

# 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 written in a cursive style with a large initial 'S'.

*Samuel Lesko, MD, MPH  
Medical Director*

Table 1. Standardized incidence ratios by primary cancer site and sex, Northeastern Pennsylvania<sup>†</sup>, 2010-2014

Primary site	Cases No.	SIR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	22,996	105*	103*	107*
Brain	317	113*	105	122*
Breast, female	2,995	-	-	92*
Bronchus & lung	3,369	120*	129*	110*
Colon & rectum	2,236	115*	116*	115*
Esophagus	328	146*	151*	131
Hodgkin's lymphoma	128	125*	122	130
Kidney & renal pelvis	719	97	94	101
Larynx	206	137*	124*	196*
Leukemia	635	94	89*	101
Liver/intra-hepatic bile duct	358	82*	84*	75*
Melanoma of the skin	873	79*	77*	83*
Multiple myeloma	299	87*	96	76*
Non-Hodgkin's Lymphoma	979	100	99	102
Oral cavity & pharynx	670	121*	122*	116
Ovary	332	-	-	108
Pancreas	665	100	103	97
Prostate	2,432	-	83*	-
Stomach	327	94	104	78*
Testis	106	-	107	-
Thyroid	805	138*	114	146*
Urinary bladder	1,322	126*	125*	129*
Uterine cervix	175	-	-	134*
Uterine corpus	957	-	-	134*

<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 (women), bronchus and lung, colon and rectum, esophagus, Hodgkin's lymphoma, larynx, oral cavity and pharynx, thyroid (women), 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>, 2010-2014

Primary site	Deaths No.	SMR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	8,910	104*	105*	103
Brain	194	93	81*	109
Breast, female	570	-	-	96
Bronchus & lung	2,312	100	105	94
Colon & rectum	884	115*	114*	116*
Esophagus	300	142*	144*	133
Hodgkin's lymphoma	16	94	80	114
Kidney & renal pelvis	168	84*	76*	97
Larynx	74	135*	118	200*
Leukemia	370	108	101	117
Liver/intra-hepatic bile duct	269	82*	83*	79*
Melanoma of the skin	154	117	113	124
Multiple myeloma	163	92	89	94
Non-Hodgkin's Lymphoma	320	105	105	105
Oral cavity & pharynx	154	120*	119	123
Ovary	216	-	-	102
Pancreas	586	102	105	100
Prostate	389	-	93	-
Stomach	143	87	86	87
Testis	9	-	300*	-
Thyroid	20	74	64	81
Urinary bladder	230	99	102	92
Uterine cervix	41	-	-	77
Uterine corpus	150	-	-	112

<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, pancreas, breast (women) and prostate.

Cancer mortality was significantly higher in northeast Pennsylvania than in the US for all sites combined and for five specific sites: colon & rectum, esophagus, larynx (women), oral cavity & pharynx and testis.

Mortality in northeast Pennsylvania was significantly lower than the US rate for three sites: brain (men), kidney (men) and liver/intra-hepatic bile duct.

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, Northeastern Pennsylvania<sup>†</sup>, 2010-2014

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	22,996	<b>105 (103.4, 106.1)</b>	8,910	<b>104 (102.1, 106.4)</b>
Brain	317	<b>113 (100.4, 125.2)</b>	194	93 (80.1, 106.4)
Breast, female	2,995	<b>92 (88.9, 95.5)</b>	570	96 (87.9, 103.7)
Bronchus & lung	3,369	<b>120 (115.7, 123.8)</b>	2,312	100 (96.1, 104.3)
Colon & rectum	2,236	<b>115 (110.4, 119.9)</b>	884	<b>115 (107.7, 122.9)</b>
Esophagus	328	<b>146 (130.6, 162.3)</b>	300	<b>142 (125.5, 157.5)</b>
Hodgkin's lymphoma	128	<b>125 (103.8, 147.2)</b>	16	94 (48.0, 140.2)
Kidney & renal pelvis	719	97 (89.5, 103.6)	168	<b>84 (71.3, 96.7)</b>
Larynx	206	<b>137 (118.6, 156.1)</b>	74	<b>135 (103.9, 165.2)</b>
Leukemia	635	94 (87.0, 101.7)	370	108 (96.9, 118.9)
Liver/intra-hepatic bile duct	358	<b>82 (73.1, 90.0)</b>	269	<b>82 (72.2, 91.8)</b>
Melanoma of the skin	873	<b>79 (73.7, 84.2)</b>	154	117 (98.2, 135.1)
Multiple myeloma	299	<b>87 (77.1, 96.8)</b>	163	92 (77.5, 105.6)
Non-Hodgkin's lymphoma	979	100 (93.9, 106.5)	320	105 (93.4, 116.4)
Oral cavity & pharynx	670	<b>121 (111.4, 129.6)</b>	154	<b>120 (101.3, 139.3)</b>
Ovary	332	108 (96.2, 119.4)	216	102 (88.7, 116.0)
Pancreas	665	100 (92.7, 107.9)	586	102 (94.2, 110.7)
Prostate	2,432	<b>83 (79.3, 85.9)</b>	389	93 (83.8, 102.3)
Stomach	327	94 (83.8, 104.2)	143	87 (72.5, 100.9)
Testis	106	107 (86.7, 127.5)	9	<b>300 (104.0, 496.0)</b>
Thyroid	805	<b>138 (128.1, 147.1)</b>	20	74 (41.6, 106.5)
Urinary bladder	1,322	<b>126 (119.0, 132.6)</b>	230	99 (86.0, 111.5)
Uterine cervix	175	<b>134 (113.8, 153.4)</b>	41	77 (53.7, 101.0)
Uterine corpus	957	<b>134 (125.7, 142.7)</b>	150	112 (94.0, 129.9)

<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 four specific sites: colon and rectum, esophagus, larynx and oral cavity & pharynx.

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, multiple myeloma and prostate, and incidence was significantly elevated but mortality was not for cancers of the brain, bronchus and lung, Hodgkin's lymphoma, thyroid, urinary bladder, uterine cervix and uterine corpus. However, for several sites (Hodgkin's lymphoma, larynx, 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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