.5)*	2.3
Splenic Flexure	39	6	1.5	*(1.1-2.1)*	1.6	1.1	*(0.8-1.6)*	1.1
Descending Colon	98	11	3.8	*(3.1-4.6)*	3.0	2.8	*(2.3-3.5)*	2.0
Sigmoid Colon	396	62	15.3	*(13.9-16.9)*	16.7	11.4	*(10.3-12.6)*	11.9
Large Intestine, NOS	40	7	1.5	*(1.1-2.1)*	1.9	1.2	*(0.8-1.6)*	1.5
Rectum and Rectosigmoid Junction	933	148	36.1	*(33.9-38.5)*	39.9	26.5	*(24.8-28.3)*	28.1
Rectosigmoid Junction	284	28	11.0	*(9.8-12.4)*	7.5	8.0	*(7.0-9.0)*	5.1
Rectum	649	120	25.1	*(23.2-27.1)*	32.3	18.5	*(17.1-20.1)*	23.0
Anus, Anal Canal and Anorectum	23	<10	0.9	*(0.6-1.3)*	1.3	0.6	*(0.4-1.0)*	0.9
Liver and Intrahepatic Bile Duct	174	28	6.7	*(5.8-7.8)*	7.5	5.0	*(4.2-5.8)*	5.0
Liver	119	19	4.6	*(3.8-5.5)*	5.1	3.4	*(2.8-4.1)*	3.4
Intrahepatic Bile Duct	55	9	2.1	*(1.6-2.8)*	2.4	1.5	*(1.2-2.0)*	1.6
Gallbladder	24	6	0.9	*(0.6-1.4)*	1.6	0.7	*(0.4-1.0)*	1.0
Other Biliary	48	10	1.9	*(1.4-2.5)*	2.7	1.4	*(1.0-1.9)*	2.1
Pancreas	414	81	16.0	*(14.5-17.7)*	21.8	11.8	*(10.7-13.0)*	14.8
Retroperitoneum	<5	0	0.2	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Peritoneum, Omentum and Mesentery	<5	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Other Digestive System	19	<5	0.7	*(0.4-1.1)*	0.3	0.6	*(0.3-0.9)*	0.2
Respiratory System	**3,044**	**453**	**117.9**	***(113.7-122.2)***	**122.1**	**87.7**	***(84.6-90.9)***	**84.0**
Nose, Nasal Cavity and Middle Ear	21	6	0.8	*(0.5-1.2)*	1.6	0.6	*(0.4-1.0)*	1.3
Larynx	172	21	6.7	*(5.7-7.7)*	5.7	4.7	*(4.1-5.5)*	3.6
Lung and Bronchus	2,845	426	110.2	*(106.2-114.3)*	114.8	82.1	*(79.1-85.2)*	79.1
Pleura	<5	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<10	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.1-0.5)*	0.0
Bones and Joints	**34**	**7**	**1.3**	***(0.9-1.8)***	**1.9**	**1.1**	***(0.8-1.6)***	**2.0**
Soft Tissue including Heart	**104**	**13**	**4.0**	***(3.3-4.9)***	**3.5**	**3.4**	***(2.8-4.2)***	**3.1**
Skin excluding Basal and Squamous	**630**	**93**	**24.4**	***(22.5-26.4)***	**25.1**	**18.8**	***(17.3-20.4)***	**18.5**
Melanomas of the Skin	567	79	22.0	*(20.2-23.8)*	21.3	16.8	*(15.4-18.3)*	15.4
Other Non-Epithelial Skin	63	14	2.4	*(1.9-3.1)*	3.8	2.0	*(1.5-2.6)*	3.0
Breast	**40**	**9**	**1.5**	***(1.1-2.1)***	**2.4**	**1.1**	***(0.8-1.5)***	**1.6**

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Male Genital System	**5,005**	**525**	**193.8**	***(188.5-199.3)***	**141.5**	**141.3**	***(137.3-145.3)***	**95.8**
Prostate	4,821	504	186.7	*(181.5-192.1)*	135.8	133.5	*(129.7-137.3)*	89.9
Testis	139	12	5.4	*(4.5-6.4)*	3.2	6.5	*(5.4-7.7)*	4.3
Penis	38	9	1.5	*(1.0-2.0)*	2.4	1.1	*(0.8-1.6)*	1.6
Other Male Genital Organs	7	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0
Urinary System	**2,000**	**339**	**77.5**	***(74.1-80.9)***	**91.3**	**57.5**	***(55.0-60.1)***	**62.9**
Urinary Bladder	1,212	214	46.9	*(44.3-49.7)*	57.7	35.1	*(33.1-37.1)*	39.9
Kidney and Renal Pelvis	753	120	29.2	*(27.1-31.3)*	32.3	21.4	*(19.9-23.0)*	22.1
Ureter	24	5	0.9	*(0.6-1.4)*	1.3	0.7	*(0.5-1.1)*	0.9
Other Urinary Organs	11	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.2-0.6)*	0.0
Eye and Orbit	**13**	**<5**	**0.5**	***(0.3-0.9)***	**0.3**	**0.4**	***(0.2-0.7)***	**0.4**
Brain and Other Nervous System	**227**	**28**	**8.8**	***(7.7-10.0)***	**7.5**	**7.1**	***(6.2-8.2)***	**6.6**
Brain	222	28	8.6	*(7.5-9.8)*	7.5	7.0	*(6.0-8.0)*	6.6
Cranial Nerves Other Nervous System	5	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.1-0.4)*	0.0
Endocrine System	**245**	**38**	**9.5**	***(8.3-10.8)***	**10.2**	**7.5**	***(6.6-8.6)***	**7.6**
Thyroid	232	<38	9.0	*(7.9-10.2)*	9.7	7.1	*(6.2-8.1)*	7.3
Other Endocrine including Thymus	13	<5	0.5	*(0.3-0.9)*	0.5	0.4	*(0.2-0.7)*	0.3
Lymphoma	**790**	**122**	**30.6**	***(28.5-32.8)***	**32.9**	**24.3**	***(22.6-26.1)***	**24.3**
Hodgkin Lymphoma	77	16	3.0	*(2.4-3.7)*	4.3	3.1	*(2.4-3.9)*	4.2
Hodgkin – Nodal	<75	16	2.9	*(2.3-3.6)*	4.3	3.0	*(2.3-3.8)*	4.2
Hodgkin - Extranodal	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Non-Hodgkin's Lymphoma	713	106	27.6	*(25.6-29.7)*	28.6	21.2	*(19.6-22.8)*	20.1
NHL – Nodal	471	71	18.2	*(16.6-20.0)*	19.1	13.9	*(12.7-15.3)*	13.5
NHL - Extranodal	242	35	9.4	*(8.2-10.6)*	9.4	7.3	*(6.4-8.3)*	6.6
Myeloma	**229**	**36**	**8.9**	***(7.8-10.1)***	**9.7**	**6.5**	***(5.7-7.5)***	**6.5**
Leukemia	**560**	**94**	**21.7**	***(19.9-23.6)***	**25.3**	**17.0**	***(15.6-18.6)***	**19.0**
Lymphocytic Leukemia	347	52	13.4	*(12.1-14.9)*	14.0	10.4	*(9.3-11.6)*	10.1
Acute Lymphocytic Leukemia	44	<10	1.7	*(1.2-2.3)*	1.6	1.8	*(1.3-2.5)*	1.8
Chronic Lymphocytic Leukemia	283	42	11.0	*(9.7-12.3)*	11.3	8.0	*(7.1-9.1)*	7.5
Other Lymphocytic Leukemia	20	<5	0.8	*(0.5-1.2)*	1.1	0.5	*(0.3-0.8)*	0.8
Myeloid and Monocytic Leukemia	192	41	7.4	*(6.4-8.6)*	11.0	6.0	*(5.1-6.9)*	8.7
Acute Myeloid Leukemia	117	24	4.5	*(3.7-5.4)*	6.5	3.6	*(2.9-4.3)*	4.9
Acute Monocytic Leukemia	<15	<5	0.4	*(0.2-0.7)*	0.5	0.4	*(0.2-0.7)*	0.4
Chronic Myeloid Leukemia	63	<20	2.4	*(1.9-3.1)*	4.0	2.0	*(1.5-2.6)*	3.4
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Leukemia	21	<5	0.8	*(0.5-1.2)*	0.3	0.7	*(0.4-1.1)*	0.2
Other Acute Leukemia	15	0	0.6	*(0.3-1.0)*	0.0	0.5	*(0.3-0.8)*	0.0
Aleukemic, subleukemic and NOS	6	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.1-0.5)*	0.2
Mesothelioma	**74**	**12**	**2.9**	***(2.3-3.6)***	**3.2**	**2.1**	***(1.7-2.7)***	**2.3**
Kaposi Sarcoma	**7**	**<5**	**0.3**	***(0.1-0.6)***	**0.5**	**0.2**	***(0.1-0.5)***	**0.4**
Miscellaneous	**253**	**45**	**9.8**	***(8.6-11.1)***	**12.1**	**7.4**	***(6.5-8.4)***	**9.0**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 2: Number of New Cases and Associated Incidence Rates* for Females by Cancer Site, NB, 2007-2013

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**14,757**	**2,233**	**552.0**	***(543.1-560.9)***	**588.2**	**374.4**	***(368.1-380.7)***	**377.2**
Oral Cavity and Pharynx	**190**	**27**	**7.1**	***(6.1-8.2)***	**7.1**	**4.9**	***(4.2-5.7)***	**4.6**
Lip	7	<5	0.3	*(0.1-0.5)*	0.3	0.2	*(0.1-0.4)*	0.1
Tongue	55	8	2.1	*(1.5-2.7)*	2.1	1.4	*(1.0-1.9)*	1.2
Salivary Gland	27	5	1.0	*(0.7-1.5)*	1.3	0.8	*(0.5-1.2)*	1.2
Floor of Mouth	10	0	0.4	*(0.2-0.7)*	0.0	0.3	*(0.1-0.5)*	0.0
Gum and Other Mouth	31	<5	1.2	*(0.8-1.6)*	0.8	0.7	*(0.5-1.1)*	0.4
Nasopharynx	8	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.5)*	0.3
Tonsil	39	7	1.5	*(1.0-2.0)*	1.8	1.0	*(0.7-1.4)*	1.1
Oropharynx	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.2)*	0.1
Hypopharynx	7	0	0.3	*(0.1-0.5)*	0.0	0.2	*(0.1-0.4)*	0.0
Other Oral Cavity and Pharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.2)*	0.0
Digestive System	**2,792**	**435**	**104.4**	***(100.6-108.4)***	**114.6**	**65.2**	***(62.7-67.7)***	**67.8**
Esophagus	66	10	2.5	*(1.9-3.1)*	2.6	1.6	*(1.2-2.0)*	1.7
Stomach	192	26	7.2	*(6.2-8.3)*	6.8	4.6	*(3.9-5.3)*	4.0
Small Intestine	62	7	2.3	*(1.8-3.0)*	1.8	1.6	*(1.2-2.1)*	1.0
Colon and Rectum	1,758	268	65.8	*(62.7-68.9)*	70.6	40.9	*(38.9-42.9)*	41.6
Colon Excluding Rectum	1,280	207	47.9	*(45.3-50.6)*	54.5	29.3	*(27.6-31.0)*	31.6
Cecum	388	61	14.5	*(13.1-16.0)*	16.1	8.7	*(7.8-9.6)*	9.0
Appendix	20	<5	0.7	*(0.5-1.2)*	1.1	0.5	*(0.3-0.9)*	0.9
Ascending Colon	292	52	10.9	*(9.7-12.2)*	13.7	6.5	*(5.8-7.4)*	7.3
Hepatic Flexure	40	<5	1.5	*(1.1-2.0)*	0.8	0.9	*(0.7-1.3)*	0.3
Transverse Colon	103	19	3.9	*(3.1-4.7)*	5.0	2.3	*(1.9-2.9)*	3.0
Splenic Flexure	31	<5	1.2	*(0.8-1.6)*	0.3	0.7	*(0.5-1.1)*	0.2
Descending Colon	75	13	2.8	*(2.2-3.5)*	3.4	1.8	*(1.4-2.3)*	2.1
Sigmoid Colon	273	44	10.2	*(9.0-11.5)*	11.6	6.7	*(5.9-7.6)*	7.6
Large Intestine, NOS	58	10	2.2	*(1.6-2.8)*	2.6	1.0	*(0.8-1.4)*	1.3
Rectum and Rectosigmoid Junction	478	61	17.9	*(16.3-19.6)*	16.1	11.6	*(10.5-12.7)*	10.0
Rectosigmoid Junction	160	20	6.0	*(5.1-7.0)*	5.3	3.9	*(3.3-4.5)*	3.4
Rectum	318	41	11.9	*(10.6-13.3)*	10.8	7.7	*(6.9-8.7)*	6.6
Anus, Anal Canal and Anorectum	71	21	2.7	*(2.1-3.3)*	5.5	1.7	*(1.3-2.2)*	3.5
Liver and Intrahepatic Bile Duct	110	16	4.1	*(3.4-5.0)*	4.2	2.6	*(2.1-3.2)*	2.6
Liver	44	6	1.6	*(1.2-2.2)*	1.6	1.1	*(0.7-1.5)*	1.0
Intrahepatic Bile Duct	66	10	2.5	*(1.9-3.1)*	2.6	1.6	*(1.2-2.0)*	1.6
Gallbladder	49	6	1.8	*(1.4-2.4)*	1.6	1.1	*(0.8-1.5)*	1.0
Other Biliary	51	9	1.9	*(1.4-2.5)*	2.4	1.2	*(0.9-1.6)*	1.4
Pancreas	409	69	15.3	*(13.9-16.9)*	18.2	9.4	*(8.5-10.4)*	10.6
Retroperitoneum	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	12	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.1-0.5)*	0.0
Other Digestive System	<15	<5	0.4	*(0.2-0.7)*	0.8	0.2	*(0.1-0.5)*	0.5
Respiratory System	**2,183**	**<340**	**81.7**	***(78.3-85.1)***	**88.2**	**53.4**	***(51.1-55.7)***	**54.0**
Nose, Nasal Cavity and Middle Ear	19	0	0.7	*(0.4-1.1)*	0.0	0.5	*(0.3-0.8)*	0.0
Larynx	26	<5	1.0	*(0.6-1.4)*	0.3	0.7	*(0.4-1.0)*	0.2
Lung and Bronchus	2,138	334	80.0	*(76.6-83.4)*	88.0	52.2	*(50.0-54.6)*	53.9
Pleura	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Trachea, Mediastinum and Other Respiratory System	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Bones and Joints	**20**	**<5**	**0.7**	***(0.5-1.2)***	**0.8**	**0.8**	***(0.5-1.3)***	**0.8**
Soft Tissue including Heart	**83**	**11**	**3.1**	***(2.5-3.8)***	**2.9**	**2.6**	***(2.0-3.2)***	**2.7**
Skin excluding Basal and Squamous	**614**	**93**	**23.0**	***(21.2-24.9)***	**24.5**	**17.0**	***(15.6-18.5)***	**16.6**
Melanomas of the Skin	551	83	20.6	*(18.9-22.4)*	21.9	15.4	*(14.0-16.8)*	15.1
Other Non-Epithelial Skin	63	10	2.4	*(1.8-3.0)*	2.6	1.6	*(1.2-2.1)*	1.5
Breast	**3,977**	**571**	**148.8**	***(144.2-153.4)***	**150.4**	**101.7**	***(98.4-105.0)***	**98.1**
Female Genital System	**1,564**	**250**	**58.5**	***(55.6-61.5)***	**65.8**	**40.7**	***(38.6-42.9)***	**42.7**
Cervix Uteri	198	21	7.4	*(6.4-8.5)*	5.5	6.7	*(5.8-7.8)*	5.5
Corpus and Uterus, NOS	814	142	30.4	*(28.4-32.6)*	37.4	20.3	*(18.9-21.8)*	23.7
Corpus Uteri	790	139	29.5	*(27.5-31.7)*	36.6	19.7	*(18.4-21.2)*	23.3
Uterus, NOS	24	<5	0.9	*(0.6-1.3)*	0.8	0.6	*(0.3-0.9)*	0.4
Ovary	406	60	15.2	*(13.7-16.7)*	15.8	10.2	*(9.2-11.3)*	9.4
Vagina	21	<5	0.8	*(0.5-1.2)*	0.8	0.5	*(0.3-0.8)*	0.6
Vulva	107	21	4.0	(3.3-4.8)	5.5	2.5	(2.0-3.1)	3.1
Other Female Genital Organs	18	<5	0.7	(0.4-1.1)	0.8	0.5	(0.3-0.8)	0.4

Cancer Site	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Urinary System	**904**	**129**	**33.8**	***(31.6-36.1)***	**34.0**	**22.2**	***(20.7-23.8)***	**21.8**
Urinary Bladder	389	50	14.5	*(13.1-16.1)*	13.2	9.2	*(8.3-10.2)*	7.6
Kidney and Renal Pelvis	492	74	18.4	*(16.8-20.1)*	19.5	12.5	*(11.4-13.7)*	13.4
Ureter	18	<5	0.7	*(0.4-1.1)*	1.1	0.4	*(0.2-0.7)*	0.5
Other Urinary Organs	5	<5	0.2	*(0.1-0.4)*	0.3	0.1	*(0.0-0.3)*	0.2
Eye and Orbit	**26**	**<5**	**1.0**	***(0.6-1.4)***	**0.8**	**0.7**	***(0.4-1.1)***	**0.4**
Brain and Other Nervous System	**194**	**<30**	**7.3**	***(6.3-8.4)***	**7.4**	**5.3**	***(4.5-6.1)***	**5.1**
Brain	189	27	7.1	*(6.1-8.2)*	7.1	5.1	*(4.4-6.0)*	4.9
Cranial Nerves Other Nervous System	5	<5	0.2	*(0.1-0.4)*	0.3	0.1	*(0.0-0.4)*	0.2
Endocrine System	**697**	**<95**	**26.1**	***(24.2-28.1)***	**24.5**	**21.5**	***(19.8-23.3)***	**19.5**
Thyroid	681	91	25.5	*(23.6-27.5)*	24.0	21.0	*(19.3-22.7)*	19.1
Other Endocrine including Thymus	16	<5	0.6	*(0.3-1.0)*	0.5	0.5	*(0.3-0.9)*	0.5
Lymphoma	**<660**	**112**	**24.5**	***(22.7-26.5)***	**29.5**	**17.1**	***(15.8-18.6)***	**20.1**
Hodgkin Lymphoma	<60	14	2.1	*(1.5-2.7)*	3.7	2.0	*(1.5-2.6)*	3.3
Hodgkin – Nodal	52	14	1.9	*(1.5-2.6)*	3.7	1.9	*(1.4-2.5)*	3.3
Hodgkin - Extranodal	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Non-Hodgkin's Lymphoma	601	98	22.5	*(20.7-24.4)*	25.8	15.1	*(13.9-16.5)*	16.8
NHL – Nodal	411	64	15.4	*(13.9-16.9)*	16.9	10.3	*(9.3-11.4)*	10.9
NHL - Extranodal	190	34	7.1	*(6.1-8.2)*	9.0	4.8	*(4.1-5.6)*	5.9
Myeloma	**186**	**33**	**7.0**	***(6.0-8.0)***	**8.7**	**4.2**	***(3.6-4.9)***	**4.9**
Leukemia	**<405**	**68**	**15.0**	***(13.5-16.5)***	**17.9**	**11.2**	***(10.0-12.4)***	**11.9**
Lymphocytic Leukemia	204	36	7.6	*(6.6-8.8)*	9.5	5.8	*(5.0-6.8)*	6.4
Acute Lymphocytic Leukemia	39	<5	1.5	*(1.0-2.0)*	1.1	1.8	*(1.3-2.5)*	1.3
Chronic Lymphocytic Leukemia	154	30	5.8	*(4.9-6.7)*	7.9	3.7	*(3.2-4.4)*	4.8
Other Lymphocytic Leukemia	11	<5	0.4	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.3
Myeloid and Monocytic Leukemia	<170	31	6.3	*(5.4-7.3)*	8.2	4.7	*(4.0-5.6)*	5.2
Acute Myeloid Leukemia	115	22	4.3	*(3.6-5.2)*	5.8	3.3	*(2.7-4.0)*	3.7
Acute Monocytic Leukemia	14	<5	0.5	*(0.3-0.9)*	0.5	0.4	*(0.2-0.7)*	0.3
Chronic Myeloid Leukemia	38	6	1.4	*(1.0-2.0)*	1.6	1.0	*(0.7-1.4)*	1.1
Other Myeloid/Monocytic Leukemia	<5	<5	0.1	*(0.0-0.3)*	0.3	0.1	*(0.0-0.2)*	0.1
Other Leukemia	<30	<5	1.0	*(0.7-1.5)*	0.3	0.6	*(0.4-1.0)*	0.2
Other Acute Leukemia	19	<5	0.7	*(0.4-1.1)*	0.3	0.5	*(0.3-0.8)*	0.2
Aleukemic, subleukemic and NOS	<10	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0
Mesothelioma	**19**	**6**	**0.7**	***(0.4-1.1)***	**1.6**	**0.5**	***(0.3-0.7)***	**0.8**
Kaposi Sarcoma	**<5**	**0**	**0.1**	***(0.0-0.3)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**250**	**36**	**9.4**	***(8.2-10.6)***	**9.5**	**5.5**	***(4.8-6.2)***	**5.4**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 3: Number of Deaths and Associated Mortality Rates* for Males by Cancer Site, NB, 2007-2013

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**6,840**	**974**	**264.9**	***(258.7-271.3)***	**262.4**	**199.5**	***(194.7-204.3)***	**184.0**
Oral Cavity and Pharynx	**121**	**18**	**4.7**	***(3.9-5.6)***	**4.8**	**3.5**	***(2.9-4.2)***	**3.5**
Lip	<5	0	0.2	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	26	7	1.0	*(0.7-1.5)*	1.9	0.8	*(0.5-1.1)*	1.4
Salivary Gland	12	<5	0.5	*(0.2-0.8)*	0.5	0.4	*(0.2-0.6)*	0.4
Floor of Mouth	<5	<5	0.0	*(0.0-0.2)*	0.3	0.0	*(0.0-0.2)*	0.2
Gum and Other Mouth	20	0	0.8	*(0.5-1.2)*	0.0	0.6	*(0.4-0.9)*	0.0
Nasopharynx	8	<5	0.3	*(0.1-0.6)*	0.3	0.3	*(0.1-0.5)*	0.2
Tonsil	12	<5	0.5	*(0.2-0.8)*	0.8	0.3	*(0.2-0.6)*	0.5
Oropharynx	<5	<5	0.2	*(0.0-0.4)*	0.3	0.1	*(0.0-0.3)*	0.2
Hypopharynx	8	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Other Oral Cavity and Pharynx	26	<5	1.0	*(0.7-1.5)*	0.5	0.7	*(0.5-1.1)*	0.4
Digestive System	**1,811**	**277**	**70.1**	***(66.9-73.4)***	**74.6**	**52.3**	***(49.9-54.8)***	**51.8**
Esophagus	248	35	9.6	*(8.4-10.9)*	9.4	7.1	*(6.2-8.0)*	6.5
Stomach	201	29	7.8	*(6.7-8.9)*	7.8	5.8	*(5.0-6.7)*	5.4
Small Intestine	15	5	0.6	*(0.3-1.0)*	1.3	0.4	*(0.2-0.7)*	1.0
Colon and Rectum	764	112	29.6	*(27.5-31.8)*	30.2	22.3	*(20.7-23.9)*	21.0
Colon Excluding Rectum	609	78	23.6	*(21.7-25.5)*	21.0	17.8	*(16.4-19.3)*	14.5
Rectum and Rectosigmoid Junction	155	34	6.0	*(5.1-7.0)*	9.2	4.5	*(3.8-5.2)*	6.5
Anus, Anal Canal and Anorectum	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.2)*	0.1
Liver and Intrahepatic Bile Duct	168	28	6.5	*(5.6-7.6)*	7.5	4.8	*(4.1-5.6)*	5.3
Liver	119	21	4.6	*(3.8-5.5)*	5.7	3.4	*(2.8-4.1)*	4.0
Intrahepatic Bile Duct	49	7	1.9	*(1.4-2.5)*	1.9	1.4	*(1.0-1.9)*	1.3
Gallbladder	9	<5	0.3	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.3
Other Biliary	23	<5	0.9	*(0.6-1.3)*	0.8	0.7	*(0.4-1.0)*	0.5
Pancreas	358	60	13.9	*(12.5-15.4)*	16.2	10.3	*(9.2-11.4)*	11.1
Retroperitoneum	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Peritoneum, Omentum and Mesentery	<5	<5	0.0	*(0.0-0.2)*	0.3	0.0	*(0.0-0.2)*	0.2
Other Digestive System	22	<5	0.9	*(0.5-1.3)*	0.3	0.6	*(0.4-1.0)*	0.2
Respiratory System	**2,291**	**293**	**88.7**	***(85.1-92.4)***	**78.9**	**66.4**	***(63.6-69.2)***	**54.8**
Nose, Nasal Cavity and Middle Ear	7	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.4)*	0.2
Larynx	66	10	2.6	*(2.0-3.3)*	2.7	1.9	*(1.4-2.4)*	1.9
Lung and Bronchus	2,209	280	85.6	*(82.0-89.2)*	75.4	64.0	*(61.3-66.7)*	52.3
Pleura	<5	<5	0.1	*(0.0-0.3)*	0.3	0.1	*(0.0-0.3)*	0.2
Trachea, Mediastinum and Other Respiratory System	<10	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.1-0.5)*	0.2
Bones and Joints	**15**	**6**	**0.6**	***(0.3-1.0)***	**1.6**	**0.5**	***(0.3-0.9)***	**1.3**
Soft Tissue including Heart	**48**	**7**	**1.9**	***(1.4-2.5)***	**1.9**	**1.6**	***(1.1-2.1)***	**1.2**
Skin excluding Basal and Squamous	**130**	**15**	**5.0**	***(4.2-6.0)***	**4.0**	**3.7**	***(3.1-4.5)***	**2.8**
Melanomas of the Skin	97	7	3.8	*(3.0-4.6)*	1.9	2.8	*(2.3-3.4)*	1.3
Other Non-Epithelial Skin	33	8	1.3	*(0.9-1.8)*	2.2	0.9	*(0.6-1.3)*	1.5
Breast	**12**	**<5**	**0.5**	***(0.2-0.8)***	**1.1**	**0.3**	***(0.2-0.6)***	**0.8**
Male Genital System	**675**	**95**	**26.1**	***(24.2-28.2)***	**25.6**	**20.0**	***(18.5-21.6)***	**18.2**
Prostate	658	<95	25.5	*(23.6-27.5)*	25.3	19.5	*(18.0-21.0)*	18.1
Testis	9	<5	0.3	*(0.2-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Penis	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Male Genital Organs	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Urinary System	**443**	**70**	**17.2**	***(15.6-18.8)***	**18.9**	**12.8**	***(11.7-14.1)***	**13.1**
Urinary Bladder	220	<35	8.5	*(7.4-9.7)*	8.6	6.4	*(5.6-7.4)*	6.1
Kidney and Renal Pelvis	208	37	8.1	*(7.0-9.2)*	10.0	5.9	*(5.2-6.8)*	6.8
Ureter	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Urinary Organs	7	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.4)*	0.2
Eye and Orbit	**<5**	**0**	**0.2**	***(0.0-0.4)***	**0.0**	**0.1**	***(0.0-0.3)***	**0.0**
Brain and Other Nervous System	**178**	**29**	**6.9**	***(5.9-8.0)***	**7.8**	**5.2**	***(4.5-6.1)***	**6.3**
Endocrine System	**27**	**<5**	**1.0**	***(0.7-1.5)***	**0.5**	**0.8**	***(0.5-1.2)***	**0.4**
Thyroid	18	<5	0.7	*(0.4-1.1)*	0.5	0.5	*(0.3-0.8)*	0.4
Other Endocrine including Thymus	9	0	0.3	*(0.2-0.7)*	0.0	0.3	*(0.1-0.6)*	0.0
Lymphoma	**265**	**37**	**10.3**	***(9.1-11.6)***	**10.0**	**8.0**	***(7.0-9.0)***	**7.0**
Hodgkin Lymphoma	13	<5	0.5	*(0.3-0.9)*	0.3	0.5	*(0.2-0.8)*	0.2
Non-Hodgkin's Lymphoma	252	<37	9.8	*(8.6-11.0)*	9.7	7.5	*(6.6-8.6)*	6.8
Myeloma	**97**	**11**	**3.8**	***(3.0-4.6)***	**3.0**	**2.8**	***(2.3-3.5)***	**2.1**

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Leukemia	**208**	**37**	**8.1**	***(7.0-9.2)***	**10.0**	**6.2**	***(5.4-7.2)***	**6.8**
Lymphocytic Leukemia	65	12	2.5	*(1.9-3.2)*	3.2	2.0	*(1.5-2.5)*	2.1
Acute Lymphocytic Leukemia	11	<5	0.4	*(0.2-0.8)*	0.5	0.4	*(0.2-0.7)*	0.3
Chronic Lymphocytic Leukemia	48	8	1.9	*(1.4-2.5)*	2.2	1.4	*(1.0-1.9)*	1.4
Other Lymphocytic Leukemia	6	<5	0.2	*(0.1-0.5)*	0.5	0.2	*(0.1-0.4)*	0.4
Myeloid and Monocytic Leukemia	66	11	2.6	*(2.0-3.3)*	3.0	2.0	*(1.5-2.5)*	2.0
Acute Myeloid Leukemia	55	<11	2.1	*(1.6-2.8)*	2.4	1.6	*(1.2-2.2)*	1.6
Acute Monocytic Leukemia	<5	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	7	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.4)*	0.4
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Leukemia	77	14	3.0	*(2.4-3.7)*	3.8	2.3	*(1.8-2.9)*	2.7
Other Acute Leukemia	36	7	1.4	*(1.0-1.9)*	1.9	1.1	*(0.8-1.6)*	1.4
Aleukemic, subleukemic and NOS	41	7	1.6	*(1.1-2.2)*	1.9	1.2	*(0.9-1.7)*	1.3
Mesothelioma	**51**	**8**	**2.0**	***(1.5-2.6)***	**2.2**	**1.5**	***(1.1-2.0)***	**1.5**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.1)***	**0.0**	**0.0**	***(0.0-0.1)***	**0.0**
Miscellaneous	**464**	**65**	**18.0**	***(16.4-19.7)***	**17.5**	**13.6**	***(12.4-14.9)***	**12.5**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 4: Number of Deaths and Associated Mortality Rates* for Females by Cancer Site, NB, 2007-2013

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
All Sites	**5,993**	**912**	**224.2**	***(218.5-229.9)***	**240.2**	**137.2**	***(133.6-140.9)***	**138.2**
Oral Cavity and Pharynx	**56**	**8**	**2.1**	***(1.6-2.7)***	**2.1**	**1.3**	***(0.9-1.7)***	**1.1**
Lip	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	13	0	0.5	*(0.3-0.8)*	0.0	0.3	*(0.1-0.5)*	0.0
Salivary Gland	12	<5	0.4	*(0.2-0.8)*	0.8	0.3	*(0.1-0.5)*	0.5
Floor of Mouth	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Gum and Other Mouth	10	<5	0.4	*(0.2-0.7)*	0.8	0.2	*(0.1-0.4)*	0.3
Nasopharynx	5	0	0.2	*(0.1-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tonsil	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Oropharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.2)*	0.0
Hypopharynx	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Other Oral Cavity and Pharynx	5	<5	0.2	*(0.1-0.4)*	0.5	0.1	*(0.0-0.3)*	0.3
Digestive System	**1,503**	**224**	**56.2**	***(53.4-59.1)***	**59.0**	**32.9**	***(31.2-34.7)***	**33.5**
Esophagus	74	14	2.8	*(2.2-3.5)*	3.7	1.7	*(1.3-2.2)*	2.4
Stomach	137	16	5.1	*(4.3-6.1)*	4.2	3.1	*(2.6-3.7)*	2.5
Small Intestine	9	<5	0.3	*(0.2-0.6)*	0.3	0.2	*(0.1-0.4)*	0.1
Colon and Rectum	684	96	25.6	*(23.7-27.6)*	25.3	14.5	*(13.4-15.7)*	13.3
Colon Excluding Rectum	582	79	21.8	*(20.0-23.6)*	20.8	12.3	*(11.2-13.4)*	10.7
Rectum and Rectosigmoid Junction	102	17	3.8	*(3.1-4.6)*	4.5	2.2	*(1.8-2.7)*	2.6
Anus, Anal Canal and Anorectum	12	<5	0.4	*(0.2-0.8)*	0.3	0.3	*(0.1-0.5)*	0.2
Liver and Intrahepatic Bile Duct	113	21	4.2	*(3.5-5.1)*	5.5	2.6	*(2.1-3.1)*	3.2
Liver	50	8	1.9	*(1.4-2.5)*	2.1	1.1	*(0.8-1.5)*	1.1
Intrahepatic Bile Duct	63	13	2.4	*(1.8-3.0)*	3.4	1.5	*(1.1-1.9)*	2.1
Gallbladder	24	<5	0.9	*(0.6-1.3)*	1.1	0.5	*(0.3-0.8)*	0.6
Other Biliary	27	<5	1.0	*(0.7-1.5)*	0.8	0.6	*(0.4-0.9)*	0.4
Pancreas	395	64	14.8	*(13.4-16.3)*	16.9	8.9	*(8.0-9.8)*	10.0
Retroperitoneum	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Digestive System	21	<5	0.8	*(0.5-1.2)*	1.1	0.5	*(0.3-0.7)*	0.7
Respiratory System	**1,587**	**249**	**59.4**	***(56.5-62.4)***	**65.6**	**37.8**	***(35.9-39.8)***	**38.7**
Nose, Nasal Cavity and Middle Ear	5	0	0.2	*(0.1-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Larynx	10	<5	0.4	*(0.2-0.7)*	0.5	0.3	*(0.1-0.5)*	0.4
Lung and Bronchus	1,568	<249	58.6	*(55.8-61.6)*	65.1	37.3	*(35.5-39.3)*	38.3
Pleura	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Bones and Joints	**8**	**<5**	**0.3**	***(0.1-0.6)***	**0.5**	**0.2**	***(0.1-0.5)***	**0.5**
Soft Tissue including Heart	**35**	**8**	**1.3**	***(0.9-1.8)***	**2.1**	**0.9**	***(0.6-1.3)***	**1.4**
Skin excluding Basal and Squamous	**80**	**20**	**3.0**	***(2.4-3.7)***	**5.3**	**1.8**	***(1.4-2.3)***	**2.8**
Melanomas of the Skin	60	14	2.2	*(1.7-2.9)*	3.7	1.5	*(1.1-2.0)*	2.1
Other Non-Epithelial Skin	20	6	0.7	*(0.5-1.2)*	1.6	0.4	*(0.2-0.6)*	0.7
Breast	**812**	**111**	**30.4**	***(28.3-32.5)***	**29.2**	**18.5**	***(17.2-19.9)***	**16.1**
Female Genital System	**543**	**77**	**20.3**	***(18.6-22.1)***	**20.3**	**12.8**	***(11.7-14.0)***	**12.3**
Cervix Uteri	65	6	2.4	*(1.9-3.1)*	1.6	1.7	*(1.3-2.2)*	1.5
Corpus and Uterus, NOS	148	23	5.5	*(4.7-6.5)*	6.1	3.5	*(2.9-4.1)*	3.8
Corpus Uteri	81	12	3.0	*(2.4-3.8)*	3.2	1.9	*(1.5-2.4)*	2.2
Uterus, NOS	67	11	2.5	*(1.9-3.2)*	2.9	1.6	*(1.2-2.0)*	1.5
Ovary	282	42	10.5	*(9.4-11.9)*	11.1	6.6	*(5.8-7.4)*	6.3
Vagina	9	0	0.3	*(0.2-0.6)*	0.0	0.2	*(0.1-0.4)*	0.0
Vulva	25	<5	0.9	*(0.6-1.4)*	1.1	0.5	*(0.3-0.8)*	0.5
Other Female Genital Organs	14	<5	0.5	*(0.3-0.9)*	0.5	0.3	*(0.2-0.5)*	0.2
Urinary System	**237**	**42**	**8.9**	***(7.8-10.1)***	**11.1**	**5.0**	***(4.3-5.7)***	**6.1**
Urinary Bladder	86	<15	3.2	*(2.6-4.0)*	3.4	1.6	*(1.3-2.0)*	1.8
Kidney and Renal Pelvis	140	28	5.2	*(4.4-6.2)*	7.4	3.1	*(2.6-3.8)*	4.2
Ureter	<5	<5	0.1	*(0.0-0.4)*	0.3	0.1	*(0.0-0.2)*	0.2
Other Urinary Organs	<10	0	0.3	*(0.1-0.5)*	0.0	0.1	*(0.1-0.3)*	0.0
Eye and Orbit	**5**	**<5**	**0.2**	***(0.1-0.4)***	**0.3**	**0.1**	***(0.0-0.3)***	**0.2**
Brain and Other Nervous System	**145**	**20**	**5.4**	***(4.6-6.4)***	**5.3**	**3.7**	***(3.1-4.5)***	**3.2**
Endocrine System	**26**	**5**	**1.0**	***(0.6-1.4)***	**1.3**	**0.7**	***(0.4-1.1)***	**0.9**
Thyroid	18	<5	0.7	*(0.4-1.1)*	1.1	0.4	*(0.2-0.7)*	0.7
Other Endocrine including Thymus	8	<5	0.3	*(0.1-0.6)*	0.3	0.3	*(0.1-0.6)*	0.2

Cancer Site	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2007-2013	2013	2007-2013		2013	2007-2013		2013
Lymphoma	**208**	**34**	**7.8**	***(6.8-8.9)***	**9.0**	**4.7**	***(4.1-5.5)***	**5.5**
Hodgkin Lymphoma	9	<5	0.3	*(0.2-0.6)*	0.8	0.3	*(0.1-0.5)*	0.5
Non-Hodgkin's Lymphoma	199	<34	7.4	*(6.4-8.6)*	8.2	4.5	*(3.8-5.2)*	5.0
Myeloma	**112**	**21**	**4.2**	***(3.4-5.0)***	**5.5**	**2.5**	***(2.0-3.0)***	**3.0**
Leukemia	**185**	**31**	**6.9**	***(6.0-8.0)***	**8.2**	**4.3**	***(3.6-5.0)***	**4.3**
Lymphocytic Leukemia	46	8	1.7	*(1.3-2.3)*	2.1	1.0	*(0.7-1.4)*	1.0
Acute Lymphocytic Leukemia	8	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Chronic Lymphocytic Leukemia	33	<8	1.2	*(0.8-1.7)*	1.6	0.7	*(0.5-1.0)*	0.8
Other Lymphocytic Leukemia	5	<5	0.2	*(0.1-0.4)*	0.5	0.1	*(0.0-0.2)*	0.2
Myeloid and Monocytic Leukemia	67	14	2.5	*(1.9-3.2)*	3.7	1.6	*(1.3-2.1)*	2.1
Acute Myeloid Leukemia	54	<14	2.0	*(1.5-2.6)*	3.4	1.3	*(1.0-1.8)*	2.0
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.1)*	0.0	0.0	*(0.0-0.1)*	0.0
Chronic Myeloid Leukemia	<15	<5	0.4	*(0.2-0.7)*	0.3	0.2	*(0.1-0.5)*	0.1
Other Myeloid/Monocytic Leukemia	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.2)*	0.0
Other Leukemia	72	9	2.7	*(2.1-3.4)*	2.4	1.6	*(1.2-2.1)*	1.3
Other Acute Leukemia	33	<9	1.2	*(0.8-1.7)*	1.6	0.7	*(0.5-1.1)*	0.8
Aleukemic, subleukemic and NOS	39	<5	1.5	*(1.0-2.0)*	0.8	0.9	*(0.6-1.2)*	0.4
Mesothelioma	**14**	**<5**	**0.5**	***(0.3-0.9)***	**1.1**	**0.3**	***(0.2-0.6)***	**0.6**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.1)***	**0.0**	**0.0**	***(0.0-0.1)***	**0.0**
Miscellaneous	**436**	**55**	**16.3**	***(14.8-17.9)***	**14.5**	**9.6**	***(8.6-10.6)***	**8.2**

* Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates. Counts are suppressed when fewer than five cases were reported for the specific cancer. The suppressed cases however, are included in the counts and rates for 'all sites' combined.

Table 5: Number of New Cases and Associated Rates for Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29) by Cancer Type and Sex, NB, 1986-2006 vs. 2007-2013

A) 1986 – 2006; Age 0-14

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	230	14.9 (13.0, 17.0)	15.2 (13.3, 17.3)	215	14.7 (12.8, 16.8)	14.9 (13.0, 17.0)
Leukemia	82	5.3 (4.2, 6.6)	5.5 (4.4, 6.9)	66	4.5 (3.5, 5.8)	4.7 (3.6, 5.9)
Brain	52	3.4 (2.5, 4.4)	3.4 (2.6, 4.5)	53	3.6 (2.7, 4.8)	3.6 (2.7, 4.8)
Lymphoma	24	1.6 (1.0, 2.3)	1.5 (1.0, 2.3)	16	1.1 (0.6, 1.8)	1.0 (0.6, 1.7)
Soft Tissue (including heart)	20	1.3 (0.8, 2.0)	1.3 (0.8, 2.0)	8	0.5 (0.2, 1.1)	0.6 (0.2, 1.1)

B) 1986 – 2006; Age 15-29

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	480	27.0 (24.6, 29.5)	27.7 (25.3, 30.3)	561	32.8 (30.2, 35.7)	34.2 (31.5, 37.2)
Lymphoma	128	7.2 (6.0, 8.6)	7.3 (6.1, 8.6)	92	5.4 (4.3, 6.6)	5.5 (4.4, 6.7)
Testis	94	5.3 (4.3, 6.5)	5.5 (4.4, 6.7)	-	-	-
Melanoma of the Skin	43	2.4 (1.8, 3.3)	2.6 (1.9, 3.5)	78	4.6 (3.6, 5.7)	4.8 (3.8, 6.0)
Thyroid	12	0.7 (0.3, 1.2)	0.7 (0.4, 1.2)	83	4.9 (3.9, 6.0)	5.1 (4.0, 6.3)

C) 2007– 2013; Age 0-14

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	69	16.8 (13.1, 21.3)	17.1 (13.3, 21.6)	70	18.1 (14.1, 22.8)	18.3 (14.3, 23.1)
Leukemia	25	6.1 (3.9, 9.0)	6.2 (4.0, 9.2)	26	6.7 (4.4, 9.8)	6.8 (4.5, 10.0)
Brain	7	1.7 (0.7, 3.5)	1.7 (0.7, 3.5)	12	3.1 (1.6, 5.4)	3.1 (1.6, 5.4)
Lymphoma	13	3.2 (1.7, 5.4)	3.1 (1.7, 5.4)	4	1.0 (0.3, 2.6)	1.0 (0.3, 2.6)
Soft Tissue (including heart)	8	2.0 (0.8, 3.8)	2.0 (0.9, 3.9)	8	2.1 (0.9, 4.1)	2.1 (0.9, 4.2)

D) 2007– 2013; Age 15-29

Cancer Site	Males			Females		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	172	34.4 (29.4, 39.9)	35.7 (30.5, 41.5)	175	36.7 (31.4, 42.5)	38.4 (32.9, 44.6)
Lymphoma	32	6.4 (4.4, 9.0)	6.4 (4.4, 9.1)	27	5.7 (3.7, 8.2)	5.7 (3.7, 8.3)
Testis	57	11.4 (8.6, 14.8)	12.0 (9.1, 15.6)	-	-	-
Melanoma of the Skin	7	1.4 (0.6, 2.9)	1.6 (0.7, 3.3)	20	4.2 (2.6, 6.5)	4.5 (2.7, 6.9)
Thyroid	7	1.4 (0.6, 2.9)	1.5 (0.6, 3.0)	41	8.6 (6.2, 11.7)	9.0 (6.4, 12.2)

Table 6: Male Incidence: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2007-2013

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Prostate	27.8	1	28.9	1	26.5	1	23.4	1	31.2	1	21.4	2	28.7	1	36.7	1
Lung	16.4	2	15.2	2	15.9	2	17.0	2	16.9	2	22.4	1	16.5	2	16.8	2
Colorectal	13.0	3	12.8	3	12.9	3	13.9	3	14.6	3	11.4	3	13.0	3	11.0	3
Urinary Bladder	7.0	4	7.0	4	6.9	4	7.9	4	7.3	4	8.7	4	6.2	4	4.9	4
Kidney and Renal Pelvis	4.3	5	4.6	5	4.2	5	4.5	5	3.5	6	6.2	5	4.0	6	3.8	5
Non-Hodgkin's Lymphoma	4.1	6	4.5	6	3.4	8	4.3	6	3.9	5	4.7	6	4.7	5	3.4	7
Melanoma of the Skin	3.3	7	3.5	7	3.9	7	3.5	7	-		2.6	10	-	-	3.7	6
Leukemia	3.2	8	3.1	8	4.0	6	3.3	8	2.8	7	3.0	7	2.9	8	2.4	9
Pancreas	2.4	9	2.0	10	2.5	9	2.7	9	2.7	8	2.8	8	2.4	10	2.0	10
Stomach	2.1	10	2.3	9	-		1.8	10	2.0	9	2.7	9	2.9	7	2.6	8
Esophagus	-		-		1.9	10	-		-		-		-	-	-	
Thyroid	-		-		-		-		2.0	10	-		2.4	9	-	
All Other Sites	16.4		16.0		18.0		17.9		13.1		14.1		16.1		12.8	

Table 7: Male Mortality: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2007-2013

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5*		HR6		HR7†	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Lung	32.3	1	31.2	1	31.3	1	31.9	1	31.6	1	38.4	1	32.9	1	35.6	1
Colorectal	11.2	2	11.7	2	11.8	2	11.3	2	11.6	3	10.4	2	10.6	2	7.7	3
Prostate	9.6	3	9.6	3	8.4	3	10.0	3	12.2	2	7.8	3	10.5	3	9.6	2
Pancreas	5.2	4	5.1	4	5.0	4	5.3	4	6.5	4	4.9	4	5.1	5	5.5	4
Non-Hodgkin's Lymphoma	3.7	5	4.7	5	3.4	7	4.0	6	2.7	9	2.6	9	3.2	7	2.6	9
Esophagus	3.6	6	3.1	8	3.9	5	4.4	5	3.3	7	2.9	8	2.6	9	4.9	5
Urinary Bladder	3.2	7	2.8	10	3.5	6	3.0	8	3.5	5	2.6	10	4.0	6	3.5	7
Kidney and Renal Pelvis	3.0	8	3.3	6	2.8	10	3.0	9	2.5	10	3.8	6	3.1	8	3.3	8
Leukemia	3.0	9	3.2	7	3.3	8	3.1	7	-		2.9	7	-		3.7	6
Stomach	2.9	10	2.9	9	-		-		3.1	8	4.0	5	5.7	4	2.6	10
Brain and other Nervous					3.2	9	2.8	10	3.3	6	-		2.5	10		
All Other Sites	22.1		22.3		23.4		21.2		19.6		19.7		19.8		21.0	

* Liver, Non-Hodgkin's Lymphoma and Urinary Bladder cancers had the same percentage of 2.6%.

† Non-Hodgkin's Lymphoma, stomach and Brain and other Nervous System had the same percentage of 2.6%.

Table 8: Female Incidence: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2007-2013

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Breast	26.9	1	28.9	1	24.9	1	26.9	1	29.0	1	28.6	1	27.4	1	22.9	1
Lung	14.5	2	13.9	2	16.8	2	14.2	2	14.3	2	18.9	2	10.3	4	13.8	3
Colorectal	11.9	3	11.6	3	11.3	3	13.2	3	11.7	3	10.2	3	11.0	3	14.0	2
Corpus Uteri	5.4	4	4.6	4	6.4	4	6.1	4	7.1	4	5.1	5	3.5	6	4.2	6
Thyroid	4.6	5	4.0	6	-		3.6	6	6.5	5	5.3	4	11.4	2	4.0	7
Non-Hodgkin's Lymphoma	4.1	6	4.3	5	4.1	6	3.6	7	3.1	6	2.8	8	5.3	5	4.4	5
Melanoma of the Skin	3.7	7	3.7	7	4.3	5	3.8	5	2.2	10	2.5	9	3.1	8	4.9	4
Kidney and Renal Pelvis	3.3	8	3.2	9	3.8	7	3.0	9	3.0	7	3.0	7	3.5	7	3.6	8
Ovary	2.8	9	-		2.7	9	3.1	8	-		2.5	10	2.6	9	-	
Pancreas	2.8	10	-		2.8	8	2.9	10	2.8	8	-		2.5	10	3.3	10
Urinary Bladder	-		3.0	10	-		-		-		4.4	6	-		3.5	9
Leukemia	-		3.3	8	2.7	10	-		2.5	9	-		-		-	
All Other Sites	20.0		19.5		20.3		19.6		17.9		16.9		19.4		21.6	

Table 9: Female Mortality: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2007-2013

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7‡	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Lung	26.2	1	25.6	1	28.9	1	26.1	1	28.5	1	29.8	1	19.7	1	23.3	1
Breast	13.5	2	13.4	2	12.0	2	14.8	2	10.6	3	15.1	2	17.6	2	11.8	3
Colorectal	11.4	3	11.3	3	10.8	3	11.3	3	12.5	2	10.1	3	12.3	3	12.8	2
Pancreas	6.6	4	6.5	4	6.3	4	6.5	4	7.3	4	6.2	4	6.5	4	8.2	4
Ovary	4.7	5	6.0	5	3.4	6	4.7	5	4.7	5	5.0	5	4.8	5	4.6	5
Non-Hodgkin's Lymphoma	3.3	6	3.6	7	3.6	5	3.6	6	1.9	10	2.7	8	2.3	10	3.6	6
Leukemia	3.1	7	3.8	6	3.0	8	2.8	7	4.2	6	2.3	9	-		2.6	7
Brain and other Nervous	2.4	8	2.3	9	2.1	9	2.4	8	4.0	7	-		3.7	6	2.3	10
Kidney and Renal Pelvis	2.3	9	-		3.3	7	-		2.6	8	2.7	7	2.7	9	-	
Stomach	2.3	10	2.5	8	1.7	10	2.1	9	-		3.1	6	3.2	7	2.6	8
Myeloma	-		1.9	10	-		2.0	10	2.4	9	-		2.9	8	2.6	9
Corpus Uteri	-		-		-		-		-		2.3	10	-		-	
All Other Sites	24.1		23.1		24.9		23.8		21.4		20.5		24.2		25.6	

‡ Cervix Uteri and Brain and other Nervous had the same percentage of 2.3%.

Table 10: Ranking of the Five Leading Cancers in the Health Regions Compared to the Province Using Age-Standardized Incidence Rates (ASIR)* (per 100,000 population), Males, 2007-2013

Cancer Site	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)
Prostate	133.5 (129.7-137.3)	143.1 (135.6-151.0)	130.3 (122.4-138.6)	99.1 (92.2-106.5)	158.7 (143.1-175.9)	103.5 (88.0-121.8)	131.0 (120.5-142.4)	215.5 (197.2-235.3)
Lung	82.1 (79.1-85.2)	78.1 (72.4-84.1)	81.1 (74.8-87.9)	75.2 (69.0-81.8)	87.7 (76.0-100.9)	110.3 (94.1-129.3)	79.5 (71.2-88.8)	102.3 (89.6-116.6)
Colorectal	64.9 (62.2-67.6)	65.9 (60.7-71.4)	65.5 (59.8-71.6)	61.6 (56.0-67.6)	76.3 (65.4-88.6)	56.3 (44.9-70.6)	62.2 (54.8-70.5)	66.9 (56.6-78.7)
Urinary Bladder	35.1 (33.1-37.1)	35.9 (32.2-40.1)	35.2 (31.1-39.8)	35.4 (31.2-40.1)	38.5 (30.9-47.7)	42.8 (33.0-55.5)	31.2 (25.8-37.5)	30.2 (23.3-38.7)
Kidney and Renal Pelvis	21.4 (19.9-23.0)	24.1 (20.9-27.6)	20.7 (17.6-24.2)	19.0 (16.0-22.4)	18.8 (12.9-24.8)	28.3 (20.6-38.8)	20.3 (15.9-25.7)	22.3 (16.7-29.6)

Table 11: Ranking of the Five Leading Cancers in the Health Regions Compared to the Province Using Age-Standardized Mortality Rates (ASMR)* (per 100,000 population), Males, 2007-2013

Cancer Site	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)
Lung	64.0 (61.3-66.7)	57.4 (52.6-62.6)	65.1 (59.4-71.2)	60.7 (55.1-66.7)	68.2 (58.0-80.0)	89.5 (74.8-106.9)	63.5 (56.1-71.9)	76.3 (65.4-88.9)
Colorectal	22.3 (20.7-23.9)	21.7 (18.8-25.0)	25.0 (21.5-28.9)	21.4 (18.2-25.1)	25.8 (19.6-33.6)	24.2 (16.9-34.6)	20.6 (16.4-25.6)	16.5 (11.6-23.0)
Prostate	19.5 (18.0-21.0)	17.6 (15.0-20.5)	18.1 (15.2-21.5)	19.4 (16.3-23.0)	27.7 (21.2-35.8)	18.2 (12.0-27.6)	21.4 (17.1-26.7)	21.0 (15.4-28.2)
Pancreas	10.3 (9.2-11.4)	9.5 (7.6-11.7)	10.2 (8.1-12.8)	9.8 (7.7-12.4)	14.4 (9.8-20.6)	11.0 (6.4-19.0)	9.8 (7.0-13.6)	11.6 (7.6-17.3)
Non-Hodgkin's Lymphoma	7.5 (6.6-8.6)	8.9 (7.0-11.1)	7.4 (5.5-9.7)	7.7 (5.8-10.1)	6.4 (3.5-11.0)	6.7 (3.0-14.0)	6.8 (4.3-10.3)	5.6 (3.0-10.0)

* Age-standardized to the 1991 Canadian population estimates.

Table 12: Ranking of the Five Leading Cancers in the Health Region Compared to the Province Using Age-Standardized Incidence Rates (ASIR)* (per 100,000 population), Females, 2007-2013

Cancer Site	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)	ASIR (95% CI)
Breast	101.7 (98.4-105.0)	113.0 (106.4-119.9)	98.9 (92.3-105.9)	93.6 (87.0-100.6)	105.6 (92.8-119.9)	98.9 (83.9-116.4)	98.7 (89.3-109.0)	92.6 (80.3-106.5)
Lung	52.2 (50.0-54.6)	51.1 (46.8-55.6)	64.0 (58.9-69.5)	48.3 (43.7-53.3)	49.4 (41.3-58.9)	62.2 (51.2-75.7)	36.1 (30.8-42.3)	53.2 (44.5-63.4)
Colorectal	40.9 (38.9-42.9)	40.3 (36.5-44.3)	41.3 (37.3-45.8)	42.8 (38.5-47.5)	37.8 (31.0-46.1)	31.5 (23.9-41.7)	37.3 (31.9-43.5)	50.5 (42.1-60.5)
Thyroid	21.0 (19.3-22.7)	18.6 (15.7-21.9)	12.9 (10.3-16.0)	15.2 (12.3-18.6)	27.6 (20.4-36.5)	26.9 (17.1-40.2)	50.2 (42.6-59.0)	19.6 (13.5-27.7)
Corpus Uteri	19.7 (18.4-21.2)	17.7 (15.2-20.5)	24.7 (21.5-28.2)	20.9 (17.9-24.3)	25.0 (19.3-32.3)	16.6 (11.2-24.7)	13.1 (9.8-17.3)	15.7 (11.2-21.8)

Table 13: Ranking of the Five Leading Cancers in the Health Region Compared to the Province Using Age-Standardized Mortality Rates (ASMR)* (per 100,000 population), Females, 2007-2013

Cancer Site	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)	ASMR (95% CI)
Lung	37.3 (35.5-39.3)	35.3 (31.8-39.1)	45.0 (40.7-49.6)	36.5 (32.6-40.8)	43.1 (35.6-52.0)	40.1 (31.5-51.3)	25.8 (21.3-31.2)	34.3 (27.5-42.7)
Breast	18.5 (17.2-19.9)	17.4 (15.0-20.1)	18.0 (15.3-21.1)	19.5 (16.7-22.7)	15.3 (11.1-21.0)	18.9 (13.2-27.3)	21.8 (17.8-26.8)	17.1 (12.3-23.5)
Colorectal	14.5 (13.4-15.7)	13.3 (11.3-15.7)	14.7 (12.4-17.3)	14.5 (12.1-17.3)	17.8 (13.1-24.0)	11.2 (7.2-17.9)	14.7 (11.5-18.8)	17.1 (12.4-23.3)
Pancreas	8.9 (8.0-9.8)	8.1 (6.5-10.0)	9.4 (7.5-11.6)	8.8 (6.9-11.0)	10.5 (7.1-15.4)	7.5 (4.2-13.7)	8.1 (5.7-11.3)	11.3 (7.6-16.7)
Ovary	6.6 (5.8-7.4)	8.2 (6.6-10.2)	4.6 (3.4-6.2)	6.7 (5.0-8.7)	6.8 (4.1-10.9)	7.5 (3.8-14.2)	6.3 (4.2-9.3)	6.1 (3.4-10.5)

*Age-standardized to the 1991 Canadian population estimates.

Table 14: Average Annual Percent Change (AAPC) in Age-Standardized Incidence Rates for the Ten Leading Cancers by Sex, NB, 1986-2013

Cancer Site	Incidence			
	Males		Females	
	AAPC (95% CI)	Changepoint†	AAPC (95% CI)	Changepoint
All Sites	**0.2 (-0.7, 1.1)**		**0.7* (0.5, 0.8)**	
Prostate	0.6 (-1.2, 2.3)	1993, 2003, 2008	-	
Breast	-		0.8* (0.2, 1.3)	
Lung	-1.2* (-1.7, -0.8)	2003	1.8* (1.1, 2.5)	
Colorectal	0.0 (-0.3, 0.3)		-0.7* (-1.0, -0.4)	
Urinary Bladder	0.4 (0.0, 0.8)		0.4 (-0.4, 1.1)	
Kidney and Renal Pelvis	2.1* (1.4, 2.9)		1.3* (0.7, 2.0)	
Thyroid	7.5* (5.9, 9.1)		6.2* (2.9, 9.7)	1999, 2006
Corpus Uteri	-		0.9* (0.3, 1.5)	
Non-Hodgkin's Lymphoma	1.6* (0.8, 2.5)		1.0* (0.1, 1.9)	
Leukemia	1.7* (0.9, 2.6)		2.0* (1.1, 2.8)	
Melanoma of the Skin	2.3* (1.5, 3.0)		2.0* (0.9, 3.2)	
Pancreas	0.4 (-0.5, 1.2)		0.9* (0.1, 1.7)	
Stomach	-2.2* (-2.8, -1.6)		-2.5* (-3.6, -1.4)	
Ovary	-		-0.6* (-1.3, 0.1)	

- Not Applicable.
* Significant at p=0.05.
†: Changepoint indicates the baseline year, if the slope of the trend changed after 1986.

Table 15: Average Annual Percent Change (AAPC) in Age-Standardized Mortality Rates for the Ten Leading Cancers by Sex, NB, 1986-2013

Cancer Site	Mortality			
	Males		Females	
	AAPC (95% CI)	Changepoint†	AAPC (95% CI)	Changepoint
All Sites	**-1.2* (-1.7, -0.8)**		**-0.4* (-0.8, 0.0)**	
Lung	-2.1* (-2.9, -1.3)	2008	1.3* (0.3, 2.3)	
Colorectal	-1.6* (-1.9, -1.2)		-2.2* (-2.8, -1.6)	
Breast	-		-2.4* (-2.9, -1.9)	
Prostate	-1.8* (-2.9, -0.6)		-	
Pancreas	-0.5* (-1.3, 0.3)		0.6* (-0.2, 1.3)	
Non-Hodgkin's Lymphoma	-0.6* (-2.1, 0.9)		-0.9* (-2.0, 0.1)	
Ovary	-		-0.4 (-1.2, 0.3)	
Esophagus	0.8* (0.0, 1.6)		-0.2 (-1.7, 1.3)	
Urinary Bladder	-0.6* (-1.2, 0.0)		-1.9* (-3.6, -0.1)	
Leukemia	-0.9* (-1.7, -0.1)		-0.1 (-1.2, 1.0)	
Kidney and Renal Pelvis	0.2 (-0.7, 1.0)		-1.0* (-2.0, -0.1)	
Stomach	-4.0* (-4.8, -3.2)		-2.9* (-3.8, -1.9)	
Brain and other Nervous System	-0.1 (-1.1, 0.9)		-0.5* (-1.5, 0.5)	

- Not Applicable.
* Significant at p=0.05.
†: Changepoint indicates the baseline year, if the slope of the trend changed after 1986.

Table 16: 10-Year Tumour-based Prevalence Counts by Cancer Sites Prior to January 1, 2014, NB

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
All Sites	13,023	11,632	3,701	3,226	2,969	2,762	2,336	2,263	863	798	496	448	1,599	1,377	1,065	767
Lung	762	769	214	217	168	209	139	135	46	42	47	43	89	75	59	49
Colorectal	1,765	1,357	504	400	379	308	338	276	144	98	59	32	212	146	129	97
Prostate	5,667	-	1,594	-	1,302	-	886	-	400	-	189	-	740	-	556	-
Breast	*	4,345	*	1,264	*	972	*	852	*	307	*	180	*	503	*	268

Table 17: 10-Year Person-based Prevalence Counts by Cancer Sites Prior to January 1, 2014, NB

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
All Sites	11,199	9,893	3,194	2,720	2,477	2,266	2,014	1,948	771	720	429	386	1,409	1,207	905	646
Lung	550	572	156	164	120	140	103	112	38	31	34	35	58	58	41	32
Colorectal	1,414	1,084	403	317	298	244	267	217	117	83	50	26	182	118	97	79
Prostate	4,846	-	1,378	-	1,073	-	768	-	347	-	165	-	655	-	460	-
Breast	*	3,607	*	1,035	*	781	*	722	*	270	*	160	*	419	*	220

- Not applicable.

* Not available due to small number.

Table 18: Age-Specific Relative Survival Ratios (95% CI) for Selected Cancers at One, Three and Five Years, Males, NB, 2007-2013

Cancer Site	Age at Diagnosis (Years)	1-Year	3-Year	5-Year
All Sites	All Ages	77.2 (76.2, 78.3)	67.5 (66.3, 68.7)	64.3 (63.0, 65.6)
	0-44	90.7 (86.9, 93.4)	80.9 (76.0, 84.8)	79.2 (74.2, 83.3)
	45-49	85.7 (80.3, 89.7)	74.4 (68.1, 79.6)	71.4 (64.8, 76.9)
	50-74	81.2 (80.0, 82.3)	72.4 (71.0, 73.8)	69.3 (67.8, 70.7)
	75+	64.0 (61.5, 66.3)	51.5 (48.7, 54.3)	47.4 (44.2, 50.5)
Prostate	All Ages	98.0 (96.8, 98.8)	96.3 (94.5, 97.5)	95.4 (93.3, 96.9)
	0-44	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	45-49	100.0* (N/A)	98.3 (70.3, 99.9)	98.3 (70.3, 99.9)
	50-74	99.5 (97.9, 99.9)	99.2 (96.6, 99.8)	98.7 (96.3, 99.5)
	75+	91.4 (86.1, 94.7)	82.2 (75.1, 87.4)	79.0 (70.6, 85.2)
Lung	All Ages	45.2 (42.2, 48.1)	25.2 (22.6, 27.9)	18.4 (15.9, 21.0)
	0-44	80.1 (20.2, 97.0)	42.8 (6.1, 77.3)	42.8 (6.1, 77.3)
	45-49	38.5 (14.1, 62.9)	21.5 (6.3, 42.5)	14.4 (2.7, 35.3)
	50-74	48.7 (45.0, 52.3)	28.1 (24.7, 31.5)	20.2 (17.1, 23.5)
	75+	38.6 (33.7, 43.5)	19.6 (15.4, 24.3)	14.5 (10.1, 19.7)
Colorectal	All Ages	84.3 (81.5, 86.6)	71.9 (68.4, 75.0)	66.2 (62.3, 69.8)
	0-44	96.9 (79.5, 99.6)	77.8 (56.6, 89.6)	74.7 (53.6, 87.2)
	45-49	89.5 (70.3, 96.6)	76.6 (56.2, 88.4)	71.8 (52.0, 84.5)
	50-74	88.1 (85.0, 90.5)	76.8 (72.8, 80.3)	70.7 (66.2, 74.7)
	75+	73.8 (67.5, 79.1)	59.3 (51.6, 66.1)	53.7 (45.0, 61.7)
Thyroid	All Ages	96.5 (89.5, 98.9)	94.0 (84.5, 97.8)	89.8 (79.5, 95.1)
	0-44	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	45-49	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	50-74	97.7 (88.9, 99.5)	92.6 (79.1, 97.5)	84.5 (69.4, 92.5)
	75+	73.7 (31.6, 92.2)	73.7 (31.6, 92.2)	73.7 (31.6, 92.2)
Melanomas of the skin	All Ages	95.2 (90.7, 97.6)	90.1 (83.7, 94.1)	88.1 (80.3, 92.9)
	0-44	95.1 (69.1, 99.3)	95.1 (69.1, 99.3)	95.1 (69.1, 99.3)
	45-49	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	50-74	96.9 (91.4, 98.9)	91.1 (83.9, 95.2)	87.4 (78.4, 92.8)
	75+	90.1 (75.6, 96.2)	82.6 (63.3, 92.4)	82.2 (62.1, 92.3)
Testis	All Ages	95.8 (84.0, 98.9)	94.3 (82.6, 98.2)	94.3 (82.6, 98.2)
	0-44	97.5 (83.4, 99.7)	95.6 (82.9, 98.9)	95.6 (82.9, 98.9)
	45-49	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	50-74	75.1 (12.6, 96.1)	75.1 (12.6, 96.1)	75.1 (12.6, 96.1)
	75+	N/A (N/A)	N/A (N/A)	N/A (N/A)

* The relative survival ratio was truncated to 100.0%.

Table 19: Age-Specific Relative Survival Ratios (95% CI) for Selected Cancers at One, Three and Five Years, Females, NB, 2007-2013

Cancer Site	Age at Diagnosis (Years)	1-Year	3-Year	5-Year
All Sites	All Ages	79.4 (78.3, 80.4)	69.0 (67.7, 70.2)	64.8 (63.4, 66.1)
	0-44	95.6 (93.2, 97.2)	88.4 (85.1, 91.1)	85.9 (82.3, 88.8)
	45-49	91.5 (88.0, 93.9)	84.4 (80.2, 87.7)	80.3 (75.8, 84.1)
	50-74	83.9 (82.6, 85.1)	74.6 (73.0, 76.0)	70.1 (68.4, 71.7)
	75+	63.5 (61.1, 65.8)	49.2 (46.5, 51.8)	44.8 (41.8, 47.7)
Breast	All Ages	96.4 (95.2, 97.4)	91.7 (89.8, 93.3)	88.8 (86.5, 90.7)
	0-44	100.0* (N/A)	96.2 (90.6, 98.5)	94.2 (88.1, 97.2)
	45-49	97.8 (92.9, 99.3)	96.0 (90.6, 98.3)	92.6 (86.6, 96.0)
	50-74	97.7 (96.4, 98.5)	94.7 (92.7, 96.1)	93.2 (90.8, 94.9)
	75+	91.1 (86.7, 94.1)	80.2 (73.9, 85.1)	73.2 (66.1, 79.0)
Lung	All Ages	54.9 (51.6, 58.2)	31.7 (28.4, 34.9)	24.5 (21.5, 27.7)
	0-44	83.4 (27.1, 97.5)	62.6 (14.2, 89.4)	62.6 (14.2, 89.4)
	45-49	69.0 (48.9, 82.6)	43.6 (24.9, 60.8)	33.6 (17.3, 50.9)
	50-74	58.8 (54.6, 62.8)	38.2 (34.0, 42.3)	29.5 (25.4, 33.6)
	75+	45.6 (39.6, 51.3)	16.8 (12.4, 21.8)	12.9 (8.9, 17.8)
Colorectal	All Ages	82.1 (78.9, 84.9)	71.5 (67.6, 75.1)	65.7 (61.2, 69.7)
	0-44	91.7 (53.7, 98.8)	76.7 (48.4, 90.8)	58.7 (34.1, 76.9)
	45-49	100.0* (N/A)	97.4 (80.5, 99.7)	85.0 (63.4, 94.4)
	50-74	88.9 (85.0, 91.9)	78.1 (73.1, 82.3)	71.3 (65.7, 76.1)
	75+	72.1 (66.3, 77.1)	61.1 (54.2, 67.3)	58.0 (50.1, 65.1)
Thyroid	All Ages	98.3 (95.5, 99.3)	97.6 (94.1, 99.0)	97.6 (94.1, 99.0)
	0-44	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	45-49	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	50-74	97.6 (93.2, 99.2)	97.3 (92.0, 99.1)	97.3 (92.0, 99.1)
	75+	94.2 (61.3, 99.3)	82.8 (48.7, 95.2)	75.7 (34.2, 93.0)
Melanomas of the Skin	All Ages	96.9 (92.5, 98.8)	91.2 (85.2, 94.9)	86.7 (79.8, 91.3)
	0-44	100.0* (N/A)	89.6 (74.3, 96.0)	89.6 (74.3, 96.0)
	45-49	100.0* (N/A)	100.0* (N/A)	100.0* (N/A)
	50-74	97.8 (91.7, 99.4)	91.9 (84.1, 95.9)	85.9 (77.3, 91.5)
	75+	91.3 (73.9, 97.3)	80.4 (62.6, 90.4)	77.2 (51.5, 90.4)
Ovary	All Ages	70.3 (62.5, 76.7)	46.4 (38.6, 53.7)	35.5 (28.1, 43.0)
	0-44	100.0* (N/A)	92.4 (56.3, 98.9)	92.4 (56.3, 98.9)
	45-49	71.5 (25.8, 92.0)	43.0 (9.8, 73.6)	38.4 (8.9, 68.4)
	50-74	84.8 (76.0, 90.6)	56.0 (46.0, 64.9)	39.9 (29.6, 50.0)
	75+	31.2 (18.3, 45.0)	13.9 (5.6, 25.9)	8.2 (2.5, 18.5)
Cervix	All Ages	92.0 (83.2, 96.3)	74.4 (63.0, 82.8)	67.0 (55.1, 76.4)
	0-44	100.0* (N/A)	84.0 (65.5, 93.1)	84.0 (65.5, 93.1)
	45-49	100.0* (N/A)	67.3 (34.3, 86.3)	57.7 (25.7, 80.0)
	50-74	86.3 (69.1, 94.3)	70.6 (50.7, 83.7)	55.0 (36.3, 70.3)
	75+	69.4 (17.9, 92.6)	58.8 (15.4, 86.0)	58.8 (15.4, 86.0)
Corpus and Uterus	All Ages	90.7 (87.0, 93.4)	84.9 (80.2, 88.6)	81.6 (76.3, 85.9)
	0-44	100.0* (N/A)	85.8 (53.8, 96.3)	85.8 (53.8, 96.3)
	45-49	87.5 (58.6, 96.7)	87.5 (58.6, 96.7)	87.5 (58.6, 96.7)
	50-74	93.3 (89.4, 95.8)	87.9 (82.9, 91.5)	85.6 (79.9, 89.8)
	75+	79.1 (66.3, 87.5)	72.1 (55.8, 83.2)	59.3 (40.4, 74.0)

* The relative survival ratio was truncated to 100.0%.

Table 20: Relative Survival Ratios (95% CI) by Stage for Four Leading Cancers at One, Two and Three Years, NB, 2007-2013

Cancer Site	Cancer Stage	1-Year		2-Year		3-Year	
		M	F	M	F	M	F
Lung	All stages	46.1 (41.1, 50.9)	53.0 (47.4, 58.4)	32.4 (27.6, 37.1)	36.3 (31.0, 41.7)	26.8 (22.2, 31.5)	28.8 (23.7, 34.1)
	I	84.0 (73.6, 90.6)	87.3 (78.2, 92.8)	70.2 (58.3, 79.2)	69.2 (57.1, 78.5)	63.1 (50.8, 73.2)	61.8 (49.2, 72.1)
	II	69.2 (51.0, 81.8)	93.4 (74.9, 98.4)	53.9 (36.5, 68.5)	73.9 (53.0, 86.6)	40.3 (23.8, 56.3)	57.1 (35.4, 73.9)
	III	57.2 (45.5, 67.2)	53.0 (40.5, 63.9)	38.8 (27.8, 49.7)	34.9 (24.1, 46.0)	30.7 (20.4, 41.6)	22.2 (13.2, 32.6)
	IV	19.9 (14.6, 25.8)	14.3 (8.7, 21.2)	6.3 (3.0, 11.1)	6.5 (3.5, 10.8)	3.6 (1.3, 7.8)	4.9 (2.4, 8.9)
	Occult	35.8 (0.8, 80.6)	100* (N/A)	18.0 (0.3, 60.8)	N/A	N/A	N/A
	Unknown	N/A	N/A	N/A	N/A	N/A	N/A
Colorectal	All stages	85.3 (80.7, 88.9)	79.8 (74.0, 84.4)	80.0 (74.6, 84.4)	73.9 (67.3, 79.3)	75.9 (69.8, 80.9)	67.2 (60.2, 73.3)
	I	95.5 (84.0, 98.8)	95.0 (83.1, 98.6)	95.5 (84.0, 98.8)	95.0 (83.1, 98.6)	95.5 (84.0, 98.8)	91.9 (67.7, 98.2)
	II	97.3 (89.0, 99.4)	90.6 (79.0, 96.0)	94.7 (81.4, 98.6)	90.6 (77.1, 96.3)	94.0 (78.1, 98.4)	86.2 (72.0, 93.5)
	III	92.9 (83.3, 97.1)	88.7 (76.6, 94.7)	87.7 (76.0, 94.0)	81.3 (67.9, 89.5)	86.9 (73.5, 93.8)	79.3 (64.3, 88.6)
	IV	56.6 (44.5, 67.0)	38.1 (24.8, 51.3)	40.2 (28.2, 52.0)	25.6 (15.1, 37.3)	23.9 (14.0, 35.2)	17.8 (9.3, 28.5)
	Unknown	61.2 (30.6, 81.6)	55.6 (23.0, 79.1)	35.9 (11.3, 61.8)	29.3 (4.7, 61.1)	32.8 (9.6, 58.9)	10.1 (0.5, 37.5)
Prostate	All stages	97.6 (94.8, 98.9)	-	95.3 (92.0, 97.3)	-	93.4 (89.8, 95.8)	-
	I	99.1 (90.2, 99.9)	-	98.5 (90.3, 99.8)	-	98.5 (90.3, 99.8)	-
	II	100* (N/A)	-	100* (N/A)	-	100* (N/A)	-
	III	100* (N/A)	-	100* (N/A)	-	100* (N/A)	-
	IV	65.8 (49.2, 78.2)	-	45.7 (30.8, 59.3)	-	31.4 (19.1, 44.5)	-
	Unknown	50.4 (0.6, 91.3)	-	20.0 (0.8, 58.8)	-	15.3 (0.7, 48.9)	-
Breast	All stages	-	97.4 (95.0, 98.7)	-	93.6 (90.5, 95.7)	-	89.2 (85.6, 91.9)
	I	-	100* (N/A)	-	100* (N/A)	-	98.4 (90.7, 99.7)
	II	-	97.0 (92.1, 98.9)	-	93.8 (88.0, 96.9)	-	89.4 (82.7, 93.6)
	III	-	93.8 (83.1, 97.8)	-	86.4 (73.0, 93.4)	-	75.1 (61.0, 84.7)
	IV	-	70.3 (46.8, 84.9)	-	51.7 (31.8, 68.4)	-	41.1 (23.2, 58.1)
	Unknown	-	79.2 (7.1, 98.0)	-	60.3 (8.5, 90.1)	-	32.3 (3.1, 69.2)

- Not Applicable.

Table 21: Actual and Projected* Five-Year Cancer Incidence Cases for the Ten Leading Age-Standardized Incidence Rates (ASIRs), Males, NB

Cancer Site	Actual New Cases	Projected New Cases		
	2013	2020	2025	2030
All Sites	2,500	3,331	3,733	4,020
Prostate**	504	309	321	339
Lung	426	470	495	510
Colorectal	361	476	567	649
Urinary Bladder	214	211	237	257
Kidney and Renal Pelvis	120	155	176	185
Non-Hodgkin's Lymphoma	106	120	133	145
Melanomas of the Skin	79	101	113	118
Pancreas	81	78	95	113
Stomach	65	53	57	62
Leukemia	94	102	118	132

* Age-period-cohort method with Power link function was used in the projection.
** Estimates from the Public Health Agency of Canada.

Table 22: Actual and Projected* Five-Year Cancer Incidence Cases for the Ten Leading Age-Standardized Incidence Rates (ASIRs), Females, NB

Cancer Site	Actual New Cases	Projected New Cases		
	2013	2020	2025	2030
All Sites	2,233	2,609	2,883	3,108
Breast	571	655	694	721
Lung	334	411	439	443
Colorectal	268	288	315	338
Corpus Uteri	139	165	168	180
Thyroid	91	175	211	233
Non-Hodgkin's Lymphoma	98	109	124	138
Melanomas of the Skin	83	106	98	104
Ovary	60	67	92	101
Kidney and Renal Pelvis	74	103	125	149
Pancreas	69	76	84	91

* Age-period-cohort method with Power link function was used in the projection.

Glossary

Cancer

Cancer is a disease in which cells divide and multiply without control. Cancer cells can invade nearby tissues and spread to other parts of the body. There are several main types of cancer. Carcinoma is cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is cancer that starts in blood-forming tissue such as bone marrow, and causes white blood cells to be produced. Lymphoma is cancer that begins in the cells of the immune system.

Regional Health Authority (RHA)

Two Regional Health Authorities exist in New Brunswick. Both are responsible for consolidating and managing programs and services previously delivered by the eight former RHAs. Former RHAs 1 (Beauséjour), 4, 5 and 6 were consolidated under Vitalité Health Network. Former RHAs 1 (South East), 2, 3 and 7 were consolidated under Horizon Health Network.

New Brunswick Provincial Cancer Registry

A central depository for cancer incidence data in New Brunswick, which is located in Saint John and managed by the New Brunswick Cancer Network (NBCN) of the Department of Health.

Incidence (new cases)

The number of newly diagnosed cancer cases during a defined time period in a specified population.

Mortality (deaths)

The number of deaths attributed to a particular type of cancer during a defined time period in a specified population. Included are deaths of those whose cancer was diagnosed in an earlier time period, people with a new diagnosis during the time period, and persons for whom a diagnosis of cancer is recorded only at time of death.

Vital Statistics

A unit of Service New Brunswick that compiles mortality information and other data such as the number of births and marriages data.

Invasive Cancer (Behavior Code 3)

Invasive cancer is a cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding healthy tissue.

SEER (The Surveillance, Epidemiology, and End Results) Cancer Classification

The Surveillance, Epidemiology, and End Results (SEER) Classification is a method of grouping cancer by the type of tissue in which the cancer originates (histological type) and by primary site, or the location in the body where the cancer first developed.

ICD-O-3

The third edition of the International Classification of Diseases for Oncology (ICD-O-3), published by the World Health Organization, is used in tumour or cancer registries for coding the site (topography) and the histology (morphology) of neoplasms, usually obtained from a pathology report.

ICD-10

Published by the World Health Organization, the Tenth Revision of the International Classification of Diseases (ICD-10) classifies diseases into certain categories for recording morbidity and mortality data.

Variance

A statistic measures how spread out the distribution (e.g., mean) is in a data set.

Joinpoint /Joinpoint model

Joinpoint is statistic software for the analysis of trends using joinpoint models, where several different lines are connected together at the "joinpoints". A joinpoint model, developed by National Cancer Institute, is used to determine when and how often the change(s) occurred in the age-standardized incidence and mortality rates overtime.

Prevalence

The proportion of individuals who were previously diagnosed with cancer and who are still alive at a given point in time.

New Brunswicker / Resident of New Brunswick

For cancer incidence and mortality data, a patient is considered a New Brunswicker – or resident of New Brunswick – if they were a permanent resident at the time of diagnosis or death.

Stage of Cancer

The stage of cancer is the anatomic extent of the cancer at the time of diagnosis and before the application of definitive treatment.

All Sites or All Cancers or All Cancer Sites Combined

This refers to the total of all malignant cancer sites combined, as defined in the SEER tables in Appendices A and B. It excludes non-melanoma skin cancer (basal and squamous cell carcinoma of the skin) and invasive ovarian cancers with the following morphology: 8442/3, 8462/3, 8472/3 and 8473/3.

Rank

The cancers with the highest age-standardized rates or frequencies are numbered in descending order.

Age-Specific Rate

A ratio between age-specific new cases or deaths due to cancer and the population size of a specified age range where the new cases or deaths were generated. It is expressed as an age-specific incidence or age-specific mortality rate per 100,000 population.

Crude Rate

A ratio between the total number of new cases or deaths due to cancer and the total population in the same geographic area (for a specific time period) and multiplied by 100,000 population.

Age-Standardized Incidence / Mortality Rate (ASIR, ASMR)

It is calculated as a weighted average of the age-specific rates (usually in 5 year age groups) in the population of interest, where the weight for each age group is the proportion of the standard population (i.e., 1991 Canadian population estimates) in that age group.

Confidence Interval (CI)

A statistic gives an estimated range of values which is likely to include an unknown population parameter, the estimated range being calculated from a given set of sample data. For example, a 95% confidence interval means that if we were to take 100 different samples and compute a 95% confidence interval for each sample, then approximately 95 of the 100 confidence intervals contain the true parameter such as a mean or a rate.

Childhood and Adolescent and Young Adult Cancers

Types of cancers found in children (ages 0-14) and adolescents and young adults (ages 15-29) in New Brunswick.

All Other Sites

In some sections of this report, the ten leading cancer sites were selected for analysis. Those sites not included in the ten leading were grouped and labeled as 'All Other Sites' so that all cancer sites were accounted for.

Annual Percent Change (APC)

APC is used to assess the rate of change over time of an incidence or mortality rate. It is defined as a percentage increase or decrease of the rates in a fixed pre-specified interval where the change in rates is assumed constant.

Relative Survival Ratio (RSR)

RSR is defined as the ratio of the observed survival for a group of persons diagnosed with cancer to the survival that would be expected for members of the general population, who are free of the cancer of interest. Estimates of the RSR greater than 100% are possible, which indicates the observed survival of the cancer patients is better the expected survival of the general population.

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