

the Métis
Nation *of*
Ontario

CANCER IN THE MÉTIS NATION OF ONTARIO

LAY REPORT
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CANCER IN THE MÉTIS NATION OF ONTARIO

Cancer is a disease that starts when cells in the body begin to divide and grow uncontrollably. Cancer cells that spread to other parts of the body are called metastases. Cancers are named after the part of the body where they start. For example, cancer that starts in the bladder but spreads to the lung is called bladder cancer with lung metastases. Many cancers are preventable or treatable in their early stages so it is important to look at who is at risk of getting them so as to off-set their development or 'catch it early'.

The rate of new cancers and cancer death has been stable or declining over time in the general population but we do not know what is happening in the Métis population even though the Métis are a significant proportion (approximately 30%) of the Aboriginal population in Canada. This information gap has contributed to a lack of peer-reviewed studies on Métis health and healthcare. The Métis Nation of Ontario (MNO), the sole representative body for the Métis in Ontario, is very interested in the health and healthcare of the Métis people. For this reason the MNO has launched a research initiative with funding from the Public Health Agency of Canada to develop population-based data on cancer in the Métis who reside in Ontario. The MNO worked with the Institute for Clinical Evaluative Sciences (ICES) on this study to look at new cancers during 2005 to 2007.

Ontario health data do not include identifiers for individuals' ethnic or cultural background and so an alternative way of identifying the Métis population in the provincial health databases was needed. This was done by linking the citizenship registry of the Métis Nation of Ontario provincial healthcare records held at ICES. All information that might identify individuals was kept strictly confidential.

This report explains how the information about Métis people and their rates of cancer was gathered and uses charts to show what was learned about the disease among the Métis and how it compares to cancer in the rest of the population in Ontario.

THE EXTENT OF THE PROBLEM

Most of the information on rates of cancer among Métis people is provided by surveys where respondents report whether or not they or family members have the disease. For example, one estimate is 15.3% among registered Métis in British Columbia report that they or a family member had a diagnosis of cancer (Hutchinson 2007). A linkage study in Manitoba, not unlike the one described in this report found that cancer incidence was 4.2% lower among Métis men and 2.4% among Métis women compared to other Manitobans. This study had a lot of limitations however; for instance, most of the people included lived in the same region and so it was not possible to know if their cancer rates were similar to all Métis in that province.

More recently the Manitoba Centre for Health Policy, in collaboration with the Manitoba Metis Federation, released a detailed report on the health and healthcare use of the Métis population in Manitoba. Despite a huge wealth of data, this report did not include information on the prevalence or incidence of common cancers. The report did discuss the proportion of total mortality due to cancer and found 30.6% compared with 27.8% for 'other' Manitobans, which suggests a higher cancer rate or a higher cancer case fatality rate.

RESEARCH METHODS

HOW THE INFORMATION WAS GATHERED

This study is based on the citizenship registry of the Métis Nation of Ontario (updated to August 2009), which represents about 18% of Ontario's total Métis population. Registry files were linked to the database of everyone who is eligible for a health card in Ontario. In all, 14,021 of the 14,480 individuals in the citizenship registry were found in Ontario health records, 96% of those aged 18 years and older had a valid Ontario address and Health Card number. This was the Métis population that was studied. In the report, they are referred to simply as "the Métis", or "the Métis population". All other citizens of Ontario aged 18 and older were counted as part of the general population, which includes the Métis who are not part of the registry.

Privacy was protected by substituting coded numbers for real health-card numbers. This kept people anonymous while still allowing us to trace their medical history through Ontario healthcare records. A combination of databases were used to narrow down the group again, so it included only people who have cancer both in the Métis Nation of Ontario and in the general public. By “cancer” we are referring to the following diseases:

- Prostate - starts in the cells of the prostate gland, part of the male reproductive system. It is the most common cancer among Canadian men and often grows slowly and can often be cured or treated successfully.
- Breast - starts in the cells of the breast. It is the most common cancer among Canadian women. One in 9 women is expected to develop breast cancer during her lifetime and one in 28 will die of it. Colorectal - most start in the cells that line the inside of the colon or the rectum. Colorectal cancer is the second leading cause of cancer-related death among Canadian men and women combined. It usually grows slowly and in a predictable way, and is curable when diagnosed at an early stage.
- Lung - starts in the cells of the lung. There are two main types of lung cancer: Non-small cell lung cancer (NSCLC) is the most common type of lung cancer. It grows more slowly than small cell lung cancer. Small cell lung cancer (SCLC) grows quickly and often spreads to distant parts of the body. Because each type of lung cancer behaves quite differently, they are treated differently. Lung cancer remains the leading cause of cancer death for both men and women.
- Non-Hodgkin Lymphoma - starts in the cells of the lymphatic system, part of the immune system that helps fight infection and disease. It can begin in almost any part of the body but it usually starts in a group of lymph nodes in one part of the body, most often the neck. Eventually, it can spread to almost any tissue or organ in the body through the lymphatic system or the bloodstream. There are over 20 types of non-Hodgkin lymphoma.
- Uterine - starts in the lining of the uterus (or womb) which is part of a woman’s reproductive system. Cancer that starts in the lining inside the uterus is called uterine cancer (or endometrial carcinoma).
- Ovarian - starts in the cells of the ovary or ovaries, two small, oval-shaped organs that are part of the female reproductive system and lie deep in the pelvis on either side of the uterus (womb). There are three main types of ovarian cancer, which are differentiated by the type of cell that the cancer starts in.
- Cervical - the narrow, lower part of the uterus (or womb). It is the passageway that connects the uterus to the vagina. The cervix is part of a woman’s reproductive system. Precancerous changes of cervical cells are called dysplasia and many women who have dysplasia do not develop cervical cancer.

Again, to keep things simple, in the report when the term “general population” is used it refers to the general public who are not part of the Métis Nation of Ontario citizenship registry. Once these groups were defined, the Ontario Cancer Registry (OCR) was examined for cancer-related entries. The OCR records information on all Ontario residents who have been newly diagnosed with cancer (“incidence”) or who have died of cancer (“mortality”). The only type of cancer that is not captured in this system is non-melanoma skin cancer. This registry contains information on 95% of Ontarians with cancer.

The number of cases of each of the cancer types included in our study was estimated by looking at provincial registry data from 2005 to 2007 (fiscal years).

Because the average age and the distribution of men and woman of the Métis population is different than the Ontario population overall, many of the numbers gathered were “standardized” or adjusted to ensure that when the two groups were compared it was a fair comparison. For example, some types of cancer are more common in older people and in one sex, but the Métis population has a different age and sex distribution than Ontario overall. Just counting cases could result in a false impression of the differences between the two groups. By adjusting the numbers, a more accurate comparison between the Métis population and the overall Ontario population can be made. When statistics have not been adjusted, they are technically referred to as “crude” number.

FINDINGS

WHO WAS INCLUDED IN THIS STUDY

Table 1 : Demographic characteristics of the Métis Nation of Ontario citizenship registry versus the Métis population in Ontario identified in the 2006 Census.

Characteristic		Métis Nation of Ontario Citizenship Registry	Ontario Métis people identified in the 2006 Census
Number of persons		13,439	73,605
Age	<65	88.8%	94.8%
	65+	11.2%	5.2%
Sex	Female	45.9%	50.0%
	Male	54.1%	50.0%

The MNO citizenship registry included in this analysis represented approximately 18% of the total Métis population in Ontario based 2006 Census census estimate. People included in the citizenship registry were older and more likely to be male.

Table 2 : Comparing characteristics of registered citizens of the Métis Nation of Ontario and the Ontario general population.

Characteristic		Métis Nation of Ontario Citizenship Registry	General population
Number of persons	13,439	9,897,757	13,445,390
Age (%)	<65	88.8	83.4
	65-74	7.8	8.7
	75+	3.4	7.8
Sex (%)	Female	45.9	51.1
	Male	54.1	48.9
Rurality ¹ (%)	Missing	4.9	0.0
	Urban	65.6	87.7
	Rural	29.5	12.2
Income Quintile ² (%)	Missing	0.1	0.0
	1	21.8	18.2
	2	20.8	19.5
	3	20.5	20.2
	4	19.8	21.4
	5	17.0	20.8
Local Health Integrated Network (LHIN) (%)	Missing	4.9	0.0
	Erie St. Clair	2.4	5.1
	South West	3.4	7.3
	Waterloo Wellington	2.2	5.5
	Hamilton Niagara Haldimand Brant	5.1	10.9
	Central West	1.2	5.9
	Mississauga Halton	1.6	8.4
	Toronto Central	2.3	9.4
	Central	2.0	12.6
	Central East	4.8	11.7
	South East	2.7	3.9
	Champlain	5.3	9.4
	North Simcoe Muskoka	17.3	3.4
	North East	29.3	4.5
	North West	15.5	1.8

¹Based on the Statistics Canada definition of rurality (Statistics Canada. Standard Geographical Classification (SGC): Volume 1 - The Classification. Ottawa, ON: 2007).

² Neighbourhood income is calculated by Statistics Canada and is updated every five years when new census data become available. Ontario neighbourhoods are now classified into one of five approximately equal-sized groups (quintiles), ranked from poorest (Q1) to wealthiest (Q5). These income quintiles are related to population health status and levels of health care utilization. We generated the income quintile distribution for urban areas only.

MNO citizens are slightly younger and have a greater proportion of males than the general population. A much higher proportion of the general population lived in urban areas compared with MNO citizens. When considering only those residing in urban areas, MNO citizens were more likely to live in lower income neighbourhoods than the general population. The majority of MNO citizens lived in the North of the province, with the largest group in the North East.

WHAT TYPES OF CANCER EXIST AMONG THE MÉTIS

Table 3 : Frequency ranking of cancers newly diagnosed during 2005-2007 among the Métis and among the Ontario general population, by type.

Cancer Type	Cases among Métis (n)	Frequency Ranking among Métis	Cancer Type	Cases among General population (n)
Total			Total	
Lung	29	1	Prostate	27,917
Prostate	23	2	Breast	23,662
Colorectal	22	3	Colorectal	21,092
Breast	19	4	Lung	21,563
Non-Hodgkin Lymphoma	6	5	Non-Hodgkin Lymphoma	7,977
Uterus	<=5	6	Uterus	4,962
Ovary	<=5	7	Ovary	3,112
Cervix	<=5	8	Cervix	1,575
Overall	168		Overall	160,971
Males			Males	
Prostate	23	1	Prostate	27,917
Lung	13	2	Lung	11,546
Colorectal	12	3	Colorectal	11,514
Non-Hodgkin Lymphoma	<=5	4	Non-Hodgkin Lymphoma	4,389
Overall	87		Overall	83,336
Females			Females	
Breast	19	1	Breast	23,662
Lung	16	2	Colorectal	9,578
Colorectal	10	3	Lung	10,017
Uterus	<=5	4	Uterus	4,962

Table 3 (continued) : Frequency ranking of cancers newly diagnosed during 2005-2007 among the Métis and among the Ontario general population, by type.

Cancer Type	Cases among Métis (n)	Frequency Ranking among Métis	Cancer Type	Cases among General population (n)
Ovary	<=5	5	Non-Hodgkin Lymphoma	3,588
Non-Hodgkin Lymphoma	<=5	6	Ovary	3,112
Cervix	<=5	7	Cervix	1,575
Overall	81		Overall	77,635

Cell sizes of less than five have been suppressed.

The most frequent types of newly diagnosed cancers among the Métis population were in order, lung, prostate, colorectal and breast whereas in the general Ontario population they were prostate, breast, lung and colorectal.

Table 4 : Incidence of cancer per 1000 persons during 2005 to 2007 among the Métis population and among the Ontario general population, by type and sex.

Crude Incidence per 1000 population (95% CI), by type	Métis	General population
Total		
Breast	1.05 (0.63, 1.64)	1.48 (1.46, 1.50)
Cervix	-	0.10 (0.09, 0.10)
Colorectal	0.56 (0.35, 0.85)	0.67 (0.66, 0.67)
Lung	0.74 (0.49, 1.06)	0.68 (0.67, 0.69)
Non-Hodgkin Lymphoma	0.15 (0.06, 0.33)	0.25 (0.25, 0.26)
Ovary	0.17 (0.03, 0.48)	0.19 (0.19, 0.20)
Prostate	1.10 (0.70, 1.65)	1.82 (1.80, 1.84)
Uterus	0.27 (0.09, 0.64)	0.31 (0.30, 0.32)
All Cancers	4.40 (3.76, 5.12)	5.25 (5.22, 5.27)
Males		
Colorectal	0.57 (0.30, 1.00)	0.74 (0.73, 0.76)
Lung	0.62 (0.32, 1.06)	0.74 (0.73, 0.76)
Non-Hodgkin Lymphoma	0.24 (0.08, 0.55)	0.28 (0.27, 0.29)
Prostate	1.10 (0.70, 1.65)	1.82 (1.80, 1.84)
All Cancers	4.24 (3.40, 5.23)	5.54 (5.50, 5.58)
Females		
Breast	1.05 (0.63, 1.64)	1.48 (1.46, 1.50)
Cervix	-	0.10 (0.09, 0.10)
Colorectal	0.55 (0.26, 1.01)	0.59 (0.58, 0.60)
Lung	0.88 (0.50, 1.43)	0.62 (0.61, 0.63)
Non-Hodgkin Lymphoma	0.06 (0.00, 0.31)	0.22 (0.21, 0.23)
Ovary	0.17 (0.03, 0.48)	0.19 (0.19, 0.20)
Uterus	0.27 (0.09, 0.64)	0.31 (0.30, 0.32)
All Cancers	4.59 (3.64, 5.70)	4.97 (4.93, 5.00)

CI: Confidence Interval

The overall crude incidence of cancer is 20 percent lower in the Métis population than in the general Ontario population. The lower incidence of cancer among the Métis remains true when looking at specific types of cancer overall and by sex, with the exception of lung cancer which appears to be 1.4 times higher among Métis women.

Table 5 : Crude and age-sex standardized annual incidence of cancer per 1000 persons among the Métis, 2005 to 2007.

	Métis		General population	
Incidence per 1000 population, by year	Crude Rate (CI)	Indirectly Standardized Rate (CI)	Crude Rate (CI)	Indirectly Standardized Rate (CI)
2005	5.29 (4.10, 6.72)	5.43 (4.21, 6.90)	5.17 (5.13, 5.22)	5.19 (5.15, 5.24)
2006	3.93 (2.92, 5.18)	3.93 (2.92, 5.19)	5.26 (5.21, 5.30)	5.26 (5.21, 5.30)
2007	3.99 (2.97, 5.24)	3.89 (2.89, 5.11)	5.31 (5.26, 5.35)	5.29 (5.24, 5.33)

CI: Confidence Interval

Standardizing for age and sex did not substantially change the annual incidence rates of cancer among either the Métis or the general Ontario population. Cancer incidence was 1.4 to 1.5 times lower among the Métis compared to the general population in the years 2006 and 2007. A comparison of the crude and age standardized rates per year can be found in Appendix 2.

Table 6 : Incidence of cancer per 1000 persons during 2005 to 2007 among the Métis and among the Ontario general population, by age and sex.

Crude Incidence, per 1000 population (95% CI)	Métis	General population
Total		
< 65 years	2.79 (2.27, 3.41)	2.87 (2.85, 2.89)
65-74 years	17.76 (13.00, 23.69)	16.87 (16.71, 17.03)
75+ years	28.57 (18.49, 42.18)	20.25 (20.06, 20.43)
Overall	4.40 (3.76, 5.12)	5.25 (5.22, 5.27)
Males		
< 65 years	2.56 (1.89, 3.40)	2.70 (2.67, 2.72)
65-74 years	18.72 (12.23, 27.43)	21.51 (21.24, 21.77)
75+ years	32.26 (17.18, 55.16)	27.27 (26.91, 27.62)
Overall	4.24 (3.40, 5.23)	5.54 (5.50, 5.58)
Females		
< 65 years	3.07 (2.27, 4.05)	3.04 (3.01, 3.07)
65-74 years	16.65 (10.17, 25.72)	12.71 (12.52, 12.90)
75+ years	25.42 (13.14, 44.41)	15.89 (15.67, 16.10)
Overall	4.59 (3.64, 5.70)	4.97 (4.93, 5.00)

CI: Confidence Interval

The overall incidence rate of cancer was higher among the Métis than the general population for persons over age 65. The incidence rates of cancer were higher among Métis men and women across the different age categories, except among Métis men aged less than 75.

LIMITS OF THE STUDY

Getting information on cancer among the Métis population in Ontario is important but there are some significant limits to the information gathered in this study. Researchers use health administration records to understand long-term diseases like cancer because it is an efficient way to get a picture of the impact of the disease – including how many people have it, how long they live, and how often they have to come back to hospital with it. But administrative records are not perfect sources. For example, using diagnostic data from doctors' billing records allows researchers to find out who has a disease, but billings are not routinely checked for accuracy and they can be error-filled.

This report relied solely on data about the number of newly diagnosed cancer cases from the OCR. This data source has a lot of limitations including not having information on the seriousness of each diagnosis and not having information on some types of cancer at all (for instance, one type of skin cancer and another common type of breast cancer). Again, it is important to note the Métis Nation of Ontario citizenship registry may not represent the entire Métis population in the province. It is possible individuals whose citizenship is not registered with Métis Nation of Ontario may be quite different in their age, behaviour or use of healthcare from those who are, so generalizing these results to all Métis people in Ontario may not be appropriate.

CONCLUSIONS

This study found that cancer is slightly less common in the population of the MNO citizenship registry than the rest of the Ontario population with the greatest differences being noted during the two most recent years of the study period, 2006 and 2007. The results are not straightforward, however. These estimates are based on very small numbers of cases in the Métis population so little significance can be attributed to this finding. Further, when the rates were looked at by age and sex, the rates were only lower among Métis men under the age of 75.

Researchers at Statistics Canada have found that, using information from the Canadian census, cancer death rates among the Métis in Canada appeared higher than among the non-Aboriginal population, though the differences were not significant statistically. That study found that among Métis the highest rates of cancer-related death for both men and women were for lung cancer; prostate cancer was the third highest rate for men and ovarian and uterine cancer was the third highest rate for women.

While our findings suggest that cancer diagnoses are lower among the Métis compared to the general population, there are a number of limitations in our data which are important to remember when interpreting these findings. First, it's possible that the OCR does not capture all cases of cancer among the Métis. Of note, a large segment of the study cohort lives in the North West part of the province and therefore may travel to Manitoba for care. As a result, it is possible that people living in the North West who have cancer are underrepresented in the OCR. One way to determine whether or not this is actually the case would be to compare cancer incidence and screening rates by region and if the rates in the North West are markedly lower than everywhere else, then we can conclude that they may not be captured in our data. Second, we know that the Métis population studied is older and more likely to be male than those identifying as Métis in the Census. So generalizing these findings to the rest of the Métis population should be done with caution.

Cancer rates are expected to rise among the Aboriginal population in Canada in coming years, based on past trends and information about risk factors among this group. In the Métis population smoking rates are estimated to be around 37% whereas in the general population they sit at approximately 22%. It is likely that this increased smoking rate among the Métis will cause more cases of lung cancer among the Métis in the future, compared with the general population.

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APPENDIX 1 : Cancer diagnoses

	ICD-9	DESCRIPTION
Colorectal	1530	MAL NEO HEPATIC FLEXURE
	1531	MAL NEO TRANSVERSE COLON
	1532	MAL NEO DESCEND COLON
	1533	MAL NEO SIGMOID COLON
	1534	MALIGNANT NEOPLASM CECUM
	1536	MALIG NEO ASCEND COLON
	1537	MAL NEO SPLENIC FLEXURE
	1538	MALIGNANT NEO COLON NEC
	1539	MALIGNANT NEO COLON NOS
	1540	MAL NEO RECTOSIGMOID JCT
	1541	MALIGNANT NEOPL RECTUM
Lung	1620	MALIGNANT NEO TRACHEA
	1622	MALIG NEO MAIN BRONCHUS
	1623	MAL NEO UPPER LOBE LUNG
	1624	MAL NEO MIDDLE LOBE LUNG
	1625	MAL NEO LOWER LOBE LUNG
	1628	MAL NEO BRONCH/LUNG NEC
	1629	MAL NEO BRONCH/LUNG NOS
	Breast	1740
1741		MAL NEO BREAST-CENTRAL
1742		MAL NEO BREAST UP-INNER
1743		MAL NEO BREAST LOW-INNER
1744		MAL NEO BREAST UP-OUTER
1745		MAL NEO BREAST LOW-OUTER
1746		MAL NEO BREAST-AXILLARY
1748		MALIGN NEOPL BREAST NEC
1749		MALIGN NEOPL BREAST NOS
Ovary	1830	MALIGN NEOPL OVARY
Uterus	1820	MALIG NEO CORPUS UTERI
	1821	MAL NEO UTERINE ISTHMUS
	1828	MAL NEO BODY UTERUS NEC
	179	MALIG NEOPL UTERUS NOS
Cervix	1800	MALIG NEO ENDOCERVIX
	1801	MALIG NEO EXOCERVIX
	1808	MALIG NEO CERVIX NEC
	1809	MAL NEO CERVIX UTERI NOS
Prostate	185	MALIGN NEOPL PROSTATE

APPENDIX 2 : Crude and age/sex standardized incidence of cancer per 1000 people among the Métis and among the Ontario general population per year, by type and sex. *Rate calculated per 1000 person-years for the cases incident in 2005,

Incidence, per 1000 population	Cases (n)	Métis*							
		Overall Crude Rate (CI)	2005			2006		2007	
			Crude Rate (CI)	ISR (CI)	Crude Rate (CI)	ISR (CI)	Crude Rate (CI)	ISR (CI)	
Total									
Breast	19	1.05 (0.63, 1.64)	1.51 (0.69, 2.86)	1.53 (0.70, 2.90)	1.16 (0.47, 2.40)	1.16 (0.47, 2.40)	0.49 (0.10, 1.44)	0.49 (0.10, 1.42)	
Cervix	<=5	-	-	-	-	-	-	-	
Colorectal	22	0.56 (0.35, 0.85)	0.31 (0.08, 0.79)	0.33 (0.09, 0.83)	0.69 (0.32, 1.31)	0.69 (0.31, 1.31)	0.68 (0.31, 1.30)	0.65 (0.30, 1.23)	
Lung	29	0.74 (0.49, 1.06)	0.77 (0.37, 1.42)	0.77 (0.38, 1.46)	0.76 (0.37, 1.40)	0.77 (0.37, 1.41)	0.68 (0.31, 1.30)	0.66 (0.30, 1.25)	
Non-Hodgkin Lymphoma	6	0.15 (0.06, 0.33)	0.23 (0.05, 0.67)	0.24 (0.05, 0.70)	0.08 (0.00, 0.43)	0.08 (0.00, 0.43)	0.15 (0.02, 0.55)	0.15 (0.02, 0.53)	
Ovary	<=5	0.17 (0.03, 0.48)	0.33 (0.04, 1.20)	0.34 (0.04, 1.21)	0.17 (0.00, 0.92)	0.17 (0.00, 0.92)	0.00 (NA)	0.00 (NA)	
Prostate	23	1.10 (0.70, 1.65)	1.58 (0.79, 2.83)	1.66 (0.83, 2.96)	0.72 (0.23, 1.67)	0.72 (0.23, 1.67)	1.00 (0.40, 2.06)	0.96 (0.38, 1.97)	
Uterus	<=5	0.27 (0.09, 0.64)	0.33 (0.04, 1.20)	0.33 (0.04, 1.21)	0.33 (0.04, 1.19)	0.33 (0.04, 1.19)	0.16 (0.00, 0.91)	0.16 (0.00, 0.90)	
All Cancers	168	4.40 (3.76, 5.12)	5.29 (4.10, 6.72)	5.43 (4.21, 6.90)	3.93 (2.92, 5.18)	3.93 (2.92, 5.19)	3.99 (2.97, 5.24)	3.89 (2.89, 5.11)	
Males									
Colorectal	12	0.57 (0.30, 1.00)	0.43 (0.09, 1.26)	0.45 (0.09, 1.32)	0.43 (0.09, 1.25)	0.43 (0.09, 1.25)	0.85 (0.31, 1.85)	0.81 (0.30, 1.77)	
Lung	13	0.62 (0.32, 1.06)	0.57 (0.16, 1.47)	0.60 (0.16, 1.53)	1.00 (0.40, 2.05)	1.00 (0.40, 2.06)	0.28 (0.03, 1.02)	0.27 (0.03, 0.99)	
Non-Hodgkin Lymphoma	<=5	0.24 (0.08, 0.55)	0.43 (0.09, 1.25)	0.46 (0.09, 1.30)	0.14 (0.00, 0.79)	0.14 (0.00, 0.79)	0.14 (0.00, 0.79)	0.14 (0.00, 0.76)	
Prostate	23	1.10 (0.70, 1.65)	1.58 (0.79, 2.83)	1.66 (0.83, 2.96)	0.72 (0.23, 1.67)	0.72 (0.23, 1.67)	1.00 (0.40, 2.06)	0.96 (0.38, 1.97)	
All Cancers	87	4.24 (3.40, 5.23)	5.42 (3.82, 7.48)	5.61 (3.95, 7.73)	3.51 (2.25, 5.22)	3.52 (2.25, 5.23)	3.79 (2.47, 5.55)	3.67 (2.40, 5.73)	
Females									
Breast	19	1.05 (0.63, 1.64)	1.51 (0.69, 2.86)	1.53 (0.70, 2.90)	1.16 (0.47, 2.40)	1.16 (0.47, 2.40)	0.49 (0.10, 1.44)	0.49 (0.10, 1.42)	
Cervix	<=5	-	-	-	-	-	-	-	
Colorectal	10	0.55 (0.26, 1.01)	0.17 (0.00, 0.93)	0.18 (0.01, 0.99)	0.99 (0.36, 2.15)	0.99 (0.36, 2.14)	0.49 (0.10, 1.43)	0.46 (0.10, 1.36)	
Lung	16	0.88 (0.50, 1.43)	1.00 (0.37, 2.17)	1.03 (0.38, 2.24)	0.50 (0.10, 1.45)	0.50 (0.10, 1.45)	1.14 (0.46, 2.35)	1.10 (0.45, 2.29)	
Non-Hodgkin Lymphoma	<=5	0.06 (0.00, 0.31)	0.00 (NA)	0.00 (NA)	0.00 (NA)	0.00 (NA)	0.16 (0.00, 0.91)	0.17 (0.00, 0.92)	
Ovary	<=5	0.17 (0.03, 0.48)	0.33 (0.04, 1.20)	0.34 (0.04, 1.21)	0.17 (0.00, 0.92)	0.17 (0.00, 0.92)	0.00 (NA)	0.00 (NA)	
Uterus	<=5	0.27 (0.09, 0.64)	0.33 (0.04, 1.20)	0.33 (0.04, 1.21)	0.33 (0.04, 1.19)	0.33 (0.04, 1.19)	0.16 (0.00, 0.91)	0.16 (0.00, 0.90)	
All Cancers	81	4.59 (3.64, 5.70)	5.13 (3.46, 7.33)	4.42 (2.89, 6.48)	4.42 (2.89, 6.47)	4.42 (2.89, 6.47)	4.22 (2.73, 6.22)	4.14 (2.68, 6.11)	

*Rate calculated per 1000 person-years for the cases incident in 2005, 2006 and 2007 using the observation time contributed by the population in each year as the denominator.

**Rate calculated per 1000 people for the cases incident in 2005, 2006 and 2007 using 2006 population as the denominator.

APPENDIX 2, continued : Crude and age/sex standardized incidence of cancer per 1000 people among the Métis and among the Ontario general population per year, by type and sex.

Cases (n)	Overall Crude Rate (CI)	General population**					
		2005		2006		2007	
		Crude Rate (CI)	ISR (CI)	Crude Rate (CI)	ISR (CI)	Crude Rate (CI)	ISR (CI)
23,662	1.48 (1.46, 1.50)	1.47 (1.44, 1.50)	1.47 (1.44, 1.50)	1.48 (1.45, 1.51)	1.48 (1.45, 1.51)	1.49 (1.45, 1.52)	1.48 (1.45, 1.52)
1,575	0.10 (0.09, 0.10)	0.10 (0.09, 0.10)	0.10 (0.09, 0.10)	0.09 (0.09, 0.10)	0.09 (0.09, 0.10)	0.10 (0.09, 0.11)	0.10 (0.09, 0.11)
21,092	0.67 (0.66, 0.67)	0.66 (0.65, 0.68)	0.67 (0.65, 0.68)	0.67 (0.65, 0.68)	0.67 (0.65, 0.68)	0.67 (0.65, 0.68)	0.66 (0.65, 0.68)
21,563	0.68 (0.67, 0.69)	0.70 (0.68, 0.71)	0.70 (0.68, 0.72)	0.68 (0.66, 0.70)	0.68 (0.66, 0.70)	0.66 (0.65, 0.68)	0.66 (0.64, 0.67)
7,977	0.25 (0.25, 0.26)	0.26 (0.25, 0.27)	0.26 (0.25, 0.27)	0.24 (0.24, 0.25)	0.24 (0.24, 0.25)	0.25 (0.24, 0.26)	0.25 (0.24, 0.26)
3,112	0.19 (0.19, 0.20)	0.18 (0.17, 0.20)	0.19 (0.17, 0.20)	0.19 (0.18, 0.20)	0.19 (0.18, 0.21)	0.20 (0.19, 0.21)	0.20 (0.19, 0.21)
27,917	1.82 (1.80, 1.84)	1.78 (1.74, 1.81)	1.79 (1.75, 1.82)	1.84 (1.81, 1.88)	1.84 (1.81, 1.88)	1.83 (1.79, 1.87)	1.82 (1.78, 1.86)
4,962	0.31 (0.30, 0.32)	0.28 (0.27, 0.30)	0.29 (0.27, 0.30)	0.31 (0.30, 0.33)	0.31 (0.30, 0.33)	0.32 (0.31, 0.34)	0.32 (0.30, 0.33)
160,971	5.25 (5.22, 5.27)	5.17 (5.13, 5.22)	5.19 (5.15, 5.24)	5.26 (5.21, 5.30)	5.26 (5.21, 5.30)	5.31 (5.26, 5.35)	5.29 (5.24, 5.33)
11,514	0.74 (0.73, 0.76)	0.74 (0.71, 0.76)	0.74 (0.72, 0.77)	0.75 (0.73, 0.77)	0.75 (0.73, 0.78)	0.74 (0.72, 0.77)	0.74 (0.71, 0.76)
11,546	0.74 (0.73, 0.76)	0.76 (0.74, 0.79)	0.77 (0.74, 0.79)	0.75 (0.72, 0.77)	0.75 (0.72, 0.77)	0.72 (0.70, 0.74)	0.71 (0.69, 0.74)
4,389	0.28 (0.27, 0.29)	0.29 (0.27, 0.30)	0.29 (0.27, 0.30)	0.27 (0.26, 0.29)	0.27 (0.26, 0.29)	0.29 (0.28, 0.31)	0.29 (0.27, 0.30)
27,917	1.82 (1.80, 1.84)	1.78 (1.74, 1.81)	1.79 (1.75, 1.82)	1.84 (1.81, 1.88)	1.84 (1.81, 1.88)	1.83 (1.79, 1.87)	1.82 (1.78, 1.86)
83,336	5.54 (5.50, 5.58)	5.45 (5.38, 5.51)	5.48 (5.41, 5.55)	5.58 (5.51, 5.64)	5.58 (5.51, 5.65)	5.59 (5.52, 5.65)	5.55 (5.49, 5.62)
23,662	1.48 (1.46, 1.50)	1.47 (1.44, 1.50)	1.47 (1.44, 1.50)	1.48 (1.45, 1.51)	1.48 (1.45, 1.51)	1.49 (1.45, 1.52)	1.48 (1.45, 1.52)
1,575	0.10 (0.09, 0.10)	0.10 (0.09, 0.10)	0.10 (0.09, 0.10)	0.09 (0.09, 0.10)	0.09 (0.09, 0.10)	0.10 (0.09, 0.11)	0.10 (0.09, 0.11)
9,578	0.59 (0.58, 0.60)	0.60 (0.58, 0.62)	0.60 (0.58, 0.62)	0.59 (0.56, 0.61)	0.58 (0.56, 0.61)	0.59 (0.57, 0.61)	0.59 (0.57, 0.61)
10,017	0.62 (0.61, 0.63)	0.63 (0.61, 0.66)	0.64 (0.61, 0.66)	0.62 (0.59, 0.64)	0.62 (0.60, 0.64)	0.60 (0.58, 0.62)	0.60 (0.58, 0.62)
3,588	0.22 (0.21, 0.23)	0.23 (0.21, 0.24)	0.23 (0.21, 0.24)	0.22 (0.21, 0.23)	0.22 (0.21, 0.23)	0.22 (0.21, 0.23)	0.22 (0.21, 0.23)
3,112	0.19 (0.19, 0.20)	0.18 (0.17, 0.20)	0.19 (0.17, 0.20)	0.19 (0.18, 0.20)	0.19 (0.18, 0.21)	0.20 (0.19, 0.21)	0.20 (0.19, 0.21)
4,962	0.31 (0.30, 0.32)	0.28 (0.27, 0.30)	0.29 (0.27, 0.30)	0.31 (0.30, 0.33)	0.31 (0.30, 0.33)	0.32 (0.31, 0.34)	0.32 (0.30, 0.33)
77,635	4.97 (4.93, 5.00)	4.91 (4.85, 4.97)	4.92 (4.86, 4.98)	4.95 (4.89, 5.01)	4.95 (4.89, 5.01)	5.04 (4.98, 5.10)	5.03 (4.97, 5.09)