

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

Karen Ryczak, RN  
Director- Surveillance Program

Samuel M. Lesko, MD, MPH  
Medical Director

Northeast Regional Cancer Institute  
Scranton, PA 18503  
570-904-8808  
karen.ryczak@cancernepa.org  
samuel.lesko@cancernepa.org

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The logo for the Northeast Regional Cancer Institute (NRCI) features the letters 'NRCI' in a bold, black, sans-serif font. A small green square is positioned above the letter 'R'.

Northeast Regional  
Cancer Institute

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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 30 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, northeast Pennsylvania<sup>†</sup>, 2014-2018

Primary site	Cases No.	SIR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	23,444	103*	102	105*
Brain	308	110	103	118
Breast, female	3,090	-	-	95*
Bronchus & lung	3,537	124*	127*	122*
Colon & rectum	2,133	112*	111*	112*
Esophagus	373	164*	171*	124
Hodgkin's lymphoma	125	130*	143*	114
Kidney & renal pelvis	806	98	100	95
Larynx	191	128*	121*	157*
Leukemia	649	94	92	98
Liver/intra-hepatic bile duct	438	89*	95	76*
Melanoma of the skin	963	87*	79*	98
Multiple myeloma	337	91	88	95
Non-Hodgkin's Lymphoma	975	100	100	100
Oral cavity & pharynx	725	123*	124*	119*
Ovary	284	-	-	101
Pancreas	763	108	112*	104
Prostate	2,357	-	82*	-
Stomach	323	87*	90	83*
Testis	115	-	120	-
Thyroid	696	114*	108	117*
Urinary bladder	1,340	127*	128*	127*
Uterine cervix	198	-	-	135*
Uterine corpus	943	-	-	126*

<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, female 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: bronchus and lung, colon and rectum, esophagus, Hodgkin lymphoma, larynx, oral cavity and pharynx, pancreas (men), thyroid, urinary bladder, uterine cervix, and uterine corpus.

Reported incidence was significantly lower in northeast Pennsylvania than the US rate for five sites for both sexes combined (unless otherwise noted): breast (women), liver and intra-hepatic bile duct, melanoma of the skin, prostate and stomach. 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, northeast Pennsylvania<sup>†</sup>, 2014-2018

Primary site	Deaths No.	SMR <sup>†</sup>		
		Both Sexes	Men	Women
All sites	8,989	109*	110*	108*
Brain	209	95	89	103
Breast, female	602	-	-	106
Bronchus & lung	2,275	110*	115*	104
Colon & rectum	811	112*	107	117*
Esophagus	320	152*	159*	127
Hodgkin's lymphoma	9	64	67	60
Kidney & renal pelvis	176	90	90	90
Larynx	50	93	88	109
Leukemia	377	116*	108	126*
Liver/intra-hepatic bile duct	290	81*	87*	68*
Melanoma of the skin	153	133*	130*	138*
Multiple myeloma	168	97	102	90
Non-Hodgkin's Lymphoma	302	105	108	102
Oral cavity & pharynx	166	124*	125*	121
Ovary	202	-	-	105
Pancreas	666	112*	113*	111
Prostate	397	-	94	-
Stomach	152	98	97	100
Testis	8	-	267	-
Thyroid	25	89	58	113
Urinary bladder	280	119*	122*	113
Uterine cervix	58	-	-	114
Uterine corpus	180	-	-	124*

<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, female breast and prostate.

Cancer mortality was significantly higher in northeast Pennsylvania than in the US for all sites combined and for nine specific sites: Bronchus & lung, colon & rectum, esophagus, leukemia, melanoma, oral cavity & pharynx, pancreas, urinary bladder and uterine corpus.

Mortality in northeast Pennsylvania was significantly lower than the US rate for cancer of the liver/intra-hepatic bile duct.

Table 3. Standardized incidence and mortality ratios by primary cancer site, both sexes, northeast Pennsylvania<sup>1</sup>, 2014-2018

Primary site	Cases No.	SIR (95% CI*)	Deaths No.	SMR (95% CI*)
All sites	23,444	<b>103 (102.0, 104.7)</b>	8,989	<b>109 (106.5, 111.0)</b>
Brain	308	110 (97.4, 121.9)	209	95 (82.1, 107.9)
Breast, female	3,090	<b>95 (91.9, 98.6)</b>	602	106 (97.2, 114.1)
Bronchus & lung	3,537	<b>124 (120.2, 128.4)</b>	2,275	<b>110 (105.2, 114.2)</b>
Colon & rectum	2,133	<b>112 (107.0, 116.5)</b>	811	<b>112 (104.2, 119.6)</b>
Esophagus	373	<b>164 (147.6, 181.0)</b>	320	<b>152 (135.7, 169.1)</b>
Hodgkin's lymphoma	125	<b>130 (107.4, 153.0)</b>	9	64 (22.3, 106.3)
Kidney & renal pelvis	806	98 (91.4, 105.0)	176	90 (76.9, 103.6)
Larynx	191	<b>128 (110.0, 146.4)</b>	50	93 (66.9, 118.3)
Leukemia	649	94 (87.1, 101.6)	377	<b>116 (104.0, 127.3)</b>
Liver/intra-hepatic bile duct	438	<b>89 (80.9, 97.6)</b>	290	<b>81 (71.5, 90.1)</b>
Melanoma of the skin	963	<b>87 (81.4, 92.3)</b>	153	<b>133 (112.0, 154.1)</b>
Multiple myeloma	337	91 (81.6, 101.1)	168	97 (82.0, 111.2)
Non-Hodgkin's lymphoma	975	100 (93.8, 106.4)	302	105 (93.4, 117.1)
Oral cavity & pharynx	725	<b>123 (113.9, 131.8)</b>	166	<b>124 (105.0, 142.7)</b>
Ovary	284	101 (89.6, 113.2)	202	105 (90.2, 119.1)
Pancreas	763	<b>108 (100.4, 115.7)</b>	666	<b>112 (103.1, 120.0)</b>
Prostate	2,357	<b>82 (79.0, 85.7)</b>	397	94 (84.6, 103.1)
Stomach	323	<b>87 (77.8, 96.8)</b>	152	98 (82.5, 113.7)
Testis	115	120 (97.9, 141.7)	8	267 (81.9, 451.5)
Thyroid	696	<b>114 (106.0, 123.0)</b>	25	89 (54.3, 124.3)
Urinary bladder	1,340	<b>127 (120.6, 134.2)</b>	280	<b>119 (105.2, 133.1)</b>
Uterine cervix	198	<b>135 (115.9, 153.5)</b>	58	114 (84.5, 143.0)
Uterine corpus	943	<b>126 (118.0, 134.1)</b>	180	<b>124 (106.0, 142.3)</b>

<sup>1</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 seven specific sites: Bronchus & lung, colon and rectum, esophagus, oral cavity & pharynx, pancreas, urinary bladder and uterine corpus.

Some notable disparities between incidence and mortality include: incidence was significantly depressed but mortality was not significantly different from U.S. rates for female breast, prostate, and stomach and incidence was significantly elevated but mortality was not for Hodgkin's lymphoma, larynx, thyroid, and uterine cervix. However, for two of these sites (larynx and uterine cervix) the number of deaths was small and the confidence intervals did not rule out the possibility of a meaningful elevation in mortality for these sites. Also, incidence was significantly depressed for melanoma, however, mortality was significantly elevated and mortality was significantly elevated for leukemia but incidence was not.

## 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 112. This means that the incidence of cancers of the colon and rectum in Northeastern Pennsylvania was 12% higher than the same figure for the United States.

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.



Northeast Regional  
Cancer Institute

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.

### Participating Health Organizations

Allied Services

Geisinger Community Medical Center

Moses Taylor Hospital

Regional Hospital of Scranton

Tyler Memorial Hospital

Wayne Memorial Health System

Wilkes-Barre General Hospital

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