

Report on New Hampshire Cancer Incidence and Mortality 2009-2013



New Hampshire State Cancer Registry
Division of Public Health Services
New Hampshire Department of Health and Human Services
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INTRODUCTION:

The New Hampshire State Cancer Registry (NHSCR) was established in 1985 as a statewide population-based cancer surveillance program that operates in accordance with state rules¹ under the Cancer Registries Amendment Act² to help us understand cancer better and use our resources to the best effect in prevention and treatment. The NHSCR complies with national guidelines³ and has achieved national recognition for the quality of their data.

The main purposes of the registry are: (1) to maintain an incidence reporting system for the estimation of cancer rates in New Hampshire (NH); (2) to provide information to help public health officials and agencies in the planning and evaluation of cancer prevention and control programs, and in cancer cluster investigations; and (3) to provide an informational resource for the investigation of cancer and its causes.

The NHSCR collects incidence data on all reportable cancer diagnoses among NH residents regardless of place of diagnosis or treatment. In addition to NH hospitals, physician practices, and free-standing surgery and radiation oncology centers, NHSCR also receives reports from the Central Veterans Administration office and several other states.

Data in this report were gathered from the New Hampshire State Cancer Registry 24 months after the end of the diagnosis year 2013, when data are expected to be at least 95% complete. The NH Department of Health and Human Services (DHHS) produces calculations of age-adjusted incidence rates, stage, age-adjusted mortality rates using Surveillance, Epidemiology and End Results (SEER) site groups and, where applicable, stratified by sex and geographic area to monitor the top cancer sites within New Hampshire.

All incidence rates were calculated for invasive cancers (malignant cancers of all sites and in situ bladder cancers). To maintain the confidentiality and privacy of individuals represented in the data, we suppressed counts and rates when case counts were less than 5 (five).

¹ NH DHHS, RSA 141-B, He-P 304 NH administrative rules
http://www.gencourt.state.nh.us/rules/state_agencies/he-p300.html),

² United States Public Law 102-515 (<http://www.cdc.gov/cancer/npcr/pdf/publaw.pdf>)

³ Guidelines and standards set by National Program for Cancer Registry (NPCR) (http://www.cdc.gov/cancer/npcr/pdf/npcr_standards.pdf) and the North American Association of Central Cancer Registries (NAACCR) (<http://naacccr.org/StandardsandRegistryOperations/VolumeII.aspx>).

SUMMARY:

Overall age adjusted cancer incidence rate in NH during the 2009-2013 time period (503.8 per 100,000, 95% CI= 498.7-508.9) was found to be significantly lower (517.9 per 100,000, 95% CI=512.6 – 523.3) than that of the preceding 5 years (2004-2008).

Incidence of some cancers, like colorectal, prostate and ovarian cancers were found to be significantly lower during this period whereas thyroid, uterine, and liver cancers were found to be significantly higher than that of the 2004-2008 time period.

Age adjusted mortality rate for all cancers (168.4, 95% CI=165.4-171.3) was found to be significantly lower (182.6, 95% CI=179.4–185.8) than that of the preceding 5 years (2004-2008).

The top 5 cancers among males during the 2009-2013 time period were prostate, lung, bladder, colorectal, and melanoma. In females, they were breast, lung, colorectal, uterine, and melanoma.

Rockingham County had the highest cancer incidence rate (532.6 cases per 100,000) whereas Coos County had the lowest cancer incidence rate (470.3 cases per 100,000) in NH during this time period.

Over half of all cancer cases among NH residents were diagnosed (52.1%) in early stage (in situ and localized stage) during this time period.

CANCER INCIDENCE RATES:

Among New Hampshire residents between 2009 and 2013, an average of 7,793 new invasive cancer cases were reported annually (5 year total case count=38,968). Of them 19,928 were male and 19,034 were female. The overall age-adjusted cancer incidence rate for NH residents from 2009 through 2013 was 503.8 per 100,000 (95% CI= 498.7 - 508.9)). Males experienced a significantly higher cancer incidence rates than females (561.5 vs. 463.8 per 100,000).

Table 1: Age-adjusted incidence rates by primary cancer sites in NH residents, 2009-2013

Primary Cancer site	Female			Male			Total		
	Rate per 100,000	(95% CI)		Rate per 100,000	95% CI		Rate per 100,000	95% CI	
		lower limit	upper limit		lower limit	upper limit		lower limit	upper limit
Bladder	12.9	11.9	14.0	51.8	49.3	54.3	29.8	28.6	31.1
Brain & other CNS	6.8	5.8	7.5	9.4	8.4	10.5	7.9	7.3	8.6
Breast (female)	139.2	135.5	142.9	--	--	--	--	--	--
Cervical	4.6	3.9	5.3	--	--	--	--	--	--
Colorectal	34.8	33.0	36.6	42.6	40.3	44.8	38.5	37.0	39.9
Esophagus	2.5	2.0	3.0	12.1	10.9	13.3	6.9	6.3	7.5
Hodgkin's Disease	2.4	1.9	2.9	3.9	3.2	4.6	3.1	2.7	3.6
Kidney & Renal pelvis	10.7	9.7	11.7	20.4	18.9	21.9	15.2	14.4	16.1
Larynx	1.5	1.1	1.9	6.0	5.2	6.9	3.5	3.1	3.9
Leukemia	10.7	9.6	11.7	18.9	17.3	20.4	14.3	13.4	15.1
Liver & Intrahepatic Bile Duct	2.5	2.0	3.0	8.8	7.8	9.8	5.5	5.2	6.2
Lung & Bronchus	64.9	62.4	67.4	76.1	73.0	79.1	69.0	67.2	70.9
Melanoma of Skin	22.9	21.4	24.4	32.8	30.8	34.8	26.9	25.7	28.1
Multiple Myeloma	4.5	3.8	5.1	7.8	6.9	8.8	6.0	5.5	6.6
Non-Hodgkin's Lymphoma	18.1	16.8	19.4	26.9	25.1	28.7	21.9	20.9	23.0
Oral cavity & Pharynx	6.8	6.0	7.6	17.2	15.9	18.6	11.7	11.0	12.5
Ovary	11.2	10.1	12.2	--	--	--	--	--	--
Pancreas	10.4	9.5	11.4	14.9	13.5	16.2	12.5	11.7	13.3
Prostate	--	--	--	138.9	135.0	142.7	--	--	--
Stomach	4.0	3.4	4.6	7.8	6.8	8.7	5.7	5.2	6.2
Testis	--	--	--	7.8	6.8	8.8	--	--	--
Thyroid	21.6	20.0	23.1	7.9	6.9	8.8	14.8	13.9	15.7
Uterus	33.4	31.6	35.2	--	--	--	--	--	--
All Malignant Cancers	463.8	457.1	470.5	561.5	553.5	569.55	503.8	498.7	508.9

All incidence rates are age-adjusted to the 2000 US standard population.

-- Sex specific cancer

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

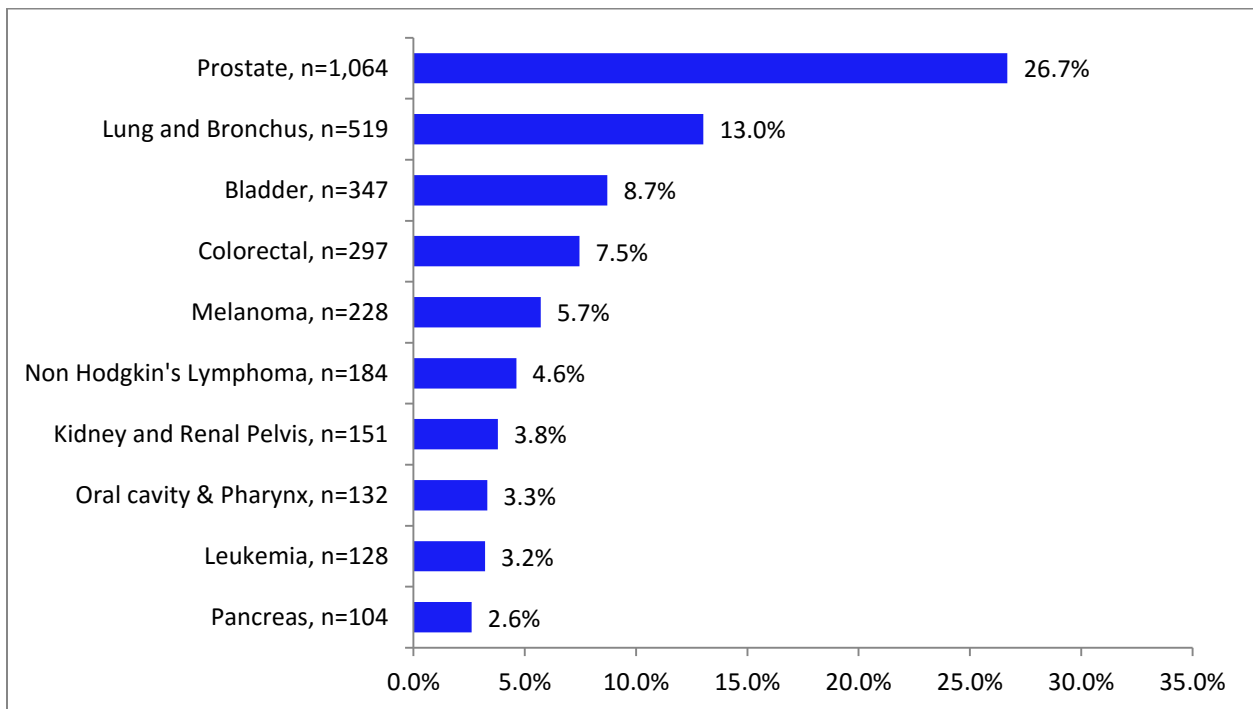
NH population estimates were obtained from Census 2010 decennial census and 2010-2014 intercensal population estimates

TOP 10 CANCERS BY SEX:

Males:

An annual average of 3,986 cancer cases was reported among NH males from 2009 through 2013. In males, the top 3 cancers, (prostate, lung & bronchus and bladder cancers) accounted for 49% of all male cancer cases.

Figure 1: Top 10 invasive cancer sites in NH males diagnosed between 2009 and 2013*



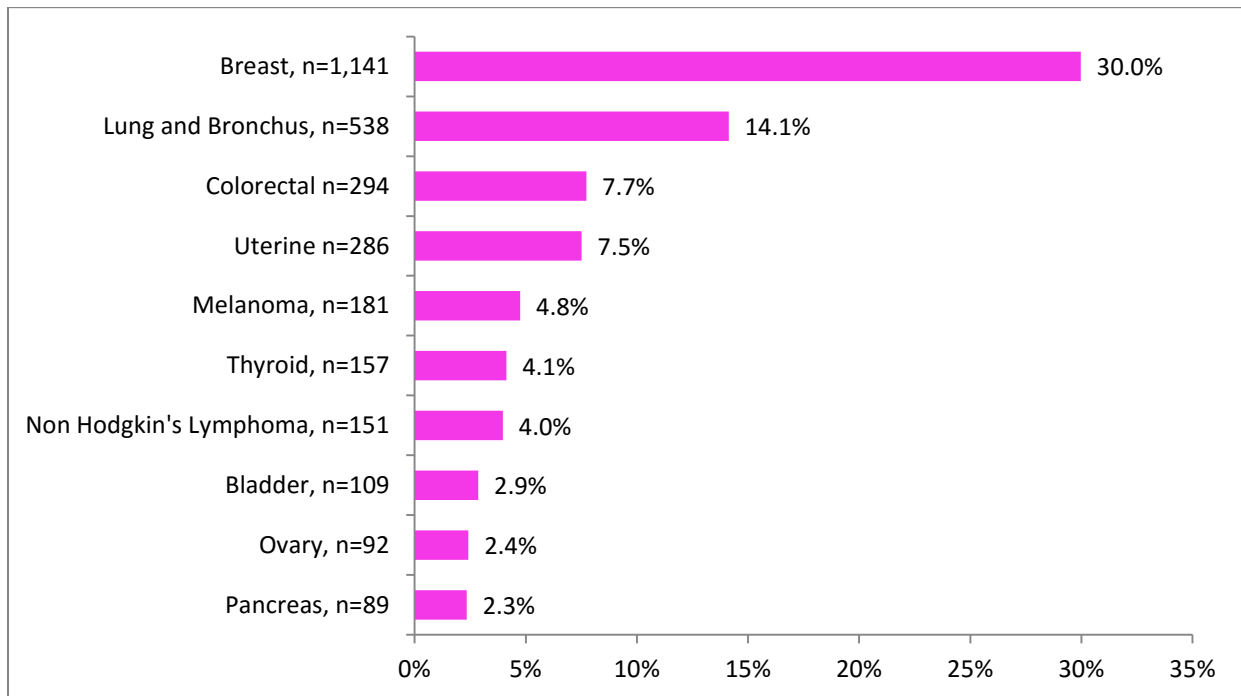
*Based on the average annual case count

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

Females:

An annual average of 3,807 cancer cases was reported among NH females from 2009 through 2013. In females, the top 3 cancers (breast, lung & bronchus, and colorectal cancer) accounted for 52% of all female cancer cases.

Figure 2: Top 10 invasive cancer sites in NH females diagnosed between 2009 and 2013*



*Based on the average annual case count

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

MORTALITY RATES:

Between 2009 and 2013, an average of 2,567 NH residents died annually from various cancers (5 year total death count = 12,836). Of these, 6,731 deaths occurred among men and 6,105 among women. The overall age-adjusted cancer mortality rate for NH residents from 2009 through 2013 was 168.4 per 100,000 (95% CI= 165.4 – 171.3). Males experienced a significantly higher cancer mortality rate than females (205.9 vs. 143.0 per 100,000).

Table 2: Age-adjusted mortality rates by primary cancer sites in NH residents, 2009-2013

Primary Cancer site	Female			Male			Total		
	Rate per 100,000	(95% CI)		Rate per 100,000	95% CI		Rate per 100,000	95% CI	
		lower limit	upper limit		lower limit	upper limit		lower limit	upper limit
Bladder	2.2	1.8	2.6	9.5	8.4	10.6	5.1	4.6	5.7
Brain & other CNS	3.5	2.9	4.1	6.1	5.3	7.0	4.7	4.2	5.1
Breast (female)	19.5	18.1	20.8	--	--	--	--	--	--
Cervical	1.6	1.2	2.0	--	--	--	--	--	--
Colorectal	12.3	11.3	13.4	15.5	14.1	16.9	13.6	112.8	14.4
Esophagus	1.9	1.6	2.4	10.0	8.9	11.1	5.6	5.1	6.1
Hodgkin's Disease	0.2	0.1	0.4	0.5	0.3	0.9	0.4	0.2	0.5
Kidney & Renal pelvis	1.9	1.5	2.4	5.9	5.1	6.7	3.7	3.3	4.2
Larynx	0.4	0.3	0.6	1.8	1.4	2.3	1.0	0.8	1.3
Leukemia	5.0	4.3	5.7	9.0	8.0	10.1	6.6	6.0	7.2
Liver & Intrahepatic Bile Duct	2.6	2.1	3.1	7.8	6.9	8.8	5.0	4.5	5.5
Lung & Bronchus	41.6	39.6	42.5	56.6	54.0	59.3	47.6	46.0	49.2
Melanoma of Skin	1.8	1.4	2.3	4.1	3.4	4.8	2.7	2.4	3.1
Multiple Myeloma	2.5	2.0	3.0	4.2	3.5	5.0	3.3	2.8	3.7
Non-Hodgkin's Lymphoma	4.3	3.6	4.9	6.9	6.0	7.9	5.4	4.9	5.9
Oral cavity & Pharynx	1.1	0.8	1.5	3.4	2.8	4.0	2.2	1.8	2.5
Ovary	7.6	6.8	8.4	--	--	--	--	--	--
Pancreas	9.3	8.4	10.2	13.7	12.4	15.0	11.3	10.6	12.1
Prostate	--	--	--	20.6	18.9	22.2	--	--	--
Stomach	1.5	1.2	1.9	3.4	2.7	4.0	2.3	2.0	2.7
Testis	--	--	--	0.2	0.1	0.4	--	--	--
Thyroid	0.4	0.3	0.7	0.5	0.3	0.8	0.4	0.3	0.6
Uterus	4.6	4.0	5.3	--	--	--	--	--	--
All Malignant Cancers	143.0	139.3	146.6	205.9	200.8	210.9	168.4	165.4	171.3

All mortality rates are age-adjusted to the 2000 US standard population.

-- Sex specific cancer

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

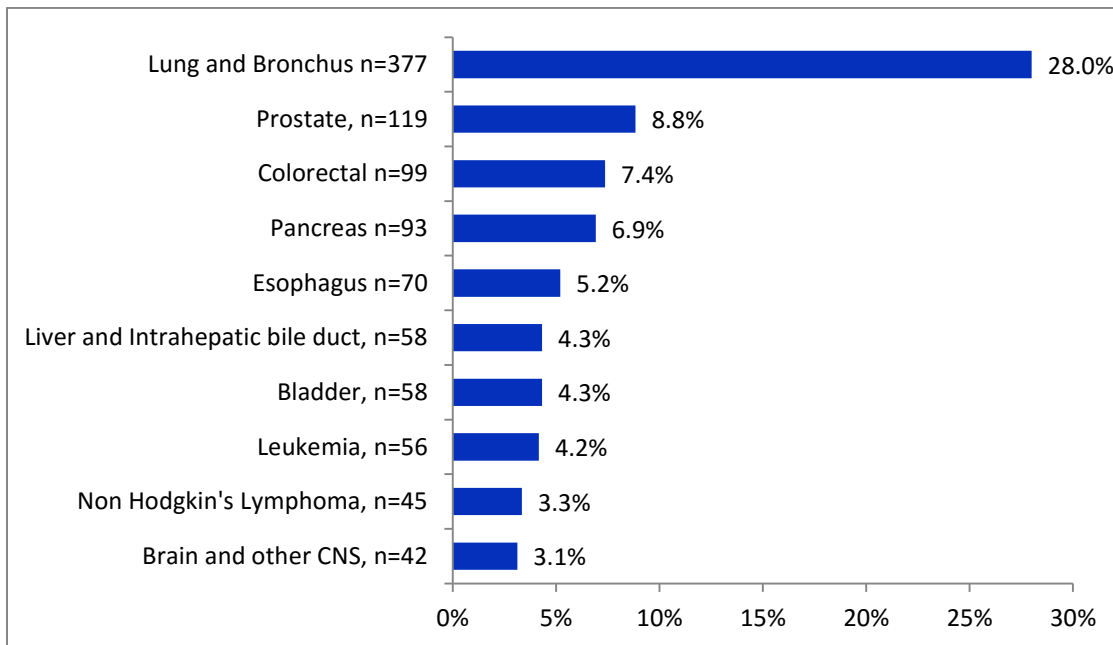
NH population estimates were obtained from Census 2010 decennial census and 2010-2014 intercensal population estimates

TOP 10 CAUSES OF CANCER DEATHS BY SEX:

Males:

On average, 1,346 men died of cancer in NH from 2009 through 2013. Among males, the top 3 causes of cancer deaths (lung & bronchus, prostate and colorectal cancer) accounted for 44% of all male cancer deaths.

Figure 3: Top 10 cancer deaths among NH males, 2009 and 2013*



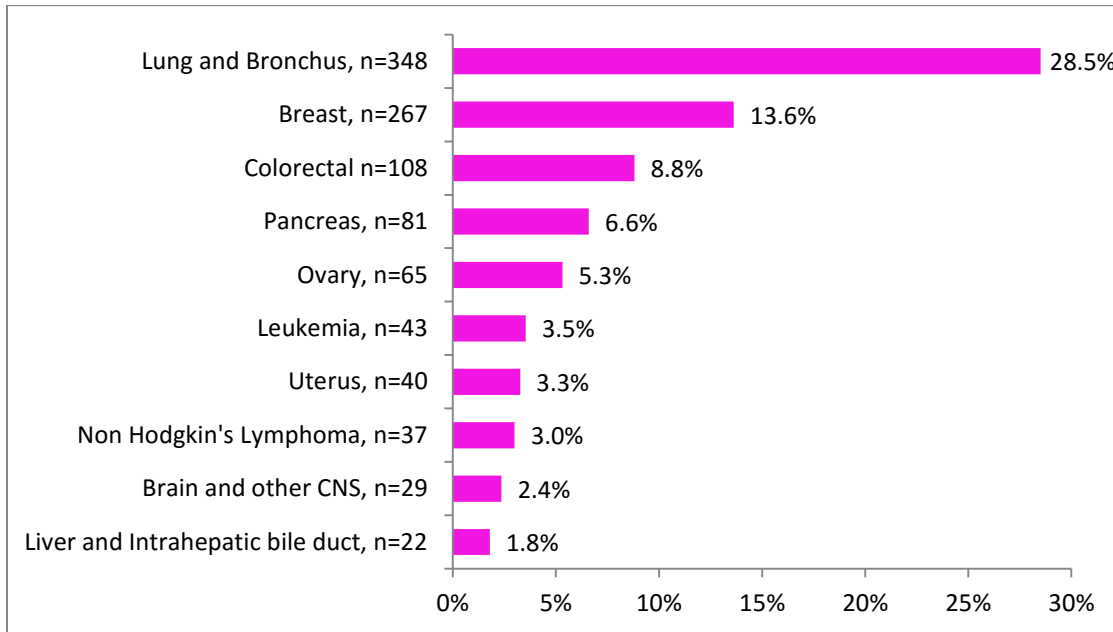
*Based on the average annual cancer deaths

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

Females:

On average, 1,221 women died of cancer each year in NH from 2009 through 2013. Among females, the top 3 cause of cancer deaths (lung & bronchus, breast and colorectal cancer) accounted for 51% of all female cancer deaths.

Figure 4: Top 10 cause of cancer deaths among NH females, 2009 and 2013*



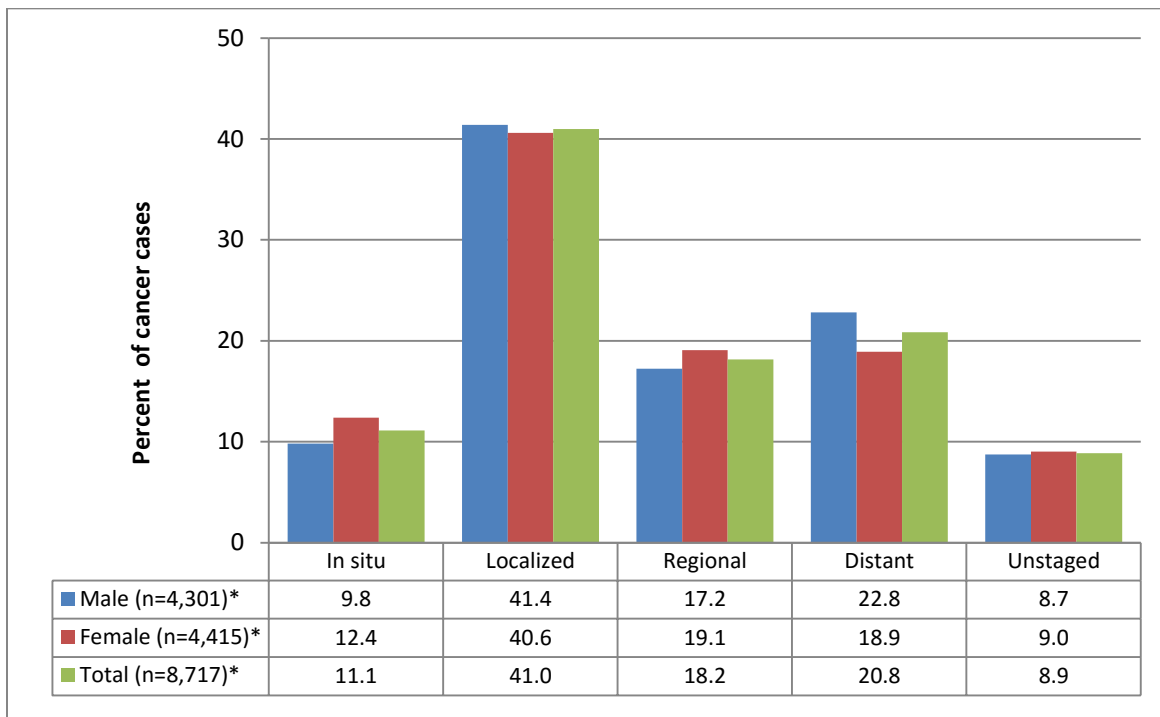
* Based on the average annual cancer deaths

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 10, 2016

STAGE AT DIAGNOSIS OF CANCER:

For staging purposes, we used all reportable cancer cases (in situ, localized, regional, distant and un-staged) in Figure 5. In females, over half of all cancers (53%) were diagnosed in an early stage (in situ or localized) between 2009 and 2013, whereas in males, 51.3% cancers were diagnosed at an early stage.

Figure 5: Stage at diagnosis of all reportable cancers among NH residents by sex diagnosed between 2009 and 2013



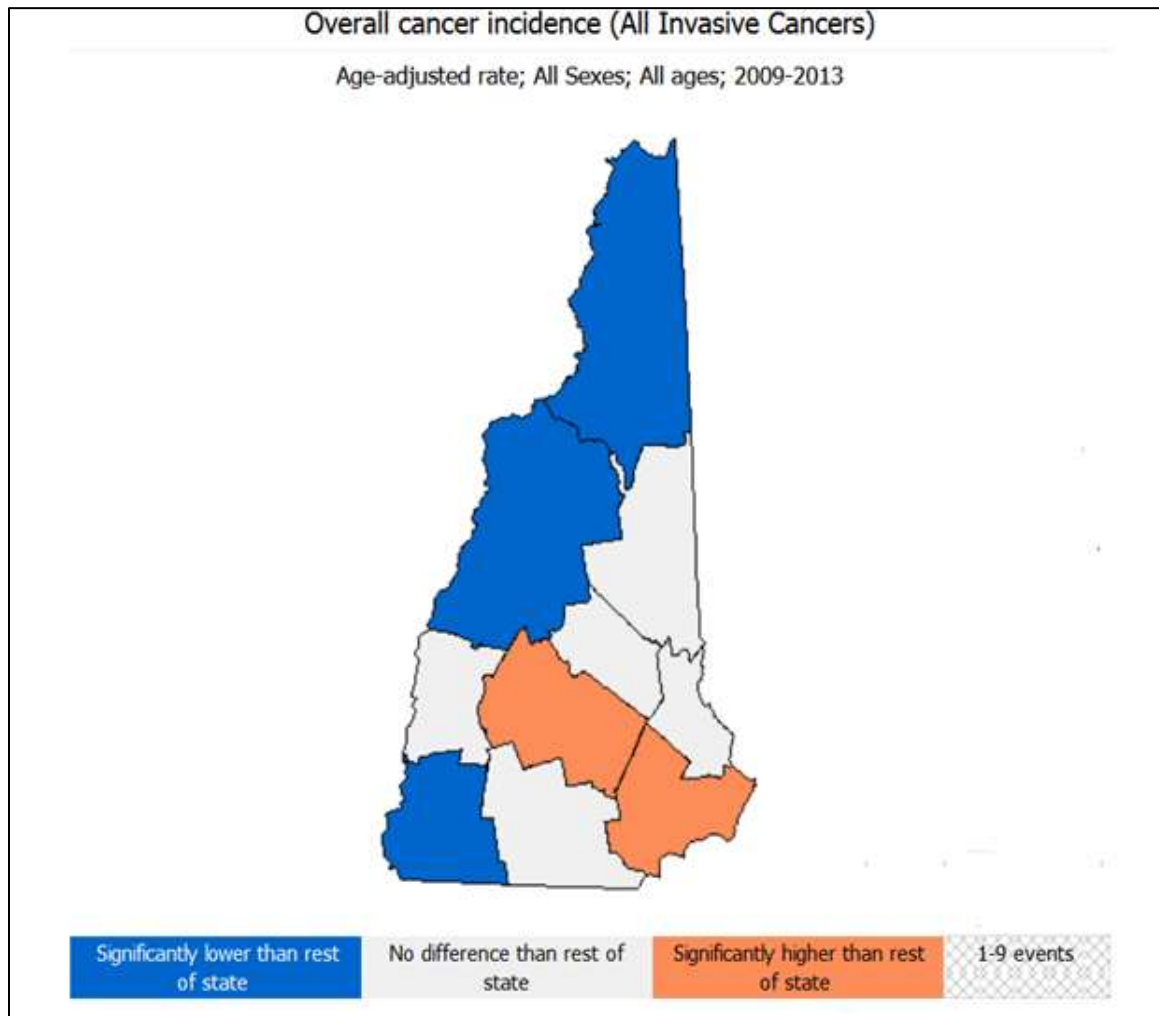
* Based on the average annual counts of all reportable cancer cases
 Source: NH State Cancer Registry, June 2016

COUNTY LEVEL VARIABILITY IN CANCER:

OVERALL CANCER INCIDENCE RATES (2009-2013):

The counties of Rockingham (532.6 per 100,000) and Merrimack (522.8 per 100,000) had higher age-adjusted cancer incidence rates than the rest of the state. The counties of Grafton (450.1 per 100,000), Coos (470.3 per 100,000) and Cheshire (478.4 per 100,000) had lower incidence rates than the rest of the state. These differences were statistically significant.

Figure 6: Overall age-adjusted cancer incidence rates among NH residents by county diagnosed between 2009 and 2013

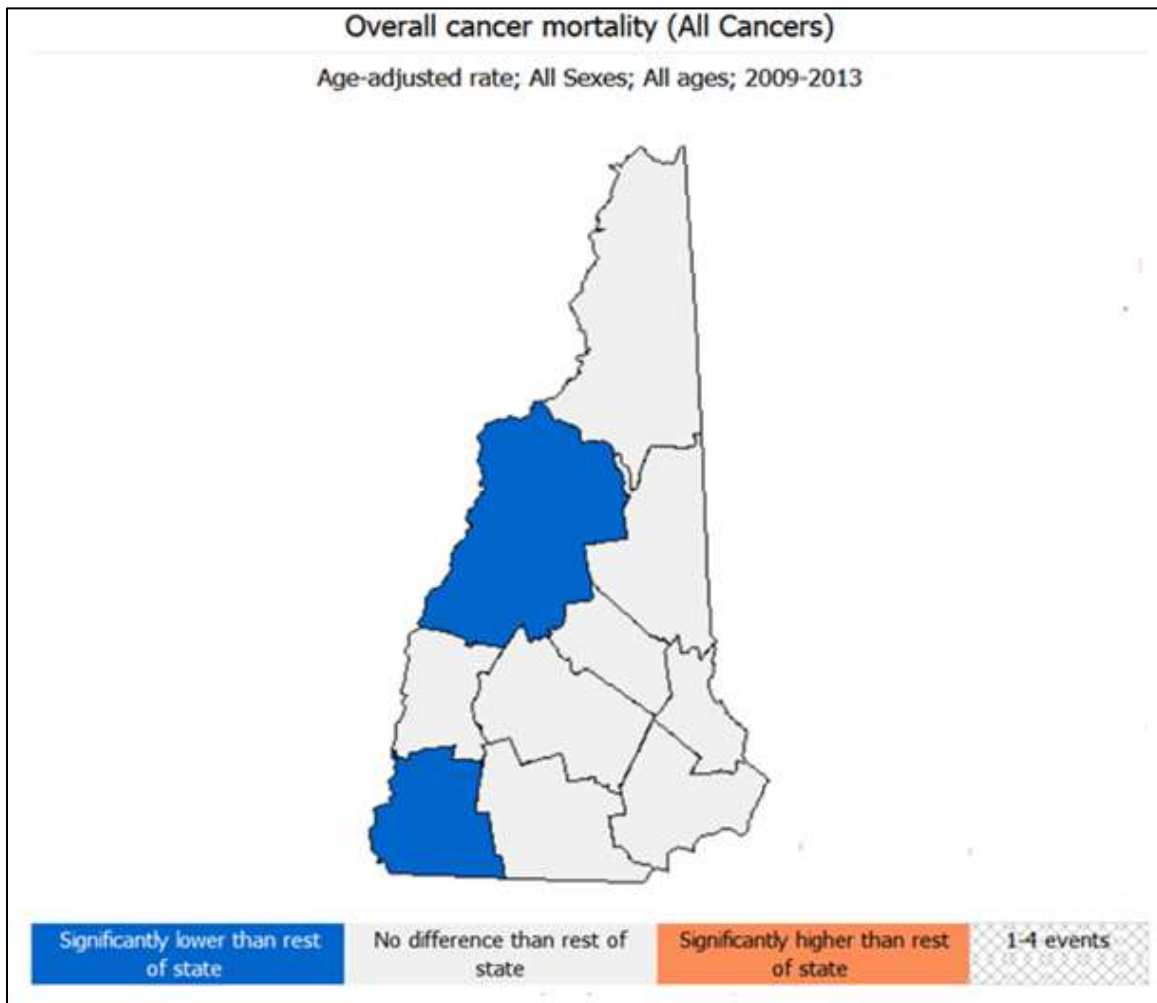


Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 20, 2016

OVERALL CANCER MORTALITY RATE (2009-2013):

The counties of Grafton (148.6 per 100,000) and Cheshire (152.8 per 100,000) had lower cancer mortality rates than the rest of the state, and this difference was statistically significant. None of the counties had significantly higher mortality rates than the rest of the state.

Figure 7: Overall age-adjusted cancer mortality rates among NH residents by county diagnosed between 2009 and 2013



Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 20, 2016

CANCER SITE SPECIFIC GEOGRAPHIC VARIABILITY

Table 3 shows counties that have significantly higher or lower incidence or mortality rates than the rest of the state for the common cancer sites.

[Note: County or town level data involve small numbers which can lead to statistical reliability issues. The results reported here should be interpreted with caution and random chance should always be considered when trying to interpret the data].

Table 3: County variability in individual cancer sites' incidence and mortality rates in NH for 2009 - 2013

Cancer Site	Incidence Rate		Mortality Rate	
	Higher than rest of State	Lower than rest of State	Higher than rest of State	Lower than rest of State
Lung & bronchus	--	Grafton*	Belknap*	Grafton*
Colorectal	--	--	--	--
Breast (female)	Belknap*	--	Belknap*	--
Cervical	--	--	--	--
Leukemia	--	--	--	--
Melanoma	--	Strafford*	--	--
Non-Hodgkin's Lymphoma	--	--	--	Sullivan*
Bladder	Strafford*	Grafton*	--	--
Uterine	--	--	--	--
Kidney & renal pelvis	--	--	--	--
Brain and other CNS	--	--	--	--
Ovary	--	--	--	--
Esophagus	--	--	--	--
Liver	--	--	--	--
Pancreas	--	--	--	--
Prostate	Rockingham *	Sullivan* Cheshire* Grafton*	--	--

Note: Each county level estimate is compared to the estimate for the 9 other counties.

*Statistically significant

--No county was significantly higher/lower than rest of the state.

Source: NH WISDOM. URL: <https://wisdom.dhhs.nh.gov/wisdom/> Accessed on June 20, 2016

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CONTACT INFORMATION

GM Monawar Hosain, MD, PHD
State Cancer Epidemiologist
New Hampshire Department of Health & Human Services
Department of Public Health Services
Chronic Disease Section
29 Hazen Drive
Concord NH 03301
Phone: 603-271-7812
E-mail: gm.hosain@dhhs.state.nh.us