

# Cancer in Northeastern Pennsylvania: Incidence and Mortality of Common Cancers

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*“Easing the burden of cancer in  
Northeastern Pennsylvania”*



*Dear Community Members,*

*The Northeast Regional Cancer Institute, a community-based nonprofit organization, is pleased to present this report on cancer incidence and mortality in Northeastern Pennsylvania. For over 25 years, the Cancer Institute has worked to ease the burden of cancer by focusing on the areas of community & patient services and survivorship. The Cancer Institute invests 100% of its resources in this region.*

*The Cancer Surveillance Program at the Cancer Institute compiled this report using data from the organization's Regional Cancer Registry and the Bureau of Health Statistics and Research of the Pennsylvania Department of Health. Characterized in this report are cancer incidence and mortality in Northeastern Pennsylvania relative to the United States for the 23 most common cancer sites. For the purpose of this report, Northeastern Pennsylvania is made up of six counties including Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming.*

*The Northeast Regional Cancer Institute uses the local cancer surveillance data it generates to focus the organization's community and patient services so that they may have the greatest possible impact. Similarly, we hope that the information contained in this report is helpful to you in your efforts against cancer.*

*Sincerely,*

A handwritten signature in black ink that reads "Samuel M. Lesko". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

*Samuel Lesko, MD, MPH  
Medical Director*

Table 1. Standardized incidence ratios by primary cancer site and sex, Northeastern Pennsylvania<sup>†</sup>, 2009-2013

Primary site	Cases No.	SIR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	23,709	108*	107*	109*
Brain	318	113*	112	114
Breast, female	3,014	-	-	94*
Bronchus & lung	3,374	119*	130*	107*
Colon & rectum	2,305	117*	116*	118*
Esophagus	310	138*	140*	132*
Hodgkin's lymphoma	124	122*	111	136*
Kidney & renal pelvis	727	99	95	106
Larynx	211	141*	123*	222*
Leukemia	655	100	94	107
Liver/intra-hepatic bile duct	334	79*	79*	80*
Melanoma of the skin	813	76*	75*	77*
Multiple myeloma	306	91	102	78*
Non-Hodgkin's Lymphoma	982	101	101	102
Oral cavity & pharynx	637	118*	121*	110
Ovary	342	-	-	110
Pancreas	653	100	107	94
Prostate	2,620	-	84*	-
Stomach	345	98	109	83*
Testis	108	-	109	-
Thyroid	838	145*	122*	153*
Urinary bladder	1,294	125*	123*	130*
Uterine cervix	183	-	-	140*
Uterine corpus	920	-	-	130*

<sup>†</sup> Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.  
<sup>†</sup> Standardized incidence ratio = observed / expected cases X 100.  
\* Significantly different from 100, p < 0.05.

### Table 1 Summary

The five most commonly diagnosed cancer sites in northeast Pennsylvania were (starting with the most common): bronchus and lung, breast, prostate, colon and rectum, and urinary bladder.

Incidence was significantly elevated in northeast Pennsylvania for all sites combined and for 11 specific cancer sites: brain, bronchus and lung, colon and rectum, esophagus, Hodgkin's lymphoma, larynx, oral cavity and pharynx, thyroid, urinary bladder, uterine cervix, and uterine corpus.

Reported incidence was significantly lower in northeast Pennsylvania than the US rate for six sites for both sexes combined (unless otherwise noted): breast (women), liver and intra-hepatic bile duct, melanoma of the skin, myeloma (women), prostate and stomach (women). Note, previous analyses suggest that cancers of the breast, prostate, skin, lymph node, and blood (e.g., leukemia) may be under reported. Caution should be used when interpreting incidence rates for these sites.

Table 2. Standardized mortality ratios by primary cancer site and sex, Northeastern Pennsylvania<sup>†</sup>, 2009-2013

Primary site	Deaths No.	SMR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	8,915	104*	106*	102
Brain	203	99	93	107
Breast, female	596	-	-	99
Bronchus & lung	2,314	99	104	94*
Colon & rectum	880	113*	115*	111*
Esophagus	288	136*	142*	117
Hodgkin's lymphoma	20	118	90	157
Kidney & renal pelvis	182	91	87	97
Larynx	72	133*	116	200*
Leukemia	369	107	104	110
Liver/intra-hepatic bile duct	258	82*	81*	85
Melanoma of the skin	153	115	112	121
Multiple myeloma	149	86*	76*	96
Non-Hodgkin's Lymphoma	337	109	117	101
Oral cavity & pharynx	144	117	120	110
Ovary	220	-	-	102
Pancreas	554	98	101	95
Prostate	398	-	94	-
Stomach	150	90	92	87
Testis	7	-	233	-
Thyroid	19	70	55*	81
Urinary bladder	240	104	106	100
Uterine cervix	47	-	-	89
Uterine corpus	140	-	-	109

<sup>†</sup> Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.

<sup>†</sup> Standardized mortality ratio = observed / expected deaths X 100.

\* Significantly different from 100, p < 0.05.

### Table 2 Summary

The five cancer sites resulting in the highest number of cancer deaths in northeast Pennsylvania were (starting with the most common): bronchus and lung, colon and rectum, breast (women), pancreas, and prostate.

Cancer mortality was significantly higher in northeast Pennsylvania than in the US for all sites combined and for three specific sites: colon & rectum, esophagus and larynx.

Mortality in northeast Pennsylvania was significantly lower than the US rate for four sites: bronchus & lung (women), liver/intra-hepatic bile duct, multiple myeloma and thyroid (men).

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, Northeastern Pennsylvania<sup>†</sup>, 2009-2013

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	23,709	<b>108 (106.5, 109.3)</b>	8,915	<b>104 (102.0, 106.2)</b>
Brain	318	<b>113 (100.4, 125.2)</b>	203	99 (85.4, 112.7)
Breast, female	3,014	<b>94 (90.6, 97.2)</b>	596	99 (86.2, 101.6)
Bronchus & lung	3,374	<b>119 (114.9, 122.9)</b>	2,314	99 (95.0, 103.1)
Colon & rectum	2,305	<b>117 (112.2, 121.8)</b>	880	<b>113 (105.6, 120.6)</b>
Esophagus	310	<b>138 (122.4, 153.1)</b>	288	<b>136 (120.7, 152.3)</b>
Hodgkin's lymphoma	124	<b>122 (100.2, 143.0)</b>	20	118 (66.1, 169.2)
Kidney & renal pelvis	727	99 (92.0, 106.4)	182	91 (77.8, 104.2)
Larynx	211	<b>141 (121.7, 159.7)</b>	72	<b>133 (102.5, 164.1)</b>
Leukemia	655	100 (92.2, 107.5)	369	107 (96.0, 117.9)
Liver/intra-hepatic bile duct	334	<b>79 (70.8, 87.8)</b>	258	<b>82 (72.1, 92.2)</b>
Melanoma of the skin	813	<b>76 (70.8, 81.2)</b>	153	115 (96.8, 133.3)
Multiple myeloma	306	91 (80.9, 101.3)	149	<b>86 (71.9, 99.4)</b>
Non-Hodgkin's lymphoma	982	101 (95.1, 107.8)	337	109 (97.4, 120.7)
Oral cavity & pharynx	637	<b>118 (108.4, 126.7)</b>	144	117 (98.0, 136.2)
Ovary	342	110 (98.0, 121.2)	220	102 (88.8, 115.9)
Pancreas	653	100 (92.3, 107.7)	554	98 (90.1, 106.4)
Prostate	2,620	<b>84 (81.0, 87.5)</b>	398	94 (84.7, 103.1)
Stomach	345	98 (87.9, 108.7)	150	90 (75.5, 104.2)
Testis	108	109 (88.5, 129.7)	7	233 (60.5, 406.2)
Thyroid	838	<b>145 (134.9, 154.5)</b>	19	70 (38.7, 102.0)
Urinary bladder	1,294	<b>125 (117.8, 131.3)</b>	240	104 (90.8, 117.0)
Uterine cervix	183	<b>140 (119.5, 159.9)</b>	47	89 (63.3, 114.0)
Uterine corpus	920	<b>130 (121.9, 138.7)</b>	140	109 (91.3, 127.5)

<sup>†</sup> Limited to Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties.

\* Confidence interval.

Figures in **bold font** are significantly different from 100.

### Table 3 Summary

Cancer incidence and mortality were significantly elevated in northeast Pennsylvania for all sites combined and at three specific sites: colon and rectum, esophagus, and larynx.

Some notable disparities between incidence and mortality include: incidence was significantly depressed but mortality was not significantly different from U.S. rates for breast (women), melanoma, and prostate, and incidence was significantly elevated but mortality was not for cancers of the brain, bronchus and lung, Hodgkin's lymphoma, oral cavity and pharynx, testis, thyroid, urinary bladder, uterine cervix and uterine corpus. However, for several sites (Hodgkin's lymphoma, larynx, oral cavity and pharynx, testis, thyroid, uterine cervix) the number of deaths was small limiting the ability of these data to detect significant elevations in mortality for these sites.

## Confidence Interval

The standardized incidence and mortality ratios described in this report are point estimates of cancer incidence and mortality in Northeastern Pennsylvania compared to the United States. Although these are the best estimates of cancer experience in Northeastern Pennsylvania, it is important to recognize the potential for uncertainty in these estimates due to random or sampling error or variability. The size of the uncertainty in these ratios is reflected in confidence interval. The 95% confidence interval is the range of values that will include the true ratio 95% of the time. Compared to narrow confidence intervals, wider confidence intervals reflect greater uncertainty in value of the true ratio.

## Primary Site

The cancer cases in this report were examined by primary site. The primary site is the tissue or organ where the cancer was shown to originate as evidenced by microscopic examination of tissue, radiologic examination (x-ray, CT scan, or MRI), endoscopy (e.g., colonoscopy), or clinical examination.

## Standardized Incidence and Mortality Ratios

The incidence ratios in this report (Tables 1 & 3) are the calculated best estimates of the incidence of each cancer in Northeastern Pennsylvania relative to the corresponding incidence in the United States and take the age and racial make-up of the population into account. Similarly, mortality ratios (shown in Tables 2 & 3) compare cancer mortality rates in NEPA to the United States mortality. These ratios are calculated by dividing the number of cancer cases (or deaths) that actually occurred in Northeastern Pennsylvania by the number of cases (or deaths) expected if Northeastern Pennsylvania had exactly the same cancer risk (or mortality) as the United States. The ratios shown in Tables 1-3 are expressed as a percentage of the corresponding United States rate. For example, the standardized incidence ratio (SIR) for colon and rectal cancer, shown in Table 1, was 115. This means that the incidence of cancers of the colon and rectum in Northeastern Pennsylvania was 15% higher than the same figure for the United States.

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This report uses data provided by the Bureau of Health Statistics and Research, Pennsylvania Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations or conclusions.



*The Northeast Regional Cancer Institute is a nonprofit community-based agency serving seven counties in northeast Pennsylvania with offices located in Scranton and Wilkes-Barre. Focusing on surveillance, community and patient services, and hospital and practice support services, the Cancer Institute invests 100% of its resources locally.*

### Sponsoring Organizations

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