NB DEPARTMENT OF HEALTH

Cancer in New Brunswick

2014-2018

New Nouveau Brunswick CANADA

Message from the New Brunswick Cancer Network

The New Brunswick Cancer Network (NBCN) is pleased to release its fifth Provincial Cancer Report. NBCN, a branch of the Department of Health, has been mandated to coordinate the development, implementation and evaluation of the provincial cancer strategies for all elements of cancer care in New Brunswick. The purpose of this Report is to provide updated cancer information to support population-based cancer control initiatives throughout the province.

The Special Topic section in this Report analyzes the first-hand experiences of NB cancer survivors who participated in the Canadian Partnership Against Cancer's *Transition Study* and provides rich information to guide the development of services aimed to enhance supportive care for people living with and beyond cancer diagnosis. Also, the Report expands cancer data analysis from health regions to finer geographic areas, i.e. census divisions, to facilitate better monitoring of the cancer burden across New Brunswick and describes the impact of COVID-19 pandemic on cancer registrations.

We are encouraged to see continuous improvements in cancer survival for many cancer sites due to the advancements in cancer treatment and the successful implementation of population-based cancer screening programs in New Brunswick.

Cancer affects many New Brunswickers and with an inevitable increase in the number of cancer diagnosis due to the rapidly aging population, we are confident that improved cancer surveillance information in this Report will provide a solid foundation for further developments and improvements of patient-centered cancer care in New Brunswick.

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

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CANCER INCIDENCE

- In New Brunswick, approximately 4,947 new invasive cases have been diagnosed annually between 2014 and 2018. For both genders combined, on average, 13.6 new cancer cases were diagnosed per day for the period 2014-2018 compared to 12.6 new cancer cases per day between 2007 and 2013.[1]
- The total number of new cancer cases for males was 12,830 cases in 2014-2018 and associated age-standardized incidence rate (*ASIR*) of all cancers combined was 581.9 cases per 100,000 population when using 2011 Canadian population estimates as the reference for age standardization. Similarly, 11,905 new cancer cases were observed for females and corresponding ASIR was 493.5 cases per 100,000 population (Tables 1-2).
- The four leading cancers in New Brunswick were lung (16.7%, 4,139/24,735), colorectal[§] (12.1%, 2,987/24,735), prostate (10.8%, 2,677/24,735) and breast cancer (12.9%, 3,182/24,735). Prostate cancer continued to be the leading site for males (20.9%, 2,677/12,830) and breast cancer for females (26.5%, 3,158/11,905).
- In males, prostate, lung and colorectal cancers accounted for 51.3% (6,581/12,830) of all cancers diagnosed between 2014 and 2018. For females, a similar proportion (53.6%, 6,380/11,905) 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 when using 2011 Canadian population estimates as the reference for age standardization. For males, the ASMR declined from 272.7 deaths in 2007-2013 to 259.2 deaths per 100,000 population in 2014-2018, and for females from 185.1 to 177.1 deaths per 100,000 population (Tables 3-4).
- An improvement in mortality rates was observed in cancers such as stomach, colon excluding rectum, lung and bronchus, prostate and Hodgkin's and Non-Hodgkin's lymphoma in males;

[§]: Colon and Rectum.

stomach, colon excluding rectum, pancreas, lung and bronchus, breast, cervix uteri, ovary and leukemia in females.

- Lung cancer was the leading cause of cancer-related deaths (28.1%, 2,817/10,034) between 2014 and 2018 for both males and females, accounting for 29.6% (1,612/5,445) and 26.3% (1,205/4,589) of cancer deaths, respectively. About one out of four cancer deaths in both sexes was due to lung cancer alone.
- Colorectal cancer was the second leading cause of cancer-related deaths (11.5%, 627/5,445) in males, followed by prostate cancer (9.1%, 495/5,445). For females, breast and colorectal cancers were the second and third leading cause of cancer-related deaths, accounting for 13.1% (602/4,589) and 11.9% (548/4,589), respectively.

AGE AND SEX DISTRIBUTION OF CANCER

- For children less than 14 years of age, leukemia (32.1%, 26/81), brain (22.2%, 18/81), and lymphoma (12.3%, 10/81) cancers were the three leading cancer sites. These cancer sites were responsible for approximately 66.7% (24/36) of all cancers diagnosed in males and 66.7% (30/45) in females.
- Lymphoma (17.8%, 37/208), thyroid (14.4%, 30/208), testis (13.9%, 29/208), melanoma of the skin (10.1%, 21/208) and cervix uteri (9.6%, 20/208) were the five leading cancer sites for adolescents and young adults from 15 to 29 years of age. These cancer sites consisted of 70.3% (64/91) of all cancers diagnosed in male and 62.4% (73/117) in female.
- Breast (18.8%, 1,085/5,764), lung (10.0%, 578/5,764), colorectal (9.5%, 550/5,764) and prostate (8.9%, 511/5,764) were the four leading cancer sites for adults who were 30 to 59 years old. In total, these cancer sites constituted 43.4% (1,114/2,568) of all cancers diagnosed in males and 50.4% (1,610/3,196) in females.
- In males, 79.0% (10,135/12,830) of new cases and 87.6% (4,772/5,445) of deaths due to cancer occurred among those who were 60 years or older. In females, 71.8% (8,547/11,905) of new cases and 85.2% (3,910/4,589) of cancer deaths occurred amongst those 60 years and older.

GEOGRAPHIC DISTRIBUTION OF CANCER

The geographic boundaries of New Brunswick's seven health regions (HRs) are illustrated on Page 20.

Leading cancers

- Incidence and mortality rates for top four cancers (prostate, breast, lung and colorectal) by HRs are illustrated in Figures I-IV i.e., pages XVIII-XIX. In all health regions, the leading cancer

incidence rate in males was prostate (except HR2 and HR5) and in females was breast. Lung cancer had the highest mortality rates in males and females, and accounted for more cancer-related deaths than prostate, breast and colorectal cancers combined (2,817 deaths for lung cancer vs. 2,285 for prostate, breast and colorectal cancers in 2014-2018).

Prostate cancer

- HR7 had the highest incidence rate for prostate cancer at 135.8 cases per 100,000 population, while the lowest rate occurred in HR5 (91.5 cases). The incidence rate in HR1 (128.8 cases) and HR6 (115.9 cases) were slightly higher than the provincial rate (114.4 cases).
- Mortality rates in HR2 (29.3 deaths), HR3 (28.7 deaths) and HR4 (28.5 deaths) were higher than the provincial average (25.9 deaths per 100,000 population).

Breast cancer

- HR4 had the highest incidence rate for female breast cancer at 162.4 cases, while the lowest rate was seen in HR7 (117.2 cases) compared with the provincial rate of 134.1 cases per 100,000 population.
- Higher mortality rates for female breast cancer were observed in HR4 (31.1 deaths) and HR5 (32.2 deaths) in contrast to the provincial average (24.2 deaths).

Lung cancer

- In males, the highest and second highest incidence and mortality rates for lung cancer occurred in HR5 (incidence: 126.3 cases; mortality: 91.6 deaths) and HR2 (incidence: 113.5 cases; mortality: 85.5 deaths). The other HRs showed no significant difference in these rates when compared to the provincial rates (incidence: 100.7 cases; mortality: 75.0 deaths).
- The highest incidence rate of lung cancer for females occurred in HR5 (96.5 cases) followed by HR2 (88.4 cases) and HR4 (80.7 cases). Mortality rates for HR2 (56.3 deaths) and HR5 (47.5 deaths) were higher than the provincial average (46.3 deaths). The lowest rate was noted in HR6 (38.1 deaths) followed by HR7 (40.5 deaths).

Colorectal cancer

- In males, HR7 had the highest incidence (100.1 cases) and mortality rates (36.8 deaths). All incidence and mortality rates across other health regions were comparable to the provincial rates (incidence: 76.8 cases; mortality: 29.7 deaths).
- The highest incidence and mortality rates for females were observed in HR4 (incidence: 63.7 cases; mortality: 27.1 deaths). There were no significant differences in both rates between other health regions and the province (51.9 cases; 20.5 deaths).

Incidence and mortality rates for the four leading cancers (prostate, breast, lung and colorectal) by Census Division i.e., County are also reported on pages 36-43.

Cancer Incidence and Mortality Trends 2004-2018

- The *ASIRs* for all cancer sites combined in New Brunswick showed a decrease in males with an average annual percentage change (AAPC) of -1.2% and a slight increase of +0.4% in females. The *ASMRs* for all cancer sites combined decreased significantly for both sexes (male AAPC: -1.4%; female AAPC: -0.7%).
- Both *ASIRs* and *ASMRs* for male lung cancer and *ASMRs* for female lung cancer have significantly decreased since 2004 (male AAPC: -1.6% for incidence, -2.7% for mortality; female AAPC: -1.6% for mortality). However, a slightly increasing trend was identified for female lung cancer incidence rate (+0.2%).
- Decreasing trends were seen for the following cancers in cancer incidence rates: lung (males: -1.6%), prostate (-3.4%) and colorectal (males: -1.0%; females: -0.4%). However, slightly increasing trends were observed for female breast cancer (+0.3%) and lung cancer (+0.2%) incidence rates. Additionally, decreasing trends were detected in mortality rates for both sexes on all cancer sites combined as well as the four leading cancers: all cancer sites (males: -1.4%; females: -0.7%), lung (males: -2.7%; females: -1.6%), colorectal (males: -1.0%; females: -0.3%); breast (females: -1.3%) and prostate (-2.5%), respectively.

Cancer Prevalence for Selected Cancers

- As of January 1, 2018, a total of 21,915 New Brunswickers (11,291 males and 10,624 females) had been diagnosed with cancer in the previous ten years (10-year person-based prevalence). Among these people, 26,222 (13,441 males and 12,781 females) tumours were recorded (10-year tumour-based prevalence).
- Prostate cancer accounted for 38.8% (4,382/11,291) of the 10-year person-based prevalent cases for males and breast cancer accounted for 36.2% (3,847/10,624) in females. Overall, prostate, colorectal and lung cancers represented 57.3% (6,473/11,291) of the 10-year person-based prevalent cases in males, while breast, colorectal and lung cancers constituted 53.2% (5,657/10,624) of the 10-year person-based prevalence in females. Like the person-based prevalence, the percentage of 10-year tumour-based prevalence for prostate, colorectal and

lung cancers in males was 59.3% (7,966/13,441) and 55.9% (7,149/12,781) of all prevalent cases for breast, colorectal and lung cancers in females.

- The percentages of 10-year person-based and tumour-based prevalence varied across health regions. For instance, as of January 1, 2018, the percentages of 10-year person-based prevalence for all cancer sites combined varied from 29.1% (6,374/21,915) in HR1 to HR5 with 3.8% (839/21,915). The three largest HRs (HR1, HR2 and HR3) constituted more than 70.0% of all prevalent cases for all cancer sites combined in both person-based (70.4%, 15,418/21,915) and tumour-based (70.9%, 18,589/26,222) prevalent cases.

Five-Year Relative Cancer Survival Ratio 2013-2017

- Five-year relative survival rate of all cancers combined for males was 60.3% and 63.8% for females.
- Five-year relative survival rates were highest for patients diagnosed with prostate cancer (95.1%), followed by female breast cancer (89.4%), colorectal cancer (males: 66.0%; females: 63.5%), and lung cancer (males: 18.2%; females: 26.3%). Relative survival rate for lung cancer was significantly lower than for the other three major cancers (i.e., prostate, breast and colorectal), and survival rate decreased with increasing age (21.7% in 50-74 years old vs. 12.4% in 75+ years old).
- Five-year relative survival rates were consistently higher for female breast cancer patients diagnosed in the early stages (stage I: 98.2%; stage II: 92.8%; stage III: 78.8%; stage IV: 23.6%). Higher survival was also true for colorectal (males: stage I: 96.8%; stage II: 82.9%; stage III: 73.5%; stage IV: 11.1%; females: stage I: 88.1%; stage II: 94.1%; stage III: 60.8%; stage IV: 15.2%) and lung cancers (males: stage I: 54.6%; stage II: 26.8%; stage III: 12.5%; stage IV: 1.4%; females: stage I: 58.0%; stage II: 35.6%; stage III: 15.8%; stage IV: 4.1%). The five-year relative survival ratios for prostate cancer were as follows: stage I: 99.5%; stage II: 99.5%; stage III: 100.0%; stage IV: 36.7%.

Table 1: Number of New Cases and Associated Incidence Rates* for Males by Cancer Site, NB, 2014-2018

CANCER SITE	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**12830**	**2598**	**689.5**	***(677.6-701.5)***	**706.8**	**581.9**	***(571.7-592.3)***	**568.4**
Oral Cavity and Pharynx	**432**	**86**	**23.2**	***(21.1-25.5)***	**23.4**	**19.9**	***(18.0-21.9)***	**19.7**
Lip	30	5	1.6	*(1.1-2.3)*	1.4	1.5	*(1.0-2.2)*	1.1
Tongue	136	32	7.3	*(6.1-8.6)*	8.7	6.2	*(5.2-7.4)*	7.6
Salivary Gland	18	<5	1.0	*(0.6-1.5)*	1.1	0.9	*(0.5-1.4)*	0.9
Floor of Mouth	21	<5	1.1	*(0.7-1.7)*	0.8	1.0	*(0.6-1.5)*	0.9
Gum and Other Mouth	38	9	2.0	*(1.4-2.8)*	2.4	1.8	*(1.3-2.5)*	2.1
Nasopharynx	16	<5	0.9	*(0.5-1.4)*	0.3	0.7	*(0.4-1.2)*	0.2
Tonsil	128	25	6.9	*(5.7-8.2)*	6.8	5.8	*(4.8-7.0)*	5.4
Oropharynx	24	<5	1.3	*(0.8-1.9)*	0.5	1.1	*(0.7-1.6)*	0.5
Hypopharynx	16	5	0.9	*(0.5-1.4)*	1.4	0.7	*(0.4-1.1)*	1.0
Other Oral Cavity and Pharynx	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.6)*	0.0
Digestive System	**2894**	**583**	**155.5**	***(149.9-161.3)***	**158.6**	**132.6**	***(127.7-137.6)***	**129.4**
Esophagus	197	51	10.6	*(9.2-12.2)*	13.9	9.0	*(7.8-10.4)*	11.5
Stomach	301	41	16.2	*(14.4-18.1)*	11.2	13.9	*(12.3-15.6)*	9.3
Small Intestine	68	12	3.7	*(2.8-4.6)*	3.3	3.1	*(2.4-3.9)*	2.9
Colon and Rectum	1675	342	90.0	*(85.8-94.4)*	93.0	76.8	*(73.1-80.7)*	75.9
Colon Excluding Rectum	1046	200	56.2	*(52.9-59.7)*	54.4	48.4	*(45.5-51.5)*	44.7
Cecum	249	50	13.4	*(11.8-15.2)*	13.6	11.5	*(10.1-13.1)*	11.4
Appendix	24	9	1.3	*(0.8-1.9)*	2.4	1.2	*(0.8-1.8)*	2.3
Ascending Colon	191	35	10.3	*(8.9-11.8)*	9.5	9.0	*(7.7-10.4)*	8.6
Hepatic Flexure	44	9	2.4	*(1.7-3.2)*	2.4	2.1	*(1.5-2.8)*	2.0
Transverse Colon	100	20	5.4	*(4.4-6.5)*	5.4	4.5	*(3.6-5.5)*	3.9
Splenic Flexure	30	<9	1.6	*(1.1-2.3)*	1.4	1.4	*(0.9-2.0)*	1.0
Descending Colon	63	17	3.4	*(2.6-4.3)*	4.6	2.8	*(2.2-3.7)*	3.6
Sigmoid Colon	310	53	16.7	*(14.9-18.6)*	14.4	14.1	*(12.6-15.9)*	11.3
Large Intestine, NOS	35	<5	1.9	*(1.3-2.6)*	0.5	1.8	*(1.2-2.5)*	0.6
Rectum and Rectosigmoid Junction	629	142	33.8	*(31.2-36.5)*	38.6	28.4	*(26.2-30.7)*	31.2
Rectosigmoid Junction	151	27	8.1	*(6.9-9.5)*	7.3	6.8	*(5.7-8.0)*	5.8
Rectum	478	115	25.7	*(23.4-28.1)*	31.3	21.6	*(19.6-23.6)*	25.5
Anus, Anal Canal and Anorectum	29	10	1.6	*(1.0-2.2)*	2.7	1.4	*(0.9-2.0)*	2.3
Liver and Intrahepatic Bile Duct	179	39	9.6	*(8.3-11.1)*	10.6	7.8	*(6.7-9.1)*	8.0
Liver	133	31	7.1	*(6.0-8.5)*	8.4	5.8	*(4.8-6.9)*	6.2
Intrahepatic Bile Duct	46	8	2.5	*(1.8-3.3)*	2.2	2.0	*(1.5-2.7)*	1.7
Gallbladder	11	<5	0.6	*(0.3-1.1)*	0.3	0.5	*(0.3-1.0)*	0.2
Other Biliary	55	10	3.0	*(2.2-3.8)*	2.7	2.5	*(1.9-3.3)*	2.3
Pancreas	353	66	19.0	*(17.0-21.1)*	18.0	16.4	*(14.7-18.2)*	14.5
Retroperitoneum	<5	<5	0.1	*(0.0-0.4)*	0.5	0.1	*(0.0-0.4)*	0.6
Peritoneum, Omentum and Mesentery	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.5
Other Digestive System	21	7	1.1	*(0.7-1.7)*	1.9	1.0	*(0.6-1.6)*	1.5
Respiratory System	**2372**	**460**	**127.5**	***(122.4-132.7)***	**125.1**	**107.0**	***(102.7-111.5)***	**99.5**
Nose, Nasal Cavity and Middle Ear	<15	<5	0.8	*(0.4-1.3)*	0.8	0.6	*(0.3-1.1)*	0.6
Larynx	125	<22	6.7	*(5.6-8.0)*	5.4	5.5	*(4.6-6.6)*	4.2
Lung and Bronchus	2229	437	119.8	*(114.9-124.9)*	118.9	100.7	*(96.5-105.1)*	94.7
Pleura	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.0-0.5)*	0.0

Bones and Joints	**16**	**5**	**0.9**	***(0.5-1.4)***	**1.4**	**0.8**	***(0.4-1.3)***	**1.2**
Soft Tissue including Heart	**67**	**14**	**3.6**	***(2.8-4.6)***	**3.8**	**3.3**	***(2.6-4.3)***	**3.2**
Skin excluding Basal and Squamous	**613**	**136**	**32.9**	***(30.4-35.7)***	**37.0**	**28.6**	***(26.3-31.0)***	**30.9**
Melanomas of the Skin	545	120	29.3	*(26.9-31.9)*	32.6	25.3	*(23.2-27.6)*	27.3
Other Non-Epithelial Skin	68	16	3.7	*(2.8-4.6)*	4.4	3.2	*(2.5-4.1)*	3.7
Breast	**24**	**7**	**1.3**	***(0.8-1.9)***	**1.9**	**1.1**	***(0.7-1.7)***	**1.6**
Male Genital System	**2819**	**593**	**151.5**	***(145.9-157.2)***	**161.3**	**122.1**	***(117.6-126.8)***	**123.0**
Prostate	2677	572	143.9	*(138.5-149.4)*	155.6	114.4	*(110.0-118.8)*	117.3
Testis	107	16	5.8	*(4.7-6.9)*	4.4	6.2	*(5.1-7.5)*	4.7
Penis	29	5	1.6	*(1.0-2.2)*	1.4	1.3	*(0.9-1.9)*	1.1
Other Male Genital Organs	6	0	0.3	*(0.1-0.7)*	0.0	0.3	*(0.1-0.6)*	0.0
Urinary System	**1634**	**325**	**87.8**	***(83.6-92.2)***	**88.4**	**74.5**	***(70.9-78.3)***	**70.3**
Urinary Bladder	978	199	52.6	*(49.3-56.0)*	54.1	44.5	*(41.7-47.4)*	42.4
Kidney and Renal Pelvis	606	111	32.6	*(30.0-35.3)*	30.2	27.5	*(25.4-29.9)*	24.5
Ureter	24	<5	1.3	*(0.8-1.9)*	0.8	1.2	*(0.8-1.8)*	0.8
Other Urinary Organs	26	<15	1.4	*(0.9-2.0)*	3.3	1.3	*(0.8-1.9)*	2.6
Eye and Orbit	**8**	**0**	**0.4**	***(0.2-0.8)***	**0.0**	**0.3**	***(0.1-0.7)***	**0.0**
Brain and Other Nervous System	**<192**	**30**	**10.3**	***(8.9-11.8)***	**8.2**	**0.9**	***(7.8-10.4)***	**7.3**
Brain	187	30	10.0	*(8.7-11.6)*	8.2	8.9	*(7.6-10.3)*	7.3
Cranial Nerves Other Nervous System	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.0-0.5)*	0.0
Endocrine System	**173**	**<30**	**9.3**	***(8.0-10.8)***	**7.6**	**8.5**	***(7.3-9.9)***	**6.8**
Thyroid	160	26	8.6	*(7.3-10.0)*	7.1	7.8	*(6.7-9.2)*	6.4
Other Endocrine including Thymus	13	<5	0.7	*(0.4-1.2)*	0.5	0.7	*(0.4-1.2)*	0.5
Lymphoma	690	147	37.1	*(34.4-40.0)*	40.0	32.4	*(30.0-34.9)*	34.6
Hodgkin Lymphoma	60	11	3.2	*(2.5-4.2)*	3.0	3.2	*(2.4-4.1)*	2.7
Hodgkin – Nodal	60	11	3.2	*(2.5-4.2)*	3.0	3.2	*(2.4-4.1)*	2.7
Hodgkin - Extranodal	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Non-Hodgkin Lymphoma	630	136	33.9	*(31.3-36.6)*	37.0	29.2	*(26.9-31.6)*	31.9
NHL – Nodal	438	87	23.5	*(21.4-25.8)*	23.7	20.3	*(18.4-22.4)*	20.1
NHL - Extranodal	192	49	10.3	*(8.9-11.9)*	13.3	8.9	*(7.7-10.3)*	11.8
Myeloma	**180**	**31**	**9.7**	***(8.3-11.2)***	**8 .4**	**8.3**	***(7.1-9.6)***	**6.9**
Leukemia	**<485**	**91**	**25.8**	***(23.6-28.3)***	**24.8**	**22.0**	***(20.0-24.1)***	**19.8**
Lymphocytic Leukemia	284	55	15.3	*(13.5-17.1)*	15.0	12.9	*(11.4-14.5)*	12.0
Acute Lymphocytic Leukemia	18	<5	1.0	*(0.6-1.5)*	0.3	1.0	*(0.6-1.6)*	0.3
Chronic Lymphocytic Leukemia	253	51	13.6	*(12.0-15.4)*	13.9	11.3	*(9.9-12.8)*	10.9
Other Lymphocytic Leukemia	13	<5	0.7	*(0.4-1.2)*	0.8	0.6	*(0.3-1.0)*	0.8
Myeloid and Monocytic Leukemia	191	34	10.3	*(8.9-11.8)*	9.2	8.8	*(7.6-10.2)*	7.5
Acute Myeloid Leukemia	133	24	7.1	*(6.0-8.5)*	6.5	6.1	*(5.1-7.3)*	5.2
Acute Monocytic Leukemia	9	<5	0.5	*(0.2-0.9)*	0.5	0.5	*(0.2-0.9)*	0.4
Chronic Myeloid Leukemia	49	<10	2.6	*(1.9-3.5)*	2.2	2.3	*(1.7-3.0)*	1.9
Other Myeloid/Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Other Leukemia	<10	<5	0.3	*(0.1-0.7)*	0.5	0.3	*(0.1-0.6)*	0.4
Other Acute Leukemia	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Aleukemic, subleukemic and NOS	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Mesothelioma	**52**	**19**	**2.8**	***(2.1-3.7)***	**5.2**	**2.5**	***(1.9-3.3)***	**4.3**
Kaposi Sarcoma	**5**	**<5**	**0.3**	***(0.1-0.6)***	**0.3**	**0.3**	***(0.1-0.6)***	**0.2**
Miscellaneous	**179**	**42**	**9.6**	***(8.3-11.1)***	**11.4**	**8.6**	***(7.4-10.0)***	**9.6**

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	11905	2447	625.1	*(613.9-636.4)*	651.0	493.5	*(484.5-502.6)*	498.2
Oral Cavity and Pharynx	168	27	8.8	*(7.5-10.3)*	7.2	6.9	*(5.9-8.1)*	5.7
Lip	12	0	0.6	*(0.3-1.1)*	0.0	0.5	*(0.2-0.9)*	0.0
Tongue	44	9	2.3	*(1.7-3.1)*	2.4	1.8	*(1.3-2.4)*	2.0
Salivary Gland	14	<5	0.7	*(0.4-1.2)*	0.5	0.6	*(0.3-1.0)*	0.4
Floor of Mouth	11	0	0.6	*(0.3-1.0)*	0.0	0.4	*(0.2-0.8)*	0.0
Gum and Other Mouth	38	8	2.0	*(1.4-2.7)*	2.1	1.5	*(1.1-2.1)*	1.7
Nasopharynx	8	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.1-0.7)*	0.0
Tonsil	30	7	1.6	*(1.1-2.2)*	1.9	1.3	*(0.9-1.9)*	1.4
Oropharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Hypopharynx	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Oral Cavity and Pharynx	<5	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.0-0.5)*	0.2
Digestive System	2157	481	113.3	*(108.5-118.1)*	128.0	84.8	*(81.2-88.5)*	93.4
Esophagus	55	15	2.9	*(2.2-3.8)*	4.0	2.2	*(1.6-2.8)*	3.1
Stomach	155	35	8.1	*(6.9-9.5)*	9.3	6.0	*(5.1-7.0)*	6.6
Small Intestine	52	13	2.7	*(2.0-3.6)*	3.5	2.1	*(1.6-2.8)*	2.8
Colon and Rectum	1312	286	68.9	*(65.2-72.7)*	76.1	51.9	*(49.1-54.8)*	56.2
Colon Excluding Rectum	984	213	51.7	*(48.5-55.0)*	56.7	38.3	*(35.9-40.8)*	41.1
Cecum	265	57	13.9	*(12.3-15.7)*	15.2	10.3	*(9.1-11.7)*	11.4
Appendix	22	7	1.2	*(0.7-1.7)*	1.9	1.1	*(0.7-1.6)*	1.5
Ascending Colon	235	52	12.3	*(10.8-14.0)*	13.8	9.1	*(7.9-10.3)*	10.1
Hepatic Flexure	38	12	2.0	*(1.4-2.7)*	3.2	1.4	*(1.0-2.0)*	2.3
Transverse Colon	87	21	4.6	*(3.7-5.6)*	5.6	3.3	*(2.7-4.2)*	4.1
Splenic Flexure	32	<5	1.7	*(1.1-2.4)*	0.8	1.3	*(0.9-1.8)*	0.5
Descending Colon	52	12	2.7	*(2.0-3.6)*	3.2	2.0	*(1.5-2.6)*	2.0
Sigmoid Colon	211	45	11.1	*(9.6-12.7)*	12.0	8.3	*(7.2-9.5)*	8.5
Large Intestine, NOS	42	<5	2.2	*(1.6-3.0)*	1.1	1.5	*(1.1-2.1)*	0.7
Rectum and Rectosigmoid Junction	328	73	17.2	*(15.4-19.2)*	19.4	13.6	*(12.1-15.2)*	15.1
Rectosigmoid Junction	88	11	4.6	*(3.7-5.7)*	2.9	3.7	*(3.0-4.6)*	2.5
Rectum	240	62	12.6	*(11.1-14.3)*	16.5	9.9	*(8.7-11.3)*	12.6
Anus, Anal Canal and Anorectum	70	13	3.7	*(2.9-4.6)*	3.5	2.9	*(2.3-3.7)*	2.5
Liver and Intrahepatic Bile Duct	100	18	5.3	*(4.3-6.4)*	4.8	3.9	*(3.2-4.8)*	3.5
Liver	46	8	2.4	*(1.8-3.2)*	2.1	1.8	*(1.3-2.4)*	1.6
Intrahepatic Bile Duct	54	10	2.8	*(2.1-3.7)*	2.7	2.1	*(1.6-2.8)*	1.9
Gallbladder	28	5	1.5	*(1.0-2.1)*	1 .3	1.1	*(0.7-1.6)*	0.9
Other Biliary	46	13	2.4	*(1.8-3.2)*	3.5	1.8	*(1.3-2.5)*	2.7
Pancreas	316	74	16.6	*(14.8-18.5)*	19.7	12.0	*(10.7-13.5)*	13.5
Retroperitoneum	<5	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.0-0.4)*	0.2
Peritoneum, Omentum and Mesentery	<5	<5	0.2	*(0.0-0.5)*	0.3	0.1	*(0.0-0.4)*	0.2
Other Digestive System	16	7	0.8	*(0.5-1.4)*	1.9	0.6	*(0.3-1.0)*	1.3
Respiratory System	1943	394	102.0	*(97.5-106.7)*	104.8	76.1	*(72.7-79.6)*	74.5
Nose, Nasal Cavity and Middle Ear	12	<5	0.6	*(0.3-1.1)*	0.8	0.5	*(0.3-1.0)*	0.6
Larynx	21	<5	1.1	*(0.7-1.7)*	1.1	0.9	*(0.5-1.4)*	0.8
Lung and Bronchus	1910	387	100.3	*(95.8-104.9)*	103.0	74.6	*(71.3-78.1)*	73.1
Pleura	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0

Bones and Joints	16	5	0.8	*(0.5-1.4)*	1.3	0.8	*(0.5-1.3)*	1.2
Soft Tissue including Heart	65	17	3.4	*(2.6-4.4)*	4.5	2.8	*(2.2-3.7)*	3.6
Skin excluding Basal and Squamous	541	100	28.4	*(26.1-30.9)*	26.6	24.1	*(22.0-26.2)*	21.9
Melanomas of the Skin	491	92	25.8	*(23.6-28.2)*	24.5	22.0	*(20.1-24.1)*	20.3
Other Non-Epithelial Skin	50	8	2.6	*(1.9-3.5)*	2.1	2.0	*(1.5-2.7)*	1.6
Breast	3158	644	165.8	*(160.1-171.7)*	171.3	134.1	*(129.4-139.0)*	135.4
Female Genital System	1382	297	72.6	*(68.8-76.5)*	79.0	59.6	*(56.4-62.9)*	62.5
Cervix Uteri	152	25	8.0	*(6.8-9.4)*	6.7	8.1	*(6.8-9.5)*	7.3
Corpus and Uterus, NOS	804	176	42.2	*(39.3-45.2)*	46.8	33.3	*(31.0-35.7)*	35.5
Corpus Uteri	799	175	42.0	*(39.1-45.0)*	46.6	33.1	*(30.8-35.5)*	35.3
Uterus, NOS	5	1	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Ovary	295	67	15.5	*(13.8-17.4)*	17.8	12.6	*(11.1-14.1)*	13.8
Vagina	18	<5	0.9	*(0.6-1.5)*	0.8	0.7	*(0.4-1.2)*	0.5
Vulva	93	23	4.9	*(3.9-6.0)*	6.1	4.1	*(3.3-5.0)*	4.7
Other Female Genital Organs	20	<5	1.1	*(0.6-1.6)*	0.8	0.9	*(0.5-1.4)*	0.6
Urinary System	699	137	36.7	*(34.0-39.5)*	36.4	28.3	*(26.2-30.5)*	27.3
Urinary Bladder	317	59	16.6	*(14.9-18.6)*	15.7	12.3	*(11.0-13.8)*	11.1
Kidney and Renal Pelvis	356	69	18.7	*(16.8-20.7)*	18.4	15.0	*(13.4-16.7)*	14.6
Ureter	15	<5	0.8	*(0.4-1.3)*	0.8	0.6	*(0.3-1.0)*	0.5
Other Urinary Organs	11	<10	0.6	*(0.3-1.0)*	1.6	0.4	*(0.2-0.8)*	1.1
Eye and Orbit	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Brain and Other Nervous System	129	<25	6.8	*(5.7-8.0)*	6.1	5.9	*(4.9-7.0)*	5.2
Brain	123	22	6.5	*(5.4-7.7)*	5.9	5.6	*(4.6-6.7)*	5.0
Cranial Nerves Other Nervous System	6	<5	0.3	*(0.1-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Endocrine System	382	73	20.1	*(18.1-22.2)*	19.4	18.6	*(16.8-20.6)*	17.3
Thyroid	368	68	19.3	*(17.4-21.4)*	18.1	18.1	*(16.2-20.0)*	16.2
Other Endocrine including Thymus	14	5	0.7	*(0.4-1.2)*	1.3	0.6	*(0.3-1.0)*	1.1
Lymphoma	559	<115	29.4	*(27.0-31.9)*	29.5	23.2	*(21.3-25.3)*	22.5
Hodgkin Lymphoma	36	<5	1.9	*(1.3-2.6)*	0.8	1.8	*(1.2-2.5)*	0.6
Hodgkin – Nodal	36	<5	1.9	*(1.3-2.6)*	0.8	1.8	*(1.2-2.5)*	0.6
Hodgkin - Extranodal	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Non-Hodgkin Lymphoma	523	108	27.5	*(25.2-29.9)*	28.7	21.4	*(19.6-23.4)*	22.0
NHL – Nodal	360	69	18.9	*(17.0-21.0)*	18.4	14.7	*(13.2-16.4)*	13.5
NHL - Extranodal	163	39	8.6	*(7.3-10.0)*	10.4	6.7	*(5.7-7.8)*	8.4
Myeloma	131	24	6.9	*(5.8-8.2)*	6.4	5.2	*(4.3-6.2)*	4.8
Leukemia	<360	75	18.8	*(17.0-20.9)*	20.0	14.9	*(13.4-16.6)*	15.7
Lymphocytic Leukemia	211	40	11.1	*(9.6-12.7)*	10.6	8.7	*(7.5-9.9)*	8.6
Acute Lymphocytic Leukemia	23	<15	1.2	*(0.8-1.8)*	2.9	1.3	*(0.8-1.9)*	3.1
Chronic Lymphocytic Leukemia	183	27	9.6	*(8.3-11.1)*	7.2	7.2	*(6.2-8.3)*	5.1
Other Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.5)*	0.4
Myeloid and Monocytic Leukemia	144	35	7.6	*(6.4-8.9)*	9.3	6.1	*(5.1-7.2)*	7.1
Acute Myeloid Leukemia	99	21	5.2	*(4.2-6.3)*	5.6	4.2	*(3.4-5.1)*	4.3
Acute Monocytic Leukemia	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Chronic Myeloid Leukemia	40	<15	2.1	*(1.5-2.9)*	3.2	1.7	*(1.2-2.3)*	2.5
Other Myeloid/Monocytic Leukemia	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.4
Other Leukemia	<5	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.0-0.5)*	0.0
Other Acute Leukemia	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Aleukemic, subleukemic and NOS	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Mesothelioma	11	<5	0.6	*(0.3-1.0)*	0.3	0.4	*(0.2-0.7)*	0.2
Kaposi Sarcoma	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Miscellaneous	199	37	10.4	*(9.0-12.0)*	9.8	7.5	*(6.5-8.6)*	6.9

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**5445**	**1133**	**292.6**	***(284.9-300.5)***	**308.2**	**259.2**	***(252.2-266.3)***	**258.2**
Oral Cavity and Pharynx	**115**	**29**	**6.2**	***(5.1-7.4)***	**7.9**	**5.4**	***(4.4-6.5)***	**6.6**
Lip	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	31	10	1.7	*(1.1-2.4)*	2.7	1.5	*(1.0-2.1)*	2.5
Salivary Gland	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.6)*	0.0
Floor of Mouth	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Gum and Other Mouth	16	6	0.9	*(0.5-1.4)*	1.6	0.8	*(0.4-1.3)*	1.4
Nasopharynx	8	0	0.4	*(0.2-0.8)*	0.0	0.4	*(0.2-0.7)*	0.0
Tonsil	23	<5	1.2	*(0.8-1.9)*	0.5	1.1	*(0.7-1.7)*	0.4
Oropharynx	7	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.6)*	0.3
Hypopharynx	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.4
Other Oral Cavity and Pharynx	20	7	1.1	*(0.7-1.7)*	1.9	0.9	*(0.6-1.5)*	1.6
Digestive System	**1555**	**315**	**83.6**	***(79.5-87.8)***	**85.7**	**72.7**	***(69.0-76.5)***	**71.2**
Esophagus	213	39	11.4	*(10.0-13.1)*	10.6	9.9	*(8.6-11.3)*	8.9
Stomach	143	29	7.7	*(6.5-9.1)*	7.9	6.7	*(5.6-8.0)*	6.3
Small Intestine	17	<5	0.9	*(0.5-1.5)*	0.8	0.8	*(0.4-1.3)*	0.6
Colon and Rectum	627	127	33.7	*(31.1-36.4)*	34.5	29.7	*(27.4-32.2)*	29.2
Colon Excluding Rectum	457	93	24.6	*(22.4-26.9)*	25.3	21.8	*(19.8-23.9)*	21.5
Rectum and Rectosigmoid Junction	170	34	9.1	*(7.8-10.6)*	9.2	7.9	*(6.7-9.2)*	7.6
Anus, Anal Canal and Anorectum	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Liver and Intrahepatic Bile Duct	171	40	9.2	*(7.9-10.7)*	10.9	7.8	*(6.6-9.0)*	8.8
Liver	107	25	5.8	*(4.7-6.9)*	6.8	4.8	*(3.9-5.8)*	5.4
Intrahepatic Bile Duct	64	15	3.4	*(2.6-4.4)*	4.1	3.0	*(2.3-3.8)*	3.4
Gallbladder	10	<5	0.5	*(0.3-1.0)*	0.3	0.5	*(0.2-0.9)*	0.2
Other Biliary	13	<5	0.7	*(0.4-1.2)*	1.1	0.6	*(0.3-1.1)*	1.1
Pancreas	341	66	18.3	*(16.4-20.4)*	18.0	15.7	*(14.1-17.6)*	14.8
Retroperitoneum	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Peritoneum, Omentum and Mesentery	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Other Digestive System	14	<5	0.8	*(0.4-1.3)*	1.1	0.7	*(0.4-1.3)*	0.9
Respiratory System	**1667**	**322**	**89.6**	***(85.3-94.0)***	**87.6**	**77.5**	***(73.7-81.4)***	**71.2**
Nose, Nasal Cavity and Middle Ear	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.3
Larynx	45	9	2.4	*(1.8-3.2)*	2.4	2.0	*(1.5-2.8)*	1.8
Lung and Bronchus	1612	310	86.6	*(82.4-91.0)*	84.3	75.0	*(71.3-78.8)*	68.8
Pleura	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Trachea, Mediastinum and Other Respiratory System	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Bones and Joints	**7**	**0**	**0.4**	***(0.2-0.8)***	**0.0**	**0.4**	***(0.2-0.8)***	**0.0**
Soft Tissue including Heart	**28**	**6**	**1.5**	***(1.0-2.2)***	**1.6**	**1.4**	***(0.9-2.1)***	**1.4**
Skin excluding Basal and Squamous	**84**	**21**	**4.5**	***(3.6-5.6)***	**5.7**	**4.1**	***(3.3-5.1)***	**4.9**
Melanomas of the Skin	62	9	3.3	*(2.6-4.3)*	2.4	3.0	*(2.3-3.9)*	2.1
Other Non-Epithelial Skin	22	12	1.2	*(0.7-1.8)*	3.3	1.1	*(0.7-1.7)*	2.8
Breast	**13**	**4**	**0.7**	***(0.4-1.2)***	**1.1**	**0.6**	***(0.3-1.0)***	**0.8**
Male Genital System	**507**	**118**	**27.2**	***(24.9-29.7)***	**32.1**	**26.5**	***(24.2-29.0)***	**28.8**
Prostate	495	113	26.6	*(24.3-29.1)*	30.7	25.9	*(23.7-28.4)*	27.5

Testis	7	<5	0.4	*(0.2-0.8)*	1.1	0.4	*(0.1-0.7)*	1.0
Penis	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.0-0.5)*	0.3
Other Male Genital Organs	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Urinary System	**421**	**101**	**22.6**	***(20.5-24.9)***	**27.5**	**20.4**	***(18.4-22.5)***	**23.2**
Urinary Bladder	208	54	11.2	*(9.7-12.8)*	14.7	10.4	*(9.0-11.9)*	12.8
Kidney and Renal Pelvis	179	34	9.6	*(8.3-11.1)*	9.2	8.2	*(7.1-9.6)*	7.4
Ureter	8	<5	0.4	*(0.2-0.8)*	0.3	0.4	*(0.2-0.9)*	0.3
Other Urinary Organs	26	<15	1.4	*(0.9-2.0)*	3.3	1.3	*(0.9-1.9)*	2.8
Eye and Orbit	**<5**	**0**	**0.1**	***(0.0-0.3)***	**0.0**	**0.1**	***(0.0-0.3)***	**0.0**
Brain and Other Nervous System	**143**	**30**	**7.7**	***(6.5-9.1)***	**8.2**	**6.6**	***(5.6-7.9)***	**7.0**
Endocrine System	**17**	**<5**	**0.9**	***(0.5-1.5)***	**0.5**	**0.8**	***(0.5-1.3)***	**0.5**
Thyroid	11	<5	0.6	*(0.3-1.1)*	0.3	0.5	*(0.3-1.0)*	0.3
Other Endocrine including Thymus	6	<5	0.3	*(0.1-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Lymphoma	**<210**	**48**	**11.1**	***(9.6-12.7)***	**13.1**	**10.0**	***(8.6-11.5)***	**11.2**
Hodgkin Lymphoma	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Non-Hodgkin Lymphoma	202	48	10.9	*(9.4-12.5)*	13.1	9.8	*(8.5-11.3)*	11.2
Myeloma	**113**	**19**	**6.1**	***(5.0-7.3)***	**5.2**	**5.5**	***(4.5-6.6)***	**4.4**
Leukemia	**210**	**<55**	**11.3**	***(9.8-12.9)***	**14.1**	**10.0**	***(8.6-11.5)***	**11.6**
Lymphocytic Leukemia	45	10	2.4	*(1.8-3.2)*	2.7	2.3	*(1.6-3.0)*	2.6
Acute Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.3	*(0.1-0.7)*	0.6
Chronic Lymphocytic Leukemia	33	7	1.8	*(1.2-2.5)*	1.9	1.6	*(1.1-2.3)*	1.7
Other Lymphocytic Leukemia	7	<5	0.4	*(0.2-0.8)*	0.3	0.3	*(0.1-0.7)*	0.2
Myeloid and Monocytic Leukemia	101	<30	5.4	*(4.4-6.6)*	7.1	4.6	*(3.7-5.6)*	5.2
Acute Myeloid Leukemia	88	25	4.7	*(3.8-5.8)*	6.8	4.0	*(3.2-4.9)*	5.1
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	8	0	0.4	*(0.2-0.8)*	0.0	0.4	*(0.2-0.8)*	0.0
Other Myeloid/Monocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Other Leukemia	64	16	3.4	*(2.6-4.4)*	4.4	3.1	*(2.4-4.0)*	3.8
Other Acute Leukemia	21	6	1.1	*(0.7-1.7)*	1.6	1.0	*(0.6-1.5)*	1.3
Aleukemic, subleukemic and NOS	43	10	2.3	*(1.7-3.1)*	2.7	2.1	*(1.5-2.9)*	2.5
Mesothelioma	**39**	**11**	**2.1**	***(1.5-2.9)***	**3.0**	**1.9**	***(1.4-2.6)***	**2.5**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.2)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**318**	**54**	**17.1**	***(15.3-19.1)***	**14.7**	**15.3**	***(13.7-17.1)***	**12.5**

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**4589**	**970**	**241.0**	***(234.0-248.0)***	**258.1**	**177.1**	***(172.0-182.4)***	**183.0**
Oral Cavity and Pharynx	**45**	**9**	**2.4**	***(1.7-3.2)***	**2.4**	**1.7**	***(1.2-2.3)***	**1.7**
Lip	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	10	<5	0.5	*(0.3-1.0)*	1.1	0.4	*(0.2-0.8)*	0.7
Salivary Gland	9	<5	0.5	*(0.2-0.9)*	0.5	0.3	*(0.1-0.6)*	0.4
Floor of Mouth	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Gum and Other Mouth	10	<5	0.5	*(0.3-1.0)*	0.5	0.4	*(0.2-0.7)*	0.4
Nasopharynx	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Tonsil	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Oropharynx	<5	0	0.2	*(0.0-0.5)*	0.0	0.1	*(0.0-0.4)*	0.0
Hypopharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Oral Cavity and Pharynx	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Digestive System	**1169**	**259**	**61.4**	***(57.9-65.0)***	**68.9**	**44.1**	***(41.6-46.7)***	**48.0**
Esophagus	65	15	3.4	*(2.6-4.4)*	4.0	2.5	*(1.9-3.2)*	2.9
Stomach	95	26	5.0	*(4.0-6.1)*	6.9	3.6	*(2.9-4.4)*	4.8
Small Intestine	12	<5	0.6	*(0.3-1.1)*	0.5	0.4	*(0.2-0.8)*	0.4
Colon and Rectum	548	108	28.8	*(26.4-31.3)*	28.7	20.5	*(18.8-22.4)*	20.1
Colon Excluding Rectum	457	90	24.0	*(21.8-26.3)*	23.9	17.0	*(15.5-18.7)*	16.6
Rectum and Rectosigmoid Junction	91	18	4.8	*(3.8-5.9)*	4.8	3.5	*(2.8-4.4)*	3.5
Anus, Anal Canal and Anorectum	11	<5	0.6	*(0.3-1.0)*	0.8	0.4	*(0.2-0.8)*	0.5
Liver and Intrahepatic Bile Duct	117	23	6.1	*(5.1-7.4)*	6.1	4.6	*(3.8-5.5)*	4.3
Liver	47	8	2.5	*(1.8-3.3)*	2.1	1.9	*(1.4-2.5)*	1.5
Intrahepatic Bile Duct	70	15	3.7	*(2.9-4.6)*	4.0	2.7	*(2.1-3.5)*	2.8
Gallbladder	10	<5	0.5	*(0.3-1.0)*	0.5	0.4	*(0.2-0.7)*	0.4
Other Biliary	19	<5	1.0	*(0.6-1.6)*	1.1	0.7	*(0.4-1.2)*	0.7
Pancreas	278	71	14.6	*(12.9-16.4)*	18.9	10.4	*(9.2-11.8)*	13.1
Retroperitoneum	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	6	<5	0.3	*(0.1-0.7)*	0.3	0.2	*(0.1-0.5)*	0.2
Other Digestive System	8	<5	0.4	*(0.2-0.8)*	1.1	0.3	*(0.1-0.6)*	0.7
Respiratory System	**<1220**	**248**	**63.8**	***(60.3-67.5)***	**66.0**	**46.7**	***(44.1-49.4)***	**46.4**
Nose, Nasal Cavity and Middle Ear	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Larynx	9	0	0.5	*(0.2-0.9)*	0.0	0.4	*(0.2-0.7)*	0.0
Lung and Bronchus	1205	248	63.3	*(59.7-66.9)*	66.0	46.3	*(43.7-49.0)*	46.4
Pleura	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Bones and Joints	**14**	<5	**0.7**	***(0.4-1.2)***	**0.3**	**0.7**	***(0.3-1.1)***	**0.2**
Soft Tissue including Heart	**41**	**11**	**2.2**	***(1.5-2.9)***	**2.9**	**1.7**	***(1.2-2.4)***	**2.4**
Skin excluding Basal and Squamous	**73**	**<20**	**3.8**	***(3.0-4.8)***	**4.8**	**2.9**	***(2.2-3.6)***	**3.5**
Melanomas of the Skin	57	15	3.0	*(2.3-3.9)*	4.0	2.3	*(1.7-3.0)*	3.0
Other Non-Epithelial Skin	16	<5	0.8	*(0.5-1.4)*	0.8	0.6	*(0.3-1.0)*	0.5
Breast	**602**	**135**	**31.6**	***(29.1-34.2)***	**35.9**	**24.2**	***(22.3-26.3)***	**26.0**
Female Genital System	**425**	**84**	**22.3**	***(20.2-24.5)***	**22.3**	**16.9**	***(15.3-18.6)***	**16.7**
Cervix Uteri	39	5	2.0	*(1.5-2.8)*	1.3	1.8	*(1.2-2.4)*	1.1

Corpus and Uterus, NOS	131	30	6.9	*(5.8-8.2)*	8.0	5.1	*(4.2-6.0)*	5.8
Corpus Uteri	86	21	4.5	*(3.6-5.6)*	5.6	3.3	*(2.6-4.1)*	3.9
Uterus, NOS	45	9	2.4	*(1.7-3.2)*	2.4	1.8	*(1.3-2.4)*	1.8
Ovary	208	40	10.9	*(9.5-12.5)*	10.6	8.3	*(7.2-9.5)*	8.1
Vagina	8	<5	0.4	*(0.2-0.8)*	0.8	0.3	*(0.1-0.7)*	0.6
Vulva	31	<5	1.6	*(1.1-2.3)*	1.1	1.1	*(0.8-1.6)*	0.8
Other Female Genital Organs	8	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.7)*	0.4
Urinary System	**<195**	**<45**	**9.8**	***(8.5-11.3)***	**10.9**	**7.0**	***(6.0-8.1)***	**7.4**
Urinary Bladder	78	19	4.1	*(3.2-5.1)*	5.1	2.9	*(2.3-3.6)*	3.4
Kidney and Renal Pelvis	96	19	5.0	*(4.1-6.2)*	5.1	3.6	*(2.9-4.5)*	3.4
Ureter	<5	0	0.2	*(0.1-0.5)*	0.0	0.1	*(0.0-0.4)*	0.0
Other Urinary Organs	9	<5	0.5	*(0.2-0.9)*	0.8	0.3	*(0.1-0.6)*	0.6
Eye and Orbit	**<5**	**<5**	**0.1**	***(0.0-0.3)***	**0.3**	**0.0**	***(0.0-0.3)***	**0.2**
Brain and Other Nervous System	**103**	**24**	**5.4**	***(4.4-6.6)***	**6.4**	**4.3**	***(3.5-5.2)***	**5.3**
Endocrine System	**25**	**5**	**1.3**	***(0.8-1.9)***	**1.3**	**1.0**	***(0.6-1.5)***	**1.0**
Thyroid	12	<5	0.6	*(0.3-1.1)*	0.8	0.5	*(0.2-0.8)*	0.6
Other Endocrine including Thymus	13	<5	0.7	*(0.4-1.2)*	0.5	0.5	*(0.3-1.0)*	0.4
Lymphoma	**184**	**<40**	**9.7**	***(8.3-11.2)***	**9.8**	**7.0**	***(6.0-8.1)***	**6.8**
Hodgkin Lymphoma	8	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.7)*	0.4
Non-Hodgkin Lymphoma	176	35	9.2	*(7.9-10.7)*	9.3	6.6	*(5.7-7.7)*	6.4
Myeloma	**83**	**13**	**4.4**	***(3.5-5.4)***	**3.5**	**3.1**	***(2.5-3.9)***	**2.4**
Leukemia	**<135**	**27**	**7.0**	***(5.8-8.3)***	**7.2**	**5.2**	***(4.3-6.1)***	**5.0**
Lymphocytic Leukemia	38	11	2.0	*(1.4-2.7)*	2.9	1.5	*(1.0-2.0)*	2.0
Acute Lymphocytic Leukemia	10	<5	0.5	*(0.3-1.0)*	0.8	0.4	*(0.2-0.8)*	0.6
Chronic Lymphocytic Leukemia	23	6	1.2	*(0.8-1.8)*	1.6	0.8	*(0.5-1.3)*	1.1
Other Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.4)*	0.3
Myeloid and Monocytic Leukemia	<55	8	2.8	*(2.1-3.6)*	2.1	2.1	*(1.6-2.7)*	1.5
Acute Myeloid Leukemia	45	<5	2.4	*(1.7-3.2)*	1.1	1.8	*(1.3-2.4)*	0.8
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	5	<5	0.3	*(0.1-0.6)*	0.8	0.2	*(0.1-0.5)*	0.5
Other Myeloid/Monocytic Leukemia	<5	<5	0.2	*(0.0-0.5)*	0.3	0.1	*(0.0-0.4)*	0.2
Other Leukemia	42	<10	2.2	*(1.6-3.0)*	2.1	1.6	*(1.2-2.2)*	1.5
Other Acute Leukemia	19	<5	1.0	*(0.6-1.6)*	0.5	0.7	*(0.4-1.2)*	0.4
Aleukemic, subleukemic and NOS	23	6	1.2	*(0.8-1.8)*	1.6	0.9	*(0.6-1.3)*	1.1
Mesothelioma	**14**	**5**	**0.7**	***(0.4-1.2)***	**1.3**	**0.5**	***(0.3-0.9)***	**0.9**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.2)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**274**	**52**	**14.4**	***(12.7-16.2)***	**13.8**	**10.2**	***(9.0-11.5)***	**9.0**

*: Rates are per 100,000 population and are age-standardized to the 2011 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* in Males for Prostate, Lung, and Colorectal Cancers by Health Region (HR), NB, 2014-2018

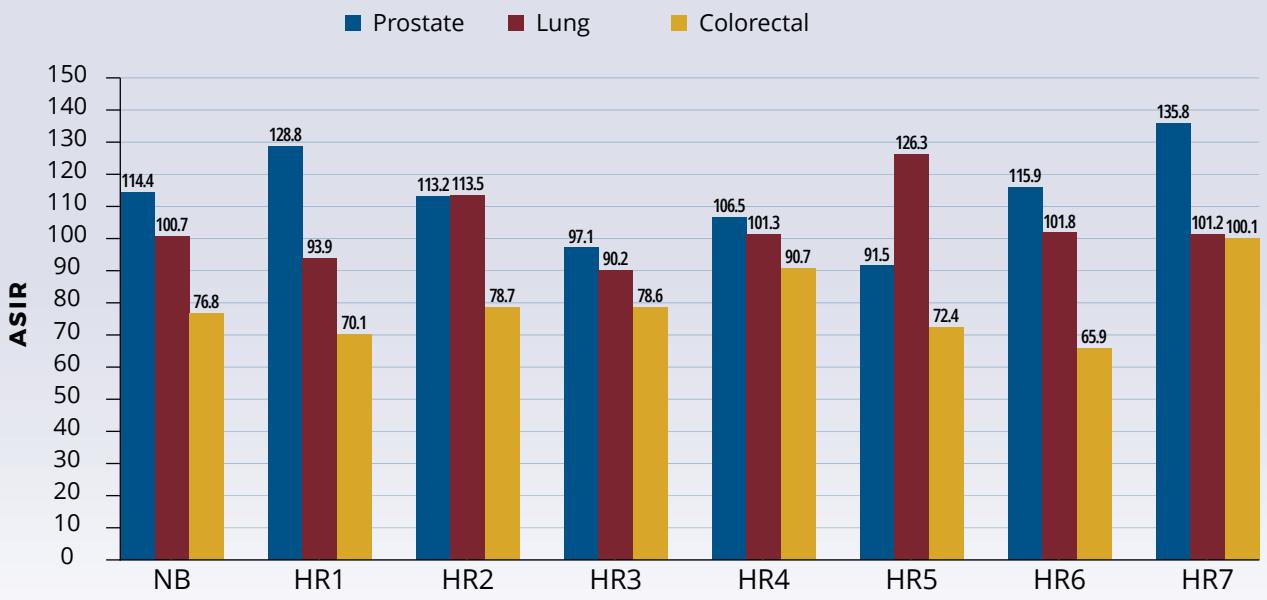
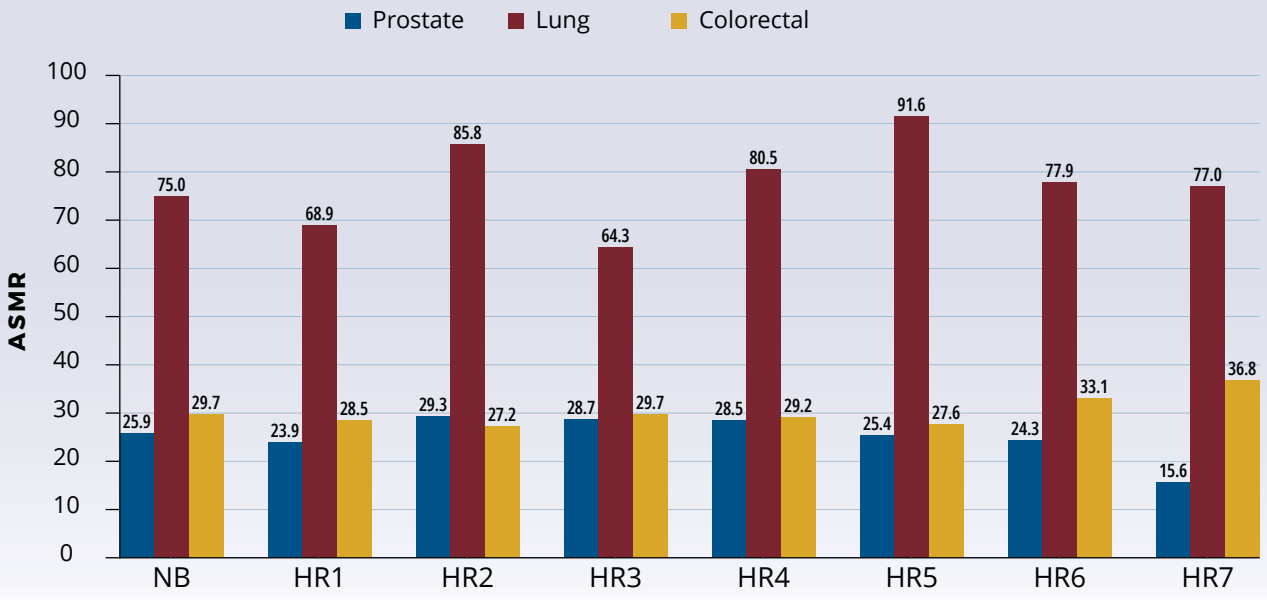


Figure II: Age-Standardized Mortality Rates* in Males for Prostate, Lung, and Colorectal Cancers by Health Region (HR), NB, 2014-2018



*: Rates are per 100,000 population and are age-standardized to the 2011 Canadian population estimates.

Figure III: Age-Standardized Incidence Rates* in Females for Breast, Lung, and Colorectal Cancers by Health Region (HR), NB, 2014-2018

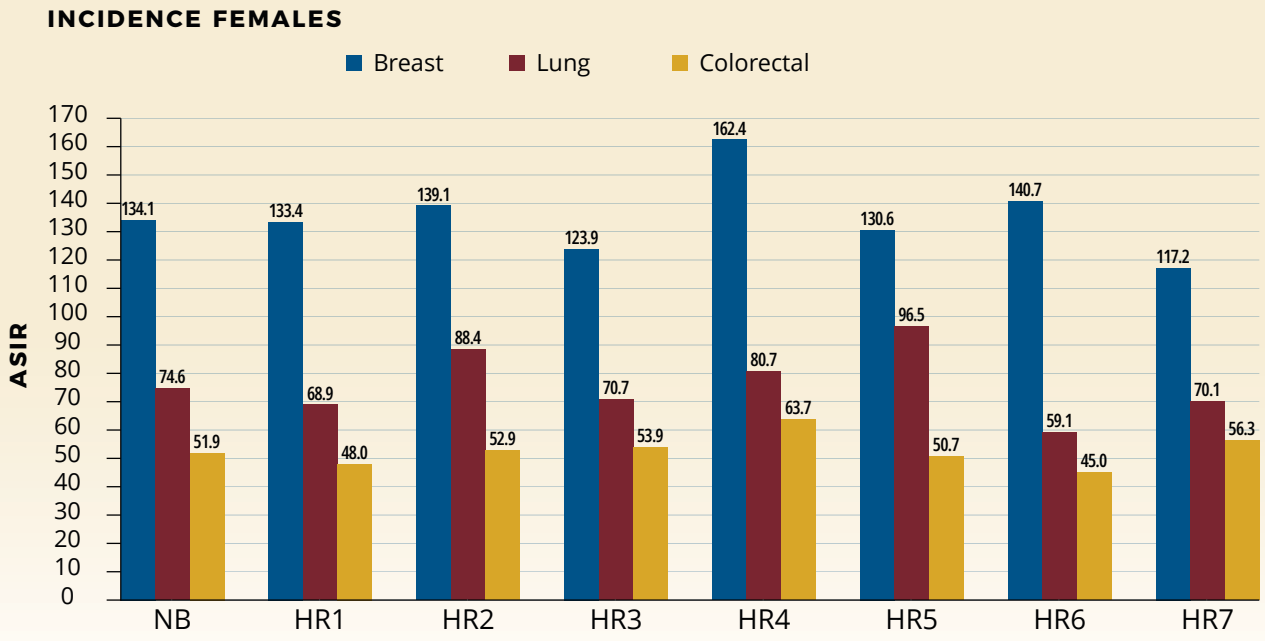
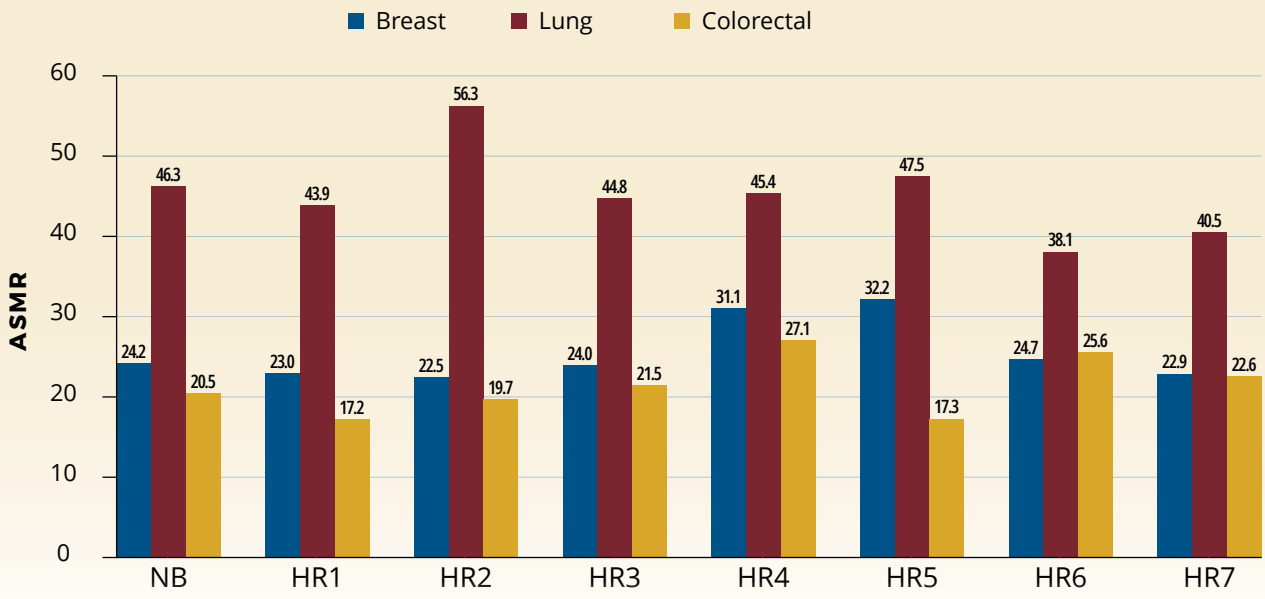


Figure IV: Age-Standardized Mortality Rates* in Females for Breast, Lung, and Colorectal Cancers by Health Region (HR), NB, 2014-2018



*: Rates are per 100,000 population and are age-standardized to the 2011 Canadian population estimates.

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CHAPTER.1

Introduction

Chapter 1 Introduction

Cancer remains a major public health issue that profoundly affects many New Brunswickers and is one of the significant drivers of rising healthcare costs mostly due to the increase in expenses related to treatment and lost productivity. Cancer was one of the leading causes of death in New Brunswick in 2018, accounting for nearly 27.4% of all-cause mortality. In order to understand and evaluate the impact of cancer on our society, the New Brunswick Cancer Network (NBCN) operates a comprehensive cancer surveillance system that includes tracking and reporting of new cancer cases and cancer-related deaths by cancer type, age, sex and geographic areas. This system is used to evaluate the effectiveness of patient-centered health care programs in areas of cancer prevention, screening, treatment and palliative care in New Brunswick.

This report provides high quality information for comparison of cancer incidence, mortality, trends, prevalence and survival across health regions and counties in New Brunswick and Canada as a whole. It provides scientific-based evidence for guidance in health planning, resource allocation, research and policy decision-making aimed at 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). These data repositories allow for the reporting of multiple primary tumours per person.[2]

The Registry was originally operated by the Saint John General Hospital and in 1982, it was moved to the new Saint John Regional Hospital. In 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 transferred to the NBCN of the Department of Health.

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

The authorization for RHAs 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 RHAs and authority to disclose

information to the Registry was stated in paragraph 28(I) and 37(6)(d) of the *Personal Health Information Privacy and Access Act* (2010).

1.2 PURPOSE OF REPORT

The purpose of this report is to provide valuable information on cancer 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 on cancer incidence, mortality, trends, prevalence and survival in New Brunswick and its health regions;
- Use geographic information systems (GIS) to examine cancer incidence for the four leading cancers (breast, colorectal, lung and prostate) by census divisions (CD);
- Evaluate cancer distribution in children aged 14 years or less and in adolescents and young adults from 15 to 29 years of age;
- Produce survival rates by cancer stage for the four leading cancers between 2013 and 2017 where the Collaborative Staging scheme was implemented; and,
- Analyze NB data collected as part of the Canadian Partnership Against Cancer *Experiences of Cancer Patients in Transition Study*, the largest pan-Canadian survey that provides information on the survivorship phase of cancer continuum.

1.3 EFFECTS OF COVID-19 PANDEMIC ON CANCER REGISTRATION

Several healthcare services under NBCN, for instance cancer coding or registration in the Registry, were postponed in March 2020 due to the onset of COVID-19 pandemic. To evaluate the magnitude of the impact on cancer registration, the NBCN compared the number of cases registered each month in 2020 to the corresponding month of the averages of years 2015-2019. The preliminary data analyses showed a decline in cancer case registration for all cancers from 3% in March to 22% in June, 2020. In July 2020, the cancer case registration resumed to comparable levels of those in 2015-2019. More in-depth analyses may be warranted to study the impacts of a possible delay in cancer diagnosis due to COVID-19 that can potentially lead to more advanced cancer stage presentation and poorer clinical outcomes.

CHAPTER.2

Methods

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,
    - Postal Code Conversion File Plus (PCCF+) Version 7D, November 2020.

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 in 1987 to enhance data quality and promote the use of cancer registry data, has awarded gold certification to the NBPCR for the years 2005 to 2018 and silver certification for the year 2010. NAACCR's certification is awarded based on data quality, completeness and timeliness criteria.

2.3 DATA COLLECTION AND GROUPING CRITERIA

Similar to New Brunswick's previous cancer reports,[1,3,4,5] this report focuses on primary malignant or *invasive cancer* sites which do not include basal and squamous cell carcinomas of the skin. Approximately 6,039 basal cell carcinomas and 2,451 squamous cell carcinomas were registered between 2014 and 2017 and, the Registry only allows one basal cell carcinoma and one squamous cell carcinoma of the skin to be registered per person per lifetime. Effective January 1, 2018, the Registry has stopped collecting basal and squamous cell carcinomas of the skin in New Brunswick.

* 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 October 1, 2020.

† 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 2018.

Incidence and mortality were grouped based on the *Surveillance, Epidemiology, and End Results (SEER)* cancer site recode tables (Appendices A and B).[6] The *SEER recode ICD-O-3 / WHO 2008* conversion tables were used as a reliable methodology for cancer grouping, where the primary site and histology code of the primary tumor were reported. Some updates on hematopoietic codes adopted from *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (2008)* were also implemented in the above SEER site recode system.

2.4 AGE-STANDARDIZED INCIDENCE AND MORTALITY RATES (ASIRS AND ASMRS)

Cancer incidence and mortality rates were used to monitor how many new cancer cases and cancer-related deaths occurred in New Brunswick during 2014-2018. The 2011 Canadian postcensal population estimate (July 1, 2011) was utilized for the age standardization. Age-standardized cancer rates provide more meaningful comparisons over time as well as among different geographic areas. *Variance* of the rate was calculated using Tiwari's formula for efficient confidence interval estimation.[7] The 95% *confidence interval* was reported to describe the precision of the rates.

Although the reporting time frame for this report was 2014 to 2018, thirty-three years of data (1986-2018) 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. Further, incidence and mortality rates were compared by sex, health regions and counties for all cancer sites combined and the four leading cancers i.e., breast, colorectal, lung and prostate cancers.

2.5 AVERAGE ANNUAL PERCENT CHANGE (AAPC) FOR CANCER TRENDS

A *joinpoint regression program*,[8] developed by the *National Cancer Institute* (NCI), was used to determine when and how often the change(s) occurred in the ASIRs and ASMRs 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.[9] Of note, a new feature was added to the *joinpoint regression program* version 4.9, where users can specify the interval type of the independent variable e.g., monthly instead of annually, in the selections to gain the model flexibility and efficiency. In this report, the AAPCs for all cancer sites combined and the four leading cancers (breast, colorectal, lung and prostate) were computed using the age-standardized incidence or mortality rates over the 14-year period from 2004 to 2018.

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.[10] 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 and accurate information about both the incidence and vital status of cancer patients i.e., prevalence is a function of both cancer incidence and survival. In this report, the Byrne et al.[11] counting method was used to estimate prevalence from incidence, as well as follow-up data collected by the Registry; as well as to report calculated prevalence by cancer type, sex and health region.

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 or whether the patient is still under treatment or is considered cured. 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).[10] For this report, limited-duration prevalence was adopted to report prevalence by cancer type, sex and health region.

There are two different approaches to estimate the prevalence. Person-based prevalence is to estimate the number of patients living with cancer on the index date and tumour-based is to estimate the total number of diagnoses of cancer among patients alive on the index date. 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.[12]

2.7 RELATIVE SURVIVAL RATIO 2013-2017

Relative survival ratio analysis based on the Period Analysis Method[13] was applied to patients diagnosed with invasive primary cancer between 2013 and 2017. This method provides more up-to-date estimates of long-term patient survival compared to traditional methods.[14] To achieve statistical stability and reliability, a five-year relative survival ratio was produced for the following common cancer sites: lung, colorectal, prostate, and female breast cancers as well as for all cancer sites combined. On January 1, 2018, an update to cancer stage coding from *Collaborative Staging* to *AJCC's TNM Staging 8th Edition* for the top four cancers (breast, colorectal, lung and prostate) as well as for endometrial cancer, was implemented in the Registry. Data using the same cancer stage coding scheme (i.e., *Collaborative Staging*) from years 2013 to 2017 were then analyzed to examine patient survival experience for the cancers of interest. 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) age values not found in the life table.

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.[15] 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.[16] and Ederer II[17] methods were used to estimate the expected survival time and relevant 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 precision 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.

2.8 GEOGRAPHIC INFORMATION SYSTEMS MAPPING

The Geographic Information Systems (GIS)[18] 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 as well as cancer incidence and mortality rates by census divisions i.e., counties in New Brunswick. Algorithms for the selection of multiple cutoff points for age-standarized incidence rates of the four leading cancers (breast, colorectal, lung and prostate) are included in the map legends.

CHAPTER.3

Results

Chapter 3 Results

3.1 PROVINCIAL CANCER INCIDENCE PROFILE

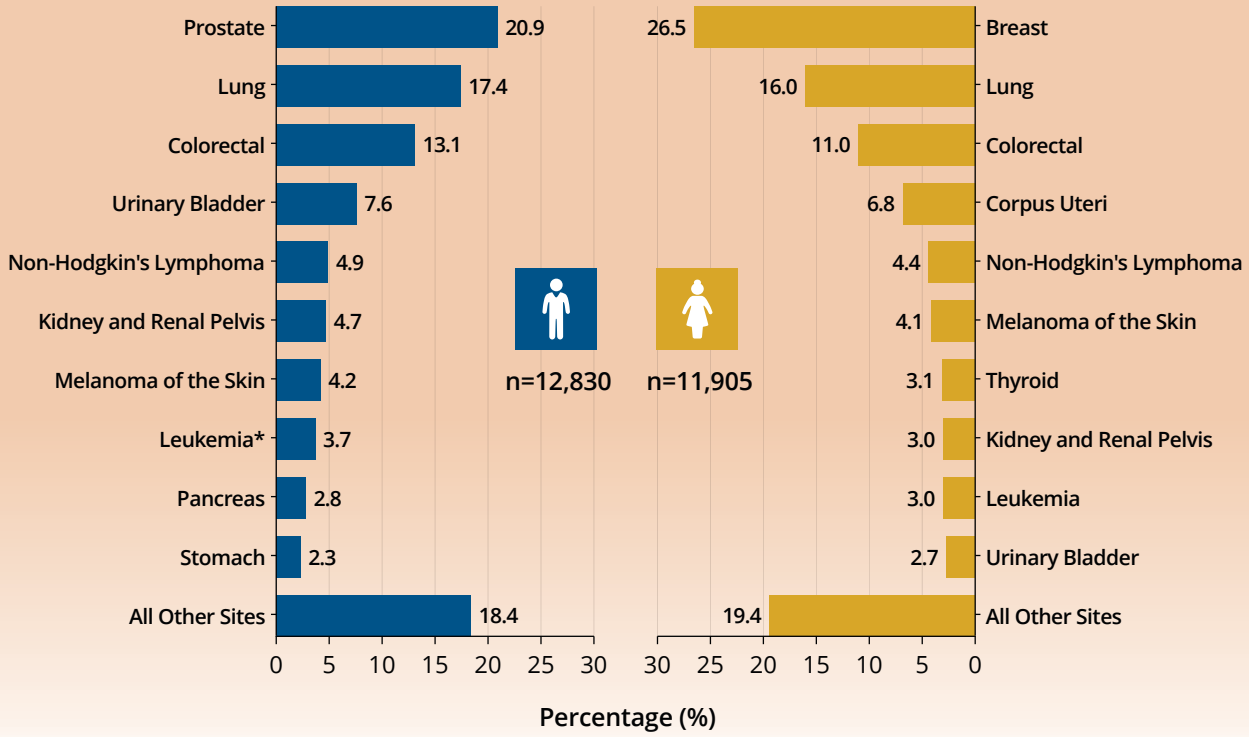
The 2019 Canadian Cancer Statistics estimated that New Brunswick had the fourth highest age-standardized incidence rates in the country for *all cancers* for males and the fifth highest for females.[19] Approximately, 4,947 individuals in New Brunswick were diagnosed with some form of invasive cancer annually during the period of 2014 to 2018, which was 7.8% higher than the average of 4,588 from the previous seven-year period (2007-2013).[1] Further, the number of new cases of all cancers was higher for males (12,830 cases) than for females (11,905 cases) (Figure 1). Even when the sex-specific sites (male and female genital systems and breast) were excluded, males still had a relatively higher incidence count than females (9,987 vs. 7,365 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: *432 vs.* females: *168, digestive system* males: *2,894 vs.* females: *2,157, respiratory system* males*: 2,372 vs.* females: *1,943, urinary system* males: *1,634 vs.* females: *699*; *lymphoma* males: *690 vs.* females: *559*; and *myeloma* males: *180 vs.* females: *131*) with the exception of *endocrine system*, where female counts were higher (*382* females vs. *173* males).

For males, the six leading cancers by percentage of cancer incidence for the period 2014-2018 were: *prostate* (20.9%), *lung* (17.4%), *colorectal* (13.1%), *urinary bladder* (7.6%), *non-Hodgkin's lymphoma* (4.9%) and *kidney and renal pelvis* (4.7%) cancers (Figure 1). *Melanoma of the skin* (4.2%) was the seventh leading cancer for males, followed by *leukemia* (3.7%), *pancreas* (2.8%) and *stomach* (2.3%) (Figure 1). Of these, *prostate*, *lung* and *colorectal* cancers accounted for 51.3% of all new male cancer cases.

For females, the six leading cancers by percentage of cancer incidence in this period were: *breast* (26.5%), *lung* (16.0%), *colorectal* (11.0%), *corpus uteri* (6.8%), *non-Hodgkin's lymphoma* (4.4%) and *melanoma of the skin* cancers (4.1%) (Figure 1). *Thyroid* (3.1%) was the seventh leading cancer followed by *leukemia* (3.0%), *kidney and renal pelvis* (3.0%) and *urinary bladder* cancers (2.7%) (Figure 1). Of these, *breast, lung and colorectal* cancers consisted of 53.6% of all new female cancer cases in 2014-2018.

Figure 1: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, NB, 2014-2018

INCIDENCE



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

3.2 PROVINCIAL CANCER MORTALITY PROFILE

The 2019 Canadian Cancer Statistics also reported that New Brunswick had the fourth highest age-standardized mortality rates in the country for all cancers for males and the fifth highest for females.[19] Between 2014 and 2018, about 2,007 deaths per year in New Brunswick were attributed to cancer (Figure 2), which was 9.5% higher than that in the previous seven-year period (1,833 deaths per year, 2007-2013).[1]

The number of cancer-related deaths was higher for males (5,445 deaths) than for females (4,589 deaths). Like 2007-2013, when the sex-specific sites (male and female genital systems and breast) were excluded, the number of cancer-related deaths in 2014-2018 was still higher in males (males: 4,925 vs. females: 3,562). Overall, the number of deaths across multiple cancer sites in males was higher than or close to those of females. For instance, *respiratory system* (males: *1,667* vs. females: *<1,220*), *digestive system* (males: *1,555* vs. females: *1,169*), *urinary system* (males: *421* vs. females: *<195*) and *leukemia* cancers (males: *210* vs. females: *<135*).

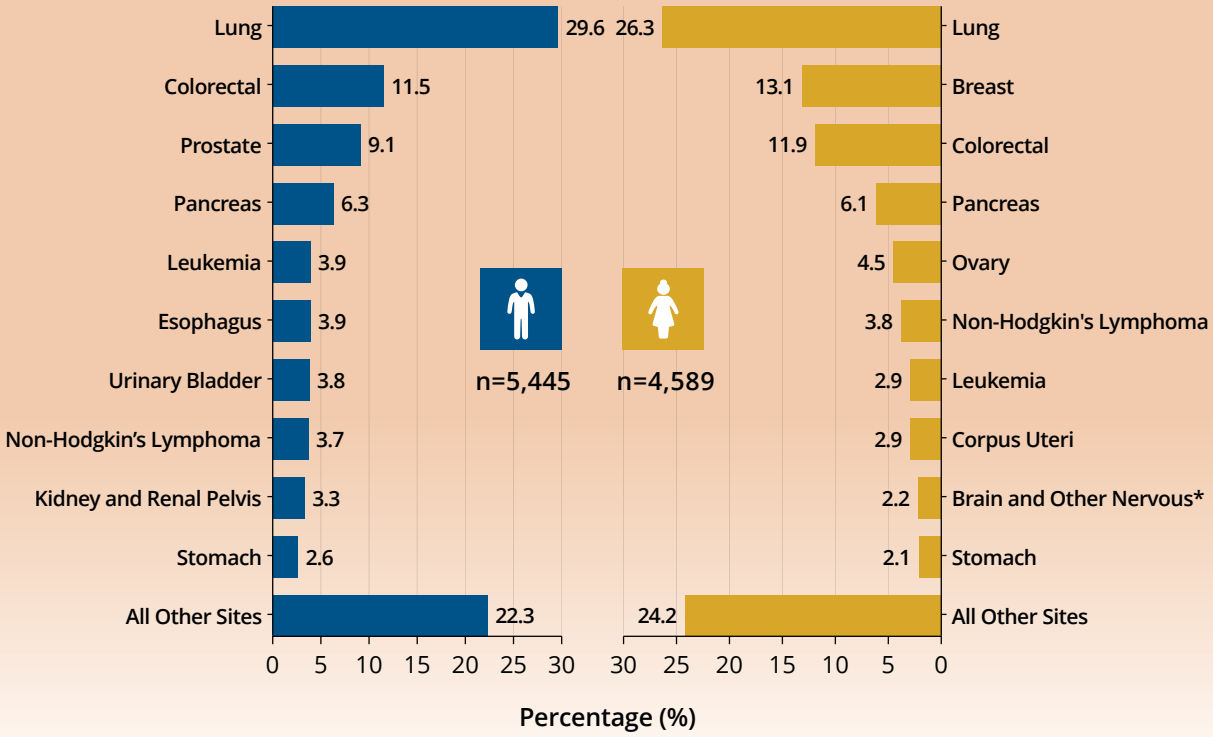
The six leading cancers for male mortality by percentage distribution in 2014-2018 (Figure 2) were: *lung* (29.6%), *colorectal* (11.5%), *prostate* (9.1%), *pancreas* (6.3%), *esophagus* (3.9%) and *leukemia* cancers (3.9%). *Urinary bladder* (3.8%) was in seventh place, followed by *non-Hodgkin's lymphoma* (3.7%), *kidney and renal pelvis* (3.3%), and *stomach* (2.6%) for this period. Of these, *lung, colorectal,* and *prostate* cancers accounted for 50.2% of all male cancer deaths between 2014 and 2018.

The six leading cancers for female mortality by percentage distribution in 2014-2018 (Figure 2) were: *lung* (26.3%), *breast* (13.1%), *colorectal* (11.9%), *pancreas* (6.1%), *ovary* (4.5%) and *non-Hodgkin's lymphoma* cancers (3.8%). *Corpus uteri* (2.9%) and *leukemia* (2.9%) cancers were in seventh place, followed by *brain and other nervous* (2.2%), and *stomach* (2.1%). Of these, *lung*, *breast* and *colorectal* cancers consisted of 51.3% of all female cancer deaths.

Lung cancer was the leading cause of cancer-related death for both males and females during the period of 2014-2018. As shown in Figure 2, this cancer alone accounted for 29.6% of all cancer deaths for males and 26.3% for females.

Figure 2: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, NB, 2014-2018

MORTALITY



*: Brain and Other Nervous System.

3.3 CHILDHOOD AND ADOLESCENT AND YOUNG ADULTS CANCERS, 1986-2013 VS. 2014-2018

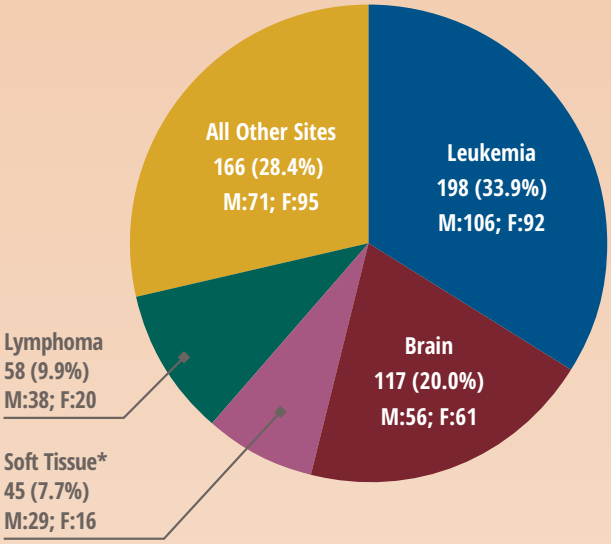
Between 1986 and 2013, a total of 1,982 new cancer cases were diagnosed in children (ages 0-14 years; 584 cases) and adolescents and young adults (ages 15-29 years; 1,398 cases) in New Brunswick (Figures 3A and 3B). During the period of 2014-2018, 81 new cancer cases were seen among children aged 14 years or less and 208 among adolescents and young adults from 15 to 29 years of age. Specifically, leukemia, brain cancer, lymphoma and soft tissue comprised 75.0% (27/36) of all new cancer cases diagnosed for males and 68.9% (31/45) for females from 0 to 14 years old (Figure 3C). Within the same time period, testicular, lymphoma, thyroid, and melanoma of the skin cancers constituted 70.3% (64/91) of male cancers from 15 to 29 years of age (Figure 3D). Thyroid, lymphoma, and melanoma of the skin cancers accounted for 45.3% (53/117) of female new cases in this age group (Figure 3D).

The number of new cancer cases and associated incidence rates for all cancers as well as the four leading cancers are outlined in Tables 5A to 5D. Between 2014 and 2018, the crude incidence rates for all cancers in females were slightly higher than those of males and, also true for the age-standardized incidence rates (Tables 5C and 5D). Caution should be exercised when interpreting those rates from cancer sites with small counts, for instance, the total of lymphoma and soft tissue cancers for children less than 14 years of age were 10 and 4 cases (Table 5C), respectively.

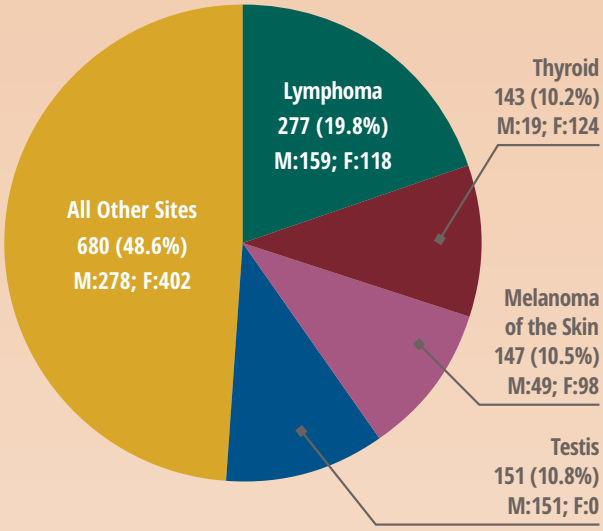
The number of cancer-related deaths for children (ages 0-14 years) and adolescents and young adults (ages 15-29 years) by two reporting time frames (1986-2013 vs. 2014-2018) and cancer sites are also illustrated in Figures 4A to 4D.

Figure 3: 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, 1986-2013 vs. 2014-2018

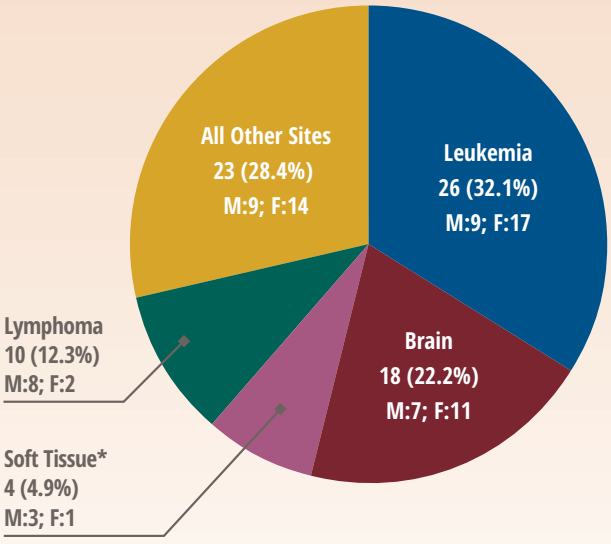
A): Time Period:1986-2013
Age:0-14
n=584 | M:300; F:284



B): Time Period:1986-2013
Age:15-29
n=1,398 | M:656; F:742



C): Time Period:2014-2018
Age:0-14
n=81 | M:36; F:45



D): Time Period:2014-2018
Age:15-29
n=208 | M:91; F:117

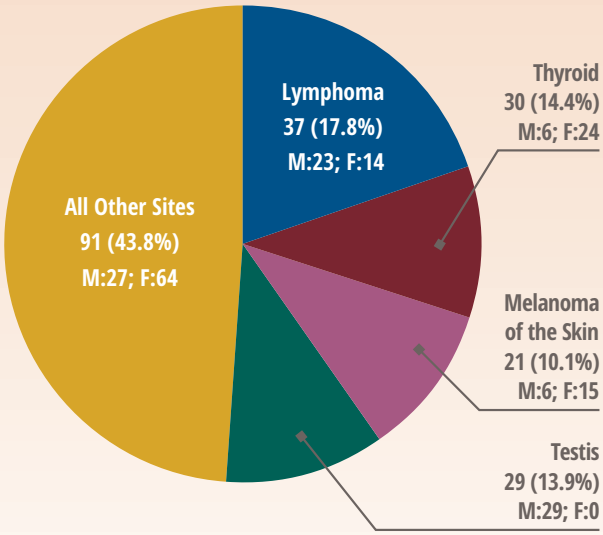


Table 5: Number of New Cases and Associated Rates for Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29) by Cancer Type and Sex, NB, 1986-2013 vs. 2014-2018

A) 1986 – 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	**300**	15.4 (13.7, 17.2)	15.7 (13.9, 17.6)	**284**	15.4 (13.6, 17.3)	15.6 (13.9, 17.6)
Leukemia	**106**	5.4 (4.4, 6.6)	5.6 (4.6, 6.8)	**92**	5.0 (4.0, 6.1)	5.1 (4.1, 6.3)
Brain	**56**	2.9 (2.2, 3.7)	2.9 (2.2, 3.8)	**61**	3.3 (2.5, 4.2)	3.3 (2.5, 4.2)
Lymphoma	**38**	1.9 (1.4, 2.7)	1.9 (1.4, 2.6)	**20**	1.1 (0.7, 1.7)	1.0 (0.6, 1.6)
Soft Tissue*	**29**	1.5 (1.0, 2.1)	1.5 (1.0, 2.2)	**16**	0.9 (0.5, 1.4)	0.9 (0.5, 1.5)

B) 1986 – 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	**656**	28.8 (26.6, 31.1)	29.0 (26.8, 31.3)	**742**	33.9 (31.5, 36.5)	34.1 (31.6, 36.6)
Lymphoma	**159**	7.0 (5.9, 8.2)	7.0 (6.0, 8.2)	**118**	5.4 (4.5, 6.5)	5.4 (4.5, 6.5)
Testis	**151**	6.6 (5.6, 7.8)	6.7 (5.7, 7.8)	**-**	-	-
Melanoma of the Skin	**49**	2.2 (1.6, 2.8)	2.2 (1.6, 2.9)	**98**	4.5 (3.6, 5.5)	4.5 (3.7, 5.5)
Thyroid	**19**	0.8 (0.5, 1.3)	0.8 (0.5, 1.3)	**124**	5.7 (4.7, 6.8)	5.7 (4.7, 6.8)

*: Soft Tissue (including Heart).

Table 5 cont'd: 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, 1986-2013 vs. 2014-2018

C) 2014– 2018; Age 0-14

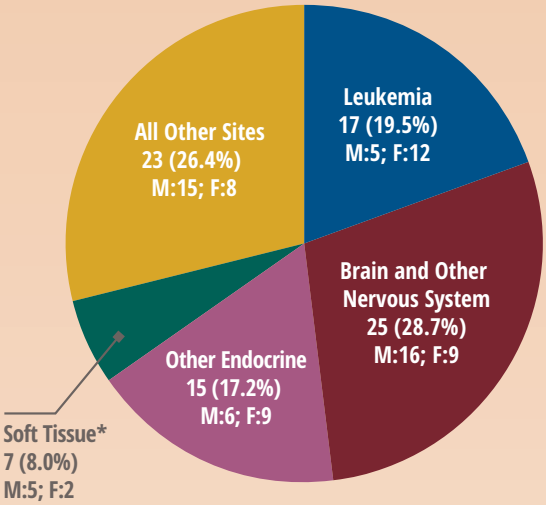
Cancer Site	MALES			FEMALES		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	**36**	12.9 (9.0, 17.8)	13.1 (9.2, 18.1)	**45**	16.8 (12.3, 22.5)	17.0 (12.4, 22.7)
Leukemia	**9**	3.2 (1.5, 6.1)	3.3 (1.5, 6.2)	**17**	6.4 (3.7, 10.2)	6.5 (3.8, 10.4)
Brain	**7**	2.5 (1.0, 5.1)	2.6 (1.1, 5.4)	**11**	4.1 (2.1, 7.4)	4.1 (2.1, 7.4)
Lymphoma	**8**	2.9 (1.2, 5.6)	2.8 (1.2, 5.5)	**2**	0.7 (0.1, 2.7)	0.7 (0.1, 2.7)
Soft Tissue	**3**	1.1 (0.2, 3.1)	1.1 (0.2, 3.1)	**1**	0.4 (0.0, 2.1)	0.4 (0.0, 2.1)

D) 2014– 2018; Age 15-29

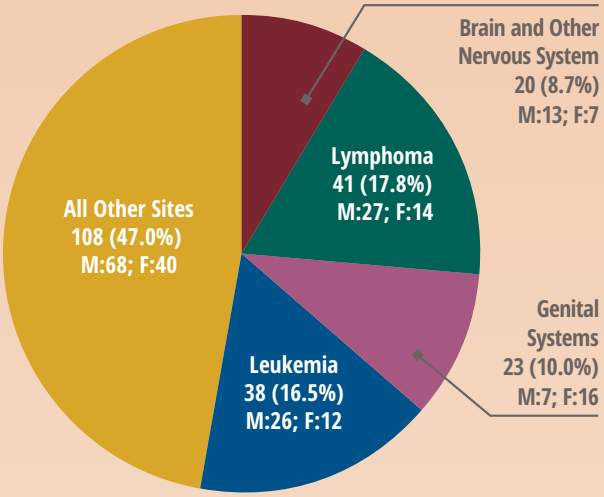
Cancer Site	MALES			FEMALES		
	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)	# of New Cases	Crude Rate (95% CI)	ASIR (95% CI)
All Sites	**91**	27.2 (21.9, 33.4)	27.3 (22.0, 33.5)	**117**	37.8 (31.3, 45.3)	37.9 (31.4, 45.4)
Lymphoma	**23**	6.9 (4.4, 10.3)	6.8 (4.3, 10.3)	**14**	4.5 (2.5, 7.6)	4.5 (2.5, 7.6)
Testis	**29**	8.7 (5.8, 12.5)	8.7 (5.9, 12.6)	**-**	-	-
Melanoma of the Skin	**6**	1.8 (0.7, 3.9)	1.8 (0.6, 3.9)	**15**	4.8 (2.7, 8.0)	4.8 (2.7, 8.0)
Thyroid	**6**	1.8 (0.7, 3.9)	1.8 (0.7, 4.0)	**24**	7.8 (5.0, 11.5)	7.8 (5.0, 11.6)

Figure 4: Number of Deaths and Associated Percentage Distribution of Cancer Mortality in Children (Ages 0-14) and Adolescents and Young Adults (Ages 15-29), NB, 1986-2013 vs. 2014-2018

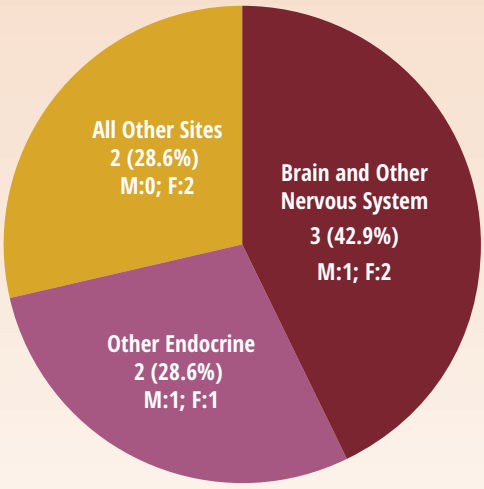
A): Time Period:1986-2013
Age:0-14
n=87 | M:47; F:40



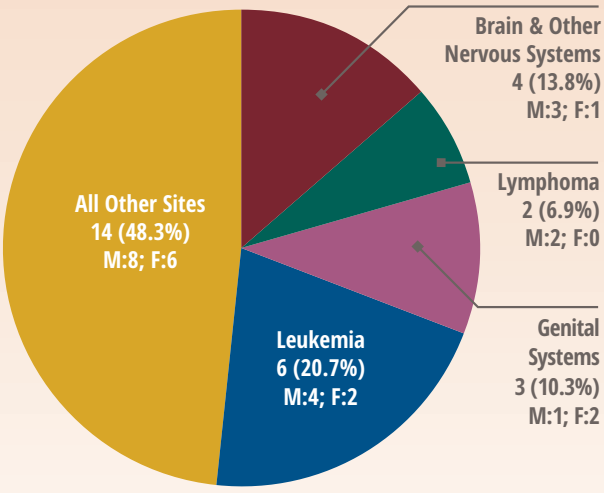
B): Time Period:1986-2013
Age:15-29
n=230 | M:141; F:89



C): Time Period:2014-2018
Age:0-14
n=7 | M:2; F:5



D): Time Period:2014-2018
Age:15-29
n=29 | M:18; F:11



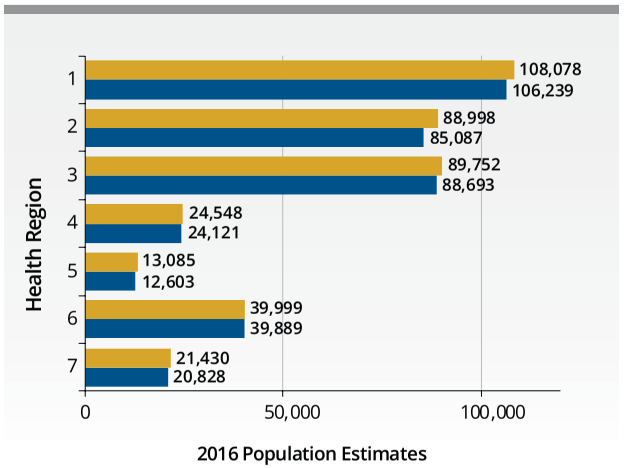
3.4 GEOGRAPHIC DISTRIBUTION OF CANCER

3.4.1 HEALTH REGION POPULATION DEMOGRAPHICS

New Brunswick is divided into two *Regional Health Authorities* (i.e., *Horizon Health Network* and *Vitalité Health Network*) which include seven health regions (HRs). The population of each health region varies from about 25,688 in HR5 to approximately 214,317 in HR1. Of the 763,350 New Brunswickers (2016 Statistics Canada population estimates), 74.3% are located in HR1, HR2 and HR3, while 25.7% residents live in the northern areas of HR4, HR5, HR6 and HR7 (Map 1).

In general, the larger health regions (HR1, HR2 and HR3) with a large population generate more new cancer cases and deaths than smaller health regions (HR4, HR5, HR6 and HR7) with a small population. Different ratios of males to females (HR2 = 0.96 and HR6 = 1.00) also have an impact on cancer incidence and mortality distributions across the seven health regions. 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 2016



Region 6	Total	79,888
	M	39,889
	F	39,999

Region 5	Total	25,688
	M	12,603
	F	13,085

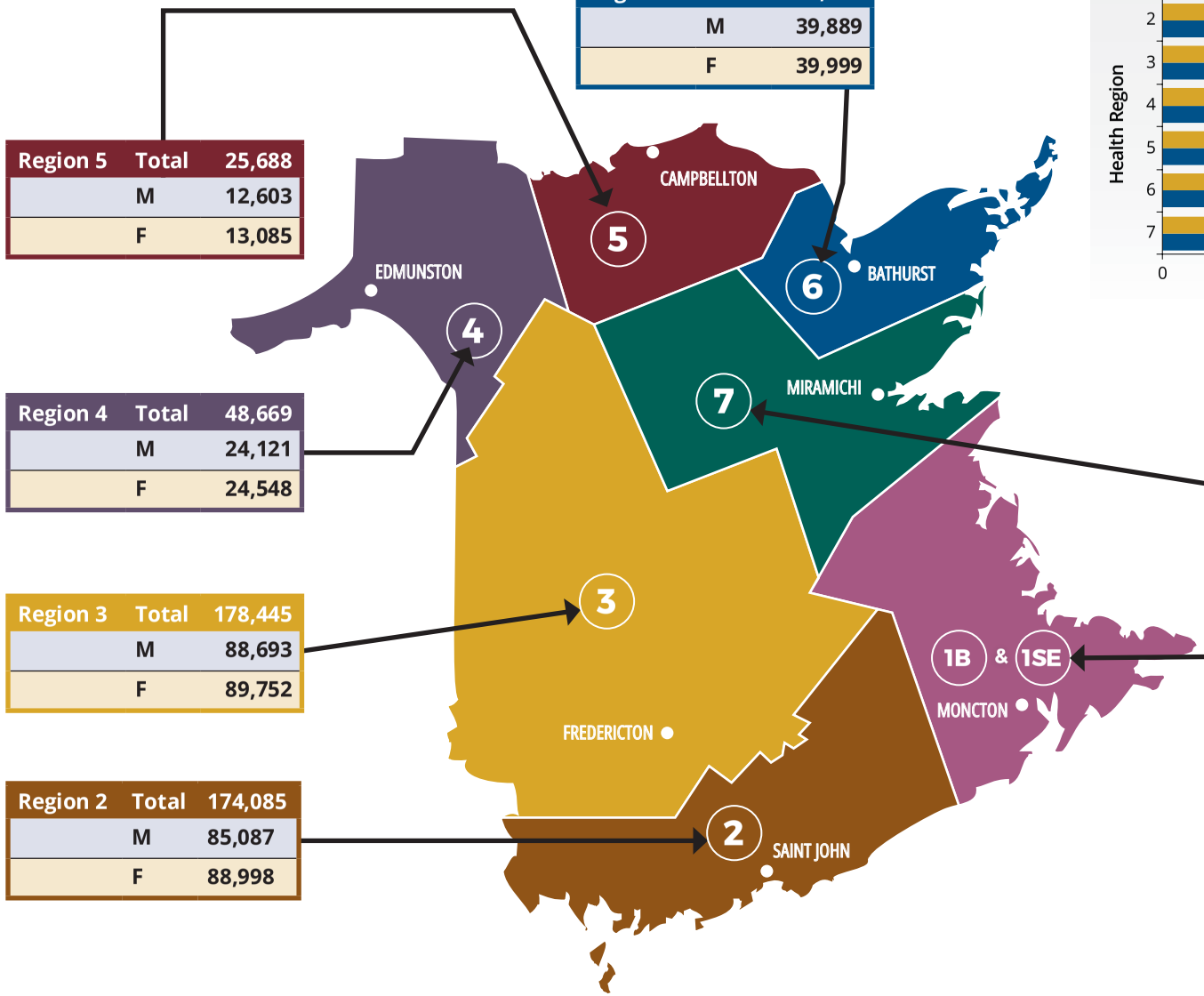
Region 4	Total	48,669
	M	24,121
	F	24,548

Region 3	Total	178,445
	M	88,693
	F	89,752

Region 2	Total	174,085
	M	85,087
	F	88,998

Region 7	Total	42,258
	M	20,828
	F	21,430

Region 1	Total	214,317
	M	106,239
	F	108,078



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 5 to 18. 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 computed based on the number of new cancer cases and deaths that occurred during the period of 2014-2018.

Prostate Cancer

Prostate cancer was the most frequently diagnosed cancer in males across all health regions except HR5, ranging from 18.2% of all cancers in HR3 to 23.6% in HR7 (Table 6). The 2019 estimated national incidence of prostate cancer was 20.3% of all cancers diagnosed in males (Canadian Cancer Statistics 2019, Table 1.5).[19] Prostate cancer was the third leading cause of cancer-related deaths across all regions, with the exception of HR7 (5.8%) where it ranked in fifth place (Table 7). The highest percentage of prostate cancer-related deaths occurred in HR3 (9.9%), slightly over the provincial average of 9.1% and the national rate of 9.5% (Canadian Cancer Statistics 2019, Table 2.5).[19]

Breast Cancer

Breast cancer was the most frequently diagnosed cancer in females and varied from 23.5% of all cancers in HR7 to 30.4% in HR4 (Table 8); these estimates were comparable to the national rate of 25.1% (Canadian Cancer Statistics 2019, Table 1.5).[19] Breast cancer was the second leading cause of cancer-related deaths across all regions, with the exception of HR6 (13.3%) where it ranked in third place (Table 9). The highest percentage of female breast cancer deaths occurred in HR5 (18.7%) compared to the provincial average of 13.1% and the national rate of 12.9% for 2019 (Canadian Cancer Statistics 2019, Table 2.5).[19]

Lung Cancer

The regional frequency distributions of *lung cancer* incidence in males ranged from 15.9% in HR1 to 21.8% in HR5 (Table 6). For females, the frequencies of lung cancer varied from 13.7% in HR6 to 22.7% in HR5 (Table 8). The 2019 national estimated frequencies of lung cancer incidence were 13.2% for males and 13.5% for females (Canadian Cancer Statistics 2019, Table 1.5).[19] In New Brunswick, lung cancer was responsible for the highest percentages of deaths in both sexes across all health regions. Specifically, mortality frequencies of lung cancer for males ranged from 25.9% in HR3 to 35.7% in HR5. For females, the frequencies of lung cancer deaths varied from 21.8% in HR6 to 29.0% in HR2. The provincial average frequencies of lung cancer mortality was 29.6% for males and 26.3% for females in comparison to the national estimates (males: 25.2%; females: 26.1%, Canadian Cancer Statistics 2019, Table 2.5).[19]

Colorectal Cancer

The frequencies of the incidence of *colorectal cancer* for both sexes ranked third across all regions (Tables 6 and 8). Incidence percentages of colorectal cancer in males varied from 11.7% in HR6 to 16.4% in HR4 and from 9.9% in HR6 to 12.5% in HR4 for females. Mortality percentages of colorectal cancer in males ranged from 9.6% in HR5 to 13.4% in HR7 and in females, from 10.6% in HR2 to 14.5% in HR6 (Tables 7 and 9). Colorectal cancer ranked in second place for cancer-related deaths in males (11.5%) and third for females (11.9%) provincially and nationally (males: 12.0%; females: 11.4%, Canadian Cancer Statistics 2019, Table 2.5).[19]

Incidence and mortality percentages of all other ten leading cancers by sex across health regions are highlighted in Figures 5 to 18 and Tables 6 to 9.

Figure 5: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 1, NB, 2014-2018

INCIDENCE

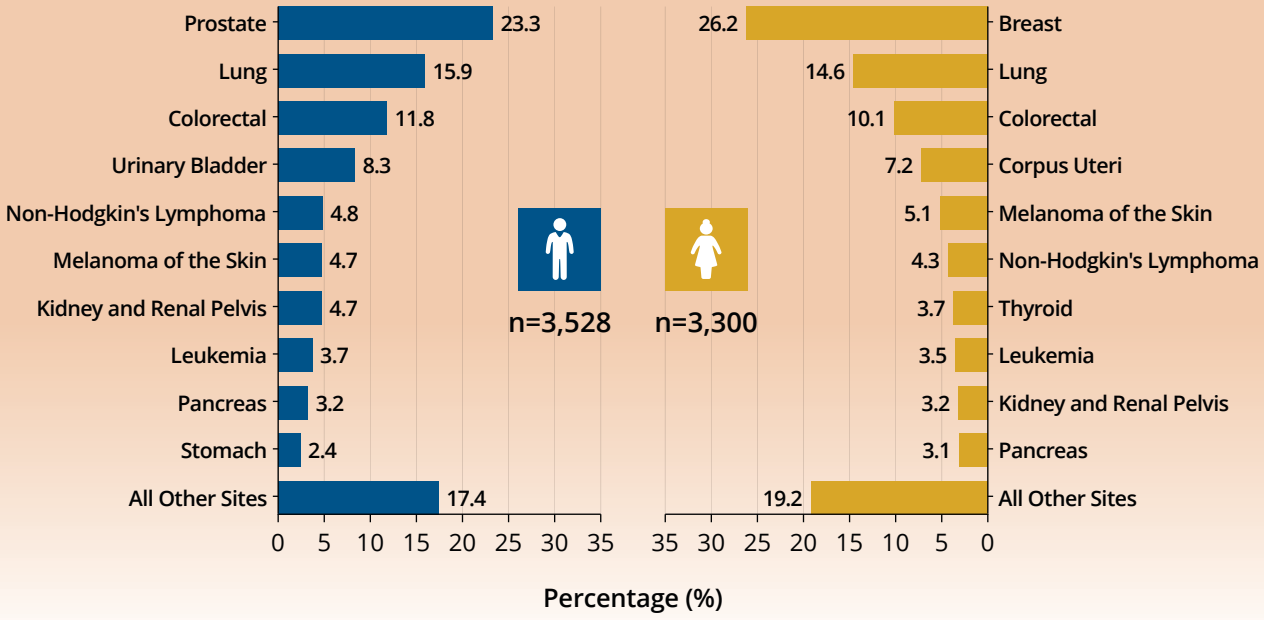
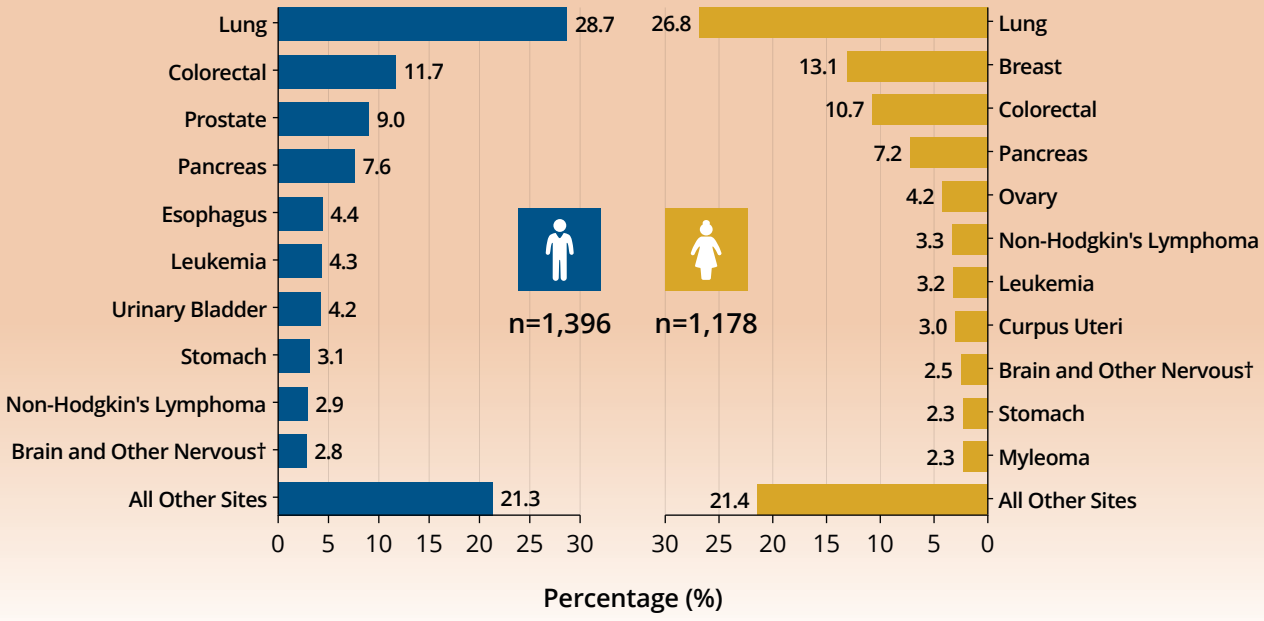


Figure 6: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 1, NB, 2014-2018

MORTALITY



†: Brain and Other Nervous System.

Figure 7: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 2, NB, 2014-2018

INCIDENCE

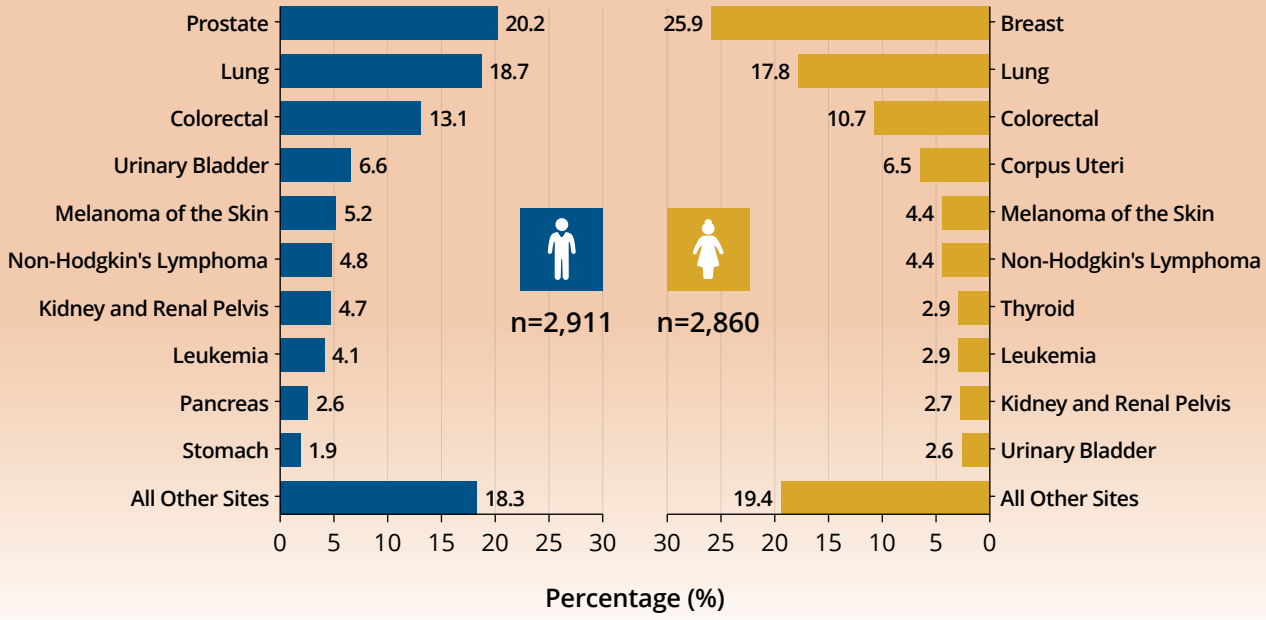


Figure 8: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 2, NB, 2014-2018

MORTALITY

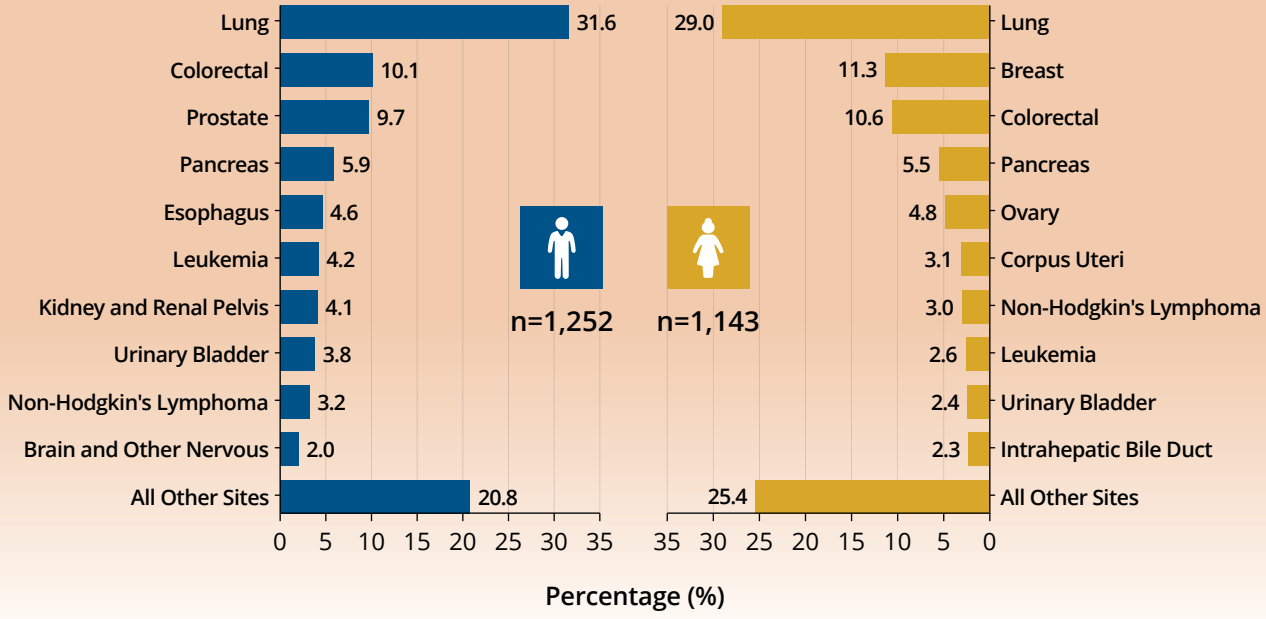


Figure 9: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 3, NB, 2014-2018

INCIDENCE

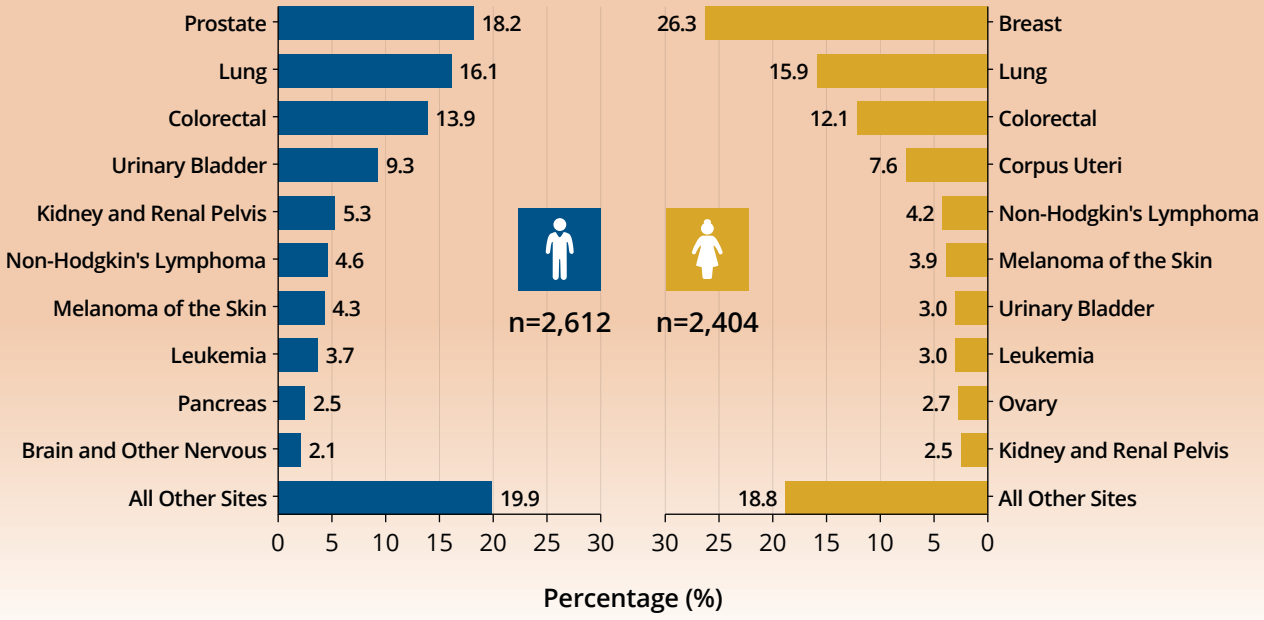


Figure 10: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 3, NB, 2014-2018

MORTALITY

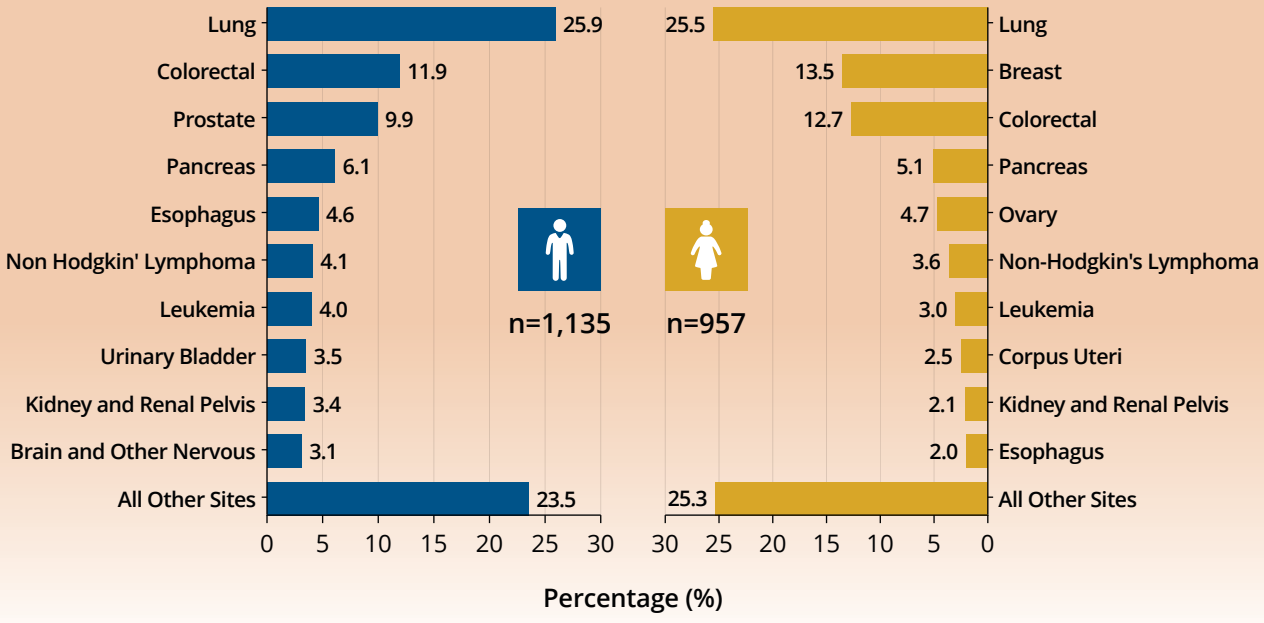


Figure 11: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 4, NB, 2014-2018

INCIDENCE

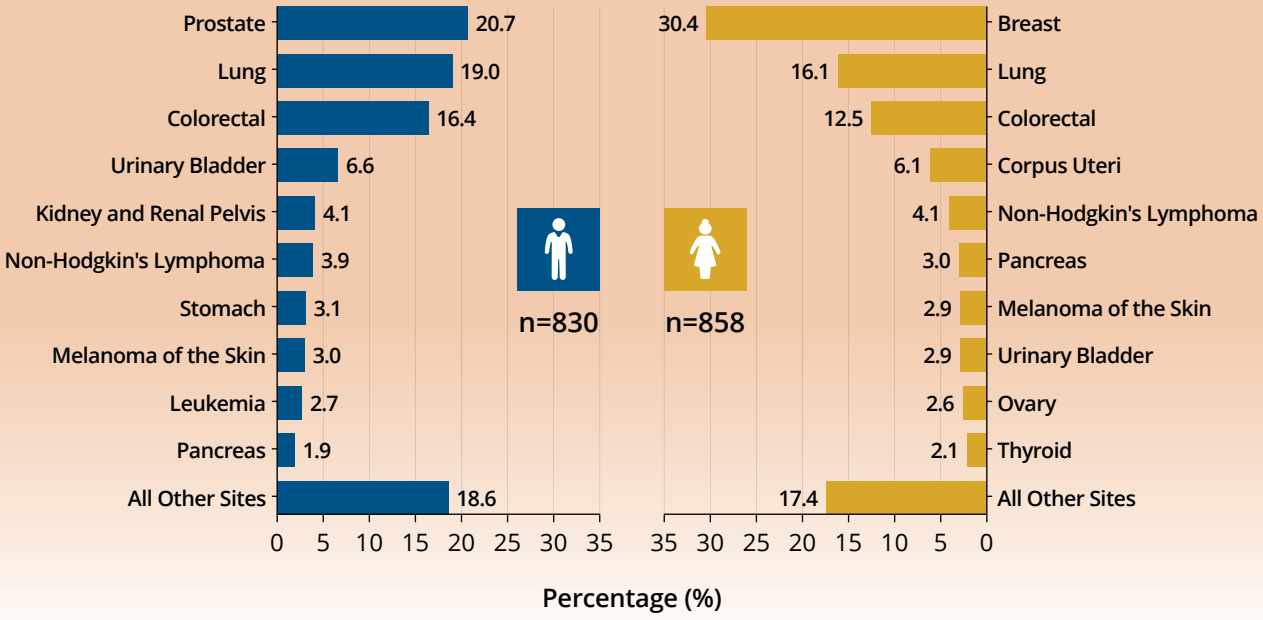


Figure 12: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 4, NB, 2014-2018

MORTALITY

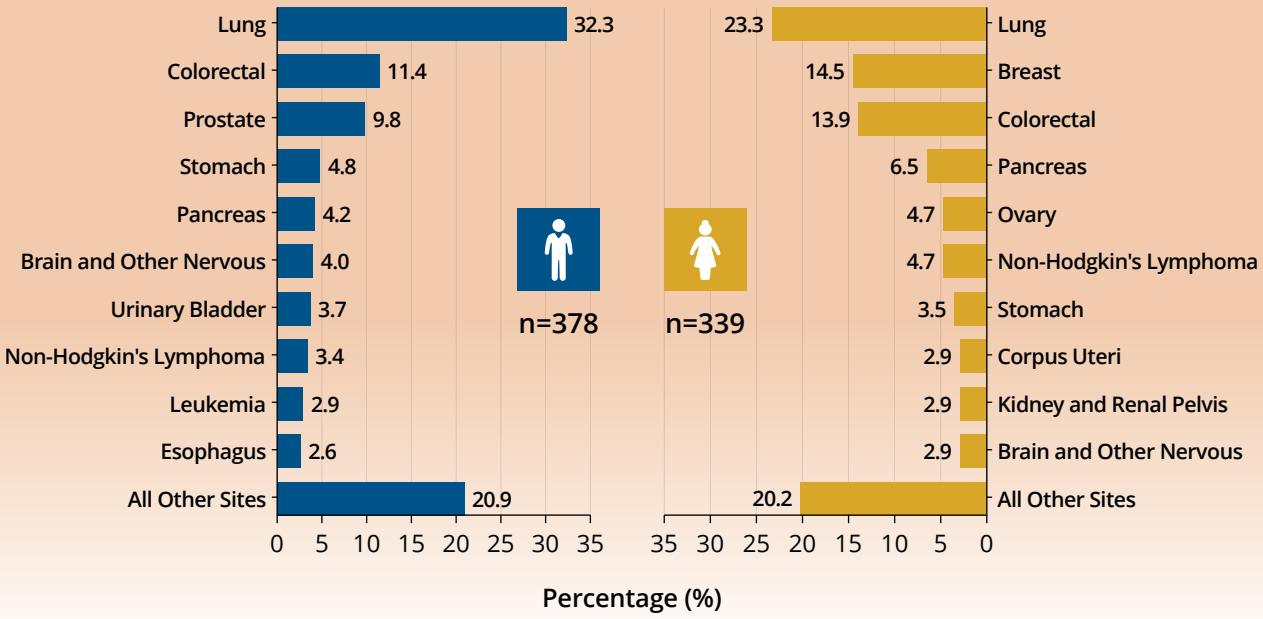


Figure 13: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 5, NB, 2014-2018

INCIDENCE

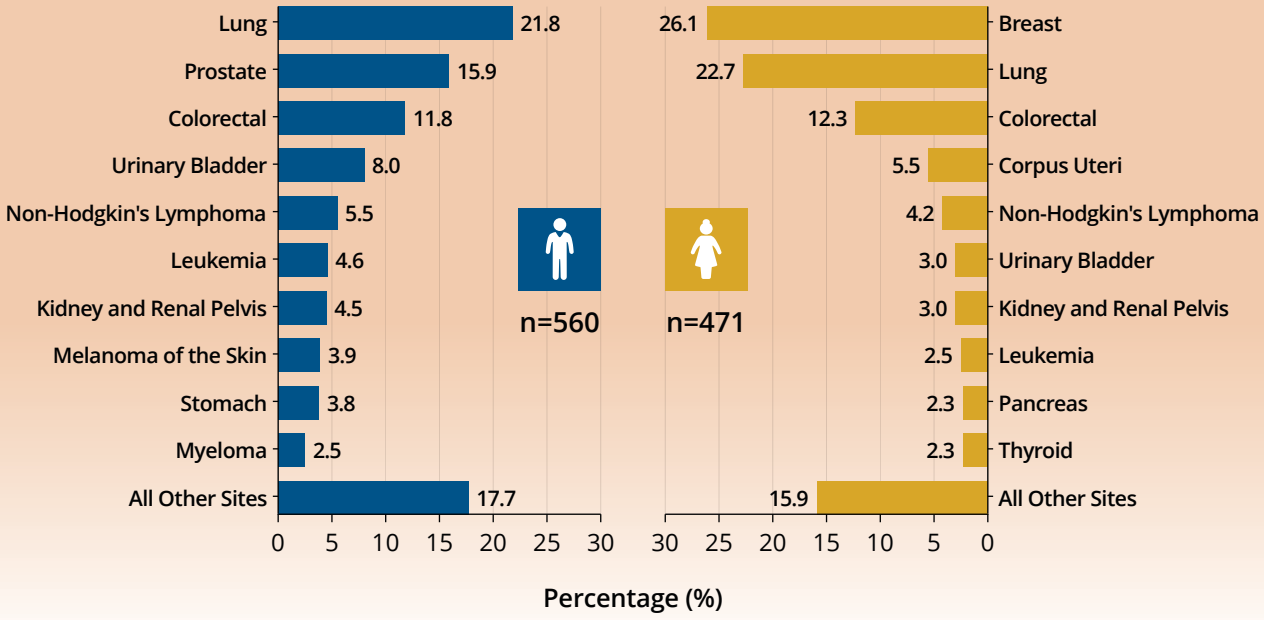


Figure 14: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 5, NB, 2014-2018

MORTALITY

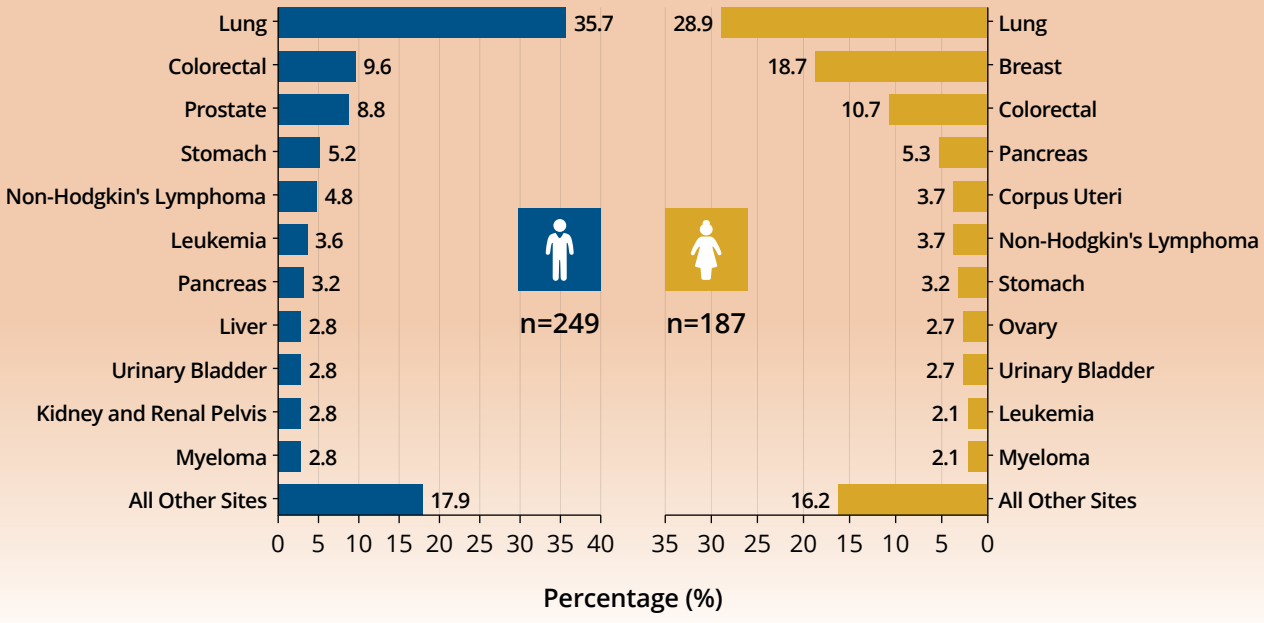


Figure 15: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 6, NB, 2014-2018

INCIDENCE

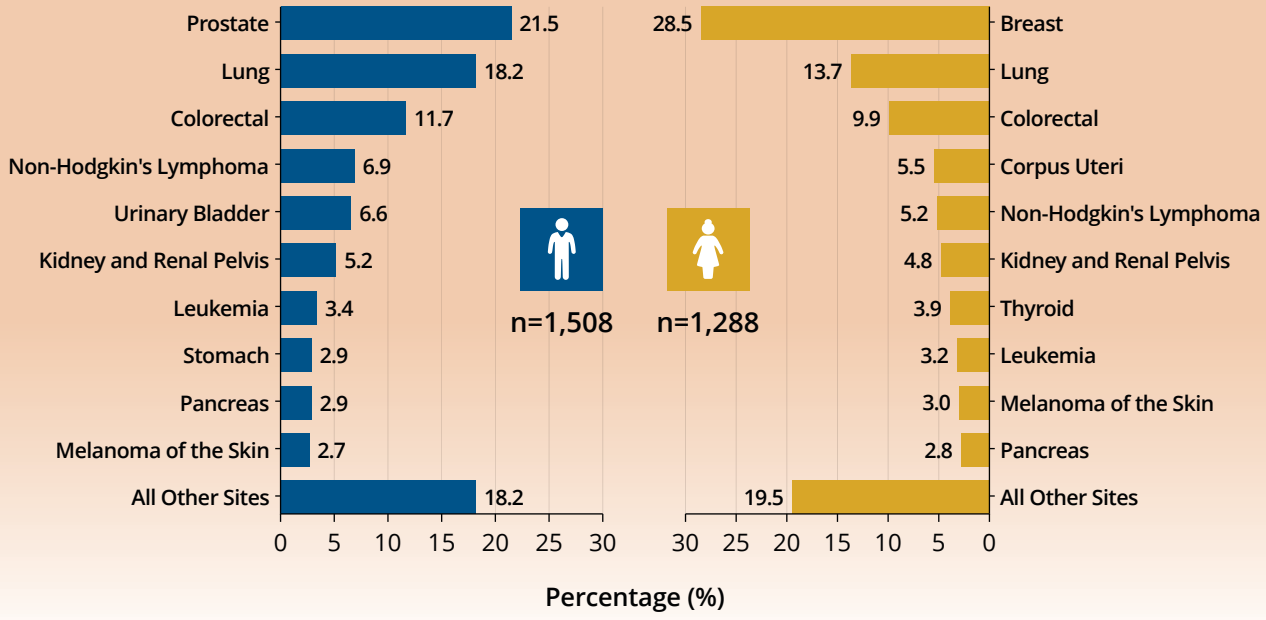


Figure 16: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 6, NB, 2014-2018

MORTALITY

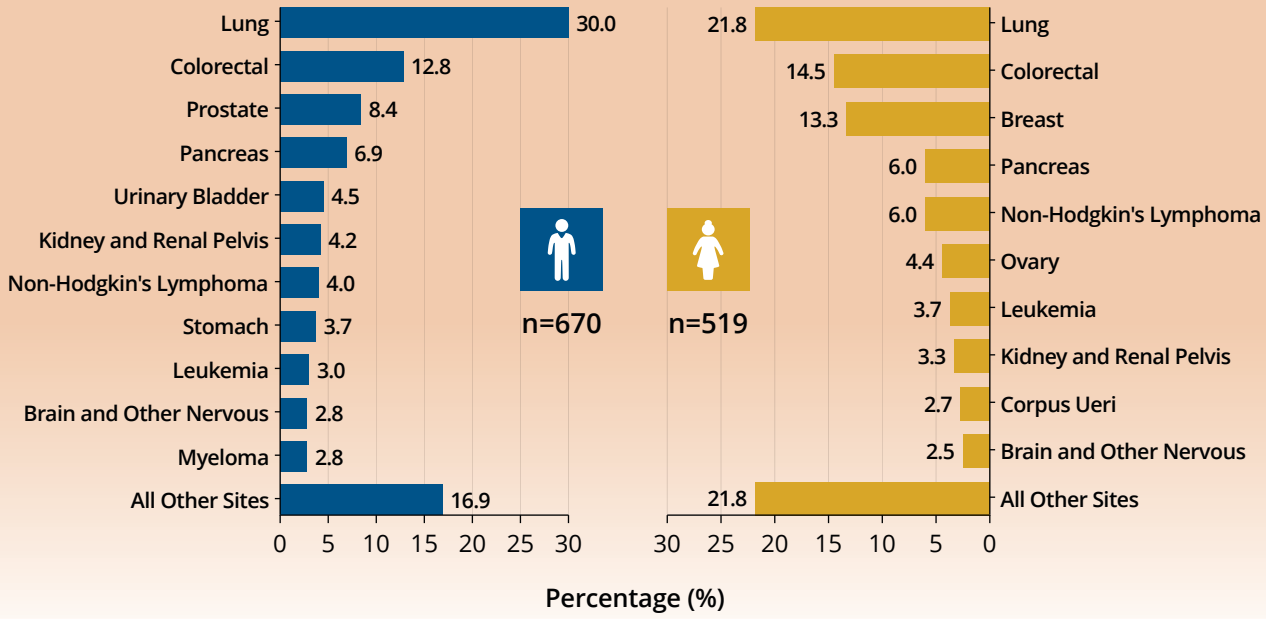


Figure 17: Percentage Distribution of Cancer Incidence for the Ten Leading Cancers by Sex, Health Region 7, NB, 2014-2018

INCIDENCE

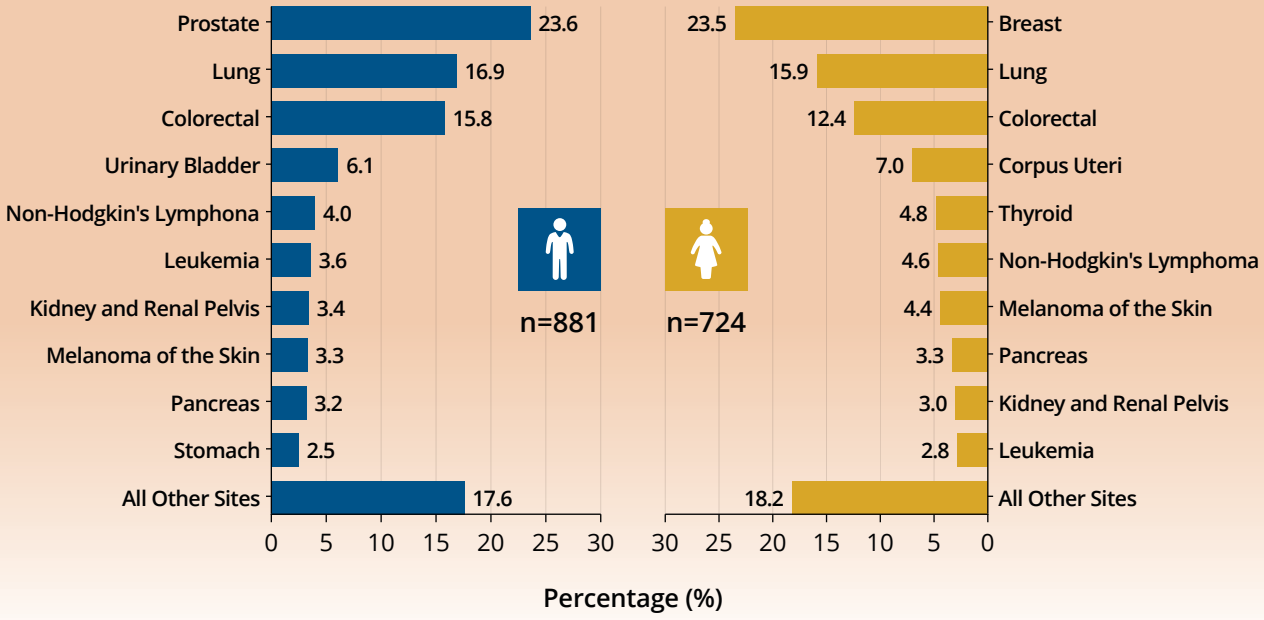
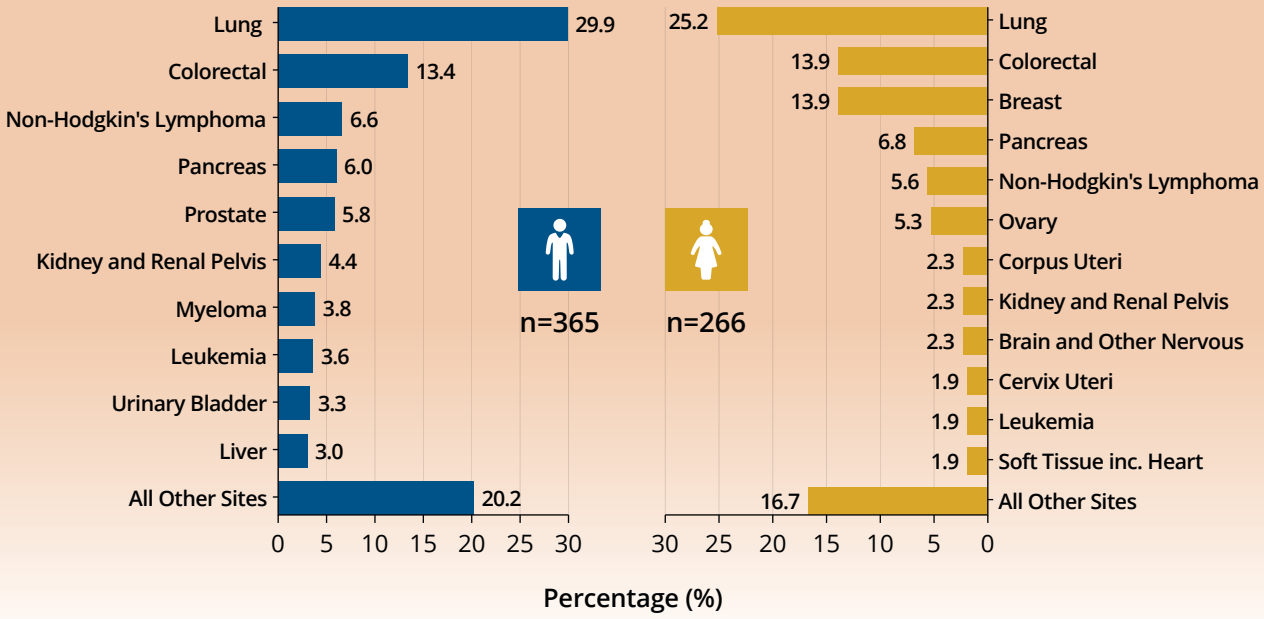


Figure 18: Percentage Distribution of Cancer Mortality for the Ten Leading Cancers by Sex, Health Region 7, NB, 2014-2018

MORTALITY



3.4.2.2 THE FIVE LEADING CANCERS BY RATE

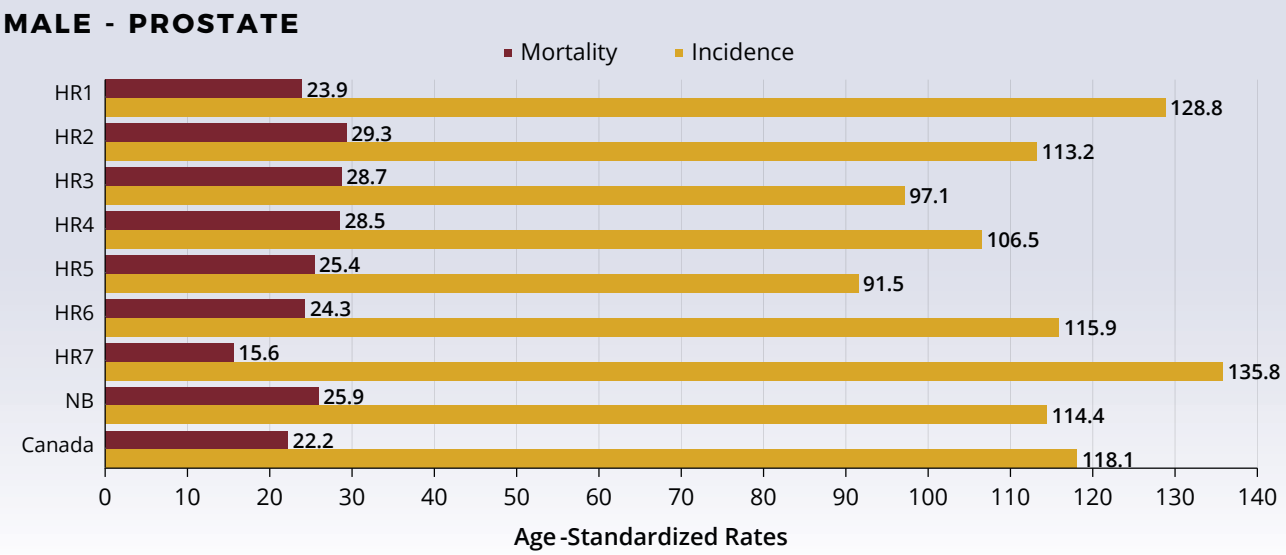
The age-standardized incidence and mortality rates (ASIR & ASMR) were used to adjust for age differences across health regions. The five leading cancers were examined and compared by health region (Tables 10 to 13). For males, the cancers with the highest incidence rates in descending order were: *prostate*, *lung, colorectal, urinary bladder* and *non-Hodgkin's lymphoma* (Table 10). Those with the highest mortality rates were: *lung*, *colorectal*, *prostate, pancreas* and *urinary bladder* cancers (Table 11). In females, the cancers with the highest incidence rates in descending order were: *breast*, *lung, colorectal, corpus uteri* and *melanoma of the skin* (Table 12). The corresponding mortality rates were: *lung, breast, colorectal, pancreas* and *ovary* cancers (Table 13). Further, the provincial and health region rates for the three leading cancers were compared to the national averages in 2019 (Figures 19 to 24).[19]

Prostate Cancer

The highest incidence rates per 100,000 population for prostate cancer were seen in HR7 (135.8 cases) and in HR1 (128.8 cases) (Figure 19 and Table 10). These were significantly higher than the provincial average of 114.4 cases and the 2019 national rate of 118.1 cases (Figure 19).[19]

Mortality rates per 100,000 population for prostate cancer varied from 15.6 in HR7 to 29.3 deaths in HR2 (Figure 19 and Table 11). With the exception of HR7, rates in all other regions were similar to the provincial (25.9 deaths) and the national rates (22.2 deaths, Figure 19).[19]

Figure 19: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Prostate Cancer by Health Region, NB and Canada, 2014-2018

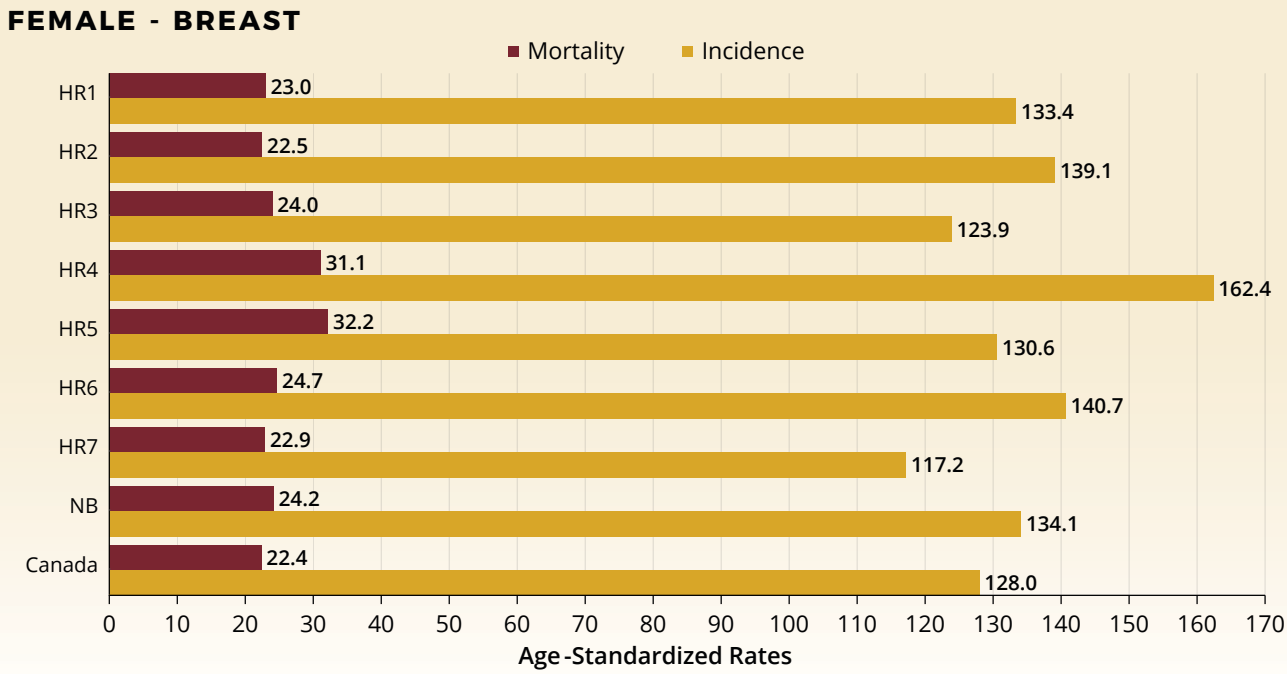


*: Age-standardized to the 2011 Canadian population estimates.

Breast Cancer

In females, incidence rates per 100,000 population varied from 117.2 in HR7 to 162.4 cases in HR4 (Figure 20 and Table 12). Mortality rates per 100,000 population ranged from 22.5 in HR2 to 32.2 deaths in HR5 (Figure 20 and Table 13). Provincial incidence and mortality rates (incidence: 134.1 cases; mortality: 24.2 deaths) were similar to the national estimates (incidence: 128.0 cases; mortality: 22.4 deaths, Figure 20).[19]

Figure 20: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Breast Cancer by Health Region, NB and Canada, 2014-2018



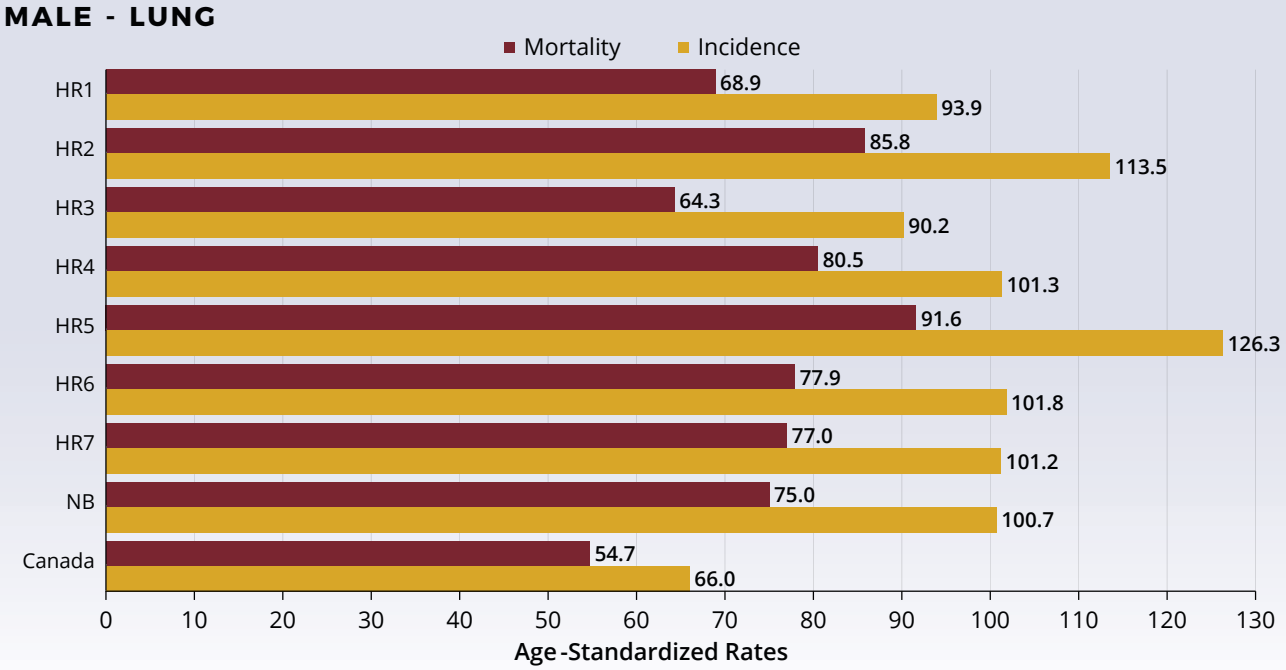
*: Age-standardized to the 2011 Canadian population estimates.

Lung Cancer

In males, the incidence rates per 100,000 population for lung cancer ranged from 90.2 in HR3 to 126.3 cases in HR5 (Figure 21 and Table 10). Mortality rates per 100,000 population varied from 64.3 in HR3 to 91.6 deaths in HR5 (Figure 21 and Table 11). The provincial incidence (100.7 cases) and mortality (75.0 deaths) rates of lung cancer were higher than the national ones (incidence: 66.0 cases; mortality: 54.7 deaths, Figure 21),[19] respectively.

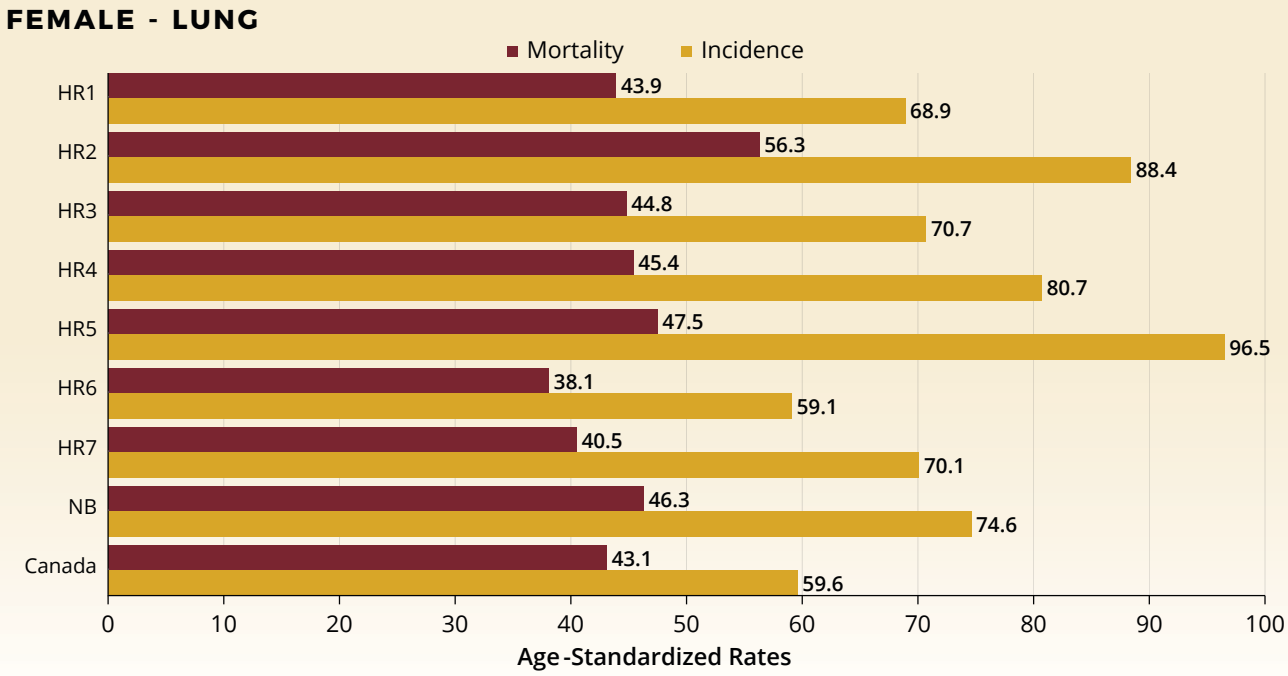
The incidence rates of lung cancer for females varied from 59.1 in HR6 to 96.5 cases in HR5 (Figure 22 and Table 12). Mortality rates ranged from 38.1 in HR6 to 56.3 deaths in HR2 (Figure 22 and Table 13). Mortality rates in HR2 (56.3 deaths) and HR5 (47.5 deaths) were higher than the provincial average (46.3 deaths) and the rest i.e., HR1(43.9 deaths), HR3 (44.8 deaths), HR4 (45.4 deaths), HR6 (38.1 deaths) and HR7 (40.5 deaths) were lower. Like males, the provincial rates (incidence: 74.6 cases; mortality: 46.3 deaths) of females were higher than the national averages of 59.6 cases and 43.1 deaths (Figure 22).[19]

Figure 21: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Male Lung Cancer by Health Region, NB and Canada, 2014-2018



*: Age-standardized to the 2011 Canadian population estimates.

Figure 22: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Lung Cancer by Health Region, NB and Canada, 2014-2018



Colorectal Cancer

The incidence rates per 100,000 population of colorectal cancer for males ranged from 65.9 in HR6 to 100.1 cases in HR7 (Figure 23 and Table 10). Males in NB had a similar incidence rate (76.8 cases) when compared to the national rate of 71.7 cases (Figure 23).[19] Mortality rates per 100,000 population of colorectal cancer for males ranged from 27.2 in HR2 to 36.8 deaths in HR7 (Figure 23 and Table 11). Mortality rates in HR2 (27.2 deaths) and HR5 (27.6 deaths) were lower than the provincial average (29.7 deaths) and the rest i.e., HR1 (28.5 deaths), HR3 (29.7 deaths), HR4 (29.2 deaths), HR6 (33.1 deaths) and HR7 (36.8 deaths) were comparable or slightly higher. The estimated national mortality rate for male colorectal cancer was 26.8 deaths per 100,000 population (Canadian Cancer Statistics 2019, Table 2.4).[19]

The incidence rates of colorectal cancer for females varied from 45.0 in HR6 to 63.7 cases in HR4 (Figure 24 and Table 12). The provincial rate (51.9 cases) was slightly higher than that in HR1 (48.0 cases), HR5 (50.7 cases) and HR6 (45.0 cases) and, it was comparable to the national average of 50.9 cases per 100,000 population (Figure 24).[19] Mortality rates for female colorectal cancer ranged from 17.2 in HR1 to 27.1 deaths in HR4 (Figure 24 and Table 13) and, the provincial rate (20.5 deaths) was similar to the national average of 18.2 deaths per 100,000 population (Figure 24).[19]

*: Age-standardized to the 2011 Canadian population estimates.

The fourth and the fifth leading cancer incidence and mortality rates by sex across health regions are also reported in Tables 10 to 13.

Figure 23: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Male Colorectal Cancer by Health Region, NB and Canada, 2014-2018

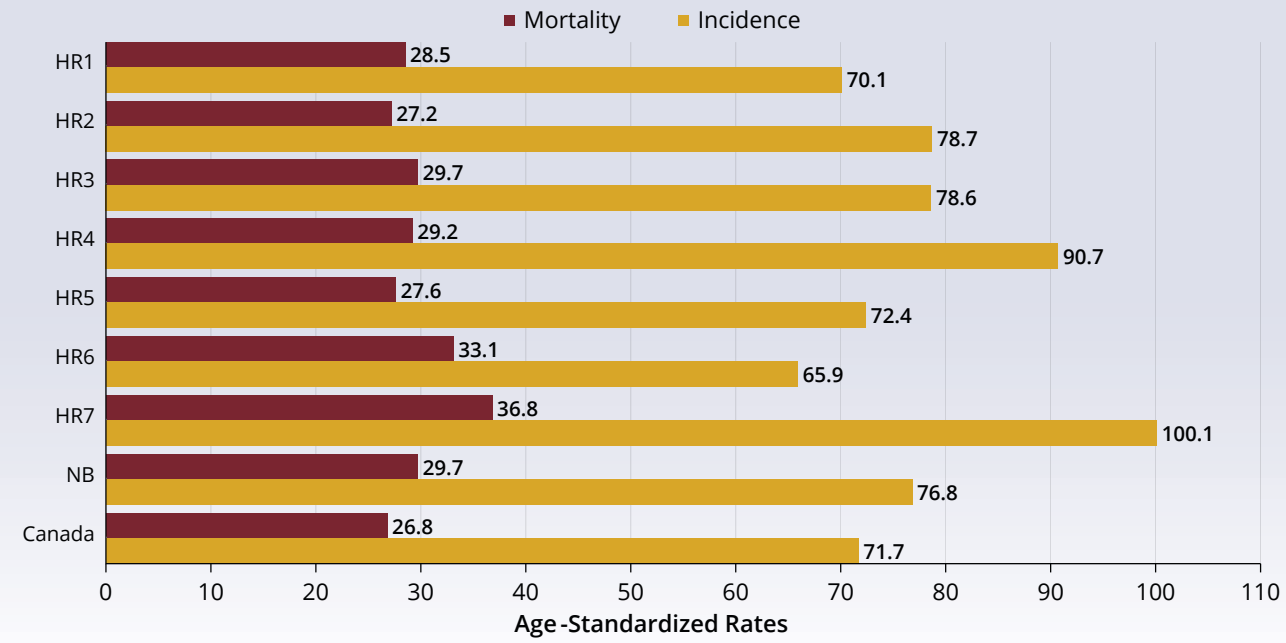
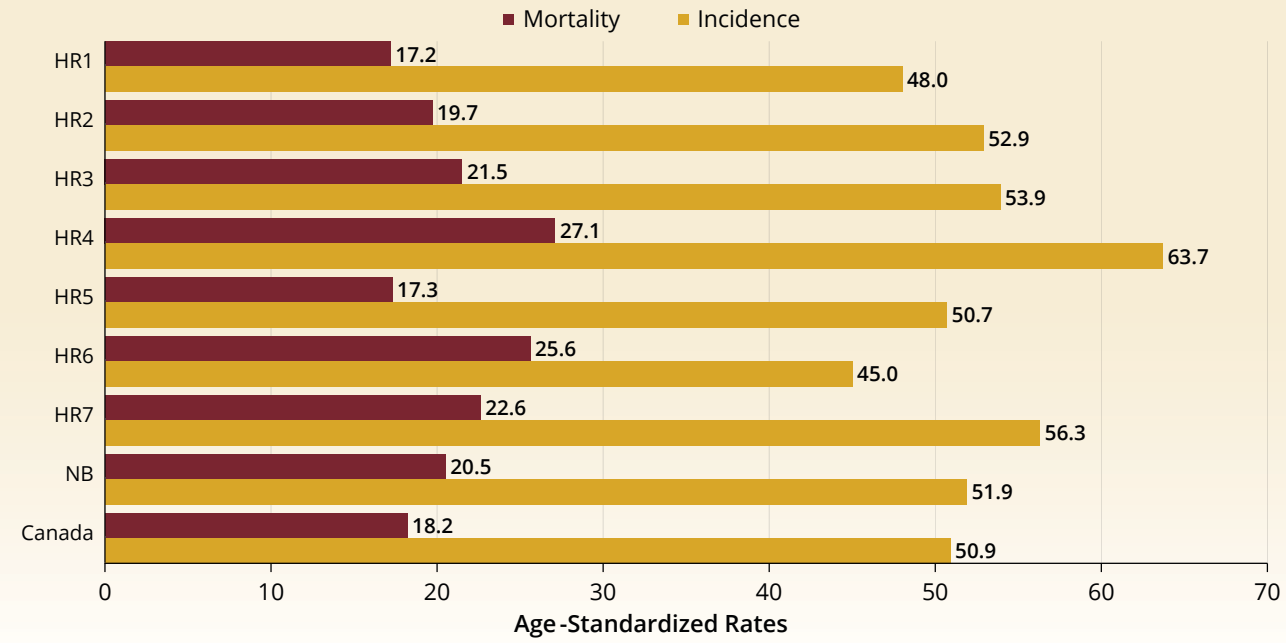


Figure 24: Age-Standardized Incidence and Mortality Rates* (per 100,000 population) for Female Colorectal Cancer by Health Region, NB and Canada, 2014-2018

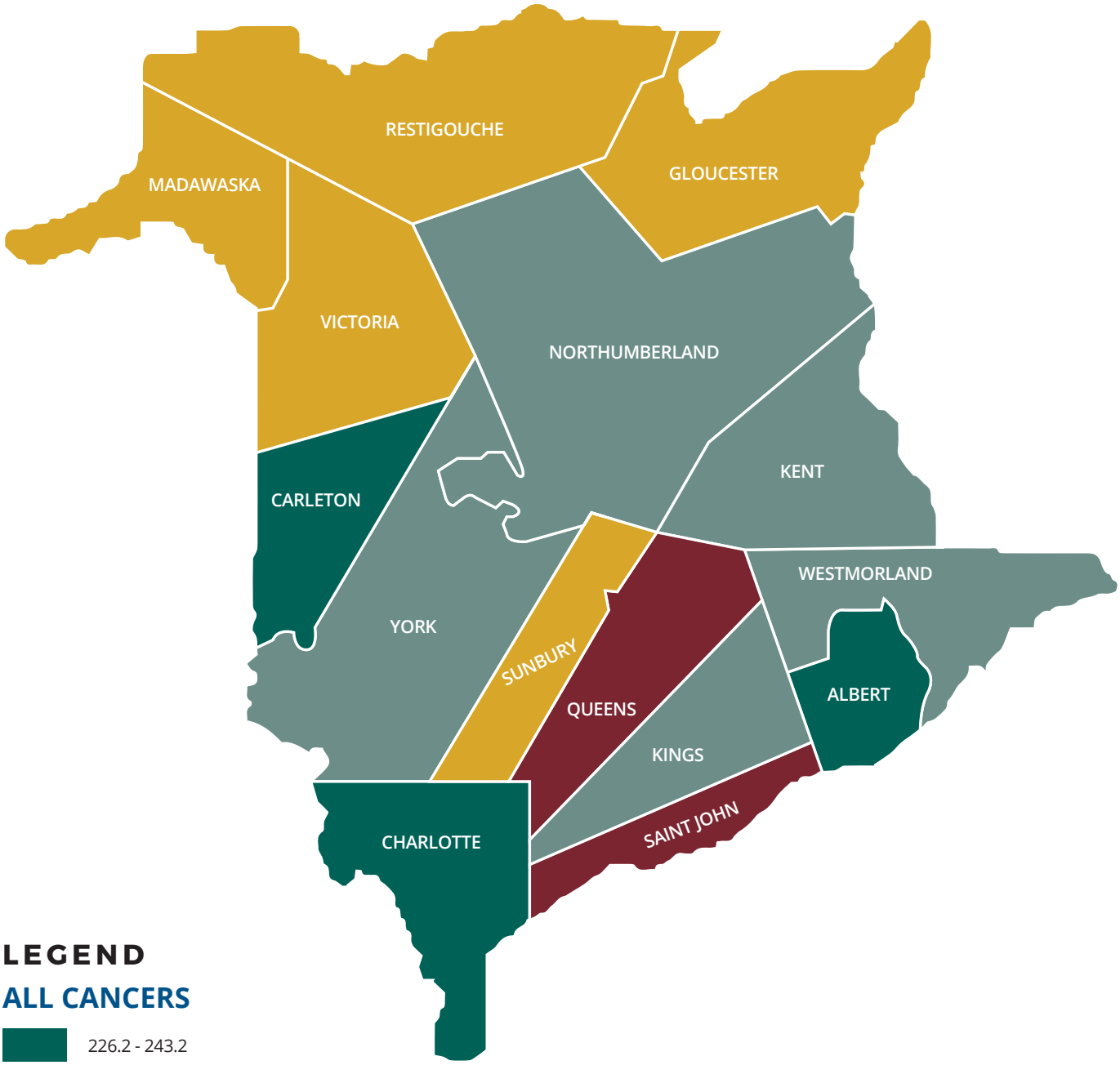


*: Age-standardized to the 2011 Canadian population estimates.

3.4.3 AGE-STANDARDIZED INCIDENCE RATES (ASIRS) FOR ALL CANCERS AND THE FOUR LEADING CANCERS BY CENSUS DIVISION (CD) IN NB

In this report, the unit of data analysis was extended from HR to Census Division (CD) or County for a more focused examination of the geographic variation in cancer occurrence across New Brunswick. The Geographic Information Systems (GIS)[18] was utilized to map the age-standardized incidence rate at the CD or County-level for visualization and comparison purposes. Detailed ASIRs by CDs and sexes are reported in Map 2 to Map 9. The detailed ASIRs by CD for all cancers and four leading cancers (colorectal, lung, prostate and breast) are also presented in Tables 14-15.

Map 2: ASIRs for Male All Cancers by CD, New Brunswick, 2014-2018



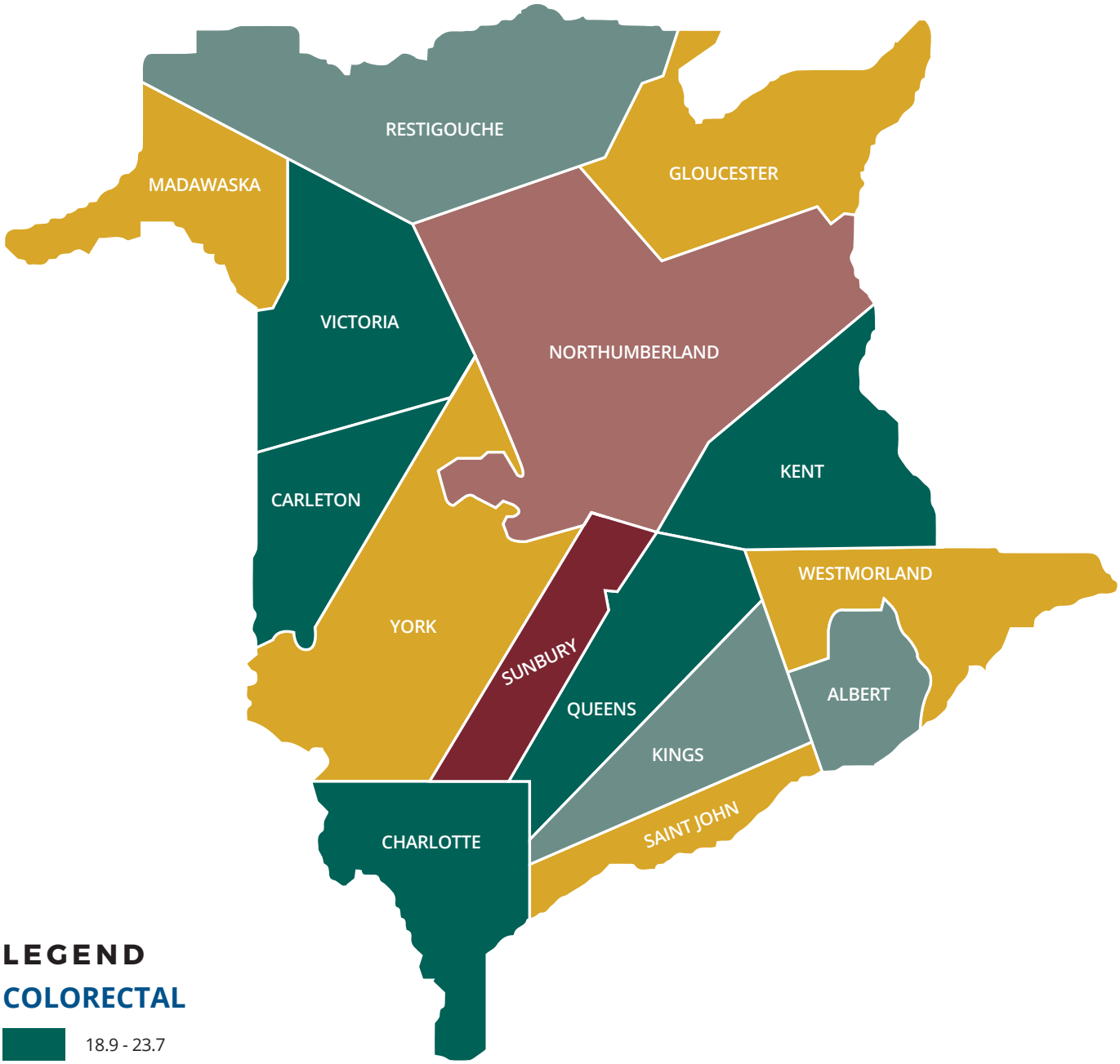
LEGEND

ALL CANCERS

- 226.2 - 243.2
- 243.3 - 260.3
- 260.4 - 277.3
- 277.4 - 294.4
- 294.5 - 311.4

Provincial ASIR for Male All Cancers: 259.2 cases per 100,000 population

Map 3: ASIRs for Male Colorectal Cancer by CD, New Brunswick, 2014-2018



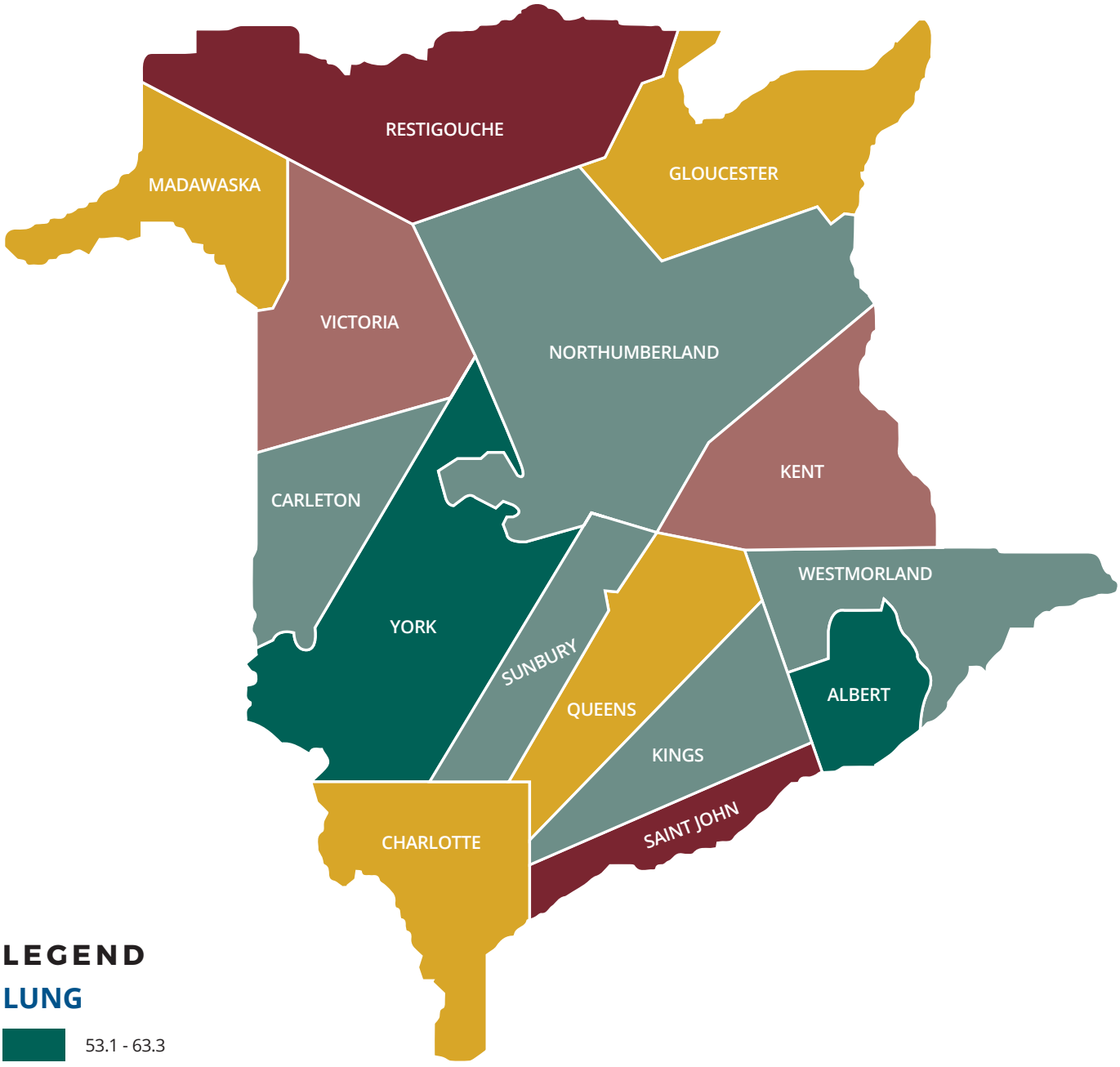
LEGEND

COLORECTAL

- 18.9 - 23.7
- 23.8 - 28.4
- 28.5 - 33.2
- 33.3 - 37.9
- 38.0 - 42.7

Provincial ASIR for Male Colorectal Cancer: 29.7 cases per 100,000 population

Map 4: ASIRs for Male Lung Cancer by CD, New Brunswick, 2014-2018



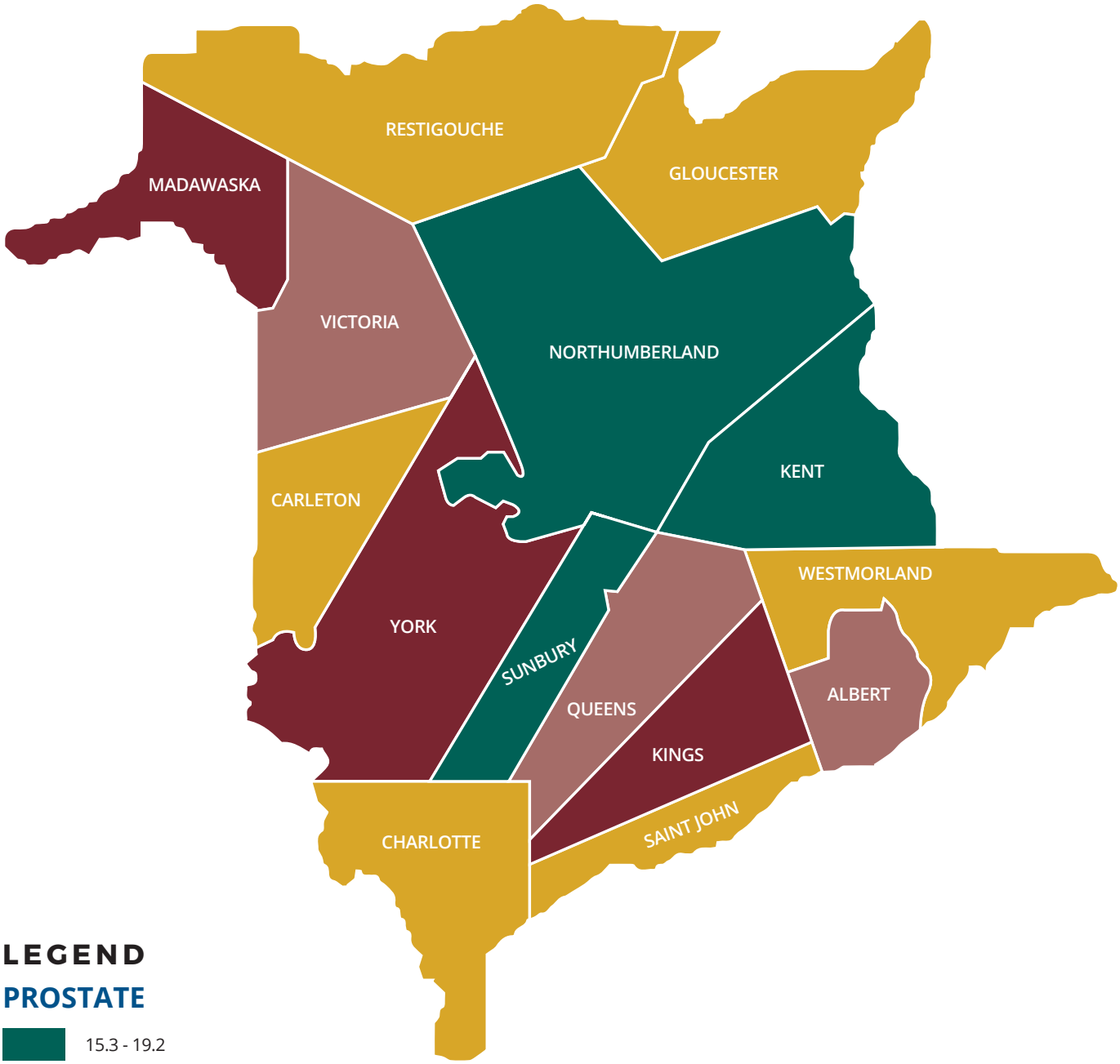
LEGEND

LUNG

- 53.1 - 63.3
- 63.4 - 73.5
- 73.6 - 83.6
- 83.7 - 93.8
- 93.9 - 104.0

Provincial ASIR for Male Lung Cancer: 75.0 cases per 100,000 population

Map 5: ASIRs for Prostate Cancer by CD, New Brunswick, 2014-2018



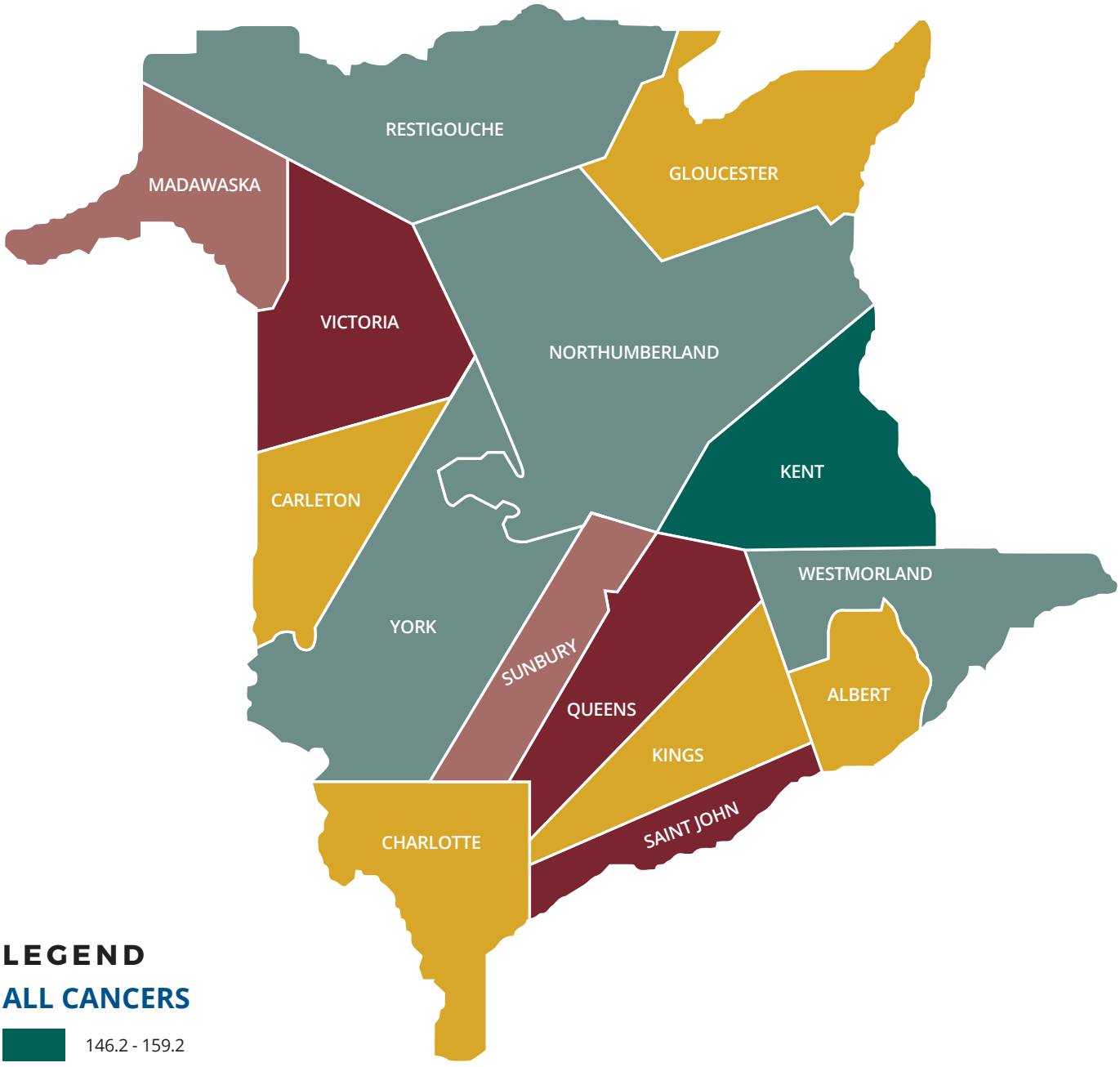
LEGEND

PROSTATE

- 15.3 - 19.2
- 19.3 - 23.2
- 23.3 - 27.1
- 27.2 - 31.1
- 31.2 - 35.0

Provincial ASIR for Prostate Cancer: 25.9 cases per 100,000 population

Map 6: ASIRs for Female All Cancers by CD, New Brunswick, 2014-2018



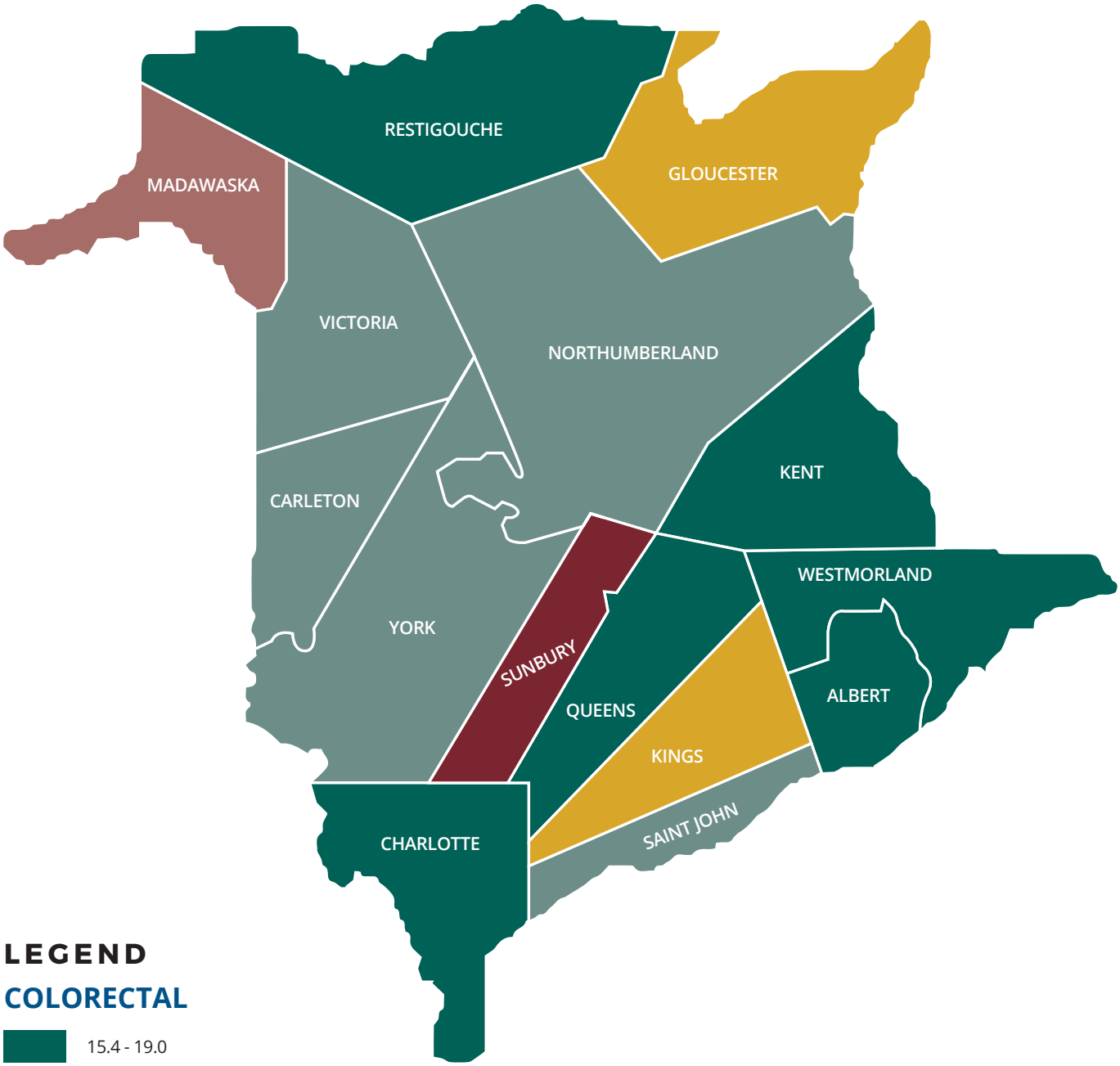
LEGEND

ALL CANCERS

- 146.2 - 159.2
- 159.3 - 172.2
- 172.3 - 185.3
- 185.4 - 198.3
- 198.4 - 211.3

Provincial ASIR for Female All Cancers: 177.1 cases per 100,000 population

Map 7: ASIRs for Female Colorectal Cancer by CD, New Brunswick, 2014-2018



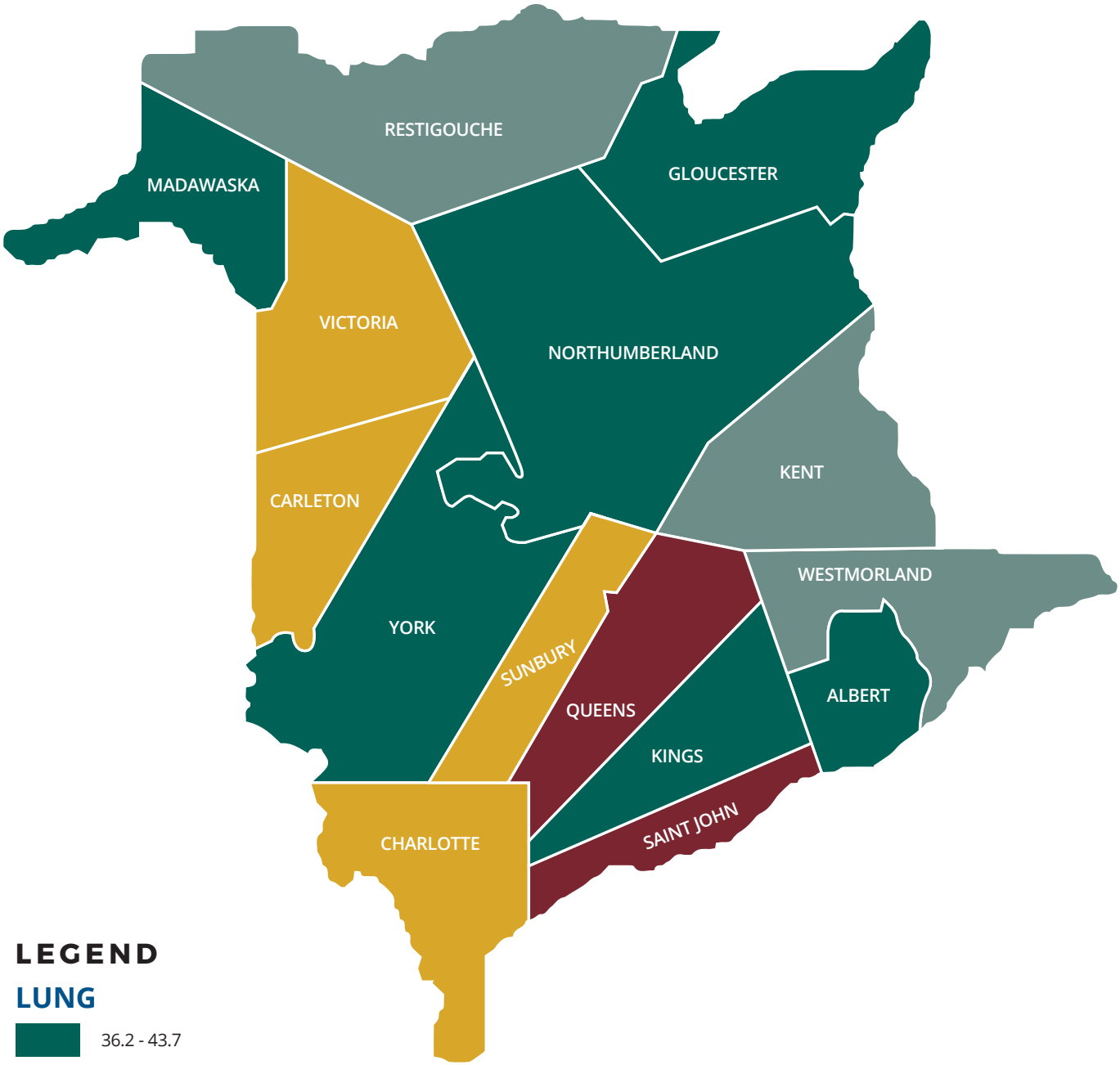
LEGEND

COLORECTAL

- 15.4 - 19.0
- 19.1 - 22.6
- 22.7 - 26.1
- 26.2 - 29.7
- 29.8 - 33.3

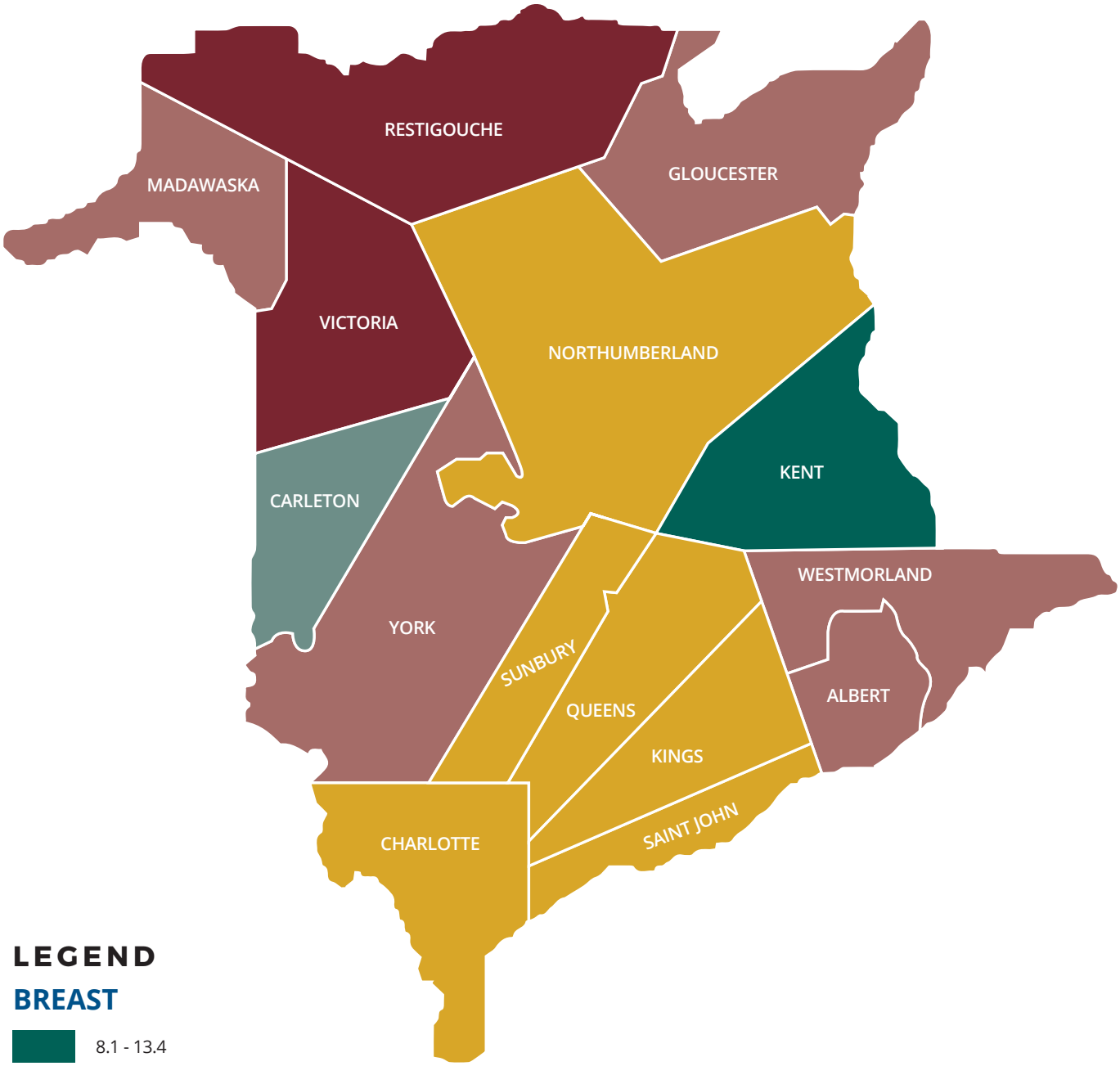
Provincial ASIR for Female Colorectal Cancer: 20.5 cases per 100,000 population

Map 8: ASIRs for Female Lung Cancer by CD, New Brunswick, 2014-2018



Provincial ASIR for Female Lung Cancer: 46.3 cases per 100,000 population

Map 9: ASIRs for Female Breast Cancer by CD, New Brunswick, 2014-2018



LEGEND

BREAST

- 8.1 - 13.4
- 13.5 - 18.7
- 18.8 - 24.1
- 24.2 - 29.4
- 29.5 - 34.7

Provincial ASIR for Female Breast Cancer: 24.2 cases per 100,000 population

3.5 TRENDS IN CANCER INCIDENCE AND MORTALITY, 2004-2018

3.5.1 TRENDS FOR ALL CANCERS

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 14-year period from 2004 to 2018, the incidence and mortality rates for all cancers were consistently higher in males than in females (Figures 25 and 26).

For males, the age-standardized rates per 100,000 population between 2014 and 2018 (581.9 cases for incidence; 259.2 deaths for mortality) for all cancers were higher than the Canadian rates (incidence: 559.0 cases; mortality: 222.8 deaths),[19] however, the patterns of cancer incidence and mortality trends were similar between New Brunswick and Canada as a whole (Figures 25 and 26). There has been a significant decrease in the age-standardized incidence rate for all cancers between 2004 and 2018 with an AAPC of -1.2% (95%CI: -1.9, -0.5; Table 16). Further, mortality rates have significantly declined from a high of 308.6 in 2004 to 258.2 deaths per 100,000 population in 2018 (AAPC: -1.4%, 95%CI: -2.1, -0.7; Table 16).

In females, the age-standardized incidence (493.5 cases) and mortality (177.1 deaths) rates between 2014 and 2018 for all cancers were similar to the Canadian rates (incidence: 489.5 cases; mortality: 166.0 deaths).[19] Since 2004, incidence rates for all cancers in New Brunswick females increased (AAPC: +0.4%, 95%CI: +0.1, +0.7; Table 16), whereas mortality rates decreased with an AAPC of -0.7% (95%CI: -1.3, -0.1; Table 16).

Figure 25: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for All Cancers by Sex, NB and Canada, 2004-2018

INCIDENCE

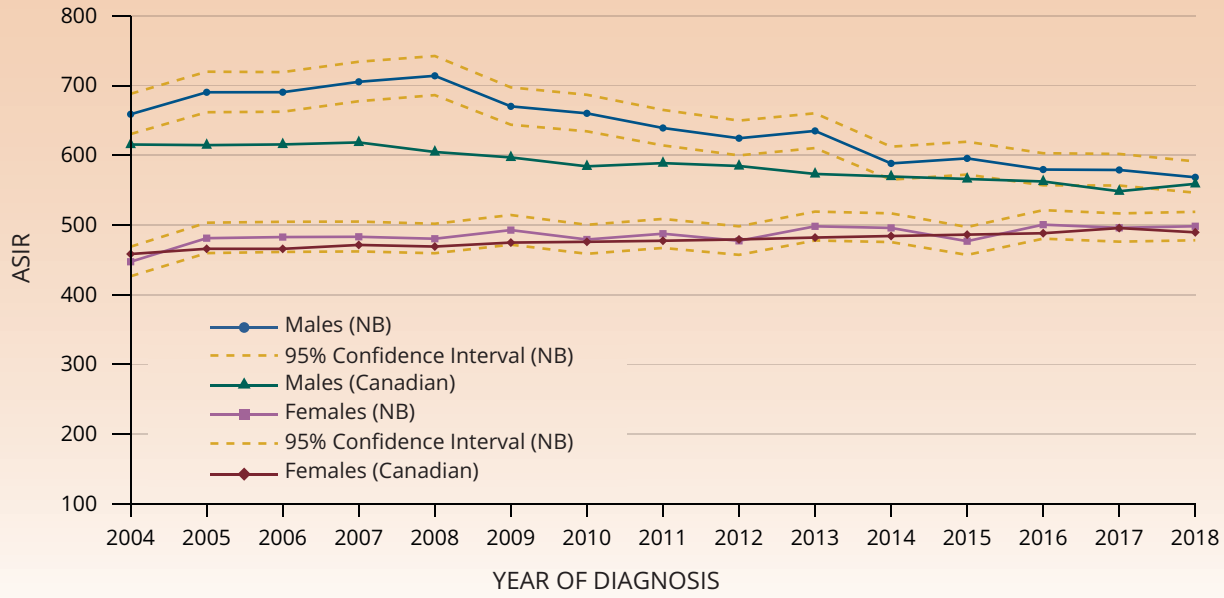
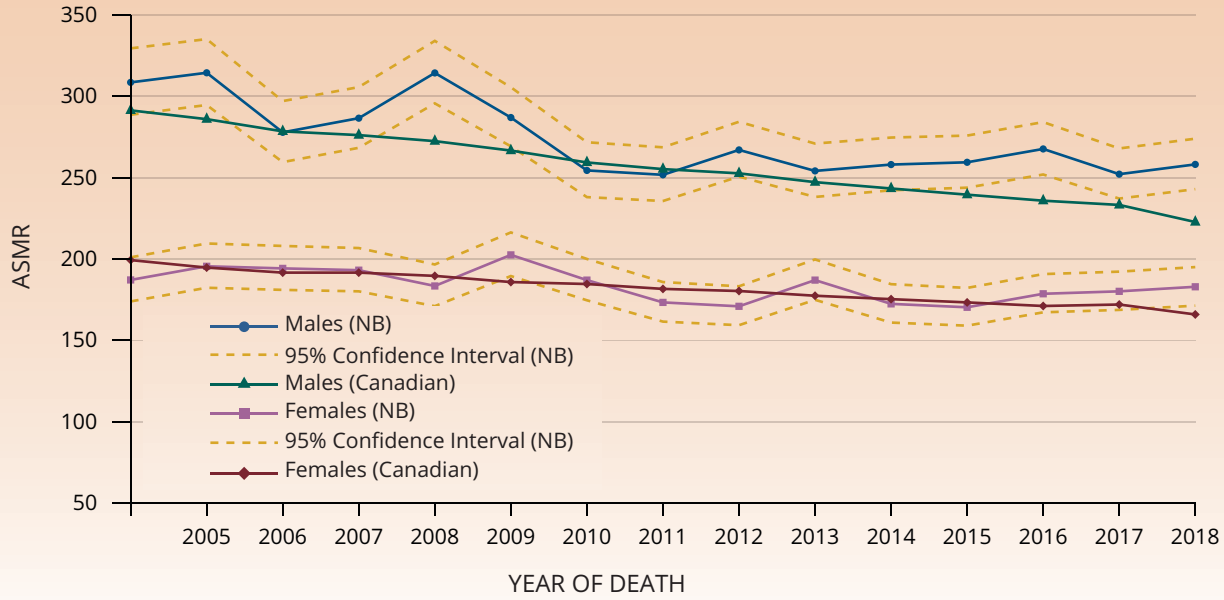


Figure 26: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for All Cancers by Sex, NB and Canada, 2004-2018

MORTALITY



*: Age-standardized to the 2011 Canadian population estimates.

3.5.2 TRENDS FOR THE FOUR LEADING CANCERS

The calculated age-standardized incidence and mortality rates (ASIRs and ASMRs) over time for the four leading cancers (prostate, lung, breast and colorectal) by sex are shown in Figures 27 to 30 and the corresponding Average Annual Percentage Changes (AAPCs) in rates are reported in Figures 31 to 34.

Prostate Cancer

Since 2004, the incidence rate of prostate cancer in New Brunswick has decreased with an AAPC of -3.4% (95%CI: -6.5, -0.2; Table 16). The incidence rate has been significantly decreasing over the last five to six years (Figure 27). This may be due to the reduction in prostate-specific antigen (PSA) testing for early prostate cancer.[20] Also, a decreasing trend (Figure 28) in mortality for prostate cancer -2.5% (95%CI: -4.0, -1.0; Table 16) was detected in this period.

Lung Cancer

Starting in 2004, the age-standardized rates for male lung cancer decreased significantly by -1.6% (95%CI: -2.1, -1.1; Table 16) per year for incidence and by -2.7% (95%CI: -3.7, -1.7; Table 16) for mortality. These improvements in incidence and mortality rates were similar to the national trends between 1984 and 2015 (incidence AAPC: -1.7%; mortality AAPC: -1.7%),[19] although the rates of lung cancer for male New Brunswickers were consistently higher. In females, incidence rate has been increasing slightly since 2004 with an AAPC of +0.2% (95%CI: -0.7, +1.1; Table 16) however the mortality rate has decreased with an AAPC of -1.6% (95%CI: -2.9, -0.3; Table 16).

Breast Cancer

Between 2004 and 2018, the incidence rate of female breast cancer increased slightly (AAPC: +0.3%, 95%CI: -0.3, +1.0; Table 16), but a decreasing trend in mortality rate was observed with an AAPC of -1.3% (95%CI: -2.5, 0.0; Table 16). This improvement in mortality was likely the result of a combination of uptake in mammography screening and the use of effective treatments following breast cancer surgery.[20]

Colorectal Cancer

Since 2004, the incidence rates of colorectal cancer have decreased for both sexes (male AAPC: -1.0%, 95%CI: -1.9, -0.1; female AAPC: -0.4%, 95%CI: -1.3, 0.5; Table 16); also true for the male and female mortality rates (male AAPC: -1.0%, 95%CI: -1.7, -0.4; female AAPC: -0.3%, 95%CI: -1.8, 1.3; Table 16). Mortality rates continued to decline in both sexes, which was likely the result of improvements in treatment such as chemotherapy.[20] With increased participation in the colorectal cancer screening program in New Brunswick, we may expect to further reduce colorectal cancer mortality rates in the near future.

Figure 27: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for the Three Leading Cancers, Males, NB, 2004-2018

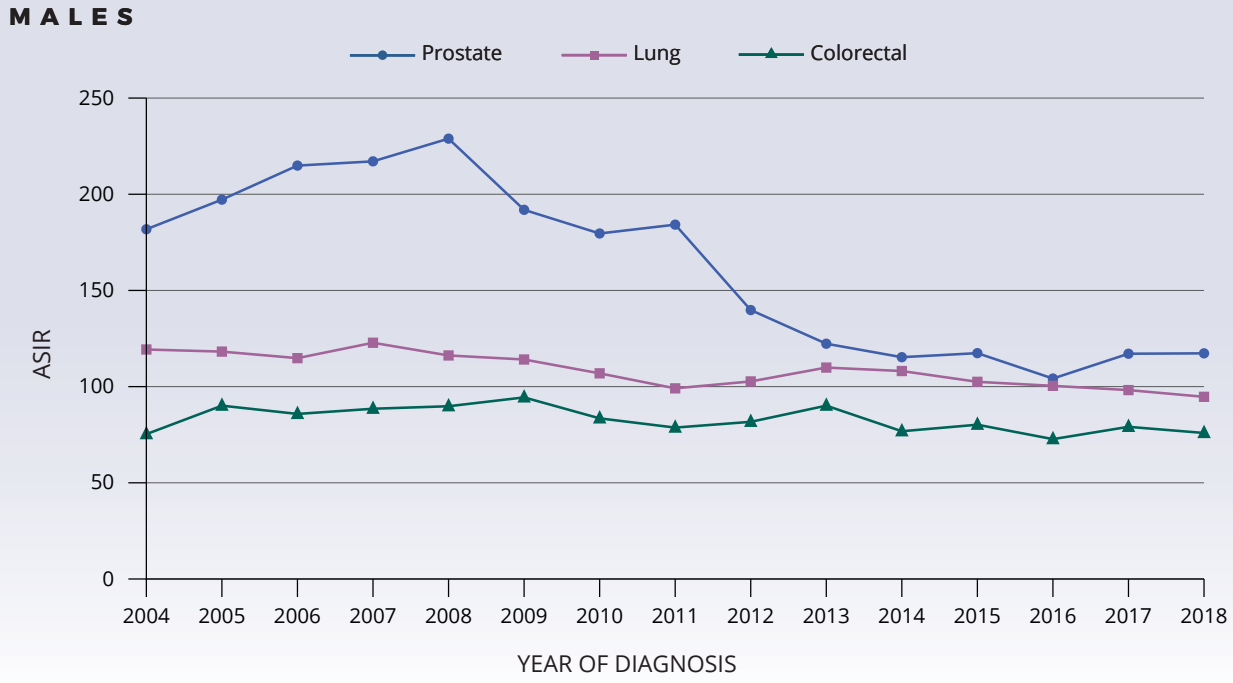
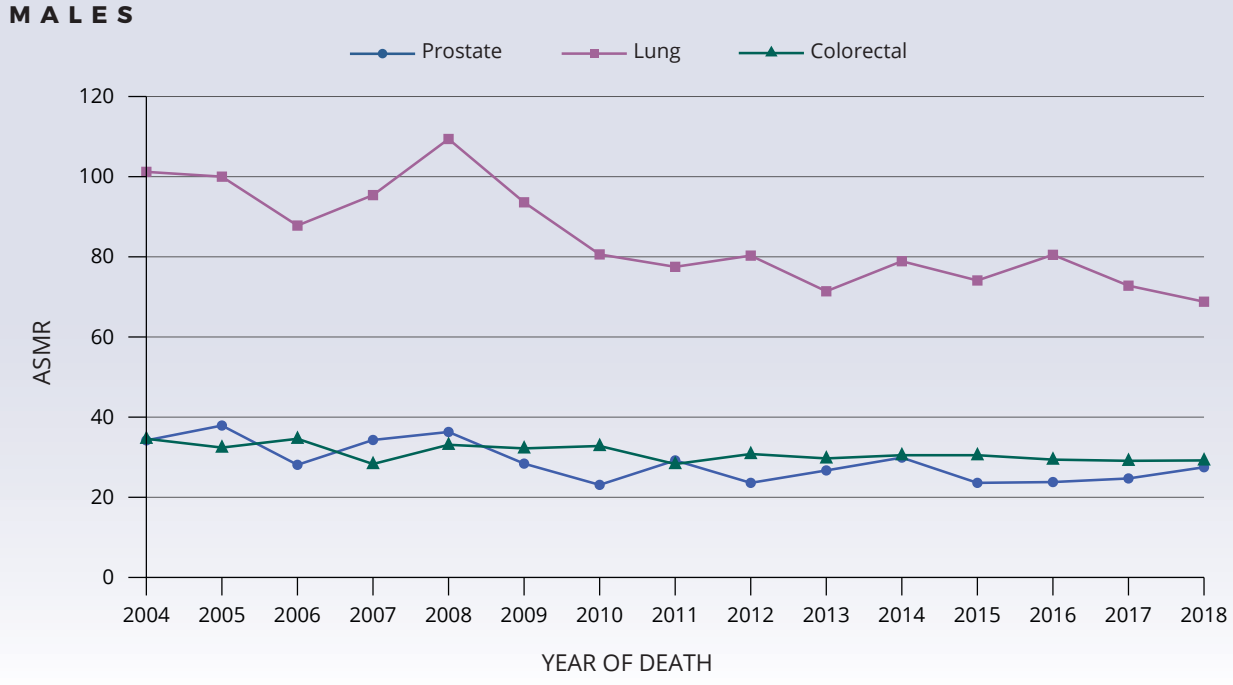


Figure 28: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for the Three Leading Cancers, Males, NB, 2004-2018



*: Age-standardized to the 2011 Canadian population estimates.

Figure 29: Trends in Age-Standardized Incidence Rates* (per 100,000 population) for the Three Leading Cancers, Females, NB, 2004-2018

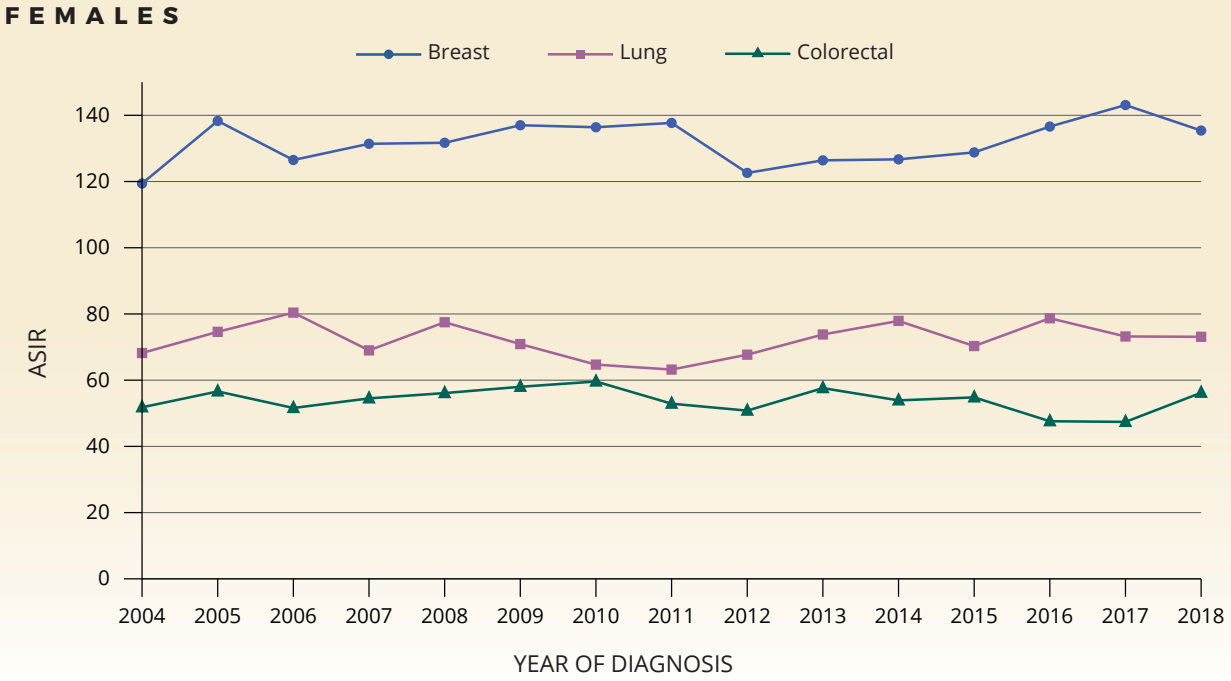
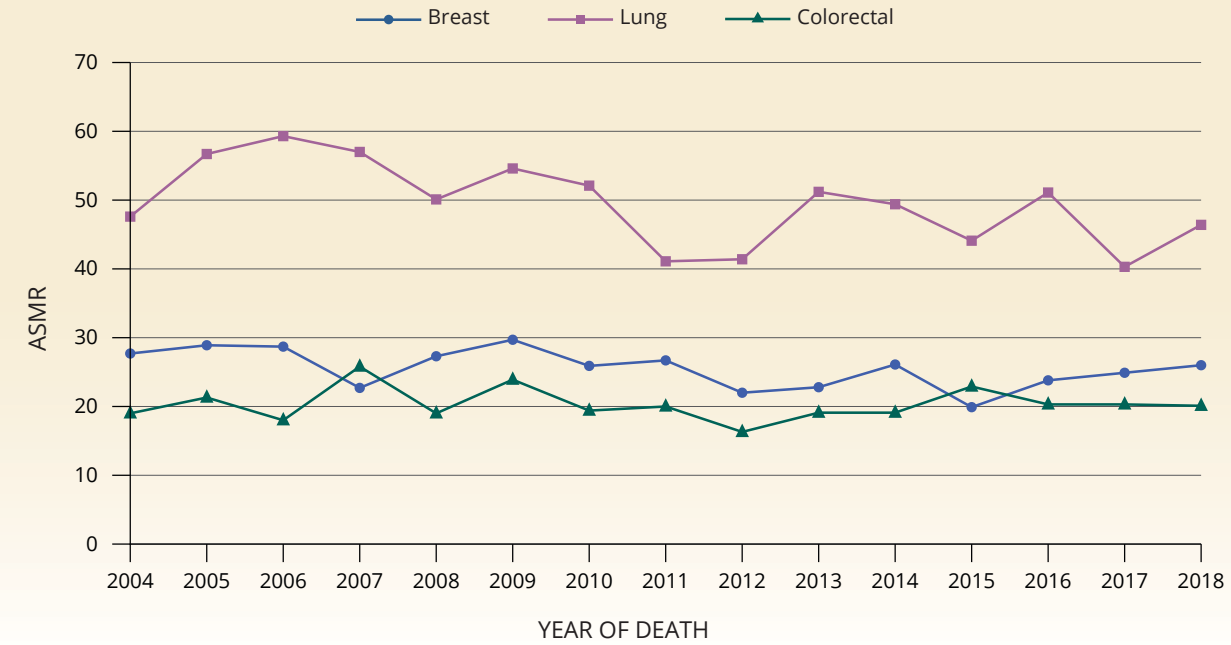


Figure 30: Trends in Age-Standardized Mortality Rates* (per 100,000 population) for the Three Leading Cancers, Females, NB, 2004-2018



*: Age-standardized to the 2011 Canadian population estimates.

Figure 31: Average Annual Percentage Change (AAPC) in Age-Standardized Incidence Rates* for All Cancers and the Three Leading Cancers, Males, NB, 2004-2018

MALE INCIDENCE

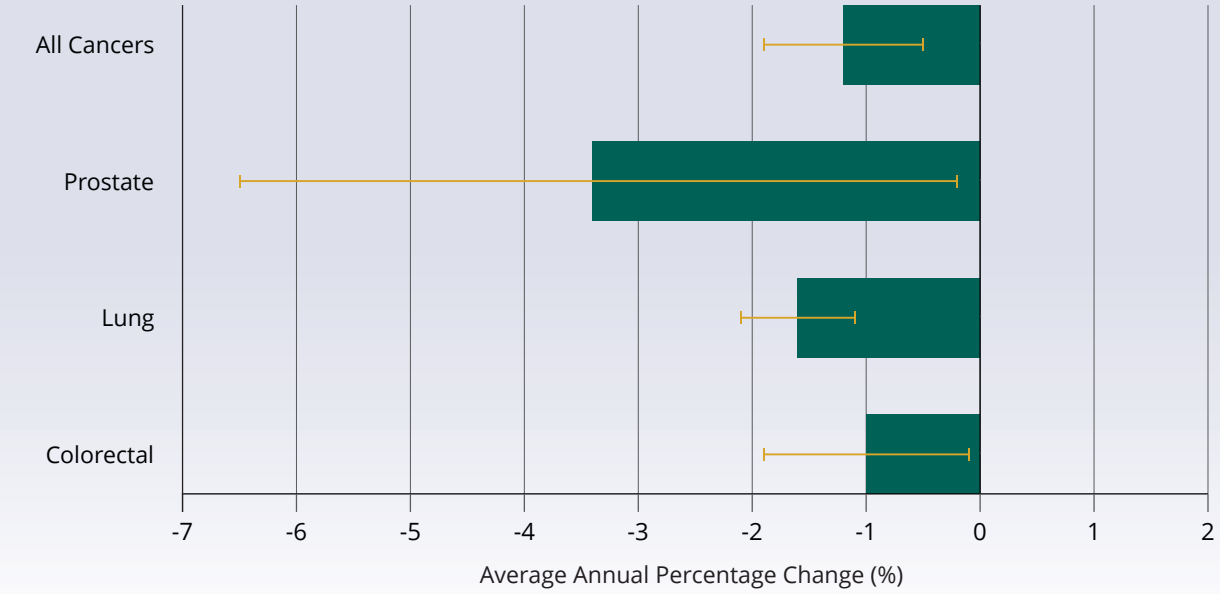
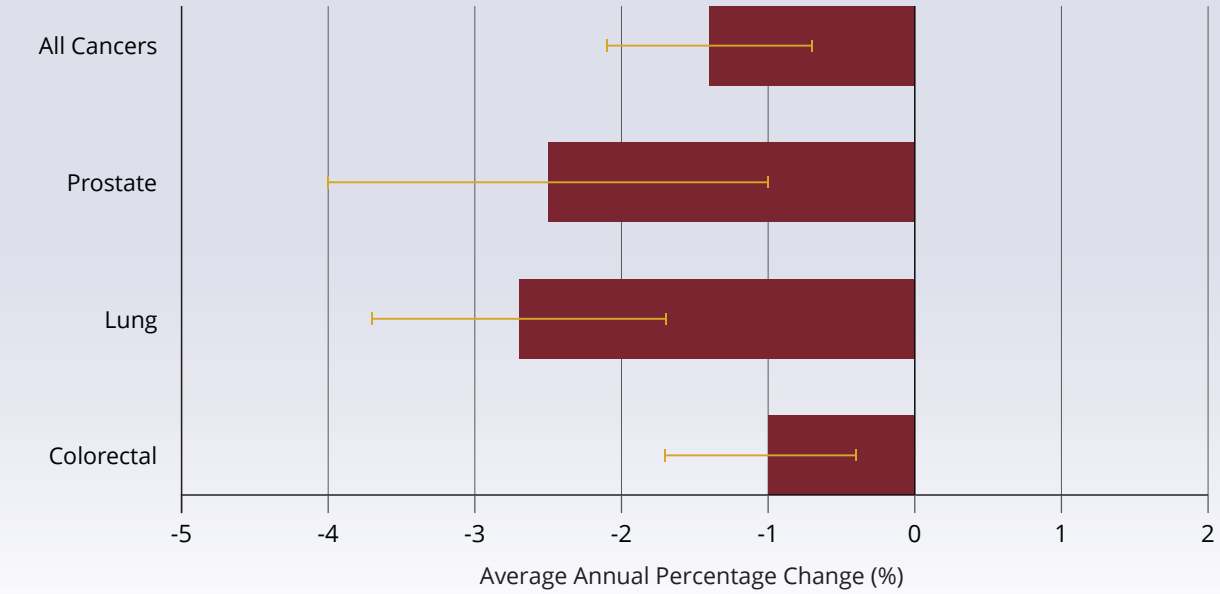


Figure 32: Average Annual Percentage Change (AAPC) in Age-Standardized Mortality Rates* for All Cancers and the Three Leading Cancers, Males, NB, 2004-2018

MALE MORTALITY



*: Age-standardized to the 2011 Canadian population estimates.

Figure 33: Average Annual Percentage Change (AAPC) in Age-Standardized Incidence Rates* for All Cancers and the Three Leading Cancers, Females, NB, 2004-2018

FEMALE INCIDENCE

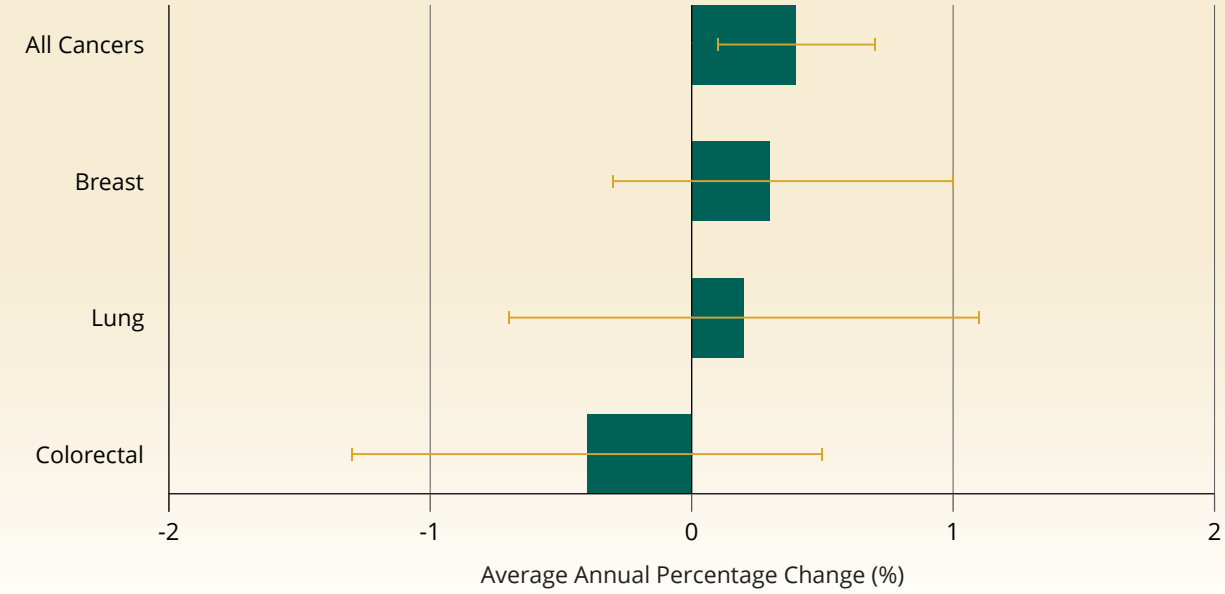
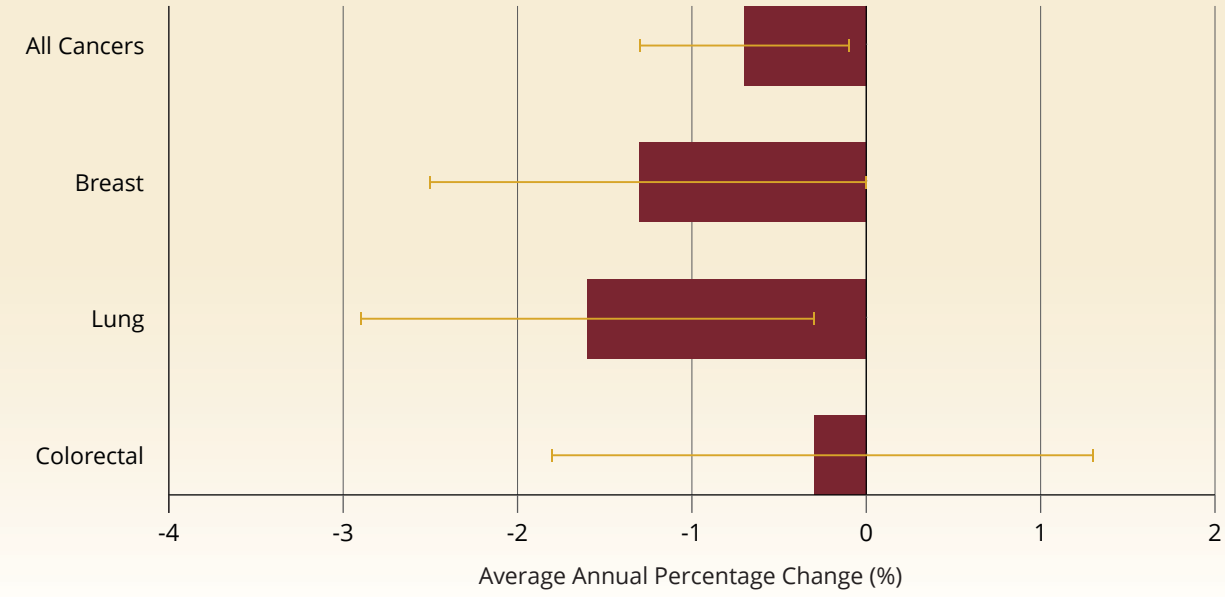


Figure 34: Average Annual Percentage Change (AAPC) in Age-Standardized Mortality Rates* for All Cancers and the Three Leading Cancers, Females, NB, 2004-2018

FEMALE MORTALITY



*: Age-standardized to the 2011 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 date i.e., index date. Two different types of prevalence are commonly used: total prevalence and limited-duration prevalence. Limited-duration prevalence, meaning prevalent cases diagnosed within a specified number of years prior to the index date,[12] will be addressed in this report.

Cancer prevalence is a composite index of both incidence and survival from the disease. In New Brunswick, as the number of newly diagnosed cases continues to rise and with an improved survival, along with significant decrease in mortality for many cancers, cancer prevalence becomes one of the key indicators for cancer-related health care services, social services and health resource allocation.

Prevalence can be calculated 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).[12] 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.[21] In this report, tumour-based and person-based prevalences for New Brunswick will be analyzed by cancer type, sex and health region.

3.6.1 TUMOUR-BASED PREVALENCE

Among people alive on January 1, 2018 in New Brunswick, a total of 26,222 primary cancer cases (13,441 for males and 12,781 for females) had been diagnosed in the previous ten years for all cancers (Table 17).

By cancer type:

- Around 57.6% (15,115/26,222) of all 10-year prevalent cases were mainly prostate (19.8%, 5,182/26,222) or breast (18.0%, 4,726/26,222), followed by colorectal (12.6%, 3,305/26,222) and lung cancers (7.3%, 1,902/26,222).
- Despite the higher incidence of lung cancer in the study period, the number of 10-year prevalent colorectal cancer cases were about 1.7 times greater, which reflects a poor prognosis for those diagnosed with lung cancer.

By sex:

- Prostate (38.6%, 5,182/13,441), colorectal (14.0%, 1,876/13,441) and lung cancers (6.8%, 908/13,441) accounted for 59.3% (7,966/13,441) of all prevalent cases in males.

- Breast (37.0%, 4,726/12,781), colorectal (11.2%, 1,429/12,781) and lung cancers (7.8%, 994/12,781) consisted of 55.9% (7,149/12,781) of all prevalent cases in females.

By health region:

- As of January 1, 2018, the percentages of 10-year prevalent cancer cases were as follows: HR1: 29.0% (7,610/26,222), HR2: 22.8% (5,968/26,222), HR3: 19.1% (5,011/26,222), HR4: 6.8% (1,776/26,222), HR5: 3.8% (998/26,222), HR6: 11.5% (3,007/26,222) and HR7: 7.1% (1,863/26,222). Larger HRs (HR1, HR2 and HR3) consisted of 70.9% (18,589/26,222) of all prevalent cases in New Brunswick.

3.6.2 PERSON-BASED PREVALENCE

Table 18 represents the 10-year person-based prevalence for all cancers and the four leading cancers (prostate, breast, lung and colorectal) for those who were alive on January 1, 2018.

By cancer type:

- More than half of the 10-year prevalent cases (55.4%, 12,130/21,915) were primarly prostate (20.0%, 4,382/21,915) or breast (17.6%, 3,847/21,915), followed by colorectal (11.6%, 2,538/21,915) and lung cancer (6.2%, 1,363/21,915).
- Like the tumour-based prevalence ratio where the number of prevalent colorectal cancer cases was about 1.7 times greater than that of lung cancer, the person-based ratio between these two cancers was around 1.9, which again reflects the poor prognosis for people diagnosed with lung cancer.

By sex:

- Prostate (38.8%, 4,382/11,291), colorectal (12.9%, 1,458/11,291) and lung cancers (5.6%, 633/11,291) accounted for 57.3% (6,473/11,291) of all prevalent cases in males.
- Breast (36.2%, 3,847/10,624), colorectal (10.2%, 1,080/10,624) and lung cancers (6.9%, 730/10,624) accounted for 53.3% (5,657/10,624) of all prevalent cases in females.

By health region:

- As of January 1, 2018, the percentages of 10-year prevalent cancer cases were as follows: HR1: 29.1% (6,374/21,915), HR2: 22.1% (4,833/21,915), HR3: 19.2% (4,211/21,915), HR4: 7.0% (1,543/21,915), HR5: 3.8% (839/21,915), HR6: 11.8% (2,575/21,915) and HR7: 7.0% (1,540/21,915). Larger HRs (HR1, HR2 and HR3) consisted of 70.4% (15,418/21,915) of all prevalent cases in New Brunswick.

3.7 RELATIVE SURVIVAL RATIO FOR SELECTED CANCERS

3.7.1 FIVE-YEAR RELATIVE SURVIVAL RATIO 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 cancer types by patient age and cancer stage at diagnosis, survival estimates can be used to establish priority areas for improving prognosis.[22] Examined over time and in conjunction with incidence and mortality trends, survival estimates represent an important indicator of progress in cancer control.[23] 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 the individuals diagnosed with cancer to the survival expected for people in the same general population.[24] 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 actual 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. Since the age of the patient at diagnosis was observed as being an important prognostic factor, the RSRs for selected cancers were also stratified by age at diagnosis (0-44, 45-49, 50-74 and 75+).

In this report, the five-year RSRs were calculated for all cancers as well as for the four leading cancers i.e., lung, colorectal cancers for both sexes, prostate cancer for males and breast cancer for females. As discussed in Chapter 2 *Relative Survival Ratio* section, data using the same cancer stage coding scheme, i.e., *Collaborative Staging* between 2013 and 2017, are analyzed to examine patient survival experience.

Overall, the five-year RSR of all cancers was 60.3% for males and 63.8% for females, respectively. In males, for the three leading cancers, the five-year RSR was highest for prostate cancer (95.1%), followed by colorectal cancer (66.0%) and lung cancer (18.2%) (Figure 35 and Table 19). In females, for the three leading cancers, the highest five-year RSR was for breast cancer (89.4%), followed by colorectal cancer (63.5%) and lung cancer (26.3%) (Figure 36 and Table 20).

The estimated five-year RSRs (prostate: 95.1%; female breast: 89.4% and female colorectal cancer: 63.5%) (Tables 19 and 20) were similar to the 5-year Canadian estimates (prostate: 93.0%, female breast: 88.0%, females colorectal: 65.0%).[19] In general, the five-year RSRs tended to be poorer

among those diagnosed at an older age (Tables 19 and 20). 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.[25] Significant differences in the five-year RSR estimates were observed for prostate and female breast cancers when the data analysis was stratified by four different age groups (0-44, 45-49, 50-74 and 75+) (Tables 19 and 20). For example, the five-year RSR of prostate cancer patients aged 50-74 years was 99.4% (95%CI: 98.1, 99.8), which was significantly higher than the survival rate of those who were 75 years or older (65.8%, 95%CI: 55.5, 74.3).

Figure 35: Five-Year Relative Survival Ratios for Selected Cancers with 95% Confidence Intervals (I), Males, NB, 2013-2017

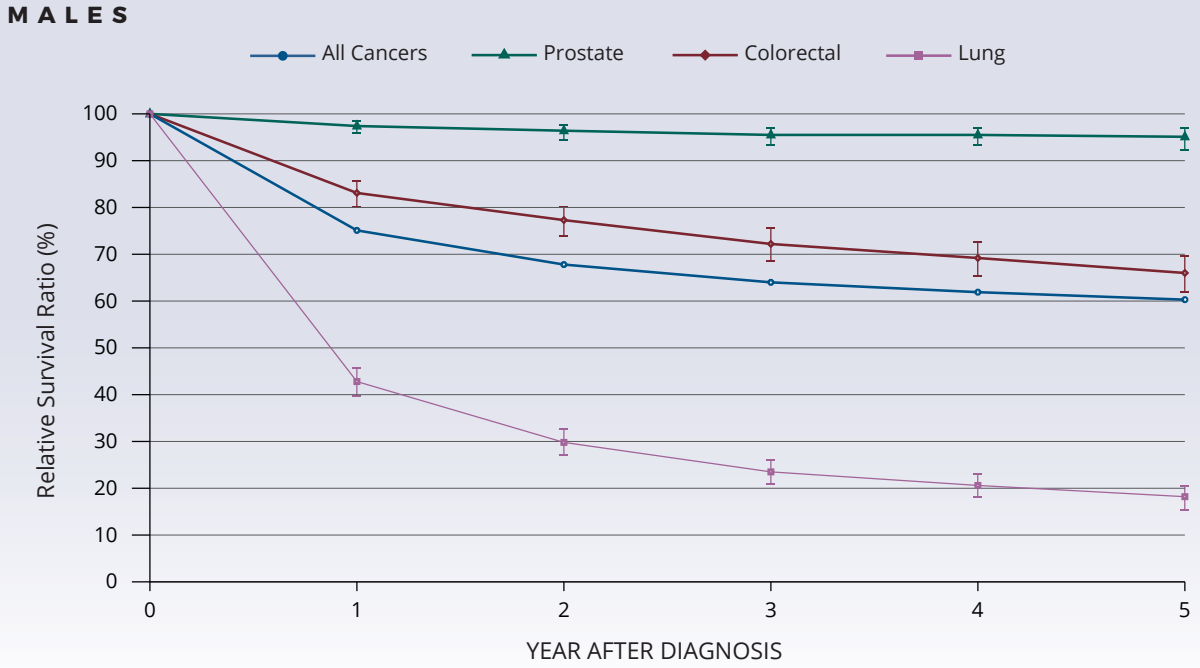
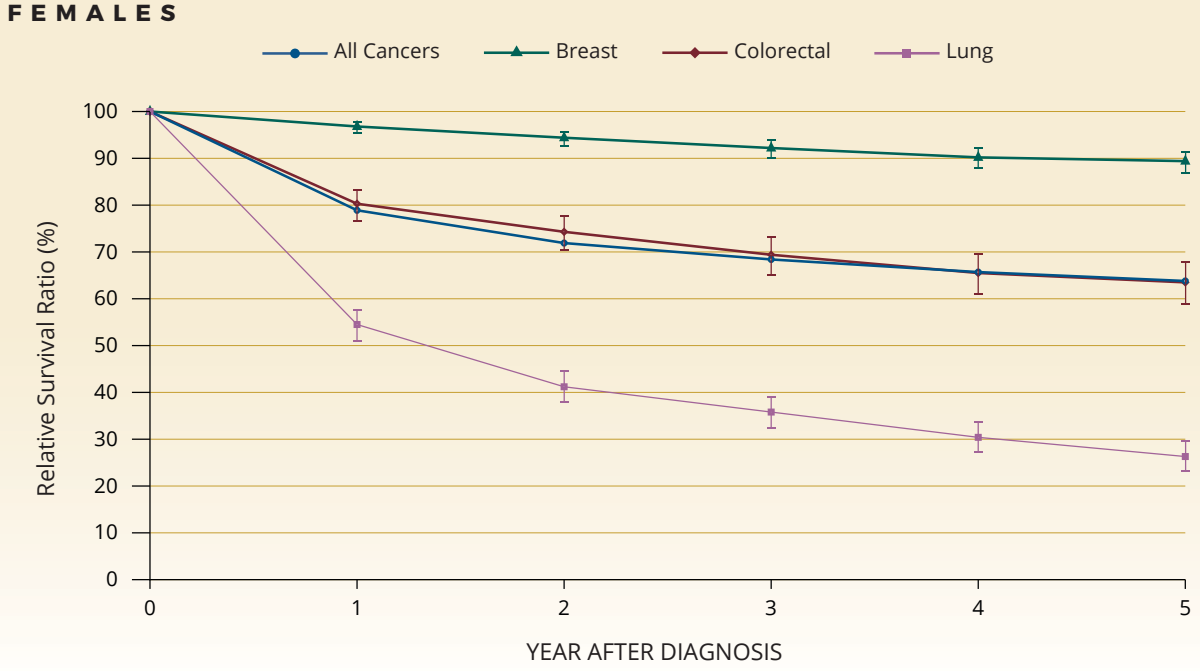


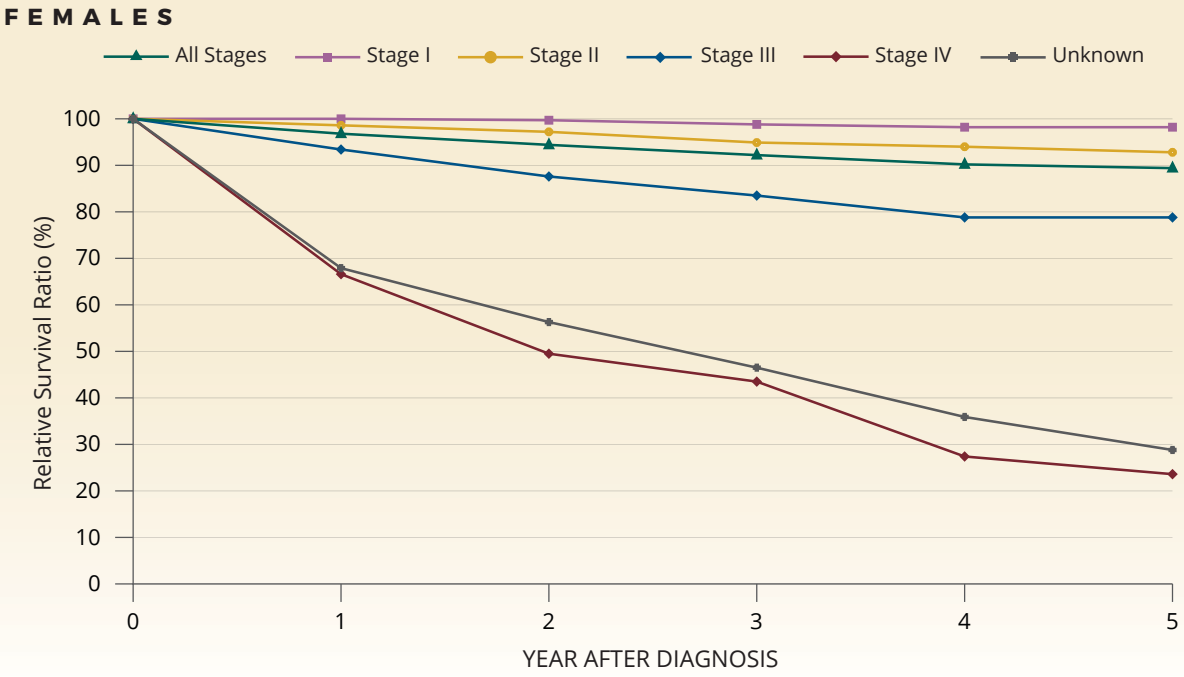
Figure 36: Five-Year Relative Survival Ratios for Selected Cancers with 95% Confidence Intervals (I), Females, NB, 2013-2017



3.7.2 FIVE-YEAR RELATIVE SURVIVAL RATIO FOR THE FOUR LEADING CANCERS BY STAGE*

As stated previously, the stage of tumour at diagnosis is an important determinant of cancer survival. The results showed that both males and females had more favorable survival rates when the cancer was detected at an early stage (Table 21). Detailed RSRs for the four leading cancers by sex and cancer stages (All Stages, and Stages I to IV) are illustrated in Figures 37 to 42 and Table 21.

Figure 37: Five-Year Relative Survival Ratios for Female Breast Cancer by Stage, NB, 2013-2017



*: Collaborative Staging.

Figure 38: Five-Year Relative Survival Ratios for Prostate Cancer by Stage, NB, 2013-2017

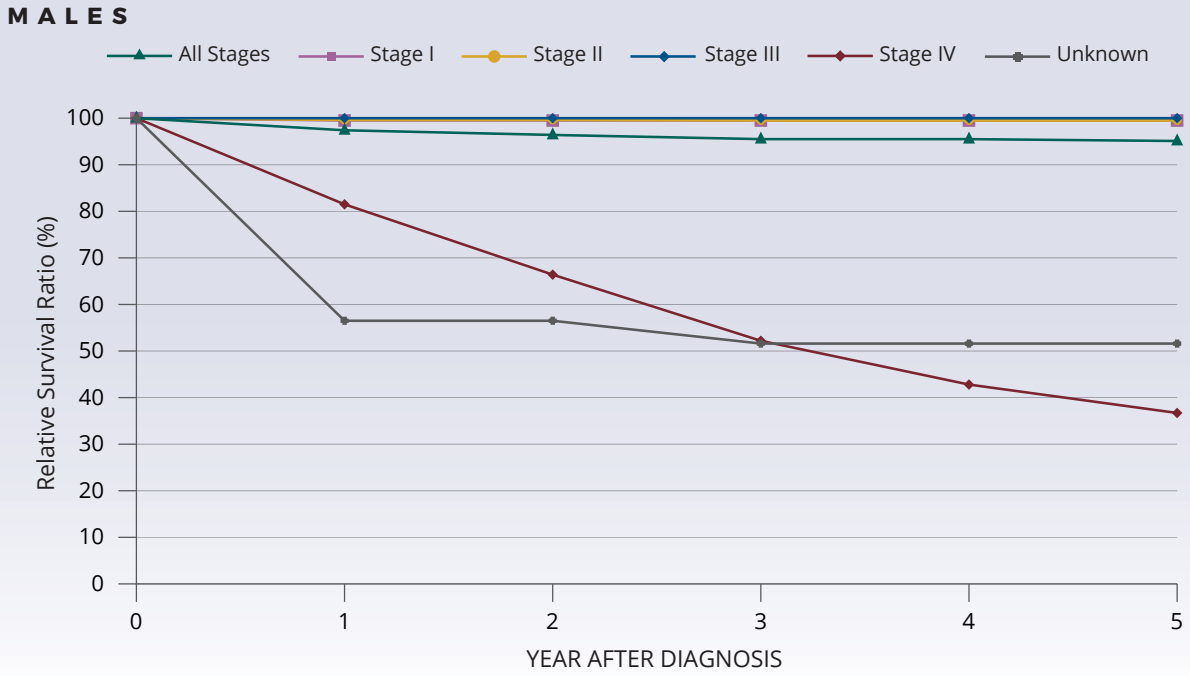


Figure 39: Five-Year Relative Survival Ratios for Male Colon Cancer by Stage, NB, 2013-2017

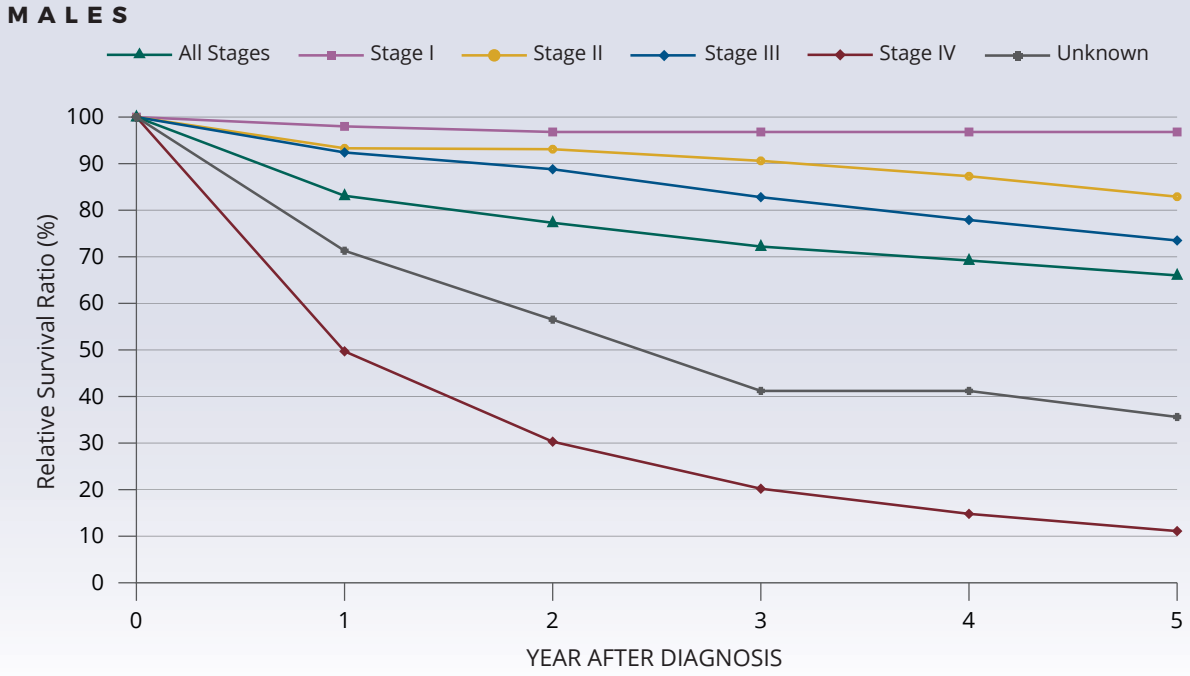


Figure 40: Five-Year Relative Survival Ratios for Female Colon Cancer by Stage, NB, 2013-2017

FEMALES

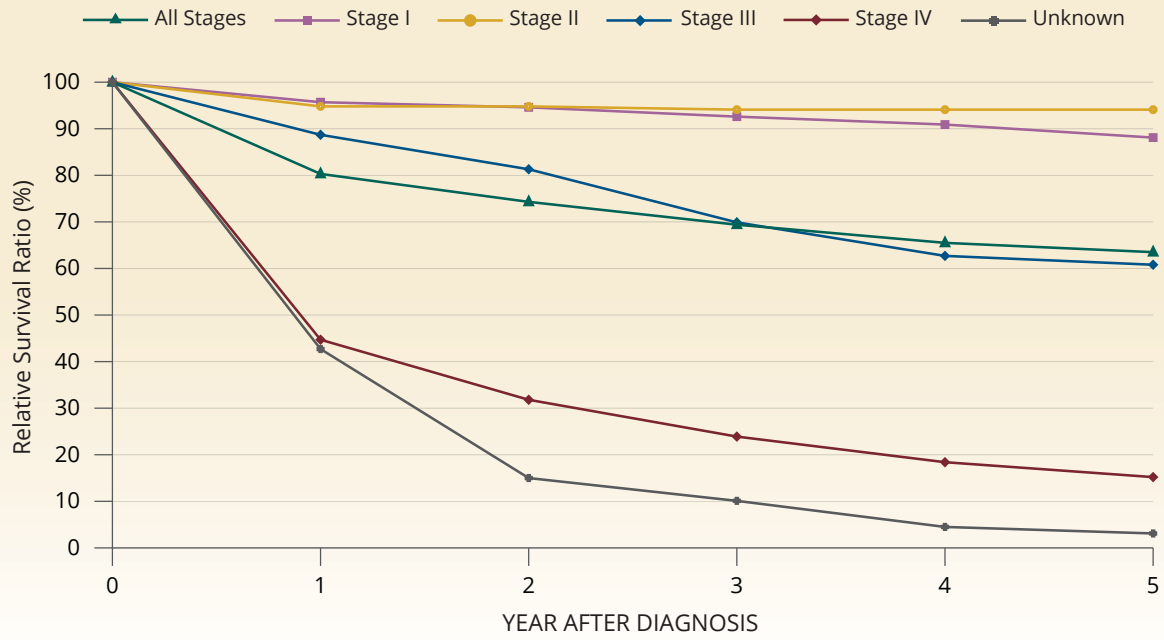


Figure 41: Five-Year Relative Survival Ratios for Male Lung Cancer by Stage, NB, 2013-2017

MALES

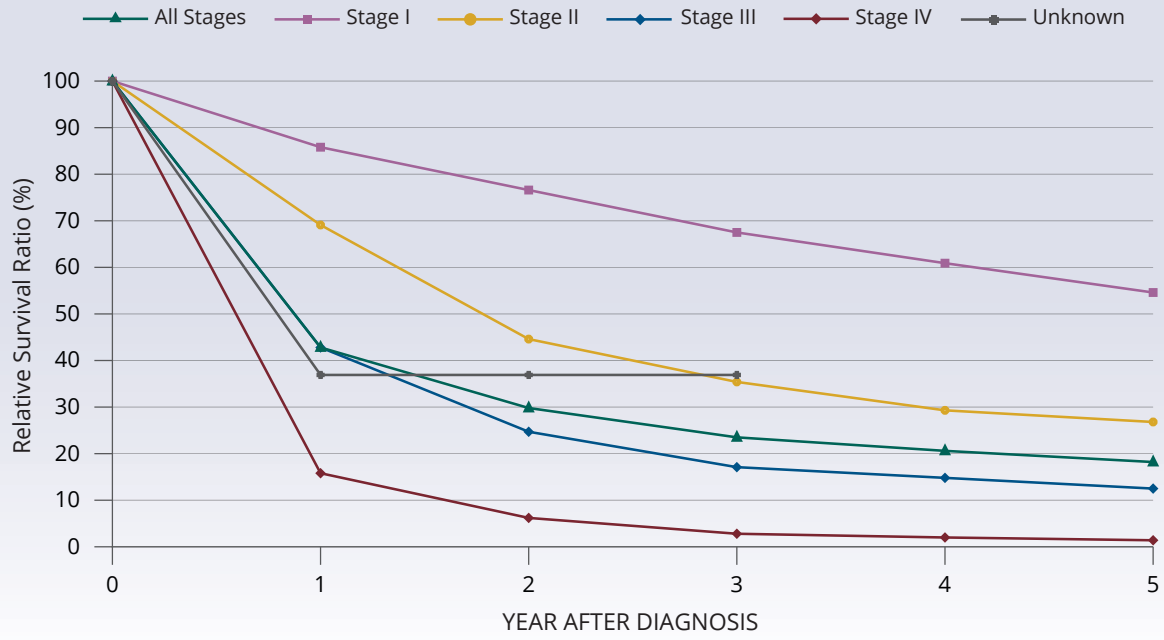
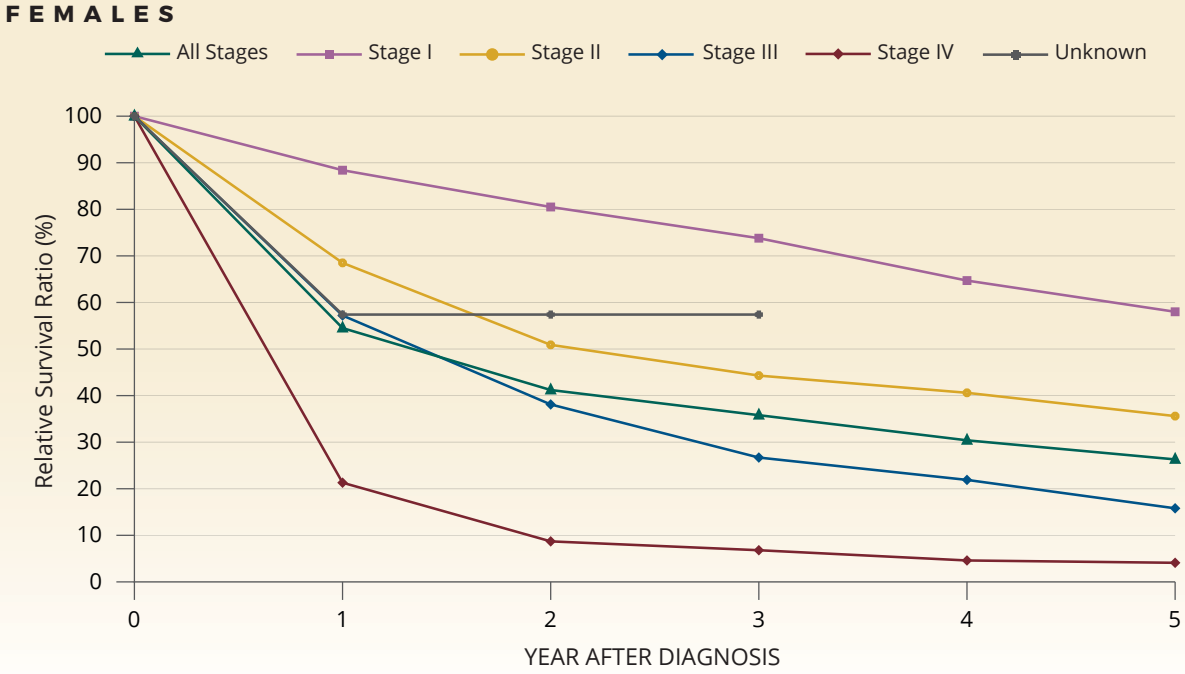


Figure 42: Five-Year Relative Survival Ratios for Female Lung Cancer by Stage, NB, 2013-2017



Conclusions and Discussions

The current statistics show continued improvements in cancer mortality for many cancer sites when compared to the last reporting period i.e., 2007-2013. Cancer prevalence is also reported to provide useful information for health planning and health resource allocation. It is projected [26] that there will be about 7,000 new cancer cases per year between 2028 and 2032 in New Brunswick, which represents a 38.2% increase from the 2018 actual counts. The burden of cancer in New Brunswick will continue to grow, especially with our rapidly aging population.

One of the long-term goals of the New Brunswick Cancer Network is to reduce the incidence and mortality of cancer and improve health outcomes for people affected by cancer. Establishing a comprehensive cancer surveillance system is an effective way to achieve this goal through continuous communication of statistical evidence to the public to increase awareness of the magnitude of cancer burden and support implementation of high quality and more cost-effective cancer control in New Brunswick. As an integral part of this surveillance system, we have focused our data analysis from health region to census division, i.e., county in New Brunswick, to enable us to monitor cancer trends or potential cancer clusters at finer geographic areas.

Cancer affects many New Brunswickers, whether as a patient, family member, friend, neighbor or coworker. With an inevitable increase in new cancer cases and a growing cancer survivor population, 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 to improve the quality of life for those affected by cancer.

Raising public awareness of the benefits of cancer prevention and early detection is essential in reducing the cancer burden. Continued public-oriented awareness campaigns on promoting health lifestyles and informed decision-making on health behaviors as well as cancer screening would be a major focus of future efforts in cancer prevention.

Special Topic

Evaluation of NB Data in the *Experiences of Cancer Patients in Transition Study (Transition Study)*

Special Topic

EVALUATION OF NB DATA IN THE EXPERIENCES OF CANCER PATIENTS IN TRANSITION STUDY (TRANSITION STUDY)

Introduction

This report is produced using data from the national *Experiences of Cancer Patients in Transition Study (Transition Study)* conducted in 2016 by the Canadian Partnership Against Cancer (CPAC) in collaboration with the ten Canadian provincial cancer agencies / programs. The purpose of the study was to provide better understanding of the cancer patients experiences as they transition from the cancer care system following treatment (e.g., surgery, chemotherapy, radiotherapy and etc.) to the broader health care and support system (e.g., primary care, community-based care and rehabilitation services).[27]

The *Transition Study* collected patient demographic information, history of cancer diagnosis, type of follow-up care and the overall experiences post-cancer treatment including physical, emotional and practical challenges facing people living with cancer diagnosis.

This special report is focused on the NB data using selected questions from the *Transition Study*. We hope this first-ever study on personal experiences of cancer survivors in transition from the end of cancer treatment to follow-up care, will provide valuable information for improving person centered cancer care delivery in NB.

Methods

Study Design, Sample Selection, Survey Dissemination and Data Analysis

Study Design

The *Experiences of Cancer Patients in Transition Study* was developed by CPAC in collaboration with provincial cancer agencies or programs across ten Canadian Provinces. The survey was designed to examine the needs of cancer survivors between one and three years following the end of their cancer treatment. The study population and eligibility criteria included adult cancer survivors (age 30+ years) of breast, prostate, colorectal, melanoma with no metastatic spread, and selected hematological (e.g., Hodgkin's Lymphoma, Diffuse B-cell Lymphoma, Acute Myelogenous Leukemia and Acute Lymphocytic Leukemia) cancers; and adolescents and young adults between the ages of 18 to 29 years with all non-metastatic cancer types except testes where metastatic disease was included.[27] A governance structure, i.e. a national Expert Panel and an ad-hoc working group, including representatives from each provincial cancer agency / program, was established to oversee the process of strategic planning, survey design, survey dissemination and communication. The survey questionnaire was comprised of 83 closed and open-ended questions.

Sample Selection

The study population was selected through probability sampling. The required sample size for each cancer site was calculated based on an assumption of 30% response rate as well as a margin of sampling error of ±5% at 95% confidence. Thus, a list of eligible cancer patients was drawn from NB Provincial Cancer Registry (NBPCR) and linked to treatment data to confirm that treatment had occurred. To achieve desired study power and precision in disease sites (e.g., hematological cancers) without significant survivors, all eligible survivors were selected to participate in the survey; for larger disease sites (i.e. prostate), a random sample within the disease site was chosen. A total of 2,931 NB cancer patients were selected and 1,166 of them completed the survey questionnaire, giving an overall response rate of 39.8% compared to a 33.3% national response rate.[27]

Survey Dissemination

The New Brunswick Cancer Network (NBCN) mailed a survey package, in both official languages, to the residence of each of the survivors drawn from the NBPCR. The survey package contained (1) a cover letter with a description of the study objectives and confidentiality agreement; (2) the survey questionnaire with a pre-printed barcode and associated PIN; and (3) a pre-addressed, pre-paid return envelope. Cancer patients / survivors also had a choice to complete the survey online in real time and contact the Transition Study Coordinator by phone with any questions or concerns.

Data Analysis

To increase the comparability across sub-categories of individual survey questions, the frequency or percentage of each categorical variables was calculated in accordance with the total valid responses to the question. Additionally, for questions designed with a hierarchical ordering, for example, Question 34 (*how much was the physical change a concern for you?*), Question 35 (*did you seek help for this concern?*) and Question 36 (*how easy was it to get help for this concern?*) in Table S3, the valid responses from the previous question serve as the denominator for the next question in column percentage calculation. All data analyses were performed with SAS 9.4 [28] and Power BI [29] from Microsoft Corporation.

Results

In total, 1,166 respondents from the *Transition Study* were included in this data analysis. Among them, 51.4% (599/1,166) were females and 47.9% (558/1,166) were males (Table S1). Most respondents (77.5% [904/1,166]) rated their overall quality of life as *Very Good* (34.6% [403/1,166]) to *Good* (43.0% [501/1,166]), 19.7% (230/1,166) as *Fair* and 2.2% (26/1,166) as *Poor to Very Poor* (Table S1). Approximately 20.9% (244/1,166) of respondents reported that they had regular help with *Household Chores*, A*ppointments* and *Finances* and 77.3% (901/1,166) answered *No help* needed.

Breast cancer (32.5% [379/1,166]), colorectal cancer (22.0% [257/1,166]), prostate cancer (23.7% [276/1,166]) and melanoma skin cancer (9.6% [112/1,166]) survivors constituted the largest

respondent group (Table S1). Of note, 87.9% (1,025/1,166) reported that their cancer diagnosis occurred between 2012 and 2014. The majority (76.3% [890/1,166]) received their last cancer treatment (e.g., surgery, radiation, chemotherapy or hormonal therapy) in the last 5 years and 18.7% (218/1,166) indicated that they had not received any form of cancer treatment.

Overall, 9.4% (110/1,166) of respondents reported that their *family doctors* oversee the follow-up cancer care, 48.5% (565/1,166) stated it was their *oncologist/hematologist/surgeon/other cancer specialist*, 35.1% (409/1,166) stated it was both *family doctor* and *specialist* and 2.5% (29/1,166) indicated *no one* had been involved in their follow-up care after completing their cancer treatment. More detailed demographics of respondents in the *Transition Study* are highlighted in Table S1.

Data related to receiving information, internet use and experiencing physical, emotional and practical challenges are examined and reported in the next section.

Experience with Receiving Information after Completing Cancer Treatment

Table S2 describes the overall experience of participants related to receiving information after completing cancer treatment. Details are illustrated below:

• *Was the Information available to me when I needed it?*

In total, 87.0% (1,014/1,166) of participants answered the question. Among them, 60.0% (608/1,014) of respondents *strongly agreed* that the required information was available; 29.4% (298/1,014) *somewhat agreed*; 6.9% (70/1,014) *neither agreed nor disagreed* and 3.8% (38/1,014) *somewhat* to *strongly disagreed*.

• *Was I given information that was useful to me?*

Approximately 85.8% (1,000/1,166) of participants provided answers to the question. Specifically, 58.9% (589/1,000) *strongly agreed* that the given information was useful; 30.1% (301/1,000) *somewhat agreed*; 6.8% (68/1,000) *neither agreed nor disagreed* and 4.2% (42/1,000) *somewhat* to *strongly disagreed*.

• *Was I given information in my preferred language?*

Around 85.8% (1,000/1,166) of participants answered the question. Of those, 85.9% (859/1,000) *strongly agreed* that they were given the information in their preferred language; 10.7% (107/1,000) *somewhat agreed*; 2.1% (21/1,000) *neither agreed nor disagreed* and 1.3% (13/1,000) *somewhat* to *strongly disagreed*.

• *Was I given information about signs of cancer returning?*

About 81.0% (945/1,166) of participants responded to the question. Particularly, 39.5% (373/945) *strongly agreed* that they were provided information about signs of cancer returning; 25.9%

(245/945) *somewhat agreed*; 15.0% (142/945) *neither agreed nor disagreed* and 19.6% (185/945) *somewhat* to *strongly disagreed*.

• *Was I given information about the side effects of treatment?*

About 76.2% (889/1,166) of participants provided answers to the question. Of those who answered the question, 53.4% (475/889) *strongly agreed* that they had received information about the side effects of treatment; 28.8% (256/889) *somewhat agreed*; 6.9% (61/889) *neither agreed nor disagreed* and 10.9% (97/889) *somewhat* to *strongly disagreed*.

• *Was I given information about community resources?*

Overall, 65.3% (761/1,166) of participants gave their answers to the question. Among them, 31.3% (238/761) *strongly agreed* that they were given community resources information; 26.0% (198/761) *somewhat agreed*; 19.4% (148/761) *neither agreed nor disagreed* and 23.3% (177/761) *somewhat* to *strongly disagreed*.

Physical Challenges

Physical challenges related to cancer diagnosis included questions about swelling, fatigue, hormonal changes, chronic pain, bladder/urinary problems, gastrointestinal problems, nerve damage, sexual dysfunction, and memory problems. Table S3 shows high percentages (from 87.2% [1,017/1,166] to 91.3% [1,065/1,166]) of participants answered questions on physical symptoms of *hormonal, menopause or fertility* to *fatigue/tiredness*. The most common symptoms across all cancer sites were *fatigue/tiredness* (69.6% [741/1,065]), followed by *changes in sexual activity or function* (44.0% [467/1,062]), *changes to concentration or memory* (39.1% [411/1,050]) and *numbness or tingling* (37.6% [395/1,052]). The lowest percentage was observed for individuals who had s*welling of arms or legs* (23.5% [241/1,027]) as a physical symptom.

Of the respondents who were concerned about a physical symptom, *changes in sexual activity or function* (46.7% [218/467]), *hormonal, menopause or fertility* (38.5% [105/273]), and *fatigue/tiredness* (34.0% [252/741]) were the three leading "big" concerns (Table S3). *Gastrointestinal problems* (62.1% [241/388]), *swelling of arms or legs* (61.0% 147/241]) and *chronic pain or long-term pain* (60.6% [214/353]) were the symptoms for which respondents most frequently sought help.

The majority of respondents i.e., from 60.2% (124/206) with *numbness or tingling* to 83.2% (173/208) with *bladder and/or urinary problems* rated their experience of seeking help as "easy"; however, approximately 23.0% (31/135) of respondents who sought help for *hormonal, menopause or fertility* symptoms described theirs as "hard". Additionally, the percentage of respondents who didn't obtain any help varied from one symptom to another e.g., 5.3% (11/208) of respondents who sought help for *bladder and/or urinary problems* to 18.0% (37/206) for *numbness or tingling* symptoms, even though the actual counts were relatively small (Table S3).

Emotional Changes

Emotional challenges included a variety of issues, such as depression, anxiety, altered body image, and changes in relationships. Approximately 65.6% (660/1,006) of respondents reported that *anxiety, stress, worry about cancer returning* was the main emotional concern, followed by *depression, sadness, loss of interest in everyday things* (45.3% [443/977]) and *changes in sexual intimacy* (40.7% [433/1,063]) (Table S4). Of those who were concerned about an emotional problem, 40.2% (174/433) identified *changes in sexual intimacy* as the greatest concern. Among them, 28.4% (123/433) of respondents sought help and, 67.5% (83/123) rated their experience of obtaining help as "easy"; nevertheless, 20.3% (25/123) of those who sought help indicated that it was difficult to get help (Table S4). Overall, similar to Table S3, the actual counts or percentages of respondents stating they did not receive any help for their emotional problems were fairly small (Table S4).

Practical Challenges

Practical challenges contained questions on *returning to work or school, getting to and from appointments, difficulty getting health or life insurance, financial issues, and childcare or eldercare*. Table S5 shows that *paying health care bills* (23.9% [250/1,047]), *getting to and from appointments* (21.9% [232/1,058]) and *returning to work or school now or in the future* (19.3% [201/1,040]) were the top three practical challenges. Of those who faced a practical challenge, *difficulty getting health or life insurance* (42.2% [57/135]) was identified as a leading "big" concern, followed by *returning to work or school now or in the future* (36.8% [74/201]) and *paying health care bills* (26.4% [66/250]) (Table S5). Of those who had a practical challenge, 36.2% (84/232]) of respondents sought help on *getting to and from appointments*, 35.6% (48/135) for *difficulty getting health or life insurance* and 34.0% (85/250) for *paying health care bills*. The majority who sought help rated their experience of getting help as "easy" except for those who faced *difficulty getting health or life insurance* practical challenge, where 17 respondents (35.4% [17/48]) reported that they experienced difficulty in obtaining help and 13 (27.1% [13/48]) of them did not receive any help.

Internet Use

Frequencies on internet use and use of social networking sites on the internet such as Facebook and Twitter were collected in the *Transition Study*. About 52.6% (573/1,089) of respondents identified themselves as *every day* internet users, 12.8% (139/1,089) opted for response *2-3 times a week* and 25.3% (275/1,089) stated they had *never* used it (Table S6). A significant percentage of respondents (47.5% [510/1,074]) indicated that they had *never* used social networking sites such as Facebook or Twitter, while 32.7% (351/1,074) stating that they used them *every day* while 10.0% (107/1,074) used them *2-3 times a week* (Table S6).

Discussions and Recommendations

Our results are comparable to the national data [30,31] when examining the distribution of cancer site, age, gender and other characteristics of the respondents (Table S1). Over 80% of participants agreed that

the *Given Information* after cancer treatment were useful and in their preferred languages; however, the percentages of reporting *somewhat to strongly disagree* on *information about community resources* and *information about signs of cancer returning* were relatively high (Table S2). This supports the anticipated need that more patient information should be provided throughout the cancer journey.

The hierarchical order of concerns expressed with physical changes were consistent with the national data. They were: *fatigue*, *changes in sexual activity*, *changes in concentration or memory*, *gastrointestinal problems* and *nervous system problems*. Consistency with the national data was also identified for emotional changes, the most reported being *depression, sadness, loss of interest in everyday things* and *anxiety, stress, worry about cancer returning*. When analyzing practical concerns, the portrait is different, as the top three concerns in New Brunswick were: *paying health care bills*, *getting to and from appointments* and *returning to work or school now or in the future*, whereas at the national level, *returning to work or school now or in the future* was the first, followed by *getting to and from appointments* and *taking care of children, elders, or other family members*. This provides a view of priority areas in NB where systematic supports may be required throughout the cancer journey.

The top areas for patients to seek help for physical concerns and emotional changes were identical to the national observations,[31] specifically *gastrointestinal problems*, *swelling of arms or legs* and *chronic or long-term pain* for physical concerns and *anxiety, stress, worry about cancer returning; depression, sadness, loss of interest in everyday things* and *changes in sexual intimacy* for emotional changes.

NB results highlighted the difficulties of getting help (Tables S3 to S5). For example, the top three challenging areas were identified for physical concerns: *hormonal menopause or fertility*, *changes to concentration or memory* and *chronic or long-term pain*. *Changes in relationships with family partners*, *changes in sexual intimacy* and *changes in relationships with friends or coworkers* were of concern for emotional changes and, *paying health care bills*, *difficulty getting health or life insurance* and *taking care of children, elders or other family members* ranked highest for practical concerns. These challenges again unveil the need for more organized support towards the patients throughout their cancer journey.

In 2017-2018, the New Brunswick Cancer Network conducted a community consultation to facilitate the design and implementation of the Cancer Patient Navigation Program in NB. The concerns reported by the participants of this community consultation are consistent with the findings reported in the *Transition Study.* Implementation of the Cancer Patient Navigation Program and the Palliative Care Strategy in cooperation with key stakeholders across the province are currently underway with a goal to

- facilitate coordination of services and continuity of care;
- provide information, education and support; and,
- match needs with available resources and services within the healthcare system and the community.

Table S1: Description of NB respondents (N=1,166) in *Transition Study*

Characteristics	n	%
Sex		
Male	558	47.9
Female	599	51.4
Prefer not to answer	9	0.7
Age		
44-	41	3.5
45-64	346	29.7
65-74	482	41.3
75+	290	24.9
Prefer not to answer	7	0.6
Marital status		
Single	66	5.7
Married/Partnered	823	70.6
Separated/Divorced/Widowed	263	22.5
Prefer not to answer	14	1.2
Education		
High school or less	516	44.3
College or undergraduate degree	542	46.5
University graduate degree	63	5.4
Prefer not to answer	15	1.3
Missing	30	2.5
Place of residence		
On an acreage, ranch or farm	139	11.9
In a town (less than 10,000 people)	444	38.1
In a small city (10,000 to 50,000 people)	275	23.6
In a large city (more than 50,000 people)	258	22.1
Missing	50	4.3
Employment		
Employed (full-time, part-time, paid sick leave)	296	25.4
Homemaker & full-time student	39	3.4
Retired	756	64.8
Unemployed	33	2.8
Prefer not to answer	42	3.6

Characteristics	n	%
Annual Household Income before Taxes (CAD)		
<$25,000	220	18.9
$25,000-$50,000	310	26.6
$50,000-$75,000	154	13.2
>$75,000	177	15.2
Prefer not to answer	255	21.9
Missing	50	4.2
Type of cancer		
Breast	379	32.5
Colorectal (colon and rectal)	257	22.0
Prostate	276	23.7
Melanoma skin cancer	112	9.6
Blood cancer/hematological	75	6.4
Other	67	5.7
Missing	71	6.0
Metastases		
Metastatic including spread after diagnosis	89	7.7
No metastatic	885	75.9
Unsure	124	10.6
Missing	68	5.8
Type of treatment received		
Surgery	740	63.5
Chemotherapy (intravenous or oral)	404	34.6
Drug therapy (immunotherapy/hormone therapy)	261	22.4
Radiation therapy	518	44.4
Alternative medicine	14	1.2
No treatment and No treatment under surveillance	70	6.0
Other	20	1.7
Missing	45	3.9
Comorbidities		
Cardiovascular or heart condition, hypertension or high blood pressure	376	32.2
Chronic kidney disease	12	1.0
Diabetes	155	13.3
Respiratory diseases	97	8.3
Mental health issues	116	9.9

Characteristics	n	%
Arthritis, osteoarthritis or other rheumatic disease	351	30.1
Osteoporosis	70	6.0
Other chronic condition	139	11.9
No chronic conditions	361	31.0
Missing	54	4.6
General physical health		
Very good	243	20.8
Good	575	49.3
Fair	289	24.8
Poor	44	3.8
Very poor	8	0.7
Missing	7	0.6
General emotional health		
Very good	323	27.7
Good	522	44.8
Fair	201	17.2
Poor	39	3.3
Very poor	6	0.5
Missing	75	6.5
Overall quality of life		
Very good	403	34.5
Good	501	43.0
Fair	230	19.7
Poor	22	1.9
Very poor	4	0.3
Missing	6	0.5

Table S2: Overall experience with *Given Information* after completing cancer treatment among NB respondents (N=1,166) in *Transition Study*

Given Information (GI)	# of respondents who answered question n	# of respondents indicating strongly agree n (%)	# of respondents indicating somewhat agree n (%)	# of respondents indicating neither agree nor disagree n (%)	# of respondents indicating disagree from somewhat to strongly disagree n (%)
Information was available to me when I needed it	1,014	608 *(60.0%)*	298 *(29.4%)*	70 *(6.9%)*	38 *(3.8%)*
I was given information that was useful to me	1,000	589 *(58.9%)*	301 *(30.1%)*	68 *(6.8%)*	42 *(4.2%)*
I was given information in my preferred language	1,000	859 *(85.9%)*	107 *(10.7%)*	21 *(2.1%)*	13 *(1.3%)*
I was given information about signs of cancer returning	945	373 *(39.5%)*	245 *(25.9%)*	142 *(15.0%)*	185 *(19.6%)*
I was given information about the side effects of treatment	889	475 *(53.4%)*	256 *(28.8%)*	61 *(6.9%)*	97 *(10.9%)*
I was given information about community resources	761	238 *(31.3%)*	198 *(26.0%)*	148 *(19.4%)*	177 *(23.3%)*

Table S3: *Physical Symptoms (PS)* of NB respondents (N=1,166) in *Transition Study*

Physical Symptoms (PS)	# of respondents who answered question	# of respondents indicating the PS was a concern	# of respondents indicating the PS was a concern from Big to Moderate to Small			# of those with a PS concern who sought help	# of those who sought help described their experience from Easy to Hard and No Help obtained		
		n *(%)*	*Big* n *(%)*	*Moderate* n *(%)*	*Small* n *(%)*		*Easy*† n *(%)*	*Hard*‡ n *(%)*	*No help* n *(%)*
Swelling of arms or legs	1,027	241 *(23.5%)*	56 *(23.2%)*	85 *(35.3%)*	100 *(41.5%)*	147 *(61.0%)*	119 *(81.0%)*	18 *(12.2%)*	8 *(5.4%)*
Fatigue, tiredness	1,065	741 *(69.6%)*	252 *(34.0%)*	325 *(43.9%)*	164 *(22.1%)*	254 *(34.3%)*	174 *(68.5%)*	45 *(17.7%)*	34 *(13.4%)*
Hormonal, menopause or fertility	1,017	273 *(26.8%)*	105 *(38.5%)*	79 *(28.9%)*	89 *(32.6%)*	135 *(49.5%)*	88 *(65.2%)*	31 *(23.0%)*	14 *(10.4%)*
Chronic pain or long-term pain	1,038	353 *(34.0%)*	95 *(26.9%)*	131 *(37.1%)*	127 *(36.0%)*	214 *(60.6%)*	140 *(65.4%)*	45 *(21.0%)*	26 *(12.1%)*
Bladder and /or urinary problems	1,055	366 *(34.7%)*	107 *(29.2%)*	123 *(33.6%)*	136 *(37.2%)*	208 *(56.8%)*	173 *(83.2%)*	22 *(10.6%)*	11 *(5.3%)*
Gastrointestinal problems	1,052	388 *(36.9%)*	116 *(29.9%)*	151 *(38.9%)*	121 *(31.2%)*	241 *(62.1%)*	185 *(76.8%)*	39 *(16.2%)*	13 *(5.4%)*
Numbness or tingling	1,052	395 *(37.6%)*	129 *(32.7%)*	118 *(29.9%)*	148 *(37.4%)*	206 *(52.2%)*	124 *(60.2%)*	42 *(20.4%)*	37 *(18.0%)*
Changes to concentration or memory	1,050	411 *(39.1%)*	85 *(20.7%)*	155 *(37.7%)*	171 *(41.6%)*	93 *(22.6%)*	56 *(60.2%)*	21 *(22.6%)*	14 *(15.1%)*
Changes in sexual activity or function	1,062	467 *(44.0%)*	218 *(46.7%)*	149 *(31.9%)*	100 *(21.4%)*	159 *(34.1%)*	109 *(68.6%)*	31 *(19.5%)*	18 *(11.3%)*

†: Very Easy and Easy. ‡: Hard and Very Hard.

Table S4: *Emotional Issues (EI)* of NB respondents (N=1,166) in *Transition Study*

Emotional Issues (EI)	# of respondents who answered question	# of respondents indicating the EI was a concern	# of respondents indicating the EI was a concern from Big to Moderate to Small			# of those with an EI concern who sought help	# of those who sought help described their experience from Easy to Hard and No Help obtained		
		n (%)	*Big* n (%)	*Moderate* n (%)	*Small* n (%)		*Easy*† n (%)	*Hard*‡ n (%)	*No help* n (%)
Depression, sadness, loss of interest in everyday things	977	443 *(45.3%)*	94 *(21.2%)*	163 *(36.8%)*	186 *(42.0%)*	149 *(33.6%)*	124 *(83.2%)*	19 *(12.8%)*	6 *(4.0%)*
Anxiety, stress, worry about cancer returning	1,006	660 *(65.6%)*	145 *(22.0%)*	243 *(36.8%)*	272 *(41.2%)*	192 *(29.1%)*	158 *(82.3%)*	26 *(13.6%)*	6 *(3.1%)*
Changes in relationships with family, partners	1,068	312 *(29.2%)*	64 *(20.5%)*	107 *(34.3%)*	141 *(45.2%)*	52 *(16.7%)*	34 *(65.4%)*	12 *(23.1%)*	4 *(7.7%)*
Changes in relationships with friends or coworkers	1,065	208 *(19.5%)*	25 *(12.0%)*	55 *(26.5%)*	128 *(61.5%)*	20 *(9.6%)*	15 *(75.0%)*	4 *(20.0%)*	1 *(5.0%)*
Changes in body image (confidence in appearance, etc.)	1,064	415 *(39.0%)*	94 *(22.6%)*	131 *(31.6%)*	190 *(45.8%)*	88 *(21.2%)*	61 *(69.3%)*	16 *(18.2%)*	11 *(12.5%)*
Changes in sexual intimacy	1,063	433 *(40.7%)*	174 *(40.2%)*	128 *(29.6%)*	131 *(30.2%)*	123 *(28.4%)*	83 *(67.5%)*	25 *(20.3%)*	13 *(10.6%)*

†: Very Easy and Easy. ‡: Hard and Very Hard.

Table S5: *Practical Challenges (PC)* of NB respondents (N=1,166) in *Transition Study*

Practical Challenges (PC)	# of respondents who answered question	# of respondents indicating the PC was a concern	# of respondents indicating the PC was a concern from Big to Moderate to Small			# of those with a PC concern who sought help	# of those who sought help described their experience from Easy to Hard and No Help Obtained		
		n (%)	*Big* n (%)	*Moder-ate* n *(%)*	*Small* n (%)		*Easy*† n (%)	*Hard*‡ n (%)	*No help* n (%)
Returning to work or school, now or in the future	1,040	201 *(19.3%)*	74 *(36.8%)*	69 *(34.3%)*	58 *(28.9%)*	56 *(27.9%)*	35 *(62.5%)*	15 *(26.8%)*	6 *(10.7%)*
Getting to and from appointments	1,058	232 *(21.9%)*	42 *(18.1%)*	78 *(33.6%)*	112 *(48.3%)*	84 *(36.2%)*	60 *(71.4%)*	22 *(26.2%)*	1 *(1.2%)*
Taking care of children, elders, or other family members	1,041	112 *(10.8%)*	22 *(19.6%)*	43 *(38.4%)*	47 *(42.0%)*	25 *(22.3%)*	15 *(60%)*	8 *(32.0%)*	2 *(8.0%)*
Difficulty getting health or life insurance	1,034	135 *(13.1%)*	57 *(42.2%)*	36 *(26.7%)*	42 *(31.1%)*	48 *(35.6%)*	18 *(37.5%)*	17 *(35.4%)*	13 *(27.1%)*
Paying health care bills (treatment, services, travel to appointments, assistive devices)	1,047	250 *(23.9%)*	66 *(26.4%)*	92 *(36.8%)*	92 *(36.8%)*	85 *(34.0%)*	36 *(42.4%)*	31 *(36.5%)*	17 *(20.0%)*

†: Very Easy and Easy. ‡: Hard and Very Hard.

Table S6: Frequency internet use among NB respondents (N=1,166) in *Transition Study*

Internet Use	Number of respondents who answered question	Number of times using internet					
		Every day n (%)	2-3 times a week n (%)	Once a week n (%)	Once every two weeks n (%)	Once a month or less n (%)	Never n (%)
Use the internet	1,089	573 *(52.6%)*	139 *(12.8%)*	38 *(3.5%)*	22 *(2.0%)*	42 *(3.9%)*	275 *(25.3%)*
Use social networking sites on the internet (Facebook, Twitter, etc.)	1,074	351 *(32.7%)*	107 *(10.0%)*	39 *(3.6%)*	14 *(1.3%)*	53 *(4.9%)*	510 *(47.5%)*

Appendices

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)
Oral Cavity and Pharynx		
Lip	C000-C009	excluding 9050-9055, 9140, 9590-9992
Tongue	C019-C029	
Salivary Gland	C079-C089	
Floor of Mouth	C040-C049	
Gum and Other Mouth	C030-C039, C050-C059, C060-C069	
Nasopharynx	C110-C119	
Tonsil	C090-C099	
Oropharynx	C100-C109	
Hypopharynx	C129, C130-C139	
Other Oral Cavity and Pharynx	C140, C142, C148	
Digestive System		
Esophagus	C150-C159	excluding 9050-9055, 9140, 9590-9992
Stomach	C160-C169	
Small Intestine	C170-C179	
Colon and Rectum		
Colon excluding Rectum		
Cecum	C180	excluding 9050-9055, 9140, 9590-9992
Appendix	C181	
Ascending Colon	C182	
Hepatic Flexure	C183	
Transverse Colon	C184	
Splenic Flexure	C185	
Descending Colon	C186	
Sigmoid Colon	C187	
Large Intestine, NOS	C188-C189, C260	
Rectum and Rectosigmoid Junction		
Rectosigmoid Junction	C199	excluding 9050-9055, 9140, 9590-9992
Rectum	C209	
Anus, Anal Canal and Anorectum	C210-C212, C218	
Liver and Intrahepatic Bile Duct		

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)
Liver	C220	excluding 9050-9055, 9140, 9590-9992
Intrahepatic Bile Duct	C221	
Gallbladder	C239	
Other Biliary	C240-C249	
Pancreas	C250-C259	
Retroperitoneum	C480	
Peritoneum, Omentum and Mesentery	C481-C482	
Other Digestive Organs	C268-C269, C488	
Respiratory System		
Nose, Nasal Cavity and Middle Ear	C300-C301, C310-C319	excluding 9050-9055, 9140, 9590-9992
Larynx	C320-C329	
Lung and Bronchus	C340-C349	
Pleura	C384	
Trachea, Mediastinum and Other Respiratory Organs	C339, C381-C383, C388, C390, C398, C399	
Bones and Joints	**C400-C419**	**excluding 9050-9055, 9140, 9590-9992**
Soft Tissue including Heart	**C380, C470-C479, C490-C499**	**excluding 9050-9055, 9140, 9590-9992**
Skin excluding Basal and Squamous		
Melanoma of the Skin	C440-C449	8720-8790
Other Non-Epithelial Skin	C440-C449	excluding 8000-8005, 8010-8046, 8050-8084, 8090-8110, 8720-8790, 9050-9055, 9140, 9590-9992
Breast	**C500-C509**	**excluding 9050-9055, 9140, 9590-9992**
Female Genital System		
Cervix Uteri	C530-C539	excluding 9050-9055, 9140, 9590-9992
Corpus and Uterus, NOS		
Corpus Uteri	C540-C549	excluding 9050-9055, 9140, 9590-9992
Uterus, NOS	C559	
Ovary	C569	
Vagina	C529	
Vulva	C510-C519	
Other Female Genital Organs	C570-C579, C589	
Male Genital System		
Prostate	C619	excluding 9050-9055, 9140, 9590-9992
Testis	C620-C629	
Penis	C600-C609	
Other Male Genital Organs	C630-C639	
Urinary System		

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)
Urinary Bladder	C670-C679	excluding 9050-9055, 9140, 9590-9992
Kidney and Renal Pelvis	C649, C659	
Ureter	C669	
Other Urinary Organs	C680-C689	
Eye and Orbit	**C690-C699**	**excluding 9050-9055, 9140, 9590-9992**
Brain and Other Nervous System		
Brain	C710-C719	excluding 9050-9055, 9140, 9530-9539, 9590-9992
Cranial Nerves Other Nervous System	C710-C719	9530-9539
	C700-C709, C720-C729	excluding 9050-9055, 9140, 9590-9992
Endocrine System		
Thyroid	C739	excluding 9050-9055, 9140, 9590-9992
Other Endocrine including Thymus	C379, C740-C749, C750-C759	
Lymphoma		
Hodgkin Lymphoma		
Hodgkin - Nodal	C024, C098-C099, C111, C142, C379, C422, C770-C779	9650-9667
Hodgkin - Extranodal	All other sites	
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
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
	All sites except C024, C098-C099, C111, C142, C379, C420-C422, C424, C770-C779	9811-9818, 9823, 9827, 9837
Myeloma		**9731-9732, 9734**
Leukemia		
Lymphocytic Leukemia		
Acute Lymphocytic Leukemia		9826, 9835-9836
	C420, C421, C424	9811-9818, 9837
Chronic Lymphocytic Leukemia	C420, C421, C424	9823

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)
Other Lymphocytic Leukemia		9820, 9832-9834, 9940
Myeloid and Monocytic Leukemia		
Acute Myeloid Leukemia		9840, 9861, 9865-9867, 9869, 9871-9874, 9895-9897, 9898, 9910-9911, 9920
Acute Monocytic Leukemia		9891
Chronic Myeloid Leukemia		9863, 9875-9876, 9945-9946
Other Myeloid/Monocytic Leukemia		9860, 9930
Other Leukemia		
Other Acute Leukemia		9801, 9805-9809, 9931
Aleukemic, subleukemic and NOS		9733, 9742, 9800, 9831, 9870, 9948, 9963-9964
	C420, C421, C424	9827
Mesothelioma		9050-9055
Kaposi Sarcoma		9140
Miscellaneous		9740-9741, 9750-9769, 9950, 9960-9962, 9965-9967, 9970-9971, 9975, 9980, 9982-9987, 9989, 9991-9992
	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.	

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

Underlying Cause of Death		ICD-9 Codes	ICD-10 Codes
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, 2014-2018

CANCER SITE	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**12830**	**2598**	**689.5**	***(677.6-701.5)***	**706.8**	**581.9**	***(571.7-592.3)***	**568.4**
Oral Cavity and Pharynx	**432**	**86**	**23.2**	***(21.1-25.5)***	**23.4**	**19.9**	***(18.0-21.9)***	**19.7**
Lip	30	5	1.6	*(1.1-2.3)*	1.4	1.5	*(1.0-2.2)*	1.1
Tongue	136	32	7.3	*(6.1-8.6)*	8.7	6.2	*(5.2-7.4)*	7.6
Salivary Gland	18	<5	1.0	*(0.6-1.5)*	1.1	0.9	*(0.5-1.4)*	0.9
Floor of Mouth	21	<5	1.1	*(0.7-1.7)*	0.8	1.0	*(0.6-1.5)*	0.9
Gum and Other Mouth	38	9	2.0	*(1.4-2.8)*	2.4	1.8	*(1.3-2.5)*	2.1
Nasopharynx	16	<5	0.9	*(0.5-1.4)*	0.3	0.7	*(0.4-1.2)*	0.2
Tonsil	128	25	6.9	*(5.7-8.2)*	6.8	5.8	*(4.8-7.0)*	5.4
Oropharynx	24	<5	1.3	*(0.8-1.9)*	0.5	1.1	*(0.7-1.6)*	0.5
Hypopharynx	16	5	0.9	*(0.5-1.4)*	1.4	0.7	*(0.4-1.1)*	1.0
Other Oral Cavity and Pharynx	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.6)*	0.0
Digestive System	**2894**	**583**	**155.5**	***(149.9-161.3)***	**158.6**	**132.6**	***(127.7-137.6)***	**129.4**
Esophagus	197	51	10.6	*(9.2-12.2)*	13.9	9.0	*(7.8-10.4)*	11.5
Stomach	301	41	16.2	*(14.4-18.1)*	11.2	13.9	*(12.3-15.6)*	9.3
Small Intestine	68	12	3.7	*(2.8-4.6)*	3.3	3.1	*(2.4-3.9)*	2.9
Colon and Rectum	1675	342	90.0	*(85.8-94.4)*	93.0	76.8	*(73.1-80.7)*	75.9
Colon Excluding Rectum	1046	200	56.2	*(52.9-59.7)*	54.4	48.4	*(45.5-51.5)*	44.7
Cecum	249	50	13.4	*(11.8-15.2)*	13.6	11.5	*(10.1-13.1)*	11.4
Appendix	24	9	1.3	*(0.8-1.9)*	2.4	1.2	*(0.8-1.8)*	2.3
Ascending Colon	191	35	10.3	*(8.9-11.8)*	9.5	9.0	*(7.7-10.4)*	8.6
Hepatic Flexure	44	9	2.4	*(1.7-3.2)*	2.4	2.1	*(1.5-2.8)*	2.0
Transverse Colon	100	20	5.4	*(4.4-6.5)*	5.4	4.5	*(3.6-5.5)*	3.9
Splenic Flexure	30	<9	1.6	*(1.1-2.3)*	1.4	1.4	*(0.9-2.0)*	1.0
Descending Colon	63	17	3.4	*(2.6-4.3)*	4.6	2.8	*(2.2-3.7)*	3.6
Sigmoid Colon	310	53	16.7	*(14.9-18.6)*	14.4	14.1	*(12.6-15.9)*	11.3
Large Intestine, NOS	35	<5	1.9	*(1.3-2.6)*	0.5	1.8	*(1.2-2.5)*	0.6
Rectum and Rectosigmoid Junction	629	142	33.8	*(31.2-36.5)*	38.6	28.4	*(26.2-30.7)*	31.2
Rectosigmoid Junction	151	27	8.1	*(6.9-9.5)*	7.3	6.8	*(5.7-8.0)*	5.8
Rectum	478	115	25.7	*(23.4-28.1)*	31.3	21.6	*(19.6-23.6)*	25.5

Anus, Anal Canal and Anorectum	29	10	1.6	*(1.0-2.2)*	2.7	1.4	*(0.9-2.0)*	2.3
Liver and Intrahepatic Bile Duct	179	39	9.6	*(8.3-11.1)*	10.6	7.8	*(6.7-9.1)*	8.0
Liver	133	31	7.1	*(6.0-8.5)*	8.4	5.8	*(4.8-6.9)*	6.2
Intrahepatic Bile Duct	46	8	2.5	*(1.8-3.3)*	2.2	2.0	*(1.5-2.7)*	1.7
Gallbladder	11	<5	0.6	*(0.3-1.1)*	0.3	0.5	*(0.3-1.0)*	0.2
Other Biliary	55	10	3.0	*(2.2-3.8)*	2.7	2.5	*(1.9-3.3)*	2.3
Pancreas	353	66	19.0	*(17.0-21.1)*	18.0	16.4	*(14.7-18.2)*	14.5
Retroperitoneum	<5	<5	0.1	*(0.0-0.4)*	0.5	0.1	*(0.0-0.4)*	0.6
Peritoneum, Omentum and Mesentery	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.5
Other Digestive System	21	7	1.1	*(0.7-1.7)*	1.9	1.0	*(0.6-1.6)*	1.5
Respiratory System	**2372**	**460**	**127.5**	***(122.4-132.7)***	**125.1**	**107.0**	***(102.7-111.5)***	**99.5**
Nose, Nasal Cavity and Middle Ear	<15	<5	0.8	*(0.4-1.3)*	0.8	0.6	*(0.3-1.1)*	0.6
Larynx	125	<22	6.7	*(5.6-8.0)*	5.4	5.5	*(4.6-6.6)*	4.2
Lung and Bronchus	2229	437	119.8	*(114.9-124.9)*	118.9	100.7	*(96.5-105.1)*	94.7
Pleura	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.0-0.5)*	0.0
Bones and Joints	**16**	**5**	**0.9**	***(0.5-1.4)***	**1.4**	**0.8**	***(0.4-1.3)***	**1.2**
Soft Tissue including Heart	**67**	**14**	**3.6**	***(2.8-4.6)***	**3.8**	**3.3**	***(2.6-4.3)***	**3.2**
Skin excluding Basal and Squamous	**613**	**136**	**32.9**	***(30.4-35.7)***	**37.0**	**28.6**	***(26.3-31.0)***	**30.9**
Melanomas of the Skin	545	120	29.3	*(26.9-31.9)*	32.6	25.3	*(23.2-27.6)*	27.3
Other Non-Epithelial Skin	68	16	3.7	*(2.8-4.6)*	4.4	3.2	*(2.5-4.1)*	3.7
Breast	**24**	**7**	**1.3**	***(0.8-1.9)***	**1.9**	**1.1**	***(0.7-1.7)***	**1.6**
Male Genital System	**2819**	**593**	**151.5**	***(145.9-157.2)***	**161.3**	**122.1**	***(117.6-126.8)***	**123.0**
Prostate	2677	572	143.9	*(138.5-149.4)*	155.6	114.4	*(110.0-118.8)*	117.3
Testis	107	16	5.8	*(4.7-6.9)*	4.4	6.2	*(5.1-7.5)*	4.7
Penis	29	5	1.6	*(1.0-2.2)*	1.4	1.3	*(0.9-1.9)*	1.1
Other Male Genital Organs	6	0	0.3	*(0.1-0.7)*	0.0	0.3	*(0.1-0.6)*	0.0
Urinary System	**1634**	**325**	**87.8**	***(83.6-92.2)***	**88.4**	**74.5**	***(70.9-78.3)***	**70.3**
Urinary Bladder	978	199	52.6	*(49.3-56.0)*	54.1	44.5	*(41.7-47.4)*	42.4
Kidney and Renal Pelvis	606	111	32.6	*(30.0-35.3)*	30.2	27.5	*(25.4-29.9)*	24.5
Ureter	24	<5	1.3	*(0.8-1.9)*	0.8	1.2	*(0.8-1.8)*	0.8
Other Urinary Organs	26	<15	1.4	*(0.9-2.0)*	3.3	1.3	*(0.8-1.9)*	2.6
Eye and Orbit	**8**	**0**	**0.4**	***(0.2-0.8)***	**0.0**	**0.3**	***(0.1-0.7)***	**0.0**
Brain and Other Nervous System	**<192**	**30**	**10.3**	***(8.9-11.8)***	**8.2**	**0.9**	***(7.8-10.4)***	**7.3**
Brain	187	30	10.0	*(8.7-11.6)*	8.2	8.9	*(7.6-10.3)*	7.3
Cranial Nerves Other Nervous System	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.0-0.5)*	0.0
Endocrine System	**173**	**<30**	**9.3**	***(8.0-10.8)***	**7.6**	**8.5**	***(7.3-9.9)***	**6.8**
Thyroid	160	26	8.6	*(7.3-10.0)*	7.1	7.8	*(6.7-9.2)*	6.4

Other Endocrine including Thymus	13	<5	0.7	*(0.4-1.2)*	0.5	0.7	*(0.4-1.2)*	0.5
Lymphoma	690	147	37.1	*(34.4-40.0)*	40.0	32.4	*(30.0-34.9)*	34.6
Hodgkin Lymphoma	60	11	3.2	*(2.5-4.2)*	3.0	3.2	*(2.4-4.1)*	2.7
Hodgkin – Nodal	60	11	3.2	*(2.5-4.2)*	3.0	3.2	*(2.4-4.1)*	2.7
Hodgkin - Extranodal	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Non-Hodgkin Lymphoma	630	136	33.9	*(31.3-36.6)*	37.0	29.2	*(26.9-31.6)*	31.9
NHL – Nodal	438	87	23.5	*(21.4-25.8)*	23.7	20.3	*(18.4-22.4)*	20.1
NHL - Extranodal	192	49	10.3	*(8.9-11.9)*	13.3	8.9	*(7.7-10.3)*	11.8
Myeloma	**180**	**31**	**9.7**	***(8.3-11.2)***	**8 .4**	**8.3**	***(7.1-9.6)***	**6.9**
Leukemia	**<485**	**91**	**25.8**	***(23.6-28.3)***	**24.8**	**22.0**	***(20.0-24.1)***	**19.8**
Lymphocytic Leukemia	284	55	15.3	*(13.5-17.1)*	15.0	12.9	*(11.4-14.5)*	12.0
Acute Lymphocytic Leukemia	18	<5	1.0	*(0.6-1.5)*	0.3	1.0	*(0.6-1.6)*	0.3
Chronic Lymphocytic Leukemia	253	51	13.6	*(12.0-15.4)*	13.9	11.3	*(9.9-12.8)*	10.9
Other Lymphocytic Leukemia	13	<5	0.7	*(0.4-1.2)*	0.8	0.6	*(0.3-1.0)*	0.8
Myeloid and Monocytic Leukemia	191	34	10.3	*(8.9-11.8)*	9.2	8.8	*(7.6-10.2)*	7.5
Acute Myeloid Leukemia	133	24	7.1	*(6.0-8.5)*	6.5	6.1	*(5.1-7.3)*	5.2
Acute Monocytic Leukemia	9	<5	0.5	*(0.2-0.9)*	0.5	0.5	*(0.2-0.9)*	0.4
Chronic Myeloid Leukemia	49	<10	2.6	*(1.9-3.5)*	2.2	2.3	*(1.7-3.0)*	1.9
Other Myeloid/Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Other Leukemia	<10	<5	0.3	*(0.1-0.7)*	0.5	0.3	*(0.1-0.6)*	0.4
Other Acute Leukemia	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Aleukemic, subleukemic and NOS	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Mesothelioma	**52**	**19**	**2.8**	***(2.1-3.7)***	**5.2**	**2.5**	***(1.9-3.3)***	**4.3**
Kaposi Sarcoma	**5**	**<5**	**0.3**	***(0.1-0.6)***	**0.3**	**0.3**	***(0.1-0.6)***	**0.2**
Miscellaneous	**179**	**42**	**9.6**	***(8.3-11.1)***	**11.4**	**8.6**	***(7.4-10.0)***	**9.6**

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total New Cases		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	11905	2447	625.1	*(613.9-636.4)*	651.0	493.5	*(484.5-502.6)*	498.2
Oral Cavity and Pharynx	168	27	8.8	*(7.5-10.3)*	7.2	6.9	*(5.9-8.1)*	5.7
Lip	12	0	0.6	*(0.3-1.1)*	0.0	0.5	*(0.2-0.9)*	0.0
Tongue	44	9	2.3	*(1.7-3.1)*	2.4	1.8	*(1.3-2.4)*	2.0
Salivary Gland	14	<5	0.7	*(0.4-1.2)*	0.5	0.6	*(0.3-1.0)*	0.4
Floor of Mouth	11	0	0.6	*(0.3-1.0)*	0.0	0.4	*(0.2-0.8)*	0.0
Gum and Other Mouth	38	8	2.0	*(1.4-2.7)*	2.1	1.5	*(1.1-2.1)*	1.7
Nasopharynx	8	0	0.4	*(0.2-0.8)*	0.0	0.3	*(0.1-0.7)*	0.0
Tonsil	30	7	1.6	*(1.1-2.2)*	1.9	1.3	*(0.9-1.9)*	1.4
Oropharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Hypopharynx	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Other Oral Cavity and Pharynx	<5	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.0-0.5)*	0.2
Digestive System	2157	481	113.3	*(108.5-118.1)*	128.0	84.8	*(81.2-88.5)*	93.4
Esophagus	55	15	2.9	*(2.2-3.8)*	4.0	2.2	*(1.6-2.8)*	3.1
Stomach	155	35	8.1	*(6.9-9.5)*	9.3	6.0	*(5.1-7.0)*	6.6
Small Intestine	52	13	2.7	*(2.0-3.6)*	3.5	2.1	*(1.6-2.8)*	2.8
Colon and Rectum	1312	286	68.9	*(65.2-72.7)*	76.1	51.9	*(49.1-54.8)*	56.2
Colon Excluding Rectum	984	213	51.7	*(48.5-55.0)*	56.7	38.3	*(35.9-40.8)*	41.1
Cecum	265	57	13.9	*(12.3-15.7)*	15.2	10.3	*(9.1-11.7)*	11.4
Appendix	22	7	1.2	*(0.7-1.7)*	1.9	1.1	*(0.7-1.6)*	1.5
Ascending Colon	235	52	12.3	*(10.8-14.0)*	13.8	9.1	*(7.9-10.3)*	10.1
Hepatic Flexure	38	12	2.0	*(1.4-2.7)*	3.2	1.4	*(1.0-2.0)*	2.3
Transverse Colon	87	21	4.6	*(3.7-5.6)*	5.6	3.3	*(2.7-4.2)*	4.1
Splenic Flexure	32	<5	1.7	*(1.1-2.4)*	0.8	1.3	*(0.9-1.8)*	0.5
Descending Colon	52	12	2.7	*(2.0-3.6)*	3.2	2.0	*(1.5-2.6)*	2.0
Sigmoid Colon	211	45	11.1	*(9.6-12.7)*	12.0	8.3	*(7.2-9.5)*	8.5
Large Intestine, NOS	42	<5	2.2	*(1.6-3.0)*	1.1	1.5	*(1.1-2.1)*	0.7
Rectum and Rectosigmoid Junction	328	73	17.2	*(15.4-19.2)*	19.4	13.6	*(12.1-15.2)*	15.1
Rectosigmoid Junction	88	11	4.6	*(3.7-5.7)*	2.9	3.7	*(3.0-4.6)*	2.5
Rectum	240	62	12.6	*(11.1-14.3)*	16.5	9.9	*(8.7-11.3)*	12.6
Anus, Anal Canal and Anorectum	70	13	3.7	*(2.9-4.6)*	3.5	2.9	*(2.3-3.7)*	2.5
Liver and Intrahepatic Bile Duct	100	18	5.3	*(4.3-6.4)*	4.8	3.9	*(3.2-4.8)*	3.5
Liver	46	8	2.4	*(1.8-3.2)*	2.1	1.8	*(1.3-2.4)*	1.6
Intrahepatic Bile Duct	54	10	2.8	*(2.1-3.7)*	2.7	2.1	*(1.6-2.8)*	1.9

Gallbladder	28	5	1.5	*(1.0-2.1)*	1 .3	1.1	*(0.7-1.6)*	0.9
Other Biliary	46	13	2.4	*(1.8-3.2)*	3.5	1.8	*(1.3-2.5)*	2.7
Pancreas	316	74	16.6	*(14.8-18.5)*	19.7	12.0	*(10.7-13.5)*	13.5
Retroperitoneum	<5	<5	0.2	*(0.1-0.5)*	0.3	0.2	*(0.0-0.4)*	0.2
Peritoneum, Omentum and Mesentery	<5	<5	0.2	*(0.0-0.5)*	0.3	0.1	*(0.0-0.4)*	0.2
Other Digestive System	16	7	0.8	*(0.5-1.4)*	1.9	0.6	*(0.3-1.0)*	1.3
Respiratory System	1943	394	102.0	*(97.5-106.7)*	104.8	76.1	*(72.7-79.6)*	74.5
Nose, Nasal Cavity and Middle Ear	12	<5	0.6	*(0.3-1.1)*	0.8	0.5	*(0.3-1.0)*	0.6
Larynx	21	<5	1.1	*(0.7-1.7)*	1.1	0.9	*(0.5-1.4)*	0.8
Lung and Bronchus	1910	387	100.3	*(95.8-104.9)*	103.0	74.6	*(71.3-78.1)*	73.1
Pleura	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Bones and Joints	16	5	0.8	*(0.5-1.4)*	1.3	0.8	*(0.5-1.3)*	1.2
Soft Tissue including Heart	65	17	3.4	*(2.6-4.4)*	4.5	2.8	*(2.2-3.7)*	3.6
Skin excluding Basal and Squamous	541	100	28.4	*(26.1-30.9)*	26.6	24.1	*(22.0-26.2)*	21.9
Melanomas of the Skin	491	92	25.8	*(23.6-28.2)*	24.5	22.0	*(20.1-24.1)*	20.3
Other Non-Epithelial Skin	50	8	2.6	*(1.9-3.5)*	2.1	2.0	*(1.5-2.7)*	1.6
Breast	3158	644	165.8	*(160.1-171.7)*	171.3	134.1	*(129.4-139.0)*	135.4
Female Genital System	1382	297	72.6	*(68.8-76.5)*	79.0	59.6	*(56.4-62.9)*	62.5
Cervix Uteri	152	25	8.0	*(6.8-9.4)*	6.7	8.1	*(6.8-9.5)*	7.3
Corpus and Uterus, NOS	804	176	42.2	*(39.3-45.2)*	46.8	33.3	*(31.0-35.7)*	35.5
Corpus Uteri	799	175	42.0	*(39.1-45.0)*	46.6	33.1	*(30.8-35.5)*	35.3
Uterus, NOS	5	1	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Ovary	295	67	15.5	*(13.8-17.4)*	17.8	12.6	*(11.1-14.1)*	13.8
Vagina	18	<5	0.9	*(0.6-1.5)*	0.8	0.7	*(0.4-1.2)*	0.5
Vulva	93	23	4.9	*(3.9-6.0)*	6.1	4.1	*(3.3-5.0)*	4.7
Other Female Genital Organs	20	<5	1.1	*(0.6-1.6)*	0.8	0.9	*(0.5-1.4)*	0.6
Urinary System	699	137	36.7	*(34.0-39.5)*	36.4	28.3	*(26.2-30.5)*	27.3
Urinary Bladder	317	59	16.6	*(14.9-18.6)*	15.7	12.3	*(11.0-13.8)*	11.1
Kidney and Renal Pelvis	356	69	18.7	*(16.8-20.7)*	18.4	15.0	*(13.4-16.7)*	14.6
Ureter	15	<5	0.8	*(0.4-1.3)*	0.8	0.6	*(0.3-1.0)*	0.5
Other Urinary Organs	11	<10	0.6	*(0.3-1.0)*	1.6	0.4	*(0.2-0.8)*	1.1
Eye and Orbit	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Brain and Other Nervous System	129	<25	6.8	*(5.7-8.0)*	6.1	5.9	*(4.9-7.0)*	5.2
Brain	123	22	6.5	*(5.4-7.7)*	5.9	5.6	*(4.6-6.7)*	5.0
Cranial Nerves Other Nervous System	6	<5	0.3	*(0.1-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Endocrine System	382	73	20.1	*(18.1-22.2)*	19.4	18.6	*(16.8-20.6)*	17.3
Thyroid	368	68	19.3	*(17.4-21.4)*	18.1	18.1	*(16.2-20.0)*	16.2

Other Endocrine including Thymus	14	5	0.7	*(0.4-1.2)*	1.3	0.6	*(0.3-1.0)*	1.1
Lymphoma	559	<115	29.4	*(27.0-31.9)*	29.5	23.2	*(21.3-25.3)*	22.5
Hodgkin Lymphoma	36	<5	1.9	*(1.3-2.6)*	0.8	1.8	*(1.2-2.5)*	0.6
Hodgkin – Nodal	36	<5	1.9	*(1.3-2.6)*	0.8	1.8	*(1.2-2.5)*	0.6
Hodgkin - Extranodal	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Non-Hodgkin Lymphoma	523	108	27.5	*(25.2-29.9)*	28.7	21.4	*(19.6-23.4)*	22.0
NHL – Nodal	360	69	18.9	*(17.0-21.0)*	18.4	14.7	*(13.2-16.4)*	13.5
NHL - Extranodal	163	39	8.6	*(7.3-10.0)*	10.4	6.7	*(5.7-7.8)*	8.4
Myeloma	131	24	6.9	*(5.8-8.2)*	6.4	5.2	*(4.3-6.2)*	4.8
Leukemia	<360	75	18.8	*(17.0-20.9)*	20.0	14.9	*(13.4-16.6)*	15.7
Lymphocytic Leukemia	211	40	11.1	*(9.6-12.7)*	10.6	8.7	*(7.5-9.9)*	8.6
Acute Lymphocytic Leukemia	23	<15	1.2	*(0.8-1.8)*	2.9	1.3	*(0.8-1.9)*	3.1
Chronic Lymphocytic Leukemia	183	27	9.6	*(8.3-11.1)*	7.2	7.2	*(6.2-8.3)*	5.1
Other Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.5)*	0.4
Myeloid and Monocytic Leukemia	144	35	7.6	*(6.4-8.9)*	9.3	6.1	*(5.1-7.2)*	7.1
Acute Myeloid Leukemia	99	21	5.2	*(4.2-6.3)*	5.6	4.2	*(3.4-5.1)*	4.3
Acute Monocytic Leukemia	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Chronic Myeloid Leukemia	40	<15	2.1	*(1.5-2.9)*	3.2	1.7	*(1.2-2.3)*	2.5
Other Myeloid/Monocytic Leukemia	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.4
Other Leukemia	<5	0	0.2	*(0.1-0.5)*	0.0	0.2	*(0.0-0.5)*	0.0
Other Acute Leukemia	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Aleukemic, subleukemic and NOS	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.4)*	0.0
Mesothelioma	11	<5	0.6	*(0.3-1.0)*	0.3	0.4	*(0.2-0.7)*	0.2
Kaposi Sarcoma	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Miscellaneous	199	37	10.4	*(9.0-12.0)*	9.8	7.5	*(6.5-8.6)*	6.9

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**5445**	**1133**	**292.6**	***(284.9-300.5)***	**308.2**	**259.2**	***(252.2-266.3)***	**258.2**
Oral Cavity and Pharynx	**115**	**29**	**6.2**	***(5.1-7.4)***	**7.9**	**5.4**	***(4.4-6.5)***	**6.6**
Lip	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	31	10	1.7	*(1.1-2.4)*	2.7	1.5	*(1.0-2.1)*	2.5
Salivary Gland	5	0	0.3	*(0.1-0.6)*	0.0	0.2	*(0.1-0.6)*	0.0
Floor of Mouth	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Gum and Other Mouth	16	6	0.9	*(0.5-1.4)*	1.6	0.8	*(0.4-1.3)*	1.4
Nasopharynx	8	0	0.4	*(0.2-0.8)*	0.0	0.4	*(0.2-0.7)*	0.0
Tonsil	23	<5	1.2	*(0.8-1.9)*	0.5	1.1	*(0.7-1.7)*	0.4
Oropharynx	7	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.6)*	0.3
Hypopharynx	<5	<5	0.2	*(0.0-0.5)*	0.5	0.1	*(0.0-0.4)*	0.4
Other Oral Cavity and Pharynx	20	7	1.1	*(0.7-1.7)*	1.9	0.9	*(0.6-1.5)*	1.6
Digestive System	**1555**	**315**	**83.6**	***(79.5-87.8)***	**85.7**	**72.7**	***(69.0-76.5)***	**71.2**
Esophagus	213	39	11.4	*(10.0-13.1)*	10.6	9.9	*(8.6-11.3)*	8.9
Stomach	143	29	7.7	*(6.5-9.1)*	7.9	6.7	*(5.6-8.0)*	6.3
Small Intestine	17	<5	0.9	*(0.5-1.5)*	0.8	0.8	*(0.4-1.3)*	0.6
Colon and Rectum	627	127	33.7	*(31.1-36.4)*	34.5	29.7	*(27.4-32.2)*	29.2
Colon Excluding Rectum	457	93	24.6	*(22.4-26.9)*	25.3	21.8	*(19.8-23.9)*	21.5
Rectum and Rectosigmoid Junction	170	34	9.1	*(7.8-10.6)*	9.2	7.9	*(6.7-9.2)*	7.6
Anus, Anal Canal and Anorectum	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Liver and Intrahepatic Bile Duct	171	40	9.2	*(7.9-10.7)*	10.9	7.8	*(6.6-9.0)*	8.8
Liver	107	25	5.8	*(4.7-6.9)*	6.8	4.8	*(3.9-5.8)*	5.4
Intrahepatic Bile Duct	64	15	3.4	*(2.6-4.4)*	4.1	3.0	*(2.3-3.8)*	3.4
Gallbladder	10	<5	0.5	*(0.3-1.0)*	0.3	0.5	*(0.2-0.9)*	0.2
Other Biliary	13	<5	0.7	*(0.4-1.2)*	1.1	0.6	*(0.3-1.1)*	1.1
Pancreas	341	66	18.3	*(16.4-20.4)*	18.0	15.7	*(14.1-17.6)*	14.8
Retroperitoneum	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Peritoneum, Omentum and Mesentery	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Other Digestive System	14	<5	0.8	*(0.4-1.3)*	1.1	0.7	*(0.4-1.3)*	0.9
Respiratory System	**1667**	**322**	**89.6**	***(85.3-94.0)***	**87.6**	**77.5**	***(73.7-81.4)***	**71.2**
Nose, Nasal Cavity and Middle Ear	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.3
Larynx	45	9	2.4	*(1.8-3.2)*	2.4	2.0	*(1.5-2.8)*	1.8
Lung and Bronchus	1612	310	86.6	*(82.4-91.0)*	84.3	75.0	*(71.3-78.8)*	68.8
Pleura	<5	<5	0.1	*(0.0-0.3)*	0.3	0.0	*(0.0-0.3)*	0.2
Trachea, Mediastinum and Other Respiratory System	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Bones and Joints	**7**	**0**	**0.4**	***(0.2-0.8)***	**0.0**	**0.4**	***(0.2-0.8)***	**0.0**
Soft Tissue including Heart	**28**	**6**	**1.5**	***(1.0-2.2)***	**1.6**	**1.4**	***(0.9-2.1)***	**1.4**
Skin excluding Basal and Squamous	**84**	**21**	**4.5**	***(3.6-5.6)***	**5.7**	**4.1**	***(3.3-5.1)***	**4.9**
Melanomas of the Skin	62	9	3.3	*(2.6-4.3)*	2.4	3.0	*(2.3-3.9)*	2.1
Other Non-Epithelial Skin	22	12	1.2	*(0.7-1.8)*	3.3	1.1	*(0.7-1.7)*	2.8
Breast	**13**	**4**	**0.7**	***(0.4-1.2)***	**1.1**	**0.6**	***(0.3-1.0)***	**0.8**
Male Genital System	**507**	**118**	**27.2**	***(24.9-29.7)***	**32.1**	**26.5**	***(24.2-29.0)***	**28.8**

Prostate	495	113	26.6	*(24.3-29.1)*	30.7	25.9	*(23.7-28.4)*	27.5
Testis	7	<5	0.4	*(0.2-0.8)*	1.1	0.4	*(0.1-0.7)*	1.0
Penis	<5	<5	0.2	*(0.1-0.6)*	0.3	0.2	*(0.0-0.5)*	0.3
Other Male Genital Organs	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Urinary System	**421**	**101**	**22.6**	***(20.5-24.9)***	**27.5**	**20.4**	***(18.4-22.5)***	**23.2**
Urinary Bladder	208	54	11.2	*(9.7-12.8)*	14.7	10.4	*(9.0-11.9)*	12.8
Kidney and Renal Pelvis	179	34	9.6	*(8.3-11.1)*	9.2	8.2	*(7.1-9.6)*	7.4
Ureter	8	<5	0.4	*(0.2-0.8)*	0.3	0.4	*(0.2-0.9)*	0.3
Other Urinary Organs	26	<15	1.4	*(0.9-2.0)*	3.3	1.3	*(0.9-1.9)*	2.8
Eye and Orbit	**<5**	**0**	**0.1**	***(0.0-0.3)***	**0.0**	**0.1**	***(0.0-0.3)***	**0.0**
Brain and Other Nervous System	**143**	**30**	**7.7**	***(6.5-9.1)***	**8.2**	**6.6**	***(5.6-7.9)***	**7.0**
Endocrine System	**17**	**<5**	**0.9**	***(0.5-1.5)***	**0.5**	**0.8**	***(0.5-1.3)***	**0.5**
Thyroid	11	<5	0.6	*(0.3-1.1)*	0.3	0.5	*(0.3-1.0)*	0.3
Other Endocrine including Thymus	6	<5	0.3	*(0.1-0.7)*	0.3	0.3	*(0.1-0.6)*	0.2
Lymphoma	**<210**	**48**	**11.1**	***(9.6-12.7)***	**13.1**	**10.0**	***(8.6-11.5)***	**11.2**
Hodgkin Lymphoma	<5	0	0.2	*(0.1-0.6)*	0.0	0.2	*(0.1-0.5)*	0.0
Non-Hodgkin Lymphoma	202	48	10.9	*(9.4-12.5)*	13.1	9.8	*(8.5-11.3)*	11.2
Myeloma	**113**	**19**	**6.1**	***(5.0-7.3)***	**5.2**	**5.5**	***(4.5-6.6)***	**4.4**
Leukemia	**210**	**<55**	**11.3**	***(9.8-12.9)***	**14.1**	**10.0**	***(8.6-11.5)***	**11.6**
Lymphocytic Leukemia	45	10	2.4	*(1.8-3.2)*	2.7	2.3	*(1.6-3.0)*	2.6
Acute Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.3	*(0.1-0.7)*	0.6
Chronic Lymphocytic Leukemia	33	7	1.8	*(1.2-2.5)*	1.9	1.6	*(1.1-2.3)*	1.7
Other Lymphocytic Leukemia	7	<5	0.4	*(0.2-0.8)*	0.3	0.3	*(0.1-0.7)*	0.2
Myeloid and Monocytic Leukemia	101	<30	5.4	*(4.4-6.6)*	7.1	4.6	*(3.7-5.6)*	5.2
Acute Myeloid Leukemia	88	25	4.7	*(3.8-5.8)*	6.8	4.0	*(3.2-4.9)*	5.1
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	8	0	0.4	*(0.2-0.8)*	0.0	0.4	*(0.2-0.8)*	0.0
Other Myeloid/Monocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.6)*	0.2
Other Leukemia	64	16	3.4	*(2.6-4.4)*	4.4	3.1	*(2.4-4.0)*	3.8
Other Acute Leukemia	21	6	1.1	*(0.7-1.7)*	1.6	1.0	*(0.6-1.5)*	1.3
Aleukemic, subleukemic and NOS	43	10	2.3	*(1.7-3.1)*	2.7	2.1	*(1.5-2.9)*	2.5
Mesothelioma	**39**	**11**	**2.1**	***(1.5-2.9)***	**3.0**	**1.9**	***(1.4-2.6)***	**2.5**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.2)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**318**	**54**	**17.1**	***(15.3-19.1)***	**14.7**	**15.3**	***(13.7-17.1)***	**12.5**

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 2014-2018

CANCER SITE	Total Mortality		Crude Rate (95% CI)			Age-standardized Rate (95% CI)		
	2014-2018	2018	2014-2018		2018	2014-2018		2018
All Sites	**4589**	**970**	**241.0**	***(234.0-248.0)***	**258.1**	**177.1**	***(172.0-182.4)***	**183.0**
Oral Cavity and Pharynx	**45**	**9**	**2.4**	***(1.7-3.2)***	**2.4**	**1.7**	***(1.2-2.3)***	**1.7**
Lip	<5	0	0.1	*(0.0-0.3)*	0.0	0.1	*(0.0-0.3)*	0.0
Tongue	10	<5	0.5	*(0.3-1.0)*	1.1	0.4	*(0.2-0.8)*	0.7
Salivary Gland	9	<5	0.5	*(0.2-0.9)*	0.5	0.3	*(0.1-0.6)*	0.4
Floor of Mouth	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Gum and Other Mouth	10	<5	0.5	*(0.3-1.0)*	0.5	0.4	*(0.2-0.7)*	0.4
Nasopharynx	5	<5	0.3	*(0.1-0.6)*	0.3	0.2	*(0.1-0.5)*	0.2
Tonsil	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Oropharynx	<5	0	0.2	*(0.0-0.5)*	0.0	0.1	*(0.0-0.4)*	0.0
Hypopharynx	<5	0	0.1	*(0.0-0.4)*	0.0	0.1	*(0.0-0.3)*	0.0
Other Oral Cavity and Pharynx	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.3)*	0.0
Digestive System	**1169**	**259**	**61.4**	***(57.9-65.0)***	**68.9**	**44.1**	***(41.6-46.7)***	**48.0**
Esophagus	65	15	3.4	*(2.6-4.4)*	4.0	2.5	*(1.9-3.2)*	2.9
Stomach	95	26	5.0	*(4.0-6.1)*	6.9	3.6	*(2.9-4.4)*	4.8
Small Intestine	12	<5	0.6	*(0.3-1.1)*	0.5	0.4	*(0.2-0.8)*	0.4
Colon and Rectum	548	108	28.8	*(26.4-31.3)*	28.7	20.5	*(18.8-22.4)*	20.1
Colon Excluding Rectum	457	90	24.0	*(21.8-26.3)*	23.9	17.0	*(15.5-18.7)*	16.6
Rectum and Rectosigmoid Junction	91	18	4.8	*(3.8-5.9)*	4.8	3.5	*(2.8-4.4)*	3.5
Anus, Anal Canal and Anorectum	11	<5	0.6	*(0.3-1.0)*	0.8	0.4	*(0.2-0.8)*	0.5
Liver and Intrahepatic Bile Duct	117	23	6.1	*(5.1-7.4)*	6.1	4.6	*(3.8-5.5)*	4.3
Liver	47	8	2.5	*(1.8-3.3)*	2.1	1.9	*(1.4-2.5)*	1.5
Intrahepatic Bile Duct	70	15	3.7	*(2.9-4.6)*	4.0	2.7	*(2.1-3.5)*	2.8
Gallbladder	10	<5	0.5	*(0.3-1.0)*	0.5	0.4	*(0.2-0.7)*	0.4
Other Biliary	19	<5	1.0	*(0.6-1.6)*	1.1	0.7	*(0.4-1.2)*	0.7
Pancreas	278	71	14.6	*(12.9-16.4)*	18.9	10.4	*(9.2-11.8)*	13.1
Retroperitoneum	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Peritoneum, Omentum and Mesentery	6	<5	0.3	*(0.1-0.7)*	0.3	0.2	*(0.1-0.5)*	0.2
Other Digestive System	8	<5	0.4	*(0.2-0.8)*	1.1	0.3	*(0.1-0.6)*	0.7
Respiratory System	**<1220**	**248**	**63.8**	***(60.3-67.5)***	**66.0**	**46.7**	***(44.1-49.4)***	**46.4**
Nose, Nasal Cavity and Middle Ear	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Larynx	9	0	0.5	*(0.2-0.9)*	0.0	0.4	*(0.2-0.7)*	0.0
Lung and Bronchus	1205	248	63.3	*(59.7-66.9)*	66.0	46.3	*(43.7-49.0)*	46.4
Pleura	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Trachea, Mediastinum and Other Respiratory System	<5	0	0.1	*(0.0-0.3)*	0.0	0.0	*(0.0-0.2)*	0.0
Bones and Joints	**14**	**<5**	**0.7**	***(0.4-1.2)***	**0.3**	**0.7**	***(0.3-1.1)***	**0.2**
Soft Tissue including Heart	**41**	**11**	**2.2**	***(1.5-2.9)***	**2.9**	**1.7**	***(1.2-2.4)***	**2.4**
Skin excluding Basal and Squamous	**73**	**<20**	**3.8**	***(3.0-4.8)***	**4.8**	**2.9**	***(2.2-3.6)***	**3.5**
Melanomas of the Skin	57	15	3.0	*(2.3-3.9)*	4.0	2.3	*(1.7-3.0)*	3.0
Other Non-Epithelial Skin	16	<5	0.8	*(0.5-1.4)*	0.8	0.6	*(0.3-1.0)*	0.5
Breast	**602**	**135**	**31.6**	***(29.1-34.2)***	**35.9**	**24.2**	***(22.3-26.3)***	**26.0**
Female Genital System	**425**	**84**	**22.3**	***(20.2-24.5)***	**22.3**	**16.9**	***(15.3-18.6)***	**16.7**
Cervix Uteri	39	5	2.0	*(1.5-2.8)*	1.3	1.8	*(1.2-2.4)*	1.1

Corpus and Uterus, NOS	131	30	6.9	*(5.8-8.2)*	8.0	5.1	*(4.2-6.0)*	5.8
Corpus Uteri	86	21	4.5	*(3.6-5.6)*	5.6	3.3	*(2.6-4.1)*	3.9
Uterus, NOS	45	9	2.4	*(1.7-3.2)*	2.4	1.8	*(1.3-2.4)*	1.8
Ovary	208	40	10.9	*(9.5-12.5)*	10.6	8.3	*(7.2-9.5)*	8.1
Vagina	8	<5	0.4	*(0.2-0.8)*	0.8	0.3	*(0.1-0.7)*	0.6
Vulva	31	<5	1.6	*(1.1-2.3)*	1.1	1.1	*(0.8-1.6)*	0.8
Other Female Genital Organs	8	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.7)*	0.4
Urinary System	**<195**	**<45**	**9.8**	***(8.5-11.3)***	**10.9**	**7.0**	***(6.0-8.1)***	**7.4**
Urinary Bladder	78	19	4.1	*(3.2-5.1)*	5.1	2.9	*(2.3-3.6)*	3.4
Kidney and Renal Pelvis	96	19	5.0	*(4.1-6.2)*	5.1	3.6	*(2.9-4.5)*	3.4
Ureter	<5	0	0.2	*(0.1-0.5)*	0.0	0.1	*(0.0-0.4)*	0.0
Other Urinary Organs	9	<5	0.5	*(0.2-0.9)*	0.8	0.3	*(0.1-0.6)*	0.6
Eye and Orbit	**<5**	**<5**	**0.1**	***(0.0-0.3)***	**0.3**	**0.0**	***(0.0-0.3)***	**0.2**
Brain and Other Nervous System	**103**	**24**	**5.4**	***(4.4-6.6)***	**6.4**	**4.3**	***(3.5-5.2)***	**5.3**
Endocrine System	**25**	**5**	**1.3**	***(0.8-1.9)***	**1.3**	**1.0**	***(0.6-1.5)***	**1.0**
Thyroid	12	<5	0.6	*(0.3-1.1)*	0.8	0.5	*(0.2-0.8)*	0.6
Other Endocrine including Thymus	13	<5	0.7	*(0.4-1.2)*	0.5	0.5	*(0.3-1.0)*	0.4
Lymphoma	**184**	**<40**	**9.7**	***(8.3-11.2)***	**9.8**	**7.0**	***(6.0-8.1)***	**6.8**
Hodgkin Lymphoma	8	<5	0.4	*(0.2-0.8)*	0.5	0.3	*(0.1-0.7)*	0.4
Non-Hodgkin Lymphoma	176	35	9.2	*(7.9-10.7)*	9.3	6.6	*(5.7-7.7)*	6.4
Myeloma	**83**	**13**	**4.4**	***(3.5-5.4)***	**3.5**	**3.1**	***(2.5-3.9)***	**2.4**
Leukemia	**<135**	**27**	**7.0**	***(5.8-8.3)***	**7.2**	**5.2**	***(4.3-6.1)***	**5.0**
Lymphocytic Leukemia	38	11	2.0	*(1.4-2.7)*	2.9	1.5	*(1.0-2.0)*	2.0
Acute Lymphocytic Leukemia	10	<5	0.5	*(0.3-1.0)*	0.8	0.4	*(0.2-0.8)*	0.6
Chronic Lymphocytic Leukemia	23	6	1.2	*(0.8-1.8)*	1.6	0.8	*(0.5-1.3)*	1.1
Other Lymphocytic Leukemia	5	<5	0.3	*(0.1-0.6)*	0.5	0.2	*(0.1-0.4)*	0.3
Myeloid and Monocytic Leukemia	<55	8	2.8	*(2.1-3.6)*	2.1	2.1	*(1.6-2.7)*	1.5
Acute Myeloid Leukemia	45	<5	2.4	*(1.7-3.2)*	1.1	1.8	*(1.3-2.4)*	0.8
Acute Monocytic Leukemia	0	0	0.0	*(0.0-0.2)*	0.0	0.0	*(0.0-0.2)*	0.0
Chronic Myeloid Leukemia	5	<5	0.3	*(0.1-0.6)*	0.8	0.2	*(0.1-0.5)*	0.5
Other Myeloid/Monocytic Leukemia	<5	<5	0.2	*(0.0-0.5)*	0.3	0.1	*(0.0-0.4)*	0.2
Other Leukemia	42	<10	2.2	*(1.6-3.0)*	2.1	1.6	*(1.2-2.2)*	1.5
Other Acute Leukemia	19	<5	1.0	*(0.6-1.6)*	0.5	0.7	*(0.4-1.2)*	0.4
Aleukemic, subleukemic and NOS	23	6	1.2	*(0.8-1.8)*	1.6	0.9	*(0.6-1.3)*	1.1
Mesothelioma	**14**	**5**	**0.7**	***(0.4-1.2)***	**1.3**	**0.5**	***(0.3-0.9)***	**0.9**
Kaposi Sarcoma	**0**	**0**	**0.0**	***(0.0-0.2)***	**0.0**	**0.0**	***(0.0-0.2)***	**0.0**
Miscellaneous	**274**	**52**	**14.4**	***(12.7-16.2)***	**13.8**	**10.2**	***(9.0-11.5)***	**9.0**

*: Rates are per 100,000 population and are age-standardized to the 2011 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, 1986-2013 vs. 2014-2018

A) 1986 – 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	**300**	15.4 (13.7, 17.2)	15.7 (13.9, 17.6)	**284**	15.4 (13.6, 17.3)	15.6 (13.9, 17.6)
Leukemia	**106**	5.4 (4.4, 6.6)	5.6 (4.6, 6.8)	**92**	5.0 (4.0, 6.1)	5.1 (4.1, 6.3)
Brain	**56**	2.9 (2.2, 3.7)	2.9 (2.2, 3.8)	**61**	3.3 (2.5, 4.2)	3.3 (2.5, 4.2)
Lymphoma	**38**	1.9 (1.4, 2.7)	1.9 (1.4, 2.6)	**20**	1.1 (0.7, 1.7)	1.0 (0.6, 1.6)
Soft Tissue*	**29**	1.5 (1.0, 2.1)	1.5 (1.0, 2.2)	**16**	0.9 (0.5, 1.4)	0.9 (0.5, 1.5)

B) 1986 – 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	**656**	28.8 (26.6, 31.1)	29.0 (26.8, 31.3)	**742**	33.9 (31.5, 36.5)	34.1 (31.6, 36.6)
Lymphoma	**159**	7.0 (5.9, 8.2)	7.0 (6.0, 8.2)	**118**	5.4 (4.5, 6.5)	5.4 (4.5, 6.5)
Testis	**151**	6.6 (5.6, 7.8)	6.7 (5.7, 7.8)	**-**	-	-
Melanoma of the Skin	**49**	2.2 (1.6, 2.8)	2.2 (1.6, 2.9)	**98**	4.5 (3.6, 5.5)	4.5 (3.7, 5.5)
Thyroid	**19**	0.8 (0.5, 1.3)	0.8 (0.5, 1.3)	**124**	5.7 (4.7, 6.8)	5.7 (4.7, 6.8)

*: Soft Tissue (including Heart).

Table 5 cont'd: 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, 1986-2013 vs. 2014-2018

C) 2014– 2018; 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	**36**	12.9 (9.0, 17.8)	13.1 (9.2, 18.1)	**45**	16.8 (12.3, 22.5)	17.0 (12.4, 22.7)
Leukemia	**9**	3.2 (1.5, 6.1)	3.3 (1.5, 6.2)	**17**	6.4 (3.7, 10.2)	6.5 (3.8, 10.4)
Brain	**7**	2.5 (1.0, 5.1)	2.6 (1.1, 5.4)	**11**	4.1 (2.1, 7.4)	4.1 (2.1, 7.4)
Lymphoma	**8**	2.9 (1.2, 5.6)	2.8 (1.2, 5.5)	**2**	0.7 (0.1, 2.7)	0.7 (0.1, 2.7)
Soft Tissue	**3**	1.1 (0.2, 3.1)	1.1 (0.2, 3.1)	**1**	0.4 (0.0, 2.1)	0.4 (0.0, 2.1)

D) 2014– 2018; 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	**91**	27.2 (21.9, 33.4)	27.3 (22.0, 33.5)	**117**	37.8 (31.3, 45.3)	37.9 (31.4, 45.4)
Lymphoma	**23**	6.9 (4.4, 10.3)	6.8 (4.3, 10.3)	**14**	4.5 (2.5, 7.6)	4.5 (2.5, 7.6)
Testis	**29**	8.7 (5.8, 12.5)	8.7 (5.9, 12.6)	**-**	-	-
Melanoma of the Skin	**6**	1.8 (0.7, 3.9)	1.8 (0.6, 3.9)	**15**	4.8 (2.7, 8.0)	4.8 (2.7, 8.0)
Thyroid	**6**	1.8 (0.7, 3.9)	1.8 (0.7, 4.0)	**24**	7.8 (5.0, 11.5)	7.8 (5.0, 11.6)

Table 6: Male Incidence: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2014-2018

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Prostate	20.9	1	23.3	1	20.2	1	18.2	1	20.7	1	15.9	2	21.5	1	23.6	1
Lung	17.4	2	15.9	2	18.7	2	16.1	2	19.0	2	21.8	1	18.2	2	16.9	2
Colorectal	13.1	3	11.8	3	13.1	3	13.9	3	16.4	3	11.8	3	11.7	3	15.8	3
Urinary Bladder	7.6	4	8.3	4	6.6	4	9.3	4	6.6	4	8.0	4	6.6	5	6.1	4
Non-Hodgkin's Lymphoma	4.9	5	4.8	5	4.8	6	4.6	6	3.9	6	5.5	5	6.9	4	4.0	5
Kidney and Renal Pelvis	4.7	6	4.7	6	4.7	7	5.3	5	4.1	5	4.5	7	5.2	6	3.4	7
Melanoma of the Skin	4.2	7	4.7	6	5.2	5	4.3	7	3.0	8	3.9	8	2.7	10	3.3	8
Leukemia	3.7	8	3.7	8	4.1	8	3.7	8	2.7	9	4.6	6	3.4	7	3.6	6
Pancreas	2.8	9	3.2	9	2.6	9	2.5	9	1.9	10	-		2.9	8	3.2	9
Stomach	2.3	10	2.4	10	1.9	10	-		3.1	7	3.8	9	2.9	8	2.5	10
Brain and Other Nervous	-		-		-		2.1	10	-		-		-		-	
Myeloma	-		-		-		-	-	-		2.5	10	-		-	
All Other Sites	18.4		17.4		18.3		19.9		18.6		17.7		18.2		17.6	

Table 7: Male Mortality: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2014-2018

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Lung	29.6	1	28.7	1	31.6	1	25.9	1	32.3	1	35.7	1	30.0	1	29.9	1
Colorectal	11.5	2	11.7	2	10.1	2	11.9	2	11.4	2	9.6	2	12.8	2	13.4	2
Prostate	9.1	3	9.0	3	9.7	3	9.9	3	9.8	3	8.8	3	8.4	3	5.8	5
Pancreas	6.3	4	7.6	4	5.9	4	6.1	4	4.2	5	3.2	7	6.9	4	6.0	4
Esophagus	3.9	5	4.4	5	4.6	5	4.6	5	2.6	10	-		-		-	
Leukemia	3.9	6	4.3	6	4.2	6	4.0	7	2.9	9	3.6	6	3.0	9	3.6	8
Urinary Bladder	3.8	7	4.2	7	3.8	8	3.5	8	3.7	7	2.8	8	4.5	5	3.3	9
Non-Hodgkin's Lymphoma	3.7	8	2.9	9	3.2	9	4.1	6	3.4	8	4.8	5	4.0	7	6.6	3
Kidney and Renal Pelvis	3.3	9	-		4.1	7	3.4	9	-		2.8	8	4.2	6	4.4	6
Stomach	2.6	10	3.1	8	-		-		4.8	4	5.2	4	3.7	8	-	
Brain and Other Nervous	-	-	2.8	10	2.0	10	3.1	10	4.0	6	-		2.8	10	-	
Myeloma	-		-		-		-		-		2.8	8	2.8	10	3.8	7
Liver	-		-		-		-		-		2.8	8	-		3.0	10
All Other Sites	22.3		21.3		20.8		23.5		20.9		17.9		16.9		20.2	

Table 8: Female Incidence: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2014-2018

Cancer Site	NB		HR1		HR2		HR3		HR4		HR5		HR6		HR7	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Breast	26.5	1	26.2	1	25.9	1	26.3	1	30.4	1	26.1	1	28.5	1	23.5	1
Lung	16.0	2	14.6	2	17.8	2	15.9	2	16.1	2	22.7	2	13.7	2	15.9	2
Colorectal	11.0	3	10.1	3	10.7	3	12.1	3	12.5	3	12.3	3	9.9	3	12.4	3
Corpus Uteri	6.8	4	7.2	4	6.5	4	7.6	4	6.1	4	5.5	4	5.5	4	7.0	4
Non-Hodgkin's Lymphoma	4.4	5	4.3	6	4.4	5	4.2	5	4.1	5	4.2	5	5.2	5	4.6	6
Melanoma of the Skin	4.1	6	5.1	5	4.4	5	3.9	6	2.9	7	-		3.0	9	4.4	7
Thyroid	3.1	7	3.7	7	2.9	7	-		2.1	10	2.3	9	3.9	7	4.8	5
Leukemia	3.0	8	3.5	8	2.9	7	3.0	7	-		2.5	8	3.2	8	2.8	10
Kidney and Renal Pelvis	3.0	8	3.2	9	2.7	9	2.5	10	-		3.0	6	4.8	6	3.0	9
Urinary Bladder	2.7	10	-		2.6	10	3.0	7	2.9	7	3.0	6	-		-	
Pancreas	-		3.1	10	-		-		3.0	6	2.3	9	2.8	10	3.3	8
Ovary	-		-		-		2.7	9	2.6	9	-		-		-	
All Other Sites	19.4		19.2		19.4		18.8		17.4		15.9		19.5		18.2	

Table 9: Female Mortality: Ranking of the Ten Leading Cancers by Frequency, Health Region and NB, 2014-2018

Cancer Site	NB		HR1[†]		HR2		HR3		HR4		HR5[‡]		HR6		HR7[§]	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Lung	26.3	1	26.8	1	29.0	1	25.5	1	23.3	1	28.9	1	21.8	1	25.2	1
Breast	13.1	2	13.1	2	11.3	2	13.5	2	14.5	2	18.7	2	13.3	3	13.9	2
Colorectal	11.9	3	10.7	3	10.6	3	12.7	3	13.9	3	10.7	3	14.5	2	13.9	2
Pancreas	6.1	4	7.2	4	5.5	4	5.1	4	6.5	4	5.3	4	6.0	4	6.8	4
Ovary	4.5	5	4.2	5	4.8	5	4.7	5	4.7	5	2.7	8	4.4	6	5.3	6
Non-Hodgkin's Lymphoma	3.8	6	3.3	6	3.0	7	3.6	6	4.7	5	3.7	5	6.0	4	5.6	5
Leukemia	2.9	7	3.2	7	2.6	8	3.0	7	-		2.1	10	3.7	7	1.9	10
Corpus Uteri	2.9	7	3.0	8	3.1	6	2.5	8	2.9	8	3.7	5	2.7	9	2.3	7
Brain and Other Nervous	2.2	9	2.5	9	-		-		2.9	8	-		2.5	10	2.3	7
Stomach	2.1	10	2.3	10	-		-		3.5	7	3.2	7	-		-	
Kidney and Renal Pelvis			-		-		2.1	9	2.9	8	-		3.3	8	2.3	7
Urinary Bladder	-		-		2.4	9	-		-		2.7	8	-		-	
Esophagus	-		-		-		2.0	10	-		-		-		-	
Intrahepatic Bile Duct	-		-		2.3	10	-		-		-		-		-	
All Other Sites	24.2		21.4		25.4		25.3		20.2		16.2		21.8		16.7	

[†]: Myeloma ranked 10 with 2.3%.

[‡]: Myeloma ranked 10 with 2.1%.

[§]: Soft Tissue inc. Heart and Cervix Uteri both ranked 10 with 1.9%.

Table 10: Ranking of the Five Leading Cancers in Health Regions Compared to the Province Using Age-Standardized Incidence Rates (ASIR)* (per 100,000 population), Males, 2014-2018

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	114.4 (110.0-118.8)	128.8 (120.0-138.0)	113.2 (104.2-122.9)	97.1 (88.5-106.4)	106.5 (90.9-124.3)	91.5 (73.3-113.8)	115.9 (103.4-129.7)	135.8 (117.7-156.2)
Lung	100.7 (96.5-105.1)	93.9 (86.2-102.2)	113.5 (104.0-123.6)	90.2 (81.7-99.5)	101.3 (85.8-119.0)	126.3 (104.3-152.3)	101.8 (89.8-115.1)	101.2 (85.4-119.5)
Colorectal	76.8 (73.1-80.7)	70.1 (63.4-77.3)	78.7 (70.9-87.2)	78.6 (70.6-87.3)	90.7 (75.7-108.0)	72.4 (55.6-93.4)	65.9 (56.3-76.9)	100.1 (83.7-119.0)
Urinary Bladder	44.5 (41.7-47.4)	48.4 (43.0-54.4)	40.2 (34.6-46.4)	53.2 (46.6-60.5)	35.8 (26.8-47.2)	45.8 (33.0-62.9)	37.9 (30.6-46.7)	37.5 (27.9-49.5)
Non-Hodgkin's Lymphoma	29.2 (26.9-31.6)	28.7 (24.5-33.4)	29.1 (24.4-34.5)	26.6 (22.0-31.9)	22.0 (14.8-31.7)	34.0 (22.7-49.8)	41.1 (33.3-50.4)	24.7 (17.0-35.0)

Table 11: Ranking of the Five Leading Cancers in Health Regions Compared to the Province Using Age-Standardized Mortality Rates (ASMR)* (per 100,000 population), Males, 2014-2018

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	75.0 (71.3-78.8)	68.9 (62.2-76.1)	85.8 (77.4-94.9)	64.3 (57.0-72.2)	80.5 (66.5-96.8)	91.6 (73.2-114.1)	77.9 (67.2-90.0)	77.0 (63.0-93.6)
Colorectal	29.7 (27.4-32.2)	28.5 (24.2-33.3)	27.2 (22.6-32.5)	29.7 (24.8-35.3)	29.2 (21.0-39.9)	27.6 (17.5-42.2)	33.1 (26.3-41.4)	36.8 (27.1-49.2)
Prostate	25.9 (23.7-28.4)	23.9 (19.9-28.5)	29.3 (24.3-35.1)	28.7 (23.5-34.6)	28.5 (19.9-39.7)	25.4 (15.8-39.5)	24.3 (18.2-31.9)	15.6 (9.6-24.3)
Pancreas	15.7 (14.1-17.6)	18.1 (14.8-22.0)	15.2 (11.9-19.2)	15.2 (11.7-19.3)	12.0 (6.8-19.9)	8.3 (3.5-17.9)	17.6 (12.8-24.0)	15.0 (9.3-23.3)
Urinary Bladder	10.4 (9.0-11.9)	10.5 (8.0-13.7)	11.3 (8.3-15.1)	9.5 (6.7-13.0)	9.0 (4.9-15.7)	8.1 (3.2-18.1)	12.7 (8.5-18.6)	8.5 (4.3-15.4)

*: Age-standardized to the 2011 Canadian population estimates.

Table 12: The Five Leading Cancers in Health Region Compared to the Province Using Age-Standardized Incidence Rates (ASIR)* (per 100,000 population), Females, 2014-2018

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	134.1 (129.4-139.0)	133.4 (124.5-142.8)	139.1 (129.1-149.7)	123.9 (114.3-134.1)	162.4 (142.8-184.2)	130.6 (107.1-158.4)	140.7 (126.1-156.8)	117.2 (99.8-137.1)
Lung	74.6 (71.3-78.1)	68.9 (62.8-75.4)	88.4 (80.8-96.6)	70.7 (63.8-78.3)	80.7 (67.6-95.9)	96.5 (78.9-117.9)	59.1 (50.6-68.9)	70.1 (57.7-84.7)
Colorectal	51.9 (49.1-54.8)	48.0 (42.9-53.6)	52.9 (47.0-59.3)	53.9 (47.8-60.5)	63.7 (51.9-77.6)	50.7 (38.1-67.2)	45.0 (37.4-54.0)	56.3 (45.0-70.0)
Corpus Uteri	33.1 (30.8-35.5)	36.0 (31.5-41.0)	33.6 (28.9-39.0)	34.2 (29.3-39.7)	32.6 (24.1-43.5)	26.1 (16.7-39.9)	25.2 (19.6-32.3)	35.5 (26.2-47.3)
Melanoma of the Skin	22.0 (20.1-24.1)	26.9 (22.9-31.4)	24.2 (20.1-29.0)	18.4 (14.8-22.6)	19.1 (12.1-28.9)	11.2 (4.9-22.5)	18.8 (13.1-26.3)	26.4 (17.5-38.3)

Table 13: The Five Leading Cancers in Health Region Compared to the Province Using Age-Standardized Mortality Rates (ASMR)* (per 100,000 population), Females, 2014-2018

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	46.3 (43.7-49.0)	43.9 (39.1-49.1)	56.3 (50.3-62.8)	44.8 (39.3-50.8)	45.4 (35.9-57.1)	47.5 (35.5-63.3)	38.1 (31.4-46.3)	40.5 (31.3-52.1)
Breast	24.2 (22.3-26.3)	23.0 (19.5-27.1)	22.5 (18.7-26.9)	24.0 (20.0-28.6)	31.1 (22.7-41.8)	32.2 (22.1-46.3)	24.7 (19.1-31.9)	22.9 (16.1-32.3)
Colorectal	20.5 (18.8-22.4)	17.2 (14.2-20.6)	19.7 (16.3-23.6)	21.5 (17.8-25.7)	27.1 (19.8-36.6)	17.3 (10.1-28.9)	25.6 (20.1-32.6)	22.6 (15.7-31.9)
Pancreas	10.4 (9.2-11.8)	12.0 (9.5-14.9)	10.4 (8.0-13.4)	8.5 (6.3-11.4)	12.7 (7.9-19.8)	8.7 (4.1-17.8)	9.9 (6.7-14.5)	10.3 (6.1-16.9)
Ovary	8.3 (7.2-9.5)	7.2 (5.3-9.6)	9.8 (7.3-12.8)	8.5 (6.2-11.5)	10.7 (5.9-18.1)	4.1 (1.3-11.9)	7.8 (4.9-12.1)	7.9 (4.3-14.0)

*: Age-standardized to the 2011 Canadian population estimates.

Table 14: Age-Standardized Incidence Rates (ASIR)* (per 100,000 population) for All Cancers and the Four Leading Cancers by Sex and Census Division (CD), NB, 2014-2018

	MALES				FEMALES			
	All Cancers	Colorectal	Lung	Prostate	All Cancers	Colorectal	Lung	Breast
	ASIR (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)	**ASIR** (95%CI)
NB	**581.9** (571.1-592.3)	**76.8** (73.1-80.7)	**100.7** (96.5-105.1)	**114.4** (110.0-118.8)	**493.5** (484.5-502.6)	**51.9** (49.1-54.8)	**74.6** (71.3-78.1)	**134.1** (129.4-139.0)
CD1	**634.8** (599.7-671.4)	**85.9** (73.3-100.1)	**130.9** (115.0-148.4)	**106.6** (93.0-121.7)	**543.6** (514.3-574.2)	**48.9** (40.5-58.5)	**107.9** (95.4-121.7)	**142.6** (127.4-159.2)
CD2	**591.3** (538.5-648.3)	**80.2** (61.6-103.1)	**112.2** (90.3-138.3)	**125.3** (102.5-152.1)	**493.5** (447.3-543.5)	**51.6** (38.0-69.3)	**89.6** (71.2-112.0)	**126.0** (102.9-153.2)
CD3	**516.1** (458.2-579.0)	**70.7** (50.8-95.6)	**87.3** (64.0-116.0)	**85.5** (63.4-112.6)	**458.2** (407.1-514.0)	**54.9** (38.0-76.7)	**75.0** (55.1-99.7)	**127.9** (101.7-158.7)
CD4	**578.4** (503.4-663.6)	**73.5** (48.7-109.6)	**120.2** (88.3-162.8)	**87.1** (61.2-123.8)	**498.4** (429.3-577.6)	**38.6** (22.1-66.5)	**92.4** (66.0-129.1)	**132.7** (96.6-179.9)
CD5	**579.9** (545.9-615.6)	**73.2** (61.4-86.7)	**97.9** (84.1-113.3)	**114.8** (100.7-130.5)	**501.1** (470.7-533.2)	**59.6** (49.6-71.1)	**65.0** (54.6-76.9)	**140.3** (124.3-157.9)
CD6	**560.9** (510.7-614.9)	**67.5** (50.6-88.5)	**81.6** (63.1-104.0)	**117.4** (95.7-142.9)	**548.0** (500.2-599.4)	**70.7** (54.7-90.3)	**64.5** (49.4-83.2)	**142.9** (118.8-170.6)
CD7	**584.7** (561.3-608.9)	**71.9** (63.7-80.8)	**88.5** (79.4-98.3)	**130.8** (120.1-142.1)	**493.8** (473.4-514.8)	**45.1** (39.2-51.7)	**68.6** (61.4-76.6)	**131.1** (120.6-142.3)
CD8	**610.1** (563.1-660.6)	**64.2** (49.9-82.1)	**124.4** (104.1-148.1)	**130.8** (110.4-154.4)	**507.0** (462.5-554.9)	**41.5** (30.0-56.5)	**73.1** (58.3-91.2)	**137.4** (115.0-163.5)
CD9	**603.9** (565.2-644.8)	**96.5** (81.2-114.2)	**100.7** (85.7-117.9)	**130.7** (113.8-149.7)	**487.0** (452.2-524.0)	**54.4** (43.8-67.2)	**69.8** (58.0-83.7)	**118.2** (101.4-137.2)
CD10	**564.8** (535.3-595.4)	**82.5** (71.4-94.8)	**80.0** (69.0-92.2)	**102.6** (90.5-115.9)	**458.8** (434.4-484.3)	**56.0** (47.8-65.2)	**63.8** (55.1-73.7)	**128.3** (115.4-142.2)
CD11	**567.9** (513.9-626.1)	**77.3** (57.9-101.2)	**99.8** (78.5-125.4)	**109.3** (87.2-135.6)	**476.2** (429.6-526.9)	**61.1** (45.7-80.5)	**77.7** (60.0-99.4)	**117.2** (94.3-144.2)
CD12	**573.9** (513.3-640.4)	**97.1** (72.2-128.2)	**102.1** (78.0-132.0)	**97.2** (74.6-125.4)	**468.7** (415.8-527.0)	**60.3** (43.0-83.2)	**90.0** (68.7-116.8)	**110.9** (85.9-141.4)
CD13	**527.7** (483.8-574.9)	**83.8** (66.8-104.1)	**95.0** (77.3-116.0)	**98.4** (80.5-119.6)	**523.2** (481.1-568.5)	**61.9** (48.1-79.1)	**74.6** (60.0-92.3)	**166.9** (143.5-193.5)
CD14	**607.6** (560.8-657.7)	**72.8** (57.3-91.7)	**130.1** (109.6-154.0)	**96.8** (79.5-117.5)	**481.8** (440.8-526.2)	**52.3** (40.4-67.4)	**97.9** (81.2-117.8)	**135.1** (113.1-160.6)
CD15	**581.2** (551.2-612.6)	**65.9** (56.3-76.9)	**101.8** (89.8-115.1)	**115.9** (103.4-129.7)	**484.5** (457.3-513.1)	**45.0** (37.4-54.0)	**59.1** (50.6-68.9)	**140.7** (126.1-156.8)

*: Age-standardized to the 2011 Canadian population estimates.

Table 15: Age-Standardized Mortality Rates (ASMR)* (per 100,000 population) for All Cancers and the Four Leading Cancers by Sex and Census Division (CD), NB, 2014-2018

	MALES				FEMALES			
	All Cancers	Colorectal	Lung	Prostate	All Cancers	Colorectal	Lung	Breast
	ASMR (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)	**ASMR** (95%CI)
NB	**259.2** (252.2-266.3)	**29.7** (27.4-32.2)	**75.0** (71.3-78.8)	**25.9** (23.7-28.4)	**177.1** (172.0-182.4)	**20.5** (18.8-22.4)	**46.3** (43.7-49.0)	**24.2** (22.3-26.3)
CD1	**311.4** (286.4-338.1)	**32.9** (25.2-42.3)	**104.0** (89.7-119.9)	**24.7** (17.8-33.3)	**211.3** (193.9-230.0)	**19.6** (14.6-25.8)	**66.3** (56.7-77.1)	**23.1** (17.5-30.1)
CD2	**233.2** (200.0-270.7)	**22.4** (13.1-36.2)	**80.8** (62.0-103.9)	**26.0** (15.3-41.6)	**179.4** (153.5-209.0)	**15.4** (8.8-26.1)	**55.3** (41.5-72.9)	**20.9** (12.6-33.4)
CD3	**268.5** (225.0-317.5)	**42.7** (26.9-63.9)	**72.0** (50.6-98.9)	**17.0** (6.6-34.1)	**187.4** (154.7-224.7)	**33.3** (20.3-51.2)	**55.0** (38.1-76.9)	**22.4** (12.3-37.6)
CD4	**305.0** (251.2-369.3)	**19.6** (8.6-43.2)	**83.1** (57.3-119.9)	**29.1** (14.1-56.7)	**201.9** (160.5-253.4)	**16.0** (6.7-37.6)	**73.7** (49.9-108.3)	**23.7** (11.6-47.7)
CD5	**251.9** (228.6-276.8)	**23.7** (17.1-32.1)	**69.7** (57.8-83.3)	**35.0** (26.3-45.6)	**177.1** (159.6-196.1)	**23.6** (17.5-31.2)	**43.5** (35.1-53.4)	**22.7** (16.6-30.4)
CD6	**226.2** (194.3-262.1)	**26.4** (16.4-40.6)	**53.1** (38.5-71.7)	**29.9** (18.6-45.6)	**177.2** (151.7-206.1)	**18.9** (11.5-30.0)	**42.8** (31.0-58.2)	**25.7** (16.4-38.6)
CD7	**246.8** (231.2-263.2)	**31.0** (25.7-37.2)	**65.8** (57.9-74.5)	**24.4** (19.5-30.1)	**168.2** (156.8-180.3)	**16.7** (13.3-20.8)	**43.8** (38.1-50.1)	**25.8** (21.3-31.0)
CD8	**245.3** (215.4-278.7)	**18.9** (11.5-30.1)	**92.4** (74.7-113.5)	**17.8** (10.1-29.5)	**146.2** (124.3-171.4)	**18.8** (11.2-30.2)	**44.5** (33.3-59.0)	**8.1** (3.6-16.5)
CD9	**247.8** (223.2-274.7)	**34.2** (25.4-45.5)	**72.3** (59.4-87.4)	**15.3** (9.6-23.4)	**160.4** (142.1-180.9)	**22.2** (15.7-30.9)	**42.5** (33.4-53.7)	**22.0** (15.5-30.7)
CD10	**257.6** (237.1-279.3)	**32.9** (26.0-41.2)	**56.6** (47.4-67.1)	**33.6** (26.1-42.5)	**170.7** (156.3-186.2)	**21.4** (16.6-27.3)	**36.2** (29.8-43.7)	**25.2** (19.8-31.7)
CD11	**239.7** (204.5-279.3)	**23.5** (13.7-37.8)	**69.5** (51.2-92.5)	**24.6** (13.9-40.3)	**184.4** (156.6-216.0)	**21.8** (13.0-34.8)	**54.4** (39.7-73.1)	**17.4** (9.6-29.5)
CD12	**266.2** (224.5-313.9)	**22.4** (11.3-40.3)	**84.4** (62.5-112.4)	**29.8** (16.7-49.7)	**207.0** (173.0-246.5)	**22.4** (12.4-38.4)	**57.6** (40.6-80.3)	**34.7** (20.9-54.9)
CD13	**268.5** (236.7-303.7)	**28.5** (19.2-41.4)	**78.8** (62.5-98.6)	**32.2** (21.2-47.0)	**192.4** (167.9-219.9)	**27.5** (18.9-39.4)	**41.1** (30.8-54.6)	**29.2** (19.6-42.3)
CD14	**269.1** (238.3-303.3)	**26.6** (17.4-39.5)	**94.6** (77.3-115.3)	**24.4** (15.7-36.8)	**162.8** (141.3-187.5)	**15.5** (9.3-25.4)	**44.1** (33.4-58.1)	**33.7** (24.2-46.6)
CD15	**267.5** (247.0-289.5)	**33.1** (26.3-41.4)	**77.9** (67.2-90.0)	**24.3** (18.2-31.9)	**179.9** (164.4-196.8)	**25.6** (20.1-32.6)	**38.1** (31.4-46.3)	**24.7** (19.1-31.9)

*: Age-standardized to the 2011 Canadian population estimates.

Table 16: Average Annual Percent Change (AAPC) in Age-Standardized Incidence Rate (ASIR) and Mortality Rate (ASMR) for All Cancers and the Four Leading Cancers by Sex, NB, 2004-2018

Cancer Site	INCIDENCE (ASIR)				MORTALITY (ASMR)			
	MALES		FEMALES		MALES		FEMALES	
	AAPC (95%CI)	Changepoint†	AAPC (95%CI)	Changepoint	AAPC (95%CI)	Changepoint	AAPC (95%CI)	Changepoint
All Cancers	**-1.2*** (-1.9, -0.5)	2007	**+0.4*** (0.1, 0.7)		**-1.4*** (-2.1, -0.7)		**-0.7*** (-1.3, -0.1)	
Prostate	**-3.4*** (-6.5, -0.2)	2008, 2014	-		**-2.5*** (-4.0, -1.0)		-	
Breast	-		**+0.3** (-0.3, 1.0)		-		**-1.3*** (-2.5, 0.0)	
Lung	**-1.6*** (-2.1, -1.1)		**+0.2** (-0.7, 1.1)		**-2.7*** (-3.7, -1.7)	2008	**-1.6*** (-2.9, -0.3)	
Colorectal	**-1.0*** (-1.9, -0.1)		**-0.4** (-1.3, 0.5)		**-1.0*** (-1.7, -0.4)		**-0.3** (-1.8, 1.3)	

†: Changepoint indicates the baseline year, if the slope of the trend changed after 2004.

*: Significant at p=0.05.

-: Not Applicable.

Table 17: 10-Year Tumour-based Prevalence Counts by Cancer Sites Prior to January 1, 2018 by Sex and Health Region, 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 Cancers	13,441	12,781	3,926	3,684	2,988	2,980	2,504	2,507	901	875	500	498	1,589	1,418	1,042	821
Lung	908	994	240	268	199	250	165	186	68	74	62	59	111	92	63	65
Colorectal	1,876	1,429	495	393	441	336	365	308	166	98	59	52	208	136	142	106
Prostate	5,182	-	1,627	-	1,087	-	800	-	363	-	156	-	623	-	526	-
Breast	*	4,726	*	1,365	*	1,072	*	923	*	356	*	200	*	535	*	275

Table 18: 10-Year Person-based Prevalence Counts by Cancer Sites Prior to January 1, 2018 by Sex and Health Region, 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 Cancers	11,291	10,624	3,311	3,063	2,434	2,399	2,109	2,102	781	762	420	419	1,366	1,209	870	670
Lung	633	730	160	207	143	169	110	147	50	52	45	42	79	71	46	42
Colorectal	1,458	1,080	401	301	331	250	278	234	130	76	47	38	163	107	108	74
Prostate	4,382	-	1,391	-	892	-	677	-	314	-	129	-	544	-	435	-
Breast	*	3,847	*	1,087	*	845	*	769	*	304	*	171	*	445	*	226

-: Not applicable.

*: Not available due to small number.

Table 19: Age-Specific Relative Survival Ratios (95% CI) for Selected Cancers at One, Three and Five Years, Males, NB, 2013-2017

Cancer Site	Age at Diagnosis (Years)	1-Year	3-Year	5-Year
All Cancers	**All Ages**	75.1 (74.0, 76.2)	64.0 (62.6, 65.3)	60.3 (58.9, 61.7)
	0-44	91.4 (86.8, 94.5)	85.9 (80.4, 90.0)	80.9 (75.0, 85.5)
	45-49	90.7 (85.1, 94.3)	76.8 (69.1, 82.7)	75.8 (68.1, 81.9)
	50-74	80.0 (78.7, 81.2)	69.5 (68.0, 71.0)	66.1 (64.4, 67.7)
	75+	59.6 (57.0, 62.1)	46.0 (43.1, 48.9)	41.4 (38.2, 44.6)
Prostate	**All Ages**	97.4 (95.9, 98.4)	95.5 (93.3, 96.9)	95.1 (92.3, 96.9)
	0-44	-* (N/A)	-* (N/A)	-* (N/A)
	45-49	100.0* (N/A)	95.4 (65.7, 99.5)	92.1 (67.6, 98.3)
	50-74	99.4 (98.1, 99.8)	99.4 (98.1, 99.8)	99.4 (98.1, 99.8)
	75+	85.2 (78.0, 90.2)	71.3 (62.2, 78.6)	65.8 (55.5, 74.3)
Lung	**All Ages**	42.8 (39.7, 45.8)	23.5 (20.8, 26.2)	18.2 (15.7, 20.8)
	0-44	67.7 (20.4, 90.9)	45.3 (11.8, 74.6)	45.3 (11.8, 74.6)
	45-49	27.3 (4.3, 58.7)	5.9 (0.3, 25.4)	5.9 (0.3, 25.4)
	50-74	47.5 (43.5, 51.3)	27.2 (23.8, 30.8)	21.7 (18.4, 25.1)
	75+	35.2 (30.4, 40.1)	17.4 (13.5, 21.7)	12.4 (8.9, 16.5)
Colorectal	**All Ages**	83.1 (80.2, 85.7)	72.2 (68.4, 75.6)	66.0 (61.9, 69.8)
	0-44	78.3 (55.0, 90.5)	65.0 (42.8, 80.3)	57.7 (37.2, 73.6)
	45-49	95.9 (73.8, 99.4)	80.8 (54.9, 92.7)	75.6 (49.4, 89.5)
	50-74	86.3 (82.9, 89.1)	74.1 (69.7, 77.9)	67.0 (62.2, 71.3)
	75+	75.6 (68.8, 81.1)	68.4 (59.7, 75.6)	64.4 (54.0, 73.0)

*: No individual was diagnosed with prostate cancer.

Table 20: Age-Specific Relative Survival Ratios (95% CI) for Selected Cancers at One, Three and Five Years, Females, NB, 2013-2017

Cancer Site	Age at Diagnosis (Years)	1-Year	3-Year	5-Year
All Cancers	**All Ages**	78.9 (77.8, 80.0)	68.4 (67.0, 69.7)	63.8 (62.3, 65.2)
	0-44	94.8 (92.0, 96.6)	91.3 (87.9, 93.8)	86.8 (82.9, 89.8)
	45-49	91.9 (87.6, 94.8)	83.7 (78.4, 87.8)	81.0 (75.4, 85.4)
	50-74	83.2 (81.9, 84.4)	72.7 (71.1, 74.3)	67.6 (65.9, 69.3)
	75+	64.1 (61.6, 66.5	50.6 (47.7, 53.4)	46.4 (43.2, 49.6)
Breast	**All Ages**	96.8 (95.4, 97.7)	92.2 (90.1, 93.8)	89.4 (86.9, 91.4)
	0-44	97.9 (91.3, 99.5)	94.2 (86.9, 97.5)	85.9 (77.2, 91.4)
	45-49	99.1 (93.5, 99.9)	93.2 (84.5, 97.1)	92.3 (83.5, 96.5)
	50-74	98.1 (96.8, 98.9)	94.5 (92.4, 96.0)	91.5 (88.9, 93.5)
	75+	91.5 (86.6, 94.7)	83.6 (76.3, 88.9)	81.2 (73.6, 86.8)
Lung	**All Ages**	54.5 (51.2, 57.7)	35.8 (32.5, 39.0)	26.3 (23.1, 29.5)
	0-44	83.4 (27.2, 97.5)	66.8 (19.4, 90.5)	66.8 (19.4, 90.5)
	45-49	51.9 (22.3, 75.0)	37.3 (12.9, 62.1)	31.2 (10.6, 54.6)
	50-74	59.1 (55.1, 62.8)	40.0 (36.0, 44.0)	30.8 (26.8, 34.8)
	75+	44.4 (38.4, 50.2)	26.4 (21.1. 31.9)	13.8 (8.9, 19.8)
Colorectal	**All Ages**	80.3 (76.8, 83.4)	69.4 (65.2, 73.2)	63.5 (58.9, 67.8)
	0-44	84.0 (61.1, 94.0)	75.7 (47.4, 90.1)	66.3 (35.5, 84.9)
	45-49	88.8 (61.8, 97.1)	79.2 (52.8, 91.8)	70.5 (45.3, 85.7)
	50-74	88.4 (84.1, 91.6)	75.3 (69.9, 79.9)	69.3 (63.4, 74.4)
	75+	69.9 (63.7, 75.3)	60.9 (53.7, 67.3)	56.0 (47.8, 63.5)

Table 21: Relative Survival Ratios (95% CI) by Stage for the Four Leading Cancers at One, Three and Five Years, NB, 2013-2017

Cancer Site	Cancer Stage	1-Year		3-Year		5-Year	
		Male	Female	Male	Female	Male	Female
Lung	All stages	42.8 (39.7, 45.8)	54.5 (51.2, 57.7)	23.5 (20.8, 26.2)	35.8 (32.5, 39.0)	18.2 (15.7, 20.8)	26.3 (23.1, 29.5)
	I	85.8 (80.2, 89.9)	88.4 (83.7, 91.9)	67.5 (60.2, 73.8)	73.8 (67.4, 79.1)	54.6 (46.4, 62.0)	58.0 (50.5, 64.8)
	II	69.1 (57.6, 78.0)	68.5 (57.5, 77.2)	35.4 (24.7, 46.2)	44.3 (33.5, 54.6)	26.8 (17.6, 36.9)	35.6 (25.4, 45.9)
	III	42.8 (36.3, 49.2)	57.2 (49.7, 64.0)	17.1 (12.6, 22.2)	26.7 (20.1, 33.7)	12.5 (8.6, 17.1)	15.8 (10.6. 22.1)
	IV	15.8 (12.6, 19.3)	21.3 (17.1, 25.8)	2.8 (1.6, 4.5)	6.8 (4.5, 9.8)	1.4 (0.6, 2.8)	4.1 (2.3, 6.5)
	Occult	N/A*	N/A	N/A	N/A	N/A	N/A
	Unknown	36.9 (7.4, 68.3)	57.4 (17.2, 84.0)	36.9 (7.4, 68.3)	57.4 (17.2, 84.0)	N/A	N/A
Colorectal	All stages	83.1 (80.2, 85.7)	80.3 (76.8, 83.4)	72.2 (68.4, 75.6)	69.4 (65.2, 73.2)	66.0 (61.9, 69.8)	63.5 (58.9, 67.8)
	I	98.0 (90.8, 99.6)	95.7 (88.5, 98.4)	96.8 (89.5, 99.1)	92.6 (82.0, 97.1)	96.8 (89.5, 99.1)	88.1 (75.7, 94.4)
	II	93.3 (87.0, 96.6)	94.8 (89.4, 97.5)	90.6 (82.2, 95.1)	94.1 (85.8, 97.6)	82.9 (73.8, 89.1)	94.1 (85.8, 97.6)
	III	92.4 (87.0, 95.6)	88.7 (81.7, 93.1)	82.8 (75.7, 88.0)	69.9 (61.1, 77.1)	73.5 (65.2, 80.1)	60.8 (51.5, 68.8)
	IV	49.7 (41.8, 57.1)	44.7 (35.9, 53.1)	20.2 (14.4, 26.6)	23.9 (16.8, 31.7)	11.1 (6.9, 16.5)	15.2 (9.3, 22.4)
	Unknown	71.3 (50.7, 84.5)	42.7 (24.4, 59.9)	41.2 (17.6, 63.5)	10.1 (2.5, 24.1)	35.6 (14.2, 57.9)	3.1 (0.4, 11.2)
Prostate	All stages	97.4 (95.9, 98.4)	-	95.5 (93.3, 96.9)	-	95.1 (92.3, 96.9)	-
	I	99.5 (93.7, 100.0)	-	99.5 (93.7, 100.0)	-	99.5 (93.7, 100.0)	-
	II	99.6 (90.7, 100.0)	-	99.5 (79.0, 100.0)	-	99.5 (79.0, 100.0)	-
	III	100 (N/A)	-	100 (N/A)	-	100 (N/A)	-
	IV	81.5 (73.8, 87.2)	-	52.2 (42.4, 61.1)	-	36.7 (27.0, 46.4)	-
	Unknown	56.5 (12.7, 85.4)	-	51.6 (9.6, 83.0)	-	51.6 (9.6, 83.0)	-
Breast	All stages	-	96.8 (95.4, 97.7)	-	92.2 (90.1, 93.8)	-	89.4 (86.9, 91.4)
	I	-	100* (0.0, 100.0)	-	98.8 (94.4, 99.7)	-	98.2 (94.6, 99.4)
	II	-	98.6 (95.7, 99.6)	-	94.9 (91.0, 97.1)	-	92.8 (88.2, 95.7)
	III	-	93.4 (87.4, 96.6)	-	83.5 (75.3, 89.1)	-	78.8 (70.1, 85.2)
	IV	-	66.6 (55.8, 75.3)	-	43.5 (32.6, 54.0)	-	23.6 (15.0, 33.4)
	Unknown	-	67.9 (30.8, 88.0)	-	46.5 (12.4, 75.5)	-	28.8 (6.5, 56.8)

-: Not Applicable.

GLOSSARY

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., 2011 Canadian population estimates) in that age group.

All Other Sites

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

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.

Annual Percent Change (APC) and Average Annual Percent Change (AAPC)

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. AAPC is a weighted average of all calculated APCs.

Cancer

Cancer is a disease in which abnormal 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 excess white blood cells to be produced. Lymphoma is cancer that begins in the cells of the immune system.

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.

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.

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.

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.

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.

Incidence (new cases)

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

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.

Joinpoint /Joinpoint Regression 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 the National Cancer Institute, is used to determine when and how often the change(s) occurred in the age-standardized incidence and mortality rates overtime.

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.

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.

New Brunswick Provincial Cancer Registry (NBPCR)

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

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

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

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.

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.

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.

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.

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

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

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