

Pennsylvania Cancer Incidence and Mortality

2012



Pennsylvania Department of Health

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**PENNSYLVANIA
CANCER INCIDENCE and MORTALITY
2012**

Division of Health Informatics
Pennsylvania Cancer Registry
Pennsylvania Cancer Control Program
Harrisburg, Pennsylvania

INTRODUCTION

The “Pennsylvania Cancer Incidence and Mortality” annual report has been produced since the Pennsylvania Cancer Registry (PCR) began collecting statewide cancer incidence data back in 1985. This is the 28th edition of this report. The publication contains many tables, charts and data highlights covering 23 primary cancer sites. Data are analyzed by sex, race, age, and stage of the disease. Page iv contains a section titled Organization of the Report, which should help readers better navigate this large report. The “Pennsylvania Cancer Incidence and Mortality - Executive Summary” was removed from this publication, although it is still available as a stand-alone document on our website.

Cancer incidence data that appear in this report were collected by the PCR, located in the Bureau of Health Statistics and Registries. The PCR is a full participant in the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC). This report only includes cancer cases and cancer deaths among Pennsylvania residents. Data for 2012 were submitted by hospitals, pathology laboratories, radiation treatment centers, medical oncology centers, physician offices, nursing homes/hospices, autopsy reports, death certificates, and other hospital outpatient units/surgery centers across the commonwealth.

Utilizing information collected by the PCR, the Department of Health can develop programs to better address Pennsylvania’s cancer program needs. Registry data can be used to plan and evaluate cancer control measures in the areas of risk assessment, prevention, early detection, patient care, public and professional education, and clinical research.

The Division of Health Informatics welcomes comments and suggestions on the content and format of this report. Staff are available to answer questions regarding the report, including utilization and limitations of the data. Please address all comments, questions, requests for additional data, etc. to:

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This report and many other health statistics are available online at: www.statistics.health.pa.gov.

The Pennsylvania Department of Health is an equal opportunity provider of grants, contracts, services, and employment.

Organization of the Report

“Pennsylvania Cancer Incidence and Mortality” is divided into 24 sections – an All Sites section plus 23 sections for each major cancer site. These 23 sites comprise approximately 91 percent of the invasive cases for both males and females diagnosed among Pennsylvania residents and reported to the registry during 2012. All other sites, such as bones and joints, soft tissue, eye, miscellaneous reticuloendothelial, and other ill-defined and unknown sites accounted for approximately 9 percent of all new cancer cases.

The first page of each section presents Data Highlights. This provides a summary of descriptive incidence and mortality analyses shown in this report and may include some comparisons to observations from national data sets. These pages also include a subsection titled Risk Factors, which includes information on factors known to be associated with an increase in incidence rates. While there are many types of associations cited in the epidemiological literature, only those factors are listed for which there are consistent findings and well-documented associations. Certain associations are not listed if a more direct association can be provided. For example, the association of higher incidence rates of lung cancer in lower socioeconomic males can be explained by the higher prevalence of cigarette smokers in these groups. Another part of the Data Highlights page, Early Detection, provides a summary of the availability and effectiveness of early detection methods. Where applicable, the current recommendations of the American Cancer Society are described. Also included on the Data Highlights page of each section is a paired bar chart that displays average annual age-adjusted incidence rates and mortality rates by sex and race for 2008-2012. Adjusted rates used in this report were calculated by the direct method, using 18 five-year age groups corresponding to those age categories in the 2000 U.S. standard million population (see Technical Notes).

Throughout the report, data are presented for males and females and are stratified by race. Race data are shown for white and black categories. According to the 2012 state census population, blacks represented 11.4 percent of Pennsylvania’s population and 69 percent of residents of races other than white. Cancer cases or deaths of other and unknown sex or race were included in the appropriate “TOTAL” categories only.

Cancer incidence and death trends from 2003 through 2012 are shown in both tables and charts. The tables include annual cases, deaths and age-adjusted rates by sex and race. For the annual age-adjusted rates, the confidence intervals were calculated at the 95% confidence level to reflect the reliability of the rates. Average annual age-specific rates and incidence counts for 2008-2012 by sex and race are also presented in tables and charts. Tables displaying age-specific incidence or death rates include a “TOTAL” category for all ages. The rates for the all ages category are crude, that is, not adjusted for age. While crude rates are useful for describing the disease burden in a particular population, they should not be used for comparing rates between different populations. Information on stage of disease at diagnosis by sex and race for 2012 is also presented and includes the unknown or unstaged category. The stage of disease at the time of diagnosis represents the Surveillance, Epidemiology, and End Results (SEER) Program’s Summary Stage 2000, derived from the Collaborative Stage Algorithm (see Technical Notes).

The county-specific analyses include average annual age-adjusted incidence and mortality rates by sex for each of the 67 counties and the entire state for 2008 through 2012. The confidence intervals, at the 95% confidence level, are displayed for these average annual age-adjusted rates. The numbers of cancer cases and deaths in the county tables represent the total occurrences among residents throughout the five-year period of 2008-2012.



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CANCER INCIDENCE and MORTALITY by SITE

All Cancer Sites

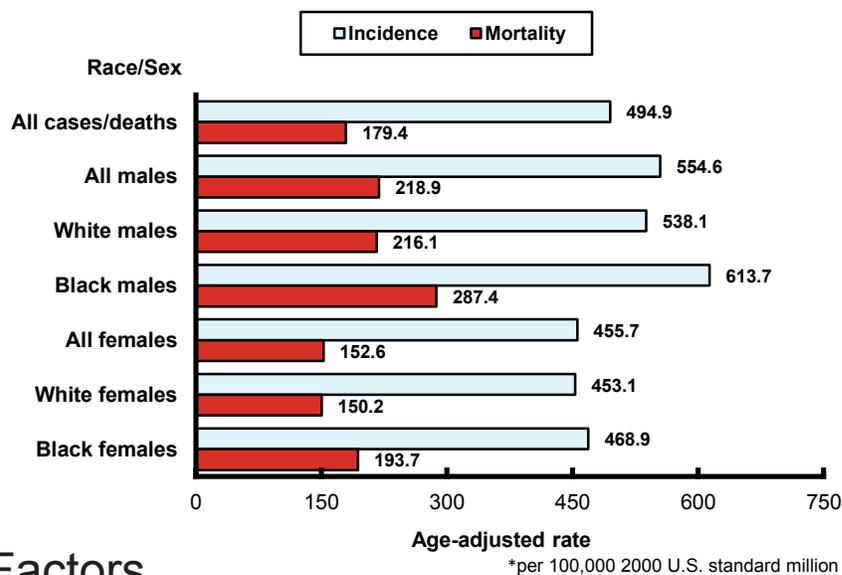
Data Highlights

IMPORTANT: Unless noted, only invasive (and in situ urinary bladder) cancers are included in the counts of cancer cases and in the calculation of all rates. Also, all age-adjusted rates are computed using the 2000 U.S. standard million population.

During 2012, a total of 75,587 new invasive cancer cases were diagnosed among Pennsylvania residents and reported to the Pennsylvania Cancer Registry. Compared to 2011, there were 2,577 less invasive cancers diagnosed during 2012. The average annual age-adjusted incidence rate for all invasive cancers covering the five-year period of 2008-2012 was 21.7 percent higher among males (554.6 per 100,000) compared to females (455.7). Black males had the highest average annual age-adjusted incidence rate for that period among the four sex/race groups (613.7), followed by white males (538.1) – a difference of about 14 percent. For the period 2008-2012, the difference between rates for white and black females was less than 4 percent. Annual age-adjusted cancer incidence rates were consistently higher among black males compared to white males (2003-2012) but similar for both white and black females (2003-2007). Black females, however, have recently had higher annual rates than whites (2008-2012). Annual age-adjusted incidence rates among white and black females generally had an upward trend during the years 2003-2012. The incidence rates for black males had an overall downward trend from 2003 to 2012. Since 2003, the incidence rate for black males has decreased by 22 percent. Among white males, the trend was less conclusive. Specifically, the cancer incidence rates among white males decreased between 2003 and 2004 and then increased to a high of 586.4 in 2006, followed by a decrease from 2007 to 2010 before increasing slightly in 2011. In 2012, the incidence rate among white males fell by 8 percent from 542.0 to 497.5, the lowest annual incidence rate observed during the 10-year period 2003-2012.

The risk of developing cancer rose dramatically with age. During the period 2008-2012, about 69 percent of all cancer cases were diagnosed among residents aged 60 and over. Staging data for 2012 by sex and race (Figure 1-C) show that approximately 47 percent of the primary cancer cases (excluding lymphomas) among black females were diagnosed in the regional or distant stages, compared to 46 percent for black males, 45 percent for white males, and 42 percent for white females.

FIGURE 1
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2008-2012



The average annual age-adjusted cancer death rate for 2008-2012 among males (218.9 per 100,000) was about 43 percent higher than the rate for females (152.6). The cancer death rate of 287.4 for black males was, by far, the highest among the four sex/race groups.

The 2012 age-adjusted death rate (173.1) for all cancers among all residents was the lowest recorded between 2003 and 2012. This was also true for black males, white males, and white females. The annual age-adjusted cancer death rates among black females have also decreased since 2003.

Risk Factors

Risk factors are not always known and can vary among the different types of cancer. Tobacco products, diets high in saturated fat, obesity, excess radiation/sunlight/indoor tanning, lack of physical activity, nutritional deficiencies, excess alcohol use, occupational exposure to certain chemicals, some infectious diseases, family history of cancer, inherited syndromes, reproductive history/hormonal status, and immunosuppression are some of the suggestive risk factors associated with cancer.

Early Detection

Many cancers can be found early through routine or regular screening. Experts recommend having a health exam by a physician, periodic mammogram and clinical breast exams, Pap-tests and pelvic exams, examinations for changes in skin appearance, and colon/rectal exams.

All Cancer Sites: INCIDENCE (Invasive)

**TABLE
1-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

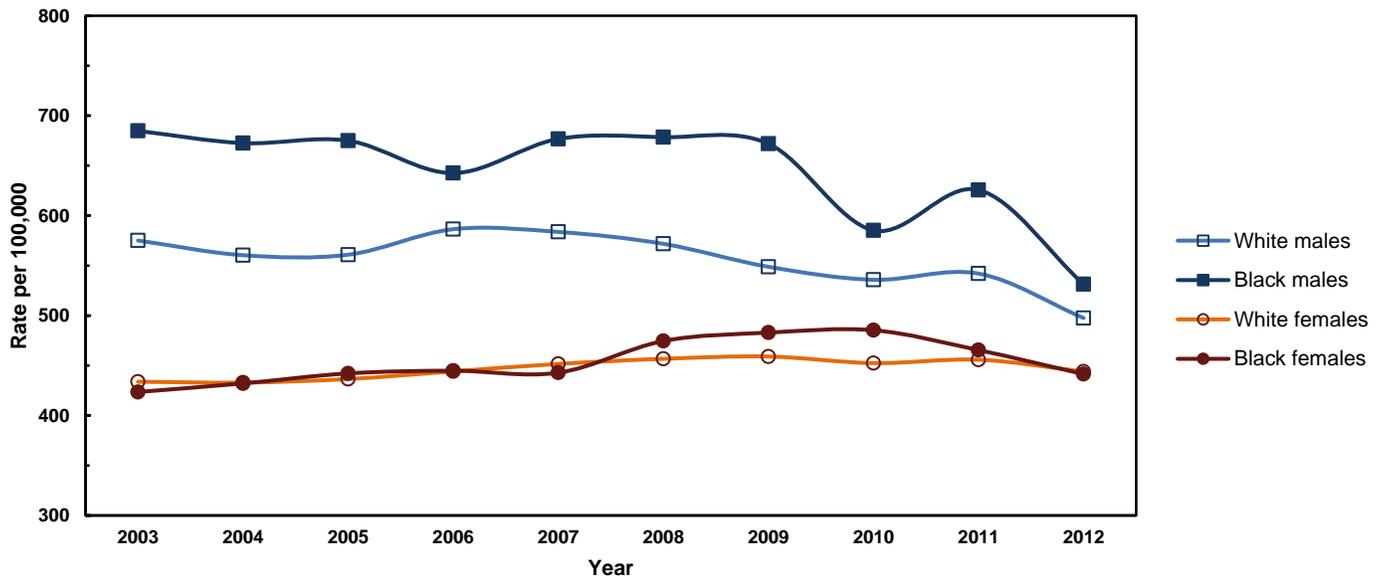
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	75,587	476.1 (472.7-479.5)	37,265	516.5 (511.3-521.7)	32,233	497.5 (492.1-502.9)	2,951	531.3 (512.1-550.5)	38,318	451.2 (446.7-455.7)	33,095	444.0 (439.2-448.8)	3,321	441.4 (426.4-456.4)
2011	78,164	498.1 (494.6-501.6)	39,744	559.2 (553.7-564.7)	34,667	542.0 (536.3-547.7)	3,356	625.7 (604.5-646.9)	38,420	456.9 (452.3-461.5)	33,898	455.8 (450.9-460.7)	3,433	465.4 (449.8-481.0)
2010	75,808	490.2 (486.7-493.7)	38,221	550.0 (544.5-555.5)	33,233	535.8 (530.0-541.6)	3,007	585.2 (564.3-606.1)	37,586	450.0 (445.5-454.5)	33,141	452.4 (447.5-457.3)	3,429	485.3 (469.1-501.5)
2009	75,781	503.9 (500.3-507.5)	37,960	567.8 (562.1-573.5)	33,286	548.8 (542.9-554.7)	3,155	671.9 (648.5-695.3)	37,820	462.2 (457.5-466.9)	33,614	459.0 (454.1-463.9)	3,270	482.9 (466.3-499.5)
2008	75,417	508.9 (505.3-512.5)	38,127	585.1 (579.2-591.0)	33,866	571.8 (565.7-577.9)	3,103	678.5 (654.6-702.4)	37,289	459.7 (455.0-464.4)	33,250	456.7 (451.8-461.6)	3,157	474.5 (457.9-491.1)
2007	75,116	511.7 (508.0-515.4)	38,543	603.8 (597.8-609.8)	33,888	583.7 (577.5-589.9)	3,039	676.8 (652.7-700.9)	36,570	453.1 (448.5-457.7)	32,751	451.6 (446.7-456.5)	2,921	442.8 (426.7-458.9)
2006	73,895	506.4 (502.7-510.1)	37,940	602.1 (596.0-608.2)	33,660	586.4 (580.1-592.7)	2,872	642.6 (619.1-666.1)	35,954	446.6 (442.0-451.2)	32,156	444.1 (439.2-449.0)	2,912	444.8 (428.6-461.0)
2005	71,788	491.5 (487.9-495.1)	36,322	574.3 (568.4-580.2)	32,429	560.9 (554.8-567.0)	2,968	675.0 (650.7-699.3)	35,466	439.2 (434.6-443.8)	31,828	436.5 (431.7-441.3)	2,850	442.1 (425.9-458.3)
2004	70,837	488.6 (485.0-492.2)	35,975	572.5 (566.6-578.4)	32,178	560.4 (554.3-566.5)	2,970	672.6 (648.4-696.8)	34,861	434.6 (430.0-439.2)	31,354	432.9 (428.1-437.7)	2,767	432.1 (416.0-448.2)
2003	71,291	494.2 (490.6-497.8)	36,536	587.4 (581.4-593.4)	32,686	575.1 (568.9-581.3)	2,949	684.8 (660.1-709.5)	34,754	434.7 (430.1-439.3)	31,323	433.8 (429.0-438.6)	2,695	423.5 (407.5-439.5)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above or below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). With the exception of urinary bladder cancers, all in situ cancer cases are excluded.

**FIGURE
1-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



All Cancer Sites: INCIDENCE (Invasive)

**TABLE
1-B**

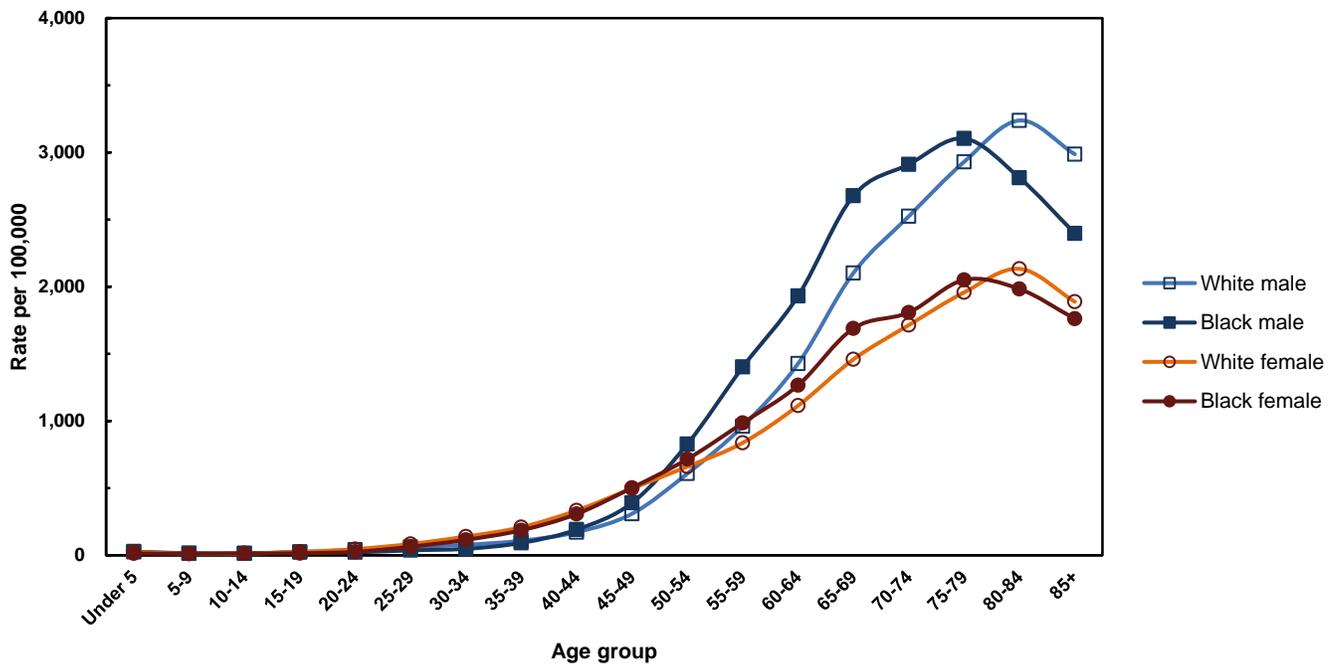
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	601.9	620.9	644.5	467.5	583.8	613.5	455.2
Under 5	25.0	26.5	27.0	24.3	23.4	24.5	13.1
5-9	12.2	13.3	13.3	14.8	11.1	11.4	10.6
10-14	13.0	13.3	13.5	13.3	12.8	12.8	13.1
15-19	23.1	22.9	23.5	22.3	23.2	24.6	14.2
20-24	39.4	37.4	40.1	21.8	41.5	45.0	24.9
25-29	69.4	57.4	61.0	36.4	81.7	83.6	62.9
30-34	103.9	73.1	77.5	47.5	135.0	138.7	114.4
35-39	156.4	106.4	107.8	91.6	206.0	208.2	185.6
40-44	252.3	174.7	171.3	190.7	328.4	332.9	306.9
45-49	409.9	319.0	308.8	389.8	498.3	497.1	501.8
50-54	650.6	635.7	608.0	827.7	665.0	659.9	715.9
55-59	929.7	1,012.5	960.4	1,401.6	850.9	837.1	985.3
60-64	1,304.1	1,496.8	1,426.9	1,931.0	1,126.2	1,113.7	1,265.6
65-69	1,809.9	2,189.9	2,101.9	2,676.7	1,478.4	1,458.5	1,689.3
70-74	2,120.0	2,609.8	2,524.2	2,911.3	1,724.1	1,713.8	1,807.9
75-79	2,408.7	3,009.1	2,930.0	3,103.9	1,973.8	1,957.6	2,050.4
80-84	2,585.9	3,285.6	3,238.1	2,810.7	2,145.4	2,133.2	1,982.7
85+	2,279.4	3,037.9	2,986.5	2,397.0	1,929.2	1,887.8	1,760.9

NOTES: Rates are per 100,000 population and are based on all invasive and in situ urinary bladder cancers. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions of the National Cancer Institute's SEER program.

**FIGURE
1-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



All Cancer Sites: INCIDENCE (Invasive)

**TABLE
1-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

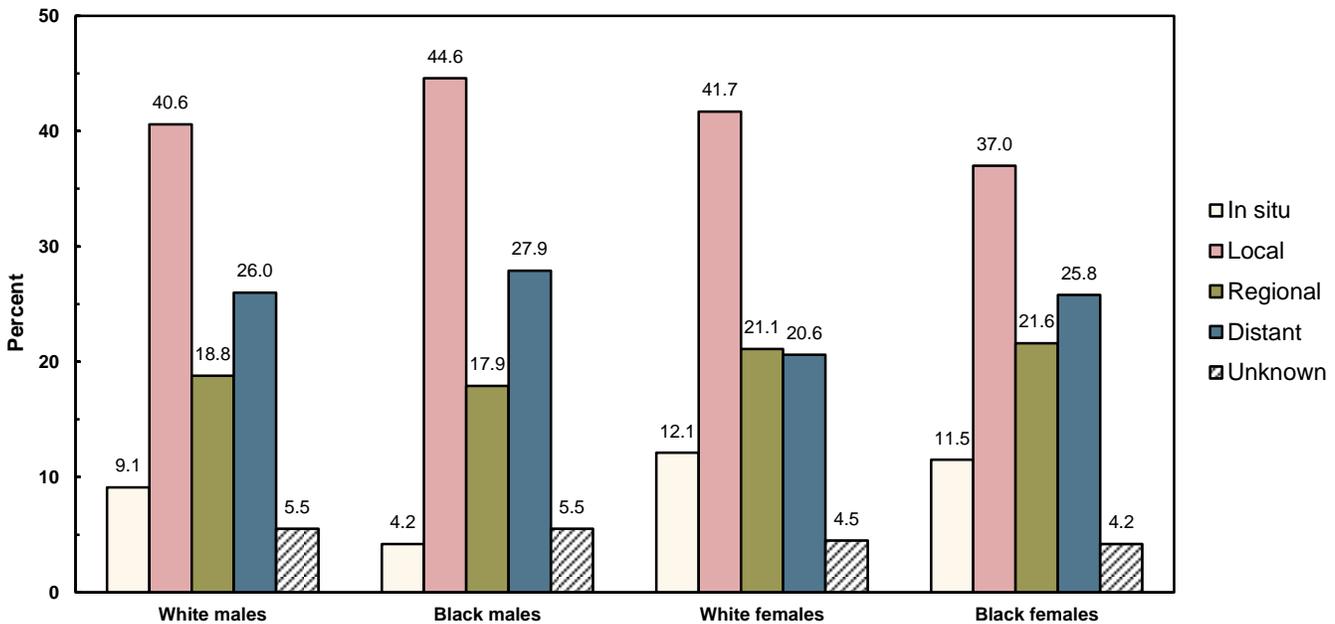
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	380,757	191,317	167,285	15,572	189,433	166,998	16,610
Under 5	915	496	390	65	419	336	34
5-9	460	256	202	39	204	164	27
10-14	515	268	217	37	247	196	35
15-19	1,043	526	430	72	517	438	44
20-24	1,749	841	721	68	908	784	77
25-29	2,694	1,130	974	91	1,563	1,282	160
30-34	3,890	1,375	1,190	107	2,515	2,078	273
35-39	5,958	2,019	1,697	193	3,939	3,260	425
40-44	10,782	3,703	3,077	422	7,078	6,007	750
45-49	18,915	7,254	6,066	867	11,661	9,923	1,257
50-54	30,826	14,779	12,426	1,717	16,047	13,802	1,728
55-59	40,269	21,366	18,048	2,390	18,901	16,307	2,030
60-64	48,157	26,525	22,773	2,491	21,630	18,940	2,108
65-69	50,619	28,532	24,928	2,279	22,087	19,536	1,998
70-74	46,558	25,618	22,636	1,823	20,940	18,762	1,709
75-79	43,510	22,829	20,487	1,410	20,680	18,655	1,590
80-84	38,387	18,846	17,313	865	19,541	17,874	1,210
85+	35,486	14,938	13,704	636	20,548	18,651	1,155

* Includes any unknowns

NOTE: With the exception of urinary bladder cancers, all in situ cancer cases are excluded.

**FIGURE
1-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTES: Lymphomas were excluded. Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 70,474 - 93.2%

All Cancer Sites: MORTALITY

**TABLE
1-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

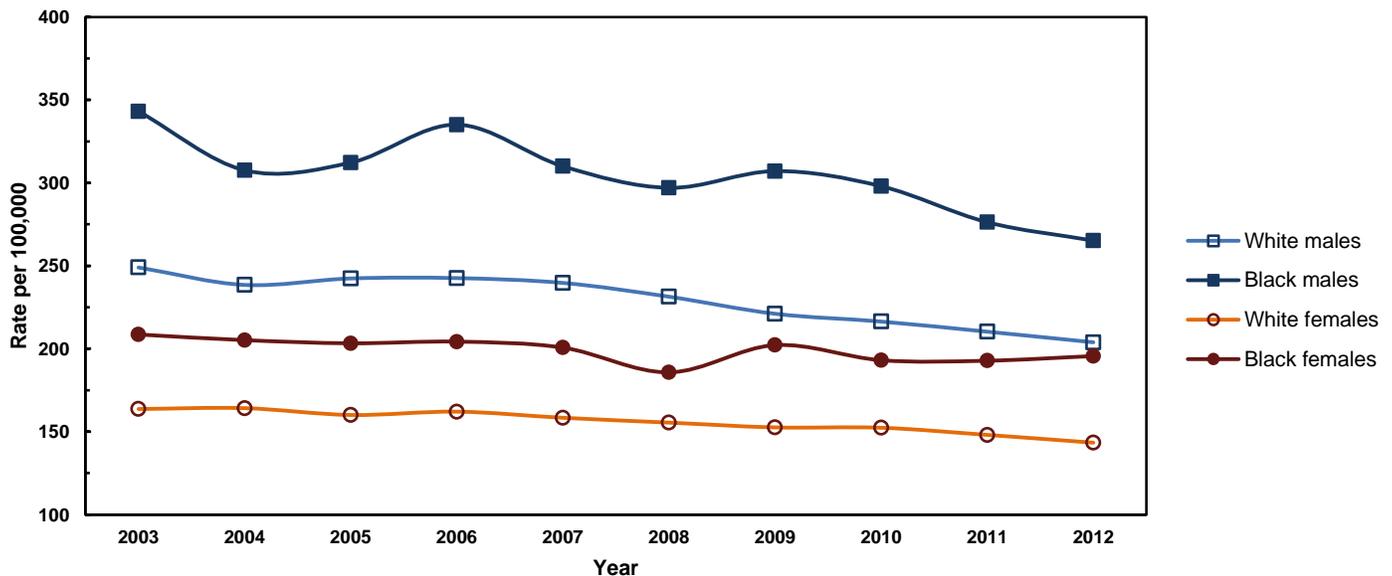
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	28,627	173.1 (171.1-175.1)	14,711	208.7 (205.3-212.1)	13,079	203.9 (200.4-207.4)	1,272	265.2 (250.6-279.8)	13,916	148.7 (146.2-151.2)	12,118	143.4 (140.8-146.0)	1,463	195.6 (185.6-205.6)
2011	28,637	175.5 (173.5-177.5)	14,705	212.9 (209.5-216.3)	13,228	210.3 (206.7-213.9)	1,303	276.3 (261.3-291.3)	13,932	150.4 (147.9-152.9)	12,366	148.1 (145.5-150.7)	1,413	192.8 (182.7-202.9)
2010	28,809	179.4 (177.3-181.5)	14,773	218.1 (214.6-221.6)	13,287	216.4 (212.7-220.1)	1,358	298.0 (282.2-313.8)	14,036	153.0 (150.5-155.5)	12,556	152.4 (149.7-155.1)	1,354	193.1 (182.8-203.4)
2009	28,680	183.0 (180.9-185.1)	14,680	224.4 (220.8-228.0)	13,224	221.1 (217.3-224.9)	1,337	307.1 (290.6-323.6)	14,000	154.9 (152.3-157.5)	12,529	152.6 (149.9-155.3)	1,379	202.2 (191.5-212.9)
2008	28,699	187.0 (184.8-189.2)	14,773	233.2 (229.4-237.0)	13,415	231.4 (227.5-235.3)	1,254	297.0 (280.6-313.4)	13,926	156.6 (154.0-159.2)	12,575	155.5 (152.8-158.2)	1,247	185.8 (175.5-196.1)
2007	28,756	191.5 (189.3-193.7)	14,694	242.0 (238.1-245.9)	13,311	239.7 (235.6-243.8)	1,284	310.0 (293.0-327.0)	14,062	160.3 (157.7-162.9)	12,649	158.4 (155.6-161.2)	1,321	200.7 (189.9-211.5)
2006	28,955	194.8 (192.6-197.0)	14,720	246.2 (242.2-250.2)	13,279	242.6 (238.5-246.7)	1,347	335.1 (317.2-353.0)	14,235	164.1 (161.4-166.8)	12,814	162.1 (159.3-164.9)	1,332	204.3 (193.3-215.3)
2005	29,355	194.4 (192.2-196.6)	15,047	245.3 (241.4-249.2)	13,676	242.4 (238.3-246.5)	1,284	312.2 (295.1-329.3)	14,308	162.3 (159.6-165.0)	12,923	160.1 (157.3-162.9)	1,309	203.3 (192.3-214.3)
2004	29,218	195.5 (193.3-197.7)	14,706	241.1 (237.2-245.0)	13,371	238.5 (234.5-242.5)	1,242	307.6 (290.5-324.7)	14,512	166.5 (163.8-169.2)	13,115	164.2 (161.4-167.0)	1,316	205.2 (194.1-216.3)
2003	29,601	199.4 (197.1-201.7)	15,198	253.1 (249.1-257.1)	13,741	249.0 (244.8-253.2)	1,369	343.1 (324.9-361.3)	14,403	166.0 (163.3-168.7)	12,999	163.7 (160.9-166.5)	1,323	208.6 (197.4-219.8)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
1-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



All Cancer Sites: MORTALITY

**TABLE
1-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

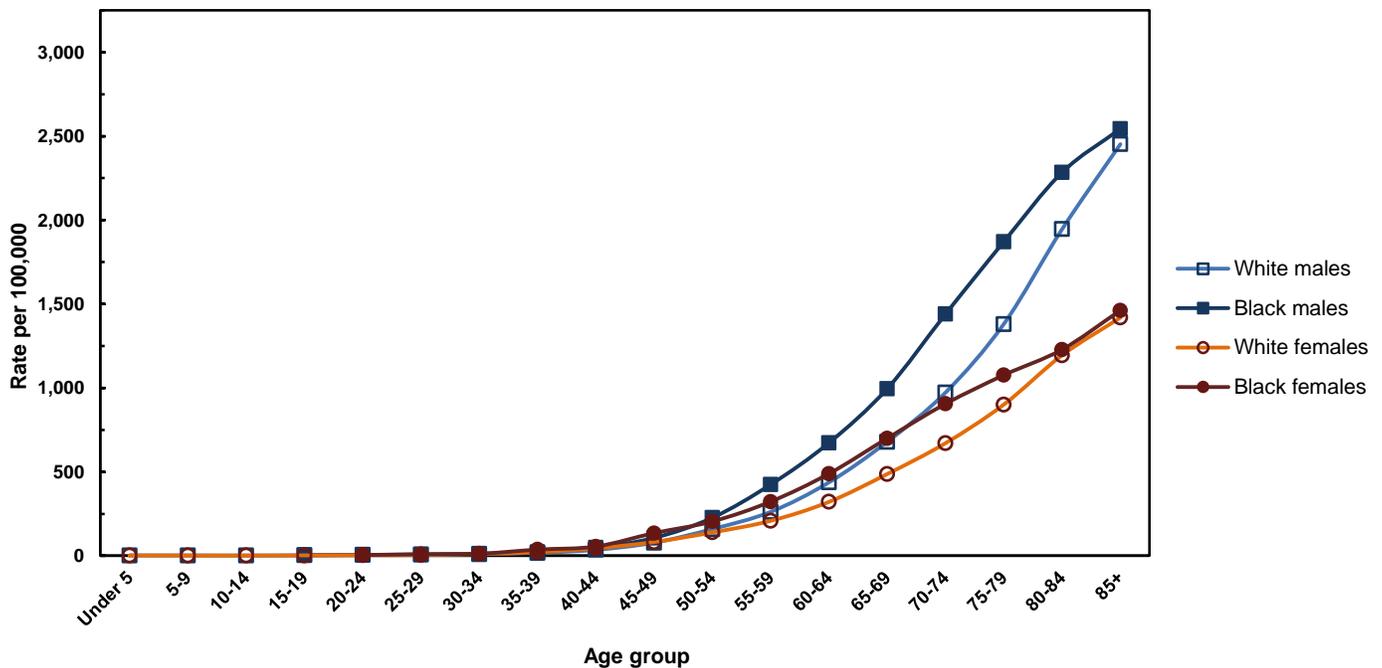
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	143,452	226.8	73,642	239.0	66,233	255.2	6,524	195.9	69,810	215.1	62,144	228.3	6,856	187.9
Under 5	85	2.3	43	2.3	35	2.4	7	ND	42	2.4	33	2.4	6	ND
5-9	79	2.1	47	2.4	40	2.6	5	ND	32	1.7	23	1.6	7	ND
10-14	70	1.8	35	1.7	30	1.9	4	ND	35	1.8	27	1.8	4	ND
15-19	128	2.8	70	3.1	55	3.0	13	4.0	58	2.6	47	2.6	9	ND
20-24	211	4.8	127	5.6	105	5.8	16	5.1	84	3.8	66	3.8	15	4.9
25-29	241	6.2	134	6.8	111	7.0	20	8.0	107	5.6	76	5.0	24	9.4
30-34	398	10.6	188	10.0	155	10.1	28	12.4	210	11.3	167	11.1	30	12.6
35-39	765	20.1	333	17.5	274	17.4	46	21.8	432	22.6	333	21.3	85	37.1
40-44	1,743	40.8	770	36.3	640	35.6	108	48.8	973	45.1	804	44.6	135	55.2
45-49	3,825	82.9	1,801	79.2	1,537	78.2	237	106.6	2,024	86.5	1,638	82.0	339	135.3
50-54	7,268	153.4	3,803	163.6	3,255	159.3	470	226.6	3,465	143.6	2,914	139.3	494	204.7
55-59	10,535	243.2	5,735	271.8	4,919	261.8	724	424.6	4,800	216.1	4,060	208.4	665	322.8
60-64	14,328	388.0	7,970	449.7	6,984	437.6	868	672.9	6,358	331.0	5,463	321.2	815	489.3
65-69	16,463	588.6	9,021	692.4	8,058	679.4	848	996.0	7,442	498.1	6,524	487.1	828	700.1
70-74	18,020	820.5	9,729	991.1	8,722	972.6	902	1,440.5	8,291	682.7	7,348	671.2	856	905.6
75-79	20,138	1,114.8	10,618	1,399.6	9,655	1,380.8	850	1,871.1	9,520	908.6	8,586	901.0	835	1,076.8
80-84	22,053	1,485.6	11,204	1,953.3	10,405	1,946.1	703	2,284.3	10,849	1,191.1	10,013	1,195.0	750	1,229.0
85+	27,099	1,740.7	12,013	2,443.0	11,252	2,452.2	675	2,544.0	15,086	1,416.4	14,020	1,419.0	959	1,462.1

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
1-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



All Cancer Sites: INCIDENCE (Invasive)

**TABLE
1-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	380,757	191,317	554.6	(552.1-557.1)	189,433	455.7	(453.6-457.8)									
Adams	2,937	1,447	502.7	(476.8-528.6)	1,490	460.3	(436.9-483.7)	Juniata	625	305	423.6	(376.1-471.1)	320	410.0	(365.1-454.9)	
Allegheny	39,731	18,886	552.9	(545.0-560.8)	20,843	479.6	(473.1-486.1)	Lackawanna	6,902	3,407	552.2	(533.7-570.7)	3,495	459.1	(443.9-474.3)	
Armstrong	2,211	1,115	509.3	(479.4-539.2)	1,096	438.5	(412.5-464.5)	Lancaster	13,659	6,942	504.4	(492.5-516.3)	6,717	417.0	(407.0-427.0)	
Beaver	5,694	2,851	536.8	(517.1-556.5)	2,843	444.5	(428.2-460.8)	Lawrence	3,115	1,543	554.1	(526.5-581.7)	1,570	473.2	(449.8-496.6)	
Bedford	1,653	903	560.0	(523.5-596.5)	750	428.8	(398.1-459.5)	Lebanon	4,072	2,062	532.1	(509.1-555.1)	2,010	438.8	(419.6-458.0)	
Berks	11,357	5,808	537.3	(523.5-551.1)	5,548	438.8	(427.3-450.3)	Lehigh	10,085	5,132	559.9	(544.6-575.2)	4,953	441.2	(428.9-453.5)	
Blair	4,112	2,108	566.6	(542.4-590.8)	2,004	430.5	(411.7-449.3)	Luzerne	11,008	5,403	575.8	(560.4-591.2)	5,605	484.1	(471.4-496.8)	
Bradford	2,085	1,058	547.5	(514.5-580.5)	1,027	470.7	(441.9-499.5)	Lycoming	3,904	1,939	575.9	(550.3-601.5)	1,965	501.0	(478.8-523.2)	
Bucks	19,047	9,690	560.7	(549.5-571.9)	9,357	464.1	(454.7-473.5)	McKean	1,302	683	527.9	(488.3-567.5)	619	436.4	(402.0-470.8)	
Butler	5,728	3,023	591.0	(569.9-612.1)	2,705	455.3	(438.1-472.5)	Mercer	3,979	2,033	571.8	(546.9-596.7)	1,946	468.7	(447.9-489.5)	
Cambria	4,940	2,546	566.0	(544.0-588.0)	2,394	452.8	(434.7-470.9)	Mifflin	1,539	763	534.5	(496.6-572.4)	776	476.9	(443.3-510.5)	
Cameron	222	125	677.9	(559.1-796.7)	97	496.7	(397.9-595.5)	Monroe	4,340	2,226	515.5	(494.1-536.9)	2,114	436.0	(417.4-454.6)	
Carbon	2,242	1,156	581.9	(548.4-615.4)	1,086	469.7	(441.8-497.6)	Montgomery	23,808	12,025	558.2	(548.2-568.2)	11,783	453.3	(445.1-461.5)	
Centre	3,153	1,644	506.1	(481.6-530.6)	1,509	421.1	(399.9-442.3)	Montour	627	320	586.4	(522.1-650.7)	307	438.9	(389.8-488.0)	
Chester	13,491	6,792	539.6	(526.8-552.4)	6,699	459.2	(448.2-470.2)	Northampton	9,703	4,984	613.0	(596.0-630.0)	4,719	485.3	(471.5-499.1)	
Clarion	1,320	706	603.7	(559.2-648.2)	614	467.6	(430.6-504.6)	Northumberland	3,135	1,662	567.4	(540.1-594.7)	1,473	429.5	(407.6-451.4)	
Clearfield	2,645	1,422	563.3	(534.0-592.6)	1,223	429.0	(405.0-453.0)	Perry	1,278	665	527.6	(487.5-567.7)	613	443.1	(408.0-478.2)	
Clinton	1,175	612	555.2	(511.2-599.2)	563	463.7	(425.4-502.0)	Philadelphia	40,999	20,139	626.4	(617.7-635.1)	20,858	472.2	(465.8-478.6)	
Columbia	2,168	1,088	595.4	(560.0-630.8)	1,080	497.8	(468.1-527.5)	Pike	1,722	898	477.2	(446.0-508.4)	824	428.4	(399.1-457.7)	
Crawford	2,730	1,420	534.8	(507.0-562.6)	1,310	437.1	(413.4-460.8)	Potter	579	320	540.7	(481.5-599.9)	259	415.8	(365.2-466.4)	
Cumberland	6,693	3,218	500.5	(483.2-517.8)	3,475	452.7	(437.6-467.8)	Schuylkill	5,083	2,522	548.8	(527.4-570.2)	2,561	479.1	(460.5-497.7)	
Dauphin	7,080	3,381	501.2	(484.3-518.1)	3,699	438.9	(424.8-453.0)	Snyder	1,101	578	547.2	(502.6-591.8)	523	429.8	(393.0-466.6)	
Delaware	17,000	8,561	607.7	(594.8-620.6)	8,439	471.2	(461.1-481.3)	Somerset	2,512	1,322	525.5	(497.2-553.8)	1,190	428.6	(404.2-453.0)	
Elk	1,175	644	616.9	(569.3-664.5)	531	450.4	(412.1-488.7)	Sullivan	297	163	631.0	(534.1-727.9)	134	524.9	(436.0-613.8)	
Erie	7,694	3,790	514.0	(497.6-530.4)	3,904	446.4	(432.4-460.4)	Susquehanna	1,301	718	516.0	(478.3-553.7)	583	397.7	(365.4-430.0)	
Fayette	4,668	2,426	570.6	(547.9-593.3)	2,242	437.7	(419.6-455.8)	Tioga	1,402	740	550.7	(511.0-590.4)	662	468.4	(432.7-504.1)	
Forest	220	124	470.2	(387.4-553.0)	96	461.9	(369.5-554.3)	Union	1,158	617	506.9	(466.9-546.9)	541	420.3	(384.9-455.7)	
Franklin	4,421	2,345	546.6	(524.5-568.7)	2,076	419.6	(401.5-437.7)	Venango	1,838	959	558.9	(523.5-594.3)	879	446.2	(416.7-475.7)	
Fulton	443	247	529.9	(463.8-596.0)	196	390.1	(335.5-444.7)	Warren	1,465	802	578.2	(538.2-618.2)	663	438.8	(405.4-472.2)	
Greene	1,216	601	537.3	(494.3-580.3)	615	496.5	(457.3-535.7)	Washington	6,776	3,396	542.5	(524.3-560.7)	3,380	453.5	(438.2-468.8)	
Huntingdon	1,231	651	469.4	(433.3-505.5)	580	401.1	(368.5-433.7)	Wayne	1,637	883	488.3	(456.1-520.5)	754	408.6	(379.4-437.8)	
Indiana	2,272	1,213	491.8	(464.1-519.5)	1,059	371.3	(348.9-393.7)	Westmoreland	12,255	6,071	524.2	(511.0-537.4)	6,184	452.9	(441.6-464.2)	
Jefferson	1,516	819	580.6	(540.8-620.4)	697	434.7	(402.4-467.0)	Wyoming	950	488	583.3	(531.5-635.1)	462	512.8	(466.0-559.6)	
								York	12,331	6,187	534.9	(521.6-548.2)	6,144	463.2	(451.6-474.8)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. With the exception of urinary bladder cancers, all in situ cancer cases are excluded.

All Cancer Sites: MORTALITY

**TABLE
1-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	143,452	73,642	218.9	(217.3-220.5)	69,810	152.6	(151.5-153.7)									
Adams	1,052	576	206.1	(189.3-222.9)	476	134.1	(122.1-146.1)	Juniata	272	153	226.3	(190.4-262.2)	119	138.4	(113.5-163.3)	
Allegheny	15,598	7,763	225.7	(220.7-230.7)	7,835	158.2	(154.7-161.7)	Lackawanna	2,759	1,395	228.8	(216.8-240.8)	1,364	153.5	(145.4-161.6)	
Armstrong	888	447	204.3	(185.4-223.2)	441	157.7	(143.0-172.4)	Lancaster	5,236	2,740	202.2	(194.6-209.8)	2,496	139.5	(134.0-145.0)	
Beaver	2,311	1,235	230.0	(217.2-242.8)	1,076	147.6	(138.8-156.4)	Lawrence	1,276	664	235.1	(217.2-253.0)	612	158.7	(146.1-171.3)	
Bedford	556	297	185.9	(164.8-207.0)	259	134.3	(117.9-150.7)	Lebanon	1,633	862	225.3	(210.3-240.3)	771	150.0	(139.4-160.6)	
Berks	4,049	2,105	200.4	(191.8-209.0)	1,944	140.6	(134.3-146.9)	Lehigh	3,684	1,875	209.7	(200.2-219.2)	1,809	145.1	(138.4-151.8)	
Blair	1,645	894	242.5	(226.6-258.4)	751	143.8	(133.5-154.1)	Luzerne	4,164	2,120	228.9	(219.2-238.6)	2,044	153.9	(147.2-160.6)	
Bradford	824	417	218.7	(197.7-239.7)	407	172.5	(155.7-189.3)	Lycoming	1,383	701	208.8	(193.3-224.3)	682	154.6	(143.0-166.2)	
Bucks	6,364	3,212	198.3	(191.4-205.2)	3,152	147.6	(142.4-152.8)	McKean	498	255	197.5	(173.3-221.7)	243	150.3	(131.4-169.2)	
Butler	2,005	1,081	217.6	(204.6-230.6)	924	139.9	(130.9-148.9)	Mercer	1,594	818	227.7	(212.1-243.3)	776	162.2	(150.8-173.6)	
Cambria	1,873	955	214.1	(200.5-227.7)	918	144.8	(135.4-154.2)	Mifflin	564	281	197.6	(174.5-220.7)	283	156.3	(138.1-174.5)	
Cameron	79	44	235.1	(165.6-304.6)	35	148.3	(99.2-197.4)	Monroe	1,561	854	217.8	(203.2-232.4)	707	147.3	(136.4-158.2)	
Carbon	849	457	236.6	(214.9-258.3)	392	157.2	(141.6-172.8)	Montgomery	8,221	4,079	194.9	(188.9-200.9)	4,142	143.9	(139.5-148.3)	
Centre	1,045	576	186.6	(171.4-201.8)	469	120.0	(109.1-130.9)	Montour	204	99	186.3	(149.6-223.0)	105	129.8	(105.0-154.6)	
Chester	4,453	2,228	191.9	(183.9-199.9)	2,225	147.3	(141.2-153.4)	Northampton	3,277	1,700	213.6	(203.4-223.8)	1,577	146.0	(138.8-153.2)	
Clarion	464	265	234.3	(206.1-262.5)	199	140.4	(120.9-159.9)	Northumberland	1,256	670	230.8	(213.3-248.3)	586	148.2	(136.2-160.2)	
Clearfield	1,034	572	231.8	(212.8-250.8)	462	145.5	(132.2-158.8)	Perry	526	309	256.1	(227.5-284.7)	217	153.5	(133.1-173.9)	
Clinton	477	260	237.0	(208.2-265.8)	217	163.7	(141.9-185.5)	Philadelphia	16,397	8,100	263.1	(257.4-268.8)	8,297	178.1	(174.3-181.9)	
Columbia	774	422	235.8	(213.3-258.3)	352	147.4	(132.0-162.8)	Pike	511	279	156.5	(138.1-174.9)	232	121.0	(105.4-136.6)	
Crawford	1,095	583	227.1	(208.7-245.5)	512	160.2	(146.3-174.1)	Potter	243	128	219.2	(181.2-257.2)	115	165.4	(135.2-195.6)	
Cumberland	2,367	1,192	191.2	(180.3-202.1)	1,175	137.9	(130.0-145.8)	Schuylkill	2,070	1,061	232.5	(218.5-246.5)	1,009	163.9	(153.8-174.0)	
Dauphin	2,682	1,369	213.3	(202.0-224.6)	1,313	148.9	(140.8-157.0)	Snyder	387	215	207.9	(180.1-235.7)	172	132.5	(112.7-152.3)	
Delaware	6,309	3,117	226.8	(218.8-234.8)	3,192	164.0	(158.3-169.7)	Somerset	926	494	195.4	(178.2-212.6)	432	132.1	(119.6-144.6)	
Elk	453	244	238.8	(208.8-268.8)	209	148.7	(128.5-168.9)	Sullivan	97	54	222.6	(163.2-282.0)	43	137.4	(96.3-178.5)	
Erie	3,124	1,587	222.8	(211.8-233.8)	1,537	161.4	(153.3-169.5)	Susquehanna	524	311	230.9	(205.2-256.6)	213	136.2	(117.9-154.5)	
Fayette	2,040	1,104	263.8	(248.2-279.4)	936	163.8	(153.3-174.3)	Tioga	500	269	201.7	(177.6-225.8)	231	145.5	(126.7-164.3)	
Forest	106	68	267.2	(203.7-330.7)	38	183.9	(125.4-242.4)	Union	398	214	191.2	(165.6-216.8)	184	123.1	(105.3-140.9)	
Franklin	1,601	858	202.6	(189.0-216.2)	743	137.0	(127.1-146.9)	Venango	803	415	245.0	(221.4-268.6)	388	179.3	(161.5-197.1)	
Fulton	162	82	184.2	(144.3-224.1)	80	149.9	(117.1-182.7)	Warren	550	291	211.7	(187.4-236.0)	259	155.5	(136.6-174.4)	
Greene	500	265	250.0	(219.9-280.1)	235	173.4	(151.2-195.6)	Washington	2,845	1,458	235.1	(223.0-247.2)	1,387	165.2	(156.5-173.9)	
Huntingdon	535	283	217.9	(192.5-243.3)	252	160.1	(140.3-179.9)	Wayne	662	368	205.3	(184.3-226.3)	294	144.0	(127.5-160.5)	
Indiana	887	457	189.7	(172.3-207.1)	430	136.0	(123.1-148.9)	Westmoreland	4,891	2,528	219.8	(211.2-228.4)	2,363	151.1	(145.0-157.2)	
Jefferson	591	315	225.8	(200.9-250.7)	276	151.3	(133.4-169.2)	Wyoming	328	196	252.4	(217.1-287.7)	132	134.4	(111.5-157.3)	
								York	4,420	2,356	212.9	(204.3-221.5)	2,064	147.3	(140.9-153.7)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

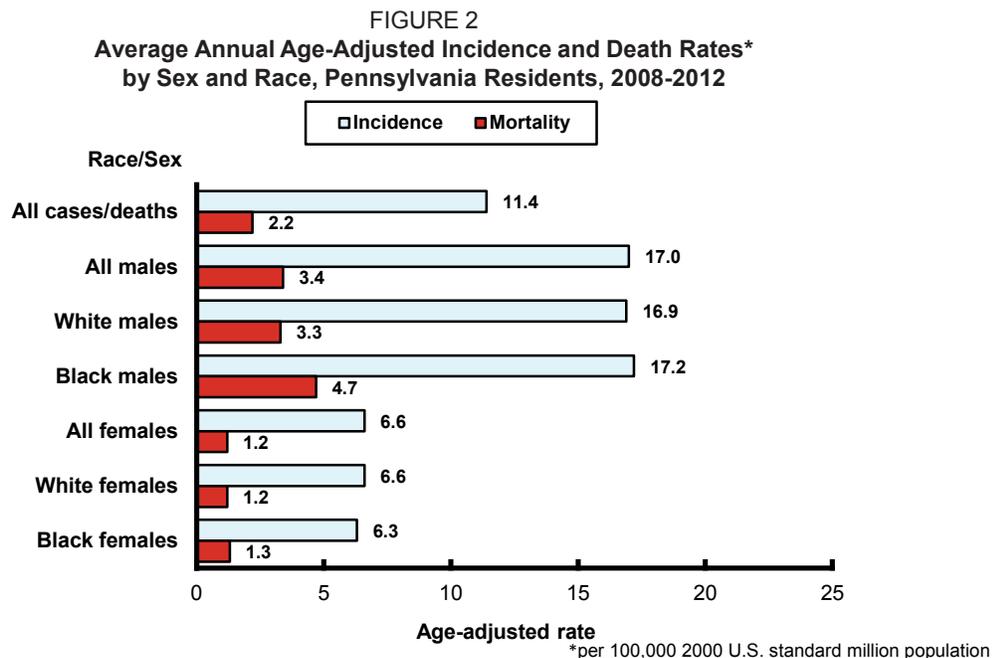
Cancer of the Oral Cavity and Pharynx

Data Highlights

There were 1,887 cases of invasive cancer of the oral cavity and pharynx diagnosed in 2012 among Pennsylvania residents. The average annual age-adjusted incidence rate for 2008-2012 was dramatically higher among males compared to females (17.0 versus 6.6 per 100,000, respectively). The 2008-2012 average annual age-adjusted incidence rate among black males was 17.2 per 100,000, which was not significantly different when compared to the rate of 16.9 for white males. Excessive use of alcohol, in combination with tobacco products, is the primary risk factor of this disease. Many new cases and deaths may be directly prevented with a reduction in these risk factors.

The annual age-adjusted incidence rates for black males declined from 2003 to 2005, when the rate was slightly lower than white males. After 2005, the incidence rate for black males increased until 2008 but again decreased in 2009 and 2010, when rates were again lower than white males. In 2011, the incidence rate for black males increased drastically to its highest point during the 10-year period, 2003-2012, before decreasing in 2012 to a rate that was again lower than the rate for white males. Rates for black females did not have any obvious trends. Among white males, the rates appear to be increasing slowly throughout the period 2003-2012. Rates for white females have been increasing slightly since 2003. The incidence rates for all Pennsylvania residents rose steadily with age, with 86 percent of the invasive cases diagnosed among those aged 50 years and older during the 2008-2012 period. Among the four sex/race groups, average annual age-specific incidence rates for 2008-2012 were noticeably higher for black males, ages 60-79. Black residents had a higher percentage of cases diagnosed at the distant stage compared to whites. Among black males, 35.3 percent of the cases in 2012 were diagnosed at the distant stage compared to 19.6 percent among white males. Regional stage diagnoses among black females represented 36.4 percent of cases compared to 32.7 percent for white females.

In 2012, there were 351 deaths among residents due to cancers of the oral cavity and pharynx. As observed with the incidence rates, average annual age-adjusted death rates for 2008-2012 were higher among males compared to females. The 2008-2012 average annual age-adjusted death rate for males was 3.4 per 100,000 compared to 1.2 for females. During the period 2003-2012, black males had the highest death rates for this cancer among the four sex/race groups. Due to small annual death counts, data for black females were considered statistically unreliable and do not appear in Figure 2-D. Overall, the annual rates for all four sex/race groups during 2003-2012 showed no discernible trends.



Risk Factors

Excessive use of alcohol, cigarette/cigar/pipe smoking, smokeless tobacco, betel quid, excess sunlight (e.g., lip cancers), poor nutrition, immune system suppression, graft-versus-host disease, lichen planus, and human papillomaviruses are associated with oral cavity and pharynx cancers.

Early Detection

Many pre-cancers of the oral cavity and pharynx can be found early during routine screening by health professionals. However, there is insufficient evidence whether palpation and inspection of the oral cavity in asymptomatic persons reduces mortality. The American Cancer Society recommends a complete oral exam be included in a periodic health examination.

Cancer of the Oral Cavity and Pharynx: INCIDENCE (Invasive)

**TABLE
2-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

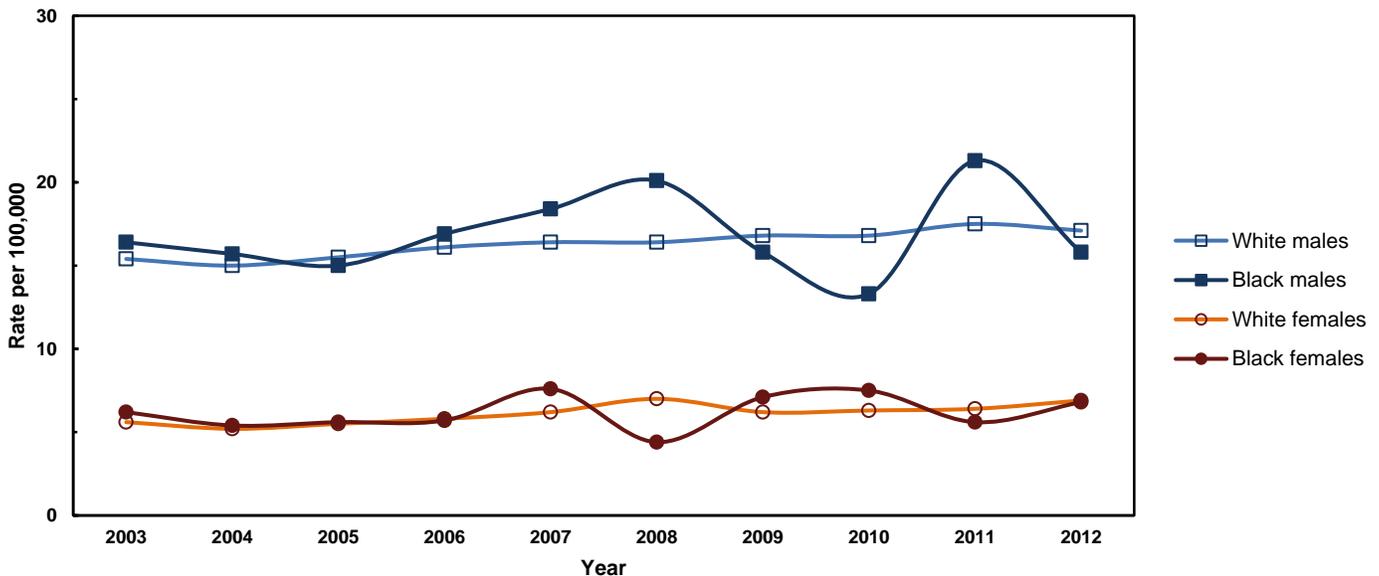
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,887	11.7 (11.2-12.2)	1,275	17.1 (16.2-18.0)	1,149	17.1 (16.1-18.1)	83	15.8 (12.4-19.2)	612	7.1 (6.5-7.7)	528	6.9 (6.3-7.5)	53	6.8 (5.0-8.6)
2011	1,844	11.7 (11.2-12.2)	1,296	17.9 (16.9-18.9)	1,134	17.5 (16.5-18.5)	117	21.3 (17.4-25.2)	548	6.4 (5.9-6.9)	489	6.4 (5.8-7.0)	41	5.6 (3.9-7.3)
2010	1,729	11.1 (10.6-11.6)	1,188	16.5 (15.6-17.4)	1,074	16.8 (15.8-17.8)	72	13.3 (10.2-16.4)	541	6.4 (5.9-6.9)	466	6.3 (5.7-6.9)	54	7.5 (5.5-9.5)
2009	1,668	11.1 (10.6-11.6)	1,146	16.8 (15.8-17.8)	1,031	16.8 (15.8-17.8)	80	15.8 (12.3-19.3)	522	6.3 (5.8-6.8)	457	6.2 (5.6-6.8)	48	7.1 (5.1-9.1)
2008	1,684	11.4 (10.9-11.9)	1,125	16.9 (15.9-17.9)	990	16.4 (15.4-17.4)	98	20.1 (16.1-24.1)	559	6.8 (6.2-7.4)	514	7.0 (6.4-7.6)	30	4.4 (2.8-6.0)
2007	1,599	11.0 (10.5-11.5)	1,081	16.5 (15.5-17.5)	969	16.4 (15.4-17.4)	86	18.4 (14.5-22.3)	518	6.4 (5.8-7.0)	449	6.2 (5.6-6.8)	51	7.6 (5.5-9.7)
2006	1,534	10.5 (10.0-11.0)	1,057	16.2 (15.2-17.2)	954	16.1 (15.1-17.1)	81	16.9 (13.2-20.6)	477	5.9 (5.4-6.4)	417	5.8 (5.2-6.4)	38	5.7 (3.9-7.5)
2005	1,465	10.1 (9.6-10.6)	1,018	15.7 (14.7-16.7)	915	15.5 (14.5-16.5)	73	15.0 (11.6-18.4)	447	5.6 (5.1-6.1)	399	5.5 (5.0-6.0)	36	5.6 (3.8-7.4)
2004	1,398	9.7 (9.2-10.2)	972	15.1 (14.2-16.0)	875	15.0 (14.0-16.0)	76	15.7 (12.2-19.2)	426	5.3 (4.8-5.8)	376	5.2 (4.7-5.7)	35	5.4 (3.6-7.2)
2003	1,449	10.2 (9.7-10.7)	993	15.6 (14.6-16.6)	890	15.4 (14.4-16.4)	79	16.4 (12.8-20.0)	456	5.8 (5.3-6.3)	403	5.6 (5.1-6.1)	40	6.2 (4.3-8.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
2-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Oral Cavity and Pharynx: INCIDENCE (Invasive)

**TABLE
2-B**

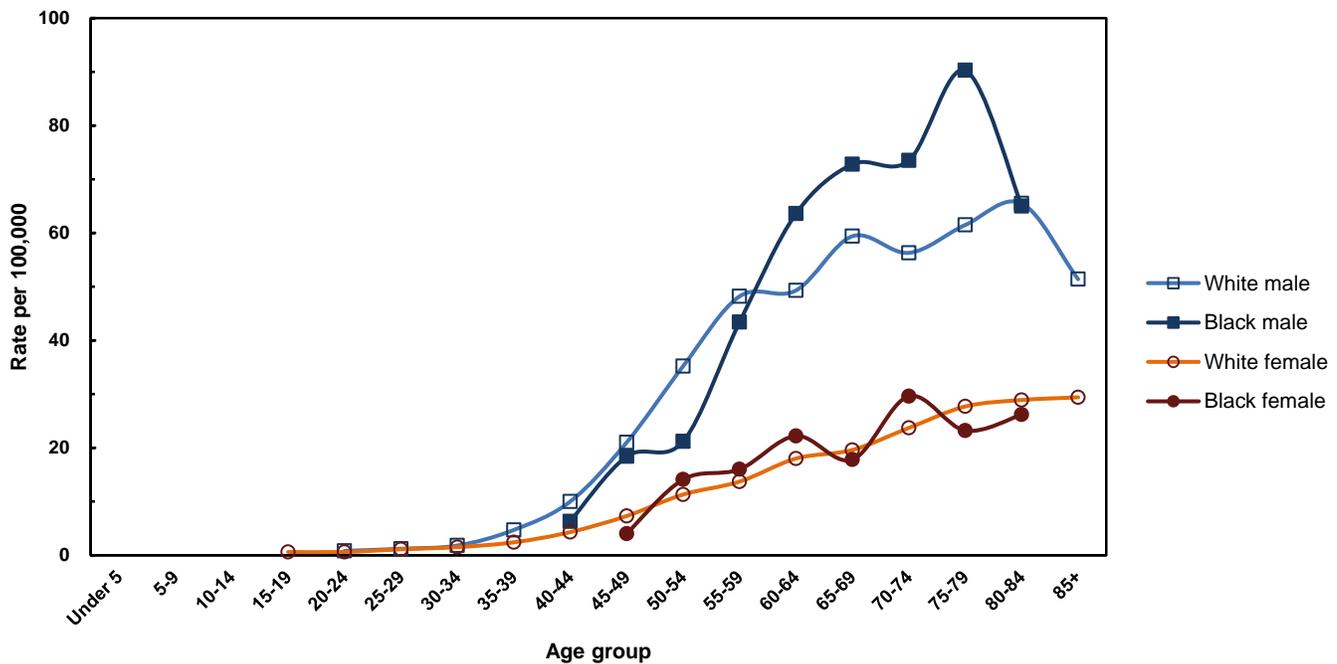
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	13.9	19.6	20.7	13.5	8.6	9.0	6.2
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	0.3	ND	ND	ND	ND	ND	ND
15-19	0.5	0.5	ND	ND	0.5	0.6	ND
20-24	0.7	0.9	0.8	ND	0.5	0.6	ND
25-29	1.2	1.3	1.2	ND	1.1	1.1	ND
30-34	1.8	2.0	1.8	ND	1.6	1.5	ND
35-39	3.4	4.6	4.7	ND	2.2	2.4	ND
40-44	7.1	9.9	10.0	6.3	4.3	4.3	ND
45-49	13.8	20.8	21.0	18.4	7.0	7.3	4.0
50-54	22.5	33.7	35.2	21.2	11.6	11.3	14.1
55-59	30.5	47.9	48.2	43.4	13.9	13.7	16.0
60-64	33.8	50.4	49.3	63.6	18.5	18.0	22.2
65-69	38.7	60.3	59.4	72.8	19.9	19.6	17.8
70-74	39.0	57.2	56.3	73.5	24.4	23.7	29.6
75-79	43.3	64.7	61.5	90.3	27.8	27.7	23.2
80-84	43.4	66.1	65.5	65.0	29.1	28.9	26.2
85+	35.8	51.0	51.4	ND	28.8	29.4	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
2-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Oral Cavity and Pharynx: INCIDENCE (Invasive)

**TABLE
2-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

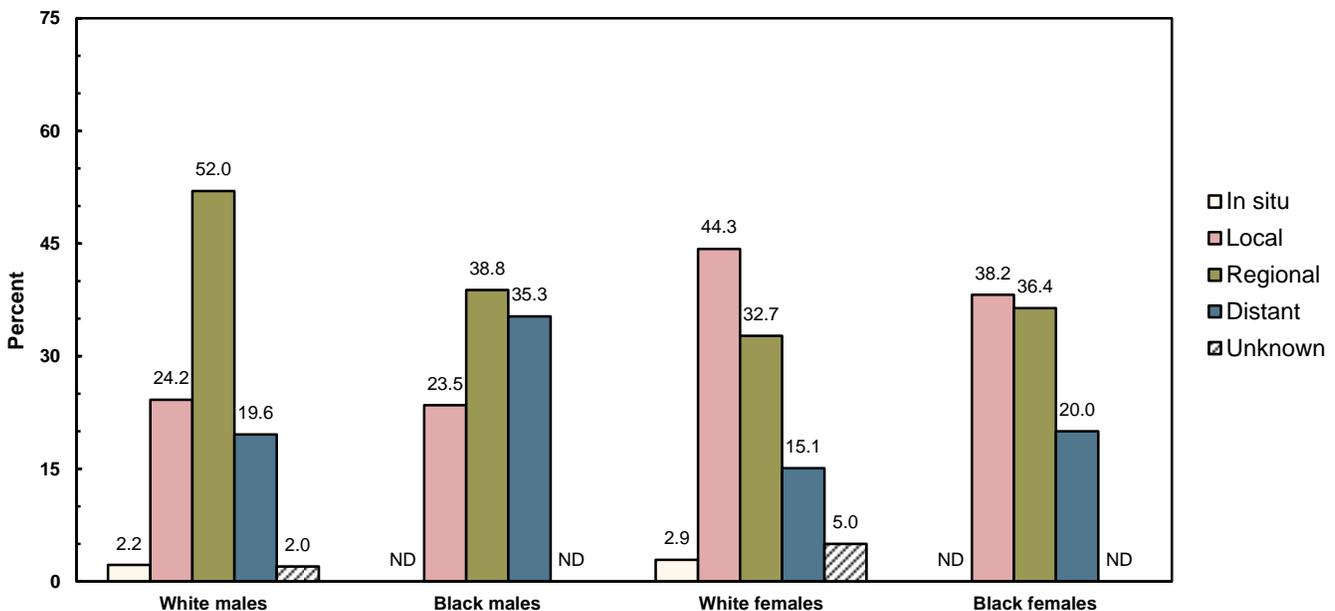
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	8,812	6,030	5,378	450	2,782	2,454	226
Under 5	1	0	0	0	1	1	0
5-9	2	1	1	0	1	1	0
10-14	11	6	6	0	5	4	1
15-19	23	12	4	4	11	11	0
20-24	32	20	15	4	12	10	2
25-29	47	25	19	2	22	17	2
30-34	67	37	28	3	30	23	4
35-39	130	88	74	5	42	38	4
40-44	303	210	180	14	93	77	9
45-49	635	472	412	41	163	145	10
50-54	1,065	784	720	44	281	237	34
55-59	1,319	1,011	906	74	308	266	33
60-64	1,250	894	787	82	356	306	37
65-69	1,083	786	705	62	297	262	21
70-74	857	561	505	46	296	260	28
75-79	782	491	430	41	291	264	18
80-84	644	379	350	20	265	242	16
85+	558	251	236	8	307	290	7

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
2-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 1,855 - 98.3%

Cancer of the Oral Cavity and Pharynx: MORTALITY

**TABLE
2-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

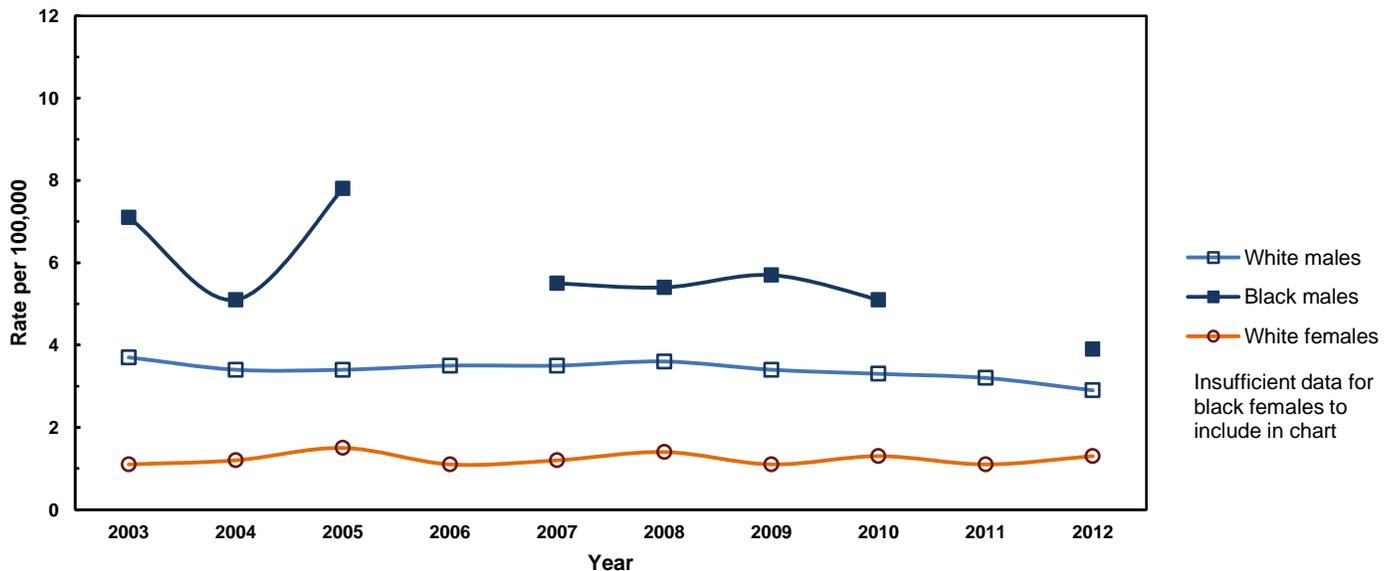
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	351	2.1 (1.9-2.3)	225	3.1 (2.7-3.5)	192	2.9 (2.5-3.3)	21	3.9 (2.2-5.6)	126	1.3 (1.1-1.5)	113	1.3 (1.1-1.5)	8	ND
2011	329	2.0 (1.8-2.2)	227	3.2 (2.8-3.6)	207	3.2 (2.8-3.6)	17	ND	102	1.1 (0.9-1.3)	90	1.1 (0.9-1.3)	10	ND
2010	360	2.2 (2.0-2.4)	244	3.4 (3.0-3.8)	215	3.3 (2.9-3.7)	26	5.1 (3.1-7.1)	116	1.3 (1.1-1.5)	108	1.3 (1.1-1.5)	7	ND
2009	344	2.2 (2.0-2.4)	238	3.5 (3.1-3.9)	208	3.4 (2.9-3.9)	26	5.7 (3.5-7.9)	106	1.1 (0.9-1.3)	97	1.1 (0.9-1.3)	9	ND
2008	372	2.4 (2.2-2.6)	242	3.7 (3.2-4.2)	211	3.6 (3.1-4.1)	25	5.4 (3.3-7.5)	130	1.5 (1.2-1.8)	115	1.4 (1.1-1.7)	13	ND
2007	341	2.3 (2.1-2.5)	231	3.7 (3.2-4.2)	202	3.5 (3.0-4.0)	25	5.5 (3.3-7.7)	110	1.3 (1.1-1.5)	94	1.2 (1.0-1.4)	15	ND
2006	322	2.2 (2.0-2.4)	224	3.5 (3.0-4.0)	203	3.5 (3.0-4.0)	18	ND	98	1.1 (0.9-1.3)	87	1.1 (0.9-1.3)	11	ND
2005	364	2.5 (2.2-2.8)	235	3.7 (3.2-4.2)	197	3.4 (2.9-3.9)	37	7.8 (5.3-10.3)	129	1.5 (1.2-1.8)	120	1.5 (1.2-1.8)	9	ND
2004	330	2.2 (2.0-2.4)	224	3.6 (3.1-4.1)	199	3.4 (2.9-3.9)	21	5.1 (2.9-7.3)	106	1.2 (1.0-1.4)	96	1.2 (1.0-1.4)	10	ND
2003	356	2.4 (2.2-2.6)	250	3.9 (3.4-4.4)	217	3.7 (3.2-4.2)	30	7.1 (4.6-9.6)	106	1.2 (1.0-1.4)	89	1.1 (0.9-1.3)	16	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
2-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Oral Cavity and Pharynx: MORTALITY

**TABLE
2-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

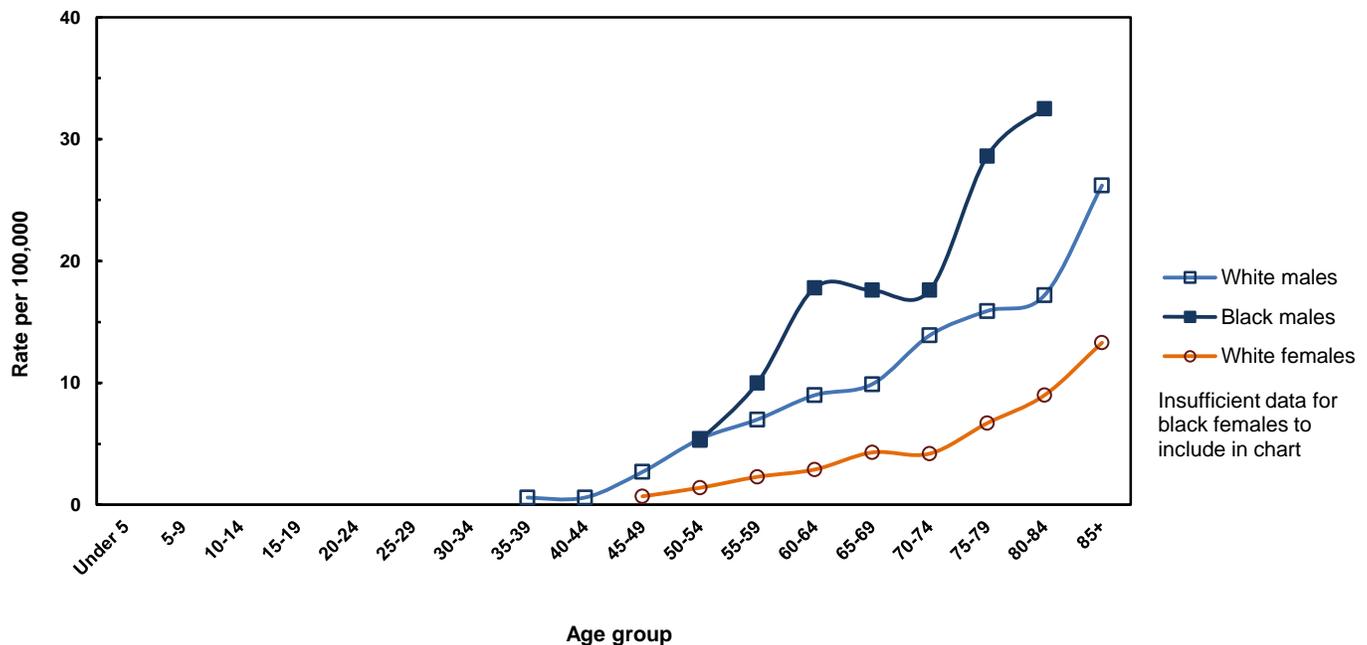
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	1,756	2.8	1,176	3.8	1,033	4.0	115	3.5	580	1.8	523	1.9	47	1.3
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	2	ND	0	ND	0	ND	0	ND	2	ND	2	ND	0	ND
25-29	2	ND	2	ND	2	ND	0	ND	0	ND	0	ND	0	ND
30-34	6	ND	3	ND	3	ND	0	ND	3	ND	2	ND	1	ND
35-39	15	0.4	12	0.6	10	0.6	2	ND	3	ND	2	ND	1	ND
40-44	22	0.5	17	0.8	11	0.6	2	ND	5	ND	5	ND	0	ND
45-49	79	1.7	64	2.8	54	2.7	5	ND	15	0.6	14	0.7	1	ND
50-54	163	3.4	124	5.3	111	5.4	11	5.3	39	1.6	30	1.4	6	ND
55-59	204	4.7	152	7.2	132	7.0	17	10.0	52	2.3	44	2.3	8	ND
60-64	227	6.1	170	9.6	144	9.0	23	17.8	57	3.0	50	2.9	5	ND
65-69	202	7.2	135	10.4	118	9.9	15	17.6	67	4.5	58	4.3	8	ND
70-74	194	8.8	140	14.3	125	13.9	11	17.6	54	4.4	46	4.2	6	ND
75-79	194	10.7	126	16.6	111	15.9	13	28.6	68	6.5	64	6.7	4	ND
80-84	182	12.3	104	18.1	92	17.2	10	32.5	78	8.6	75	9.0	2	ND
85+	264	17.0	127	25.8	120	26.2	6	ND	137	12.9	131	13.3	5	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
2-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Oral Cavity and Pharynx: INCIDENCE (Invasive)

**TABLE
2-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females				
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)		
All counties	8,812	6,030	17.0	(16.6-17.4)	2,782	6.6	(6.4-6.8)										
Adams	75	50	16.9	(12.2-21.6)	25	7.1	(4.3-9.9)	Juniata	18	12	ND		6	ND			
Allegheny	936	605	17.2	(15.8-18.6)	331	7.7	(6.9-8.5)	Lackawanna	191	137	22.2	(18.5-25.9)	54	7.4	(5.4-9.4)		
Armstrong	52	34	16.1	(10.7-21.5)	18	ND		Lancaster	272	196	13.8	(11.9-15.7)	76	4.5	(3.5-5.5)		
Beaver	116	86	15.6	(12.3-18.9)	30	4.8	(3.1-6.5)	Lawrence	71	47	15.9	(11.4-20.4)	24	7.1	(4.3-9.9)		
Bedford	41	33	21.8	(14.4-29.2)	8	ND		Lebanon	87	62	16.1	(12.1-20.1)	25	5.0	(3.0-7.0)		
Berks	253	167	14.9	(12.6-17.2)	86	6.6	(5.2-8.0)	Lehigh	240	160	17.1	(14.5-19.7)	80	6.9	(5.4-8.4)		
Blair	104	77	20.6	(16.0-25.2)	27	6.2	(3.9-8.5)	Luzerne	283	199	21.0	(18.1-23.9)	84	7.0	(5.5-8.5)		
Bradford	45	31	15.7	(10.2-21.2)	14	ND		Lycoming	81	59	17.5	(13.0-22.0)	22	5.1	(3.0-7.2)		
Bucks	482	312	17.2	(15.3-19.1)	170	8.3	(7.1-9.5)	McKean	37	28	22.3	(14.0-30.6)	9	ND			
Butler	116	78	14.5	(11.3-17.7)	38	6.1	(4.2-8.0)	Mercer	86	61	17.6	(13.2-22.0)	25	5.6	(3.4-7.8)		
Cambria	99	60	13.4	(10.0-16.8)	39	7.3	(5.0-9.6)	Mifflin	26	17	ND		9	ND			
Cameron	5	3	ND		2	ND		Monroe	94	64	13.8	(10.4-17.2)	30	6.2	(4.0-8.4)		
Carbon	46	26	12.7	(7.8-17.6)	20	9.8	(5.5-14.1)	Montgomery	501	342	15.5	(13.9-17.1)	159	6.0	(5.1-6.9)		
Centre	67	41	12.4	(8.6-16.2)	26	7.1	(4.4-9.8)	Montour	13	10	ND		3	ND			
Chester	308	201	15.2	(13.1-17.3)	107	7.4	(6.0-8.8)	Northampton	207	143	17.3	(14.5-20.1)	64	6.6	(5.0-8.2)		
Clarion	26	20	17.9	(10.1-25.7)	6	ND		Northumberland	79	53	17.8	(13.0-22.6)	26	7.2	(4.4-10.0)		
Clearfield	63	49	18.7	(13.5-23.9)	14	ND		Perry	33	20	14.1	(7.9-20.3)	13	ND			
Clinton	27	18	ND		9	ND		Philadelphia	931	634	19.2	(17.7-20.7)	297	6.6	(5.8-7.4)		
Columbia	53	42	22.1	(15.4-28.8)	11	ND		Pike	43	31	15.8	(10.2-21.4)	12	ND			
Crawford	77	56	21.9	(16.2-27.6)	21	7.4	(4.2-10.6)	Potter	8	3	ND		5	ND			
Cumberland	162	110	16.8	(13.7-19.9)	52	7.2	(5.2-9.2)	Schuylkill	127	96	20.0	(16.0-24.0)	31	5.8	(3.8-7.8)		
Dauphin	184	125	17.4	(14.3-20.5)	59	6.8	(5.1-8.5)	Snyder	29	22	21.7	(12.6-30.8)	7	ND			
Delaware	402	281	19.3	(17.0-21.6)	121	6.7	(5.5-7.9)	Somerset	57	38	15.2	(10.4-20.0)	19	ND			
Elk	20	13	ND		7	ND		Sullivan	9	2	ND		7	ND			
Erie	191	134	17.5	(14.5-20.5)	57	6.3	(4.7-7.9)	Susquehanna	36	25	18.5	(11.2-25.8)	11	ND			
Fayette	120	86	19.7	(15.5-23.9)	34	6.7	(4.4-9.0)	Tioga	28	18	ND		10	ND			
Forest	7	3	ND		4	ND		Union	24	18	ND		6	ND			
Franklin	106	74	17.1	(13.2-21.0)	32	6.5	(4.2-8.8)	Venango	46	36	19.6	(13.2-26.0)	10	ND			
Fulton	11	7	ND		4	ND		Warren	19	15	ND		4	ND			
Greene	36	24	22.3	(13.4-31.2)	12	ND		Washington	165	114	17.6	(14.4-20.8)	51	6.6	(4.8-8.4)		
Huntingdon	32	24	16.9	(10.1-23.7)	8	ND		Wayne	38	29	15.6	(9.9-21.3)	9	ND			
Indiana	50	36	14.0	(9.4-18.6)	14	ND		Westmoreland	268	174	15.1	(12.9-17.3)	94	6.5	(5.2-7.8)		
Jefferson	32	24	17.6	(10.6-24.6)	8	ND		Wyoming	21	14	ND		7	ND			
								York	300	221	17.8	(15.5-20.1)	79	5.9	(4.6-7.2)		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Oral Cavity and Pharynx: MORTALITY

**TABLE
2-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	1,756	1,176	3.4	(3.2-3.6)	580	1.2	(1.1-1.3)								
Adams	17	11	ND		6	ND		Juniata	3	2	ND		1	ND	
Allegheny	156	104	2.9	(2.3-3.5)	52	1.1	(0.8-1.4)	Lackawanna	51	37	5.8	(3.9-7.7)	14	ND	
Armstrong	11	4	ND		7	ND		Lancaster	55	34	2.5	(1.7-3.3)	21	1.0	(0.6-1.4)
Beaver	26	19	ND		7	ND		Lawrence	20	15	ND		5	ND	
Bedford	9	9	ND		0	ND		Lebanon	25	21	5.2	(3.0-7.4)	4	ND	
Berks	56	31	2.9	(1.9-3.9)	25	1.7	(1.0-2.4)	Lehigh	42	26	2.9	(1.8-4.0)	16	ND	
Blair	22	13	ND		9	ND		Luzerne	67	46	4.7	(3.3-6.1)	21	1.5	(0.9-2.1)
Bradford	10	7	ND		3	ND		Lycoming	24	16	ND		8	ND	
Bucks	91	54	3.2	(2.3-4.1)	37	1.7	(1.2-2.2)	McKean	2	0	ND		2	ND	
Butler	17	11	ND		6	ND		Mercer	18	10	ND		8	ND	
Cambria	23	13	ND		10	ND		Mifflin	14	9	ND		5	ND	
Cameron	1	0	ND		1	ND		Monroe	12	8	ND		4	ND	
Carbon	10	7	ND		3	ND		Montgomery	101	67	3.2	(2.4-4.0)	34	1.1	(0.7-1.5)
Centre	11	6	ND		5	ND		Montour	1	0	ND		1	ND	
Chester	38	26	2.1	(1.3-2.9)	12	ND		Northampton	38	24	3.1	(1.9-4.3)	14	ND	
Clarion	6	4	ND		2	ND		Northumberland	15	10	ND		5	ND	
Clearfield	15	12	ND		3	ND		Perry	5	0	ND		5	ND	
Clinton	4	4	ND		0	ND		Philadelphia	208	142	4.5	(3.8-5.2)	66	1.4	(1.1-1.7)
Columbia	12	7	ND		5	ND		Pike	8	4	ND		4	ND	
Crawford	18	15	ND		3	ND		Potter	3	2	ND		1	ND	
Cumberland	26	21	3.3	(1.9-4.7)	5	ND		Schuylkill	20	15	ND		5	ND	
Dauphin	31	18	ND		13	ND		Snyder	2	1	ND		1	ND	
Delaware	83	53	3.7	(2.7-4.7)	30	1.5	(1.0-2.0)	Somerset	11	6	ND		5	ND	
Elk	3	2	ND		1	ND		Sullivan	2	0	ND		2	ND	
Erie	37	28	3.8	(2.4-5.2)	9	ND		Susquehanna	9	5	ND		4	ND	
Fayette	31	23	5.5	(3.3-7.7)	8	ND		Tioga	5	5	ND		0	ND	
Forest	1	1	ND		0	ND		Union	4	3	ND		1	ND	
Franklin	16	13	ND		3	ND		Venango	10	8	ND		2	ND	
Fulton	1	0	ND		1	ND		Warren	9	7	ND		2	ND	
Greene	4	4	ND		0	ND		Washington	36	21	3.4	(1.9-4.9)	15	ND	
Huntingdon	5	4	ND		1	ND		Wayne	8	4	ND		4	ND	
Indiana	4	2	ND		2	ND		Westmoreland	57	45	3.6	(2.5-4.7)	12	ND	
Jefferson	8	6	ND		2	ND		Wyoming	5	5	ND		0	ND	
								York	63	46	3.9	(2.8-5.0)	17	ND	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Esophagus

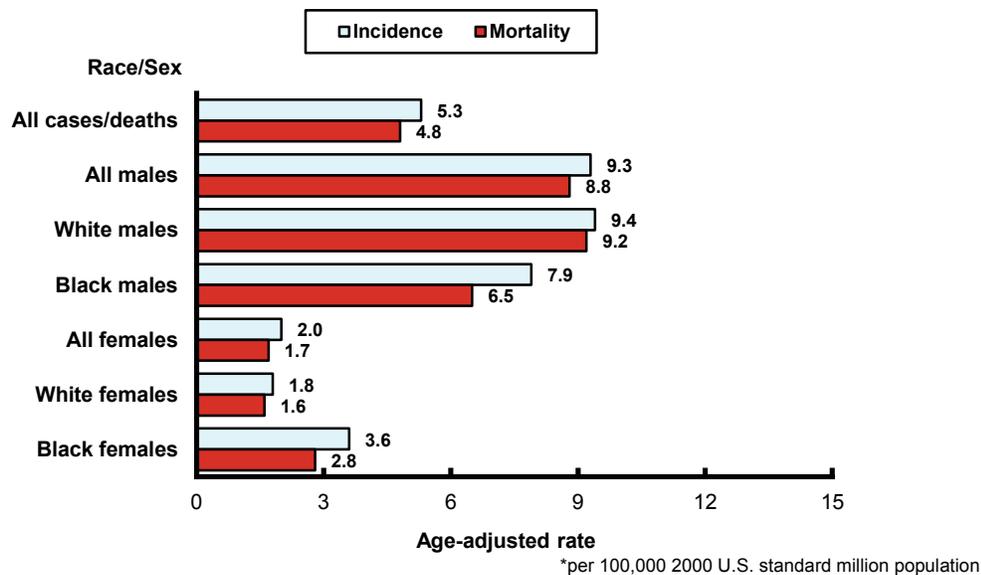
Data Highlights

As with other tobacco and alcohol-related cancers, males had a much higher average annual (2008-2012) age-adjusted incidence rate, 9.3 per 100,000, compared to 2.0 for females. In 2012, there were 829 cases of invasive esophageal cancer diagnosed among Pennsylvania residents. This is a 1.2 percent decrease compared to the 839 invasive cases diagnosed and reported in the previous year, 2011. Heavy consumption of alcohol and tobacco, in addition to poor nutrition, are major risk factors of esophageal cancer. A reduction of these risk factors would lead to significant declines in cancer incidence and mortality.

Annual age-adjusted incidence rates by sex and race for the period 2003-2012 showed a decreasing trend among black males. In fact, recent annual age-adjusted rates for black males were lower than the corresponding rates for white males, although the rate for black males has increased slightly each successive year since 2009. Among white males and females, no distinguishable trend was observed between 2003 and 2012. Black females showed an increasing trend from 2006 to 2010, although in 2011 the age-adjusted incidence rate fell to 2.8 per 100,000, the lowest rate observed over the 10-year period, before rising slightly to 3.0 in 2012. The average annual age-specific incidence rates for the five-year period of 2008-2012 were higher among males compared to females, especially for ages 50 and over. Approximately 76 percent of invasive esophageal cancers were diagnosed among those age 60 and older during the 2008-2012 period.

In 2012, most cases of esophageal cancer were diagnosed at advanced stages (regional or distant stages) – about 76 percent of cases among white males and 64 percent among white females. Early stage (in situ or local) cancers accounted for 18 percent of esophagus cases among white males and 22 percent among white females. Reported five-year relative survival rates are very poor – 17.9 percent for all invasive stages (2005-2011). This is reflected in the population-based death rates compared to the incidence rates. The 2008-2012 average annual age-adjusted death rate for the total population was 4.8 per 100,000, very close to the average annual incidence rate of 5.3. As observed for the incidence rates, females had a lower annual age-adjusted death rate in 2008-2012 compared to males (1.7 versus 8.8). The annual age-adjusted death rates among white males increased from 2003 to 2007 but have since been slightly lower. Rates among black males have decreased since 2003. Recent trends were inconclusive for white and black females. Among Pennsylvania residents, the total number of deaths in 2012 for esophageal cancers was 776 – slightly less than the 779 deaths reported in 2011.

FIGURE 3
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2008-2012



Risk Factors

Cigarette/cigar/pipe smoking, smokeless tobacco, excessive use of alcohol, obesity/overeating, nutritional deficiencies, frequent drinking of very hot liquids, occupational exposure to chemicals, achalasia, tylosis, Plummer-Vinson syndrome, injury to the esophagus, human papillomavirus, Barrett's esophagus, and gastroesophageal reflux disease are some of the suggestive risk factors associated with esophagus cancer.

Early Detection

In the United States, mass screening is not recommended. However, endoscopic methods can be used for high risk individuals, such as those with Barrett's esophagus.

Cancer of the Esophagus: INCIDENCE (Invasive)

**TABLE
3-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

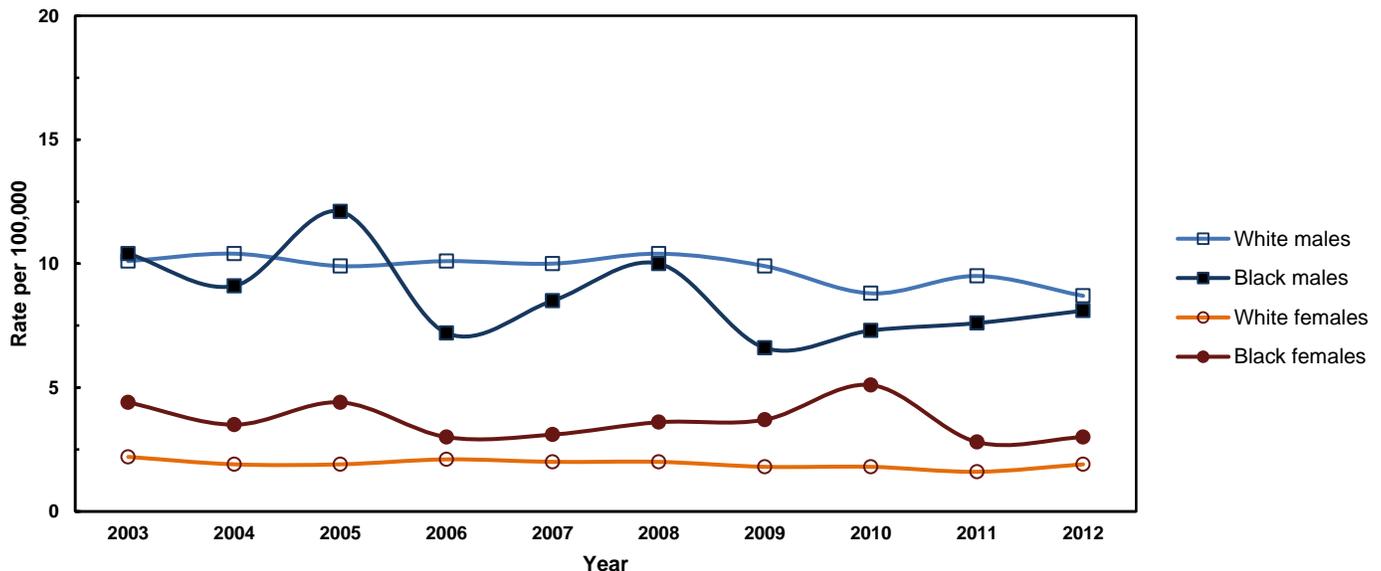
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	829	5.0 (4.7-5.3)	643	8.7 (8.0-9.4)	577	8.7 (8.0-9.4)	40	8.1 (5.6-10.6)	186	2.0 (1.7-2.3)	157	1.9 (1.6-2.2)	23	3.0 (1.8-4.2)
2011	839	5.1 (4.8-5.4)	677	9.2 (8.5-9.9)	625	9.5 (8.8-10.2)	42	7.6 (5.3-9.9)	162	1.8 (1.5-2.1)	134	1.6 (1.3-1.9)	21	2.8 (1.6-4.0)
2010	794	5.0 (4.7-5.3)	610	8.7 (8.0-9.4)	559	8.8 (8.1-9.5)	37	7.3 (4.9-9.7)	184	2.0 (1.7-2.3)	147	1.8 (1.5-2.1)	35	5.1 (3.4-6.8)
2009	827	5.4 (5.0-5.8)	655	9.7 (9.0-10.4)	613	9.9 (9.1-10.7)	30	6.6 (4.2-9.0)	172	2.0 (1.7-2.3)	144	1.8 (1.5-2.1)	25	3.7 (2.2-5.2)
2008	872	5.8 (5.4-6.2)	676	10.3 (9.5-11.1)	624	10.4 (9.6-11.2)	44	10.0 (7.0-13.0)	196	2.2 (1.9-2.5)	166	2.0 (1.7-2.3)	25	3.6 (2.2-5.0)
2007	822	5.5 (5.1-5.9)	637	10.0 (9.2-10.8)	587	10.0 (9.2-10.8)	38	8.5 (5.8-11.2)	185	2.1 (1.8-2.4)	162	2.0 (1.7-2.3)	20	3.1 (1.7-4.5)
2006	819	5.5 (5.1-5.9)	633	9.9 (9.1-10.7)	588	10.1 (9.3-10.9)	33	7.2 (4.7-9.7)	186	2.2 (1.9-2.5)	164	2.1 (1.8-2.4)	20	3.0 (1.7-4.3)
2005	827	5.5 (5.1-5.9)	642	10.0 (9.2-10.8)	582	9.9 (9.1-10.7)	53	12.1 (8.8-15.4)	185	2.1 (1.8-2.4)	151	1.9 (1.6-2.2)	29	4.4 (2.8-6.0)
2004	824	5.6 (5.2-6.0)	646	10.3 (9.5-11.1)	602	10.4 (9.6-11.2)	37	9.1 (6.2-12.0)	178	2.1 (1.8-2.4)	152	1.9 (1.6-2.2)	22	3.5 (2.0-5.0)
2003	829	5.7 (5.3-6.1)	631	10.0 (9.2-10.8)	579	10.1 (9.3-10.9)	45	10.4 (7.4-13.4)	198	2.3 (2.0-2.6)	164	2.2 (1.9-2.5)	28	4.4 (2.8-6.0)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
3-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Esophagus: INCIDENCE (Invasive)

**TABLE
3-B**

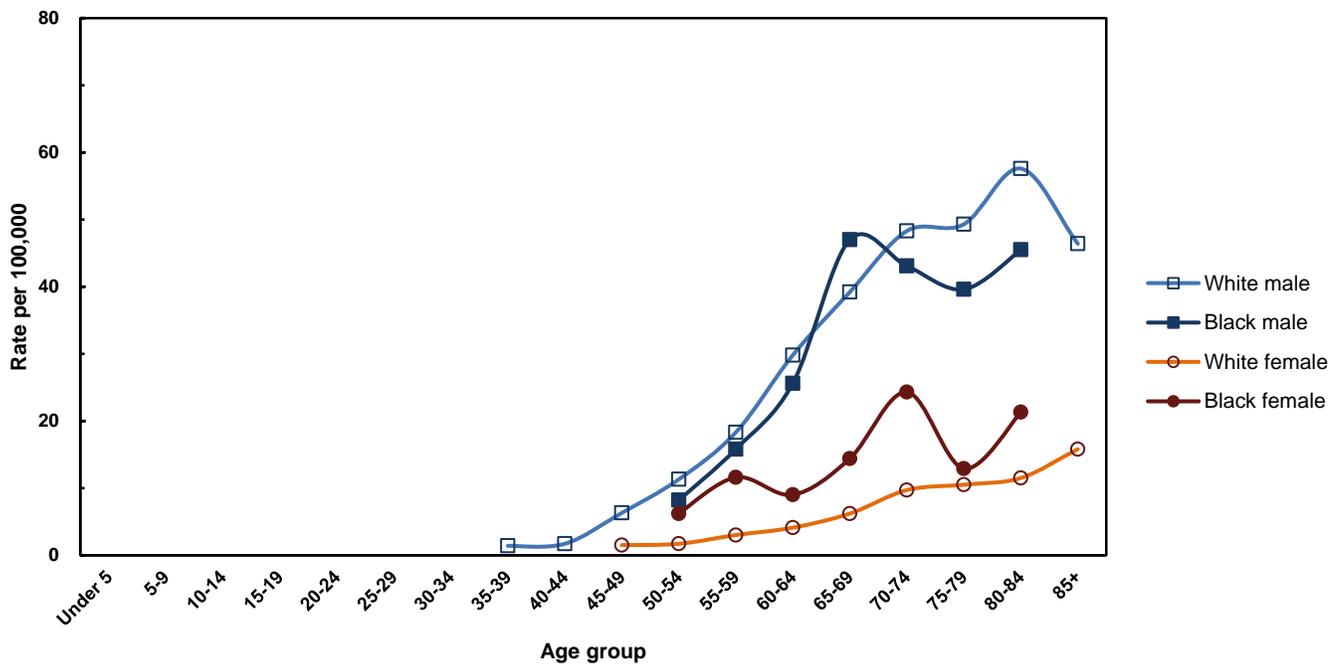
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	6.6	10.6	11.6	5.8	2.8	2.7	3.5
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	ND	ND	ND	ND	ND	ND	ND
30-34	ND	ND	ND	ND	ND	ND	ND
35-39	0.6	1.2	1.4	ND	ND	ND	ND
40-44	1.1	1.7	1.7	ND	0.5	ND	ND
45-49	3.6	5.8	6.3	ND	1.4	1.5	ND
50-54	6.4	10.8	11.3	8.2	2.1	1.7	6.2
55-59	10.7	18.0	18.3	15.8	3.8	3.0	11.6
60-64	16.4	29.2	29.8	25.6	4.6	4.1	9.0
65-69	22.1	39.5	39.2	47.0	7.0	6.2	14.4
70-74	27.4	47.6	48.3	43.1	11.0	9.7	24.3
75-79	26.6	48.5	49.3	39.6	10.7	10.5	12.9
80-84	29.8	57.5	57.6	45.5	12.3	11.5	21.3
85+	25.6	47.0	46.4	ND	15.7	15.8	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
3-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Esophagus: INCIDENCE (Invasive)

**TABLE
3-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

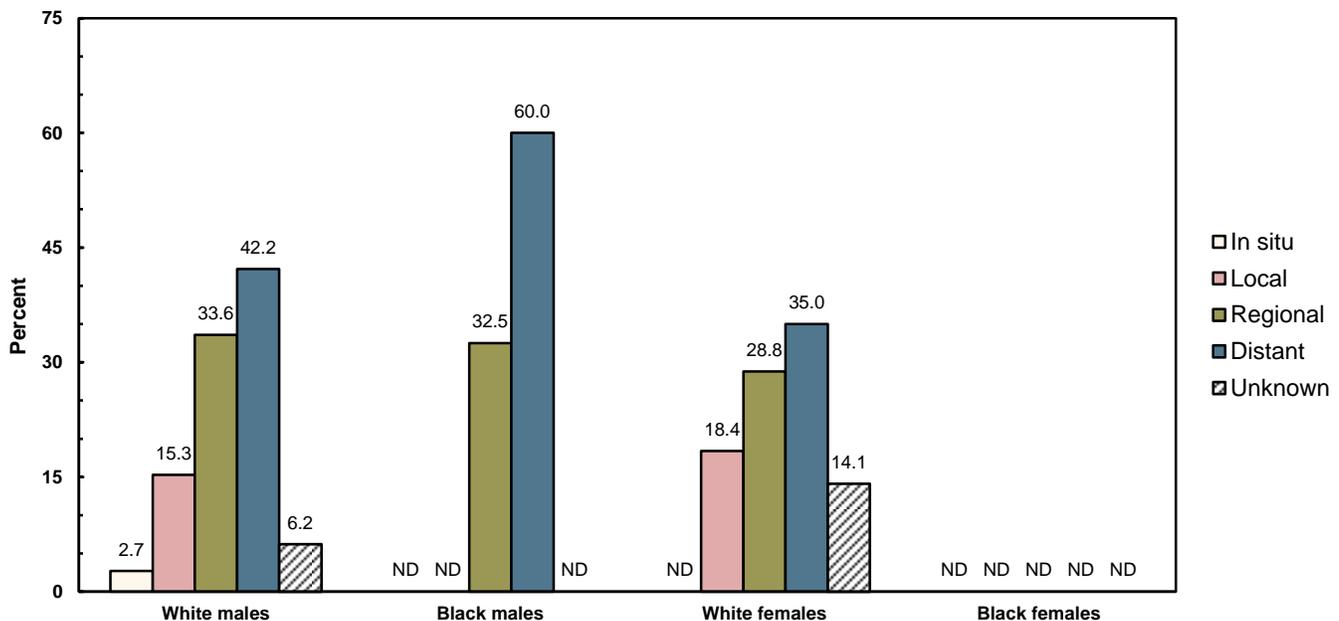
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	4,161	3,261	2,998	193	900	748	129
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	1	1	1	0	0	0	0
25-29	2	2	2	0	0	0	0
30-34	8	6	5	1	2	2	0
35-39	24	22	22	0	2	2	0
40-44	47	37	31	3	10	9	1
45-49	166	133	124	6	33	30	3
50-54	303	252	230	17	51	36	15
55-59	464	379	344	27	85	58	24
60-64	606	518	475	33	88	70	15
65-69	619	515	465	40	104	83	17
70-74	601	467	433	27	134	106	23
75-79	480	368	345	18	112	100	10
80-84	442	330	308	14	112	96	13
85+	398	231	213	7	167	156	8

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
3-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 795 - 95.9%

Cancer of the Esophagus: MORTALITY

**TABLE
3-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

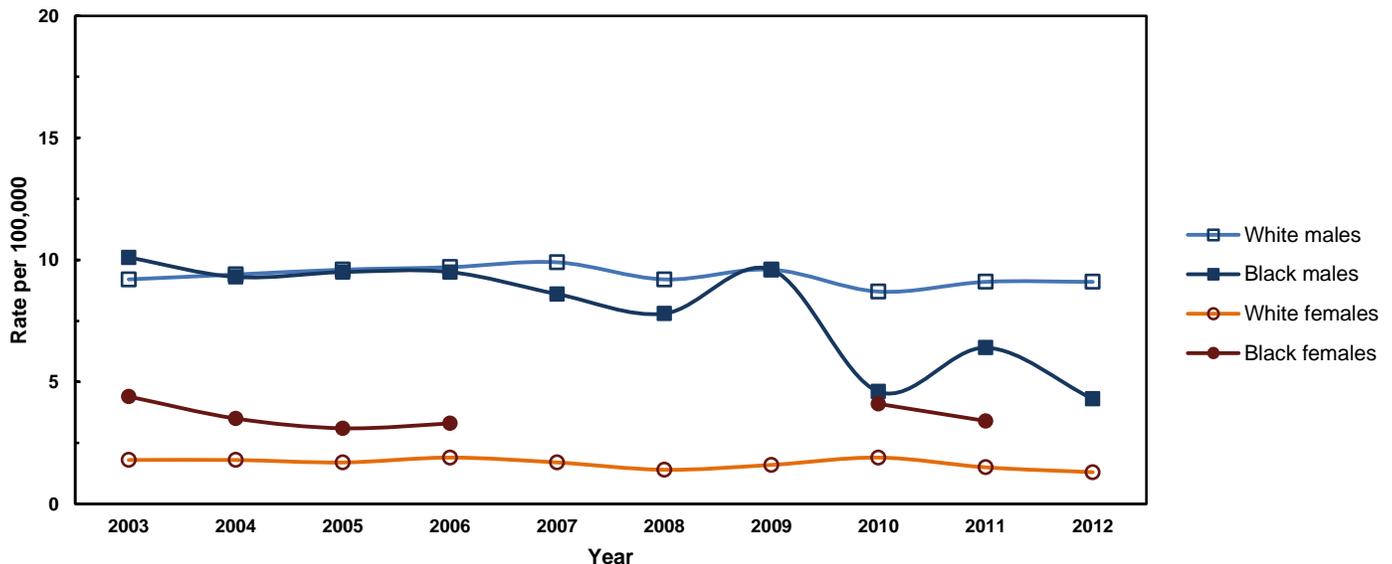
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	776	4.6 (4.3-4.9)	634	8.7 (8.0-9.4)	602	9.1 (8.4-9.8)	22	4.3 (2.5-6.1)	142	1.4 (1.2-1.6)	124	1.3 (1.1-1.5)	16	ND
2011	779	4.8 (4.5-5.1)	623	8.8 (8.1-9.5)	588	9.1 (8.4-9.8)	33	6.4 (4.2-8.6)	156	1.7 (1.4-2.0)	129	1.5 (1.2-1.8)	25	3.4 (2.1-4.7)
2010	769	4.8 (4.5-5.1)	576	8.2 (7.5-8.9)	552	8.7 (8.0-9.4)	22	4.6 (2.7-6.5)	193	2.0 (1.7-2.3)	163	1.9 (1.6-2.2)	30	4.1 (2.6-5.6)
2009	787	5.0 (4.7-5.3)	639	9.5 (8.8-10.2)	593	9.6 (8.8-10.4)	45	9.6 (6.8-12.4)	148	1.6 (1.3-1.9)	135	1.6 (1.3-1.9)	12	ND
2008	735	4.8 (4.5-5.1)	593	9.0 (8.3-9.7)	555	9.2 (8.4-10.0)	35	7.8 (5.2-10.4)	142	1.5 (1.3-1.7)	121	1.4 (1.2-1.6)	17	ND
2007	764	5.1 (4.7-5.5)	613	9.7 (8.9-10.5)	569	9.9 (9.1-10.7)	40	8.6 (5.9-11.3)	151	1.7 (1.4-2.0)	136	1.7 (1.4-2.0)	14	ND
2006	769	5.2 (4.8-5.6)	596	9.5 (8.7-10.3)	554	9.7 (8.9-10.5)	41	9.5 (6.6-12.4)	173	2.0 (1.7-2.3)	151	1.9 (1.6-2.2)	22	3.3 (1.9-4.7)
2005	769	5.1 (4.7-5.5)	604	9.5 (8.7-10.3)	559	9.6 (8.8-10.4)	42	9.5 (6.6-12.4)	165	1.8 (1.5-2.1)	143	1.7 (1.4-2.0)	20	3.1 (1.7-4.5)
2004	747	5.0 (4.6-5.4)	576	9.3 (8.5-10.1)	536	9.4 (8.6-10.2)	38	9.3 (6.3-12.3)	171	1.9 (1.6-2.2)	149	1.8 (1.5-2.1)	22	3.5 (2.0-5.0)
2003	736	5.0 (4.6-5.4)	568	9.1 (8.4-9.8)	522	9.2 (8.4-10.0)	44	10.1 (7.1-13.1)	168	1.9 (1.6-2.2)	140	1.8 (1.5-2.1)	28	4.4 (2.8-6.0)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
3-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Esophagus: MORTALITY

**TABLE
3-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

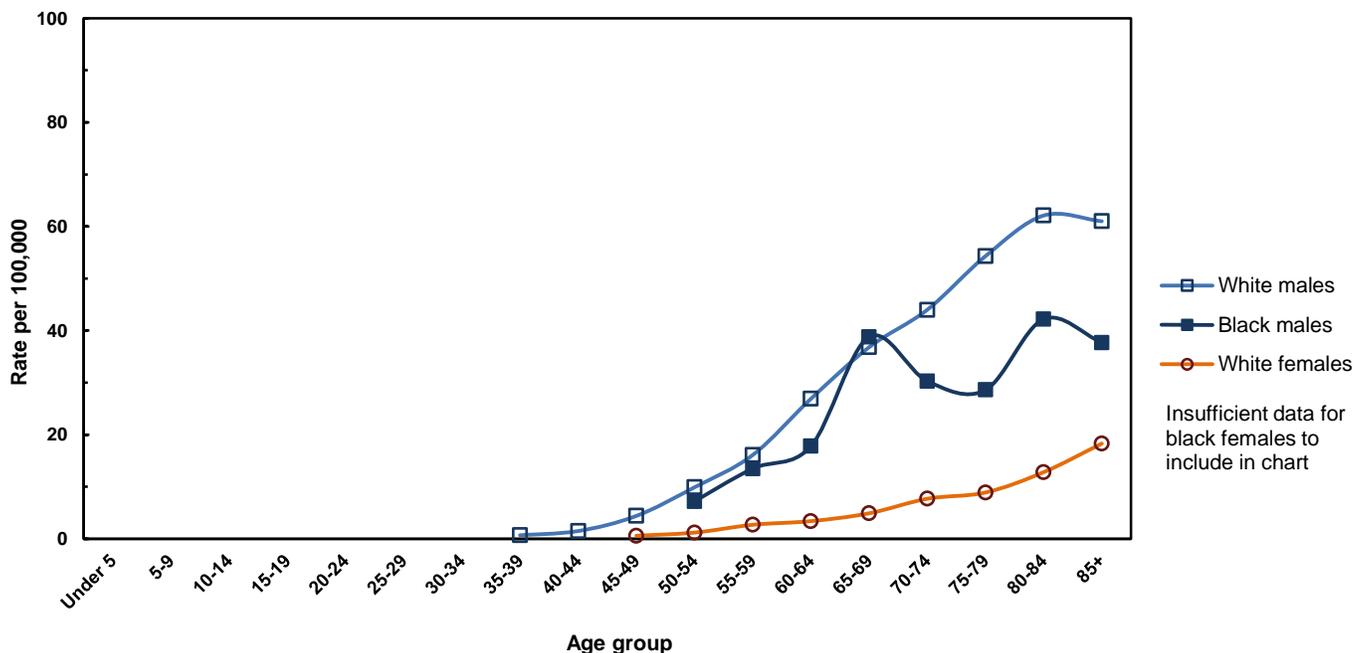
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	3,846	6.1	3,065	9.9	2,890	11.1	157	4.7	781	2.4	672	2.5	100	2.7
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
25-29	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
30-34	9	ND	9	ND	9	ND	0	ND	0	ND	0	ND	0	ND
35-39	12	0.3	11	0.6	11	0.7	0	ND	1	ND	0	ND	1	ND
40-44	34	0.8	29	1.4	27	1.5	2	ND	5	ND	4	ND	1	ND
45-49	106	2.3	93	4.1	86	4.4	6	ND	13	0.6	11	0.6	2	ND
50-54	250	5.3	218	9.4	202	9.9	15	7.2	32	1.3	25	1.2	7	ND
55-59	396	9.1	327	15.5	302	16.1	23	13.5	69	3.1	52	2.7	15	7.3
60-64	533	14.4	457	25.8	429	26.9	23	17.8	76	4.0	57	3.4	16	9.6
65-69	547	19.6	472	36.2	437	36.8	33	38.8	75	5.0	65	4.9	10	8.5
70-74	514	23.4	414	42.2	395	44.0	19	30.3	100	8.2	84	7.7	15	15.9
75-79	497	27.5	395	52.1	380	54.3	13	28.6	102	9.7	85	8.9	15	19.3
80-84	464	31.3	347	60.5	332	62.1	13	42.2	117	12.8	107	12.8	9	ND
85+	483	31.0	293	59.6	280	61.0	10	37.7	190	17.8	181	18.3	9	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
3-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Esophagus: INCIDENCE (Invasive)

**TABLE
3-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	4,161	3,261	9.3	(9.0-9.6)	900	2.0	(1.9-2.1)									
Adams	38	33	10.7	(7.0-14.4)	5	ND		Juniata	6	5	ND		1	ND		
Allegheny	379	282	8.2	(7.2-9.2)	97	2.1	(1.7-2.5)	Lackawanna	72	55	8.6	(6.3-10.9)	17	ND		
Armstrong	22	18	ND		4	ND		Lancaster	113	99	7.1	(5.7-8.5)	14	ND		
Beaver	54	38	6.9	(4.7-9.1)	16	ND		Lawrence	40	29	10.2	(6.5-13.9)	11	ND		
Bedford	20	16	ND		4	ND		Lebanon	52	43	10.4	(7.3-13.5)	9	ND		
Berks	141	120	11.0	(9.0-13.0)	21	1.6	(0.9-2.3)	Lehigh	95	75	8.3	(6.4-10.2)	20	1.6	(0.9-2.3)	
Blair	49	41	10.1	(7.0-13.2)	8	ND		Luzerne	149	118	12.1	(9.9-14.3)	31	2.5	(1.6-3.4)	
Bradford	21	16	ND		5	ND		Lycoming	43	28	7.7	(4.8-10.6)	15	ND		
Bucks	210	167	9.5	(8.1-10.9)	43	2.1	(1.5-2.7)	McKean	20	16	ND		4	ND		
Butler	64	57	11.0	(8.1-13.9)	7	ND		Mercer	49	46	13.2	(9.4-17.0)	3	ND		
Cambria	59	50	11.8	(8.5-15.1)	9	ND		Mifflin	11	8	ND		3	ND		
Cameron	2	2	ND		0	ND		Monroe	49	39	9.4	(6.4-12.4)	10	ND		
Carbon	29	22	11.2	(6.5-15.9)	7	ND		Montgomery	232	194	9.2	(7.9-10.5)	38	1.3	(0.9-1.7)	
Centre	45	37	10.7	(7.3-14.1)	8	ND		Montour	10	8	ND		2	ND		
Chester	131	92	7.3	(5.8-8.8)	39	2.7	(1.9-3.5)	Northampton	107	81	9.6	(7.5-11.7)	26	2.5	(1.5-3.5)	
Clarion	15	11	ND		4	ND		Northumberland	32	24	8.5	(5.1-11.9)	8	ND		
Clearfield	29	23	8.9	(5.3-12.5)	6	ND		Perry	21	16	ND		5	ND		
Clinton	11	8	ND		3	ND		Philadelphia	459	305	9.6	(8.5-10.7)	154	3.3	(2.8-3.8)	
Columbia	32	28	15.6	(9.8-21.4)	4	ND		Pike	23	18	ND		5	ND		
Crawford	34	26	9.7	(6.0-13.4)	8	ND		Potter	7	7	ND		0	ND		
Cumberland	56	45	6.7	(4.7-8.7)	11	ND		Schuylkill	63	49	10.2	(7.3-13.1)	14	ND		
Dauphin	57	45	6.7	(4.7-8.7)	12	ND		Snyder	12	10	ND		2	ND		
Delaware	178	137	9.5	(7.9-11.1)	41	2.1	(1.5-2.7)	Somerset	31	27	10.5	(6.5-14.5)	4	ND		
Elk	6	4	ND		2	ND		Sullivan	2	2	ND		0	ND		
Erie	81	59	8.0	(6.0-10.0)	22	2.2	(1.3-3.1)	Susquehanna	15	14	ND		1	ND		
Fayette	55	47	11.4	(8.1-14.7)	8	ND		Tioga	12	12	ND		0	ND		
Forest	1	1	ND		0	ND		Union	17	12	ND		5	ND		
Franklin	52	46	11.0	(7.8-14.2)	6	ND		Venango	24	21	12.6	(7.2-18.0)	3	ND		
Fulton	6	6	ND		0	ND		Warren	25	21	14.1	(8.1-20.1)	4	ND		
Greene	14	10	ND		4	ND		Washington	88	71	11.0	(8.4-13.6)	17	ND		
Huntingdon	14	11	ND		3	ND		Wayne	27	23	12.0	(7.1-16.9)	4	ND		
Indiana	24	20	8.0	(4.5-11.5)	4	ND		Westmoreland	134	109	9.1	(7.4-10.8)	25	1.7	(1.0-2.4)	
Jefferson	22	16	ND		6	ND		Wyoming	15	14	ND		1	ND		
								York	155	128	10.7	(8.8-12.6)	27	2.0	(1.2-2.8)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Esophagus: MORTALITY

**TABLE
3-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	3,846	3,065	8.8	(8.5-9.1)	781	1.7	(1.6-1.8)									
Adams	40	35	12.3	(8.2-16.4)	5	ND		Juniata	9	8	ND		1	ND		
Allegheny	393	290	8.3	(7.3-9.3)	103	2.1	(1.7-2.5)	Lackawanna	76	64	10.0	(7.6-12.5)	12	ND		
Armstrong	27	21	9.5	(5.4-13.6)	6	ND		Lancaster	118	98	7.1	(5.7-8.5)	20	1.0	(0.6-1.4)	
Beaver	66	46	8.4	(6.0-10.8)	20	2.6	(1.5-3.7)	Lawrence	37	29	10.3	(6.6-14.0)	8	ND		
Bedford	20	19	ND		1	ND		Lebanon	50	44	11.1	(7.8-14.4)	6	ND		
Berks	98	85	7.8	(6.1-9.5)	13	ND		Lehigh	98	82	8.9	(7.0-10.8)	16	ND		
Blair	51	39	10.0	(6.9-13.1)	12	ND		Luzerne	140	108	11.4	(9.2-13.6)	32	2.4	(1.6-3.2)	
Bradford	22	19	ND		3	ND		Lycoming	42	32	8.9	(5.8-12.0)	10	ND		
Bucks	165	128	7.6	(6.3-8.9)	37	1.7	(1.2-2.2)	McKean	11	10	ND		1	ND		
Butler	73	64	12.4	(9.4-15.4)	9	ND		Mercer	52	48	13.2	(9.5-16.9)	4	ND		
Cambria	46	39	9.0	(6.2-11.8)	7	ND		Mifflin	14	11	ND		3	ND		
Cameron	2	2	ND		0	ND		Monroe	45	39	9.9	(6.8-13.0)	6	ND		
Carbon	26	21	10.1	(5.8-14.4)	5	ND		Montgomery	201	166	7.8	(6.6-9.0)	35	1.1	(0.7-1.5)	
Centre	32	27	7.7	(4.8-10.6)	5	ND		Montour	10	8	ND		2	ND		
Chester	111	81	6.6	(5.2-8.0)	30	2.0	(1.3-2.7)	Northampton	69	55	6.7	(4.9-8.5)	14	ND		
Clarion	10	6	ND		4	ND		Northumberland	32	25	8.8	(5.4-12.2)	7	ND		
Clearfield	30	21	8.1	(4.6-11.6)	9	ND		Perry	12	9	ND		3	ND		
Clinton	15	11	ND		4	ND		Philadelphia	382	265	8.4	(7.4-9.4)	117	2.5	(2.0-3.0)	
Columbia	28	25	13.6	(8.3-18.9)	3	ND		Pike	22	18	ND		4	ND		
Crawford	21	18	ND		3	ND		Potter	8	6	ND		2	ND		
Cumberland	60	46	7.0	(5.0-9.0)	14	ND		Schuylkill	61	49	10.4	(7.5-13.3)	12	ND		
Dauphin	55	39	5.7	(3.9-7.5)	16	ND		Snyder	8	7	ND		1	ND		
Delaware	143	116	8.0	(6.5-9.5)	27	1.4	(0.9-1.9)	Somerset	40	34	12.9	(8.6-17.2)	6	ND		
Elk	9	7	ND		2	ND		Sullivan	0	0	ND		0	ND		
Erie	87	68	9.4	(7.2-11.6)	19	ND		Susquehanna	13	13	ND		0	ND		
Fayette	59	51	12.5	(9.1-15.9)	8	ND		Tioga	9	9	ND		0	ND		
Forest	1	1	ND		0	ND		Union	14	11	ND		3	ND		
Franklin	45	40	9.2	(6.3-12.1)	5	ND		Venango	24	24	13.6	(8.2-19.0)	0	ND		
Fulton	4	4	ND		0	ND		Warren	29	25	17.0	(10.3-23.7)	4	ND		
Greene	13	12	ND		1	ND		Washington	91	75	11.7	(9.1-14.3)	16	ND		
Huntingdon	15	12	ND		3	ND		Wayne	19	15	ND		4	ND		
Indiana	26	21	8.9	(5.1-12.7)	5	ND		Westmoreland	134	103	8.8	(7.1-10.5)	31	1.8	(1.2-2.4)	
Jefferson	19	17	ND		2	ND		Wyoming	15	14	ND		1	ND		
								York	149	130	11.7	(9.7-13.7)	19	ND		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Stomach

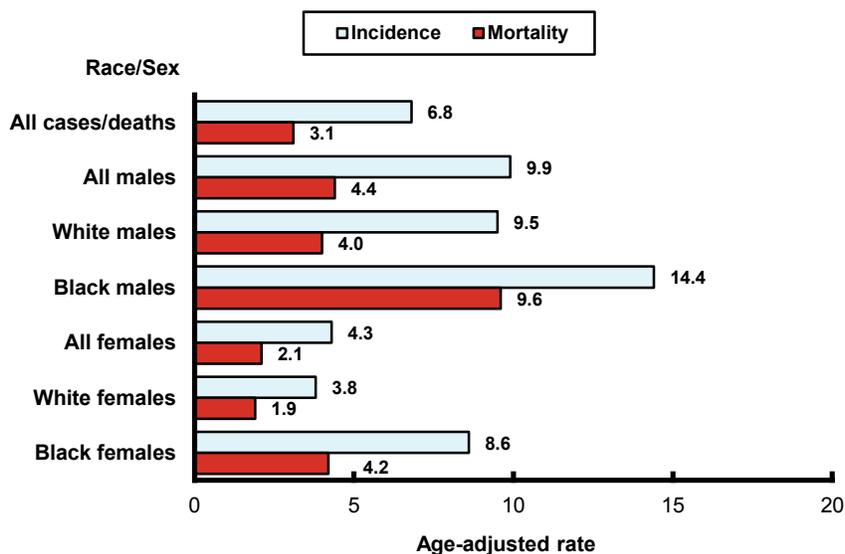
Data Highlights

The 2008-2012 average annual age-adjusted incidence rate for invasive stomach cancer was more than twice as high among males compared to females (9.9 per 100,000 versus 4.3, respectively). Black males had the highest average annual age-adjusted incidence rate (14.4) compared to the other three sex/race groups. The lowest average annual rate (3.8) was recorded for white females and was about 56 percent lower than the next lowest rate (8.6) recorded for black females.

There were 1,001 new cases of invasive stomach cancer diagnosed among residents of the state in 2012 – slightly less than the 1,062 cases recorded during 2011. During the 2003-2012 period, the annual age-adjusted incidence rate for white males was highest in 2008 at 10.5 and lowest in 2012 at 8.4. Among white females, the incidence rate was highest in 2003 at 4.3 but has since been lower. The annual rate for black males has decreased from 18.5 in 2008 to 11.2 in 2012, the lowest annual rate observed during the 10-year period. Annual rates for black females displayed no evident trends. Stomach cancer incidence rose steeply with advanced age. During the period of 2008-2012, approximately 77 percent of the cases were diagnosed among Pennsylvania residents 60 years of age or older.

In 2012, about 61 percent of stomach cancer cases were diagnosed at regional or distant stages. Survival rates at these late stages have always been poor for stomach cancer. Approximately 27 percent of the cases were diagnosed at the early stage (in situ or local) in 2012. In Pennsylvania, as in the rest of the United States, the death rates have generally been slowly declining for many years. In 2012, there were 476 resident deaths for an age-adjusted rate of 2.9 per 100,000 – an increase from 2011, when there were 460 resident deaths and an age-adjusted rate of 2.8 per 100,000. The 2012 annual age-adjusted death rate for males (4.1) was over two times the rate for females (2.0). Annual age-adjusted death rates between 2003 and 2012 have generally been on the decline for white males and white females. However, the rates have fluctuated more among black males and black females, making the trends more difficult to interpret.

FIGURE 4
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2008-2012



*per 100,000 2000 U.S. standard million population

Risk Factors

Etiological factors are not precisely known; diets low in fresh fruits and vegetables but high in smoked/salted fish/meats, pickled vegetables, and cured meats are associated. Additional risk factors include gastric infections (*Helicobacter pylori*), stomach lymphoma, tobacco use, obesity, previous stomach surgery, pernicious anemia, menetrier disease (hypertrophic gastropathy), type A blood, inherited cancer syndromes, family history, stomach polyps, Epstein-Barr viruses, occupations in coal/metal/rubber industries, and common variable immune deficiency (CVID).

Early Detection

Mass screening is not done in the United States. However, endoscopic methods can be used for high risk individuals.

Cancer of the Stomach: INCIDENCE (Invasive)

**TABLE
4-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

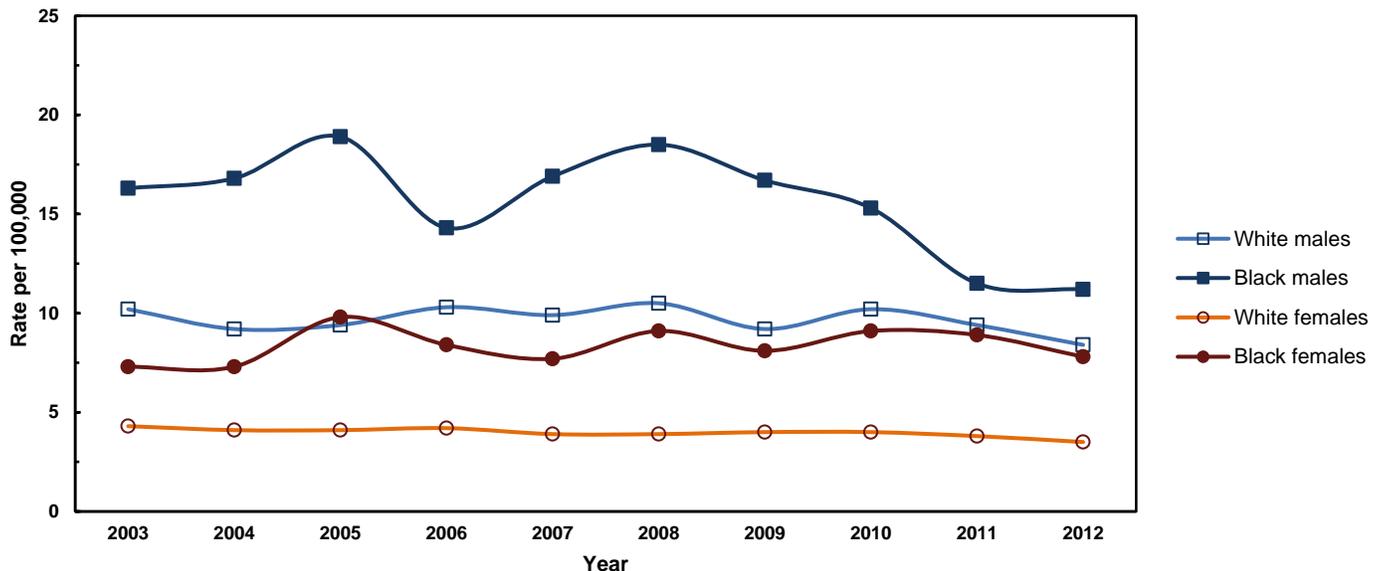
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,001	6.2 (5.8-6.6)	632	8.8 (8.1-9.5)	544	8.4 (7.7-9.1)	59	11.2 (8.3-14.1)	369	4.1 (3.7-4.5)	284	3.5 (3.1-3.9)	57	7.8 (5.8-9.8)
2011	1,062	6.6 (6.2-7.0)	666	9.6 (8.9-10.3)	592	9.4 (8.6-10.2)	56	11.5 (8.5-14.5)	396	4.4 (4.0-4.8)	312	3.8 (3.4-4.2)	65	8.9 (6.7-11.1)
2010	1,131	7.1 (6.7-7.5)	724	10.5 (9.7-11.3)	633	10.2 (9.4-11.0)	73	15.3 (11.8-18.8)	407	4.5 (4.1-4.9)	325	4.0 (3.6-4.4)	65	9.1 (6.9-11.3)
2009	1,030	6.7 (6.3-7.1)	638	9.7 (8.9-10.5)	552	9.2 (8.4-10.0)	71	16.7 (12.8-20.6)	392	4.4 (4.0-4.8)	323	4.0 (3.6-4.4)	55	8.1 (6.0-10.2)
2008	1,111	7.3 (6.9-7.7)	721	11.2 (10.4-12.0)	619	10.5 (9.7-11.3)	81	18.5 (14.5-22.5)	390	4.4 (4.0-4.8)	314	3.9 (3.5-4.3)	60	9.1 (6.8-11.4)
2007	1,037	6.9 (6.5-7.3)	660	10.6 (9.8-11.4)	562	9.9 (9.1-10.7)	72	16.9 (13.0-20.8)	377	4.3 (3.9-4.7)	310	3.9 (3.5-4.3)	52	7.7 (5.6-9.8)
2006	1,064	7.2 (6.8-7.6)	663	10.7 (9.9-11.5)	586	10.3 (9.5-11.1)	59	14.3 (10.7-17.9)	401	4.6 (4.1-5.1)	334	4.2 (3.7-4.7)	55	8.4 (6.2-10.6)
2005	1,051	7.0 (6.6-7.4)	638	10.2 (9.4-11.0)	537	9.4 (8.6-10.2)	78	18.9 (14.7-23.1)	413	4.6 (4.2-5.0)	334	4.1 (3.7-4.5)	63	9.8 (7.4-12.2)
2004	1,012	6.8 (6.4-7.2)	614	9.9 (9.1-10.7)	524	9.2 (8.4-10.0)	71	16.8 (12.9-20.7)	398	4.5 (4.1-4.9)	335	4.1 (3.7-4.5)	46	7.3 (5.2-9.4)
2003	1,064	7.2 (6.8-7.6)	656	10.8 (10.0-11.6)	566	10.2 (9.4-11.0)	68	16.3 (12.4-20.2)	408	4.6 (4.2-5.0)	348	4.3 (3.8-4.8)	46	7.3 (5.2-9.4)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
4-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Stomach: INCIDENCE (Invasive)

**TABLE
4-B**

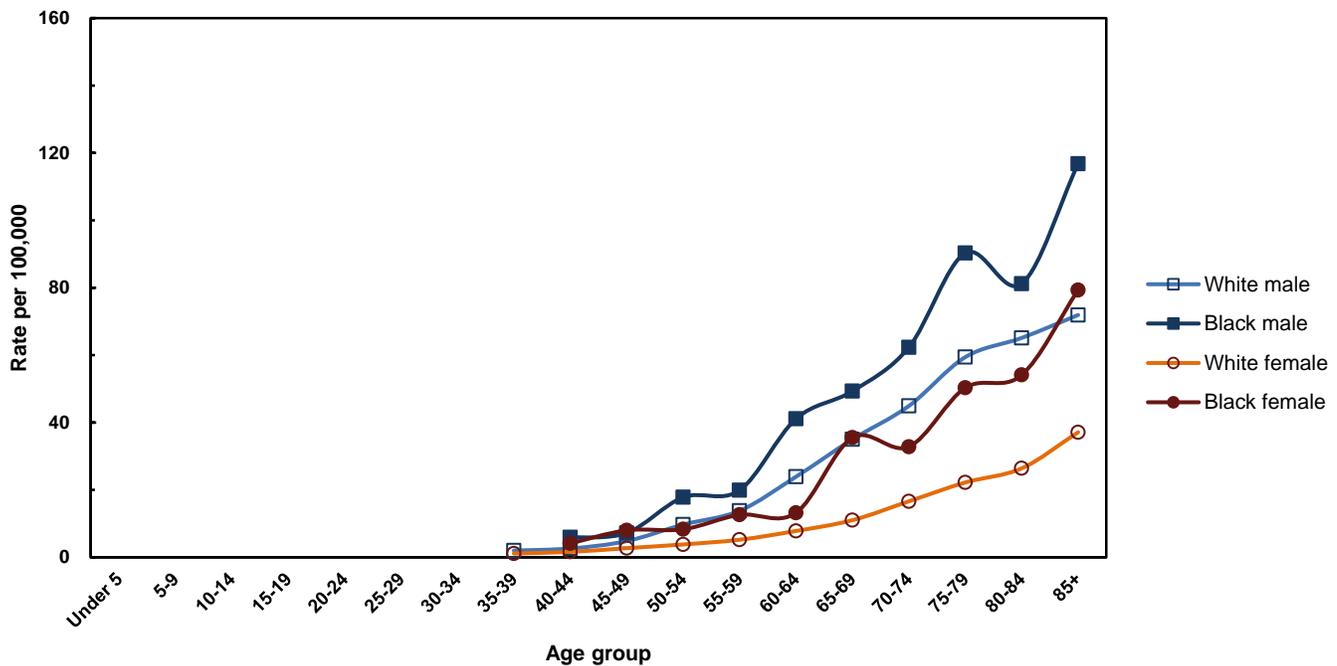
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	8.4	11.0	11.3	10.2	6.0	5.7	8.3
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	0.3	ND	ND	ND	ND	ND	ND
30-34	0.5	0.5	ND	ND	ND	ND	ND
35-39	1.7	2.2	2.0	ND	1.3	1.1	ND
40-44	2.5	3.1	2.6	5.9	1.9	1.6	4.1
45-49	4.4	5.2	4.8	7.2	3.6	2.7	8.0
50-54	7.4	10.6	9.7	17.8	4.2	3.8	8.3
55-59	10.1	14.2	13.8	19.9	6.1	5.2	12.6
60-64	16.8	25.6	23.9	41.1	8.7	7.8	13.2
65-69	23.9	35.8	35.0	49.3	13.5	11.0	35.5
70-74	30.6	46.0	44.9	62.3	18.1	16.6	32.8
75-79	40.2	62.0	59.4	90.3	24.5	22.2	50.3
80-84	43.1	65.6	65.1	81.2	29.0	26.4	54.1
85+	51.8	75.4	71.9	116.8	40.8	37.1	79.3

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
4-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Stomach: INCIDENCE (Invasive)

**TABLE
4-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

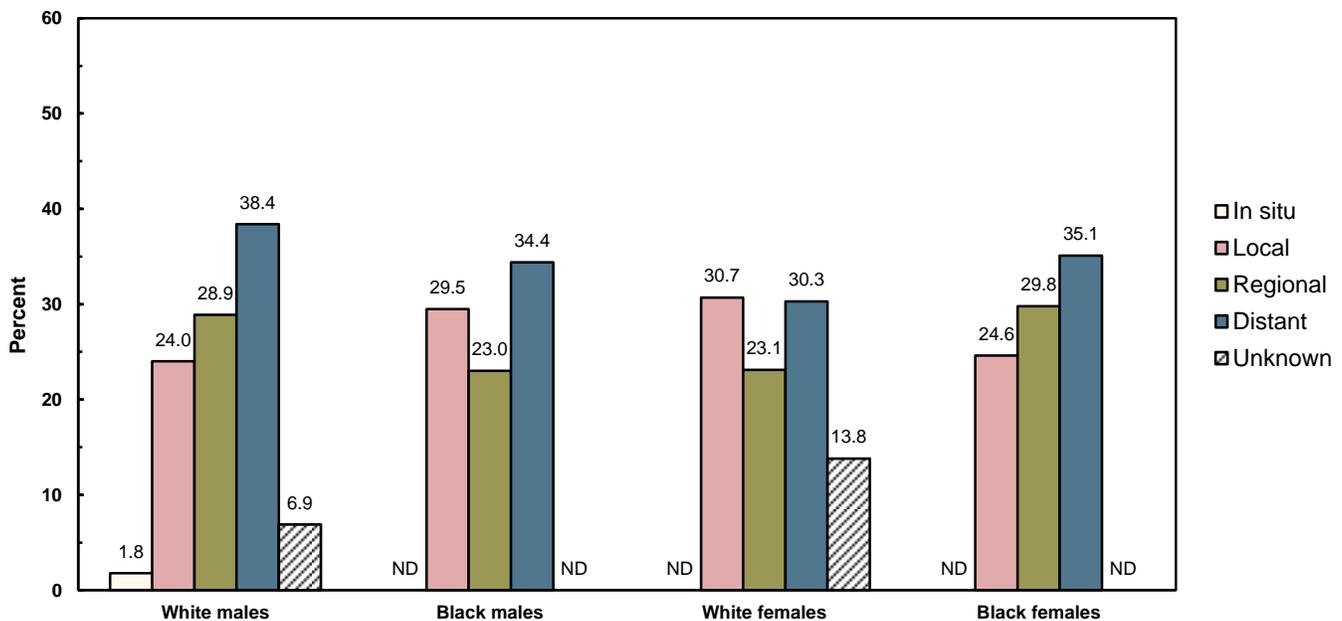
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	5,335	3,381	2,940	340	1,954	1,558	302
Under 5	3	1	1	0	2	2	0
5-9	0	0	0	0	0	0	0
10-14	1	0	0	0	1	1	0
15-19	3	2	2	0	1	1	0
20-24	6	2	2	0	4	3	0
25-29	11	5	3	0	6	4	2
30-34	18	10	8	1	8	4	3
35-39	66	41	32	8	25	17	2
40-44	107	66	47	13	41	29	10
45-49	202	118	95	16	84	54	20
50-54	349	247	199	37	102	80	20
55-59	436	300	259	34	136	101	26
60-64	620	453	381	53	167	132	22
65-69	668	467	415	42	201	148	42
70-74	672	452	403	39	220	182	31
75-79	727	470	415	41	257	212	39
80-84	640	376	348	25	264	221	33
85+	806	371	330	31	435	367	52

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
4-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 969 - 96.8%

Cancer of the Stomach: MORTALITY

**TABLE
4-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

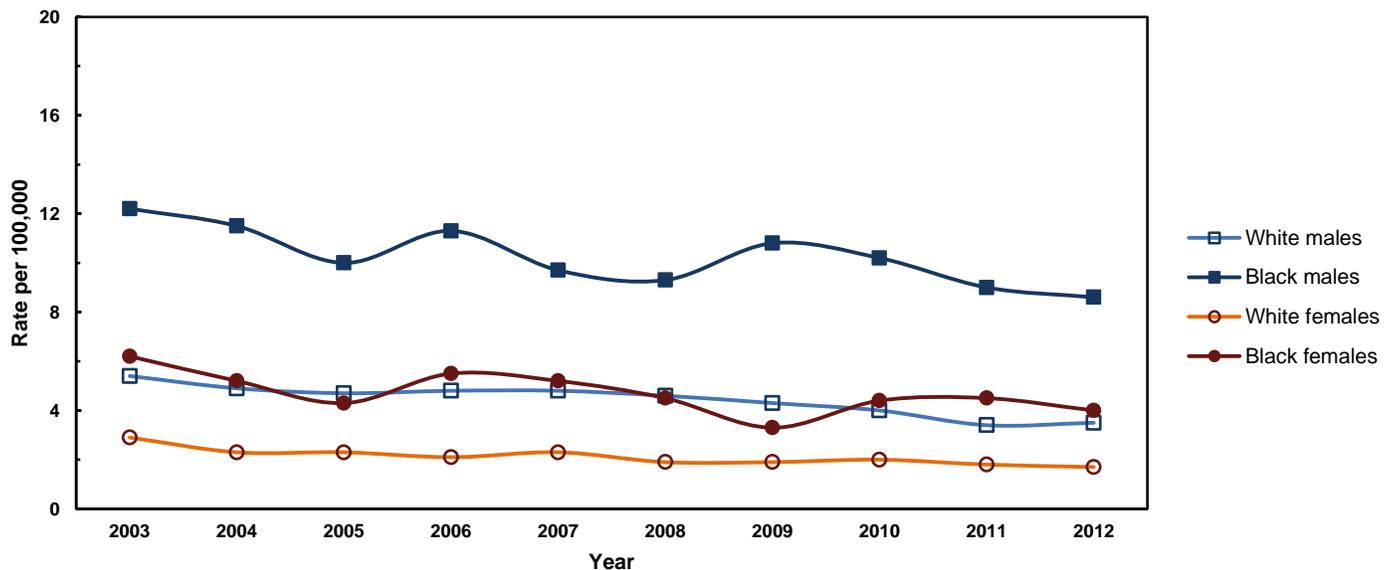
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	476	2.9 (2.6-3.2)	286	4.1 (3.6-4.6)	223	3.5 (3.0-4.0)	44	8.6 (6.1-11.1)	190	2.0 (1.7-2.3)	153	1.7 (1.4-2.0)	29	4.0 (2.5-5.5)
2011	460	2.8 (2.5-3.1)	264	3.9 (3.4-4.4)	211	3.4 (2.9-3.9)	43	9.0 (6.3-11.7)	196	2.0 (1.7-2.3)	158	1.8 (1.5-2.1)	33	4.5 (3.0-6.0)
2010	521	3.3 (3.0-3.6)	307	4.6 (4.1-5.1)	245	4.0 (3.5-4.5)	47	10.2 (7.3-13.1)	214	2.3 (2.0-2.6)	174	2.0 (1.7-2.3)	31	4.4 (2.9-5.9)
2009	497	3.2 (2.9-3.5)	307	4.7 (4.2-5.2)	255	4.3 (3.8-4.8)	45	10.8 (7.6-14.0)	190	2.0 (1.7-2.3)	162	1.9 (1.6-2.2)	25	3.3 (2.0-4.6)
2008	517	3.4 (3.1-3.7)	312	4.9 (4.4-5.4)	268	4.6 (4.0-5.2)	36	9.3 (6.3-12.3)	205	2.2 (1.9-2.5)	166	1.9 (1.6-2.2)	31	4.5 (2.9-6.1)
2007	543	3.6 (3.3-3.9)	311	5.2 (4.6-5.8)	266	4.8 (4.2-5.4)	38	9.7 (6.6-12.8)	232	2.6 (2.3-2.9)	190	2.3 (2.0-2.6)	34	5.2 (3.5-6.9)
2006	534	3.6 (3.3-3.9)	321	5.4 (4.8-6.0)	266	4.8 (4.2-5.4)	46	11.3 (8.0-14.6)	213	2.4 (2.1-2.7)	171	2.1 (1.8-2.4)	36	5.5 (3.7-7.3)
2005	539	3.6 (3.3-3.9)	316	5.2 (4.6-5.8)	267	4.7 (4.1-5.3)	40	10.0 (6.9-13.1)	223	2.4 (2.1-2.7)	189	2.3 (2.0-2.6)	28	4.3 (2.7-5.9)
2004	566	3.7 (3.4-4.0)	324	5.3 (4.7-5.9)	270	4.9 (4.3-5.5)	48	11.5 (8.2-14.8)	242	2.6 (2.3-2.9)	201	2.3 (2.0-2.6)	33	5.2 (3.4-7.0)
2003	640	4.3 (4.0-4.6)	354	5.9 (5.3-6.5)	299	5.4 (4.8-6.0)	49	12.2 (8.8-15.6)	286	3.2 (2.8-3.6)	242	2.9 (2.5-3.3)	39	6.2 (4.3-8.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
4-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Stomach: MORTALITY

**TABLE
4-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

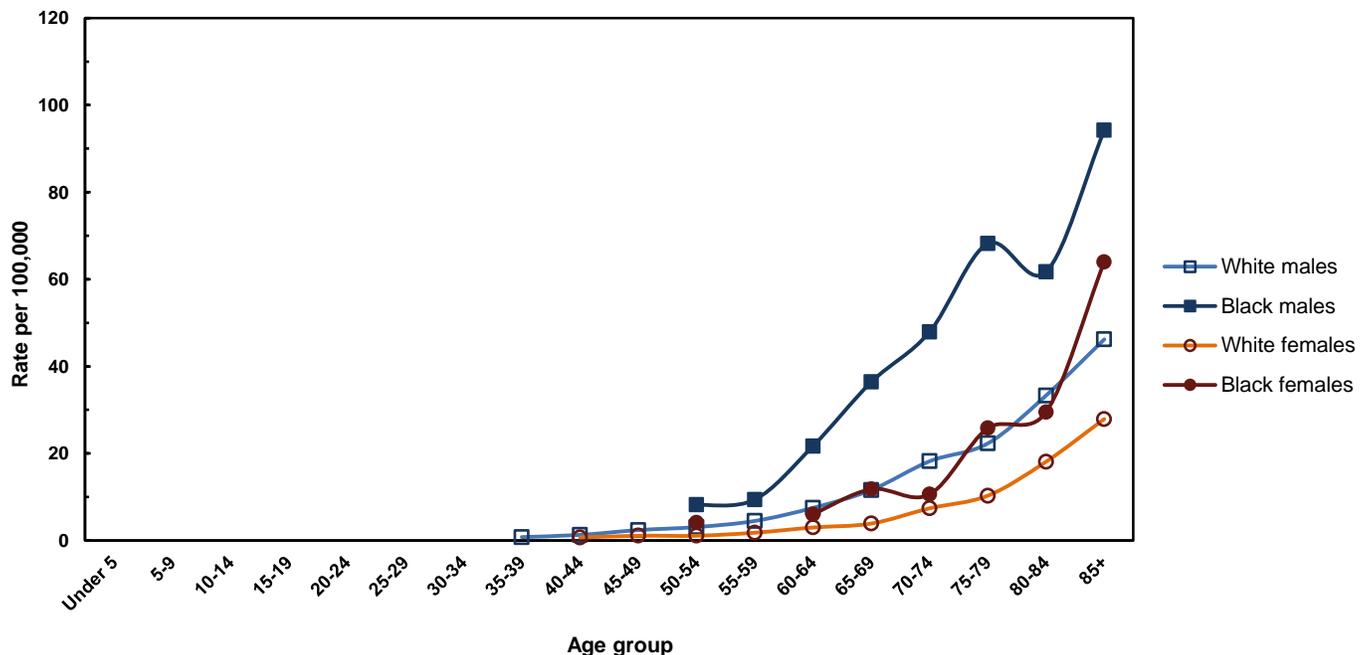
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	2,471	3.9	1,476	4.8	1,202	4.6	215	6.5	995	3.1	813	3.0	149	4.1
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	1	ND	0	ND	0	ND	0	ND	1	ND	0	ND	0	ND
25-29	8	ND	5	ND	5	ND	0	ND	3	ND	2	ND	1	ND
30-34	4	ND	0	ND	0	ND	0	ND	4	ND	2	ND	0	ND
35-39	27	0.7	19	1.0	13	0.8	4	ND	8	ND	5	ND	3	ND
40-44	50	1.2	32	1.5	23	1.3	6	ND	18	0.8	12	0.7	4	ND
45-49	94	2.0	60	2.6	48	2.4	8	ND	34	1.5	22	1.1	9	ND
50-54	123	2.6	85	3.7	63	3.1	17	8.2	38	1.6	24	1.1	10	4.1
55-59	155	3.6	107	5.1	84	4.5	16	9.4	48	2.2	36	1.8	8	ND
60-64	215	5.8	149	8.4	120	7.5	28	21.7	66	3.4	51	3.0	10	6.0
65-69	245	8.8	178	13.7	137	11.6	31	36.4	67	4.5	52	3.9	14	11.8
70-74	293	13.3	202	20.6	163	18.2	30	47.9	91	7.5	81	7.4	10	10.6
75-79	319	17.7	197	26.0	156	22.3	31	68.2	122	11.6	98	10.3	20	25.8
80-84	370	24.9	199	34.7	178	33.3	19	61.7	171	18.8	152	18.1	18	29.5
85+	567	36.4	243	49.4	212	46.2	25	94.2	324	30.4	276	27.9	42	64.0

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
4-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Stomach: INCIDENCE (Invasive)

**TABLE
4-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	5,335	3,381	9.9	(9.6-10.2)	1,954	4.3	(4.1-4.5)									
Adams	30	21	6.8	(3.9-9.7)	9	ND		Juniata	9	6	ND		3	ND		
Allegheny	651	414	12.1	(10.9-13.3)	237	4.7	(4.1-5.3)	Lackawanna	97	66	10.5	(8.0-13.0)	31	3.2	(2.1-4.3)	
Armstrong	39	25	11.4	(6.9-15.9)	14	ND		Lancaster	183	118	8.6	(7.0-10.2)	65	3.8	(2.9-4.7)	
Beaver	83	56	10.4	(7.7-13.1)	27	3.6	(2.2-5.0)	Lawrence	38	23	7.9	(4.7-11.1)	15	ND		
Bedford	26	21	12.5	(7.2-17.8)	5	ND		Lebanon	51	33	8.4	(5.5-11.3)	18	ND		
Berks	144	98	9.1	(7.3-10.9)	46	3.5	(2.5-4.5)	Lehigh	143	101	11.3	(9.1-13.5)	42	3.4	(2.4-4.4)	
Blair	68	43	12.1	(8.5-15.7)	25	4.5	(2.7-6.3)	Luzerne	175	107	11.5	(9.3-13.7)	68	4.9	(3.7-6.1)	
Bradford	18	11	ND		7	ND		Lycoming	45	29	7.8	(5.0-10.6)	16	ND		
Bucks	240	150	8.8	(7.4-10.2)	90	4.3	(3.4-5.2)	McKean	15	7	ND		8	ND		
Butler	77	56	10.7	(7.9-13.5)	21	3.2	(1.8-4.6)	Mercer	49	39	10.4	(7.1-13.7)	10	ND		
Cambria	79	51	11.4	(8.3-14.5)	28	4.1	(2.6-5.6)	Mifflin	17	12	ND		5	ND		
Cameron	5	3	ND		2	ND		Monroe	58	36	8.7	(5.9-11.5)	22	4.5	(2.6-6.4)	
Carbon	27	21	11.8	(6.8-16.8)	6	ND		Montgomery	283	168	7.8	(6.6-9.0)	115	4.2	(3.4-5.0)	
Centre	32	18	ND		14	ND		Montour	4	2	ND		2	ND		
Chester	168	112	9.1	(7.4-10.8)	56	3.7	(2.7-4.7)	Northampton	153	94	11.8	(9.4-14.2)	59	5.8	(4.3-7.3)	
Clarion	16	11	ND		5	ND		Northumberland	35	28	9.8	(6.2-13.4)	7	ND		
Clearfield	31	19	ND		12	ND		Perry	24	15	ND		9	ND		
Clinton	14	10	ND		4	ND		Philadelphia	737	408	13.2	(11.9-14.5)	329	7.1	(6.3-7.9)	
Columbia	27	16	ND		11	ND		Pike	24	14	ND		10	ND		
Crawford	22	15	ND		7	ND		Potter	7	3	ND		4	ND		
Cumberland	79	46	7.1	(5.0-9.2)	33	4.1	(2.7-5.5)	Schuylkill	79	46	9.9	(7.0-12.8)	33	5.4	(3.6-7.2)	
Dauphin	92	61	9.3	(7.0-11.6)	31	3.4	(2.2-4.6)	Snyder	10	8	ND		2	ND		
Delaware	209	134	9.8	(8.1-11.5)	75	3.8	(2.9-4.7)	Somerset	37	27	10.2	(6.4-14.0)	10	ND		
Elk	14	8	ND		6	ND		Sullivan	1	1	ND		0	ND		
Erie	103	64	8.8	(6.6-11.0)	39	4.3	(3.0-5.6)	Susquehanna	12	9	ND		3	ND		
Fayette	79	43	10.3	(7.2-13.4)	36	5.9	(4.0-7.8)	Tioga	19	16	ND		3	ND		
Forest	3	2	ND		1	ND		Union	10	8	ND		2	ND		
Franklin	53	33	8.0	(5.3-10.7)	20	3.7	(2.1-5.3)	Venango	23	19	ND		4	ND		
Fulton	4	4	ND		0	ND		Warren	22	12	ND		10	ND		
Greene	18	13	ND		5	ND		Washington	92	55	8.8	(6.5-11.1)	37	4.8	(3.3-6.3)	
Huntingdon	12	8	ND		4	ND		Wayne	31	24	14.0	(8.4-19.6)	7	ND		
Indiana	29	18	ND		11	ND		Westmoreland	196	130	11.3	(9.4-13.2)	66	4.5	(3.4-5.6)	
Jefferson	23	18	ND		5	ND		Wyoming	10	9	ND		1	ND		
								York	131	85	7.4	(5.8-9.0)	46	3.3	(2.3-4.3)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Stomach: MORTALITY

**TABLE
4-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,471	1,476	4.4	(4.2-4.6)	995	2.1	(2.0-2.2)								
Adams	16	11	ND		5	ND		Juniata	3	2	ND		1	ND	
Allegheny	289	167	4.9	(4.2-5.6)	122	2.3	(1.9-2.7)	Lackawanna	58	37	6.2	(4.2-8.2)	21	2.1	(1.2-3.0)
Armstrong	21	12	ND		9	ND		Lancaster	84	54	4.0	(2.9-5.1)	30	1.6	(1.0-2.2)
Beaver	35	24	4.5	(2.7-6.3)	11	ND		Lawrence	19	9	ND		10	ND	
Bedford	4	3	ND		1	ND		Lebanon	22	13	ND		9	ND	
Berks	57	39	3.9	(2.7-5.1)	18	ND		Lehigh	62	44	4.8	(3.4-6.2)	18	ND	
Blair	25	14	ND		11	ND		Luzerne	77	38	4.1	(2.8-5.4)	39	2.5	(1.7-3.3)
Bradford	10	5	ND		5	ND		Lycoming	20	9	ND		11	ND	
Bucks	106	57	3.5	(2.6-4.4)	49	2.3	(1.7-2.9)	McKean	5	2	ND		3	ND	
Butler	20	15	ND		5	ND		Mercer	27	16	ND		11	ND	
Cambria	41	22	4.9	(2.9-6.9)	19	ND		Mifflin	7	5	ND		2	ND	
Cameron	3	3	ND		0	ND		Monroe	38	24	7.0	(4.2-9.8)	14	ND	
Carbon	9	7	ND		2	ND		Montgomery	140	78	3.8	(3.0-4.6)	62	2.2	(1.7-2.7)
Centre	16	9	ND		7	ND		Montour	2	0	ND		2	ND	
Chester	73	49	4.2	(3.0-5.4)	24	1.5	(0.9-2.1)	Northampton	63	37	4.8	(3.3-6.3)	26	2.0	(1.2-2.8)
Clarion	2	1	ND		1	ND		Northumberland	19	14	ND		5	ND	
Clearfield	15	6	ND		9	ND		Perry	9	5	ND		4	ND	
Clinton	4	3	ND		1	ND		Philadelphia	400	239	7.8	(6.8-8.8)	161	3.3	(2.8-3.8)
Columbia	8	3	ND		5	ND		Pike	8	4	ND		4	ND	
Crawford	16	11	ND		5	ND		Potter	4	4	ND		0	ND	
Cumberland	33	19	ND		14	ND		Schuylkill	34	18	ND		16	ND	
Dauphin	40	29	4.7	(3.0-6.4)	11	ND		Snyder	4	3	ND		1	ND	
Delaware	98	61	4.4	(3.3-5.5)	37	1.8	(1.2-2.4)	Somerset	13	7	ND		6	ND	
Elk	6	0	ND		6	ND		Sullivan	0	0	ND		0	ND	
Erie	59	35	4.8	(3.2-6.4)	24	2.5	(1.5-3.5)	Susquehanna	7	6	ND		1	ND	
Fayette	37	20	5.1	(2.9-7.3)	17	ND		Tioga	4	3	ND		1	ND	
Forest	3	2	ND		1	ND		Union	5	3	ND		2	ND	
Franklin	23	14	ND		9	ND		Venango	10	7	ND		3	ND	
Fulton	1	1	ND		0	ND		Warren	8	4	ND		4	ND	
Greene	6	3	ND		3	ND		Washington	48	30	4.9	(3.1-6.7)	18	ND	
Huntingdon	8	7	ND		1	ND		Wayne	11	9	ND		2	ND	
Indiana	17	8	ND		9	ND		Westmoreland	88	51	4.5	(3.3-5.7)	37	2.6	(1.8-3.4)
Jefferson	11	6	ND		5	ND		Wyoming	5	3	ND		2	ND	
								York	55	32	3.0	(2.0-4.0)	23	1.7	(1.0-2.4)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

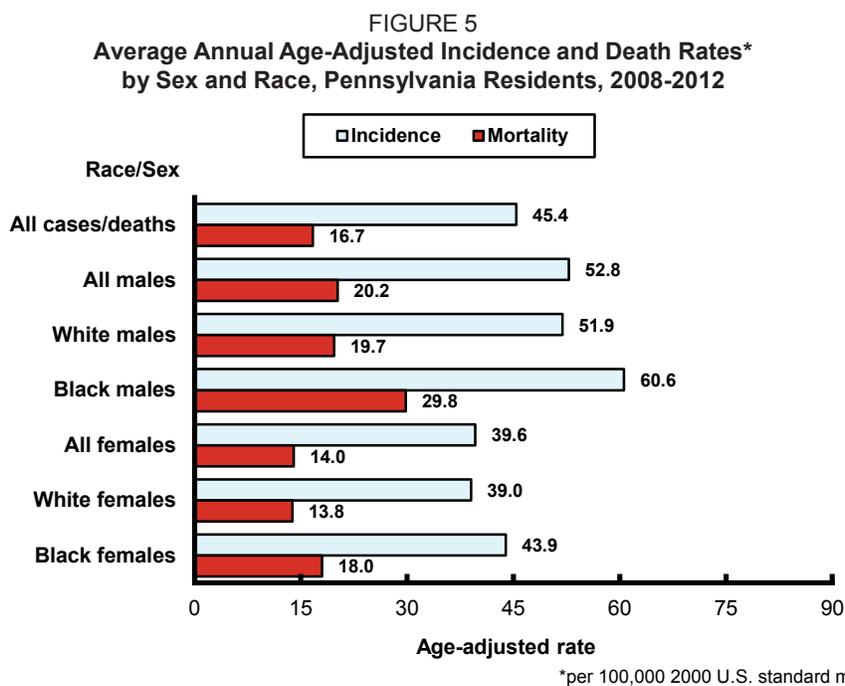
Cancer of the Colon and Rectum

Data Highlights

There were 6,851 cases of invasive colon and rectum cancers diagnosed among residents in 2012, a decrease of about 2 percent from 2011, when there were 7,017 cases recorded. It was also the third most common cancer site among males and among females, accounting for approximately 9 percent of all of the new invasive cancer cases recorded for 2012.

The average annual age-adjusted incidence rate for colon and rectum cancers during the period of 2008-2012 was 33 percent higher among males (52.8 per 100,000) compared to females (39.6). Black males had the highest average annual incidence rate (60.6) among the four sex/race groups, and white females had the lowest rate (39.0). Annual age-adjusted incidence rates during the 10 years from 2003 to 2012 showed that the incidence rates for each of the four sex/race groups have declined. Age-adjusted incidence rates for white males and white females reached a 10-year low in 2012. The age-adjusted incidence rate among black males decreased approximately 10 percent in 2012 to 55.1 per 100,000. Compared to 2003, the 2012 incidence rates among white males decreased by about 31 percent to 47.5. Among white females, the rate decreased by 25 percent to 36.4. Similarly, the rate for black males decreased by 29 percent to 55.1 and for black females by 15 percent to 41.1. During the period of 2008-2012, about 92 percent of the invasive colon/rectum cancer cases were diagnosed among Pennsylvania residents 50 years of age or older.

In 2012, there were 2,612 residents who died of colon and rectum cancers – an increase from the 2,575 resident deaths in 2011. The average annual age-adjusted death rates for 2008-2012 showed males (20.2 per 100,000) with higher rates than females (14.0). Of the four sex/race groups, black males had the highest death rate (29.8) for colon and rectum cancers. When colon and rectum cancers are detected and treated at an early stage, the five-year survival rate is very good. In 2012, 41 percent of colon/rectum cancers were diagnosed at the early stage (in situ or local), and 53 percent of the cases were diagnosed at the late stage (regional or distant). Between 2003 and 2012, annual age-adjusted death rates generally declined among white males, white females, and black females. The death rate for black males experienced a sharp peak in 2006 but have been declining in recent years, hitting a low of 26.7 in 2012.



Risk Factors

Etiological factors are not precisely known; diets high in red meats and processed meats are associated. Common risk factors include lack of physical activity, obesity, smoking, heavy alcohol use, type 2 diabetes, adenomatous polyps, familial adenomatous polyposis, inflammatory bowel disease (Crohn's disease/ulcerative colitis), family history, and inherited cancer syndromes.

Early Detection

Regular screening can discover colorectal cancer early when it is often curable, and it can even detect polyps or growths that can be removed before they develop into cancer. The American Cancer Society recommends various examination schedules starting at age 50, including the Guaiac-based fecal occult blood test (gFOBT), fecal immunochemical test (FIT), flexible sigmoidoscopy (FSIG), double-contrast barium enema, CT colonography or colonoscopy, and stool DNA test.

Cancer of the Colon and Rectum: INCIDENCE (Invasive)

**TABLE
5-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

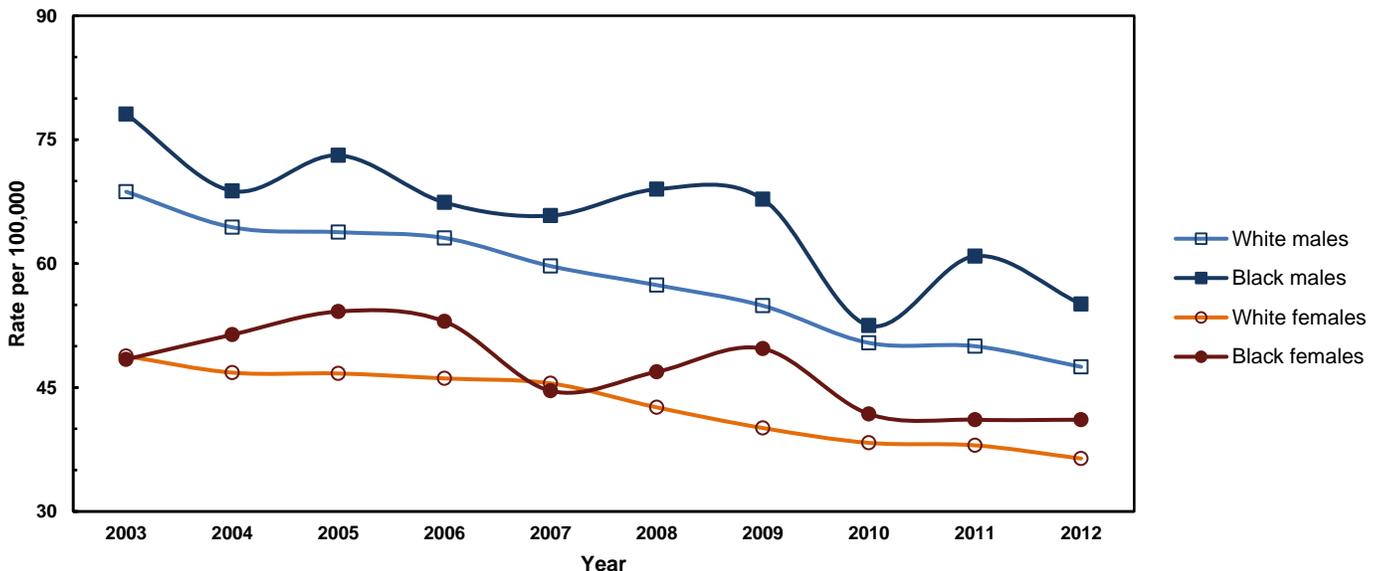
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	6,851	42.5 (41.5-43.5)	3,490	48.8 (47.2-50.4)	3,060	47.5 (45.8-49.2)	295	55.1 (48.8-61.4)	3,361	37.4 (36.1-38.7)	2,923	36.4 (35.1-37.7)	309	41.1 (36.5-45.7)
2011	7,017	44.0 (43.0-45.0)	3,588	51.3 (49.6-53.0)	3,163	50.0 (48.3-51.7)	324	60.9 (54.3-67.5)	3,429	38.3 (37.0-39.6)	3,050	38.0 (36.7-39.3)	305	41.1 (36.5-45.7)
2010	6,867	43.7 (42.7-44.7)	3,411	50.2 (48.5-51.9)	3,067	50.4 (48.6-52.2)	262	52.5 (46.1-58.9)	3,456	38.4 (37.1-39.7)	3,088	38.3 (36.9-39.7)	294	41.8 (37.0-46.6)
2009	7,315	47.6 (46.5-48.7)	3,692	56.0 (54.2-57.8)	3,295	54.9 (53.0-56.8)	314	67.8 (60.3-75.3)	3,623	41.0 (39.7-42.3)	3,214	40.1 (38.7-41.5)	336	49.7 (44.4-55.0)
2008	7,480	49.5 (48.4-50.6)	3,724	58.2 (56.3-60.1)	3,349	57.4 (55.5-59.3)	303	69.0 (61.2-76.8)	3,756	43.1 (41.7-44.5)	3,376	42.6 (41.2-44.0)	315	46.9 (41.7-52.1)
2007	7,739	52.1 (50.9-53.3)	3,784	60.5 (58.6-62.4)	3,410	59.7 (57.7-61.7)	283	65.8 (58.1-73.5)	3,954	45.8 (44.4-47.2)	3,585	45.5 (44.0-47.0)	291	44.6 (39.5-49.7)
2006	8,004	54.1 (52.9-55.3)	3,920	63.5 (61.5-65.5)	3,559	63.1 (61.0-65.2)	287	67.4 (59.6-75.2)	4,084	47.2 (45.8-48.6)	3,639	46.1 (44.6-47.6)	346	53.0 (47.4-58.6)
2005	8,198	54.8 (53.6-56.0)	4,051	64.8 (62.8-66.8)	3,658	63.8 (61.7-65.9)	302	73.1 (64.9-81.3)	4,147	47.6 (46.2-49.0)	3,725	46.7 (45.2-48.2)	345	54.2 (48.5-59.9)
2004	8,156	54.9 (53.7-56.1)	4,020	64.8 (62.8-66.8)	3,663	64.4 (62.3-66.5)	288	68.8 (60.9-76.7)	4,136	47.5 (46.1-48.9)	3,738	46.8 (45.3-48.3)	328	51.4 (45.8-57.0)
2003	8,468	57.3 (56.1-58.5)	4,233	69.4 (67.3-71.5)	3,850	68.7 (66.5-70.9)	322	78.1 (69.6-86.6)	4,234	48.7 (47.2-50.2)	3,877	48.8 (47.3-50.3)	307	48.4 (43.0-53.8)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
5-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Colon and Rectum: INCIDENCE (Invasive)

**TABLE
5-B**

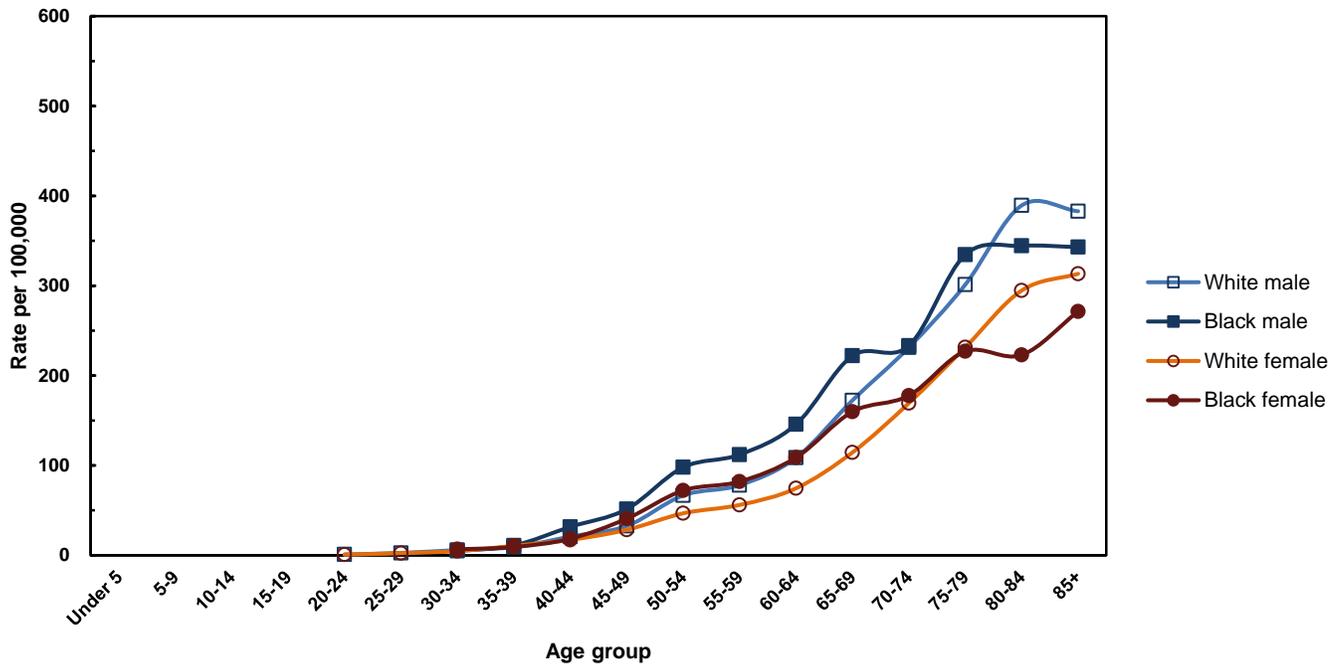
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	56.2	58.1	61.4	45.0	54.3	57.5	42.7
Under 5	ND						
5-9	ND						
10-14	ND						
15-19	0.3	ND	ND	ND	ND	ND	ND
20-24	0.9	1.0	0.9	ND	0.7	0.7	ND
25-29	2.3	2.6	2.6	ND	2.0	2.3	ND
30-34	5.0	5.4	5.8	4.9	4.7	4.6	6.7
35-39	9.9	9.1	9.0	10.9	10.6	10.5	9.2
40-44	19.4	21.8	20.8	31.6	17.0	17.1	18.4
45-49	31.9	34.2	32.6	51.3	29.6	28.3	40.7
50-54	59.4	70.0	66.6	97.9	49.3	46.7	72.1
55-59	69.5	81.1	78.0	112.0	58.5	56.0	82.0
60-64	93.9	111.9	108.5	145.7	77.3	74.5	108.7
65-69	145.2	175.9	172.4	222.0	118.3	114.4	159.8
70-74	197.6	232.2	231.3	233.2	169.6	169.3	177.7
75-79	260.6	302.6	301.2	334.6	230.2	231.4	227.0
80-84	329.3	389.5	389.4	344.4	291.4	294.7	222.9
85+	335.8	382.7	382.9	343.0	314.2	313.3	271.4

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
5-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Colon and Rectum: INCIDENCE (Invasive)

**TABLE
5-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

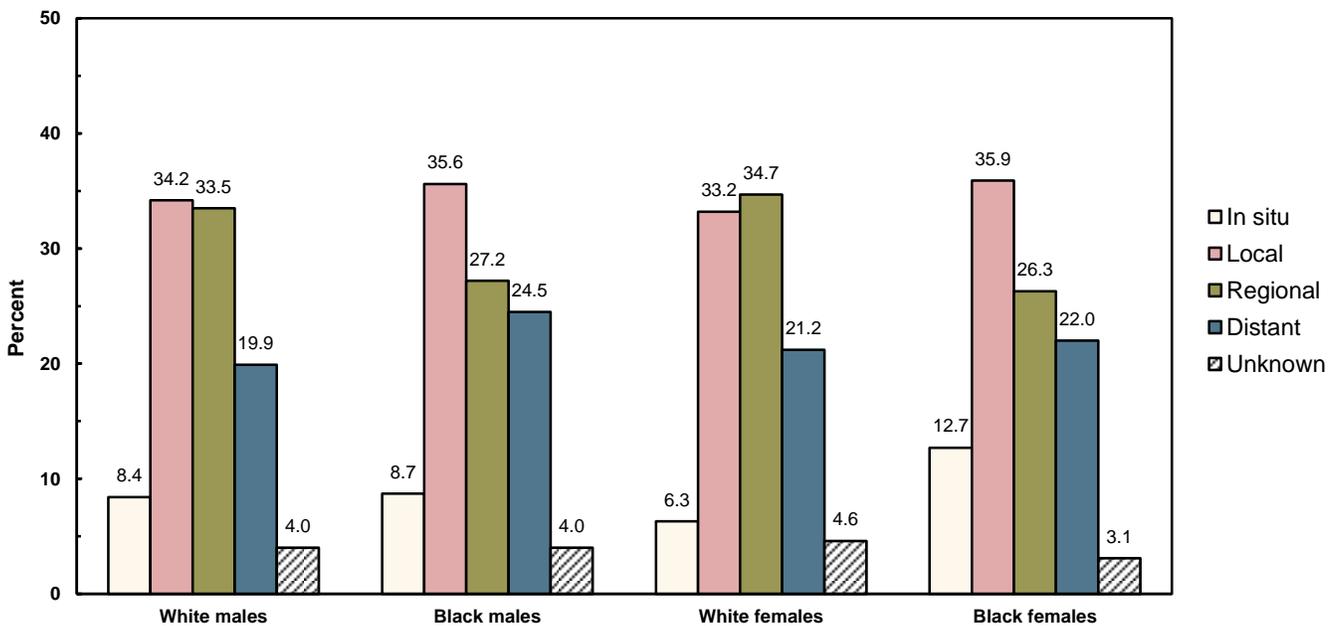
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	35,530	17,905	15,934	1,498	17,625	15,651	1,559
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	2	0	0	0	2	2	0
15-19	15	8	5	2	7	7	0
20-24	38	23	17	6	15	12	3
25-29	90	52	42	6	38	36	1
30-34	189	101	89	11	88	69	16
35-39	376	173	141	23	203	165	21
40-44	830	463	374	70	367	309	45
45-49	1,470	778	640	114	692	564	102
50-54	2,816	1,627	1,362	203	1,189	976	174
55-59	3,012	1,712	1,466	191	1,300	1,090	169
60-64	3,467	1,983	1,732	188	1,484	1,267	181
65-69	4,060	2,292	2,045	189	1,768	1,532	189
70-74	4,339	2,279	2,074	146	2,060	1,853	168
75-79	4,708	2,296	2,106	152	2,412	2,205	176
80-84	4,888	2,234	2,082	106	2,654	2,469	136
85+	5,228	1,882	1,757	91	3,346	3,095	178

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
5-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 6,596 - 96.3%

Cancer of the Colon and Rectum: MORTALITY

**TABLE
5-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

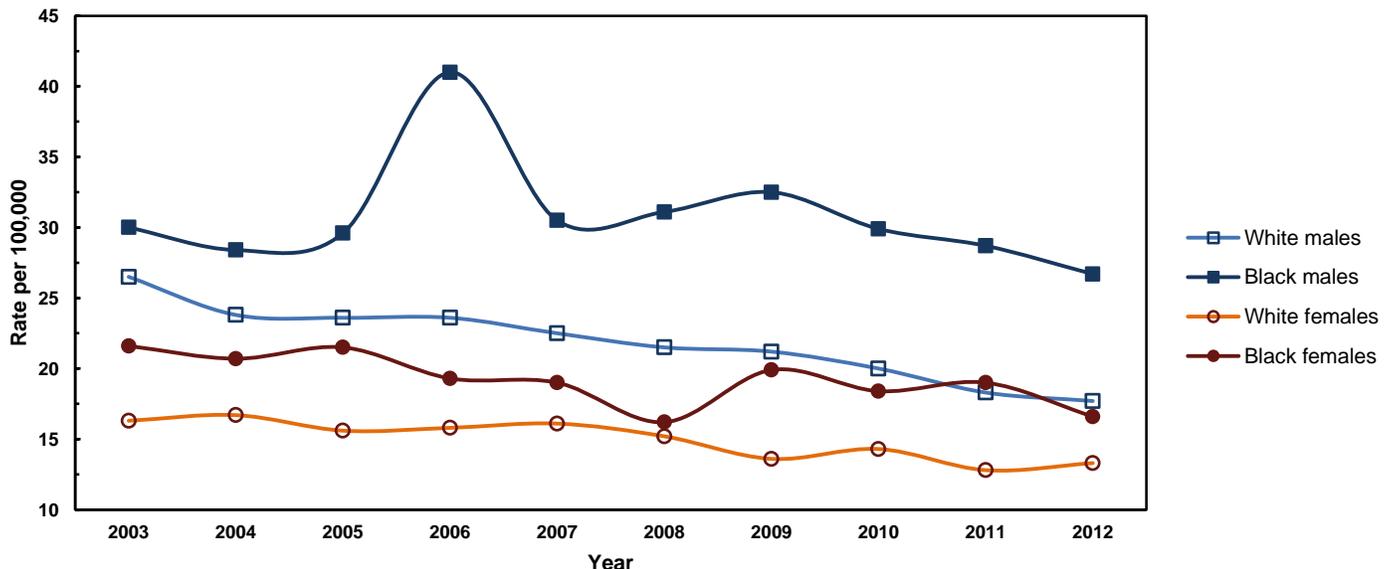
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	2,612	15.7 (15.1-16.3)	1,301	18.6 (17.6-19.6)	1,129	17.7 (16.7-18.7)	127	26.7 (22.1-31.3)	1,311	13.5 (12.8-14.2)	1,166	13.3 (12.5-14.1)	122	16.6 (13.7-19.5)
2011	2,575	15.6 (15.0-16.2)	1,292	18.9 (17.9-19.9)	1,143	18.3 (17.2-19.4)	135	28.7 (23.9-33.5)	1,283	13.2 (12.5-13.9)	1,131	12.8 (12.1-13.5)	139	19.0 (15.8-22.2)
2010	2,755	16.9 (16.3-17.5)	1,370	20.2 (19.1-21.3)	1,227	20.0 (18.9-21.1)	136	29.9 (24.9-34.9)	1,385	14.4 (13.6-15.2)	1,246	14.3 (13.5-15.1)	128	18.4 (15.2-21.6)
2009	2,749	17.3 (16.7-17.9)	1,410	21.6 (20.5-22.7)	1,265	21.2 (20.0-22.4)	139	32.5 (27.1-37.9)	1,339	14.0 (13.3-14.7)	1,192	13.6 (12.8-14.4)	136	19.9 (16.6-23.2)
2008	2,783	18.0 (17.3-18.7)	1,379	21.9 (20.7-23.1)	1,241	21.5 (20.3-22.7)	129	31.1 (25.7-36.5)	1,404	15.2 (14.4-16.0)	1,279	15.2 (14.4-16.0)	109	16.2 (13.2-19.2)
2007	2,822	18.8 (18.1-19.5)	1,365	22.8 (21.6-24.0)	1,232	22.5 (21.2-23.8)	128	30.5 (25.2-35.8)	1,457	16.2 (15.4-17.0)	1,328	16.1 (15.2-17.0)	125	19.0 (15.7-22.3)
2006	2,884	19.3 (18.6-20.0)	1,437	24.5 (23.2-25.8)	1,271	23.6 (22.3-24.9)	156	41.0 (34.6-47.4)	1,447	16.0 (15.2-16.8)	1,311	15.8 (14.9-16.7)	125	19.3 (15.9-22.7)
2005	2,914	19.0 (18.3-19.7)	1,444	23.8 (22.6-25.0)	1,316	23.6 (22.3-24.9)	120	29.6 (24.3-34.9)	1,470	15.9 (15.1-16.7)	1,322	15.6 (14.8-16.4)	140	21.5 (17.9-25.1)
2004	2,987	19.7 (19.0-20.4)	1,437	23.9 (22.7-25.1)	1,317	23.8 (22.5-25.1)	116	28.4 (23.2-33.6)	1,550	16.8 (16.0-17.6)	1,413	16.7 (15.8-17.6)	132	20.7 (17.2-24.2)
2003	3,102	20.7 (20.0-21.4)	1,579	26.6 (25.3-27.9)	1,448	26.5 (25.1-27.9)	124	30.0 (24.7-35.3)	1,523	16.6 (15.8-17.4)	1,379	16.3 (15.4-17.2)	137	21.6 (18.0-25.2)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
5-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Colon and Rectum: MORTALITY

**TABLE
5-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

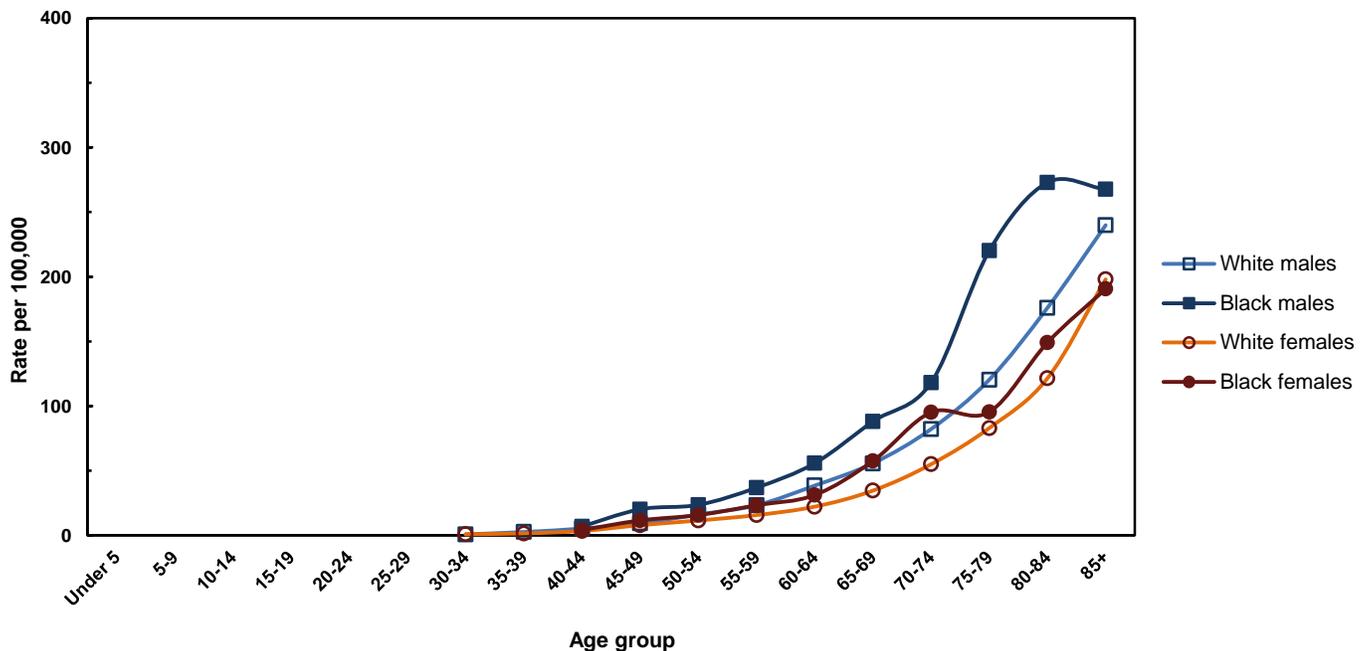
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	13,474	21.3	6,752	21.9	6,005	23.1	666	20.0	6,722	20.7	6,014	22.1	634	17.4
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	1	ND	1	ND	0	ND	1	ND	0	ND	0	ND	0	ND
20-24	6	ND	4	ND	4	ND	0	ND	2	ND	2	ND	0	ND
25-29	13	0.3	9	ND	6	ND	2	ND	4	ND	3	ND	1	ND
30-34	34	0.9	18	1.0	12	0.8	6	ND	16	0.9	13	0.9	2	ND
35-39	82	2.2	50	2.6	41	2.6	9	ND	32	1.7	24	1.5	6	ND
40-44	190	4.4	115	5.4	95	5.3	15	6.8	75	3.5	61	3.4	10	4.1
45-49	417	9.0	230	10.1	183	9.3	45	20.2	187	8.0	157	7.9	29	11.6
50-54	668	14.1	387	16.6	330	16.1	49	23.6	281	11.6	240	11.5	38	15.7
55-59	875	20.2	515	24.4	438	23.3	63	36.9	360	16.2	305	15.7	48	23.3
60-64	1,129	30.6	694	39.2	614	38.5	72	55.8	435	22.6	378	22.2	52	31.2
65-69	1,284	45.9	742	56.9	660	55.7	75	88.1	542	36.3	464	34.6	68	57.5
70-74	1,510	68.8	814	82.9	737	82.2	74	118.2	696	57.3	602	55.0	90	95.2
75-79	1,826	101.1	950	125.2	842	120.4	100	220.1	876	83.6	791	83.0	74	95.4
80-84	2,158	145.4	1,037	180.8	941	176.0	84	272.9	1,121	123.1	1,018	121.5	91	149.1
85+	3,280	210.7	1,185	241.0	1,101	239.9	71	267.6	2,095	196.7	1,956	198.0	125	190.6

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
5-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Colon and Rectum: INCIDENCE (Invasive)

**TABLE
5-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	35,530	17,905	52.8	(52.0-53.6)	17,625	39.6	(39.0-40.2)									
Adams	301	154	55.2	(46.5-63.9)	147	42.8	(35.9-49.7)	Juniata	72	43	57.5	(40.3-74.7)	29	36.1	(23.0-49.2)	
Allegheny	3,582	1,777	52.5	(50.1-54.9)	1,805	37.8	(36.1-39.5)	Lackawanna	677	315	51.8	(46.1-57.5)	362	41.8	(37.5-46.1)	
Armstrong	218	114	52.6	(42.9-62.3)	104	37.6	(30.4-44.8)	Lancaster	1,248	638	46.9	(43.3-50.5)	610	35.8	(33.0-38.6)	
Beaver	508	259	49.1	(43.1-55.1)	249	35.1	(30.7-39.5)	Lawrence	298	139	50.0	(41.7-58.3)	159	41.3	(34.9-47.7)	
Bedford	155	88	54.8	(43.4-66.2)	67	34.7	(26.4-43.0)	Lebanon	378	194	50.7	(43.6-57.8)	184	36.5	(31.2-41.8)	
Berks	1,125	602	56.5	(52.0-61.0)	523	38.6	(35.3-41.9)	Lehigh	852	432	48.0	(43.5-52.5)	420	34.3	(31.0-37.6)	
Blair	456	226	61.4	(53.4-69.4)	230	45.0	(39.2-50.8)	Luzerne	1,135	572	62.1	(57.0-67.2)	563	43.0	(39.4-46.6)	
Bradford	193	89	47.5	(37.6-57.4)	104	47.2	(38.1-56.3)	Lycoming	399	199	59.3	(51.1-67.5)	200	46.9	(40.4-53.4)	
Bucks	1,551	782	46.8	(43.5-50.1)	769	36.6	(34.0-39.2)	McKean	134	78	61.0	(47.5-74.5)	56	34.6	(25.5-43.7)	
Butler	512	279	57.5	(50.8-64.2)	233	35.7	(31.1-40.3)	Mercer	414	201	55.5	(47.8-63.2)	213	46.0	(39.8-52.2)	
Cambria	580	305	67.7	(60.1-75.3)	275	45.3	(39.9-50.7)	Mifflin	152	85	59.1	(46.5-71.7)	67	38.3	(29.1-47.5)	
Cameron	27	16	ND		11	ND		Monroe	390	197	47.4	(40.8-54.0)	193	40.9	(35.1-46.7)	
Carbon	179	89	44.6	(35.3-53.9)	90	37.6	(29.8-45.4)	Montgomery	2,053	984	46.3	(43.4-49.2)	1,069	38.2	(35.9-40.5)	
Centre	267	127	40.1	(33.1-47.1)	140	36.9	(30.8-43.0)	Montour	52	23	45.3	(26.8-63.8)	29	39.9	(25.4-54.4)	
Chester	1,050	507	42.0	(38.3-45.7)	543	36.1	(33.1-39.1)	Northampton	831	413	51.0	(46.1-55.9)	418	39.7	(35.9-43.5)	
Clarion	143	70	59.6	(45.6-73.6)	73	50.9	(39.2-62.6)	Northumberland	267	134	45.9	(38.1-53.7)	133	34.4	(28.6-40.2)	
Clearfield	281	144	58.2	(48.7-67.7)	137	42.6	(35.5-49.7)	Perry	96	56	45.9	(33.9-57.9)	40	28.2	(19.5-36.9)	
Clinton	112	59	54.5	(40.6-68.4)	53	38.7	(28.3-49.1)	Philadelphia	3,861	1,936	61.8	(59.0-64.6)	1,925	42.2	(40.3-44.1)	
Columbia	197	95	53.0	(42.3-63.7)	102	42.9	(34.6-51.2)	Pike	171	89	47.9	(37.9-57.9)	82	41.8	(32.8-50.8)	
Crawford	263	136	52.5	(43.7-61.3)	127	39.8	(32.9-46.7)	Potter	52	27	45.2	(28.2-62.2)	25	38.8	(23.6-54.0)	
Cumberland	651	310	48.6	(43.2-54.0)	341	41.9	(37.5-46.3)	Schuylkill	581	271	58.6	(51.6-65.6)	310	53.0	(47.1-58.9)	
Dauphin	683	312	47.1	(41.9-52.3)	371	42.2	(37.9-46.5)	Snyder	97	42	40.3	(28.1-52.5)	55	43.0	(31.6-54.4)	
Delaware	1,577	804	58.2	(54.2-62.2)	773	40.8	(37.9-43.7)	Somerset	263	143	57.6	(48.2-67.0)	120	39.8	(32.7-46.9)	
Elk	117	69	64.8	(49.5-80.1)	48	38.7	(27.8-49.6)	Sullivan	24	18	ND		6	ND		
Erie	647	336	46.2	(41.3-51.1)	311	33.2	(29.5-36.9)	Susquehanna	117	68	50.2	(38.3-62.1)	49	32.1	(23.1-41.1)	
Fayette	494	271	65.6	(57.8-73.4)	223	41.1	(35.7-46.5)	Tioga	134	78	57.8	(45.0-70.6)	56	36.3	(26.8-45.8)	
Forest	25	16	ND		9	ND		Union	101	57	47.6	(35.2-60.0)	44	30.4	(21.4-39.4)	
Franklin	478	248	58.5	(51.2-65.8)	230	42.7	(37.2-48.2)	Venango	177	85	47.4	(37.3-57.5)	92	44.0	(35.0-53.0)	
Fulton	32	16	ND		16	ND		Warren	121	61	43.9	(32.9-54.9)	60	36.3	(27.1-45.5)	
Greene	130	71	65.5	(50.3-80.7)	59	45.0	(33.5-56.5)	Washington	675	339	54.4	(48.6-60.2)	336	41.4	(37.0-45.8)	
Huntingdon	127	67	48.0	(36.5-59.5)	60	39.6	(29.6-49.6)	Wayne	161	74	41.2	(31.8-50.6)	87	45.9	(36.3-55.5)	
Indiana	252	131	54.3	(45.0-63.6)	121	39.6	(32.5-46.7)	Westmoreland	1,226	612	53.5	(49.3-57.7)	614	40.6	(37.4-43.8)	
Jefferson	158	75	53.2	(41.2-65.2)	83	46.2	(36.3-56.1)	Wyoming	76	43	54.0	(37.9-70.1)	33	33.1	(21.8-44.4)	
								York	1,174	615	53.9	(49.6-58.2)	559	40.6	(37.2-44.0)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Colon and Rectum: MORTALITY

**TABLE
5-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females				
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)		
All counties	13,474	6,752	20.2	(19.7-20.7)	6,722	14.0	(13.7-14.3)										
Adams	98	60	21.6	(16.1-27.1)	38	10.4	(7.1-13.7)	Juniata	24	15	ND		9	ND			
Allegheny	1,417	687	20.0	(18.5-21.5)	730	14.1	(13.1-15.1)	Lackawanna	259	124	20.8	(17.1-24.5)	135	14.1	(11.7-16.5)		
Armstrong	86	38	17.3	(11.8-22.8)	48	16.6	(11.9-21.3)	Lancaster	525	272	19.9	(17.5-22.3)	253	13.7	(12.0-15.4)		
Beaver	216	108	20.0	(16.2-23.8)	108	14.3	(11.6-17.0)	Lawrence	115	50	17.3	(12.5-22.1)	65	16.3	(12.3-20.3)		
Bedford	41	18	ND		23	11.4	(6.7-16.1)	Lebanon	150	72	19.4	(14.9-23.9)	78	14.0	(10.9-17.1)		
Berks	396	209	19.9	(17.2-22.6)	187	13.2	(11.3-15.1)	Lehigh	336	164	18.5	(15.7-21.3)	172	12.6	(10.7-14.5)		
Blair	180	82	22.9	(17.9-27.9)	98	17.1	(13.7-20.5)	Luzerne	418	201	22.0	(19.0-25.0)	217	15.4	(13.4-17.4)		
Bradford	88	40	20.3	(14.0-26.6)	48	19.7	(14.1-25.3)	Lycoming	129	63	18.7	(14.1-23.3)	66	14.8	(11.2-18.4)		
Bucks	547	265	16.6	(14.6-18.6)	282	12.7	(11.2-14.2)	McKean	49	26	19.9	(12.3-27.5)	23	13.0	(7.7-18.3)		
Butler	187	93	18.4	(14.7-22.1)	94	13.6	(10.9-16.3)	Mercer	184	94	26.5	(21.1-31.9)	90	18.3	(14.5-22.1)		
Cambria	192	109	23.6	(19.2-28.0)	83	12.4	(9.7-15.1)	Mifflin	52	31	22.4	(14.5-30.3)	21	12.0	(6.9-17.1)		
Cameron	14	9	ND		5	ND		Monroe	129	63	17.9	(13.5-22.3)	66	13.8	(10.5-17.1)		
Carbon	63	30	14.5	(9.3-19.7)	33	12.5	(8.2-16.8)	Montgomery	708	327	15.7	(14.0-17.4)	381	12.6	(11.3-13.9)		
Centre	92	42	13.8	(9.6-18.0)	50	12.5	(9.0-16.0)	Montour	22	10	ND		12	ND			
Chester	416	222	18.9	(16.4-21.4)	194	12.5	(10.7-14.3)	Northampton	268	126	15.7	(13.0-18.4)	142	12.5	(10.4-14.6)		
Clarion	46	25	21.7	(13.2-30.2)	21	13.1	(7.5-18.7)	Northumberland	114	60	21.1	(15.8-26.4)	54	12.3	(9.0-15.6)		
Clearfield	119	63	25.6	(19.3-31.9)	56	15.8	(11.7-19.9)	Perry	44	23	20.2	(11.9-28.5)	21	14.6	(8.4-20.8)		
Clinton	49	30	28.9	(18.6-39.2)	19	ND		Philadelphia	1,545	779	25.7	(23.9-27.5)	766	15.7	(14.6-16.8)		
Columbia	61	35	20.1	(13.4-26.8)	26	10.6	(6.5-14.7)	Pike	47	27	16.2	(10.1-22.3)	20	10.4	(5.8-15.0)		
Crawford	101	56	23.0	(17.0-29.0)	45	13.8	(9.8-17.8)	Potter	18	9	ND		9	ND			
Cumberland	213	110	17.6	(14.3-20.9)	103	11.6	(9.4-13.8)	Schuylkill	211	97	21.7	(17.4-26.0)	114	16.8	(13.7-19.9)		
Dauphin	264	133	19.9	(16.5-23.3)	131	14.2	(11.8-16.6)	Snyder	38	16	ND		22	17.1	(10.0-24.2)		
Delaware	634	314	22.5	(20.0-25.0)	320	15.8	(14.1-17.5)	Somerset	98	52	20.5	(14.9-26.1)	46	13.0	(9.2-16.8)		
Elk	45	19	ND		26	16.2	(10.0-22.4)	Sullivan	10	5	ND		5	ND			
Erie	284	140	20.0	(16.7-23.3)	144	14.7	(12.3-17.1)	Susquehanna	38	25	18.3	(11.1-25.5)	13	ND			
Fayette	207	116	27.8	(22.7-32.9)	91	14.9	(11.8-18.0)	Tioga	49	27	19.5	(12.1-26.9)	22	13.2	(7.7-18.7)		
Forest	9	9	ND		0	ND		Union	32	15	ND		17	ND			
Franklin	148	68	16.3	(12.4-20.2)	80	13.7	(10.7-16.7)	Venango	83	37	20.3	(13.8-26.8)	46	22.3	(15.9-28.7)		
Fulton	18	6	ND		12	ND		Warren	63	35	24.4	(16.3-32.5)	28	15.2	(9.6-20.8)		
Greene	41	26	24.8	(15.3-34.3)	15	ND		Washington	275	133	21.7	(18.0-25.4)	142	16.1	(13.5-18.7)		
Huntingdon	50	30	22.3	(14.3-30.3)	20	12.5	(7.0-18.0)	Wayne	63	30	17.6	(11.3-23.9)	33	17.5	(11.5-23.5)		
Indiana	97	55	22.3	(16.4-28.2)	42	12.0	(8.4-15.6)	Westmoreland	467	237	20.7	(18.1-23.3)	230	13.8	(12.0-15.6)		
Jefferson	65	35	25.8	(17.3-34.3)	30	16.0	(10.3-21.7)	Wyoming	28	17	ND		11	ND			
								York	399	208	19.1	(16.5-21.7)	191	13.1	(11.2-15.0)		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

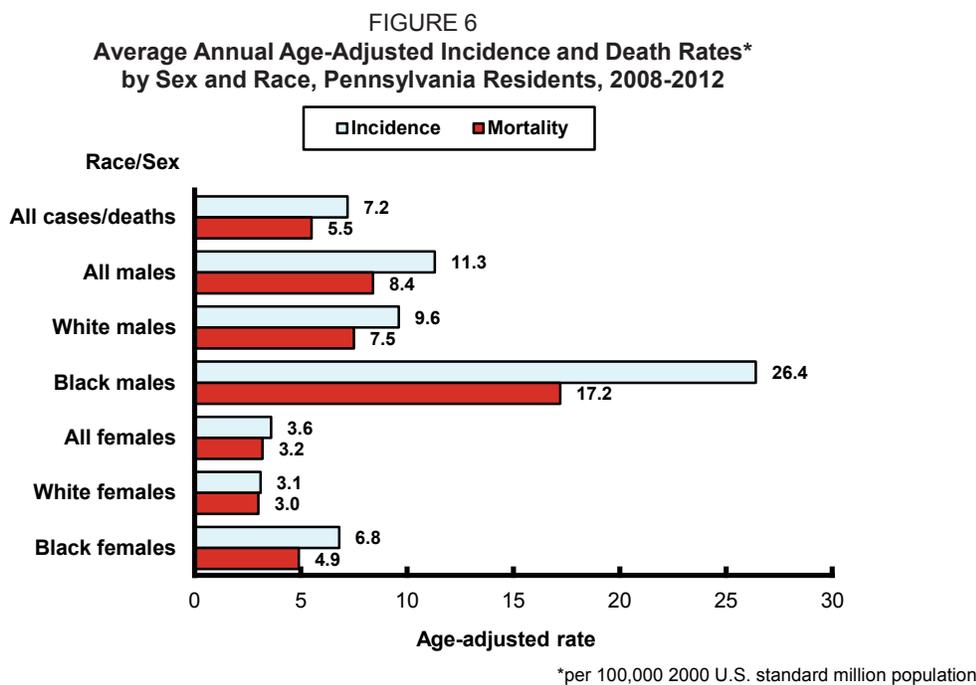
Cancer of the Liver and Intrahepatic Bile Duct

Data Highlights

The 2008-2012 average annual age-adjusted incidence rate for invasive cancers of the liver and intrahepatic bile duct was over three times higher in males than in females (11.3 compared to 3.6 per 100,000). The highest rate occurred among black males (26.4) and was over 2 1/2 times the rate among white males (9.6).

In 2012, there were 1,258 cases of invasive liver/intrahepatic bile duct cancers diagnosed among residents for an age-adjusted rate of 7.5 per 100,000. The annual age-adjusted incidence rates by sex and race for the last 10 years (2003-2012) showed increasing rates among males, especially black males. There were no obvious trends among black females diagnosed with liver cancer, although rates were somewhat higher since 2008. Rates among white females increased slightly during recent years. The 2008-2012 average annual age-specific incidence rates among the four sex/race groups indicated that black males had the highest risk for liver cancer between the ages of 50 and 80. During the summary period of 2008-2012, 97 percent of the cases were diagnosed among residents 45 years of age or older. In 2012, 47 percent of the liver/intrahepatic bile duct cancers were diagnosed at the late stage (regional or distant) of the disease, and approximately 41 percent were diagnosed at the early stage (local).

As observed with incidence rates, the 2008-2012 average annual age-adjusted death rates for cancer of the liver and intrahepatic bile duct were much higher for black males (17.2 per 100,000) compared to white males (7.5). Black females (4.9) also had higher death rates compared to white females (3.0). Liver cancer death counts and rates were also very similar to the incidence figures for all sex/race groups. This is indicative of poor survival rates for this disease. During the period 2003-2012, the annual age-adjusted death rates had increasing trends among black and white males. Annual death rates among blacks and white females displayed no discernible long-term trends.



Risk Factors

Chronic infection with hepatitis B virus, hepatitis C virus, long-term exposure to aflatoxin, cirrhosis of the liver (usually from excessive use of alcohol), diseases of the bile duct, inherited metabolic diseases, type 2 diabetes, obesity, exposure to vinyl chloride or thorium dioxide (thorotrast), anabolic steroids, arsenic in drinking water, infection with the parasite that causes schistosomiasis, and use of tobacco are associated with liver cancers.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Cancer of the Liver and Intrahepatic Bile Duct: INCIDENCE (Invasive)

**TABLE
6-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

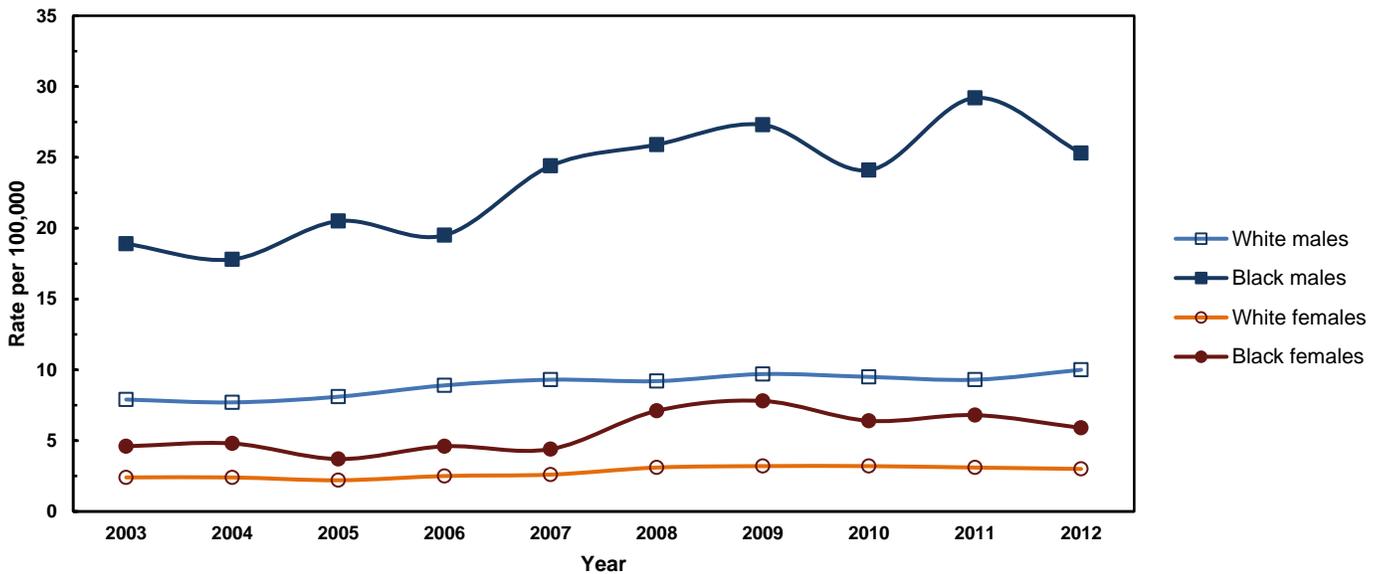
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,258	7.5 (7.1-7.9)	934	12.0 (11.2-12.8)	687	10.0 (9.3-10.7)	161	25.3 (21.4-29.2)	324	3.6 (3.2-4.0)	234	3.0 (2.6-3.4)	48	5.9 (4.2-7.6)
2011	1,191	7.2 (6.8-7.6)	862	11.3 (10.5-12.1)	628	9.3 (8.6-10.0)	184	29.2 (25.0-33.4)	329	3.6 (3.2-4.0)	256	3.1 (2.7-3.5)	55	6.8 (5.0-8.6)
2010	1,111	7.0 (6.6-7.4)	802	10.9 (10.1-11.7)	613	9.5 (8.7-10.3)	144	24.1 (20.2-28.0)	309	3.5 (3.1-3.9)	248	3.2 (2.8-3.6)	46	6.4 (4.6-8.2)
2009	1,110	7.2 (6.8-7.6)	794	11.3 (10.5-12.1)	612	9.7 (8.9-10.5)	140	27.3 (22.8-31.8)	316	3.7 (3.3-4.1)	246	3.2 (2.8-3.6)	54	7.8 (5.7-9.9)
2008	1,033	6.9 (6.5-7.3)	733	10.8 (10.0-11.6)	558	9.2 (8.4-10.0)	131	25.9 (21.5-30.3)	300	3.5 (3.1-3.9)	240	3.1 (2.7-3.5)	47	7.1 (5.1-9.1)
2007	970	6.5 (6.1-6.9)	721	10.9 (10.1-11.7)	552	9.3 (8.5-10.1)	123	24.4 (20.1-28.7)	249	2.9 (2.5-3.3)	207	2.6 (2.2-3.0)	30	4.4 (2.8-6.0)
2006	889	6.1 (5.7-6.5)	650	10.0 (9.2-10.8)	520	8.9 (8.1-9.7)	99	19.5 (15.7-23.3)	239	2.8 (2.4-3.2)	197	2.5 (2.2-2.8)	31	4.6 (3.0-6.2)
2005	809	5.5 (5.1-5.9)	602	9.3 (8.6-10.0)	476	8.1 (7.4-8.8)	102	20.5 (16.5-24.5)	207	2.5 (2.2-2.8)	173	2.2 (1.9-2.5)	24	3.7 (2.2-5.2)
2004	768	5.3 (4.9-5.7)	549	8.6 (7.9-9.3)	444	7.7 (7.0-8.4)	87	17.8 (14.1-21.5)	219	2.6 (2.3-2.9)	179	2.4 (2.0-2.8)	31	4.8 (3.1-6.5)
2003	802	5.6 (5.2-6.0)	576	9.1 (8.4-9.8)	451	7.9 (7.2-8.6)	91	18.9 (15.0-22.8)	226	2.7 (2.3-3.1)	183	2.4 (2.1-2.7)	29	4.6 (2.9-6.3)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
6-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Liver and Intrahepatic Bile Duct: INCIDENCE (Invasive)

**TABLE
6-B**

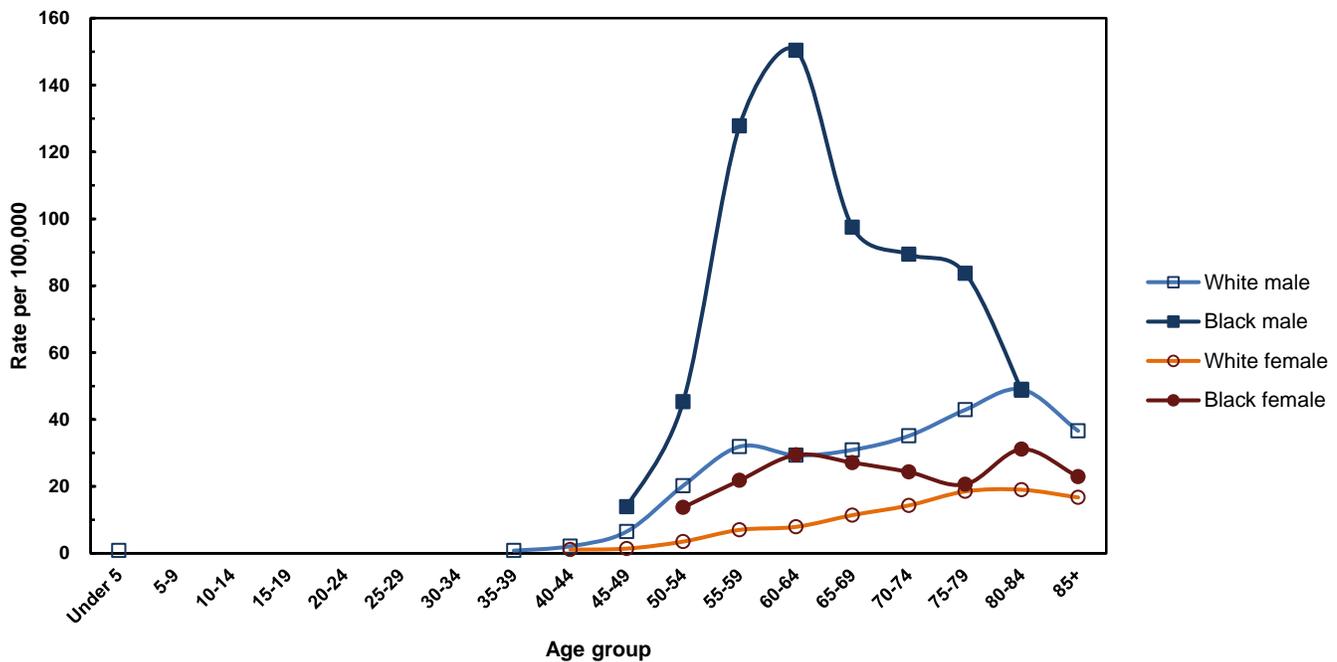
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	9.0	13.4	11.9	22.8	4.9	4.5	6.9
Under 5	0.7	0.9	0.8	ND	0.6	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	0.3	ND	ND	ND	ND	ND	ND
30-34	0.3	ND	ND	ND	ND	ND	ND
35-39	0.7	1.1	0.8	ND	ND	ND	ND
40-44	1.8	2.5	2.1	ND	1.1	1.1	ND
45-49	4.6	7.6	6.5	13.9	1.6	1.4	ND
50-54	14.2	24.0	20.2	45.3	4.8	3.5	13.7
55-59	24.4	41.4	31.9	127.8	8.4	7.0	21.8
60-64	24.4	39.8	29.3	150.4	10.2	7.9	29.4
65-69	24.6	37.5	30.9	97.5	13.4	11.4	27.1
70-74	26.4	39.8	35.1	89.4	15.6	14.3	24.3
75-79	30.9	45.6	42.9	83.7	20.3	18.5	20.6
80-84	32.7	51.1	49.0	48.7	21.2	19.0	31.1
85+	24.0	36.8	36.6	ND	18.0	16.7	22.9

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
6-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Liver and Intrahepatic Bile Duct: INCIDENCE (Invasive)

**TABLE
6-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

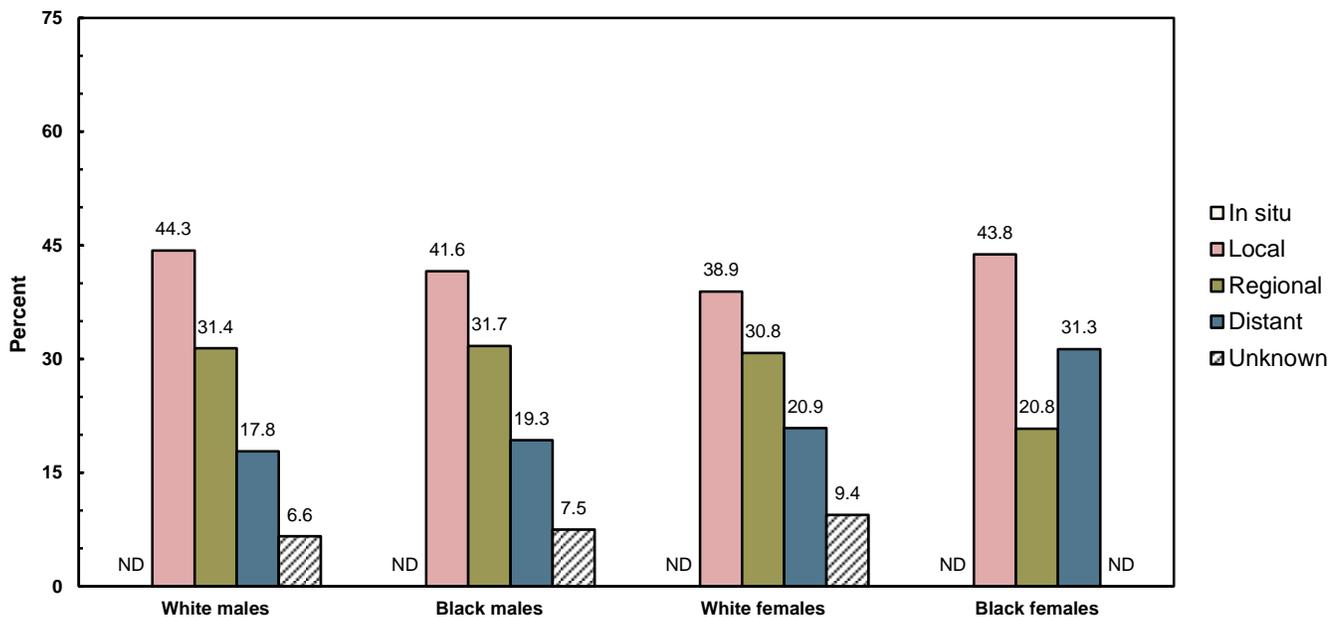
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	5,703	4,125	3,098	760	1,578	1,224	250
Under 5	27	17	11	3	10	8	2
5-9	2	0	0	0	2	2	0
10-14	4	4	4	0	0	0	0
15-19	7	5	4	0	2	2	0
20-24	8	5	3	1	3	2	0
25-29	11	6	4	2	5	3	2
30-34	12	9	4	5	3	2	0
35-39	27	20	12	4	7	5	2
40-44	76	52	37	9	24	19	5
45-49	210	172	128	31	38	27	7
50-54	672	557	413	94	115	73	33
55-59	1,059	873	599	218	186	136	45
60-64	901	705	468	194	196	135	49
65-69	689	489	366	83	200	153	32
70-74	580	391	315	56	189	157	23
75-79	559	346	300	38	213	176	16
80-84	486	293	262	15	193	159	19
85+	373	181	168	7	192	165	15

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
6-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 715 - 56.8%

Cancer of the Liver and Intrahepatic Bile Duct: MORTALITY

**TABLE
6-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

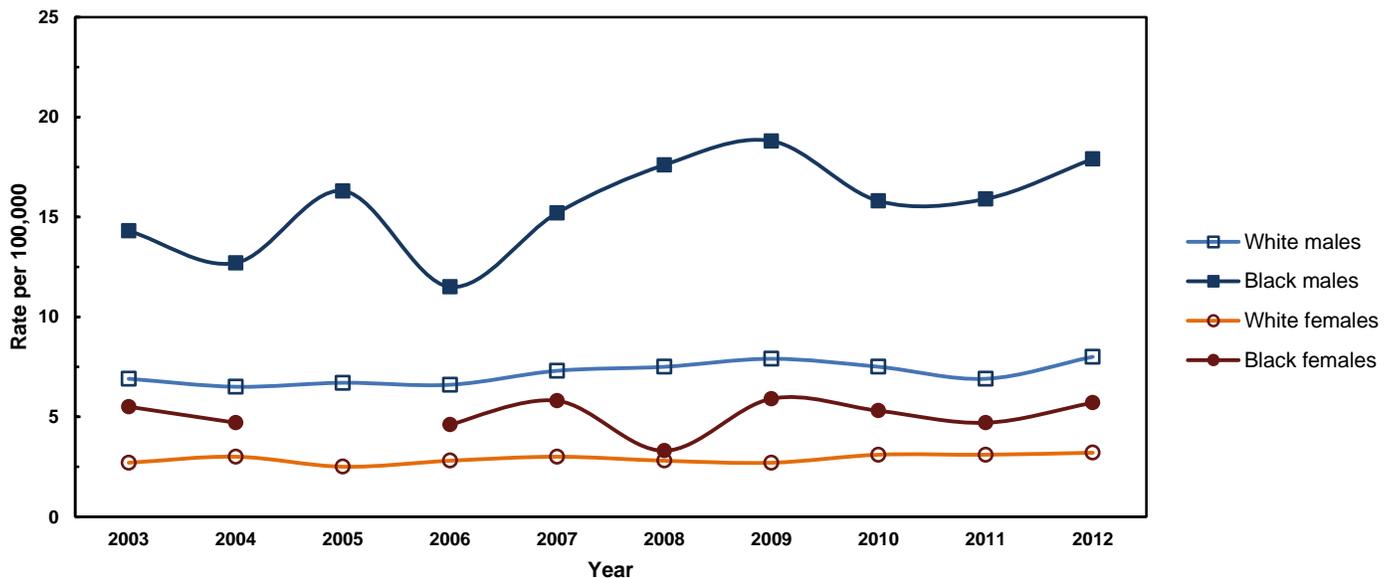
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,021	6.1 (5.7-6.5)	687	9.1 (8.4-9.8)	538	8.0 (7.3-8.7)	109	17.9 (14.5-21.3)	334	3.6 (3.2-4.0)	266	3.2 (2.8-3.6)	45	5.7 (4.0-7.4)
2011	886	5.4 (5.0-5.8)	579	7.8 (7.2-8.4)	457	6.9 (6.3-7.5)	96	15.9 (12.7-19.1)	307	3.3 (2.9-3.7)	263	3.1 (2.7-3.5)	36	4.7 (3.2-6.2)
2010	881	5.4 (5.0-5.8)	583	8.1 (7.4-8.8)	479	7.5 (6.8-8.2)	92	15.8 (12.6-19.0)	298	3.2 (2.8-3.6)	254	3.1 (2.7-3.5)	37	5.3 (3.6-7.0)
2009	851	5.5 (5.1-5.9)	584	8.6 (7.9-9.3)	484	7.9 (7.2-8.6)	92	18.8 (15.0-22.6)	267	3.0 (2.6-3.4)	224	2.7 (2.3-3.1)	40	5.9 (4.1-7.7)
2008	805	5.3 (4.9-5.7)	549	8.3 (7.6-9.0)	444	7.5 (6.8-8.2)	86	17.6 (13.9-21.3)	256	2.8 (2.5-3.1)	229	2.8 (2.4-3.2)	21	3.3 (1.9-4.7)
2007	789	5.3 (4.9-5.7)	501	7.9 (7.2-8.6)	414	7.3 (6.6-8.0)	76	15.2 (11.8-18.6)	288	3.3 (2.9-3.7)	241	3.0 (2.6-3.4)	39	5.8 (4.0-7.6)
2006	710	4.7 (4.4-5.0)	445	7.0 (6.3-7.7)	377	6.6 (5.9-7.3)	58	11.5 (8.5-14.5)	265	3.0 (2.6-3.4)	231	2.8 (2.4-3.2)	30	4.6 (3.0-6.2)
2005	698	4.7 (4.4-5.0)	466	7.4 (6.7-8.1)	384	6.7 (6.0-7.4)	74	16.3 (12.6-20.0)	232	2.6 (2.3-2.9)	208	2.5 (2.2-2.8)	19	ND
2004	715	4.8 (4.4-5.2)	445	7.1 (6.4-7.8)	373	6.5 (5.8-7.2)	60	12.7 (9.5-15.9)	270	3.1 (2.7-3.5)	239	3.0 (2.6-3.4)	30	4.7 (3.0-6.4)
2003	729	5.0 (4.6-5.4)	465	7.5 (6.8-8.2)	390	6.9 (6.2-7.6)	65	14.3 (10.8-17.8)	264	3.0 (2.6-3.4)	222	2.7 (2.3-3.1)	35	5.5 (3.7-7.3)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
6-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Liver and Intrahepatic Bile Duct: MORTALITY

**TABLE
6-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

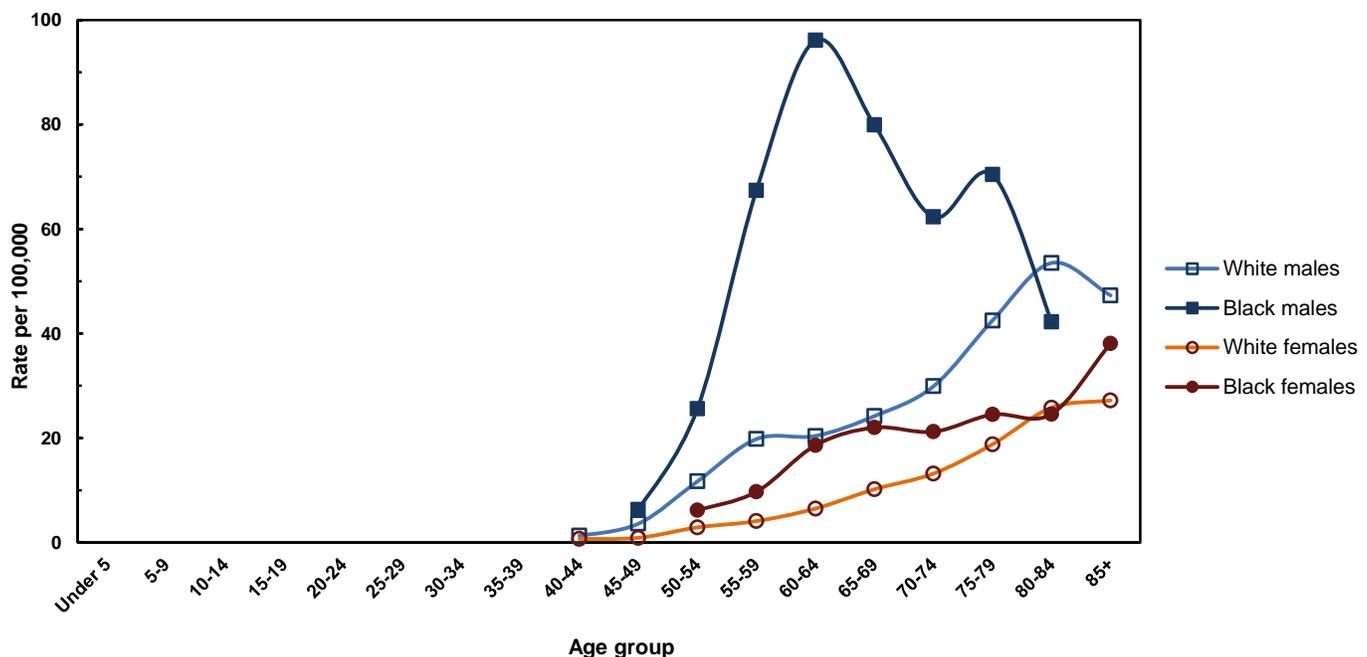
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	4,444	7.0	2,982	9.7	2,402	9.3	475	14.3	1,462	4.5	1,236	4.5	179	4.9
Under 5	2	ND	1	ND	1	ND	0	ND	1	ND	1	ND	0	ND
5-9	1	ND	0	ND	0	ND	0	ND	1	ND	0	ND	1	ND
10-14	2	ND	2	ND	2	ND	0	ND	0	ND	0	ND	0	ND
15-19	3	ND	1	ND	1	ND	0	ND	2	ND	2	ND	0	ND
20-24	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
25-29	5	ND	3	ND	2	ND	1	ND	2	ND	1	ND	1	ND
30-34	5	ND	3	ND	2	ND	1	ND	2	ND	1	ND	0	ND
35-39	20	0.5	12	0.6	7	ND	2	ND	8	ND	6	ND	1	ND
40-44	44	1.0	29	1.4	24	1.3	4	ND	15	0.7	13	0.7	1	ND
45-49	113	2.4	90	4.0	70	3.6	14	6.3	23	1.0	18	0.9	4	ND
50-54	385	8.1	306	13.2	240	11.7	53	25.6	79	3.3	60	2.9	15	6.2
55-59	608	14.0	504	23.9	372	19.8	115	67.4	104	4.7	79	4.1	20	9.7
60-64	615	16.7	470	26.5	326	20.4	124	96.1	145	7.5	110	6.5	31	18.6
65-69	536	19.2	368	28.2	287	24.2	68	79.9	168	11.2	136	10.2	26	22.0
70-74	487	22.2	318	32.4	268	29.9	39	62.3	169	13.9	144	13.2	20	21.2
75-79	549	30.4	340	44.8	297	42.5	32	70.4	209	19.9	179	18.8	19	24.5
80-84	543	36.6	306	53.3	286	53.5	13	42.2	237	26.0	216	25.8	15	24.6
85+	525	33.7	229	46.6	217	47.3	9	ND	296	27.8	269	27.2	25	38.1

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
6-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Liver and Intrahepatic Bile Duct: INCIDENCE (Invasive)

**TABLE
6-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	5,703	4,125	11.3	(11.0-11.6)	1,578	3.6	(3.4-3.8)									
Adams	39	25	8.1	(4.9-11.3)	14	ND		Juniata	7	3	ND		4	ND		
Allegheny	606	438	12.1	(11.0-13.2)	168	3.5	(3.0-4.0)	Lackawanna	95	67	10.5	(8.0-13.0)	28	3.0	(1.9-4.1)	
Armstrong	23	15	ND		8	ND		Lancaster	171	123	8.6	(7.1-10.1)	48	2.8	(2.0-3.6)	
Beaver	75	57	10.6	(7.8-13.4)	18	ND		Lawrence	39	26	9.2	(5.7-12.7)	13	ND		
Bedford	15	8	ND		7	ND		Lebanon	48	39	9.5	(6.5-12.5)	9	ND		
Berks	169	117	10.4	(8.5-12.3)	52	4.0	(2.9-5.1)	Lehigh	154	115	11.8	(9.6-14.0)	39	3.2	(2.2-4.2)	
Blair	54	43	11.3	(7.9-14.7)	11	ND		Luzerne	131	82	8.4	(6.6-10.2)	49	3.9	(2.8-5.0)	
Bradford	25	17	ND		8	ND		Lycoming	40	25	6.7	(4.1-9.3)	15	ND		
Bucks	268	192	10.3	(8.8-11.8)	76	3.6	(2.8-4.4)	McKean	14	11	ND		3	ND		
Butler	60	45	8.7	(6.2-11.2)	15	ND		Mercer	44	34	9.8	(6.5-13.1)	10	ND		
Cambria	57	45	10.3	(7.3-13.3)	12	ND		Mifflin	17	10	ND		7	ND		
Cameron	1	1	ND		0	ND		Monroe	77	64	13.8	(10.4-17.2)	13	ND		
Carbon	36	28	13.3	(8.4-18.2)	8	ND		Montgomery	336	234	10.2	(8.9-11.5)	102	3.8	(3.1-4.5)	
Centre	33	25	7.3	(4.4-10.2)	8	ND		Montour	5	5	ND		0	ND		
Chester	163	129	9.5	(7.9-11.1)	34	2.3	(1.5-3.1)	Northampton	147	106	12.2	(9.9-14.5)	41	4.1	(2.8-5.4)	
Clarion	14	9	ND		5	ND		Northumberland	27	19	ND		8	ND		
Clearfield	40	24	9.6	(5.8-13.4)	16	ND		Perry	9	8	ND		1	ND		
Clinton	13	8	ND		5	ND		Philadelphia	1,240	940	27.1	(25.4-28.8)	300	6.6	(5.9-7.3)	
Columbia	23	15	ND		8	ND		Pike	22	14	ND		8	ND		
Crawford	31	18	ND		13	ND		Potter	5	4	ND		1	ND		
Cumberland	69	48	7.3	(5.2-9.4)	21	2.5	(1.4-3.6)	Schuylkill	58	43	9.1	(6.4-11.8)	15	ND		
Dauphin	123	91	12.1	(9.6-14.6)	32	3.8	(2.5-5.1)	Snyder	16	11	ND		5	ND		
Delaware	283	200	13.4	(11.5-15.3)	83	4.3	(3.4-5.2)	Somerset	19	15	ND		4	ND		
Elk	16	12	ND		4	ND		Sullivan	2	2	ND		0	ND		
Erie	83	55	7.0	(5.1-8.9)	28	3.2	(2.0-4.4)	Susquehanna	8	6	ND		2	ND		
Fayette	69	39	8.4	(5.8-11.0)	30	5.3	(3.4-7.2)	Tioga	11	5	ND		6	ND		
Forest	1	0	ND		1	ND		Union	14	13	ND		1	ND		
Franklin	36	29	6.8	(4.3-9.3)	7	ND		Venango	24	18	ND		6	ND		
Fulton	6	3	ND		3	ND		Warren	11	9	ND		2	ND		
Greene	18	16	ND		2	ND		Washington	92	61	9.5	(7.1-11.9)	31	3.9	(2.5-5.3)	
Huntingdon	15	12	ND		3	ND		Wayne	37	32	16.1	(10.5-21.7)	5	ND		
Indiana	20	15	ND		5	ND		Westmoreland	128	82	6.8	(5.3-8.3)	46	3.1	(2.2-4.0)	
Jefferson	17	14	ND		3	ND		Wyoming	18	12	ND		6	ND		
								York	136	94	7.7	(6.1-9.3)	42	3.2	(2.2-4.2)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Liver and Intrahepatic Bile Duct: MORTALITY

**TABLE
6-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	4,444	2,982	8.4	(8.1-8.7)	1,462	3.2	(3.0-3.4)									
Adams	24	12	ND		12	ND		Juniata	7	3	ND		4	ND		
Allegheny	493	322	8.9	(7.9-9.9)	171	3.3	(2.8-3.8)	Lackawanna	78	41	6.9	(4.8-9.0)	37	4.2	(2.8-5.6)	
Armstrong	19	11	ND		8	ND		Lancaster	161	93	6.7	(5.3-8.1)	68	3.8	(2.9-4.7)	
Beaver	69	50	9.3	(6.7-11.9)	19	ND		Lawrence	44	28	9.6	(6.0-13.2)	16	ND		
Bedford	15	6	ND		9	ND		Lebanon	46	31	7.9	(5.1-10.7)	15	ND		
Berks	145	100	9.0	(7.2-10.8)	45	3.2	(2.3-4.1)	Lehigh	103	71	7.4	(5.7-9.1)	32	2.6	(1.7-3.5)	
Blair	54	36	9.5	(6.4-12.6)	18	ND		Luzerne	98	64	6.7	(5.1-8.3)	34	2.5	(1.7-3.3)	
Bradford	24	16	ND		8	ND		Lycoming	32	21	5.8	(3.3-8.3)	11	ND		
Bucks	208	141	7.9	(6.6-9.2)	67	3.2	(2.4-4.0)	McKean	9	8	ND		1	ND		
Butler	59	43	8.5	(6.0-11.0)	16	ND		Mercer	44	29	8.0	(5.1-10.9)	15	ND		
Cambria	43	29	6.6	(4.2-9.0)	14	ND		Mifflin	14	6	ND		8	ND		
Cameron	1	1	ND		0	ND		Monroe	49	41	9.2	(6.4-12.0)	8	ND		
Carbon	31	24	12.3	(7.4-17.2)	7	ND		Montgomery	241	167	7.5	(6.4-8.6)	74	2.6	(2.0-3.2)	
Centre	22	14	ND		8	ND		Montour	6	5	ND		1	ND		
Chester	133	99	7.8	(6.3-9.3)	34	2.4	(1.6-3.2)	Northampton	111	75	9.0	(7.0-11.0)	36	3.3	(2.2-4.4)	
Clarion	18	12	ND		6	ND		Northumberland	29	21	6.7	(3.8-9.6)	8	ND		
Clearfield	27	18	ND		9	ND		Perry	14	10	ND		4	ND		
Clinton	9	5	ND		4	ND		Philadelphia	812	566	16.8	(15.4-18.2)	246	5.3	(4.6-6.0)	
Columbia	22	15	ND		7	ND		Pike	19	11	ND		8	ND		
Crawford	34	15	ND		19	ND		Potter	6	4	ND		2	ND		
Cumberland	53	34	5.3	(3.5-7.1)	19	ND		Schuylkill	56	36	7.8	(5.3-10.3)	20	3.1	(1.7-4.5)	
Dauphin	86	65	8.8	(6.7-10.9)	21	2.6	(1.5-3.7)	Snyder	10	7	ND		3	ND		
Delaware	194	132	9.3	(7.7-10.9)	62	3.3	(2.5-4.1)	Somerset	23	19	ND		4	ND		
Elk	9	7	ND		2	ND		Sullivan	1	1	ND		0	ND		
Erie	82	51	6.7	(4.9-8.5)	31	3.2	(2.1-4.3)	Susquehanna	11	8	ND		3	ND		
Fayette	62	31	7.0	(4.5-9.5)	31	5.1	(3.3-6.9)	Tioga	8	3	ND		5	ND		
Forest	1	1	ND		0	ND		Union	9	8	ND		1	ND		
Franklin	43	32	7.9	(5.2-10.6)	11	ND		Venango	22	14	ND		8	ND		
Fulton	5	4	ND		1	ND		Warren	11	7	ND		4	ND		
Greene	14	12	ND		2	ND		Washington	75	47	7.3	(5.2-9.4)	28	3.3	(2.1-4.5)	
Huntingdon	12	8	ND		4	ND		Wayne	25	21	10.3	(5.9-14.7)	4	ND		
Indiana	17	10	ND		7	ND		Westmoreland	118	78	6.5	(5.1-7.9)	40	2.5	(1.7-3.3)	
Jefferson	12	9	ND		3	ND		Wyoming	10	6	ND		4	ND		
								York	102	67	5.4	(4.1-6.7)	35	2.5	(1.7-3.3)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

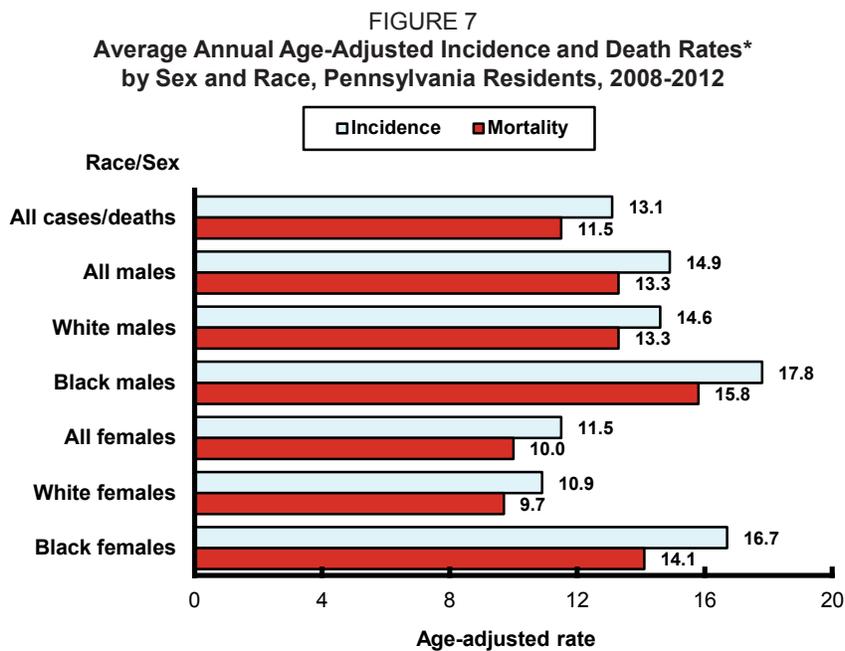
Cancer of the Pancreas

Data Highlights

The highest 2008-2012 average annual age-adjusted incidence rate among the four sex/race groups for invasive pancreatic cancer occurred in black males, with a rate of 17.8 per 100,000. Black females had the second highest rate (16.7). The rate of 14.6 for white males was about 18 percent lower than the rate for black males. The rate for white females (10.9) was about 35 percent lower than the rate for black females. A total of 2,164 cases of invasive pancreatic cancer were diagnosed among residents of Pennsylvania in 2012, a slight decrease from the 2,195 cases in 2011, which was the highest annual number of cases recorded since statewide reporting began in 1985. Annual age-adjusted incidence rates by sex and race between 2003 and 2012 showed no discernible trends among any sex/race group.

There is limited information about the etiology of this disease, although cigarette smoking is associated with increased risk. Epidemiological studies have consistently shown an excess risk for smokers relative to nonsmokers. This risk increases with the amount of tobacco use. According to the American Cancer Society, smoking is responsible for approximately 20 percent of exocrine pancreatic cancer cases. According to national estimates, the five-year relative survival rates of pancreatic cancer are only 7 percent for all stages combined because most cases are diagnosed at advanced stages. In 2012, only 9.8 percent of pancreatic cancers were diagnosed in the early (in situ and localized) stages of the disease among Pennsylvania residents, while 8.1 percent of such cancers were unstaged and 82.1 percent were diagnosed in the late stage (regional and distant).

While pancreatic cancer represented 2.8 percent of all new invasive cancers in 2012, it accounted for about 6.7 percent of the cancer deaths that year. In fact, the 2008-2012 average annual age-adjusted death rate (11.5 per 100,000) for this cancer was almost as high as the average annual incidence rate (13.1). The 2012 annual number of deaths was similar to the 2012 annual number of cases for each sex/race group. For both white males and white females, over the 10-year period of 2003 to 2012, the age-adjusted death rates were highest in 2006. The death rates for both white males and females have not shown any obvious trends in recent years. The death rates among black males and black females showed inconclusive trends, as reflected in the annual deviations (Figure 7-D).



Risk Factors

Cigarette smoking, obesity, type 2 diabetes, chronic pancreatitis, cirrhosis of the liver, stomach infections (*Helicobacter pylori*), and excess exposure to pesticides, dyes, and metal refining chemicals are suggestive of pancreas cancer risk.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Cancer of the Pancreas: INCIDENCE (Invasive)

**TABLE
7-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

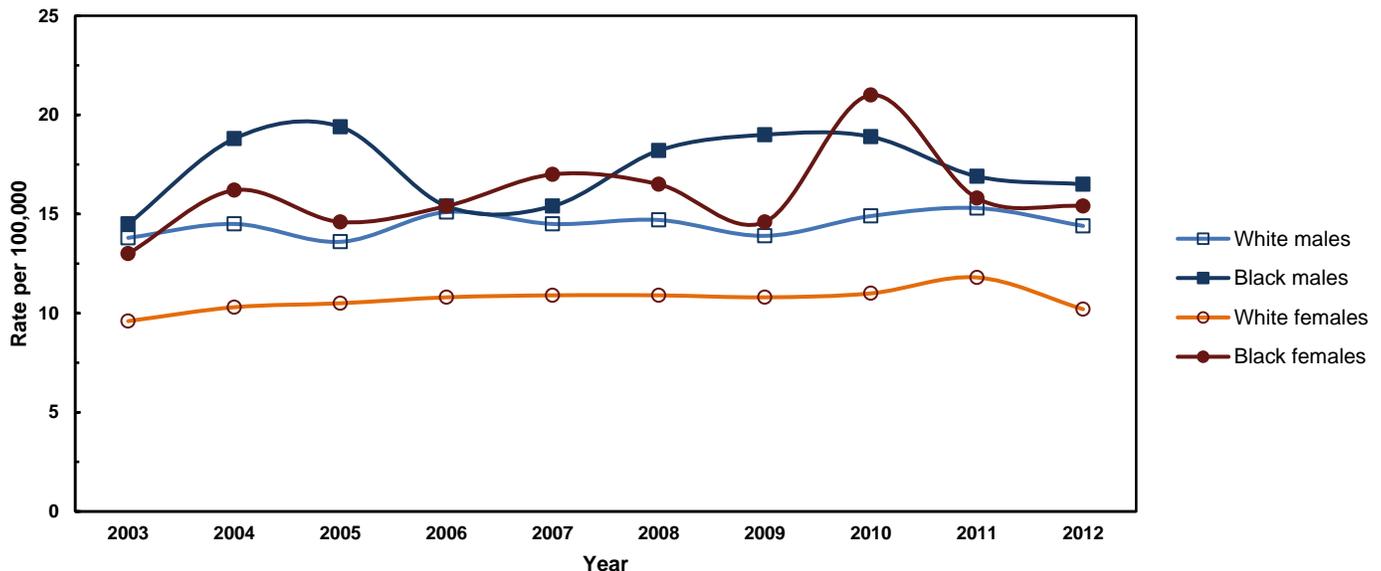
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	2,164	13.1 (12.5-13.7)	1,102	15.3 (14.4-16.2)	944	14.4 (13.5-15.3)	89	16.5 (13.1-19.9)	1,062	11.2 (10.5-11.9)	862	10.2 (9.5-10.9)	114	15.4 (12.6-18.2)
2011	2,195	13.5 (12.9-14.1)	1,075	15.2 (14.3-16.1)	977	15.3 (14.3-16.3)	88	16.9 (13.4-20.4)	1,120	12.1 (11.4-12.8)	988	11.8 (11.1-12.5)	118	15.8 (12.9-18.7)
2010	2,125	13.2 (12.6-13.8)	1,042	14.9 (14.0-15.8)	934	14.9 (13.9-15.9)	94	18.9 (15.1-22.7)	1,083	11.8 (11.1-12.5)	923	11.0 (10.3-11.7)	145	21.0 (17.6-24.4)
2009	1,948	12.5 (11.9-13.1)	949	14.3 (13.4-15.2)	846	13.9 (13.0-14.8)	86	19.0 (15.0-23.0)	999	11.1 (10.4-11.8)	885	10.8 (10.1-11.5)	100	14.6 (11.7-17.5)
2008	1,973	12.9 (12.3-13.5)	968	14.9 (14.0-15.8)	871	14.7 (13.7-15.7)	82	18.2 (14.3-22.1)	1,005	11.3 (10.6-12.0)	877	10.9 (10.2-11.6)	110	16.5 (13.4-19.6)
2007	1,916	12.8 (12.2-13.4)	918	14.5 (13.6-15.4)	838	14.5 (13.5-15.5)	68	15.4 (11.7-19.1)	998	11.3 (10.6-12.0)	879	10.9 (10.2-11.6)	111	17.0 (13.8-20.2)
2006	1,909	12.8 (12.2-13.4)	939	15.1 (14.1-16.1)	858	15.1 (14.1-16.1)	65	15.4 (11.7-19.1)	969	11.2 (10.5-11.9)	852	10.8 (10.1-11.5)	100	15.4 (12.4-18.4)
2005	1,830	12.2 (11.6-12.8)	881	14.0 (13.1-14.9)	784	13.6 (12.6-14.6)	88	19.4 (15.3-23.5)	949	10.7 (10.0-11.4)	847	10.5 (9.8-11.2)	94	14.6 (11.6-17.6)
2004	1,877	12.6 (12.0-13.2)	922	14.7 (13.8-15.6)	832	14.5 (13.5-15.5)	79	18.8 (14.7-22.9)	955	10.9 (10.2-11.6)	833	10.3 (9.6-11.0)	104	16.2 (13.1-19.3)
2003	1,740	11.8 (11.2-12.4)	867	13.9 (13.0-14.8)	785	13.8 (12.8-14.8)	63	14.5 (10.9-18.1)	873	9.9 (9.2-10.6)	777	9.6 (8.9-10.3)	82	13.0 (10.2-15.8)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
7-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Pancreas: INCIDENCE (Invasive)

**TABLE
7-B**

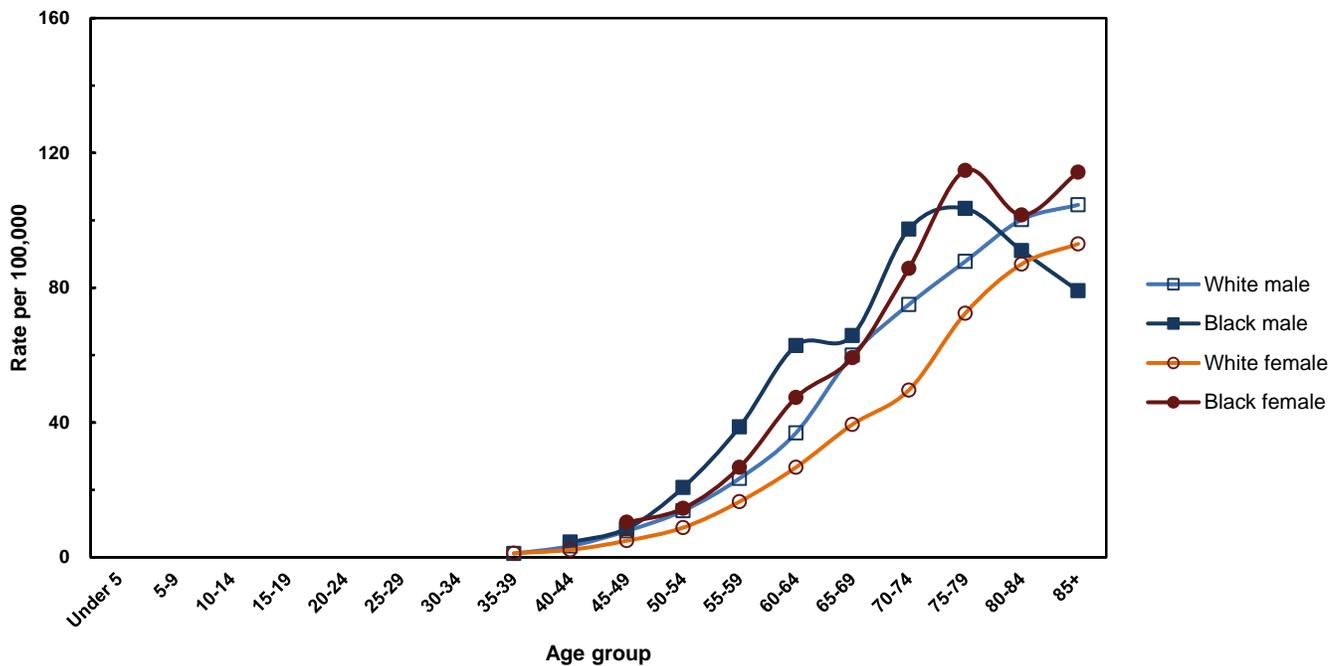
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	16.4	16.7	17.6	13.2	16.2	16.7	16.1
Under 5	ND						
5-9	ND						
10-14	ND						
15-19	ND						
20-24	ND						
25-29	0.3	ND	ND	ND	ND	ND	ND
30-34	0.4	0.5	ND	ND	ND	ND	ND
35-39	1.4	1.3	1.1	ND	1.4	1.2	ND
40-44	2.7	3.4	3.3	4.5	2.1	2.2	ND
45-49	6.5	7.7	7.8	8.5	5.4	4.9	10.4
50-54	11.9	14.5	13.8	20.7	9.4	8.8	14.5
55-59	20.8	24.5	23.4	38.7	17.2	16.5	26.7
60-64	33.2	38.7	36.9	62.8	28.2	26.7	47.4
65-69	50.1	60.7	60.0	65.8	40.9	39.4	59.2
70-74	62.9	76.1	75.0	97.4	52.3	49.6	85.7
75-79	81.7	89.5	87.8	103.5	76.0	72.4	114.8
80-84	93.4	99.7	100.2	91.0	89.5	87.0	101.6
85+	100.6	105.5	104.6	79.1	98.3	93.0	114.3

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
7-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Pancreas: INCIDENCE (Invasive)

**TABLE
7-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

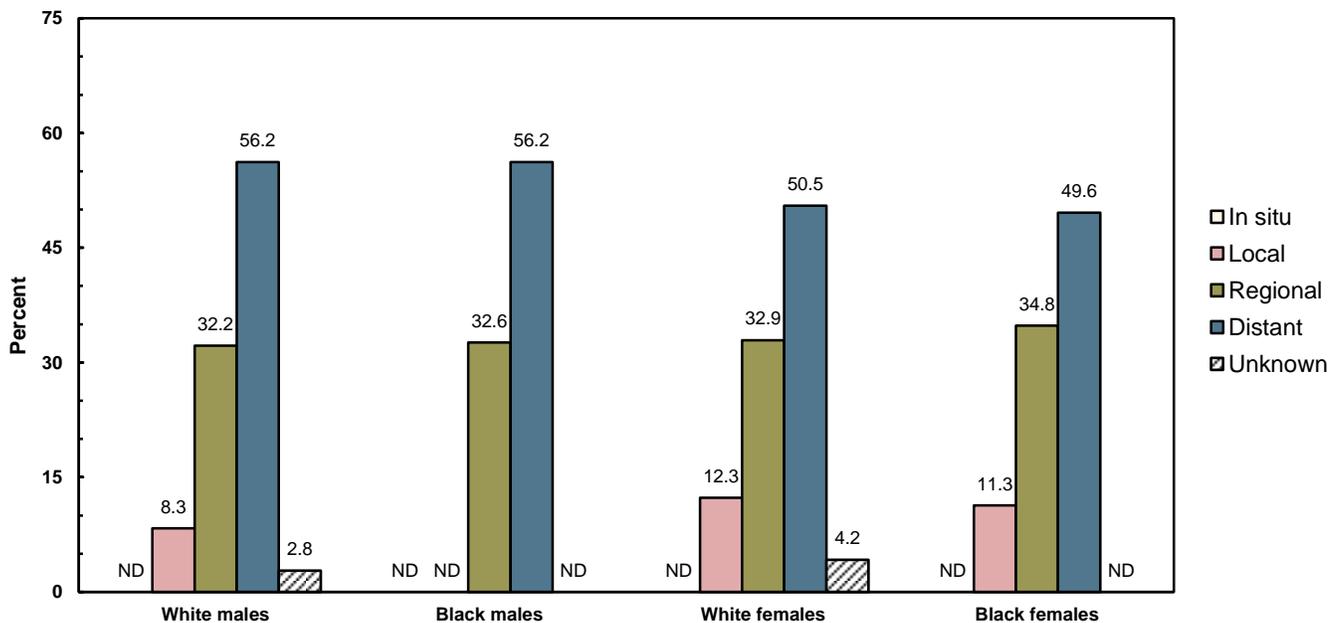
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	10,405	5,136	4,572	439	5,269	4,535	587
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	1	1	0	1	0	0	0
20-24	6	2	2	0	4	3	1
25-29	13	5	5	0	8	2	4
30-34	15	10	9	0	5	5	0
35-39	52	25	18	6	27	19	5
40-44	117	71	60	10	46	40	5
45-49	300	174	153	19	126	97	26
50-54	563	337	283	43	226	185	35
55-59	899	517	439	66	382	321	55
60-64	1,227	686	589	81	541	454	79
65-69	1,402	791	711	56	611	528	70
70-74	1,382	747	673	61	635	543	81
75-79	1,475	679	614	47	796	690	89
80-84	1,387	572	536	28	815	729	62
85+	1,566	519	480	21	1,047	919	75

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
7-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 1,831 - 84.6%

Cancer of the Pancreas: MORTALITY

**TABLE
7-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

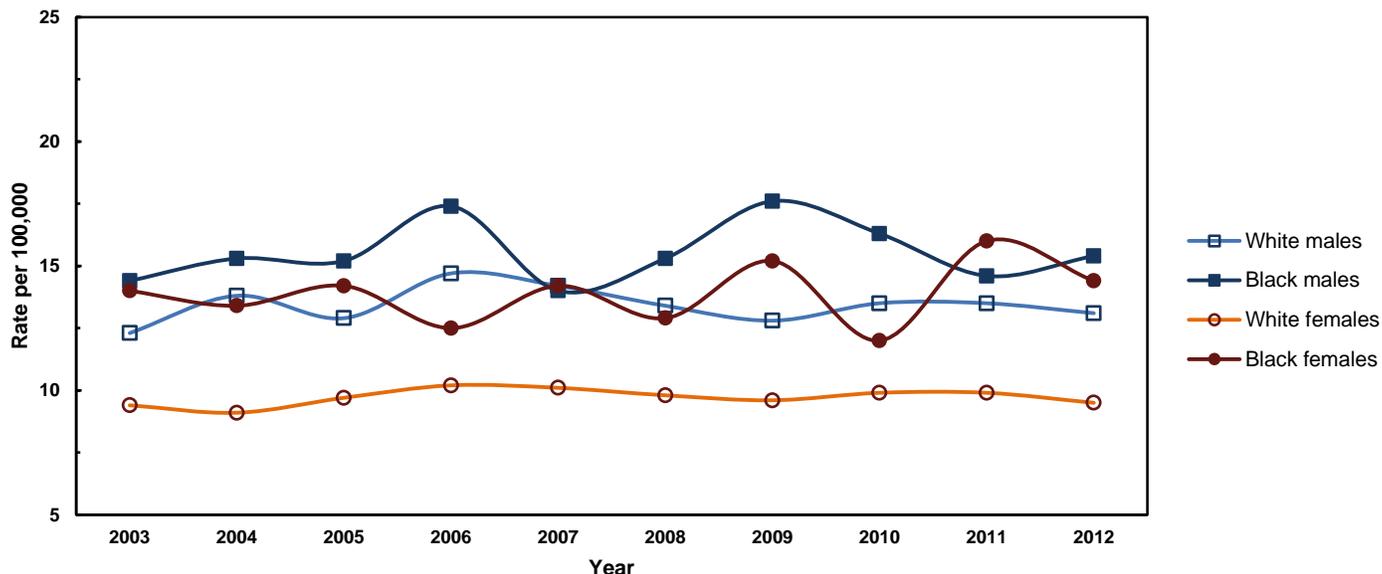
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,917	11.5 (11.0-12.0)	949	13.3 (12.5-14.1)	850	13.1 (12.2-14.0)	80	15.4 (12.0-18.8)	968	10.0 (9.4-10.6)	841	9.5 (8.9-10.1)	107	14.4 (11.7-17.1)
2011	1,925	11.7 (11.2-12.2)	942	13.5 (12.6-14.4)	861	13.5 (12.6-14.4)	72	14.6 (11.2-18.0)	983	10.3 (9.7-10.9)	853	9.9 (9.2-10.6)	116	16.0 (13.1-18.9)
2010	1,882	11.6 (11.1-12.1)	927	13.5 (12.6-14.4)	839	13.5 (12.6-14.4)	79	16.3 (12.7-19.9)	955	10.0 (9.4-10.6)	859	9.9 (9.2-10.6)	83	12.0 (9.4-14.6)
2009	1,773	11.3 (10.8-11.8)	860	13.0 (12.1-13.9)	773	12.8 (11.9-13.7)	78	17.6 (13.7-21.5)	913	10.0 (9.4-10.6)	801	9.6 (8.9-10.3)	102	15.2 (12.3-18.1)
2008	1,768	11.5 (11.0-12.0)	862	13.4 (12.5-14.3)	788	13.4 (12.5-14.3)	67	15.3 (11.6-19.0)	906	9.9 (9.3-10.5)	816	9.8 (9.1-10.5)	87	12.9 (10.2-15.6)
2007	1,798	11.9 (11.3-12.5)	878	14.1 (13.2-15.0)	810	14.2 (13.2-15.2)	63	14.0 (10.5-17.5)	920	10.2 (9.5-10.9)	825	10.1 (9.4-10.8)	92	14.2 (11.3-17.1)
2006	1,822	12.2 (11.6-12.8)	910	14.7 (13.7-15.7)	826	14.7 (13.7-15.7)	76	17.4 (13.5-21.3)	912	10.3 (9.6-11.0)	826	10.2 (9.5-10.9)	81	12.5 (9.8-15.2)
2005	1,714	11.3 (10.8-11.8)	806	12.9 (12.0-13.8)	739	12.9 (12.0-13.8)	62	15.2 (11.4-19.0)	908	10.0 (9.3-10.7)	816	9.7 (9.0-10.4)	91	14.2 (11.3-17.1)
2004	1,709	11.3 (10.8-11.8)	857	13.8 (12.9-14.7)	789	13.8 (12.8-14.8)	64	15.3 (11.6-19.0)	852	9.3 (8.7-9.9)	761	9.1 (8.5-9.7)	86	13.4 (10.6-16.2)
2003	1,610	10.8 (10.3-11.3)	757	12.3 (11.4-13.2)	692	12.3 (11.4-13.2)	61	14.4 (10.8-18.0)	853	9.6 (9.0-10.2)	762	9.4 (8.7-10.1)	88	14.0 (11.1-16.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
7-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Pancreas: MORTALITY

**TABLE
7-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

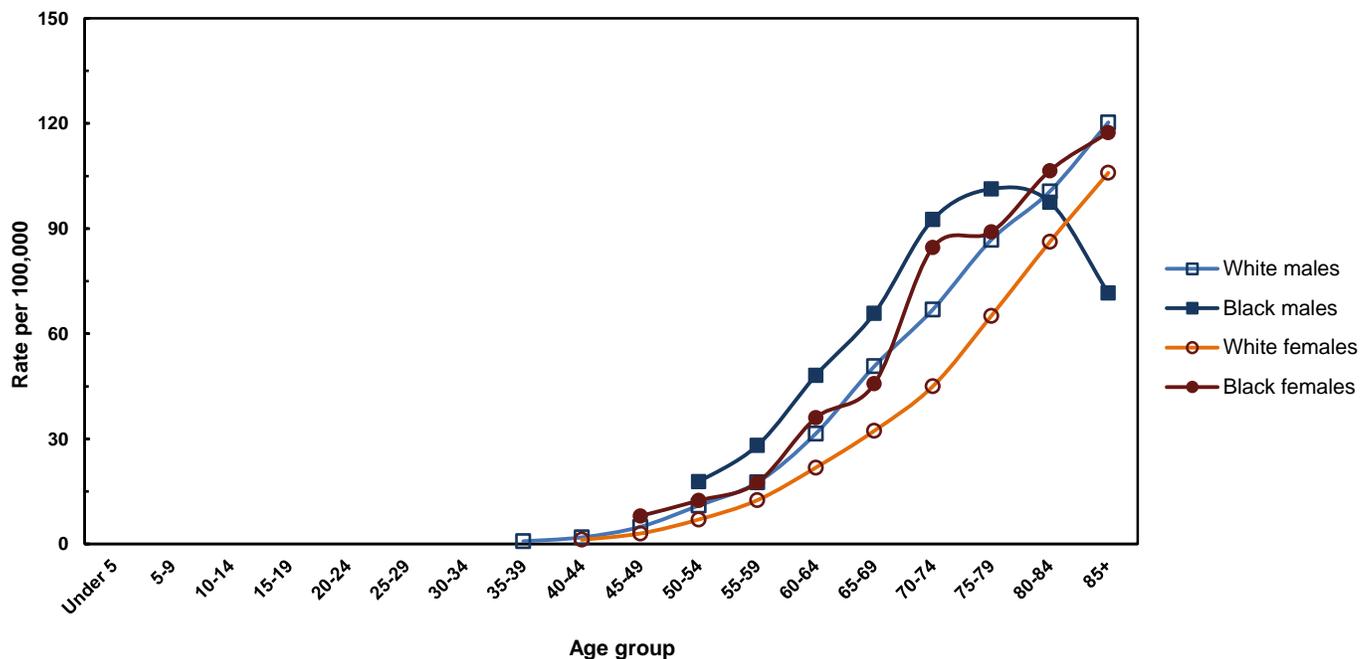
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	9,265	14.6	4,540	14.7	4,111	15.8	376	11.3	4,725	14.6	4,170	15.3	495	13.6
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	1	ND	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
25-29	2	ND	0	ND	0	ND	0	ND	2	ND	1	ND	1	ND
30-34	14	0.4	8	ND	8	ND	0	ND	6	ND	5	ND	0	ND
35-39	27	0.7	17	0.9	13	0.8	3	ND	10	0.5	8	ND	1	ND
40-44	70	1.6	42	2.0	35	1.9	7	ND	28	1.3	22	1.2	2	ND
45-49	186	4.0	106	4.7	96	4.9	9	ND	80	3.4	59	3.0	20	8.0
50-54	447	9.4	266	11.4	225	11.0	37	17.8	181	7.5	147	7.0	30	12.4
55-59	668	15.4	387	18.3	331	17.6	48	28.1	281	12.7	244	12.5	36	17.5
60-64	1,014	27.5	575	32.4	503	31.5	62	48.1	439	22.9	371	21.8	60	36.0
65-69	1,158	41.4	667	51.2	601	50.7	56	65.8	491	32.9	432	32.3	54	45.7
70-74	1,248	56.8	670	68.3	600	66.9	58	92.6	578	47.6	493	45.0	80	84.6
75-79	1,353	74.9	655	86.3	607	86.8	46	101.3	698	66.6	620	65.1	69	89.0
80-84	1,369	92.2	570	99.4	538	100.6	30	97.5	799	87.7	722	86.2	65	106.5
85+	1,706	109.6	574	116.7	552	120.3	19	71.6	1,132	106.3	1,046	105.9	77	117.4

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
7-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Pancreas: INCIDENCE (Invasive)

**TABLE
7-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	10,405	5,136	14.9	(14.5-15.3)	5,269	11.5	(11.2-11.8)									
Adams	85	37	12.6	(8.5-16.7)	48	14.6	(10.5-18.7)	Juniata	19	8	ND		11	ND		
Allegheny	1,129	537	15.6	(14.3-16.9)	592	12.0	(11.0-13.0)	Lackawanna	188	92	15.1	(12.0-18.2)	96	10.5	(8.4-12.6)	
Armstrong	42	18	ND		24	8.7	(5.2-12.2)	Lancaster	361	184	13.4	(11.5-15.3)	177	10.0	(8.5-11.5)	
Beaver	177	98	18.3	(14.7-21.9)	79	10.9	(8.5-13.3)	Lawrence	87	40	14.1	(9.7-18.5)	47	11.3	(8.1-14.5)	
Bedford	38	19	ND		19	ND		Lebanon	100	42	10.8	(7.5-14.1)	58	10.8	(8.0-13.6)	
Berks	289	141	13.0	(10.9-15.1)	148	10.8	(9.1-12.5)	Lehigh	268	120	13.3	(10.9-15.7)	148	12.0	(10.1-13.9)	
Blair	109	60	16.4	(12.3-20.5)	49	8.9	(6.4-11.4)	Luzerne	311	169	18.1	(15.4-20.8)	142	11.1	(9.3-12.9)	
Bradford	62	30	15.3	(9.8-20.8)	32	12.9	(8.4-17.4)	Lycoming	93	41	11.8	(8.2-15.4)	52	11.7	(8.5-14.9)	
Bucks	530	252	14.8	(13.0-16.6)	278	12.9	(11.4-14.4)	McKean	40	18	ND		22	13.9	(8.1-19.7)	
Butler	116	58	11.3	(8.4-14.2)	58	8.9	(6.6-11.2)	Mercer	97	48	13.0	(9.3-16.7)	49	10.7	(7.7-13.7)	
Cambria	144	87	18.4	(14.5-22.3)	57	8.9	(6.6-11.2)	Mifflin	40	21	13.8	(7.9-19.7)	19	ND		
Cameron	1	0	ND		1	ND		Monroe	119	73	17.2	(13.3-21.1)	46	9.4	(6.7-12.1)	
Carbon	58	23	11.8	(7.0-16.6)	35	14.6	(9.8-19.4)	Montgomery	710	335	15.7	(14.0-17.4)	375	13.2	(11.9-14.5)	
Centre	77	43	13.7	(9.6-17.8)	34	8.6	(5.7-11.5)	Montour	18	7	ND		11	ND		
Chester	358	183	14.7	(12.6-16.8)	175	11.4	(9.7-13.1)	Northampton	257	125	15.4	(12.7-18.1)	132	12.3	(10.2-14.4)	
Clarion	43	20	18.1	(10.2-26.0)	23	14.6	(8.6-20.6)	Northumberland	88	50	17.1	(12.4-21.8)	38	9.3	(6.3-12.3)	
Clearfield	77	39	15.5	(10.6-20.4)	38	11.9	(8.1-15.7)	Perry	36	15	ND		21	14.1	(8.1-20.1)	
Clinton	38	21	19.0	(10.9-27.1)	17	ND		Philadelphia	1,180	554	17.5	(16.0-19.0)	626	13.5	(12.4-14.6)	
Columbia	56	29	16.2	(10.3-22.1)	27	11.1	(6.9-15.3)	Pike	43	21	10.9	(6.2-15.6)	22	10.9	(6.3-15.5)	
Crawford	79	43	15.7	(11.0-20.4)	36	10.9	(7.3-14.5)	Potter	14	10	ND		4	ND		
Cumberland	194	101	15.5	(12.5-18.5)	93	10.8	(8.6-13.0)	Schuylkill	148	74	15.9	(12.3-19.5)	74	11.5	(8.9-14.1)	
Dauphin	200	106	16.1	(13.0-19.2)	94	10.4	(8.3-12.5)	Snyder	25	10	ND		15	ND		
Delaware	429	214	15.3	(13.3-17.3)	215	11.0	(9.5-12.5)	Somerset	74	34	13.8	(9.2-18.4)	40	12.3	(8.5-16.1)	
Elk	35	18	ND		17	ND		Sullivan	9	5	ND		4	ND		
Erie	220	115	15.7	(12.8-18.6)	105	11.0	(8.9-13.1)	Susquehanna	43	21	15.4	(8.8-22.0)	22	14.0	(8.1-19.9)	
Fayette	111	57	13.2	(9.8-16.6)	54	9.6	(7.0-12.2)	Tioga	40	18	ND		22	13.5	(7.9-19.1)	
Forest	8	5	ND		3	ND		Union	28	15	ND		13	ND		
Franklin	124	65	15.1	(11.4-18.8)	59	10.6	(7.9-13.3)	Venango	42	22	11.9	(6.9-16.9)	20	9.4	(5.3-13.5)	
Fulton	22	7	ND		15	ND		Warren	26	7	ND		19	ND		
Greene	27	15	ND		12	ND		Washington	164	83	13.1	(10.3-15.9)	81	9.7	(7.6-11.8)	
Huntingdon	38	19	ND		19	ND		Wayne	46	17	ND		29	13.7	(8.7-18.7)	
Indiana	47	26	10.2	(6.3-14.1)	21	6.5	(3.7-9.3)	Westmoreland	325	164	14.0	(11.9-16.1)	161	10.4	(8.8-12.0)	
Jefferson	46	22	15.3	(8.9-21.7)	24	12.6	(7.6-17.6)	Wyoming	25	11	ND		14	ND		
								York	332	174	15.2	(12.9-17.5)	158	11.1	(9.4-12.8)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Pancreas: MORTALITY

**TABLE
7-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females				
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)		
All counties	9,265	4,540	13.3	(12.9-13.7)	4,725	10.0	(9.7-10.3)										
Adams	75	36	12.3	(8.3-16.3)	39	11.1	(7.6-14.6)	Juniata	19	8	ND		11	ND			
Allegheny	986	478	13.9	(12.7-15.1)	508	9.8	(8.9-10.7)	Lackawanna	174	79	12.8	(10.0-15.6)	95	9.8	(7.8-11.8)		
Armstrong	48	23	10.6	(6.3-14.9)	25	8.3	(5.0-11.6)	Lancaster	328	162	11.9	(10.1-13.7)	166	9.0	(7.6-10.4)		
Beaver	158	88	16.3	(12.9-19.7)	70	9.4	(7.2-11.6)	Lawrence	81	34	12.0	(8.0-16.0)	47	12.0	(8.6-15.4)		
Bedford	29	15	ND		14	ND		Lebanon	105	47	12.3	(8.8-15.8)	58	10.4	(7.7-13.1)		
Berks	247	117	11.0	(9.0-13.0)	130	9.3	(7.7-10.9)	Lehigh	250	116	12.9	(10.6-15.2)	134	10.7	(8.9-12.5)		
Blair	108	62	16.6	(12.5-20.7)	46	8.3	(5.9-10.7)	Luzerne	268	138	14.9	(12.4-17.4)	130	9.8	(8.1-11.5)		
Bradford	55	27	14.0	(8.7-19.3)	28	11.2	(7.1-15.3)	Lycoming	94	41	11.9	(8.3-15.5)	53	11.4	(8.3-14.5)		
Bucks	450	221	13.1	(11.4-14.8)	229	10.5	(9.1-11.9)	McKean	32	12	ND		20	11.8	(6.6-17.0)		
Butler	110	51	9.9	(7.2-12.6)	59	9.1	(6.8-11.4)	Mercer	89	43	11.8	(8.3-15.3)	46	9.1	(6.5-11.7)		
Cambria	114	65	13.9	(10.5-17.3)	49	7.4	(5.3-9.5)	Mifflin	32	17	ND		15	ND			
Cameron	2	0	ND		2	ND		Monroe	99	56	13.6	(10.0-17.2)	43	8.5	(6.0-11.0)		
Carbon	52	18	ND		34	13.9	(9.2-18.6)	Montgomery	626	277	13.1	(11.6-14.6)	349	12.0	(10.7-13.3)		
Centre	69	39	12.7	(8.7-16.7)	30	7.6	(4.9-10.3)	Montour	14	6	ND		8	ND			
Chester	331	152	12.7	(10.7-14.7)	179	11.7	(10.0-13.4)	Northampton	239	111	13.7	(11.2-16.2)	128	11.1	(9.2-13.0)		
Clarion	40	19	ND		21	13.6	(7.8-19.4)	Northumberland	88	44	15.0	(10.6-19.4)	44	10.2	(7.2-13.2)		
Clearfield	61	35	14.1	(9.4-18.8)	26	8.0	(4.9-11.1)	Perry	31	14	ND		17	ND			
Clinton	39	24	21.1	(12.7-29.5)	15	ND		Philadelphia	999	485	15.6	(14.2-17.0)	514	10.9	(10.0-11.8)		
Columbia	45	25	13.9	(8.5-19.3)	20	8.4	(4.7-12.1)	Pike	26	13	ND		13	ND			
Crawford	73	39	15.2	(10.4-20.0)	34	10.0	(6.6-13.4)	Potter	10	7	ND		3	ND			
Cumberland	170	89	14.1	(11.2-17.0)	81	9.0	(7.0-11.0)	Schuylkill	131	68	14.8	(11.3-18.3)	63	9.6	(7.2-12.0)		
Dauphin	172	92	14.5	(11.5-17.5)	80	9.1	(7.1-11.1)	Snyder	27	11	ND		16	ND			
Delaware	383	182	13.4	(11.5-15.3)	201	10.0	(8.6-11.4)	Somerset	66	33	13.3	(8.8-17.8)	33	8.9	(5.9-11.9)		
Elk	33	19	ND		14	ND		Sullivan	5	3	ND		2	ND			
Erie	201	108	14.9	(12.1-17.7)	93	9.7	(7.7-11.7)	Susquehanna	42	23	16.8	(9.9-23.7)	19	ND			
Fayette	106	55	12.8	(9.4-16.2)	51	8.7	(6.3-11.1)	Tioga	34	19	ND		15	ND			
Forest	8	4	ND		4	ND		Union	22	11	ND		11	ND			
Franklin	119	65	15.0	(11.4-18.6)	54	9.8	(7.2-12.4)	Venango	37	17	ND		20	9.0	(5.1-12.9)		
Fulton	15	3	ND		12	ND		Warren	27	8	ND		19	ND			
Greene	20	12	ND		8	ND		Washington	159	81	12.8	(10.0-15.6)	78	8.9	(6.9-10.9)		
Huntingdon	35	16	ND		19	ND		Wayne	44	21	11.2	(6.4-16.0)	23	10.9	(6.4-15.4)		
Indiana	49	24	9.4	(5.6-13.2)	25	7.5	(4.6-10.4)	Westmoreland	304	146	12.3	(10.3-14.3)	158	9.9	(8.4-11.4)		
Jefferson	33	15	ND		18	ND		Wyoming	21	8	ND		13	ND			
								York	306	163	14.3	(12.1-16.5)	143	10.0	(8.4-11.6)		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

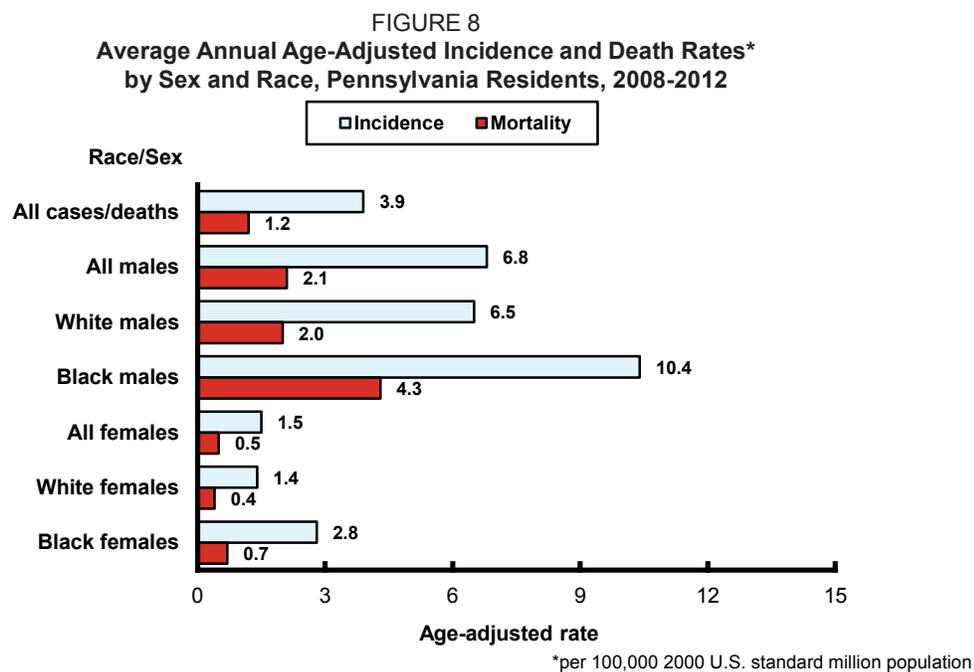
Cancer of the Larynx

Data Highlights

Laryngeal cancer is predominately a male disease. The average annual (2008-2012) age-adjusted incidence rate for invasive cancer of the larynx was nearly five times higher among males than for females (6.8 per 100,000 compared to 1.5, respectively). The average annual age-adjusted incidence rate for black males (10.4) was 60 percent higher than the rate for white males (6.5).

The main risk factors for laryngeal cancer are the use of tobacco and alcohol. According to the American Cancer Society, alcohol consumption combined with tobacco use increases the risk of larynx cancer far more than either drinking or smoking alone. In 2012, there were 600 cases of invasive laryngeal cancer diagnosed among residents of Pennsylvania for a rate of 3.7. Annual age-adjusted incidence rates for 2003 through 2012 displayed an overall decrease for black males, but no discernible trends were observed for white males and white females. Annual incidence rates for black females were insufficient for trend analysis due to the small number of cancers. Incidence rates rose steadily with age, with about 93 percent of the cases diagnosed among those 50 years of age and older during the five-year period of 2008-2012.

Fifty-four percent of laryngeal cancer cases were diagnosed at the in situ or localized stage in 2012. The five-year relative survival rate at these early stages is good. This is reflected in the age-adjusted death rates, which were much lower than incidence rates. For males and females, respectively, the average annual age-adjusted death rates for 2008-2012 were 2.1 and 0.5 per 100,000. The average annual age-adjusted death rates were disproportionately higher among black males (4.3) compared to white males (2.0). There were 180 resident deaths reported for this disease in 2012 – a decrease from the previous year (2011) when there were 188 deaths. For white males, black males, and white females, there were no apparent trends in the annual age-adjusted death rates between 2003 and 2012. The annual death rate trends for black females was statistically unreliable due to the small number of events.



Risk Factors

Tobacco smoking, excessive use of alcohol, poor nutrition, human papillomavirus, wood dust, paint fumes, gastroesophageal reflux disease (GERD), heavy exposure to asbestos or to certain chemicals used in the metalworking, petroleum, plastics, and textiles industries are suggestive.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Cancer of the Larynx: INCIDENCE (Invasive)

**TABLE
8-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

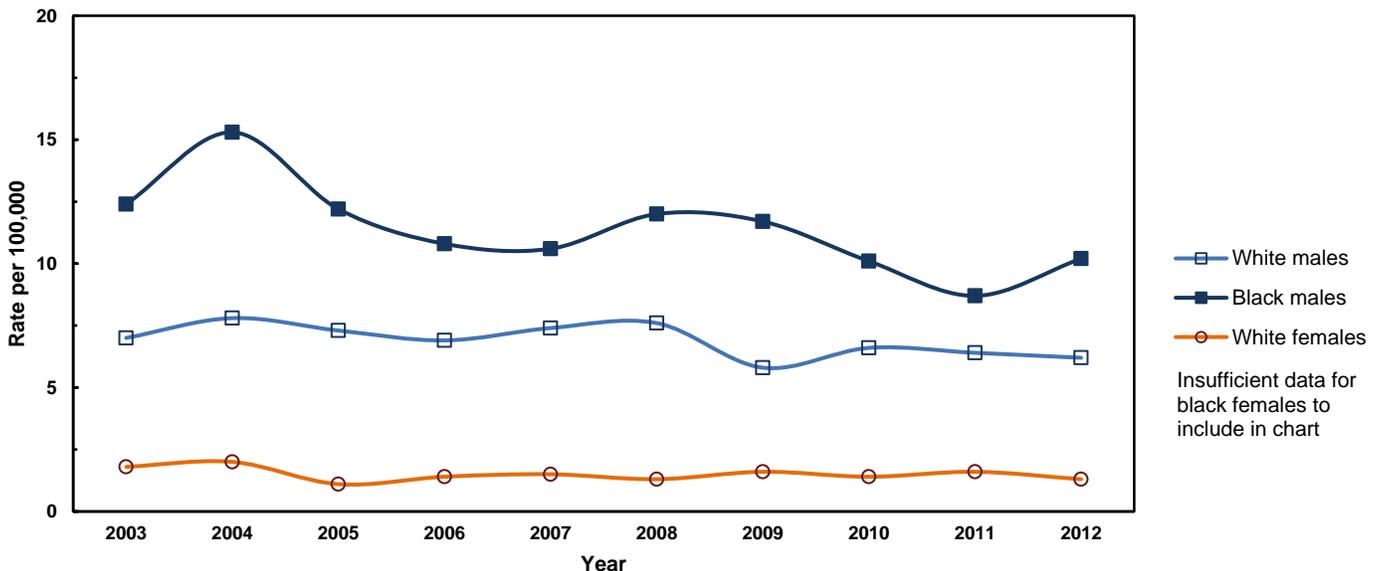
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	600	3.7 (3.4-4.0)	484	6.5 (5.9-7.1)	411	6.2 (5.6-6.8)	57	10.2 (7.6-12.8)	116	1.3 (1.1-1.5)	98	1.3 (1.0-1.6)	15	ND
2011	627	3.9 (3.6-4.2)	481	6.6 (6.0-7.2)	425	6.4 (5.8-7.0)	44	8.7 (6.1-11.3)	146	1.7 (1.4-2.0)	122	1.6 (1.3-1.9)	24	3.4 (2.0-4.8)
2010	605	3.8 (3.5-4.1)	484	6.8 (6.2-7.4)	420	6.6 (6.0-7.2)	50	10.1 (7.3-12.9)	121	1.4 (1.2-1.6)	103	1.4 (1.1-1.7)	16	ND
2009	571	3.7 (3.4-4.0)	423	6.2 (5.6-6.8)	363	5.8 (5.2-6.4)	51	11.7 (8.5-14.9)	148	1.7 (1.4-2.0)	119	1.6 (1.3-1.9)	26	3.8 (2.3-5.3)
2008	635	4.3 (4.0-4.6)	524	7.9 (7.2-8.6)	459	7.6 (6.9-8.3)	54	12.0 (8.8-15.2)	111	1.4 (1.1-1.7)	93	1.3 (1.0-1.6)	16	ND
2007	619	4.1 (3.8-4.4)	504	7.7 (7.0-8.4)	440	7.4 (6.7-8.1)	48	10.6 (7.6-13.6)	115	1.4 (1.1-1.7)	104	1.5 (1.2-1.8)	10	ND
2006	593	4.0 (3.7-4.3)	467	7.1 (6.5-7.7)	412	6.9 (6.2-7.6)	47	10.8 (7.7-13.9)	126	1.6 (1.3-1.9)	104	1.4 (1.1-1.7)	19	ND
2005	605	4.1 (3.8-4.4)	493	7.6 (6.9-8.3)	433	7.3 (6.6-8.0)	53	12.2 (8.9-15.5)	112	1.4 (1.1-1.7)	82	1.1 (0.9-1.3)	27	4.2 (2.6-5.8)
2004	696	4.8 (4.4-5.2)	536	8.3 (7.6-9.0)	460	7.8 (7.1-8.5)	67	15.3 (11.6-19.0)	160	2.0 (1.7-2.3)	141	2.0 (1.7-2.3)	17	ND
2003	623	4.3 (4.0-4.6)	475	7.4 (6.7-8.1)	408	7.0 (6.3-7.7)	56	12.4 (9.2-15.6)	148	1.9 (1.6-2.2)	131	1.8 (1.5-2.1)	17	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
8-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Larynx: INCIDENCE (Invasive)

**TABLE
8-B**

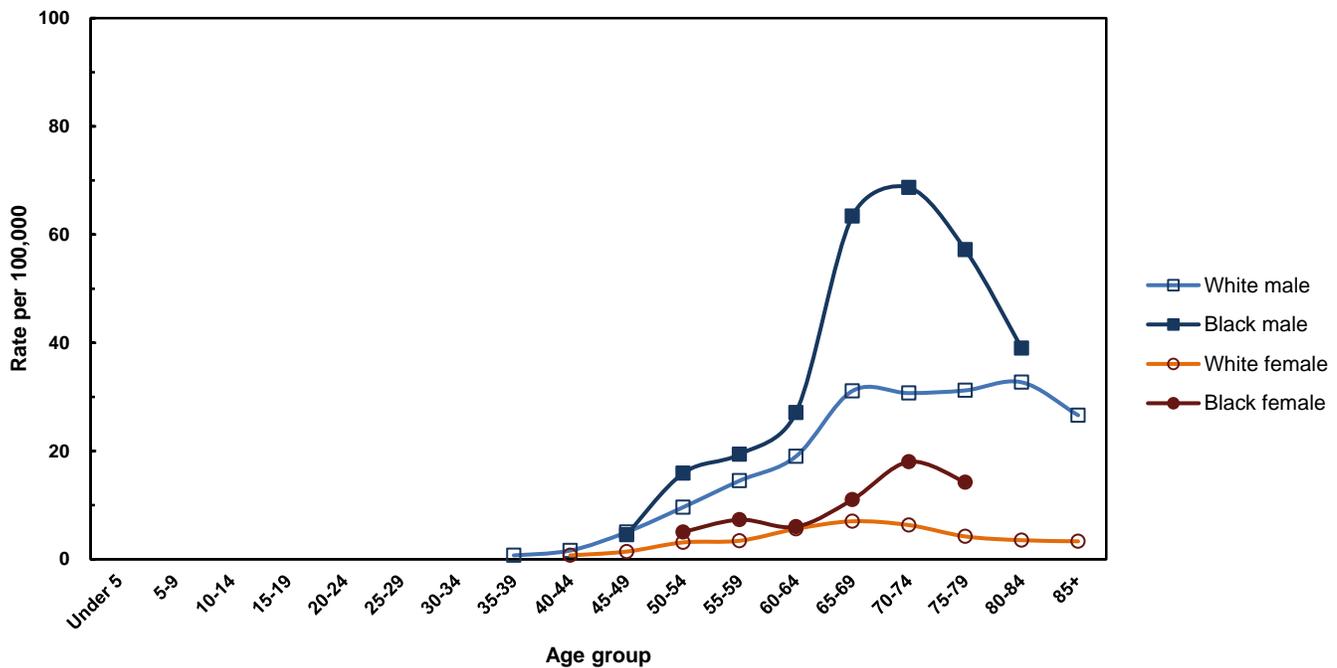
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	4.8	7.8	8.0	7.7	2.0	2.0	2.7
Under 5	ND						
5-9	ND						
10-14	ND						
15-19	ND						
20-24	ND						
25-29	ND						
30-34	ND						
35-39	0.5	0.8	0.7	ND	ND	ND	ND
40-44	1.1	1.5	1.6	ND	0.6	0.7	ND
45-49	3.1	4.7	5.0	4.5	1.5	1.4	ND
50-54	6.7	10.2	9.6	15.9	3.3	3.1	5.0
55-59	9.2	15.0	14.5	19.4	3.7	3.4	7.3
60-64	12.4	19.9	19.0	27.1	5.5	5.6	6.0
65-69	19.2	32.9	31.1	63.4	7.2	7.0	11.0
70-74	18.8	33.0	30.7	68.7	7.2	6.3	18.0
75-79	16.4	32.4	31.2	57.2	4.9	4.2	14.2
80-84	15.2	33.3	32.7	39.0	3.8	3.5	ND
85+	11.1	27.3	26.6	ND	3.7	3.3	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
8-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Larynx: INCIDENCE (Invasive)

**TABLE
8-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

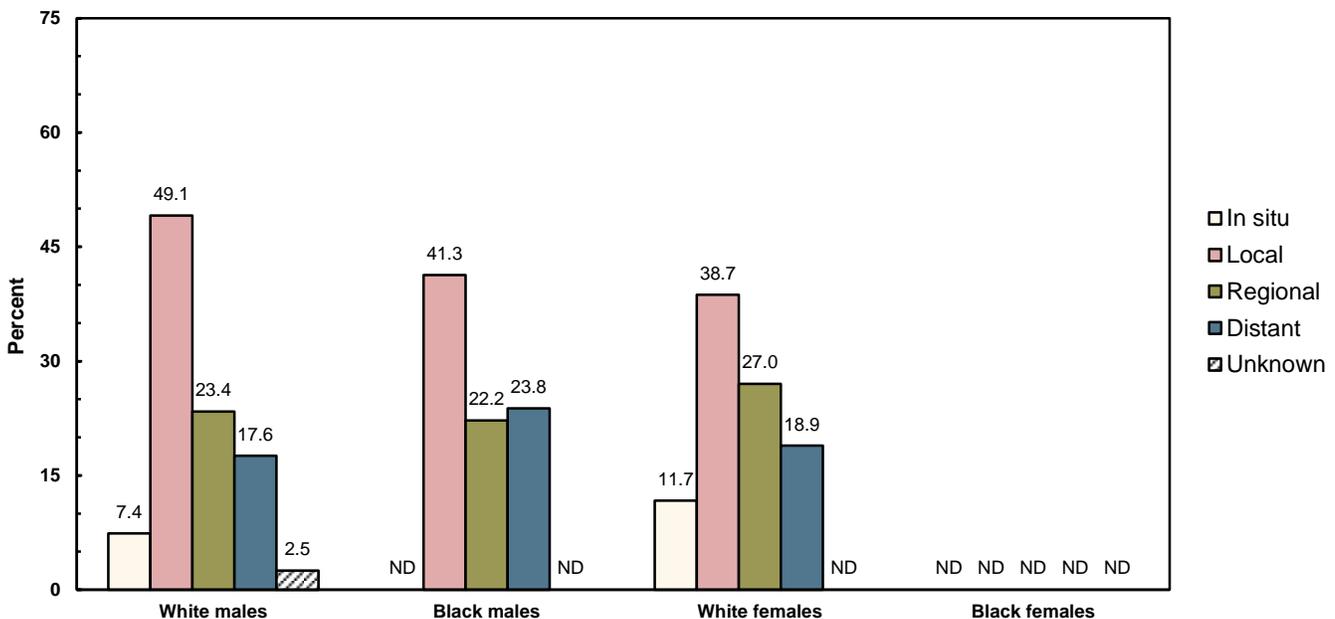
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	3,038	2,396	2,078	256	642	535	97
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	1	1	1	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	3	2	2	0	1	0	0
25-29	3	3	3	0	0	0	0
30-34	6	3	3	0	3	3	0
35-39	18	16	11	1	2	2	0
40-44	45	32	29	2	13	12	1
45-49	142	108	98	10	34	27	6
50-54	316	237	196	33	79	65	12
55-59	400	317	273	33	83	66	15
60-64	459	353	303	35	106	95	10
65-69	537	429	369	54	108	94	13
70-74	412	324	275	43	88	69	17
75-79	297	246	218	26	51	40	11
80-84	226	191	175	12	35	29	6
85+	173	134	122	7	39	33	6

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
8-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 591 - 98.5%

Cancer of the Larynx: MORTALITY

**TABLE
8-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

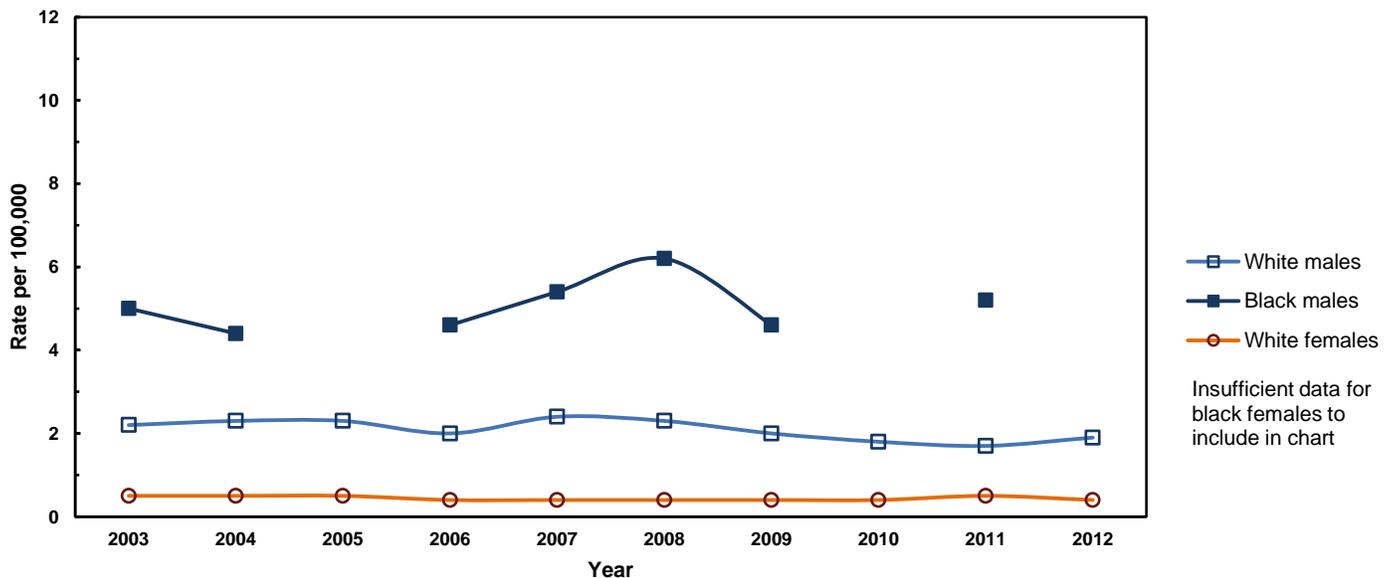
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	180	1.1 (0.9-1.3)	138	1.9 (1.6-2.2)	121	1.9 (1.6-2.2)	11	ND	42	0.4 (0.3-0.5)	33	0.4 (0.3-0.5)	8	ND
2011	188	1.1 (0.9-1.3)	138	1.9 (1.6-2.2)	115	1.7 (1.4-2.0)	23	5.2 (3.1-7.3)	50	0.5 (0.4-0.6)	44	0.5 (0.4-0.6)	6	ND
2010	168	1.1 (0.9-1.3)	132	1.9 (1.6-2.2)	114	1.8 (1.5-2.1)	17	ND	36	0.4 (0.3-0.5)	33	0.4 (0.3-0.5)	2	ND
2009	184	1.2 (1.0-1.4)	146	2.2 (1.8-2.6)	124	2.0 (1.6-2.4)	20	4.6 (2.6-6.6)	38	0.4 (0.3-0.5)	31	0.4 (0.3-0.5)	7	ND
2008	204	1.3 (1.1-1.5)	166	2.5 (2.1-2.9)	139	2.3 (1.9-2.7)	27	6.2 (3.9-8.5)	38	0.4 (0.3-0.5)	34	0.4 (0.3-0.5)	4	ND
2007	206	1.4 (1.2-1.6)	167	2.7 (2.3-3.1)	140	2.4 (2.0-2.8)	24	5.4 (3.2-7.6)	39	0.4 (0.3-0.5)	32	0.4 (0.3-0.5)	7	ND
2006	185	1.2 (1.0-1.4)	136	2.2 (1.8-2.6)	116	2.0 (1.6-2.4)	20	4.6 (2.6-6.6)	49	0.6 (0.4-0.8)	35	0.4 (0.3-0.5)	13	ND
2005	194	1.3 (1.1-1.5)	152	2.4 (2.0-2.8)	135	2.3 (1.9-2.7)	17	ND	42	0.5 (0.3-0.7)	35	0.5 (0.3-0.7)	7	ND
2004	198	1.3 (1.1-1.5)	151	2.4 (2.0-2.8)	131	2.3 (1.9-2.7)	20	4.4 (2.5-6.3)	47	0.6 (0.4-0.8)	41	0.5 (0.3-0.7)	6	ND
2003	197	1.3 (1.1-1.5)	151	2.4 (2.0-2.8)	128	2.2 (1.8-2.6)	22	5.0 (2.9-7.1)	46	0.5 (0.4-0.6)	39	0.5 (0.3-0.7)	7	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
8-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Larynx: MORTALITY

**TABLE
8-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

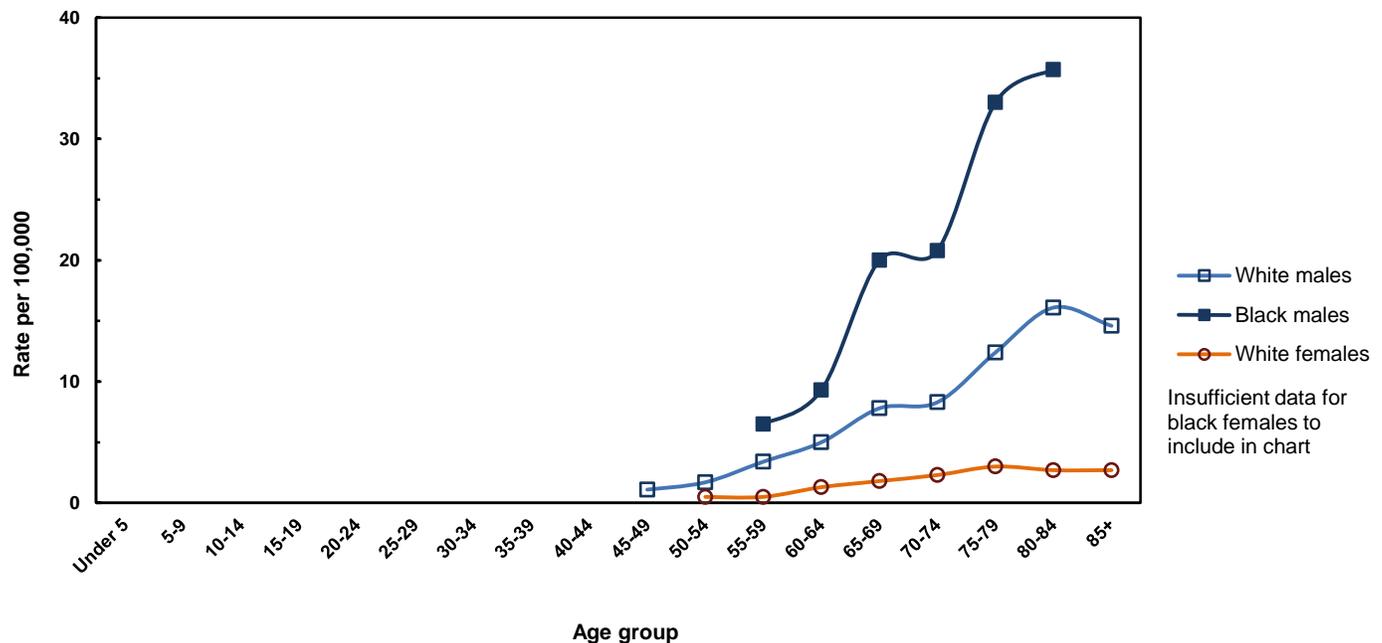
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	924	1.5	720	2.3	613	2.4	98	2.9	204	0.6	175	0.6	27	0.7
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
25-29	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
30-34	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND	0	ND
35-39	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
40-44	4	ND	4	ND	4	ND	0	ND	0	ND	0	ND	0	ND
45-49	30	0.7	25	1.1	22	1.1	3	ND	5	ND	5	ND	0	ND
50-54	55	1.2	44	1.9	35	1.7	7	ND	11	0.5	10	0.5	1	ND
55-59	87	2.0	74	3.5	63	3.4	11	6.5	13	0.6	10	0.5	3	ND
60-64	125	3.4	94	5.3	80	5.0	12	9.3	31	1.6	22	1.3	9	ND
65-69	136	4.9	110	8.4	93	7.8	17	20.0	26	1.7	24	1.8	2	ND
70-74	114	5.2	88	9.0	74	8.3	13	20.8	26	2.1	25	2.3	0	ND
75-79	140	7.8	103	13.6	87	12.4	15	33.0	37	3.5	29	3.0	8	ND
80-84	124	8.4	99	17.3	86	16.1	11	35.7	25	2.7	23	2.7	1	ND
85+	104	6.7	74	15.0	67	14.6	7	ND	30	2.8	27	2.7	3	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
8-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Larynx: INCIDENCE (Invasive)

**TABLE
8-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	3,038	2,396	6.8	(6.5-7.1)	642	1.5	(1.4-1.6)									
Adams	17	16	ND		1	ND		Juniata	6	4	ND		2	ND		
Allegheny	332	261	7.5	(6.6-8.4)	71	1.6	(1.2-2.0)	Lackawanna	73	50	8.0	(5.8-10.2)	23	3.1	(1.8-4.4)	
Armstrong	14	10	ND		4	ND		Lancaster	84	75	5.3	(4.1-6.5)	9	ND		
Beaver	41	38	7.4	(5.0-9.8)	3	ND		Lawrence	25	20	7.2	(4.0-10.4)	5	ND		
Bedford	18	14	ND		4	ND		Lebanon	27	23	5.6	(3.3-7.9)	4	ND		
Berks	81	64	5.9	(4.5-7.3)	17	ND		Lehigh	72	58	6.1	(4.5-7.7)	14	ND		
Blair	43	34	8.8	(5.8-11.8)	9	ND		Luzerne	87	69	7.0	(5.3-8.7)	18	ND		
Bradford	19	17	ND		2	ND		Lycoming	33	25	7.7	(4.7-10.7)	8	ND		
Bucks	128	105	5.8	(4.7-6.9)	23	1.1	(0.7-1.5)	McKean	10	5	ND		5	ND		
Butler	36	29	5.5	(3.5-7.5)	7	ND		Mercer	26	22	6.5	(3.8-9.2)	4	ND		
Cambria	43	36	8.1	(5.5-10.7)	7	ND		Mifflin	10	7	ND		3	ND		
Cameron	2	2	ND		0	ND		Monroe	43	30	6.3	(4.0-8.6)	13	ND		
Carbon	19	14	ND		5	ND		Montgomery	138	112	5.2	(4.2-6.2)	26	1.0	(0.6-1.4)	
Centre	25	20	6.1	(3.4-8.8)	5	ND		Montour	5	4	ND		1	ND		
Chester	80	58	4.5	(3.3-5.7)	22	1.5	(0.9-2.1)	Northampton	66	51	6.4	(4.6-8.2)	15	ND		
Clarion	5	4	ND		1	ND		Northumberland	35	28	9.8	(6.2-13.4)	7	ND		
Clearfield	31	25	9.3	(5.7-12.9)	6	ND		Perry	17	15	ND		2	ND		
Clinton	7	5	ND		2	ND		Philadelphia	417	298	9.1	(8.1-10.1)	119	2.7	(2.2-3.2)	
Columbia	18	15	ND		3	ND		Pike	17	12	ND		5	ND		
Crawford	15	11	ND		4	ND		Potter	7	5	ND		2	ND		
Cumberland	41	36	5.4	(3.6-7.2)	5	ND		Schuylkill	42	33	7.0	(4.6-9.4)	9	ND		
Dauphin	54	44	5.9	(4.2-7.6)	10	ND		Snyder	9	8	ND		1	ND		
Delaware	143	112	7.9	(6.4-9.4)	31	1.7	(1.1-2.3)	Somerset	23	19	ND		4	ND		
Elk	10	9	ND		1	ND		Sullivan	6	5	ND		1	ND		
Erie	51	43	5.5	(3.9-7.1)	8	ND		Susquehanna	5	3	ND		2	ND		
Fayette	53	41	9.4	(6.5-12.3)	12	ND		Tioga	10	8	ND		2	ND		
Forest	1	1	ND		0	ND		Union	10	8	ND		2	ND		
Franklin	33	29	6.3	(4.0-8.6)	4	ND		Venango	13	9	ND		4	ND		
Fulton	2	2	ND		0	ND		Warren	18	17	ND		1	ND		
Greene	15	13	ND		2	ND		Washington	59	44	6.8	(4.8-8.8)	15	ND		
Huntingdon	15	14	ND		1	ND		Wayne	15	8	ND		7	ND		
Indiana	13	9	ND		4	ND		Westmoreland	104	87	7.3	(5.8-8.8)	17	ND		
Jefferson	13	11	ND		2	ND		Wyoming	9	8	ND		1	ND		
								York	99	84	6.7	(5.3-8.1)	15	ND		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Larynx: MORTALITY

**TABLE
8-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	924	720	2.1	(1.9-2.3)	204	0.5	(0.4-0.6)								
Adams	6	6	ND		0	ND		Juniata	1	1	ND		0	ND	
Allegheny	94	67	1.9	(1.4-2.4)	27	0.5	(0.3-0.7)	Lackawanna	25	13	ND		12	ND	
Armstrong	7	5	ND		2	ND		Lancaster	28	26	1.8	(1.1-2.5)	2	ND	
Beaver	14	13	ND		1	ND		Lawrence	6	4	ND		2	ND	
Bedford	6	6	ND		0	ND		Lebanon	6	3	ND		3	ND	
Berks	24	20	1.9	(1.1-2.7)	4	ND		Lehigh	28	25	2.7	(1.6-3.8)	3	ND	
Blair	12	10	ND		2	ND		Luzerne	32	27	2.9	(1.8-4.0)	5	ND	
Bradford	4	3	ND		1	ND		Lycoming	9	7	ND		2	ND	
Bucks	30	22	1.3	(0.8-1.8)	8	ND		McKean	3	2	ND		1	ND	
Butler	9	8	ND		1	ND		Mercer	9	8	ND		1	ND	
Cambria	12	10	ND		2	ND		Mifflin	5	4	ND		1	ND	
Cameron	1	1	ND		0	ND		Monroe	6	3	ND		3	ND	
Carbon	6	4	ND		2	ND		Montgomery	46	41	1.9	(1.3-2.5)	5	ND	
Centre	7	5	ND		2	ND		Montour	1	0	ND		1	ND	
Chester	19	13	ND		6	ND		Northampton	24	21	2.6	(1.5-3.7)	3	ND	
Clarion	1	0	ND		1	ND		Northumberland	9	7	ND		2	ND	
Clearfield	6	3	ND		3	ND		Perry	0	0	ND		0	ND	
Clinton	2	1	ND		1	ND		Philadelphia	143	104	3.3	(2.7-3.9)	39	0.8	(0.5-1.1)
Columbia	10	7	ND		3	ND		Pike	5	4	ND		1	ND	
Crawford	2	2	ND		0	ND		Potter	3	2	ND		1	ND	
Cumberland	8	7	ND		1	ND		Schuylkill	8	7	ND		1	ND	
Dauphin	14	13	ND		1	ND		Snyder	2	2	ND		0	ND	
Delaware	44	29	2.2	(1.4-3.0)	15	ND		Somerset	7	7	ND		0	ND	
Elk	1	1	ND		0	ND		Sullivan	0	0	ND		0	ND	
Erie	18	14	ND		4	ND		Susquehanna	4	3	ND		1	ND	
Fayette	7	7	ND		0	ND		Tioga	3	2	ND		1	ND	
Forest	1	1	ND		0	ND		Union	5	3	ND		2	ND	
Franklin	12	11	ND		1	ND		Venango	3	3	ND		0	ND	
Fulton	0	0	ND		0	ND		Warren	7	7	ND		0	ND	
Greene	5	5	ND		0	ND		Washington	28	21	3.2	(1.8-4.6)	7	ND	
Huntingdon	9	9	ND		0	ND		Wayne	3	3	ND		0	ND	
Indiana	5	4	ND		1	ND		Westmoreland	27	19	ND		8	ND	
Jefferson	4	3	ND		1	ND		Wyoming	2	1	ND		1	ND	
								York	36	30	2.6	(1.7-3.5)	6	ND	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

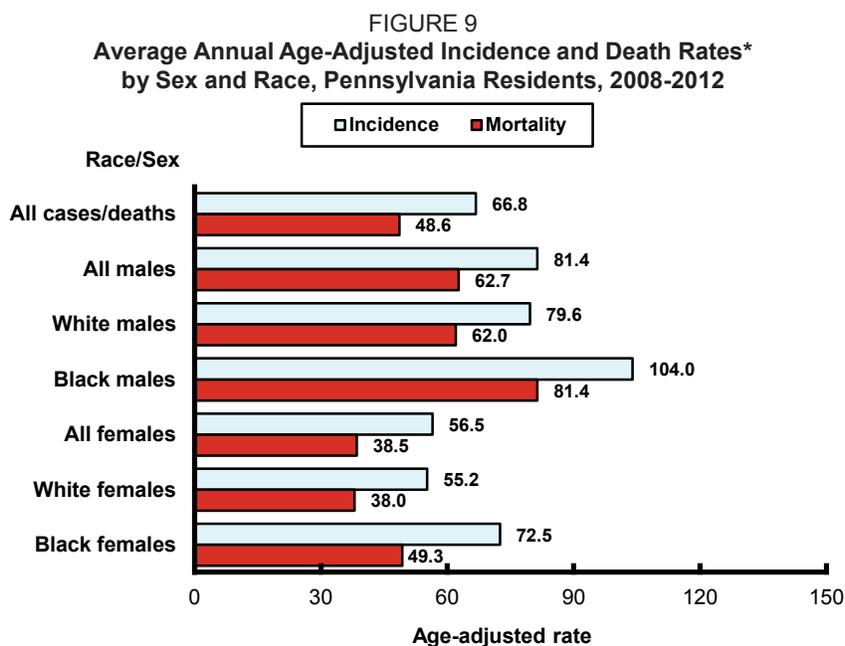
Cancer of the Lung and Bronchus

Data Highlights

In Pennsylvania, the average annual (2008-2012) age-adjusted incidence rate for invasive lung and bronchus cancer among males (81.4 per 100,000) was about 44 percent higher than the rate for females (56.5). Black males were disproportionately burdened. The 2008-2012 average annual rate for black males (104.0) was about 31 percent higher than the rate for white males (79.6).

There were 10,419 cases of invasive lung and bronchus cancers diagnosed among Pennsylvania residents in 2012 – a slight decrease from the 10,581 cases observed in 2011. Lung and bronchus cancers accounted for approximately 14 percent of all invasive cancers in 2012. The annual age-adjusted incidence rates for white and black males have generally shown a decreasing trend during the period 2003-2012. Rates among white females and black females did not have any obvious trends, although incidence rates for both groups have decreased in each successive year since 2009. During the period of 2008-2012, about 99 percent of the invasive cases were diagnosed among residents 45 years of age or older. Starting with age group 50-54, males had higher average annual age-specific incidence rates than females during the 2008-2012 period.

In 2012, about 76 percent of lung and bronchus cancer cases were diagnosed at the late stage (regional or distant) of the disease, and 18 percent were diagnosed at the early stage (in situ or local). Because lung cancers are very difficult to detect early, survival is poor. According to national estimates, the five-year relative survival rate was about 18 percent for 2007 diagnoses. The 2008-2012 average annual age-adjusted death rate was highest among black males (81.4 per 100,000) and lowest for white females (38.0). In 2012, about 29 percent of all cancer deaths among males were from lung and bronchus cancers (4,230), while the proportion was about 24 percent (3,409) for females, making this site the leading cause of cancer mortality in 2012. According to the American Cancer Society's report, "Cancer Facts and Figures 2015," 1.6 million people worldwide died from lung cancer in 2012, which was primarily caused by tobacco smoking. In Pennsylvania, the annual age-adjusted death rates from 2003 to 2012 showed declines among males of both races but no discernible trend among black or white females.



Risk Factors

Tobacco smoking, secondhand smoke, radon, asbestos, uranium, arsenic, beryllium, cadmium, silica, vinyl chloride, nickel, chromium, coal products, mustard gas, chloromethyl ethers, diesel exhaust, air pollution, radiation therapy to the lungs, arsenic in drinking water, and beta carotene supplements are suggestive of lung cancer risk.

Early Detection

Recent studies have shown that screening for lung cancer using a low-dose CT scan helps lower the risk of dying from this disease. Although imaging (CT Scan) can detect early lung cancers, it finds a lot of non-cancerous abnormalities, which may result in excess testing, biopsies, and surgeries. The American Cancer Society recommends that individuals who are in fairly good health, between the ages of 55 and 74, have at least a 30-year smoking history, and are either current smokers or have quit smoking with the last 15 years talk to their doctor about starting to screen for lung cancer.

Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

**TABLE
9-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

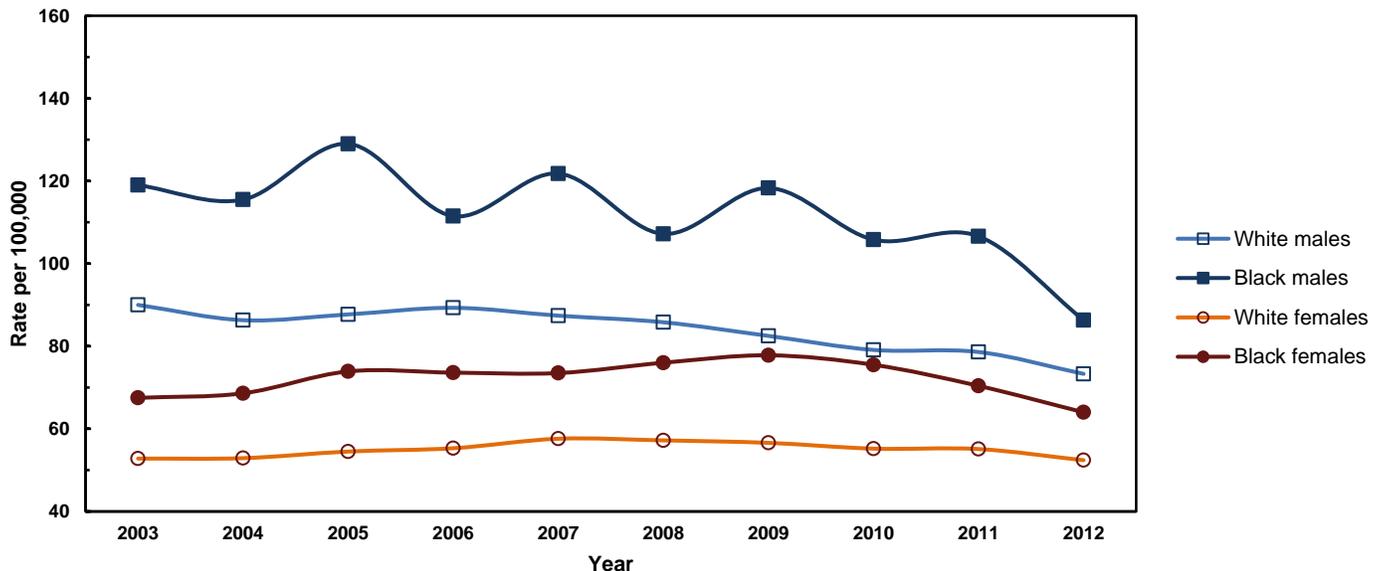
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	10,419	63.9 (62.7-65.1)	5,509	76.9 (74.9-78.9)	4,772	73.3 (71.2-75.4)	435	86.3 (78.2-94.4)	4,910	54.6 (53.1-56.1)	4,182	52.4 (50.8-54.0)	479	64.0 (58.3-69.7)
2011	10,581	66.0 (64.7-67.3)	5,637	80.1 (78.0-82.2)	5,028	78.6 (76.4-80.8)	525	106.6 (97.5-115.7)	4,944	56.0 (54.4-57.6)	4,367	55.1 (53.5-56.7)	514	70.4 (64.3-76.5)
2010	10,402	65.9 (64.6-67.2)	5,506	79.8 (77.7-81.9)	4,942	79.1 (76.9-81.3)	494	105.8 (96.5-115.1)	4,896	55.9 (54.3-57.5)	4,311	55.2 (53.6-56.8)	529	75.5 (69.1-81.9)
2009	10,598	69.0 (67.7-70.3)	5,604	84.7 (82.5-86.9)	4,986	82.5 (80.2-84.8)	522	118.3 (108.2-128.4)	4,994	58.0 (56.4-59.6)	4,405	56.6 (54.9-58.3)	527	77.8 (71.2-84.4)
2008	10,581	69.8 (68.5-71.1)	5,595	86.6 (84.3-88.9)	5,074	85.8 (83.4-88.2)	460	107.2 (97.4-117.0)	4,985	58.3 (56.7-59.9)	4,428	57.2 (55.5-58.9)	504	76.0 (69.4-82.6)
2007	10,650	70.9 (69.6-72.2)	5,657	89.3 (87.0-91.6)	5,067	87.4 (85.0-89.8)	518	121.8 (111.3-132.3)	4,993	58.5 (56.9-60.1)	4,454	57.6 (55.9-59.3)	480	73.5 (66.9-80.1)
2006	10,432	69.9 (68.6-71.2)	5,656	90.2 (87.8-92.6)	5,126	89.3 (86.9-91.7)	474	111.5 (101.5-121.5)	4,776	56.5 (54.9-58.1)	4,248	55.3 (53.6-57.0)	481	73.6 (67.0-80.2)
2005	10,476	70.3 (69.0-71.6)	5,736	90.7 (88.4-93.0)	5,096	87.7 (85.3-90.1)	550	129.0 (118.2-139.8)	4,740	56.1 (54.5-57.7)	4,206	54.5 (52.9-56.1)	476	73.9 (67.3-80.5)
2004	10,095	68.2 (66.9-69.5)	5,556	88.1 (85.8-90.4)	4,996	86.3 (83.9-88.7)	499	115.5 (105.4-125.6)	4,539	54.0 (52.4-55.6)	4,049	52.9 (51.3-54.5)	437	68.6 (62.2-75.0)
2003	10,223	69.3 (68.0-70.6)	5,724	91.7 (89.3-94.1)	5,169	90.0 (87.5-92.5)	486	119.0 (108.4-129.6)	4,499	53.8 (52.2-55.4)	4,025	52.8 (51.2-54.4)	429	67.5 (61.1-73.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
9-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

**TABLE
9-B**

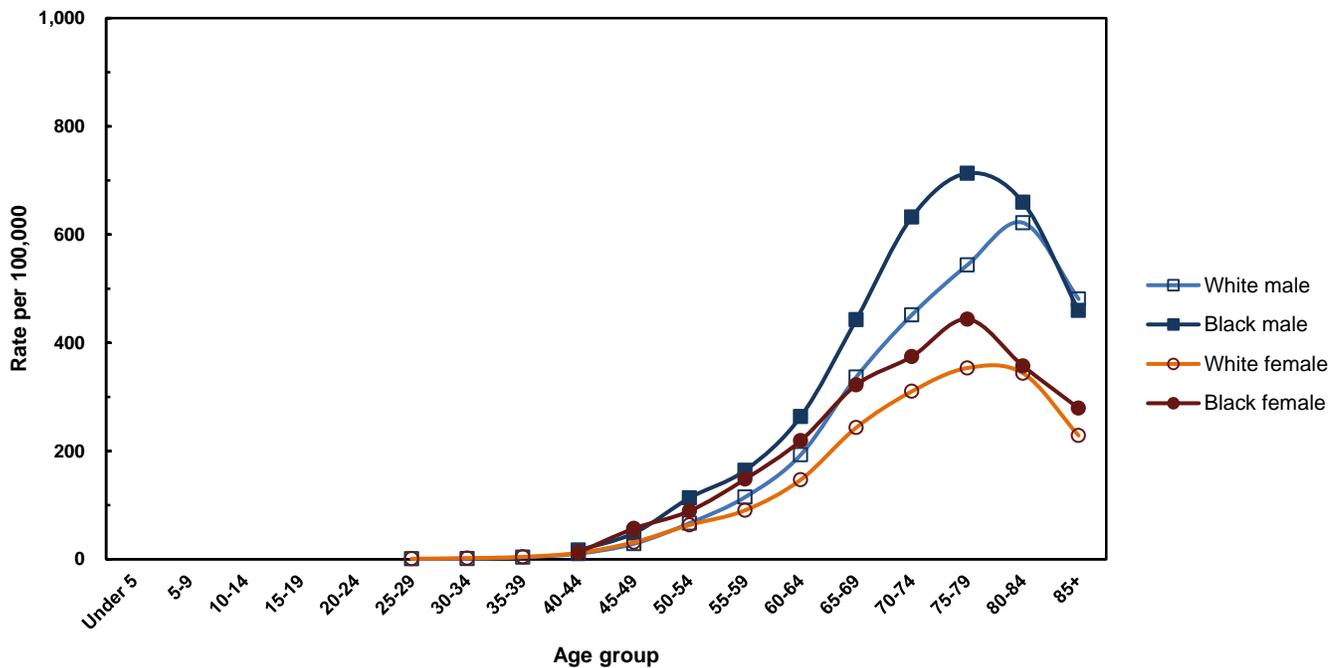
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	83.1	90.4	95.6	73.1	76.2	79.7	70.0
Under 5	ND						
5-9	ND						
10-14	ND						
15-19	ND						
20-24	0.3	ND	ND	ND	0.5	ND	ND
25-29	0.7	0.7	0.7	ND	0.7	0.8	ND
30-34	1.4	0.9	0.8	ND	2.0	1.9	ND
35-39	3.8	3.6	3.6	ND	4.0	4.2	ND
40-44	11.2	10.9	10.2	16.7	11.6	11.7	12.3
45-49	31.6	29.9	28.5	48.1	33.3	31.3	56.7
50-54	67.2	69.8	66.6	113.3	64.7	63.2	89.1
55-59	105.8	117.7	114.7	164.2	94.5	90.4	148.0
60-64	173.5	197.8	192.9	263.6	151.1	146.8	219.1
65-69	291.7	342.4	336.6	442.8	247.5	243.2	322.1
70-74	379.4	460.7	451.6	632.4	313.6	310.2	374.5
75-79	441.7	554.7	543.9	713.2	359.7	353.4	443.6
80-84	457.3	631.8	621.9	659.6	347.5	343.6	357.2
85+	318.4	488.5	481.0	459.8	239.9	228.5	279.0

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
9-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

**TABLE
9-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

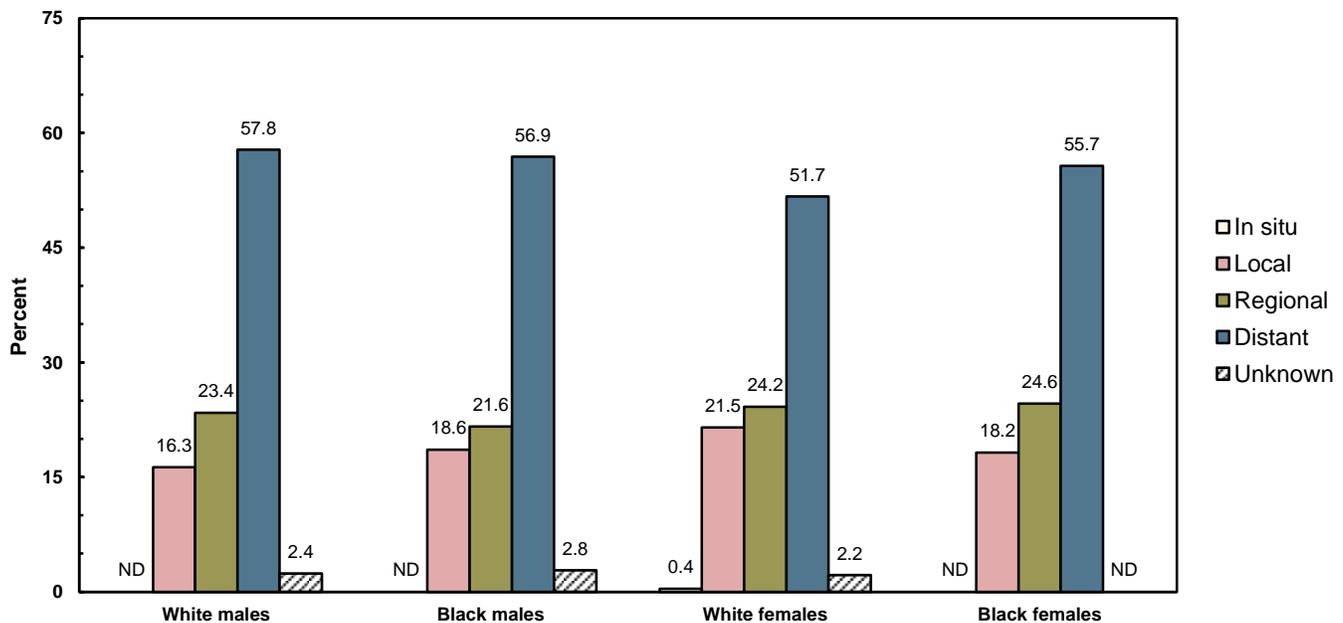
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	52,581	27,851	24,802	2,436	24,729	21,693	2,553
Under 5	4	4	3	1	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	8	5	2	2	3	3	0
20-24	15	5	3	1	10	9	1
25-29	27	13	11	0	14	12	2
30-34	54	17	12	3	37	28	4
35-39	145	68	56	8	77	66	9
40-44	480	230	183	37	250	212	30
45-49	1,460	680	559	107	780	625	142
50-54	3,184	1,623	1,362	235	1,561	1,322	215
55-59	4,583	2,484	2,155	280	2,099	1,761	305
60-64	6,408	3,505	3,079	340	2,903	2,496	365
65-69	8,158	4,461	3,992	377	3,697	3,258	381
70-74	8,331	4,522	4,050	396	3,809	3,396	354
75-79	7,978	4,208	3,803	324	3,769	3,368	344
80-84	6,789	3,624	3,325	203	3,165	2,879	218
85+	4,957	2,402	2,207	122	2,555	2,258	183

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
9-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 9,154 - 87.9%

Cancer of the Lung and Bronchus: MORTALITY

**TABLE
9-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

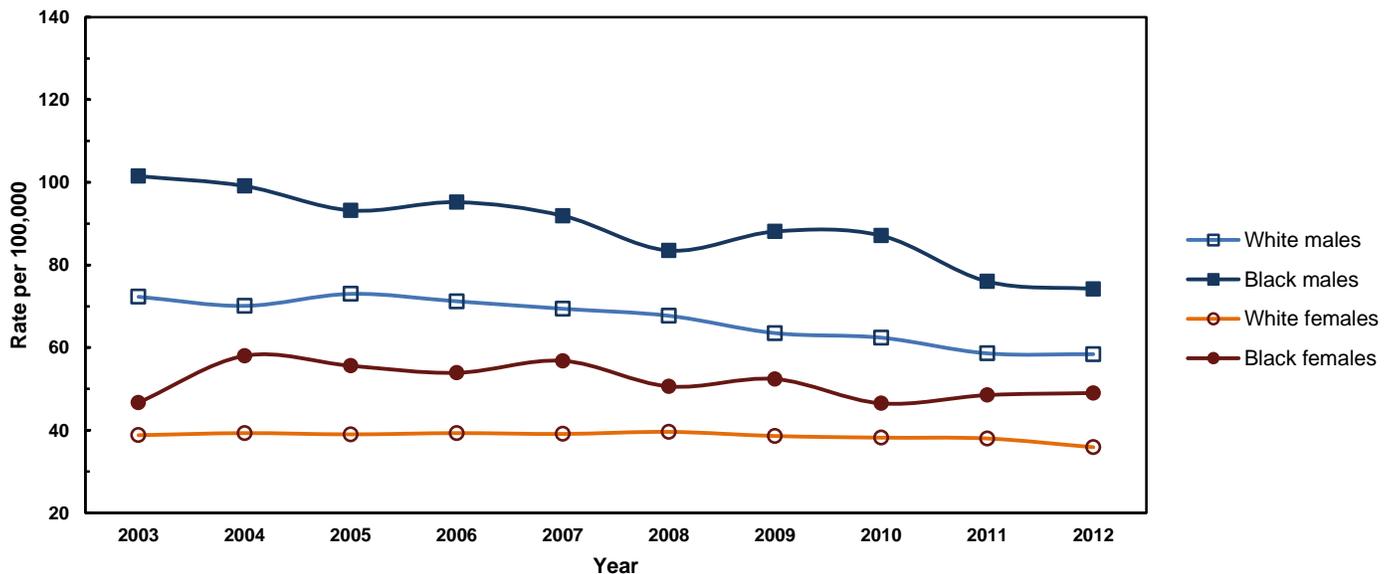
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	7,639	46.4 (45.4-47.4)	4,230	59.4 (57.6-61.2)	3,784	58.4 (56.5-60.3)	365	74.2 (66.6-81.8)	3,409	36.8 (35.6-38.0)	2,992	35.9 (34.6-37.2)	362	49.0 (44.0-54.0)
2011	7,634	47.1 (46.0-48.2)	4,131	59.2 (57.4-61.0)	3,724	58.6 (56.7-60.5)	363	76.0 (68.2-83.8)	3,503	38.4 (37.1-39.7)	3,119	38.0 (36.7-39.3)	352	48.5 (43.4-53.6)
2010	7,729	48.6 (47.5-49.7)	4,306	63.1 (61.2-65.0)	3,866	62.4 (60.4-64.4)	404	87.1 (78.6-95.6)	3,423	38.1 (36.8-39.4)	3,077	38.2 (36.9-39.5)	328	46.5 (41.5-51.5)
2009	7,702	49.7 (48.6-50.8)	4,223	64.5 (62.6-66.4)	3,808	63.5 (61.5-65.5)	380	88.1 (79.2-97.0)	3,479	39.2 (37.9-40.5)	3,107	38.6 (37.2-40.0)	354	52.4 (46.9-57.9)
2008	7,868	51.4 (50.3-52.5)	4,352	67.9 (65.9-69.9)	3,980	67.7 (65.6-69.8)	348	83.5 (74.7-92.3)	3,516	40.1 (38.8-41.4)	3,164	39.6 (38.2-41.0)	337	50.6 (45.2-56.0)
2007	7,884	52.2 (51.0-53.4)	4,390	70.2 (68.1-72.3)	3,970	69.4 (67.2-71.6)	387	91.9 (82.7-101.1)	3,494	40.1 (38.8-41.4)	3,109	39.1 (37.7-40.5)	373	56.8 (51.0-62.6)
2006	7,892	52.8 (51.6-54.0)	4,438	71.9 (69.8-74.0)	4,026	71.2 (69.0-73.4)	393	95.2 (85.8-104.6)	3,454	40.0 (38.7-41.3)	3,089	39.3 (37.9-40.7)	350	53.9 (48.3-59.5)
2005	8,086	53.7 (52.5-54.9)	4,614	73.8 (71.7-75.9)	4,201	73.0 (70.8-75.2)	389	93.2 (83.9-102.5)	3,472	40.0 (38.7-41.3)	3,099	39.0 (37.6-40.4)	355	55.6 (49.8-61.4)
2004	7,928	53.1 (51.9-54.3)	4,442	71.5 (69.4-73.6)	4,008	70.1 (67.9-72.3)	405	99.1 (89.4-108.8)	3,486	40.4 (39.1-41.7)	3,101	39.3 (37.9-40.7)	372	58.0 (52.1-63.9)
2003	7,882	53.0 (51.8-54.2)	4,531	73.5 (71.4-75.6)	4,098	72.3 (70.1-74.5)	408	101.5 (91.7-111.3)	3,351	39.1 (37.8-40.4)	3,037	38.8 (37.4-40.2)	296	46.7 (41.4-52.0)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
9-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Lung and Bronchus: MORTALITY

**TABLE
9-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

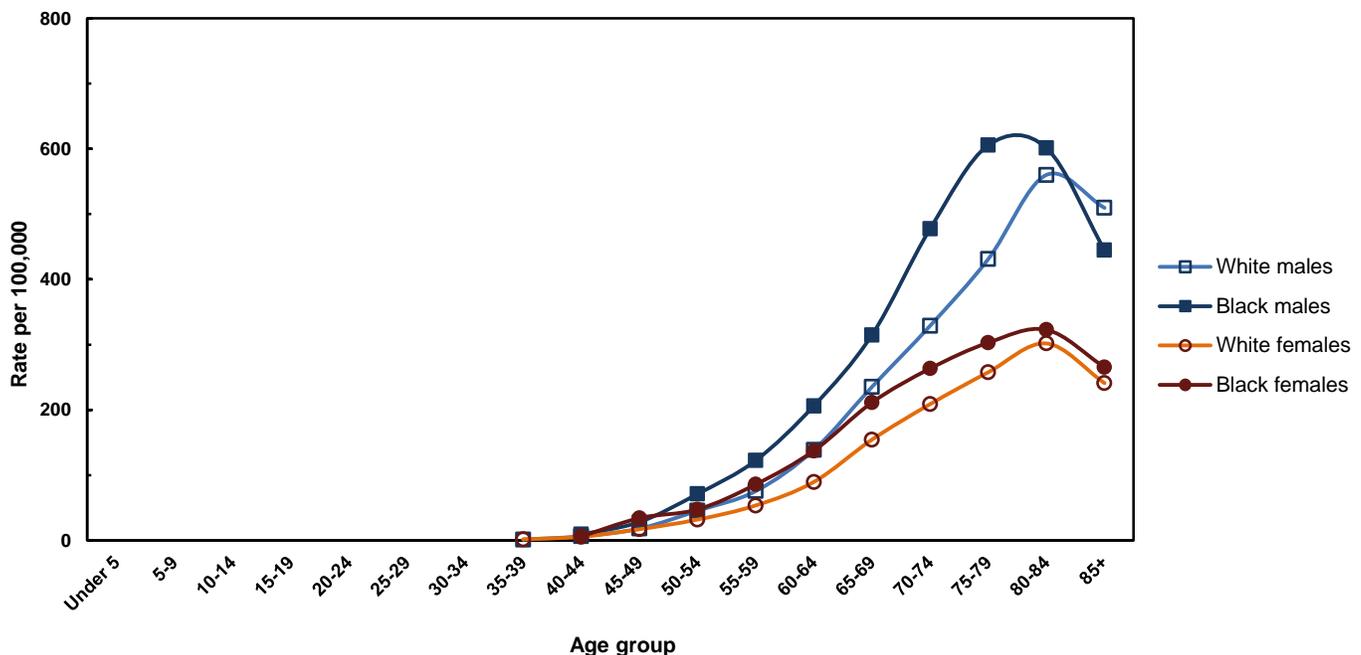
Age Group	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
Total*	38,572	61.0	21,242	68.9	19,162	73.8	1,860	55.8	17,330	53.4	15,459	56.8	1,733	47.5
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	1	ND	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND
20-24	2	ND	0	ND	0	ND	0	ND	2	ND	2	ND	0	ND
25-29	7	ND	3	ND	3	ND	0	ND	4	ND	3	ND	1	ND
30-34	15	0.4	9	ND	7	ND	2	ND	6	ND	6	ND	0	ND
35-39	68	1.8	31	1.6	24	1.5	6	ND	37	1.9	30	1.9	5	ND
40-44	264	6.2	141	6.7	116	6.5	21	9.5	123	5.7	105	5.8	15	6.1
45-49	860	18.6	421	18.5	358	18.2	63	28.3	439	18.8	345	17.3	86	34.3
50-54	1,886	39.8	1,092	47.0	931	45.6	148	71.3	794	32.9	671	32.1	115	47.6
55-59	2,887	66.7	1,652	78.3	1,423	75.7	209	122.6	1,235	55.6	1,047	53.7	177	85.9
60-64	4,273	115.7	2,509	141.6	2,214	138.7	266	206.2	1,764	91.8	1,526	89.7	229	137.5
65-69	5,431	194.2	3,094	237.5	2,790	235.3	268	314.8	2,337	156.4	2,070	154.5	250	211.4
70-74	5,835	265.7	3,280	334.1	2,949	328.9	299	477.5	2,555	210.4	2,287	208.9	249	263.4
75-79	6,036	334.1	3,323	438.0	3,014	431.1	275	605.4	2,713	258.9	2,456	257.7	235	303.0
80-84	5,952	401.0	3,210	559.6	2,994	560.0	185	601.1	2,742	301.0	2,529	301.8	197	322.8
85+	5,055	324.7	2,476	503.5	2,338	509.5	118	444.7	2,579	242.1	2,382	241.1	174	265.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
9-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

**TABLE
9-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	52,581	27,851	81.4	(80.4-82.4)	24,729	56.5	(55.8-57.2)								
Adams	406	211	72.7	(62.9-82.5)	195	55.9	(48.1-63.7)	Juniata	85	49	66.2	(47.7-84.7)	36	43.0	(29.0-57.0)
Allegheny	6,036	2,954	86.6	(83.5-89.7)	3,082	66.4	(64.1-68.7)	Lackawanna	1,050	591	94.8	(87.2-102.4)	459	57.4	(52.1-62.7)
Armstrong	310	173	77.5	(66.0-89.0)	137	51.2	(42.6-59.8)	Lancaster	1,685	933	68.4	(64.0-72.8)	752	44.1	(40.9-47.3)
Beaver	913	513	95.3	(87.1-103.5)	400	57.7	(52.0-63.4)	Lawrence	465	249	88.7	(77.7-99.7)	216	59.2	(51.3-67.1)
Bedford	190	113	69.4	(56.6-82.2)	77	39.9	(31.0-48.8)	Lebanon	561	313	79.8	(71.0-88.6)	248	49.9	(43.7-56.1)
Berks	1,514	808	75.4	(70.2-80.6)	705	53.5	(49.6-57.4)	Lehigh	1,329	705	78.5	(72.7-84.3)	624	52.3	(48.2-56.4)
Blair	546	314	83.1	(73.9-92.3)	232	47.5	(41.4-53.6)	Luzerne	1,543	842	89.6	(83.5-95.7)	701	56.5	(52.3-60.7)
Bradford	292	150	75.0	(63.0-87.0)	142	61.0	(51.0-71.0)	Lycoming	503	287	86.4	(76.4-96.4)	216	52.7	(45.7-59.7)
Bucks	2,404	1,250	74.7	(70.6-78.8)	1,154	55.9	(52.7-59.1)	McKean	203	100	76.7	(61.7-91.7)	103	69.0	(55.7-82.3)
Butler	658	375	75.3	(67.7-82.9)	283	45.3	(40.0-50.6)	Mercer	533	305	85.4	(75.8-95.0)	228	51.5	(44.8-58.2)
Cambria	598	341	75.7	(67.7-83.7)	257	44.4	(39.0-49.8)	Mifflin	247	137	93.7	(78.0-109.4)	110	63.8	(51.9-75.7)
Cameron	30	15	ND		15	ND		Monroe	667	371	87.5	(78.6-96.4)	296	61.1	(54.1-68.1)
Carbon	332	197	95.8	(82.4-109.2)	135	54.8	(45.6-64.0)	Montgomery	2,794	1,433	67.7	(64.2-71.2)	1,361	49.8	(47.2-52.4)
Centre	380	217	69.5	(60.3-78.7)	163	43.2	(36.6-49.8)	Montour	75	36	64.3	(43.3-85.3)	39	57.1	(39.2-75.0)
Chester	1,475	737	61.4	(57.0-65.8)	738	50.5	(46.9-54.1)	Northampton	1,222	682	85.5	(79.1-91.9)	540	52.0	(47.6-56.4)
Clarion	156	94	80.0	(63.8-96.2)	62	44.5	(33.4-55.6)	Northumberland	472	273	92.2	(81.3-103.1)	199	54.6	(47.0-62.2)
Clearfield	343	206	81.1	(70.0-92.2)	137	43.7	(36.4-51.0)	Perry	206	126	99.3	(82.0-116.6)	80	55.2	(43.1-67.3)
Clinton	174	97	86.1	(69.0-103.2)	77	59.8	(46.4-73.2)	Philadelphia	6,205	2,990	96.2	(92.8-99.6)	3,215	71.5	(69.0-74.0)
Columbia	284	175	93.3	(79.5-107.1)	109	47.2	(38.3-56.1)	Pike	250	135	70.9	(58.9-82.9)	115	57.4	(46.9-67.9)
Crawford	425	239	89.4	(78.1-100.7)	186	59.3	(50.8-67.8)	Potter	94	45	74.2	(52.5-95.9)	49	73.5	(52.9-94.1)
Cumberland	864	464	72.6	(66.0-79.2)	400	48.8	(44.0-53.6)	Schuylkill	720	402	86.8	(78.3-95.3)	318	56.4	(50.2-62.6)
Dauphin	1,010	529	80.7	(73.8-87.6)	481	55.4	(50.4-60.4)	Snyder	136	87	82.7	(65.3-100.1)	49	37.3	(26.9-47.7)
Delaware	2,360	1,179	85.3	(80.4-90.2)	1,181	63.5	(59.9-67.1)	Somerset	283	168	65.7	(55.8-75.6)	115	39.2	(32.0-46.4)
Elk	163	88	83.2	(65.8-100.6)	75	55.0	(42.6-67.4)	Sullivan	42	27	99.2	(61.8-136.6)	15	ND	
Erie	1,101	566	77.6	(71.2-84.0)	535	58.8	(53.8-63.8)	Susquehanna	185	115	80.8	(66.0-95.6)	70	44.7	(34.2-55.2)
Fayette	790	445	104.0	(94.3-113.7)	345	63.6	(56.9-70.3)	Tioga	209	116	85.1	(69.6-100.6)	93	60.2	(48.0-72.4)
Forest	41	23	92.9	(54.9-130.9)	18	ND		Union	150	75	65.1	(50.4-79.8)	75	52.8	(40.9-64.7)
Franklin	567	325	75.3	(67.1-83.5)	242	46.6	(40.7-52.5)	Venango	301	178	102.9	(87.8-118.0)	123	57.9	(47.7-68.1)
Fulton	56	37	80.9	(54.8-107.0)	19	ND		Warren	194	92	65.0	(51.7-78.3)	102	62.3	(50.2-74.4)
Greene	196	101	92.4	(74.4-110.4)	95	71.4	(57.0-85.8)	Washington	961	521	82.8	(75.7-89.9)	440	55.5	(50.3-60.7)
Huntingdon	175	107	78.7	(63.8-93.6)	68	42.8	(32.6-53.0)	Wayne	249	146	77.8	(65.2-90.4)	103	49.3	(39.8-58.8)
Indiana	267	146	60.6	(50.8-70.4)	121	39.3	(32.3-46.3)	Westmoreland	1,879	1,023	86.9	(81.6-92.2)	856	57.5	(53.6-61.4)
Jefferson	220	125	88.8	(73.2-104.4)	95	54.4	(43.5-65.3)	Wyoming	136	86	103.5	(81.6-125.4)	50	52.4	(37.9-66.9)
								York	1,671	899	78.6	(73.5-83.7)	772	56.2	(52.2-60.2)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Lung and Bronchus: MORTALITY

**TABLE
9-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	38,572	21,242	62.7	(61.9-63.5)	17,330	38.5	(37.9-39.1)									
Adams	280	165	57.6	(48.8-66.4)	115	32.7	(26.7-38.7)	Juniata	71	43	63.4	(44.4-82.4)	28	33.1	(20.8-45.4)	
Allegheny	4,389	2,301	67.1	(64.4-69.8)	2,088	42.8	(41.0-44.6)	Lackawanna	718	391	62.4	(56.2-68.6)	327	38.8	(34.6-43.0)	
Armstrong	250	145	64.5	(54.0-75.0)	105	38.8	(31.4-46.2)	Lancaster	1,276	737	54.4	(50.5-58.3)	539	30.6	(28.0-33.2)	
Beaver	629	360	67.1	(60.2-74.0)	269	36.5	(32.1-40.9)	Lawrence	351	209	74.0	(64.0-84.0)	142	37.2	(31.1-43.3)	
Bedford	151	89	55.3	(43.8-66.8)	62	33.5	(25.2-41.8)	Lebanon	457	268	69.4	(61.1-77.7)	189	37.1	(31.8-42.4)	
Berks	1,047	574	54.2	(49.8-58.6)	473	35.1	(31.9-38.3)	Lehigh	916	502	56.2	(51.3-61.1)	414	33.5	(30.3-36.7)	
Blair	400	244	65.3	(57.1-73.5)	156	31.0	(26.1-35.9)	Luzerne	1,087	617	66.0	(60.8-71.2)	470	36.6	(33.3-39.9)	
Bradford	212	119	60.2	(49.4-71.0)	93	40.6	(32.3-48.9)	Lycoming	380	211	63.4	(54.8-72.0)	169	39.9	(33.9-45.9)	
Bucks	1,641	876	53.6	(50.1-57.1)	765	36.5	(33.9-39.1)	McKean	153	76	59.4	(46.0-72.8)	77	49.4	(38.4-60.4)	
Butler	542	330	67.0	(59.8-74.2)	212	32.5	(28.1-36.9)	Mercer	440	244	67.8	(59.3-76.3)	196	42.2	(36.3-48.1)	
Cambria	467	257	57.2	(50.2-64.2)	210	34.1	(29.5-38.7)	Mifflin	171	94	64.2	(51.2-77.2)	77	43.2	(33.6-52.8)	
Cameron	14	5	ND		9	ND		Monroe	498	298	72.5	(64.3-80.7)	200	42.0	(36.2-47.8)	
Carbon	225	141	70.7	(59.0-82.4)	84	33.6	(26.4-40.8)	Montgomery	2,075	1,097	52.3	(49.2-55.4)	978	34.8	(32.6-37.0)	
Centre	283	169	53.9	(45.8-62.0)	114	29.2	(23.8-34.6)	Montour	42	23	40.0	(23.7-56.3)	19	ND		
Chester	1,109	558	47.4	(43.5-51.3)	551	37.2	(34.1-40.3)	Northampton	851	503	63.6	(58.0-69.2)	348	32.8	(29.4-36.2)	
Clarion	114	85	73.3	(57.7-88.9)	29	22.5	(14.3-30.7)	Northumberland	365	217	73.7	(63.9-83.5)	148	39.3	(33.0-45.6)	
Clearfield	260	156	61.8	(52.1-71.5)	104	33.8	(27.3-40.3)	Perry	150	107	89.0	(72.1-105.9)	43	30.1	(21.1-39.1)	
Clinton	154	75	66.9	(51.8-82.0)	79	59.1	(46.1-72.1)	Philadelphia	4,474	2,263	73.6	(70.6-76.6)	2,211	48.4	(46.4-50.4)	
Columbia	210	130	71.2	(59.0-83.4)	80	33.7	(26.3-41.1)	Pike	137	80	44.9	(35.1-54.7)	57	29.8	(22.1-37.5)	
Crawford	334	182	68.5	(58.5-78.5)	152	47.4	(39.9-54.9)	Potter	67	35	60.8	(40.7-80.9)	32	47.2	(30.8-63.6)	
Cumberland	603	324	51.0	(45.4-56.6)	279	33.5	(29.6-37.4)	Schuylkill	581	340	73.7	(65.9-81.5)	241	40.7	(35.6-45.8)	
Dauphin	710	383	59.3	(53.4-65.2)	327	36.5	(32.5-40.5)	Snyder	106	72	68.0	(52.3-83.7)	34	25.8	(17.1-34.5)	
Delaware	1,758	894	65.3	(61.0-69.6)	864	45.6	(42.6-48.6)	Somerset	216	131	52.0	(43.1-60.9)	85	27.2	(21.4-33.0)	
Elk	129	76	72.7	(56.4-89.0)	53	38.9	(28.4-49.4)	Sullivan	29	23	84.0	(49.7-118.3)	6	ND		
Erie	836	448	63.1	(57.3-68.9)	388	41.0	(36.9-45.1)	Susquehanna	150	92	64.5	(51.3-77.7)	58	37.6	(27.9-47.3)	
Fayette	604	365	85.2	(76.5-93.9)	239	42.0	(36.7-47.3)	Tioga	135	78	56.5	(44.0-69.0)	57	35.8	(26.5-45.1)	
Forest	36	22	85.8	(49.9-121.7)	14	ND		Union	111	62	54.6	(41.0-68.2)	49	33.4	(24.0-42.8)	
Franklin	449	271	63.3	(55.8-70.8)	178	32.9	(28.1-37.7)	Venango	237	135	78.9	(65.6-92.2)	102	46.6	(37.6-55.6)	
Fulton	46	31	67.4	(43.7-91.1)	15	ND		Warren	149	70	50.7	(38.8-62.6)	79	47.6	(37.1-58.1)	
Greene	145	82	77.2	(60.5-93.9)	63	46.5	(35.0-58.0)	Washington	799	454	72.7	(66.0-79.4)	345	42.1	(37.7-46.5)	
Huntingdon	144	84	62.5	(49.1-75.9)	60	36.4	(27.2-45.6)	Wayne	193	118	63.3	(51.9-74.7)	75	35.3	(27.3-43.3)	
Indiana	210	112	46.9	(38.2-55.6)	98	31.7	(25.4-38.0)	Westmoreland	1,366	773	66.6	(61.9-71.3)	593	37.7	(34.7-40.7)	
Jefferson	147	93	65.6	(52.3-78.9)	54	30.8	(22.6-39.0)	Wyoming	92	63	74.2	(55.9-92.5)	29	30.0	(19.1-40.9)	
								York	1,201	670	58.9	(54.4-63.4)	531	38.4	(35.1-41.7)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

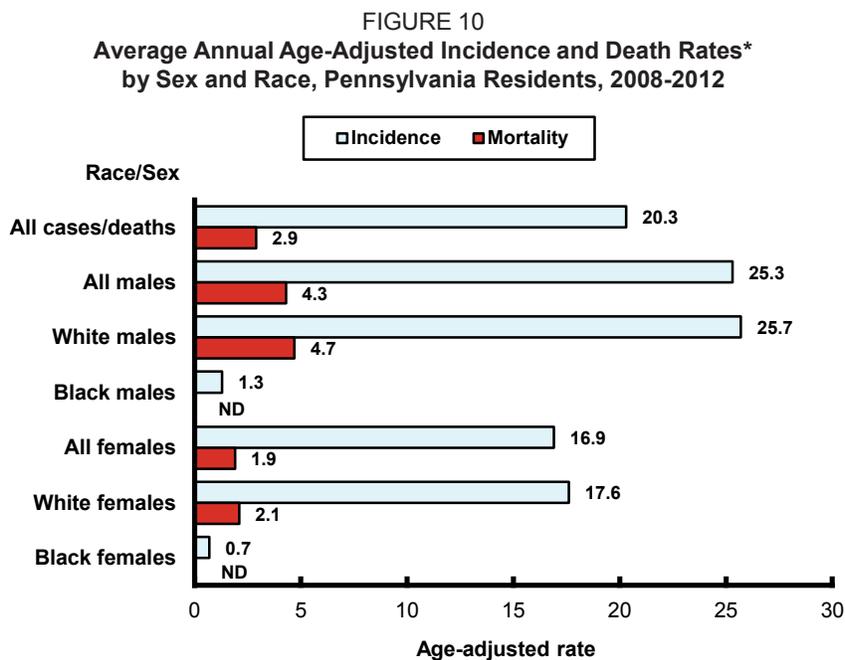
Melanoma of the Skin

Data Highlights

Average annual (2008-2012) age-adjusted incidence rates for invasive melanoma of the skin were higher among white males (25.7 per 100,000) compared to white females (17.6). Among black males and black females, the rates were much lower, 1.3 and 0.7, respectively. Nationally, whites have a much greater risk compared to population groups with darker skin pigmentation, and white males have a greater risk than white females. There were 3,220 invasive cases of malignant melanoma of the skin diagnosed in 2012 among residents. This is the largest annual number of cases reported during the period of 2003-2012 and is 34 percent higher than the annual number of cases (2,408) reported in 2003. Annual age-adjusted incidence rates for white males and white females have been increasing consistently. Incidence rates for the United States, as published by the National Cancer Institute, also revealed increasing risks between 1975 and 2012. The Pennsylvania average annual age-specific incidence rates for 2008-2012 rose dramatically with age, especially for white males. Compared to white females, age-specific incidence rates were higher among white males aged 50 and older. However, white females aged 15-49 had higher age-specific incidence rates than comparable white males.

In 2012, 83 percent of the melanoma of the skin cancers reported to the Pennsylvania Cancer Registry were diagnosed during the early stage (in situ or local) of the disease, and just 8 percent of the cases were diagnosed at the late stage (regional or distant). Prevention of most melanoma deaths should be possible through primary prevention, such as decreased exposure to sunlight, and through screening. Earlier diagnoses can permit more effective treatment.

As observed with incidence, the average annual age-adjusted death rates for 2008-2012 were much higher for white males compared to white females. There were 430 deaths due to melanoma skin cancer among state residents in 2012, yielding an age-adjusted death rate of 2.6 per 100,000, the lowest rate observed during the 10-year period, 2003-2012. Nearly all of the deaths due to melanoma occurred among whites. There were no discernible trends in the annual age-adjusted death rates for white males or white females during the 10-year period of 2003-2012, although both groups experienced decreases in 2012.



Risk Factors

Excess exposure to the sun or other ultraviolet radiation sources (especially at an early age), tanning lamps and beds, lack of skin pigmentation, fair skin, freckling, light hair, immediate family history of skin cancer, personal history of melanoma, dysplastic nevi (moles), and xeroderma pigmentosa are suggestive.

Early Detection

The American Cancer Society recommends routine examinations for changes in skin appearance.

Melanoma of the Skin: INCIDENCE (Invasive)

**TABLE
10-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

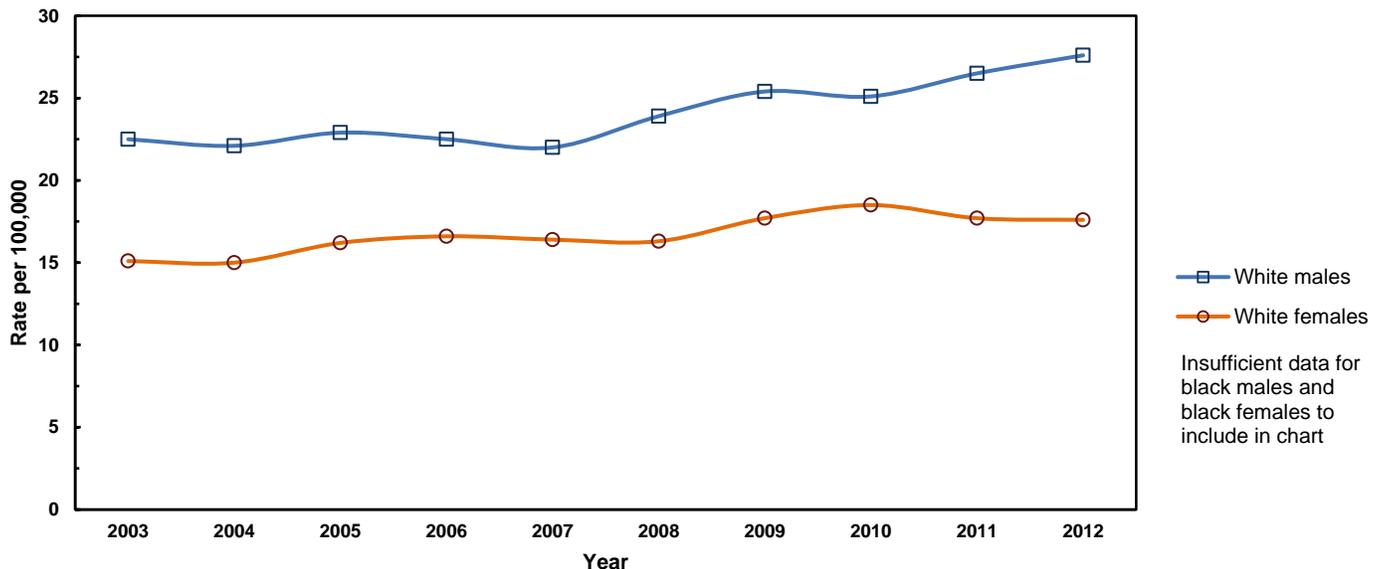
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	3,220	21.2 (20.5-21.9)	1,912	27.2 (26.0-28.4)	1,738	27.6 (26.3-28.9)	7	ND	1,308	17.0 (16.1-17.9)	1,162	17.6 (16.6-18.6)	6	ND
2011	3,194	21.1 (20.4-21.8)	1,821	26.2 (25.0-27.4)	1,656	26.5 (25.2-27.8)	6	ND	1,373	17.6 (16.7-18.5)	1,202	17.7 (16.7-18.7)	6	ND
2010	3,069	20.5 (19.8-21.2)	1,712	24.9 (23.7-26.1)	1,532	25.1 (23.8-26.4)	5	ND	1,356	17.6 (16.7-18.5)	1,216	18.5 (17.5-19.5)	3	ND
2009	2,940	20.3 (19.6-21.0)	1,656	25.1 (23.9-26.3)	1,513	25.4 (24.1-26.7)	7	ND	1,284	17.0 (16.1-17.9)	1,170	17.7 (16.7-18.7)	5	ND
2008	2,585	18.2 (17.5-18.9)	1,460	22.8 (21.6-24.0)	1,384	23.9 (22.6-25.2)	9	ND	1,125	15.2 (14.3-16.1)	1,064	16.3 (15.3-17.3)	4	ND
2007	2,431	17.3 (16.6-18.0)	1,321	21.0 (19.9-22.1)	1,253	22.0 (20.8-23.2)	6	ND	1,110	15.3 (14.4-16.2)	1,039	16.4 (15.4-17.4)	6	ND
2006	2,501	18.0 (17.3-18.7)	1,360	21.7 (20.5-22.9)	1,274	22.5 (21.3-23.7)	5	ND	1,141	15.8 (14.9-16.7)	1,049	16.6 (15.6-17.6)	4	ND
2005	2,494	17.9 (17.2-18.6)	1,388	22.1 (20.9-23.3)	1,301	22.9 (21.7-24.1)	2	ND	1,106	15.2 (14.3-16.1)	1,038	16.2 (15.2-17.2)	6	ND
2004	2,366	17.1 (16.4-17.8)	1,335	21.4 (20.3-22.5)	1,250	22.1 (20.9-23.3)	5	ND	1,030	14.4 (13.5-15.3)	955	15.0 (14.0-16.0)	3	ND
2003	2,408	17.6 (16.9-18.3)	1,359	22.0 (20.8-23.2)	1,260	22.5 (21.3-23.7)	2	ND	1,049	14.8 (13.9-15.7)	947	15.1 (14.1-16.1)	4	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
10-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Melanoma of the Skin: INCIDENCE (Invasive)

**TABLE
10-B**

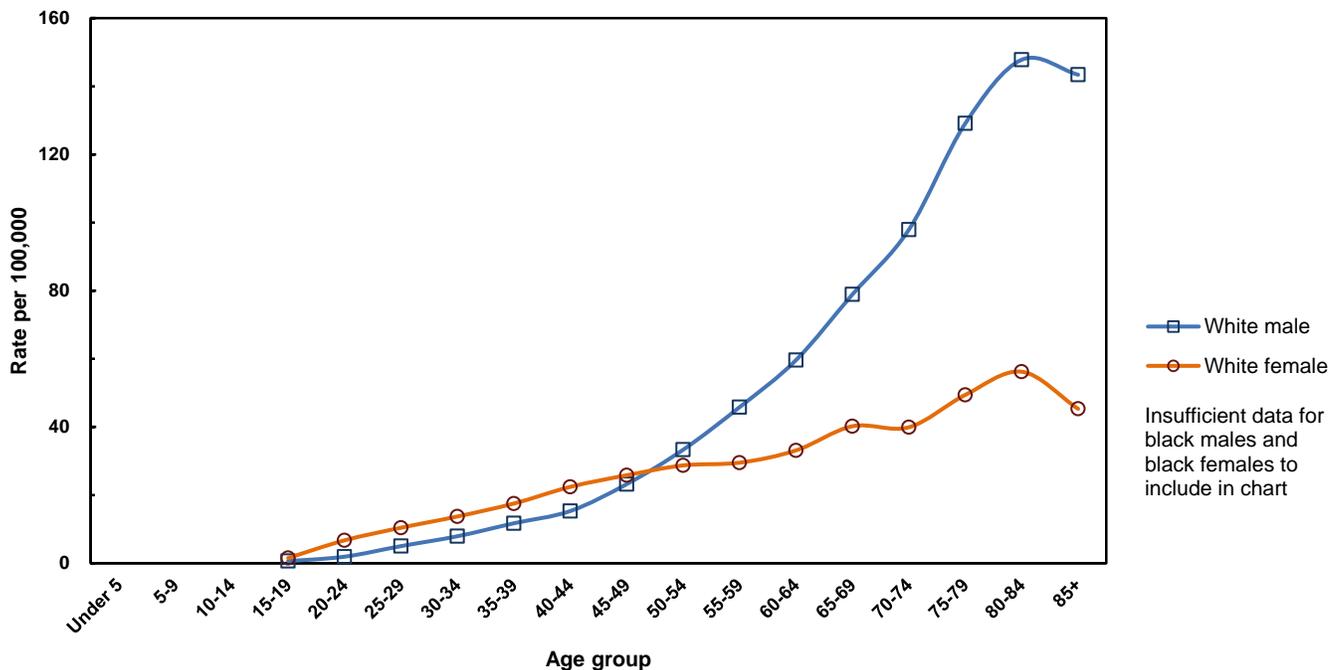
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	23.7	27.8	30.1	1.0	19.9	21.4	0.7
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	0.9	0.5	0.6	ND	1.3	1.5	ND
20-24	3.6	1.6	1.9	ND	5.7	6.7	ND
25-29	6.7	4.4	5.0	ND	9.2	10.4	ND
30-34	9.8	7.0	7.9	ND	12.5	13.7	ND
35-39	13.9	11.2	11.7	ND	16.6	17.5	ND
40-44	17.7	14.7	15.3	ND	20.6	22.4	ND
45-49	23.7	22.6	23.2	ND	24.7	25.8	ND
50-54	30.5	33.4	33.3	ND	27.8	28.7	ND
55-59	36.8	45.1	45.8	ND	28.9	29.5	ND
60-64	45.8	59.5	59.6	ND	33.2	33.1	ND
65-69	57.3	77.6	78.9	ND	39.6	40.2	ND
70-74	64.3	95.6	97.9	ND	39.1	39.9	ND
75-79	81.7	126.7	129.1	ND	49.1	49.4	ND
80-84	91.1	147.0	147.8	ND	55.9	56.2	ND
85+	77.5	144.8	143.4	ND	46.5	45.3	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
10-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Melanoma of the Skin: INCIDENCE (Invasive)

**TABLE
10-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

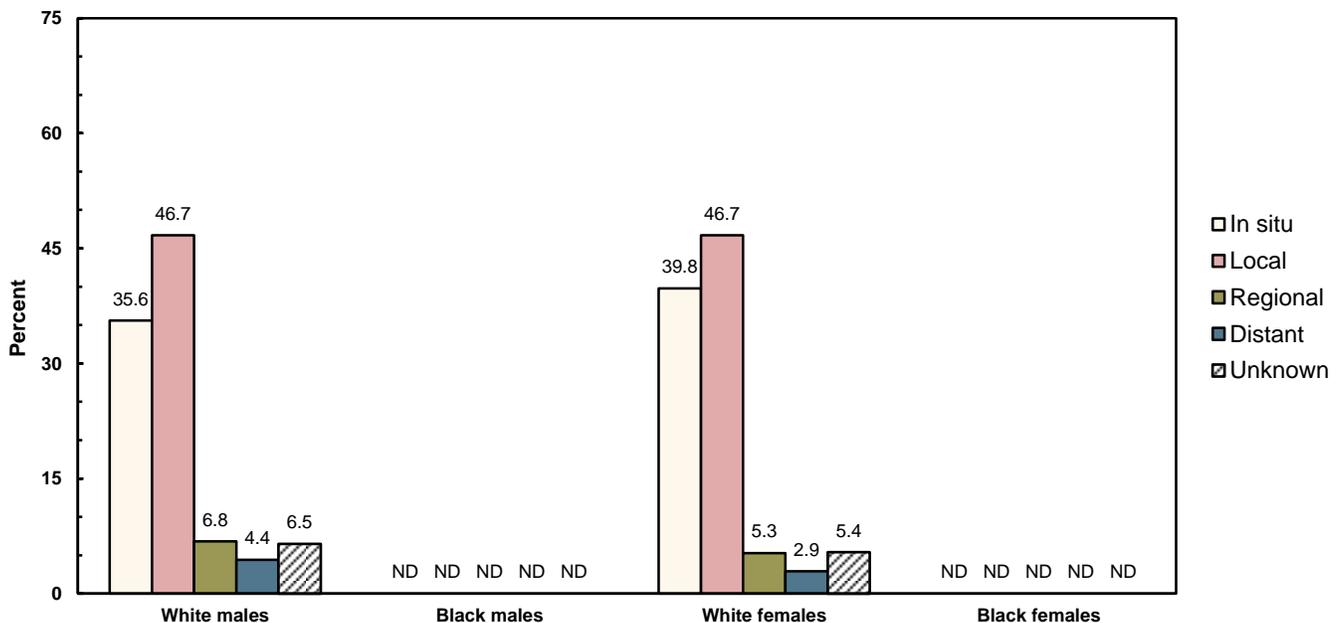
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	15,008	8,561	7,823	34	6,446	5,814	24
Under 5	7	4	3	1	3	3	0
5-9	7	4	2	2	3	3	0
10-14	7	2	2	0	5	5	0
15-19	41	12	11	1	29	26	0
20-24	160	36	34	0	124	116	0
25-29	262	86	79	0	176	160	0
30-34	365	132	121	0	233	205	1
35-39	531	213	184	2	318	274	0
40-44	755	312	275	2	443	404	2
45-49	1,092	513	456	1	579	515	1
50-54	1,447	776	680	2	671	600	1
55-59	1,593	951	860	5	641	574	2
60-64	1,692	1,055	951	5	637	563	5
65-69	1,602	1,011	936	3	591	539	2
70-74	1,413	938	878	4	475	437	2
75-79	1,475	961	903	3	514	471	3
80-84	1,352	843	790	1	509	471	3
85+	1,207	712	658	2	495	448	2

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
10-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 3,195 - 99.2%

Melanoma of the Skin: MORTALITY

**TABLE
10-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

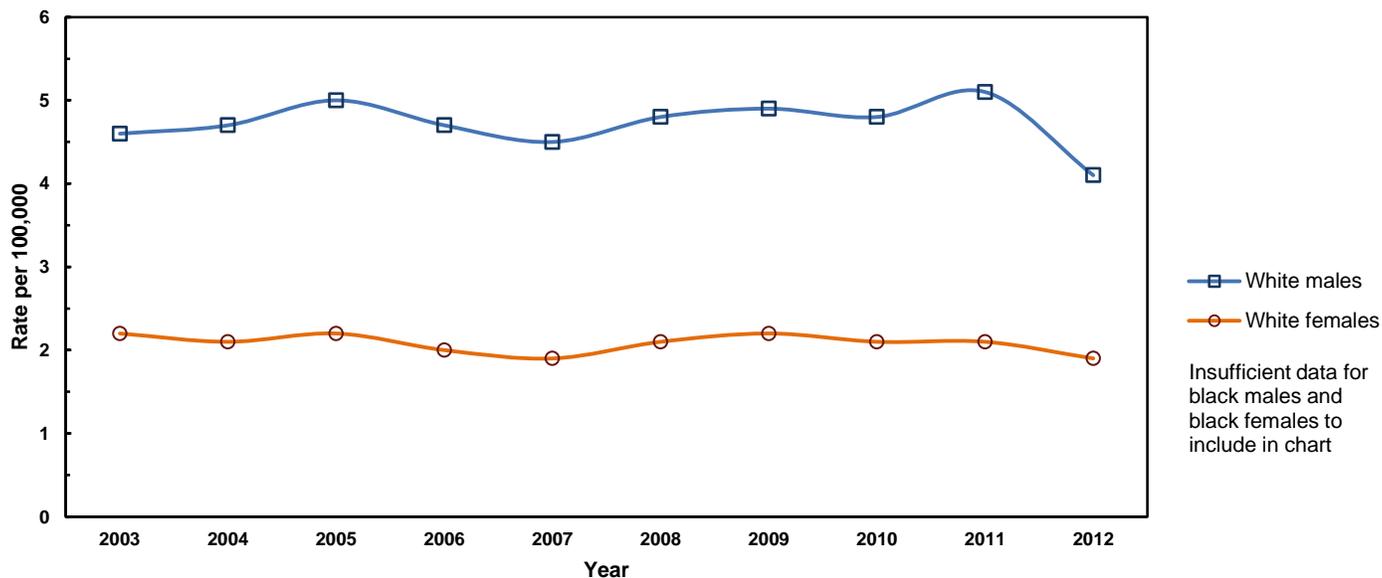
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	430	2.6 (2.4-2.8)	269	3.8 (3.3-4.3)	267	4.1 (3.6-4.6)	1	ND	161	1.7 (1.4-2.0)	158	1.9 (1.6-2.2)	1	ND
2011	482	3.1 (2.8-3.4)	315	4.6 (4.1-5.1)	313	5.1 (4.5-5.7)	2	ND	167	1.9 (1.6-2.2)	161	2.1 (1.8-2.4)	4	ND
2010	462	3.0 (2.7-3.3)	298	4.4 (3.9-4.9)	292	4.8 (4.2-5.4)	4	ND	164	1.9 (1.6-2.2)	161	2.1 (1.8-2.4)	2	ND
2009	470	3.1 (2.8-3.4)	299	4.5 (4.0-5.0)	297	4.9 (4.3-5.5)	2	ND	171	2.0 (1.7-2.3)	170	2.2 (1.9-2.5)	1	ND
2008	441	3.0 (2.7-3.3)	278	4.4 (3.9-4.9)	277	4.8 (4.2-5.4)	0	ND	163	1.9 (1.6-2.2)	159	2.1 (1.8-2.4)	4	ND
2007	406	2.7 (2.4-3.0)	259	4.2 (3.7-4.7)	255	4.5 (3.9-5.1)	3	ND	147	1.7 (1.4-2.0)	144	1.9 (1.6-2.2)	3	ND
2006	416	2.9 (2.6-3.2)	265	4.4 (3.9-4.9)	263	4.7 (4.1-5.3)	2	ND	151	1.8 (1.5-2.1)	147	2.0 (1.7-2.3)	2	ND
2005	458	3.1 (2.8-3.4)	288	4.7 (4.2-5.2)	284	5.0 (4.4-5.6)	3	ND	170	2.0 (1.7-2.3)	164	2.2 (1.9-2.5)	5	ND
2004	417	2.9 (2.6-3.2)	267	4.3 (3.8-4.8)	266	4.7 (4.1-5.3)	1	ND	150	1.9 (1.6-2.2)	149	2.1 (1.8-2.4)	1	ND
2003	416	2.9 (2.6-3.2)	256	4.2 (3.7-4.7)	255	4.6 (4.0-5.2)	1	ND	160	2.0 (1.7-2.3)	156	2.2 (1.9-2.5)	4	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (See Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
10-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Melanoma of the Skin: MORTALITY

**TABLE
10-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

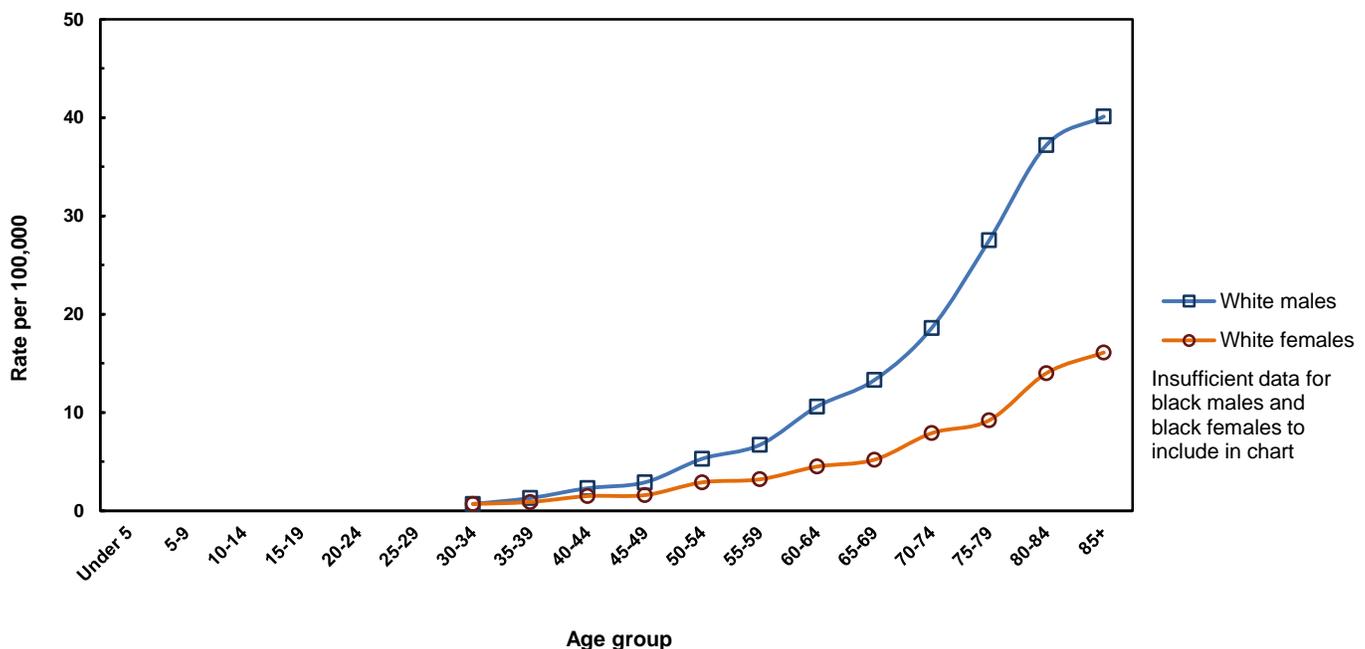
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	2,285	3.6	1,459	4.7	1,446	5.6	9	ND	826	2.5	809	3.0	12	0.3
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	3	ND	2	ND	2	ND	0	ND	1	ND	1	ND	0	ND
20-24	5	ND	5	ND	5	ND	0	ND	0	ND	0	ND	0	ND
25-29	13	0.3	8	ND	8	ND	0	ND	5	ND	5	ND	0	ND
30-34	21	0.6	11	0.6	11	0.7	0	ND	10	0.5	10	0.7	0	ND
35-39	36	0.9	20	1.1	20	1.3	0	ND	16	0.8	14	0.9	1	ND
40-44	71	1.7	43	2.0	42	2.3	1	ND	28	1.3	27	1.5	0	ND
45-49	89	1.9	57	2.5	56	2.9	1	ND	32	1.4	32	1.6	0	ND
50-54	171	3.6	109	4.7	108	5.3	0	ND	62	2.6	60	2.9	2	ND
55-59	192	4.4	127	6.0	125	6.7	1	ND	65	2.9	63	3.2	2	ND
60-64	248	6.7	171	9.6	169	10.6	2	ND	77	4.0	76	4.5	1	ND
65-69	231	8.3	159	12.2	158	13.3	0	ND	72	4.8	70	5.2	1	ND
70-74	256	11.7	167	17.0	167	18.6	0	ND	89	7.3	87	7.9	2	ND
75-79	285	15.8	195	25.7	192	27.5	3	ND	90	8.6	88	9.2	1	ND
80-84	317	21.4	199	34.7	199	37.2	0	ND	118	13.0	117	14.0	1	ND
85+	347	22.3	186	37.8	184	40.1	1	ND	161	15.1	159	16.1	1	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
10-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Melanoma of the Skin: INCIDENCE (Invasive)

**TABLE
10-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	15,008	8,561	25.3	(24.8-25.8)	6,446	16.9	(16.5-17.3)									
Adams	148	84	29.0	(22.8-35.2)	64	20.8	(15.7-25.9)	Juniata	37	20	28.8	(16.2-41.4)	17	ND		
Allegheny	1,180	660	19.7	(18.2-21.2)	520	13.6	(12.4-14.8)	Lackawanna	214	120	19.5	(16.0-23.0)	94	13.2	(10.5-15.9)	
Armstrong	76	43	20.2	(14.2-26.2)	33	15.9	(10.5-21.3)	Lancaster	609	368	27.4	(24.6-30.2)	241	16.6	(14.5-18.7)	
Beaver	160	81	15.6	(12.2-19.0)	79	14.5	(11.3-17.7)	Lawrence	103	57	21.4	(15.8-27.0)	45	16.7	(11.8-21.6)	
Bedford	66	46	30.1	(21.4-38.8)	20	12.6	(7.1-18.1)	Lebanon	181	106	28.1	(22.8-33.4)	75	18.4	(14.2-22.6)	
Berks	511	284	26.8	(23.7-29.9)	227	19.6	(17.1-22.1)	Lehigh	457	265	29.3	(25.8-32.8)	192	17.9	(15.4-20.4)	
Blair	155	93	26.2	(20.9-31.5)	62	14.1	(10.6-17.6)	Luzerne	374	231	25.3	(22.0-28.6)	143	13.5	(11.3-15.7)	
Bradford	99	51	27.6	(20.0-35.2)	48	25.5	(18.3-32.7)	Lycoming	189	96	28.8	(23.0-34.6)	93	27.0	(21.5-32.5)	
Bucks	1,020	603	34.2	(31.5-36.9)	417	21.7	(19.6-23.8)	McKean	53	28	21.9	(13.8-30.0)	25	21.4	(13.0-29.8)	
Butler	236	145	28.1	(23.5-32.7)	91	17.0	(13.5-20.5)	Mercer	135	67	19.4	(14.8-24.0)	68	19.6	(14.9-24.3)	
Cambria	169	92	20.5	(16.3-24.7)	77	16.6	(12.9-20.3)	Mifflin	62	35	26.1	(17.5-34.7)	27	19.5	(12.1-26.9)	
Cameron	4	2	ND		2	ND		Monroe	144	65	15.6	(11.8-19.4)	79	17.2	(13.4-21.0)	
Carbon	88	51	26.8	(19.4-34.2)	37	16.6	(11.3-21.9)	Montgomery	1,220	723	34.1	(31.6-36.6)	497	20.3	(18.5-22.1)	
Centre	205	118	38.1	(31.2-45.0)	87	24.4	(19.3-29.5)	Montour	27	19	ND		8	ND		
Chester	787	447	36.4	(33.0-39.8)	340	23.7	(21.2-26.2)	Northampton	432	253	31.9	(28.0-35.8)	179	19.7	(16.8-22.6)	
Clarion	54	28	26.7	(16.8-36.6)	26	24.9	(15.3-34.5)	Northumberland	121	59	20.0	(14.9-25.1)	62	21.6	(16.2-27.0)	
Clearfield	99	60	24.6	(18.4-30.8)	39	18.2	(12.5-23.9)	Perry	68	39	31.9	(21.9-41.9)	29	21.8	(13.9-29.7)	
Clinton	44	27	23.7	(14.8-32.6)	17	ND		Philadelphia	755	438	13.9	(12.6-15.2)	317	7.1	(6.3-7.9)	
Columbia	111	64	35.9	(27.1-44.7)	47	24.0	(17.1-30.9)	Pike	58	28	14.6	(9.2-20.0)	30	16.4	(10.5-22.3)	
Crawford	92	45	17.6	(12.5-22.7)	47	15.4	(11.0-19.8)	Potter	27	20	33.5	(18.8-48.2)	7	ND		
Cumberland	423	242	37.6	(32.9-42.3)	181	26.3	(22.5-30.1)	Schuylkill	176	99	22.0	(17.7-26.3)	77	16.8	(13.0-20.6)	
Dauphin	343	184	28.4	(24.3-32.5)	159	20.1	(17.0-23.2)	Snyder	59	31	31.3	(20.3-42.3)	28	23.4	(14.7-32.1)	
Delaware	828	474	34.2	(31.1-37.3)	354	20.6	(18.5-22.7)	Somerset	99	56	22.5	(16.6-28.4)	43	17.6	(12.3-22.9)	
Elk	33	18	ND		15	ND		Sullivan	14	7	ND		7	ND		
Erie	252	130	17.8	(14.7-20.9)	122	15.2	(12.5-17.9)	Susquehanna	55	33	24.2	(15.9-32.5)	22	20.5	(11.9-29.1)	
Fayette	78	52	12.7	(9.2-16.2)	26	5.6	(3.4-7.8)	Tioga	74	42	32.5	(22.7-42.3)	32	25.3	(16.5-34.1)	
Forest	8	4	ND		4	ND		Union	74	35	27.4	(18.3-36.5)	39	32.7	(22.4-43.0)	
Franklin	256	157	37.5	(31.6-43.4)	99	22.6	(18.1-27.1)	Venango	71	46	28.1	(20.0-36.2)	25	15.9	(9.7-22.1)	
Fulton	27	18	ND		9	ND		Warren	55	34	27.9	(18.5-37.3)	21	18.1	(10.4-25.8)	
Greene	29	19	ND		10	ND		Washington	197	111	18.7	(15.2-22.2)	86	13.3	(10.5-16.1)	
Huntingdon	49	24	18.0	(10.8-25.2)	25	18.6	(11.3-25.9)	Wayne	53	32	18.7	(12.2-25.2)	21	12.7	(7.3-18.1)	
Indiana	73	49	21.7	(15.6-27.8)	24	9.9	(5.9-13.9)	Westmoreland	304	169	15.2	(12.9-17.5)	135	12.7	(10.6-14.8)	
Jefferson	61	26	18.8	(11.6-26.0)	35	29.3	(19.6-39.0)	Wyoming	43	23	28.3	(16.7-39.9)	20	22.5	(12.6-32.4)	
								York	704	385	33.1	(29.8-36.4)	319	25.8	(23.0-28.6)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Melanoma of the Skin: MORTALITY

**TABLE
10-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,285	1,459	4.3	(4.1-4.5)	826	1.9	(1.8-2.0)								
Adams	22	17	ND		5	ND		Juniata	5	4	ND		1	ND	
Allegheny	208	132	4.0	(3.3-4.7)	76	1.6	(1.2-2.0)	Lackawanna	36	25	4.0	(2.4-5.6)	11	ND	
Armstrong	14	11	ND		3	ND		Lancaster	102	69	5.1	(3.9-6.3)	33	1.8	(1.2-2.4)
Beaver	35	24	4.8	(2.9-6.7)	11	ND		Lawrence	27	15	ND		12	ND	
Bedford	11	8	ND		3	ND		Lebanon	28	13	ND		15	ND	
Berks	73	45	4.0	(2.8-5.2)	28	2.0	(1.3-2.7)	Lehigh	69	42	4.3	(3.0-5.6)	27	2.3	(1.4-3.2)
Blair	22	15	ND		7	ND		Luzerne	83	50	5.5	(4.0-7.0)	33	2.7	(1.8-3.6)
Bradford	13	8	ND		5	ND		Lycoming	31	18	ND		13	ND	
Bucks	140	94	5.7	(4.5-6.9)	46	2.2	(1.6-2.8)	McKean	5	4	ND		1	ND	
Butler	36	23	4.8	(2.8-6.8)	13	ND		Mercer	20	10	ND		10	ND	
Cambria	19	11	ND		8	ND		Mifflin	10	6	ND		4	ND	
Cameron	2	0	ND		2	ND		Monroe	23	15	ND		8	ND	
Carbon	22	14	ND		8	ND		Montgomery	131	86	4.1	(3.2-5.0)	45	1.5	(1.1-1.9)
Centre	20	11	ND		9	ND		Montour	4	1	ND		3	ND	
Chester	104	67	5.9	(4.5-7.3)	37	2.6	(1.8-3.4)	Northampton	50	35	4.4	(2.9-5.9)	15	ND	
Clarion	12	10	ND		2	ND		Northumberland	18	13	ND		5	ND	
Clearfield	18	9	ND		9	ND		Perry	10	9	ND		1	ND	
Clinton	5	3	ND		2	ND		Philadelphia	150	95	3.1	(2.5-3.7)	55	1.2	(0.9-1.5)
Columbia	15	11	ND		4	ND		Pike	8	4	ND		4	ND	
Crawford	14	7	ND		7	ND		Potter	3	1	ND		2	ND	
Cumberland	36	23	3.7	(2.2-5.2)	13	ND		Schuylkill	29	20	4.6	(2.6-6.6)	9	ND	
Dauphin	39	23	3.6	(2.1-5.1)	16	ND		Snyder	6	2	ND		4	ND	
Delaware	127	72	5.2	(4.0-6.4)	55	3.0	(2.2-3.8)	Somerset	16	7	ND		9	ND	
Elk	4	3	ND		1	ND		Sullivan	2	1	ND		1	ND	
Erie	54	35	5.0	(3.3-6.7)	19	ND		Susquehanna	10	8	ND		2	ND	
Fayette	31	20	5.1	(2.9-7.3)	11	ND		Tioga	8	6	ND		2	ND	
Forest	1	1	ND		0	ND		Union	4	3	ND		1	ND	
Franklin	29	23	5.3	(3.1-7.5)	6	ND		Venango	13	8	ND		5	ND	
Fulton	6	4	ND		2	ND		Warren	6	4	ND		2	ND	
Greene	6	4	ND		2	ND		Washington	32	20	3.1	(1.7-4.5)	12	ND	
Huntingdon	15	9	ND		6	ND		Wayne	13	9	ND		4	ND	
Indiana	12	6	ND		6	ND		Westmoreland	69	48	4.2	(3.0-5.4)	21	1.3	(0.7-1.9)
Jefferson	12	7	ND		5	ND		Wyoming	4	2	ND		2	ND	
								York	83	56	4.8	(3.5-6.1)	27	1.9	(1.2-2.6)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Female Breast

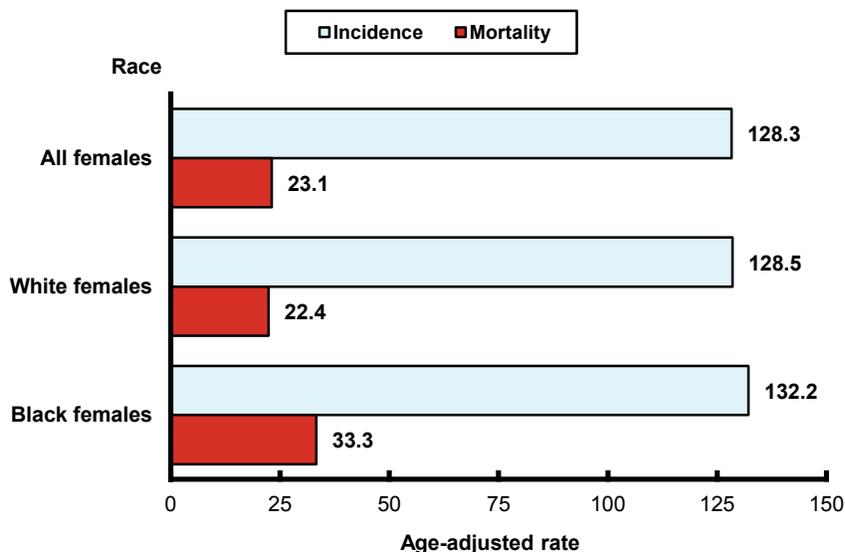
Data Highlights

As in previous years, breast cancer represented the leading cancer site for females. In Pennsylvania, there were 10,652 cases, accounting for approximately 27 percent of all invasive female cancer cases diagnosed in 2012. The 2008-2012 annual age-adjusted incidence rate for white females (128.5 per 100,000) was lower than the rate for black females (132.2). The annual age-adjusted rates among black females were higher than the rates for white females from 2006 to 2010; however, in 2011 and 2012, the rate for black females was less than the rate for white females. During the period 2003-2012, the rates among black women varied dramatically from a low of 118.1 in 2003 to high of 140.0 in 2008. The rate decreased by almost 13 percent from 138.1 in 2010 to 120.6 in 2012. Among white women, the annual rates were lowest for the years 2003 through 2007. The average annual age-specific incidence rates for 2008-2012 rose rapidly for females aged 30 and over. During the period of 2008-2012, approximately 96 percent of the female breast cancer cases were diagnosed among Pennsylvania residents aged 40 years or older.

In 2012, breast cancer was the second most frequent cause of cancer mortality among females, with 2,012 deaths – surpassed only by lung/bronchus cancers, which were responsible for 3,409 resident female deaths. Stage of disease is the single best predictor of survival. In 2012, about 27 percent of the female breast cancers were diagnosed at the late stage (regional or distant) of the disease, and 71 percent were diagnosed at the early (in situ or local) stage. According to national estimates, five-year survival rates were nearly 85 percent for regionally staged cancers but dropped to 26 percent for distant staged cancers.

The 2008-2012 average annual age-adjusted death rate among black females (33.3 per 100,000) was about 49 percent higher than the rate for white females (22.4). The annual age-adjusted death rate for 2012 among all females was 23.1, representing the lowest rate recorded during the 10-year period of 2003-2012. Annual age-adjusted death rates for white female residents have declined slightly. The death rates among black females have decreased steadily since 2009, reaching a low of 30.7 in 2012. While there are no proven technologies to reduce breast cancer incidence, interventions aimed at early detection can significantly reduce death rates.

FIGURE 11
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2008-2012



*per 100,000 2000 U.S. standard million population

Risk Factors

Genetic risk factors (gene defects/mutations), family history of breast cancer (mother, sister or daughter), dense breast tissue, benign proliferative lesions, lobular carcinoma in situ, early onset of menarche, late onset of menopause, chest radiation treatment (children/young adults), diethylstilbestrol exposure (DES), never being pregnant, first full-term pregnancy after age 30, use of birth control pills, long-term combined postmenopausal hormone therapy, long-term estrogen replacement therapy, not breast-feeding, heavy alcohol consumption, obesity, and lack of physical activity are associated with female breast cancer.

Early Detection

Experts believe early detection tests for breast cancer save many thousands of lives each year. The American Cancer Society recommends mammograms, clinical breast exams, self exams, and, occasionally, MRI screening for high risk women.

Cancer of the Female Breast: INCIDENCE (Invasive)

**TABLE
11-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	10,652	128.2 (125.8-130.6)	9,440	129.2 (126.6-131.8)	905	120.6 (112.7-128.5)
2011	10,561	128.1 (125.7-130.5)	9,375	128.6 (126.0-131.2)	938	127.6 (119.4-135.8)
2010	10,206	124.9 (122.5-127.3)	8,977	125.4 (122.8-128.0)	981	138.1 (129.5-146.7)
2009	10,421	131.0 (128.5-133.5)	9,292	130.7 (128.0-133.4)	920	136.5 (127.7-145.3)
2008	10,255	129.9 (127.4-132.4)	9,111	128.9 (126.3-131.5)	924	140.0 (131.0-149.0)
2007	9,708	123.5 (121.0-126.0)	8,654	122.6 (120.0-125.2)	848	128.9 (120.2-137.6)
2006	9,739	124.4 (121.9-126.9)	8,680	123.5 (120.9-126.1)	832	127.1 (118.5-135.7)
2005	9,505	121.4 (119.0-123.8)	8,537	121.0 (118.4-123.6)	769	118.9 (110.5-127.3)
2004	9,568	123.2 (120.7-125.7)	8,635	123.6 (121.0-126.2)	766	119.6 (111.1-128.1)
2003	9,399	121.7 (119.2-124.2)	8,478	122.1 (119.5-124.7)	750	118.1 (109.6-126.6)

* Includes any unknowns

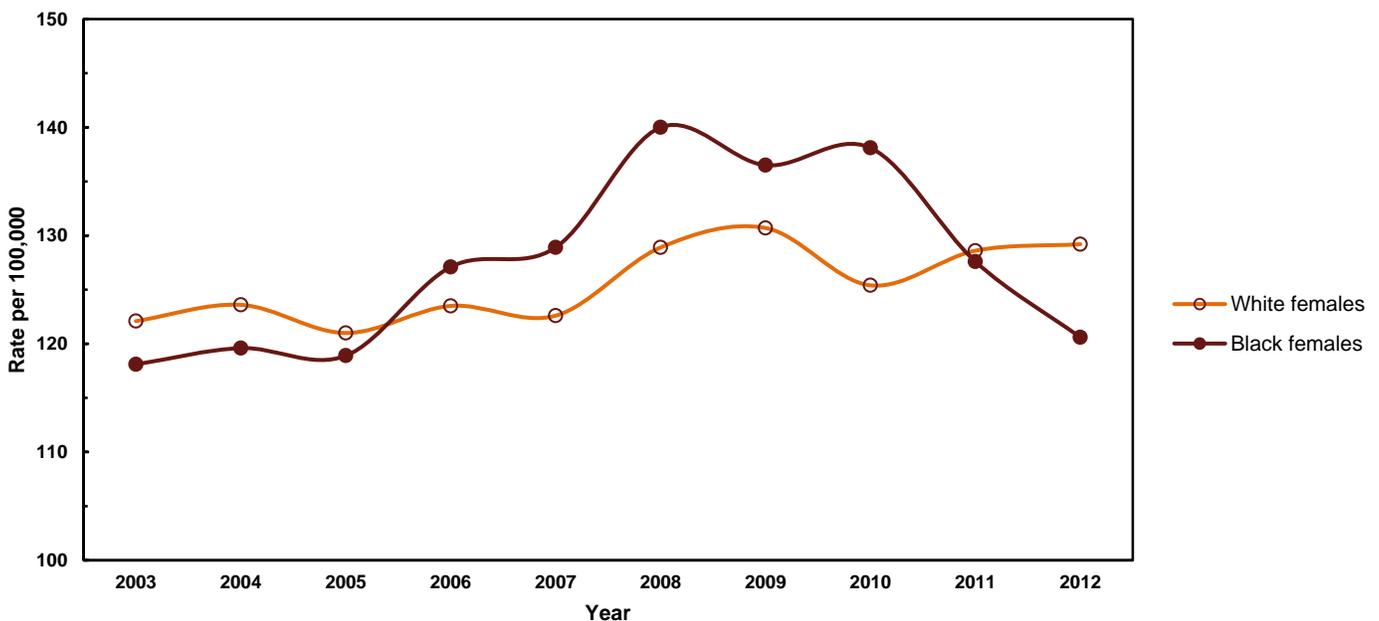
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
11-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Female Breast: INCIDENCE (Invasive)

**TABLE
11-B**

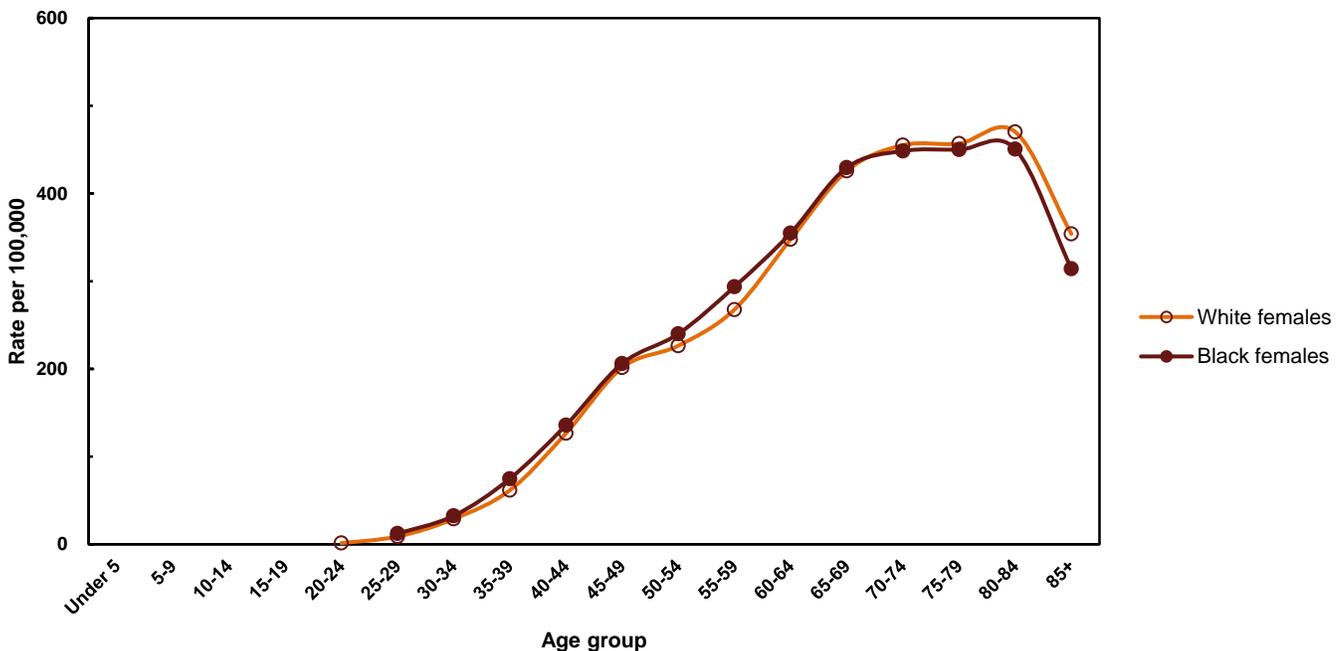
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**

Age Group	All Females	White	Black
Total	160.5	169.7	127.9
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	ND	ND	ND
20-24	1.1	1.3	ND
25-29	9.4	8.7	12.2
30-34	28.9	28.8	32.3
35-39	62.6	61.5	74.7
40-44	126.2	126.5	135.8
45-49	200.6	201.4	206.0
50-54	226.1	226.4	239.9
55-59	268.3	267.6	293.6
60-64	345.7	347.8	354.8
65-69	423.8	425.7	429.5
70-74	453.0	455.1	448.5
75-79	456.8	456.9	450.0
80-84	469.8	470.3	450.6
85+	354.9	353.9	314.1

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
11-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Female Breast: INCIDENCE (Invasive)

**TABLE
11-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2008-2012**

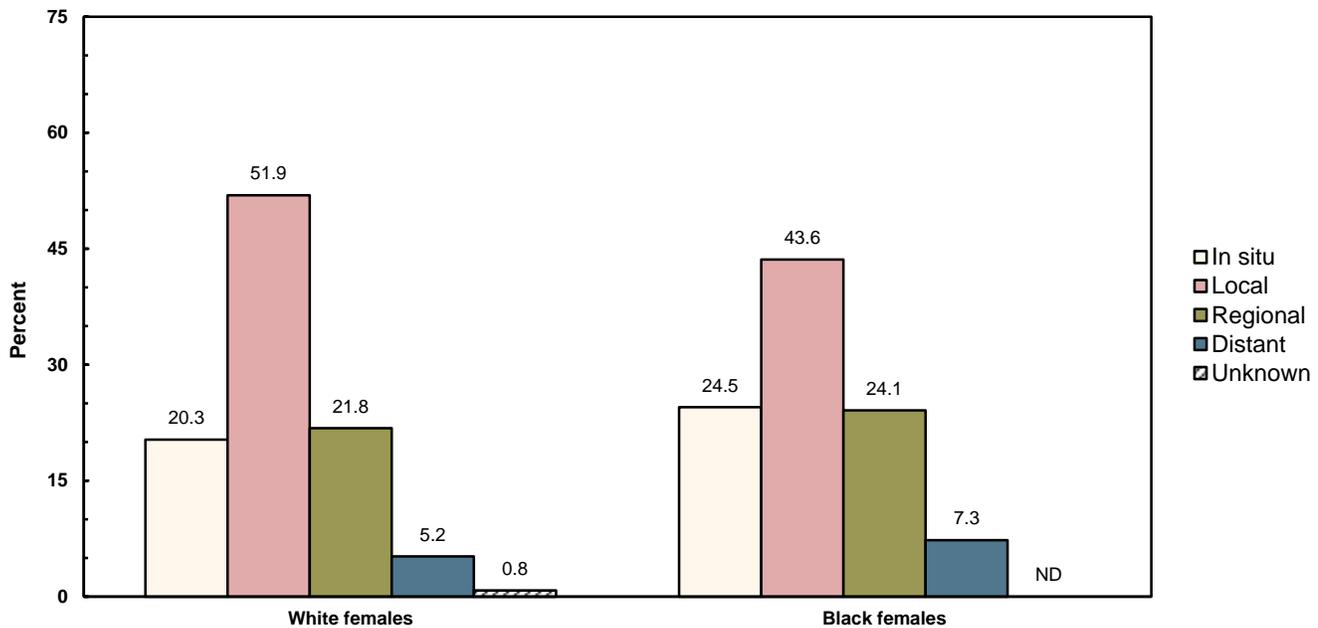
Age Group	All Females*	White	Black
Total	52,095	46,195	4,668
Under 5	1	0	1
5-9	0	0	0
10-14	1	1	0
15-19	3	1	1
20-24	25	23	2
25-29	180	133	31
30-34	539	432	77
35-39	1,198	963	171
40-44	2,719	2,282	332
45-49	4,695	4,021	516
50-54	5,455	4,735	579
55-59	5,959	5,212	605
60-64	6,640	5,915	591
65-69	6,332	5,702	508
70-74	5,502	4,982	424
75-79	4,786	4,354	349
80-84	4,279	3,941	275
85+	3,780	3,497	206

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
11-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Female Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 10,516 - 98.7%

Cancer of the Female Breast: MORTALITY

**TABLE
11-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

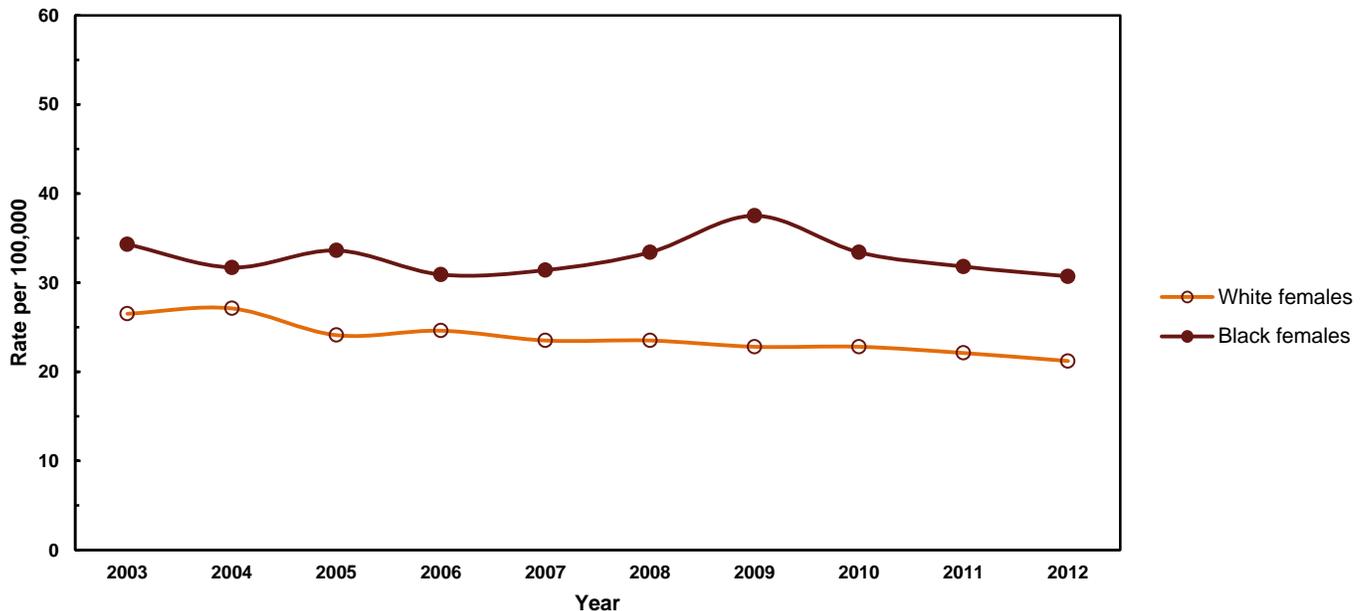
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	2,012	22.2 (21.2-23.2)	1,733	21.2 (20.2-22.2)	236	30.7 (26.8-34.6)
2011	2,042	22.7 (21.7-23.7)	1,781	22.1 (21.1-23.1)	236	31.8 (27.7-35.9)
2010	2,071	23.1 (22.1-24.1)	1,824	22.8 (21.8-23.8)	237	33.4 (29.1-37.7)
2009	2,111	23.8 (22.8-24.8)	1,837	22.8 (21.8-23.8)	257	37.5 (32.9-42.1)
2008	2,083	24.0 (23.0-25.0)	1,852	23.5 (22.4-24.6)	226	33.4 (29.0-37.8)
2007	2,046	24.0 (23.0-25.0)	1,825	23.5 (22.4-24.6)	207	31.4 (27.1-35.7)
2006	2,096	24.9 (23.8-26.0)	1,882	24.6 (23.5-25.7)	203	30.9 (26.6-35.2)
2005	2,114	24.7 (23.6-25.8)	1,891	24.1 (23.0-25.2)	217	33.6 (29.1-38.1)
2004	2,294	27.4 (26.3-28.5)	2,074	27.1 (25.9-28.3)	205	31.7 (27.4-36.0)
2003	2,267	27.0 (25.9-28.1)	2,035	26.5 (25.3-27.7)	218	34.3 (29.7-38.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
11-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Female Breast: MORTALITY

**TABLE
11-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**

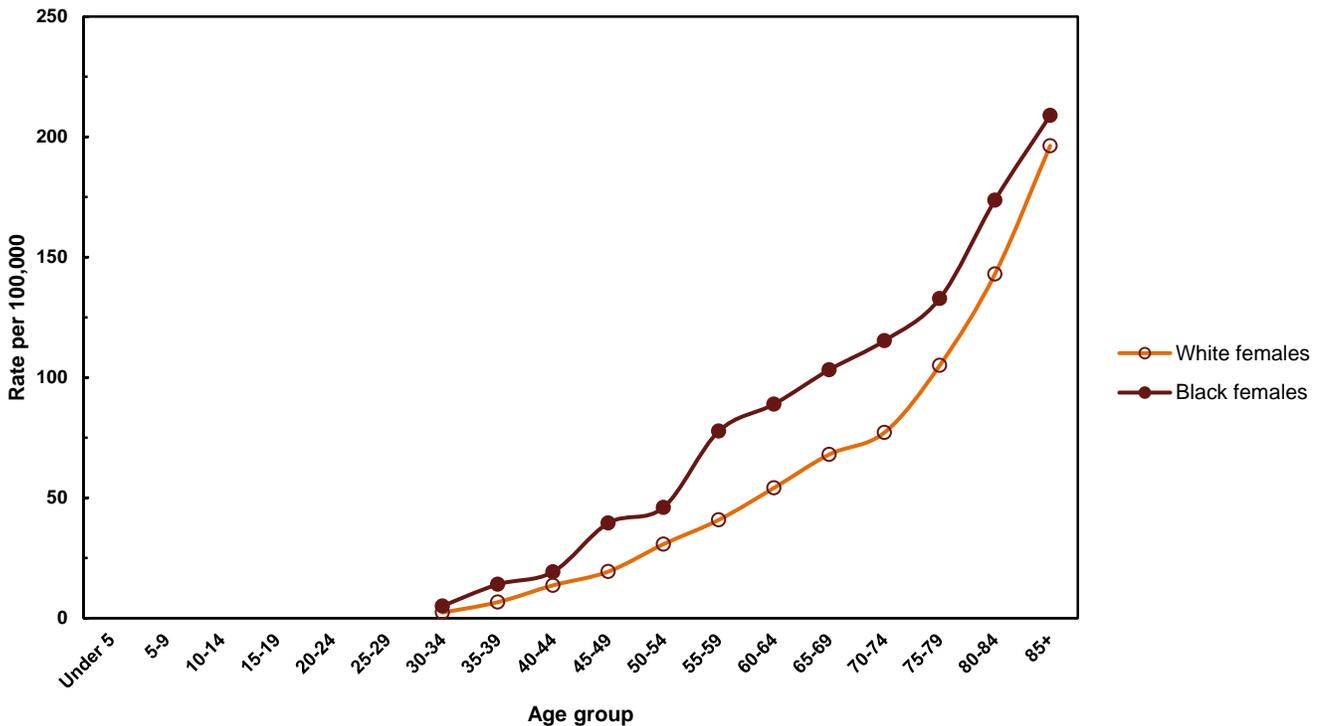
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	10,319	31.8	9,027	33.2	1,192	32.7
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	2	ND	2	ND	0	ND
25-29	10	0.5	4	ND	6	ND
30-34	51	2.7	35	2.3	12	5.0
35-39	136	7.1	104	6.6	32	14.0
40-44	301	14.0	245	13.6	47	19.2
45-49	499	21.3	386	19.3	99	39.5
50-54	763	31.6	643	30.7	111	46.0
55-59	973	43.8	794	40.8	160	77.7
60-64	1,078	56.1	920	54.1	148	88.9
65-69	1,043	69.8	911	68.0	122	103.2
70-74	958	78.9	844	77.1	109	115.3
75-79	1,108	105.8	1,001	105.0	103	132.8
80-84	1,307	143.5	1,198	143.0	106	173.7
85+	2,089	196.1	1,939	196.3	137	208.9

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
11-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Female Breast: INCIDENCE (Invasive)

**TABLE
11-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	52,095	128.3	(127.2-129.4)				
Adams	415	127.8	(115.5-140.1)	Juniata	84	109.2	(85.8-132.6)
Allegheny	5,752	136.6	(133.1-140.1)	Lackawanna	920	124.6	(116.5-132.7)
Armstrong	297	121.7	(107.9-135.5)	Lancaster	1,926	123.6	(118.1-129.1)
Beaver	858	138.3	(129.0-147.6)	Lawrence	429	133.3	(120.7-145.9)
Bedford	214	126.9	(109.9-143.9)	Lebanon	534	119.9	(109.7-130.1)
Berks	1,564	126.6	(120.3-132.9)	Lehigh	1,323	121.7	(115.1-128.3)
Blair	538	120.4	(110.2-130.6)	Luzerne	1,372	122.1	(115.6-128.6)
Bradford	263	122.1	(107.3-136.9)	Lycoming	544	140.1	(128.3-151.9)
Bucks	2,709	134.4	(129.3-139.5)	McKean	149	107.1	(89.9-124.3)
Butler	813	137.8	(128.3-147.3)	Mercer	579	141.2	(129.7-152.7)
Cambria	607	120.4	(110.8-130.0)	Mifflin	224	136.5	(118.6-154.4)
Cameron	26	137.9	(84.9-190.9)	Monroe	600	121.1	(111.4-130.8)
Carbon	290	124.0	(109.7-138.3)	Montgomery	3,468	136.9	(132.3-141.5)
Centre	454	131.3	(119.2-143.4)	Montour	83	117.8	(92.5-143.1)
Chester	1,952	133.3	(127.4-139.2)	Northampton	1,251	133.0	(125.6-140.4)
Clarion	161	121.7	(102.9-140.5)	Northumberland	374	110.7	(99.5-121.9)
Clearfield	304	110.9	(98.4-123.4)	Perry	160	113.5	(95.9-131.1)
Clinton	133	109.7	(91.1-128.3)	Philadelphia	5,493	128.0	(124.6-131.4)
Columbia	270	127.8	(112.6-143.0)	Pike	217	111.7	(96.8-126.6)
Crawford	345	116.6	(104.3-128.9)	Potter	67	106.2	(80.8-131.6)
Cumberland	1,012	135.0	(126.7-143.3)	Schuylkill	594	116.2	(106.9-125.5)
Dauphin	1,047	124.8	(117.2-132.4)	Snyder	141	118.4	(98.9-137.9)
Delaware	2,400	137.8	(132.3-143.3)	Somerset	271	97.9	(86.2-109.6)
Elk	146	128.8	(107.9-149.7)	Sullivan	32	121.5	(79.4-163.6)
Erie	1,132	130.5	(122.9-138.1)	Susquehanna	157	107.1	(90.3-123.9)
Fayette	570	113.1	(103.8-122.4)	Tioga	166	120.2	(101.9-138.5)
Forest	27	136.2	(84.8-187.6)	Union	137	112.7	(93.8-131.6)
Franklin	535	111.1	(101.7-120.5)	Venango	247	129.9	(113.7-146.1)
Fulton	52	103.4	(75.3-131.5)	Warren	191	124.4	(106.8-142.0)
Greene	159	130.5	(110.2-150.8)	Washington	950	131.0	(122.7-139.3)
Huntingdon	143	94.9	(79.3-110.5)	Wayne	193	106.2	(91.2-121.2)
Indiana	288	99.6	(88.1-111.1)	Westmoreland	1,727	128.3	(122.2-134.4)
Jefferson	183	117.3	(100.3-134.3)	Wyoming	130	143.5	(118.8-168.2)
				York	1,703	129.1	(123.0-135.2)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Female Breast: MORTALITY

**TABLE
11-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	10,319	23.1	(22.7-23.5)				
Adams	68	19.2	(14.6-23.8)	Juniata	20	23.3	(13.1-33.5)
Allegheny	1,124	23.5	(22.1-24.9)	Lackawanna	169	19.2	(16.3-22.1)
Armstrong	61	21.8	(16.3-27.3)	Lancaster	396	23.2	(20.9-25.5)
Beaver	169	24.6	(20.9-28.3)	Lawrence	88	23.3	(18.4-28.2)
Bedford	35	18.6	(12.4-24.8)	Lebanon	113	23.2	(18.9-27.5)
Berks	290	21.1	(18.7-23.5)	Lehigh	277	23.0	(20.3-25.7)
Blair	119	24.6	(20.2-29.0)	Luzerne	269	20.8	(18.3-23.3)
Bradford	50	21.8	(15.8-27.8)	Lycoming	75	17.5	(13.5-21.5)
Bucks	525	24.6	(22.5-26.7)	McKean	39	24.5	(16.8-32.2)
Butler	136	20.9	(17.4-24.4)	Mercer	117	26.6	(21.8-31.4)
Cambria	135	22.4	(18.6-26.2)	Mifflin	42	22.0	(15.3-28.7)
Cameron	3	ND		Monroe	89	18.2	(14.4-22.0)
Carbon	58	23.4	(17.4-29.4)	Montgomery	617	22.1	(20.4-23.8)
Centre	56	15.1	(11.1-19.1)	Montour	13	ND	
Chester	350	23.0	(20.6-25.4)	Northampton	228	21.6	(18.8-24.4)
Clarion	33	24.2	(15.9-32.5)	Northumberland	78	19.8	(15.4-24.2)
Clearfield	56	18.6	(13.7-23.5)	Perry	31	20.6	(13.3-27.9)
Clinton	22	18.4	(10.7-26.1)	Philadelphia	1,312	28.4	(26.9-29.9)
Columbia	41	17.5	(12.1-22.9)	Pike	39	20.2	(13.9-26.5)
Crawford	59	18.7	(13.9-23.5)	Potter	15	ND	
Cumberland	167	20.4	(17.3-23.5)	Schuylkill	145	23.9	(20.0-27.8)
Dauphin	218	25.3	(21.9-28.7)	Snyder	23	17.8	(10.5-25.1)
Delaware	486	25.3	(23.1-27.5)	Somerset	51	16.0	(11.6-20.4)
Elk	33	24.7	(16.3-33.1)	Sullivan	8	ND	
Erie	233	24.8	(21.6-28.0)	Susquehanna	29	18.6	(11.8-25.4)
Fayette	147	26.7	(22.4-31.0)	Tioga	30	20.8	(13.4-28.2)
Forest	7	ND		Union	23	16.2	(9.6-22.8)
Franklin	93	18.4	(14.7-22.1)	Venango	52	25.1	(18.3-31.9)
Fulton	9	ND		Warren	36	22.0	(14.8-29.2)
Greene	35	27.0	(18.1-35.9)	Washington	213	26.6	(23.0-30.2)
Huntingdon	28	17.9	(11.3-24.5)	Wayne	44	21.9	(15.4-28.4)
Indiana	74	24.9	(19.2-30.6)	Westmoreland	360	23.9	(21.4-26.4)
Jefferson	40	22.8	(15.7-29.9)	Wyoming	19	ND	
				York	299	21.5	(19.1-23.9)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Cervix Uteri

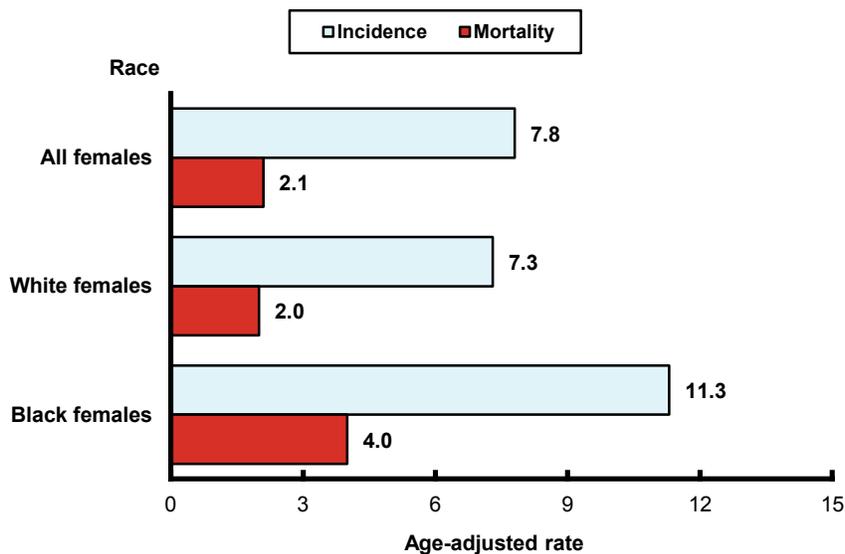
Data Highlights

During 2008-2012, the average annual age-adjusted incidence rate for invasive cancer of the cervix uteri was noticeably higher for blacks compared to white females (11.3 versus 7.3 per 100,000). A total of 521 invasive cervical cancer cases were diagnosed among Pennsylvania females in 2012 – a decrease from the 552 cases observed in the prior year, 2011. The 2012 annual age-adjusted incidence rate (7.7) was about 5 percent lower than the 2011 annual rate (8.1). The trends for annual age-adjusted incidence rates during the 10-year period 2003-2012 were inconclusive for both white and black females. Specifically, the incidence rates among black females displayed annual fluctuations, while rates among white females did not change very much (Figure 12-A).

Average annual (2008-2012) age-specific incidence rates among white females rose to 14.5 per 100,000 for ages 40-44 and remained near or slightly below that level for all older age groups. Among black females, age-specific rates were higher than rates for white females aged 35 and over. About 23 percent of the cases were diagnosed among residents under 40 years of age during the five-year period of 2008-2012. Diagnoses of invasive cervical cancer cases represent missed opportunities at screening and early diagnosis. In 2012, 41 percent of the invasive cervix uteri cancer cases were diagnosed at the early (local) stage of the disease, and about 54 percent were diagnosed at the late (regional or distant) stage, when treatment is not as effective.

All cervical cancer deaths should be considered preventable. The average annual (2008-2012) age-adjusted death rate for black females (4.0 per 100,000) was noticeably higher than the rate for whites (2.0). In 2012, there were 152 cervical cancer deaths among residents of the state: a decrease of 15 percent from 2011, when there were 179 resident deaths. Overall, the annual age-adjusted death rates did not show any discernible trends among whites and blacks during the 10-year period of 2003-2012.

FIGURE 12
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2008-2012



*per 100,000 2000 U.S. standard million population

Risk Factors

Human Papillomavirus (HPV), tobacco smoking, immunosuppression (HIV, AIDS), chlamydia infection, diets low in fruits and vegetables, long-term use of oral contraceptives, never having used an intrauterine device (IUD), having multiple full-term pregnancies, young age at first full-term pregnancy, poverty, diethylstilbestrol exposure (DES), and a family history of cervical cancer are associated. Overweight women have higher risk of adenocarcinoma of the cervix.

Early Detection

Pap-test screening, which can be combined with HPV testing, can effectively reduce the cancer death rate. The American Cancer Society recommends regular Pap tests for women who are at least 21 years of age. Less frequent testing is permitted at or after age 30 if Pap test screening and HPV testing are combined.

Cancer of the Cervix Uteri: INCIDENCE (Invasive)

**TABLE
12-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	521	7.7 (7.0-8.4)	410	7.2 (6.5-7.9)	73	9.9 (7.6-12.2)
2011	552	8.1 (7.4-8.8)	442	7.7 (7.0-8.4)	88	12.2 (9.7-14.7)
2010	497	7.1 (6.5-7.7)	391	6.7 (6.0-7.4)	75	10.7 (8.3-13.1)
2009	559	8.2 (7.5-8.9)	459	7.9 (7.2-8.6)	75	11.4 (8.8-14.0)
2008	535	7.8 (7.1-8.5)	421	7.1 (6.4-7.8)	83	12.6 (9.9-15.3)
2007	560	8.4 (7.7-9.1)	464	8.0 (7.3-8.7)	71	10.9 (8.4-13.4)
2006	534	7.8 (7.1-8.5)	451	7.6 (6.9-8.3)	53	8.2 (6.0-10.4)
2005	531	7.9 (7.2-8.6)	441	7.6 (6.9-8.3)	61	9.5 (7.1-11.9)
2004	526	7.8 (7.1-8.5)	431	7.3 (6.6-8.0)	73	11.4 (8.8-14.0)
2003	510	7.7 (7.0-8.4)	435	7.5 (6.8-8.2)	59	9.3 (6.9-11.7)

* Includes any unknowns

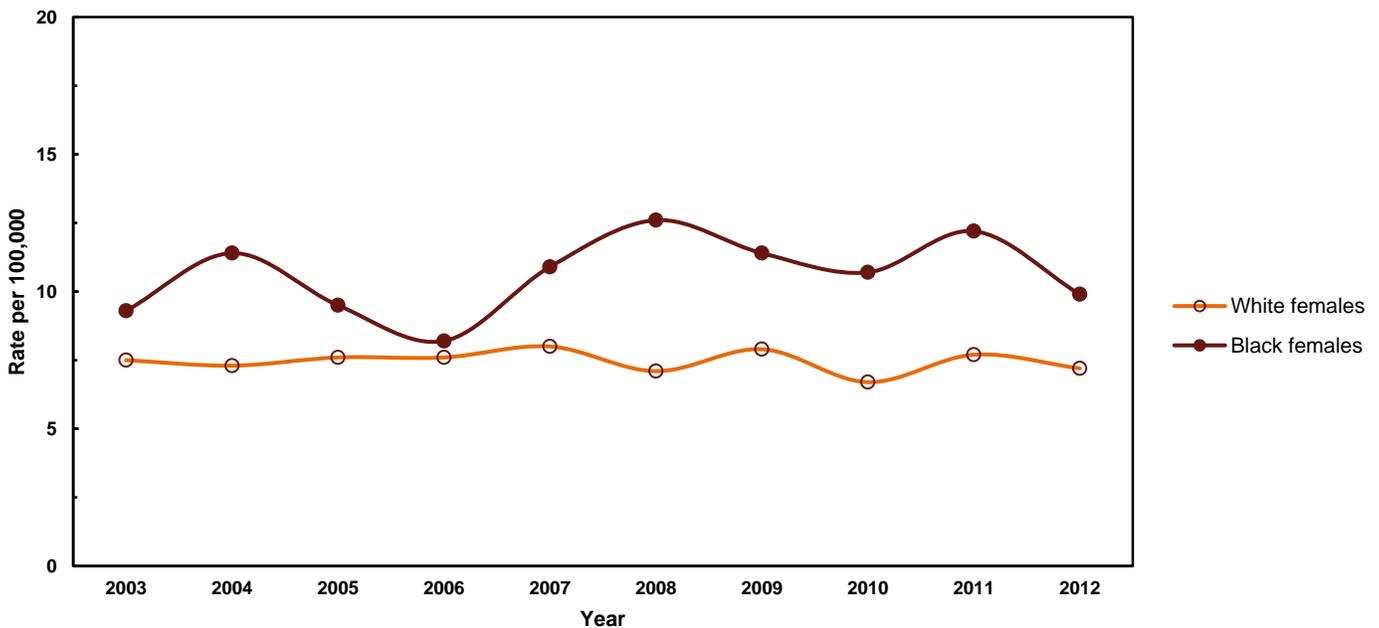
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
12-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Cervix Uteri: INCIDENCE (Invasive)

**TABLE
12-B**

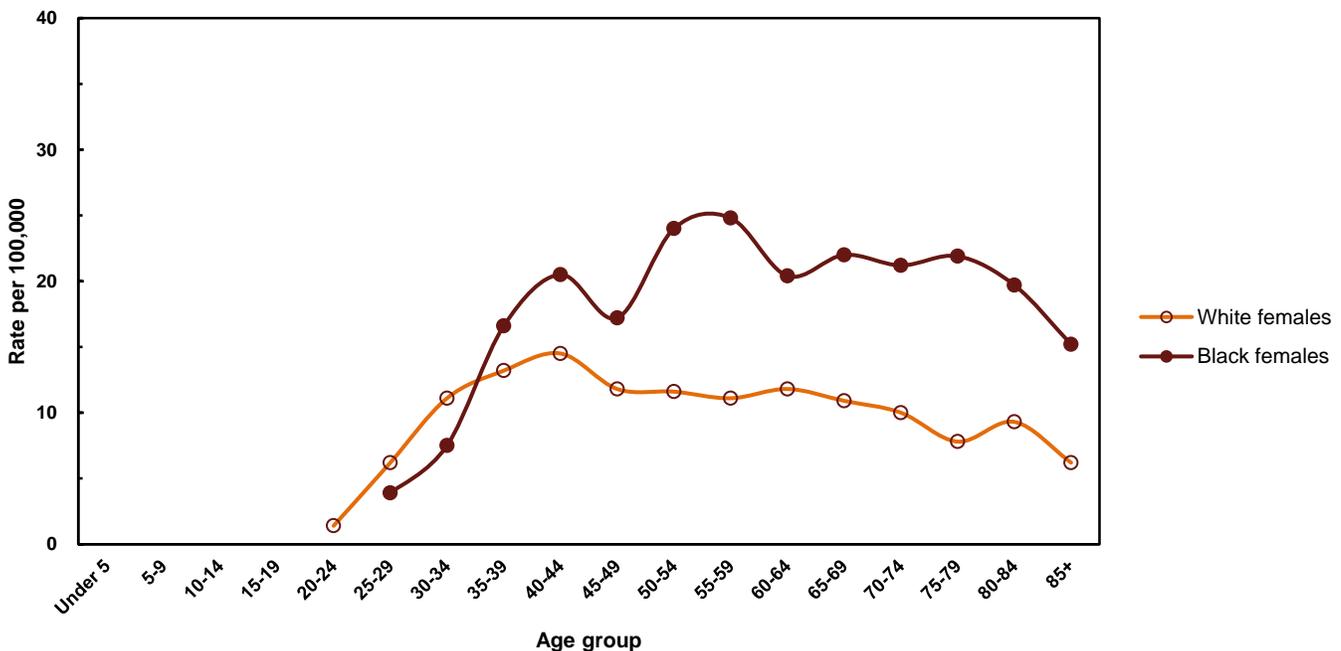
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**

Age Group	All Females	White	Black
Total	8.2	7.8	10.8
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	ND	ND	ND
20-24	1.4	1.4	ND
25-29	5.9	6.2	3.9
30-34	10.4	11.1	7.5
35-39	13.4	13.2	16.6
40-44	15.2	14.5	20.5
45-49	12.9	11.8	17.2
50-54	13.3	11.6	24.0
55-59	13.1	11.1	24.8
60-64	12.8	11.8	20.4
65-69	11.8	10.9	22.0
70-74	11.3	10.0	21.2
75-79	8.9	7.8	21.9
80-84	10.2	9.3	19.7
85+	7.2	6.2	15.2

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
12-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Cervix Uteri: INCIDENCE (Invasive)

**TABLE
12-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2008-2012**

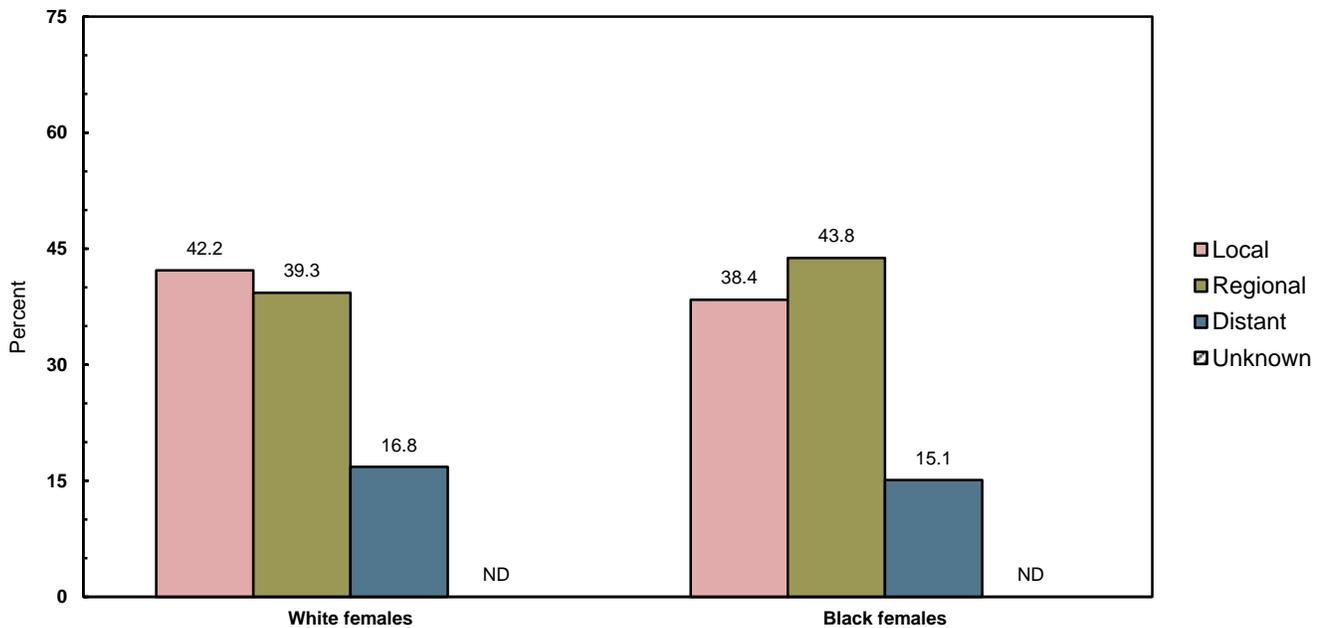
Age Group	All Females*	White	Black
Total	2,664	2,123	394
Under 5	0	0	0
5-9	0	0	0
10-14	1	1	0
15-19	5	4	1
20-24	31	24	6
25-29	112	95	10
30-34	194	167	18
35-39	257	206	38
40-44	328	262	50
45-49	303	236	43
50-54	320	242	58
55-59	291	217	51
60-64	245	200	34
65-69	177	146	26
70-74	137	110	20
75-79	93	74	17
80-84	93	78	12
85+	77	61	10

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
12-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Female Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Cases of cervix uteri cancer diagnosed at the in situ stage are not reportable to the Pennsylvania Cancer Registry.

Number and Percent of Invasive Cases Microscopically Confirmed: 507 - 97.3%

Cancer of the Cervix Uteri: MORTALITY

**TABLE
12-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2001-2010**

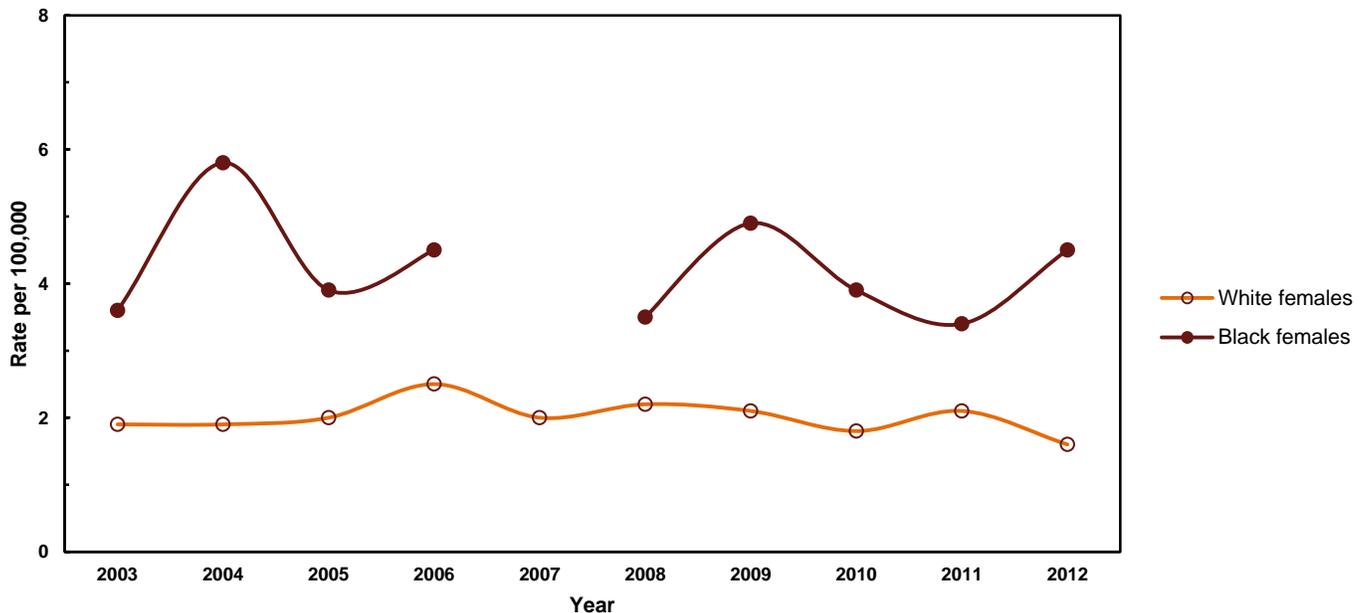
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	152	1.9 (1.6-2.2)	107	1.6 (1.3-1.9)	34	4.5 (3.0-6.0)
2011	179	2.2 (1.9-2.5)	151	2.1 (1.8-2.4)	24	3.4 (2.0-4.8)
2010	149	1.9 (1.6-2.2)	119	1.8 (1.5-2.1)	28	3.9 (2.5-5.3)
2009	176	2.3 (2.0-2.6)	142	2.1 (1.8-2.4)	32	4.9 (3.2-6.6)
2008	166	2.3 (2.0-2.6)	142	2.2 (1.8-2.6)	23	3.5 (2.1-4.9)
2007	156	2.1 (1.8-2.4)	132	2.0 (1.7-2.3)	19	ND
2006	196	2.6 (2.2-3.0)	165	2.5 (2.1-2.9)	30	4.5 (2.9-6.1)
2005	156	2.1 (1.8-2.4)	130	2.0 (1.7-2.3)	25	3.9 (2.4-5.4)
2004	168	2.3 (2.0-2.6)	127	1.9 (1.6-2.2)	37	5.8 (3.9-7.7)
2003	154	2.1 (1.8-2.4)	128	1.9 (1.6-2.2)	23	3.6 (2.1-5.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
12-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Cervix Uteri: MORTALITY

**TABLE
12-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**

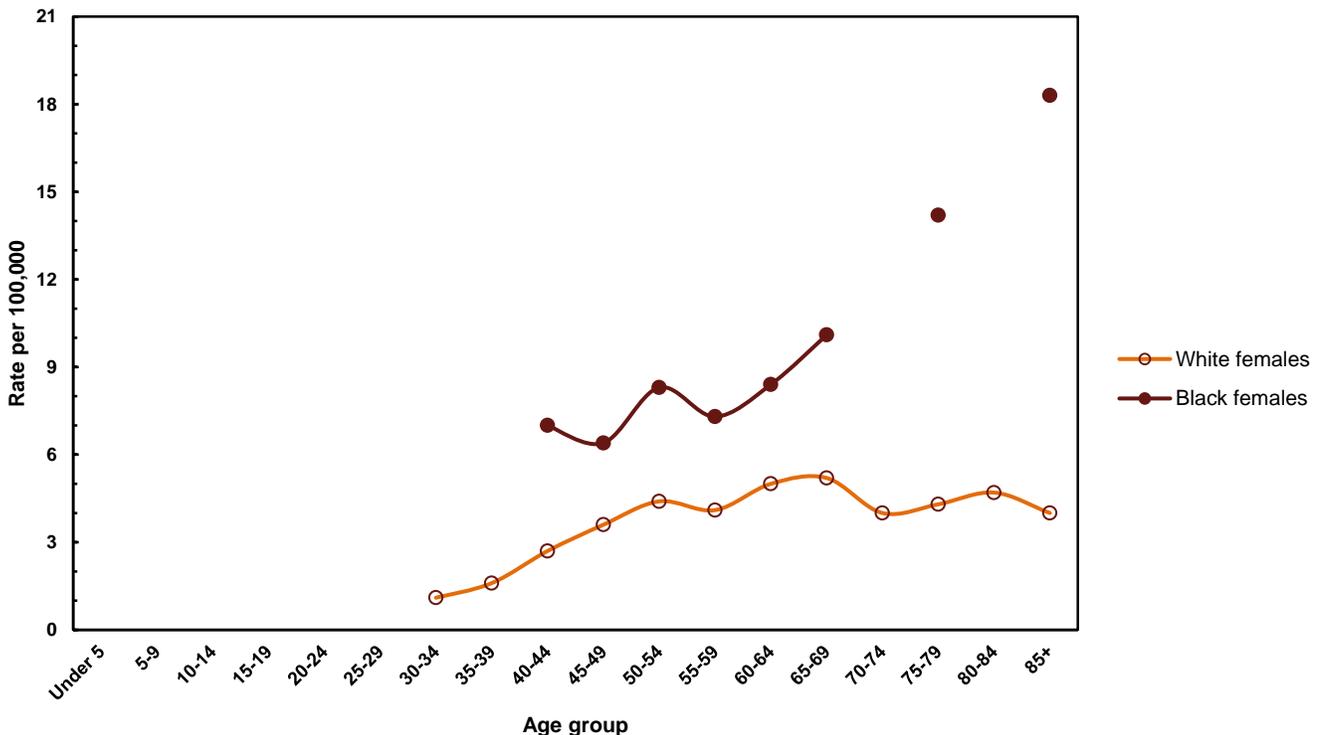
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	822	2.5	661	2.4	141	3.9
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	3	ND	3	ND	0	ND
25-29	10	0.5	8	ND	2	ND
30-34	17	0.9	16	1.1	1	ND
35-39	33	1.7	25	1.6	7	ND
40-44	67	3.1	48	2.7	17	7.0
45-49	90	3.8	72	3.6	16	6.4
50-54	113	4.7	91	4.4	20	8.3
55-59	98	4.4	79	4.1	15	7.3
60-64	102	5.3	85	5.0	14	8.4
65-69	84	5.6	70	5.2	12	10.1
70-74	55	4.5	44	4.0	9	ND
75-79	52	5.0	41	4.3	11	14.2
80-84	44	4.8	39	4.7	5	ND
85+	54	5.1	40	4.0	12	18.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
12-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Cervix Uteri: INCIDENCE (Invasive)

**TABLE
12-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	2,664	7.8	(7.5-8.1)				
Adams	23	9.8	(5.8-13.8)	Juniata	5	ND	
Allegheny	221	6.6	(5.7-7.5)	Lackawanna	47	7.9	(5.6-10.2)
Armstrong	13	ND		Lancaster	100	7.5	(6.0-9.0)
Beaver	30	6.0	(3.9-8.1)	Lawrence	17	ND	
Bedford	7	ND		Lebanon	34	10.1	(6.7-13.5)
Berks	68	6.6	(5.0-8.2)	Lehigh	79	8.5	(6.6-10.4)
Blair	21	6.2	(3.5-8.9)	Luzerne	92	10.7	(8.5-12.9)
Bradford	14	ND		Lycoming	28	8.7	(5.5-11.9)
Bucks	98	5.6	(4.5-6.7)	McKean	9	ND	
Butler	33	6.5	(4.3-8.7)	Mercer	28	9.3	(5.9-12.7)
Cambria	30	6.9	(4.4-9.4)	Mifflin	8	ND	
Cameron	3	ND		Monroe	46	10.3	(7.3-13.3)
Carbon	13	ND		Montgomery	135	5.9	(4.9-6.9)
Centre	14	ND		Montour	1	ND	
Chester	78	5.7	(4.4-7.0)	Northampton	56	6.5	(4.8-8.2)
Clarion	7	ND		Northumberland	23	9.1	(5.4-12.8)
Clearfield	18	ND		Perry	7	ND	
Clinton	5	ND		Philadelphia	494	12.4	(11.3-13.5)
Columbia	13	ND		Pike	13	ND	
Crawford	27	11.7	(7.3-16.1)	Potter	4	ND	
Cumberland	36	5.8	(3.9-7.7)	Schuylkill	45	11.7	(8.3-15.1)
Dauphin	55	7.7	(5.7-9.7)	Snyder	2	ND	
Delaware	130	8.4	(7.0-9.8)	Somerset	24	10.4	(6.2-14.6)
Elk	6	ND		Sullivan	1	ND	
Erie	41	5.6	(3.9-7.3)	Susquehanna	12	ND	
Fayette	28	7.0	(4.4-9.6)	Tioga	6	ND	
Forest	2	ND		Union	7	ND	
Franklin	38	10.0	(6.8-13.2)	Venango	8	ND	
Fulton	3	ND		Warren	7	ND	
Greene	7	ND		Washington	52	9.5	(6.9-12.1)
Huntingdon	8	ND		Wayne	6	ND	
Indiana	15	ND		Westmoreland	72	7.1	(5.5-8.7)
Jefferson	7	ND		Wyoming	5	ND	
				York	79	6.7	(5.2-8.2)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Cervix Uteri: MORTALITY

**TABLE
12-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	822	2.1	(2.0-2.2)				
Adams	9	ND		Juniata	1	ND	
Allegheny	64	1.6	(1.2-2.0)	Lackawanna	15	ND	
Armstrong	1	ND		Lancaster	31	2.0	(1.3-2.7)
Beaver	14	ND		Lawrence	3	ND	
Bedford	4	ND		Lebanon	7	ND	
Berks	14	ND		Lehigh	20	1.8	(1.0-2.6)
Blair	8	ND		Luzerne	30	3.1	(2.0-4.2)
Bradford	1	ND		Lycoming	5	ND	
Bucks	36	1.9	(1.3-2.5)	McKean	4	ND	
Butler	7	ND		Mercer	10	ND	
Cambria	12	ND		Mifflin	3	ND	
Cameron	1	ND		Monroe	19	ND	
Carbon	4	ND		Montgomery	31	1.2	(0.8-1.6)
Centre	4	ND		Montour	1	ND	
Chester	16	ND		Northampton	19	ND	
Clarion	2	ND		Northumberland	8	ND	
Clearfield	10	ND		Perry	2	ND	
Clinton	1	ND		Philadelphia	148	3.5	(2.9-4.1)
Columbia	5	ND		Pike	3	ND	
Crawford	7	ND		Potter	6	ND	
Cumberland	12	ND		Schuylkill	16	ND	
Dauphin	20	2.6	(1.5-3.7)	Snyder	0	ND	
Delaware	41	2.3	(1.6-3.0)	Somerset	11	ND	
Elk	3	ND		Sullivan	1	ND	
Erie	16	ND		Susquehanna	3	ND	
Fayette	12	ND		Tioga	2	ND	
Forest	0	ND		Union	2	ND	
Franklin	11	ND		Venango	4	ND	
Fulton	0	ND		Warren	2	ND	
Greene	1	ND		Washington	13	ND	
Huntingdon	3	ND		Wayne	2	ND	
Indiana	1	ND		Westmoreland	24	1.9	(1.1-2.7)
Jefferson	1	ND		Wyoming	1	ND	
				York	34	2.7	(1.8-3.6)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Corpus and Uterus, Not Otherwise Specified (NOS)

Data Highlights

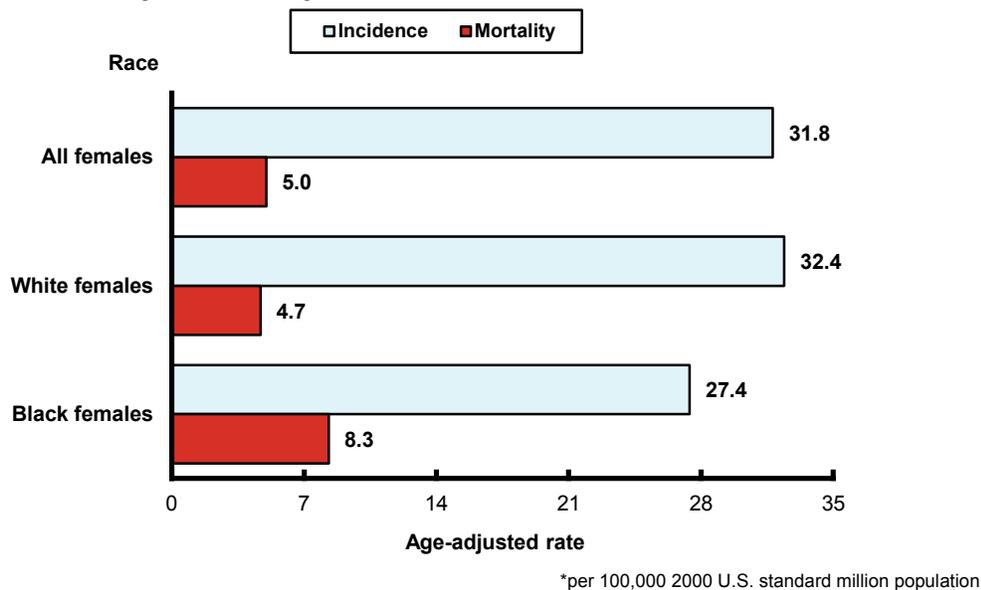
The average annual (2008-2012) age-adjusted incidence rate for invasive cancer of the corpus and uterus, NOS, among white females (32.4 per 100,000) was 18 percent higher than the rate for black females (27.4). In 2012, there were 2,748 cases of invasive corpus and uterus cancer diagnosed among female residents of Pennsylvania – a slight decrease from the 2,786 cases observed in 2011.

Annual age-adjusted incidence rates for the years 2003 through 2007 showed that corpus and uterus cancers for blacks had several deviations and no clear trend; however, the rates increased steadily from 2008 to 2011 before decreasing in 2012. Among white females, the incidence rates did not fluctuate much, and the trend was inconclusive during this 10-year period. Over the 2008-2012 timeframe, the average age-specific incidence rate of this cancer rose dramatically with age, starting at about age 40, and began to decrease with the 70-74 age group. In 2012, about 65 percent of corpus and uterus cases were diagnosed at the early stage (in situ or local) of the disease, and approximately 31 percent of cases were diagnosed at the late stage (regional or distant). Approximately 41 percent of the cases diagnosed among blacks were at the regional or distant stages, compared to 31 percent for whites.

In contrast to the lower incidence rates among blacks, the average annual age-adjusted death rate was higher among black females (8.3 per 100,000) than for white females (4.7) during the five-year period of 2008-2012. Because survival is highly dependent on the stage at which the cancer is diagnosed, the disparity in death rates is at least partially attributed to the differences in staging distribution between these two groups. For both white and black residents, the annual age-adjusted death rates showed no discernible trends during the 10-year period of 2003 through 2012.

NOTE: The abbreviation “NOS” means “Not Otherwise Specified.”

FIGURE 13
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2008-2012



Risk Factors

Changes in hormone levels, estrogen replacement therapy, early onset of menarche combined with late onset of menopause (total number of menstrual cycles), infertility, never pregnant (nulliparity), obesity, tamoxifen, ovarian tumor (granulosa-theca cell tumor), polycystic ovarian syndrome, never having used an intrauterine device (IUD), diets high in fat, personal history of ovarian or breast cancer, diabetes, family history, endometrial hyperplasia, and prior pelvic radiation therapy are associated with increased risk.

Early Detection

The American Cancer Society recommends that women experiencing menopause discuss risks and symptoms of uterine cancer and report any unexpected bleeding or spotting to their physicians.

Cancer of the Corpus and Uterus, NOS: INCIDENCE (Invasive)

**TABLE
13-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	2,748	31.3 (30.1-32.5)	2,448	31.7 (30.4-33.0)	217	27.7 (24.0-31.4)
2011	2,786	32.4 (31.2-33.6)	2,498	33.0 (31.7-34.3)	225	29.7 (25.8-33.6)
2010	2,706	32.0 (30.8-33.2)	2,431	32.9 (31.6-34.2)	206	28.4 (24.5-32.3)
2009	2,595	31.6 (30.4-32.8)	2,351	32.0 (30.7-33.3)	183	27.3 (23.3-31.3)
2008	2,570	31.6 (30.4-32.8)	2,352	32.4 (31.1-33.7)	157	23.3 (19.7-26.9)
2007	2,509	31.1 (29.9-32.3)	2,324	32.2 (30.9-33.5)	132	19.8 (16.4-23.2)
2006	2,339	29.3 (28.1-30.5)	2,142	30.1 (28.8-31.4)	155	23.5 (19.8-27.2)
2005	2,363	29.8 (28.6-31.0)	2,182	30.7 (29.4-32.0)	137	21.6 (18.0-25.2)
2004	2,318	29.5 (28.3-30.7)	2,128	30.1 (28.8-31.4)	147	22.9 (19.2-26.6)
2003	2,299	29.5 (28.3-30.7)	2,132	30.5 (29.2-31.8)	134	21.1 (17.5-24.7)

* Includes any unknowns

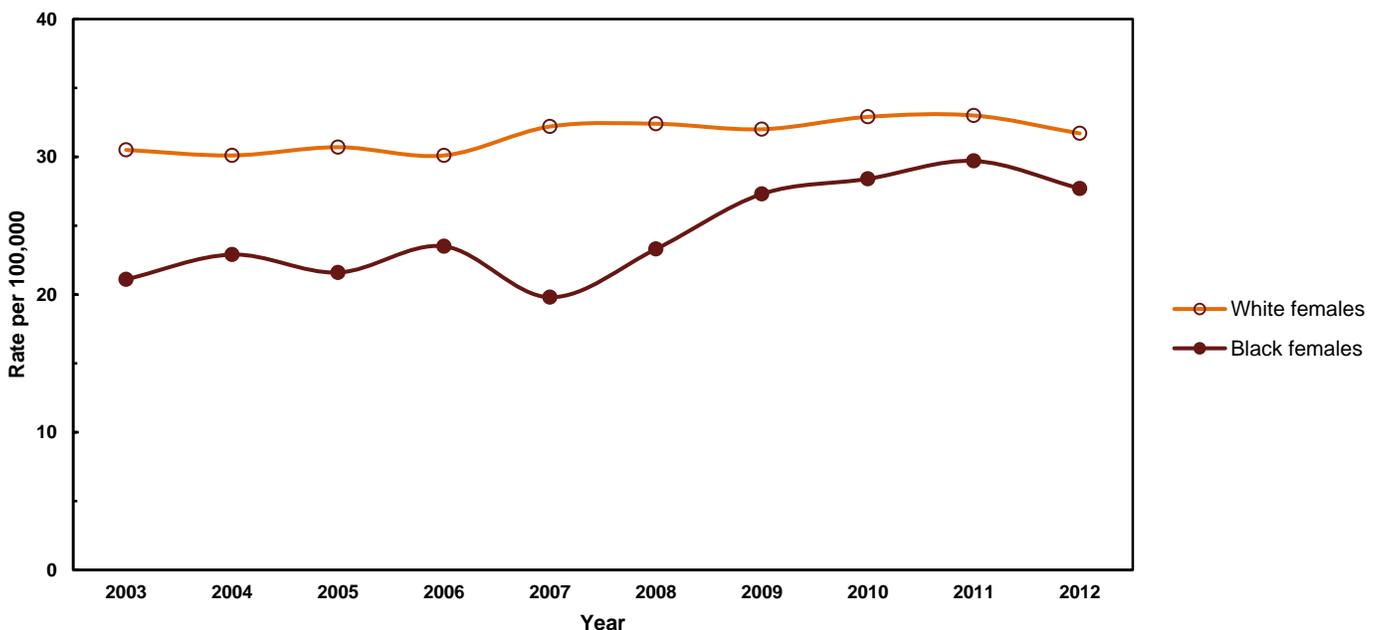
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
13-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Corpus and Uterus, NOS: INCIDENCE (Invasive)

**TABLE
13-B**

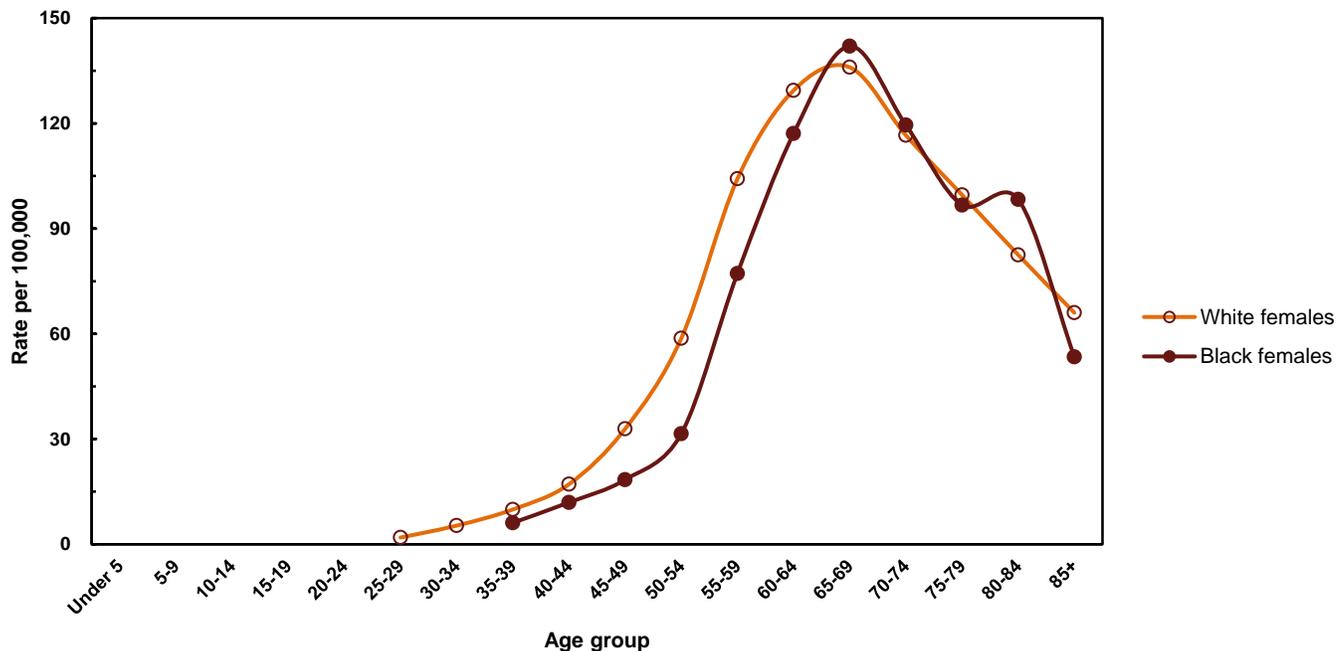
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**

Age Group	All Females	White	Black
Total	41.3	44.4	27.1
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	ND	ND	ND
20-24	ND	ND	ND
25-29	2.1	1.9	ND
30-34	5.2	5.3	ND
35-39	9.2	9.9	6.1
40-44	16.5	17.1	11.9
45-49	31.0	32.9	18.4
50-54	55.9	58.7	31.5
55-59	101.2	104.2	77.2
60-64	127.8	129.4	117.1
65-69	135.7	136.0	142.0
70-74	116.5	116.6	119.5
75-79	99.3	99.6	96.7
80-84	83.7	82.5	98.3
85+	66.7	66.0	53.4

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
13-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Corpus and Uterus, NOS: INCIDENCE (Invasive)

**TABLE
13-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2008-2012**

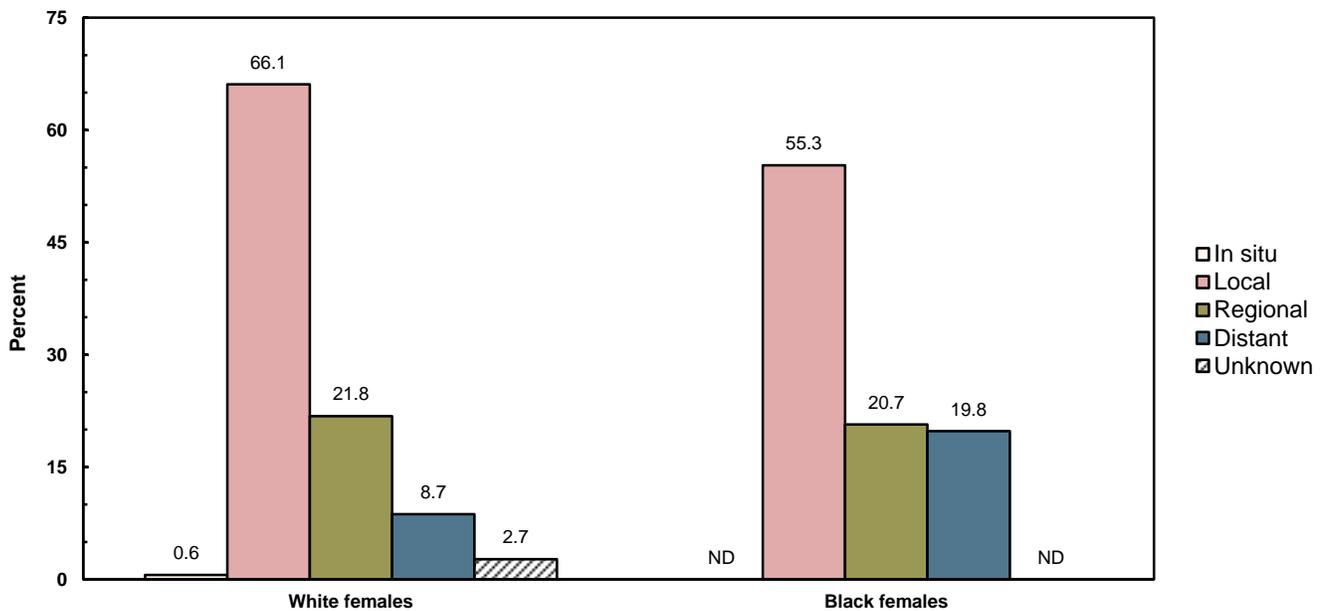
Age Group	All Females*	White	Black
Total	13,405	12,080	988
Under 5	0	0	0
5-9	0	0	0
10-14	0	0	0
15-19	0	0	0
20-24	6	4	2
25-29	40	29	8
30-34	96	79	8
35-39	176	155	14
40-44	355	308	29
45-49	726	657	46
50-54	1,348	1,228	76
55-59	2,248	2,029	159
60-64	2,455	2,200	195
65-69	2,027	1,822	168
70-74	1,415	1,277	113
75-79	1,040	949	75
80-84	762	691	60
85+	710	652	35

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
13-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Female Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 2,700 - 98.3%

Cancer of the Corpus and Uterus, NOS: MORTALITY

**TABLE
13-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

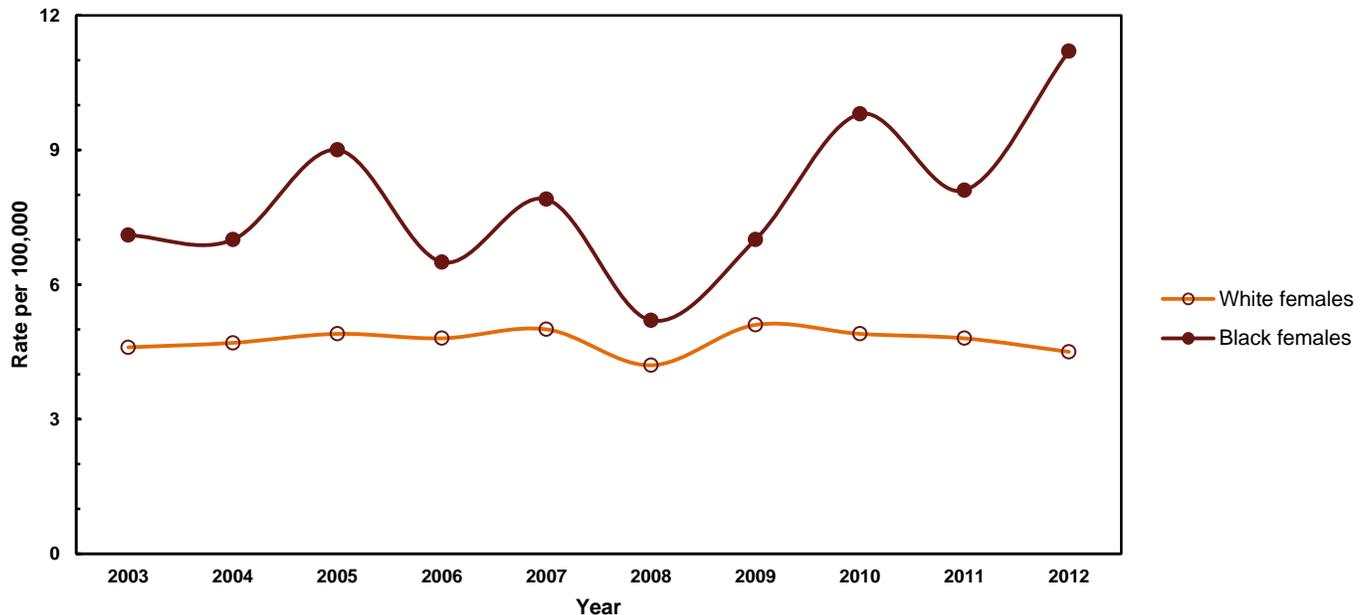
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	475	5.1 (4.6-5.6)	382	4.5 (4.0-5.0)	81	11.2 (8.8-13.6)
2011	463	5.0 (4.5-5.5)	396	4.8 (4.3-5.3)	62	8.1 (6.1-10.1)
2010	479	5.2 (4.7-5.7)	405	4.9 (4.4-5.4)	69	9.8 (7.5-12.1)
2009	462	5.2 (4.7-5.7)	412	5.1 (4.6-5.6)	46	7.0 (5.0-9.0)
2008	387	4.3 (3.9-4.7)	348	4.2 (3.8-4.6)	36	5.2 (3.5-6.9)
2007	450	5.2 (4.7-5.7)	395	5.0 (4.5-5.5)	52	7.9 (5.8-10.0)
2006	430	4.9 (4.4-5.4)	385	4.8 (4.3-5.3)	42	6.5 (4.5-8.5)
2005	445	5.1 (4.6-5.6)	386	4.9 (4.4-5.4)	57	9.0 (6.7-11.3)
2004	421	4.8 (4.3-5.3)	374	4.7 (4.2-5.2)	45	7.0 (5.0-9.0)
2003	407	4.7 (4.2-5.2)	361	4.6 (4.1-5.1)	45	7.1 (5.0-9.2)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
13-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Corpus and Uterus, NOS: MORTALITY

**TABLE
13-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**

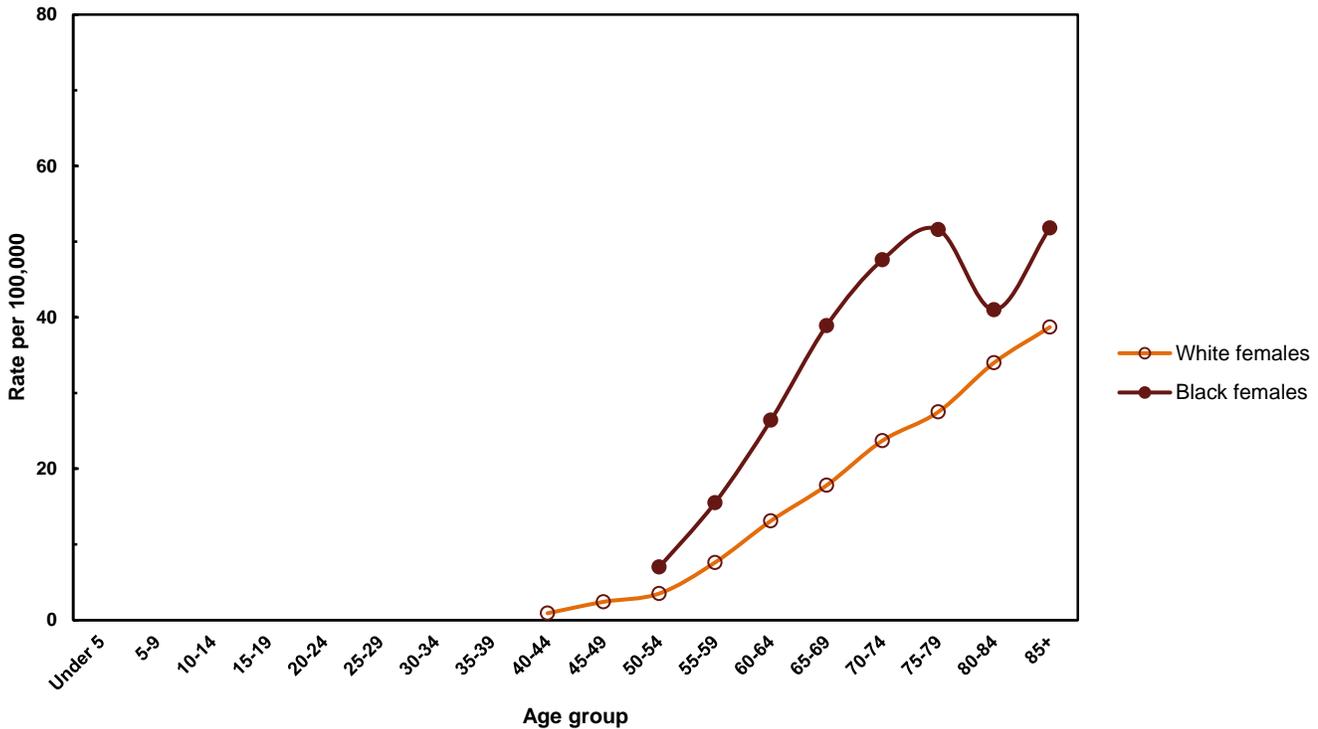
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	2,266	7.0	1,943	7.1	294	8.1
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	1	ND	1	ND	0	ND
25-29	3	ND	1	ND	0	ND
30-34	5	ND	4	ND	1	ND
35-39	4	ND	4	ND	0	ND
40-44	18	0.8	17	0.9	1	ND
45-49	58	2.5	47	2.4	9	ND
50-54	93	3.9	73	3.5	17	7.0
55-59	182	8.2	148	7.6	32	15.5
60-64	272	14.2	222	13.1	44	26.4
65-69	289	19.3	238	17.8	46	38.9
70-74	308	25.4	259	23.7	45	47.6
75-79	305	29.1	262	27.5	40	51.6
80-84	311	34.1	285	34.0	25	41.0
85+	417	39.2	382	38.7	34	51.8

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
13-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Corpus and Uterus, NOS: INCIDENCE (Invasive)

**TABLE
13-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	13,405	31.8	(31.3-32.3)				
Adams	86	26.5	(20.9-32.1)	Juniata	35	46.0	(30.8-61.2)
Allegheny	1,343	31.1	(29.4-32.8)	Lackawanna	241	31.8	(27.8-35.8)
Armstrong	79	31.5	(24.6-38.4)	Lancaster	543	33.6	(30.8-36.4)
Beaver	178	27.1	(23.1-31.1)	Lawrence	85	25.0	(19.7-30.3)
Bedford	50	27.8	(20.1-35.5)	Lebanon	187	40.8	(35.0-46.6)
Berks	352	27.4	(24.5-30.3)	Lehigh	361	31.7	(28.4-35.0)
Blair	150	32.8	(27.6-38.0)	Luzerne	466	40.7	(37.0-44.4)
Bradford	70	31.3	(24.0-38.6)	Lycoming	137	34.1	(28.4-39.8)
Bucks	665	31.5	(29.1-33.9)	McKean	45	32.6	(23.1-42.1)
Butler	162	27.0	(22.8-31.2)	Mercer	134	32.8	(27.2-38.4)
Cambria	193	38.6	(33.2-44.0)	Mifflin	46	27.6	(19.6-35.6)
Cameron	5	ND		Monroe	138	26.0	(21.7-30.3)
Carbon	91	37.0	(29.4-44.6)	Montgomery	875	33.3	(31.1-35.5)
Centre	111	29.4	(23.9-34.9)	Montour	31	43.8	(28.4-59.2)
Chester	434	28.5	(25.8-31.2)	Northampton	393	39.7	(35.8-43.6)
Clarion	42	31.3	(21.8-40.8)	Northumberland	116	32.5	(26.6-38.4)
Clearfield	94	33.0	(26.3-39.7)	Perry	60	39.6	(29.6-49.6)
Clinton	46	38.4	(27.3-49.5)	Philadelphia	1,400	31.4	(29.8-33.0)
Columbia	92	42.6	(33.9-51.3)	Pike	63	30.0	(22.6-37.4)
Crawford	94	30.0	(23.9-36.1)	Potter	18	ND	
Cumberland	244	31.5	(27.5-35.5)	Schuylkill	202	39.2	(33.8-44.6)
Dauphin	280	32.3	(28.5-36.1)	Snyder	45	35.5	(25.1-45.9)
Delaware	548	29.8	(27.3-32.3)	Somerset	97	34.8	(27.9-41.7)
Elk	38	33.9	(23.1-44.7)	Sullivan	15	ND	
Erie	255	28.9	(25.4-32.4)	Susquehanna	43	28.2	(19.8-36.6)
Fayette	153	28.7	(24.2-33.2)	Tioga	46	33.6	(23.9-43.3)
Forest	5	ND		Union	39	29.7	(20.4-39.0)
Franklin	144	28.8	(24.1-33.5)	Venango	56	27.7	(20.4-35.0)
Fulton	11	ND		Warren	50	35.2	(25.4-45.0)
Greene	44	36.2	(25.5-46.9)	Washington	235	31.0	(27.0-35.0)
Huntingdon	38	27.9	(19.0-36.8)	Wayne	43	22.1	(15.5-28.7)
Indiana	87	30.8	(24.3-37.3)	Westmoreland	408	29.7	(26.8-32.6)
Jefferson	58	36.8	(27.3-46.3)	Wyoming	42	44.6	(31.1-58.1)
				York	468	34.0	(30.9-37.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Corpus and Uterus, NOS: MORTALITY

**TABLE
13-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	2,266	5.0	(4.8-5.2)				
Adams	3	ND		Juniata	4	ND	
Allegheny	235	4.8	(4.2-5.4)	Lackawanna	42	4.6	(3.2-6.0)
Armstrong	10	ND		Lancaster	76	4.3	(3.3-5.3)
Beaver	31	3.8	(2.5-5.1)	Lawrence	17	ND	
Bedford	13	ND		Lebanon	25	5.1	(3.1-7.1)
Berks	61	4.5	(3.4-5.6)	Lehigh	66	5.4	(4.1-6.7)
Blair	21	4.0	(2.3-5.7)	Luzerne	63	4.6	(3.5-5.7)
Bradford	12	ND		Lycoming	26	5.7	(3.5-7.9)
Bucks	95	4.4	(3.5-5.3)	McKean	4	ND	
Butler	34	5.3	(3.5-7.1)	Mercer	21	4.4	(2.5-6.3)
Cambria	34	5.4	(3.6-7.2)	Mifflin	7	ND	
Cameron	1	ND		Monroe	18	ND	
Carbon	12	ND		Montgomery	156	5.6	(4.7-6.5)
Centre	9	ND		Montour	4	ND	
Chester	68	4.5	(3.4-5.6)	Northampton	71	6.8	(5.2-8.4)
Clarion	8	ND		Northumberland	23	6.3	(3.7-8.9)
Clearfield	10	ND		Perry	5	ND	
Clinton	3	ND		Philadelphia	316	6.8	(6.1-7.5)
Columbia	23	9.7	(5.7-13.7)	Pike	6	ND	
Crawford	20	6.2	(3.5-8.9)	Potter	7	ND	
Cumberland	36	4.2	(2.8-5.6)	Schuylkill	35	5.7	(3.8-7.6)
Dauphin	45	5.2	(3.7-6.7)	Snyder	4	ND	
Delaware	102	5.2	(4.2-6.2)	Somerset	14	ND	
Elk	5	ND		Sullivan	1	ND	
Erie	43	4.4	(3.1-5.7)	Susquehanna	6	ND	
Fayette	28	5.2	(3.3-7.1)	Tioga	8	ND	
Forest	1	ND		Union	5	ND	
Franklin	18	ND		Venango	12	ND	
Fulton	2	ND		Warren	6	ND	
Greene	3	ND		Washington	42	4.9	(3.4-6.4)
Huntingdon	7	ND		Wayne	8	ND	
Indiana	12	ND		Westmoreland	74	4.9	(3.8-6.0)
Jefferson	12	ND		Wyoming	9	ND	
				York	68	4.8	(3.7-5.9)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

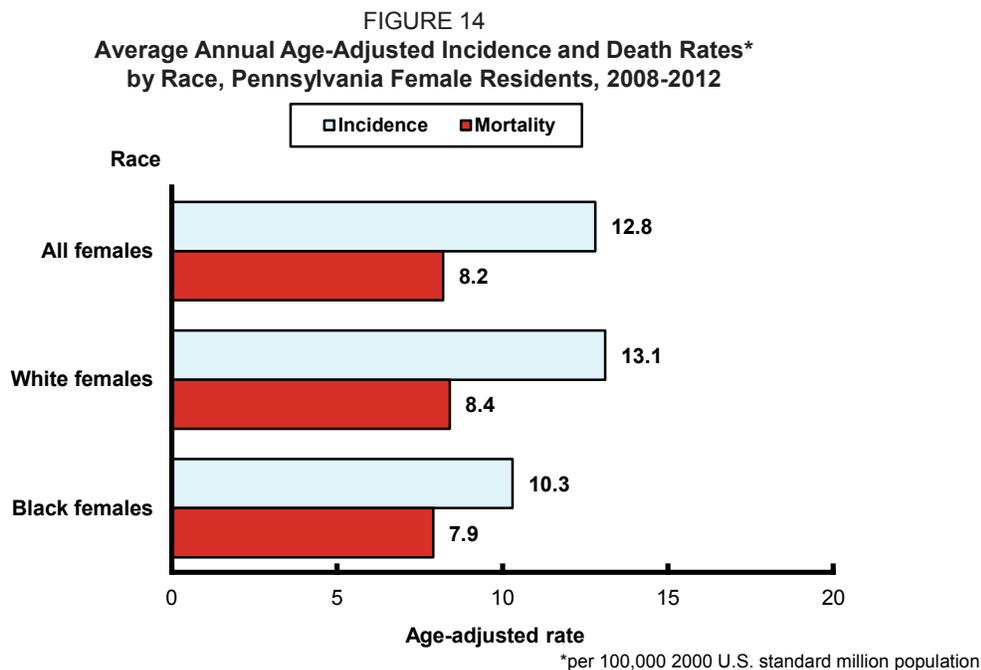
Cancer of the Ovary

Data Highlights

The 2008-2012 average annual age-adjusted incidence rate for invasive ovarian cancer among white females (13.1 per 100,000) was about 27 percent higher than the rate for black females (10.3). In 2012, there were 1,013 cases of invasive ovarian cancer diagnosed and reported to the Pennsylvania Cancer Registry – a small decrease from the previous year, 2011, when there were 1,033 cases. The 2012 age-adjusted incidence rate for females was 11.9, compared to 13.7 for females diagnosed in 2003. Annual age-adjusted incidence rates for the 10-year period of 2003-2012 showed no discernible trends among white and black females.

Average annual (2008-2012) age-specific incidence rates for this site began rising dramatically at about age 40. During 2008-2012, about 95 percent of the invasive ovarian cancers were diagnosed in women aged 40 and older. In 2012, about 80 percent of the ovarian cancer cases were diagnosed at the late stage (regional or distant) of the disease, and about 14 percent were diagnosed at the early stage (in situ or local).

The 2008-2012 average annual age-adjusted death rate for white females (8.4 per 100,000) was about 6 percent higher than the rate for black females (7.9). In 2012, ovarian cancer claimed the lives of 721 female residents of Pennsylvania, resulting in an age-adjusted death rate of 7.8. As observed with incidence rates, the age-adjusted death rates by race were consistently higher for whites compared to blacks for the period 2003-2009; however, since 2010 the age-adjusted death rate for blacks have been higher than the rate for whites. For most age groups, the 2008-2012 age-specific death rates were higher among whites compared to blacks. Among white and black females, annual age-adjusted death rates from 2003 through 2012 showed no discernible long-term trends.



Risk Factors

Nulliparity or having a smaller number of live births; fertility drugs; obesity; personal history of breast cancer; family history of breast, ovarian or colorectal cancers; use of androgens (male hormones) and estrogen/hormone replacement therapy are suggestive of ovarian cancer risk.

Early Detection

Survival rates are very good for ovarian cancers found at an early stage. However, no screening tests have proven effective or are currently being evaluated.

Cancer of the Ovary: INCIDENCE (Invasive)

**TABLE
14-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	1,013	11.9 (11.2-12.6)	893	12.1 (11.3-12.9)	65	8.6 (6.5-10.7)
2011	1,033	12.4 (11.6-13.2)	934	12.7 (11.9-13.5)	78	10.8 (8.4-13.2)
2010	1,066	12.9 (12.1-13.7)	970	13.5 (12.7-14.3)	76	10.9 (8.4-13.4)
2009	1,076	13.3 (12.5-14.1)	993	13.7 (12.8-14.6)	62	9.0 (6.8-11.2)
2008	1,100	13.5 (12.7-14.3)	994	13.6 (12.8-14.4)	86	12.5 (9.9-15.1)
2007	1,106	13.8 (13.0-14.6)	1,014	14.1 (13.2-15.0)	67	10.1 (7.7-12.5)
2006	1,013	12.6 (11.8-13.4)	936	12.9 (12.1-13.7)	64	9.7 (7.3-12.1)
2005	1,134	14.3 (13.5-15.1)	1,041	14.7 (13.8-15.6)	67	10.3 (7.8-12.8)
2004	1,043	13.2 (12.4-14.0)	961	13.6 (12.7-14.5)	65	10.2 (7.7-12.7)
2003	1,067	13.7 (12.9-14.5)	977	13.9 (13.0-14.8)	65	10.2 (7.7-12.7)

* Includes any unknowns

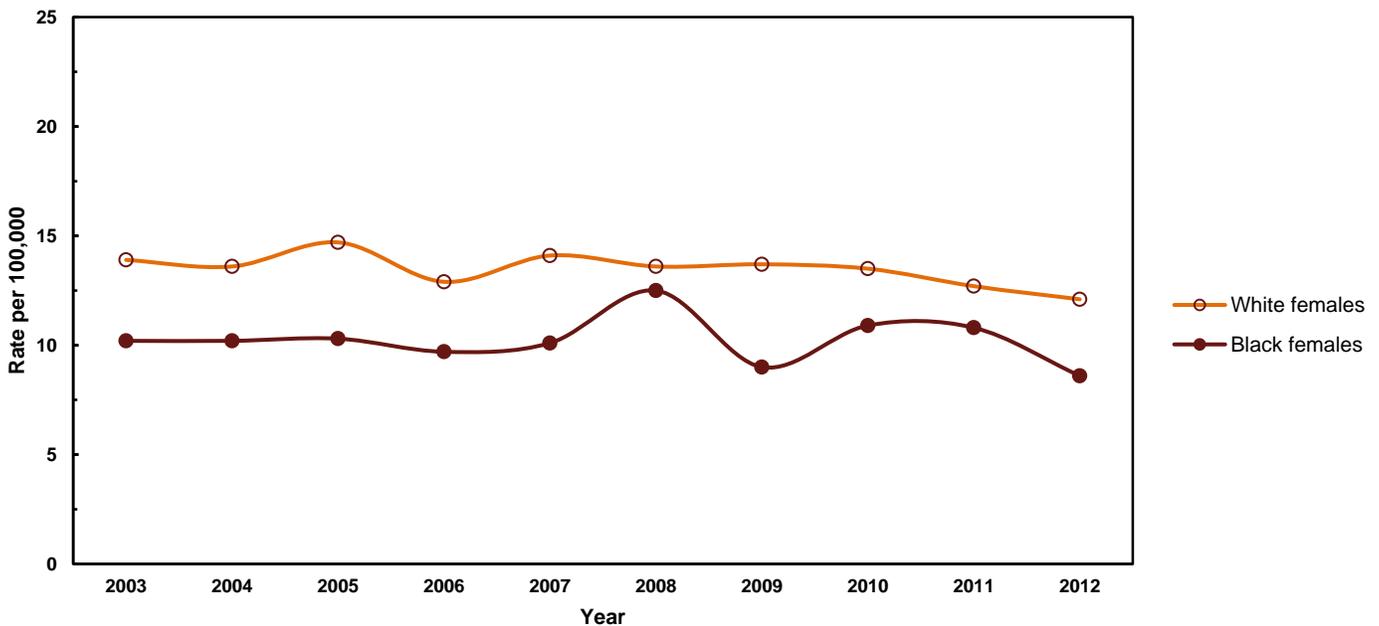
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
14-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Ovary: INCIDENCE (Invasive)

**TABLE
14-B**

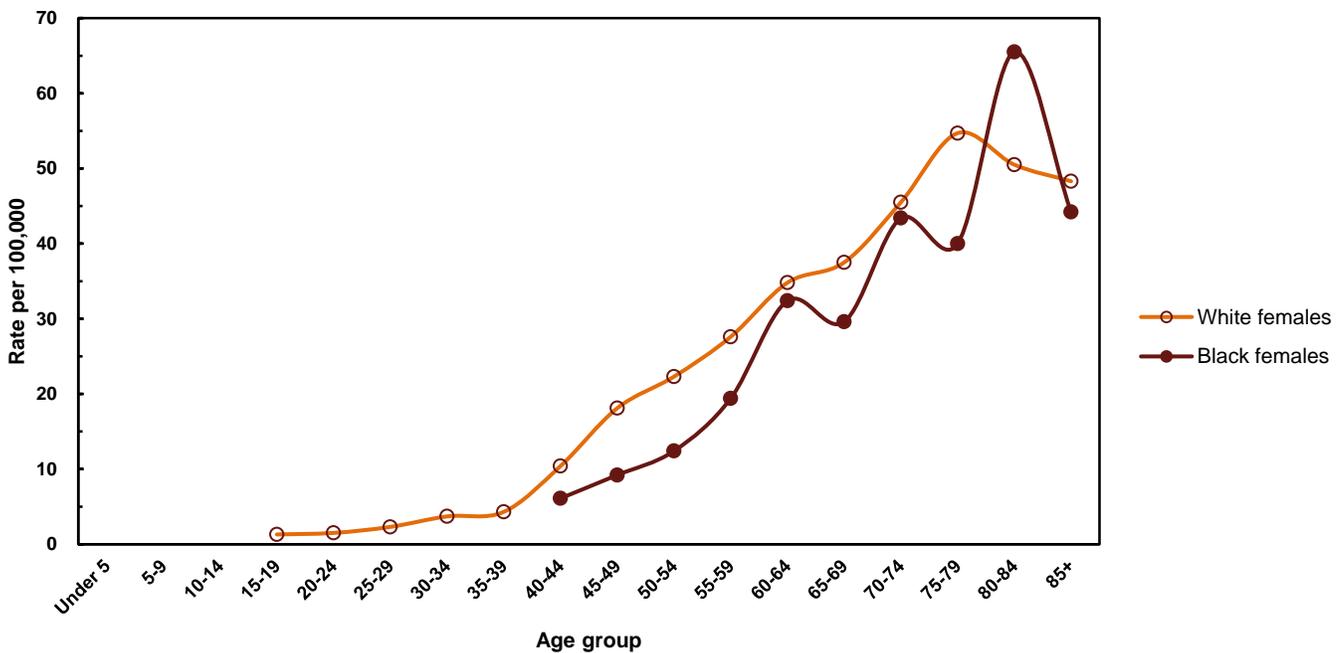
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**

Age Group	All Females	White	Black
Total	16.3	17.6	10.1
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	0.6	ND	ND
15-19	1.2	1.3	ND
20-24	1.5	1.5	ND
25-29	2.2	2.3	ND
30-34	3.4	3.7	ND
35-39	4.2	4.3	ND
40-44	9.8	10.4	6.1
45-49	17.1	18.1	9.2
50-54	20.9	22.3	12.4
55-59	27.0	27.6	19.4
60-64	34.6	34.8	32.4
65-69	36.7	37.5	29.6
70-74	45.0	45.5	43.4
75-79	53.0	54.7	40.0
80-84	51.6	50.5	65.5
85+	49.5	48.3	44.2

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
14-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Ovary: INCIDENCE (Invasive)

**TABLE
14-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2008-2012**

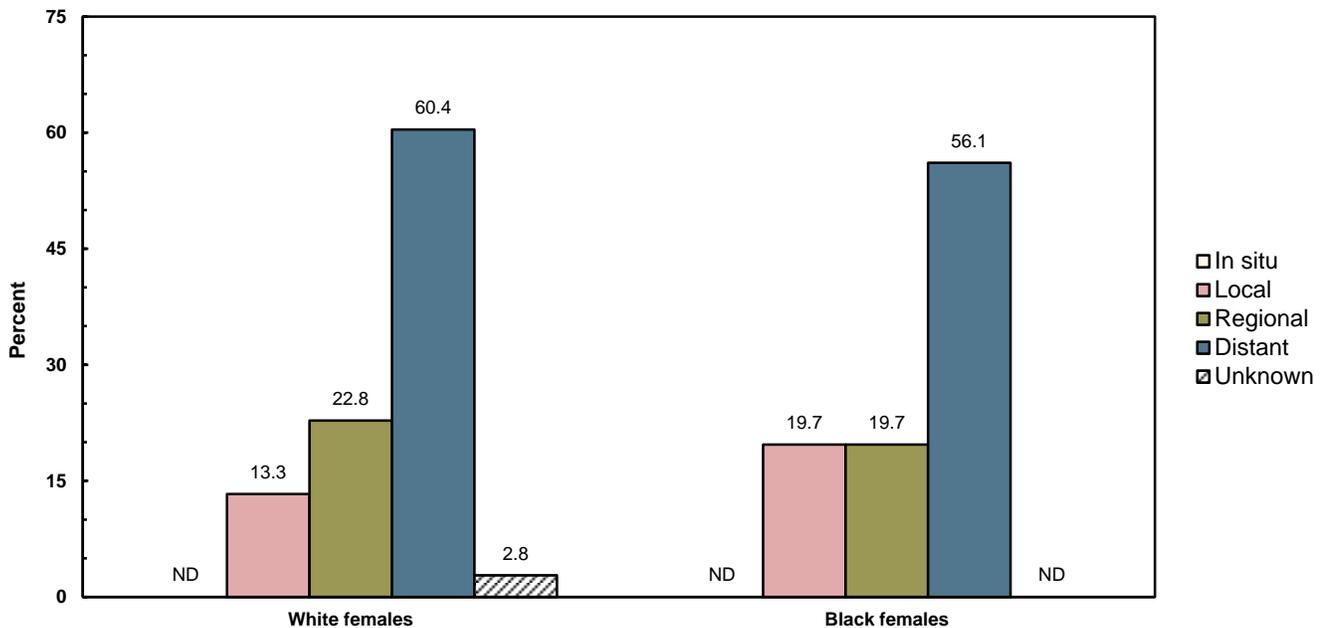
Age Group	All Females*	White	Black
Total	5,288	4,784	367
Under 5	1	0	0
5-9	3	2	1
10-14	11	6	3
15-19	27	23	3
20-24	32	26	5
25-29	42	35	4
30-34	63	56	6
35-39	81	68	7
40-44	212	188	15
45-49	401	362	23
50-54	504	467	30
55-59	599	538	40
60-64	664	592	54
65-69	549	502	35
70-74	547	498	41
75-79	555	521	31
80-84	470	423	40
85+	527	477	29

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
14-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Female Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 930 - 91.8%

Cancer of the Ovary: MORTALITY

**TABLE
14-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Female Residents, 2003-2012**

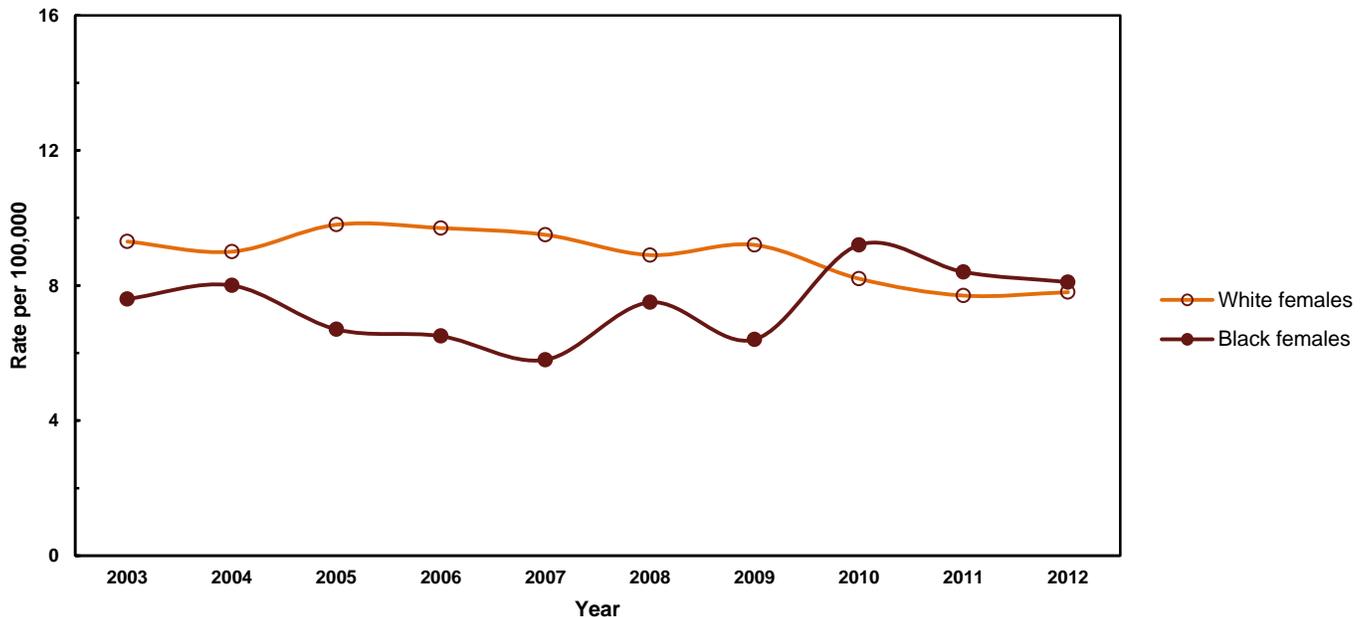
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	721	7.8 (7.2-8.4)	644	7.8 (7.2-8.4)	61	8.1 (6.1-10.1)
2011	682	7.6 (7.0-8.2)	620	7.7 (7.1-8.3)	61	8.4 (6.3-10.5)
2010	724	8.1 (7.5-8.7)	653	8.2 (7.6-8.8)	62	9.2 (6.9-11.5)
2009	782	8.9 (8.3-9.5)	736	9.2 (8.5-9.9)	43	6.4 (4.5-8.3)
2008	754	8.6 (8.0-9.2)	699	8.9 (8.2-9.6)	51	7.5 (5.4-9.6)
2007	793	9.1 (8.5-9.7)	747	9.5 (8.8-10.2)	39	5.8 (4.0-7.6)
2006	807	9.4 (8.8-10.0)	760	9.7 (9.0-10.4)	43	6.5 (4.6-8.4)
2005	808	9.5 (8.8-10.2)	760	9.8 (9.1-10.5)	43	6.7 (4.7-8.7)
2004	746	8.9 (8.3-9.5)	690	9.0 (8.3-9.7)	51	8.0 (5.8-10.2)
2003	768	9.1 (8.5-9.7)	711	9.3 (8.6-10.0)	48	7.6 (5.4-9.8)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
14-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Female Residents, 2003-2012**



Cancer of the Ovary: MORTALITY

**TABLE
14-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**

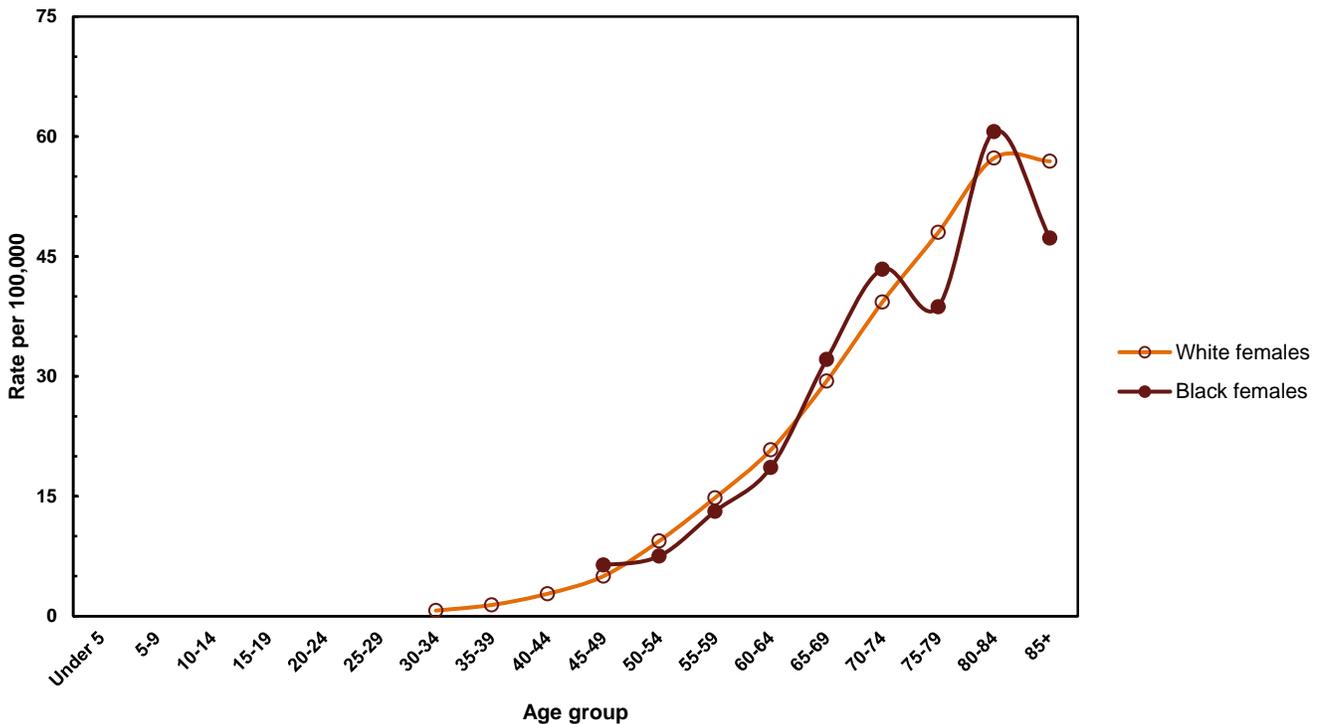
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	3,663	11.3	3,352	12.3	278	7.6
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	2	ND	1	ND	0	ND
20-24	5	ND	5	ND	0	ND
25-29	4	ND	2	ND	1	ND
30-34	13	0.7	10	0.7	3	ND
35-39	23	1.2	22	1.4	1	ND
40-44	55	2.6	50	2.8	4	ND
45-49	117	5.0	100	5.0	16	6.4
50-54	219	9.1	197	9.4	18	7.5
55-59	321	14.5	289	14.8	27	13.1
60-64	389	20.3	353	20.8	31	18.6
65-69	438	29.3	394	29.4	38	32.1
70-74	475	39.1	430	39.3	41	43.4
75-79	487	46.5	457	48.0	30	38.7
80-84	521	57.2	480	57.3	37	60.6
85+	594	55.8	562	56.9	31	47.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
14-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2008-2012**



Cancer of the Ovary: INCIDENCE (Invasive)

**TABLE
14-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	5,288	12.8	(12.5-13.1)				
Adams	40	11.9	(8.2-15.6)	Juniata	8	ND	
Allegheny	553	12.4	(11.4-13.4)	Lackawanna	105	14.4	(11.6-17.2)
Armstrong	29	11.3	(7.2-15.4)	Lancaster	207	12.5	(10.8-14.2)
Beaver	75	12.5	(9.7-15.3)	Lawrence	43	13.9	(9.7-18.1)
Bedford	17	ND		Lebanon	50	10.8	(7.8-13.8)
Berks	135	10.6	(8.8-12.4)	Lehigh	141	12.3	(10.3-14.3)
Blair	56	13.0	(9.6-16.4)	Luzerne	161	14.5	(12.3-16.7)
Bradford	28	13.6	(8.6-18.6)	Lycoming	49	13.0	(9.4-16.6)
Bucks	283	14.3	(12.6-16.0)	McKean	16	ND	
Butler	77	12.4	(9.6-15.2)	Mercer	54	14.0	(10.3-17.7)
Cambria	73	13.9	(10.7-17.1)	Mifflin	20	11.6	(6.5-16.7)
Cameron	0	ND		Monroe	79	15.7	(12.2-19.2)
Carbon	29	13.7	(8.7-18.7)	Montgomery	384	14.9	(13.4-16.4)
Centre	45	11.9	(8.4-15.4)	Montour	8	ND	
Chester	215	14.4	(12.5-16.3)	Northampton	133	14.3	(11.9-16.7)
Clarion	17	ND		Northumberland	46	13.6	(9.7-17.5)
Clearfield	33	12.0	(7.9-16.1)	Perry	21	15.8	(9.0-22.6)
Clinton	15	ND		Philadelphia	520	11.8	(10.8-12.8)
Columbia	27	12.7	(7.9-17.5)	Pike	26	13.2	(8.1-18.3)
Crawford	33	11.3	(7.4-15.2)	Potter	6	ND	
Cumberland	82	11.0	(8.6-13.4)	Schuylkill	60	11.1	(8.3-13.9)
Dauphin	92	11.2	(8.9-13.5)	Snyder	18	ND	
Delaware	238	13.0	(11.3-14.7)	Somerset	39	14.1	(9.7-18.5)
Elk	13	ND		Sullivan	3	ND	
Erie	116	13.6	(11.1-16.1)	Susquehanna	13	ND	
Fayette	72	13.4	(10.3-16.5)	Tioga	20	15.5	(8.7-22.3)
Forest	2	ND		Union	9	ND	
Franklin	58	12.0	(8.9-15.1)	Venango	25	12.4	(7.5-17.3)
Fulton	4	ND		Warren	25	16.8	(10.2-23.4)
Greene	14	ND		Washington	98	12.4	(9.9-14.9)
Huntingdon	10	ND		Wayne	25	14.1	(8.6-19.6)
Indiana	22	7.6	(4.4-10.8)	Westmoreland	179	13.2	(11.3-15.1)
Jefferson	17	ND		Wyoming	21	22.8	(13.0-32.6)
				York	156	11.8	(9.9-13.7)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Ovary: MORTALITY

**TABLE
14-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Female Residents, 2008-2012**

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	3,663	8.2	(7.9-8.5)				
Adams	26	7.3	(4.5-10.1)	Juniata	2	ND	
Allegheny	412	8.5	(7.7-9.3)	Lackawanna	66	8.0	(6.1-9.9)
Armstrong	23	8.6	(5.1-12.1)	Lancaster	148	8.2	(6.9-9.5)
Beaver	56	7.8	(5.8-9.8)	Lawrence	33	9.3	(6.1-12.5)
Bedford	13	ND		Lebanon	38	7.2	(4.9-9.5)
Berks	93	7.2	(5.7-8.7)	Lehigh	105	8.4	(6.8-10.0)
Blair	42	8.0	(5.6-10.4)	Luzerne	102	8.2	(6.6-9.8)
Bradford	22	10.3	(6.0-14.6)	Lycoming	37	8.5	(5.8-11.2)
Bucks	165	7.9	(6.7-9.1)	McKean	9	ND	
Butler	48	7.5	(5.4-9.6)	Mercer	44	9.5	(6.7-12.3)
Cambria	61	10.2	(7.6-12.8)	Mifflin	12	ND	
Cameron	2	ND		Monroe	37	7.8	(5.3-10.3)
Carbon	28	11.8	(7.4-16.2)	Montgomery	243	8.8	(7.7-9.9)
Centre	32	8.1	(5.3-10.9)	Montour	7	ND	
Chester	142	9.4	(7.9-10.9)	Northampton	69	6.7	(5.1-8.3)
Clarion	5	ND		Northumberland	32	8.9	(5.8-12.0)
Clearfield	25	8.2	(5.0-11.4)	Perry	9	ND	
Clinton	7	ND		Philadelphia	337	7.4	(6.6-8.2)
Columbia	19	ND		Pike	13	ND	
Crawford	30	9.7	(6.2-13.2)	Potter	5	ND	
Cumberland	65	8.1	(6.1-10.1)	Schuylkill	48	7.5	(5.4-9.6)
Dauphin	72	8.5	(6.5-10.5)	Snyder	9	ND	
Delaware	167	8.7	(7.4-10.0)	Somerset	25	8.8	(5.4-12.2)
Elk	9	ND		Sullivan	1	ND	
Erie	79	8.4	(6.5-10.3)	Susquehanna	11	ND	
Fayette	60	10.7	(8.0-13.4)	Tioga	11	ND	
Forest	0	ND		Union	10	ND	
Franklin	42	8.3	(5.8-10.8)	Venango	22	9.9	(5.8-14.0)
Fulton	3	ND		Warren	11	ND	
Greene	12	ND		Washington	105	12.6	(10.2-15.0)
Huntingdon	7	ND		Wayne	11	ND	
Indiana	27	8.4	(5.2-11.6)	Westmoreland	148	9.8	(8.2-11.4)
Jefferson	9	ND		Wyoming	8	ND	
				York	92	6.7	(5.3-8.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Prostate

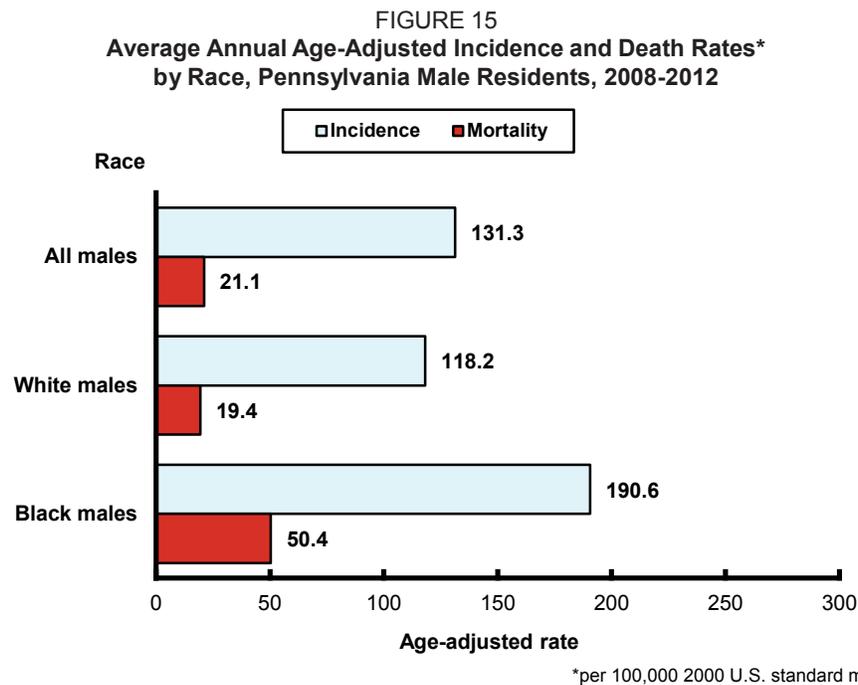
Data Highlights

Cancer of the prostate accounted for the largest number (7,841) and percentage (21.0) of all invasive cancer cases diagnosed among male residents in 2012. The average annual (2008-2012) age-adjusted incidence rate for prostate cancer among black males was 190.6 per 100,000, approximately 61 percent higher than the rate of 118.2 for whites. According to the International Agency for Research on Cancer, black males in the United States have been reported to have among the highest incidence of prostate cancer of any group in the world.

Since the late 1980s, increased basic screening procedures have become more prevalent among physicians and clinics, especially for patients of advanced ages, thereby affecting the number of cases detected and reported. The effects of increased screening procedures stabilized during the mid-1990s. The annual age-adjusted incidence rate among white males had a 25 percent decrease from 122.5 in 2011 to 92.2 in 2012. Annual incidence rates among black males had a very similar trend compared to whites, except the rates for blacks were significantly higher than whites.

Prostate cancer is a disease more prevalent among older males. Approximately 74 percent of the invasive cases diagnosed from 2008 to 2012 were among males aged 60 and older. Average annual age-specific incidence rates among black males for this site began rising dramatically at about age 50 and then declining by age 70. The average annual age-specific incidence rates among white males had a similar trend to black males but rose at a slower rate. In 2012, about 74 percent of the prostate cancer cases reported among Pennsylvania residents were diagnosed at an early stage (in situ and local) of the disease. Approximately 18 percent of prostate cancers in 2012 were diagnosed at a late stage (regional or distant).

There were 1,282 resident deaths in 2012 due to prostate cancer, a decrease from 2011 when there were 1,364 resident deaths. The average annual (2008-2012) age-adjusted death rate among black males (50.4 per 100,000) was over twice the rate for white males (19.4). As expected, the average annual (2008-2012) age-specific death rates for prostate cancer also showed black males with higher rates than white males for the age groups over 49. Overall, the annual age-adjusted death rates for whites have declined during the period 2003-2012. The annual age-adjusted death rates for blacks showed no discernible pattern.



Risk Factors

Etiological factors are not known, although risk is higher among blacks and is associated with family history, diets high in red meats and high-fat dairy products, and a lack of fruits and vegetables.

Early Detection

The effectiveness of the digital rectal exam and the prostate-specific antigen tests as screening to reduce death rates is being evaluated.

Cancer of the Prostate: INCIDENCE (Invasive)

**TABLE
15-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Male Residents, 2003-2012**

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	7,841	101.7 (99.4-104.0)	6,431	92.2 (89.9-94.5)	861	145.7 (136.0-155.4)
2011	10,235	136.5 (133.9-139.1)	8,308	122.5 (119.9-125.1)	1,081	194.0 (182.4-205.6)
2010	9,690	132.8 (130.2-135.4)	7,617	116.0 (113.4-118.6)	976	182.6 (171.1-194.1)
2009	9,742	139.6 (136.8-142.4)	7,979	125.4 (122.6-128.2)	1,042	216.8 (203.6-230.0)
2008	10,098	148.7 (145.8-151.6)	8,525	137.5 (134.6-140.4)	1,040	224.8 (211.1-238.5)
2007	11,150	167.7 (164.6-170.8)	9,177	150.9 (147.8-154.0)	1,075	237.3 (223.1-251.5)
2006	10,770	164.4 (161.3-167.5)	8,994	149.7 (146.6-152.8)	1,013	225.2 (211.3-239.1)
2005	9,435	145.5 (142.6-148.4)	8,192	137.8 (134.8-140.8)	974	220.8 (206.9-234.7)
2004	9,254	143.9 (141.0-146.8)	7,942	134.8 (131.8-137.8)	1,047	238.7 (224.2-253.2)
2003	9,882	155.1 (152.0-158.2)	8,484	145.3 (142.2-148.4)	1,097	255.0 (239.9-270.1)

* Includes any unknowns

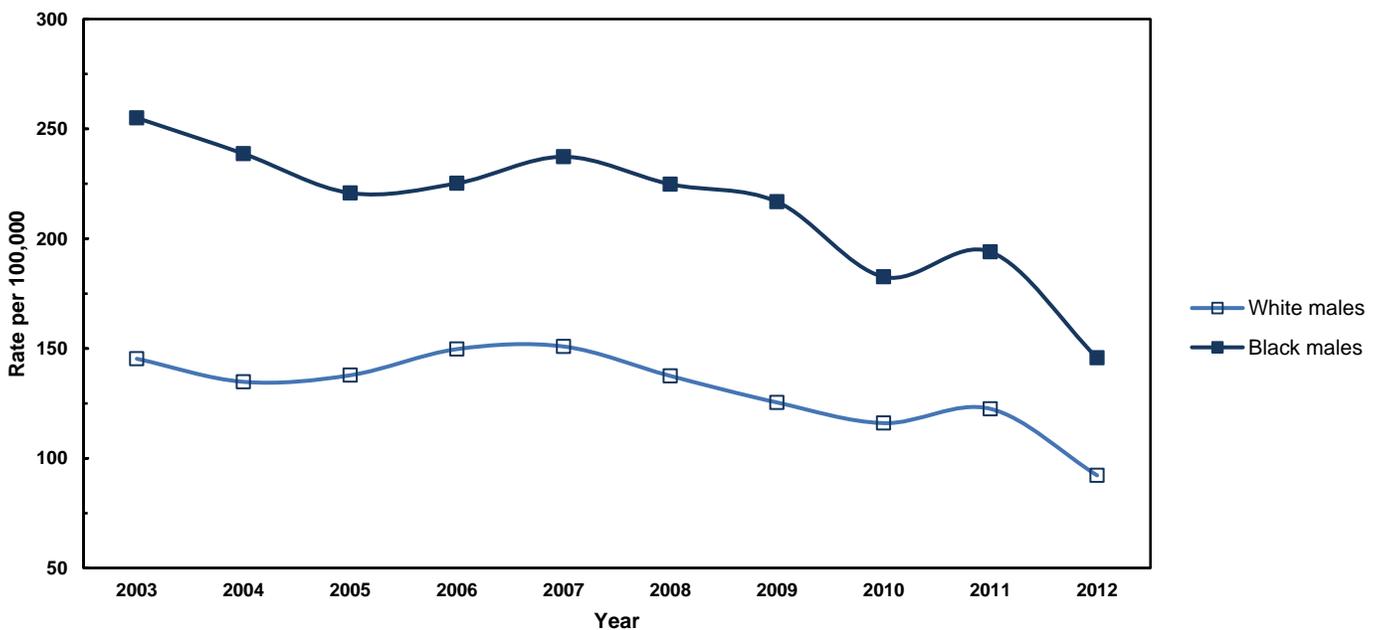
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
15-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Male Residents, 2003-2012**



Cancer of the Prostate: INCIDENCE (Invasive)

**TABLE
15-B**

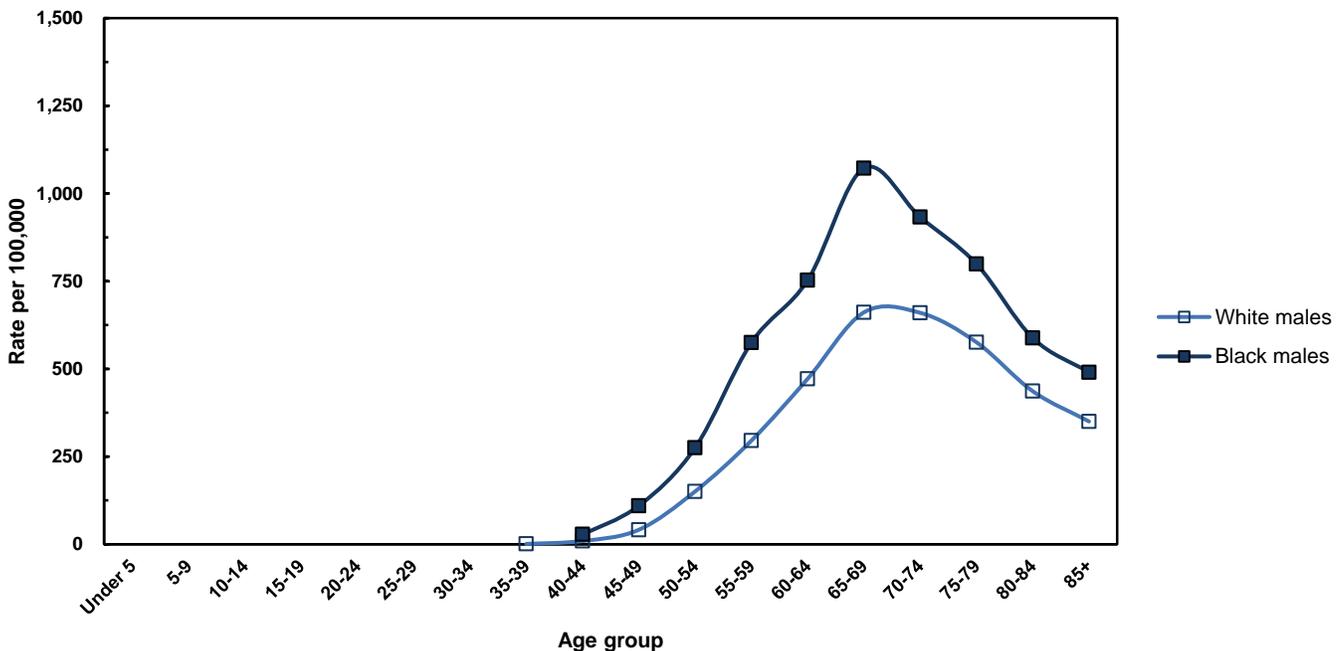
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2008-2012**

Age Group	All Males	White	Black
Total	154.5	149.7	150.1
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	ND	ND	ND
20-24	ND	ND	ND
25-29	ND	ND	ND
30-34	ND	ND	ND
35-39	0.9	0.9	ND
40-44	11.2	9.0	28.0
45-49	49.2	41.1	109.3
50-54	165.9	150.3	274.8
55-59	329.7	295.3	574.7
60-64	515.6	471.6	752.7
65-69	730.0	661.1	1,072.3
70-74	733.0	659.8	932.7
75-79	644.7	575.8	799.1
80-84	483.3	436.3	588.1
85+	387.2	350.0	490.0

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
15-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2008-2012**



Cancer of the Prostate: INCIDENCE (Invasive)

**TABLE
15-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Male Residents, 2008-2012**

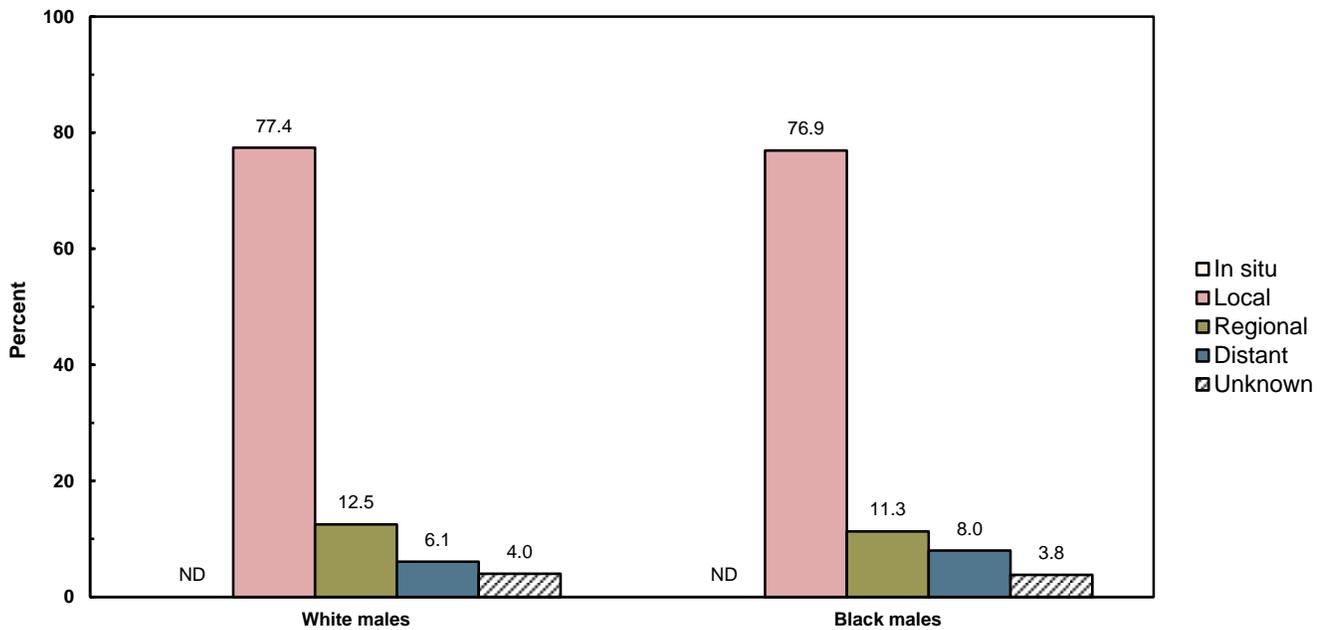
Age Group	All Males*	White	Black
Total	47,606	38,860	5,000
Under 5	2	2	0
5-9	0	0	0
10-14	0	0	0
15-19	0	0	0
20-24	0	0	0
25-29	0	0	0
30-34	5	3	0
35-39	18	14	3
40-44	237	161	62
45-49	1,119	807	243
50-54	3,856	3,071	570
55-59	6,957	5,550	980
60-64	9,137	7,527	971
65-69	9,511	7,841	913
70-74	7,195	5,917	584
75-79	4,891	4,026	363
80-84	2,772	2,333	181
85+	1,904	1,606	130

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
15-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Male Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 7,607 - 97.0%

Cancer of the Prostate: MORTALITY

**TABLE
15-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Male Residents, 2003-2012**

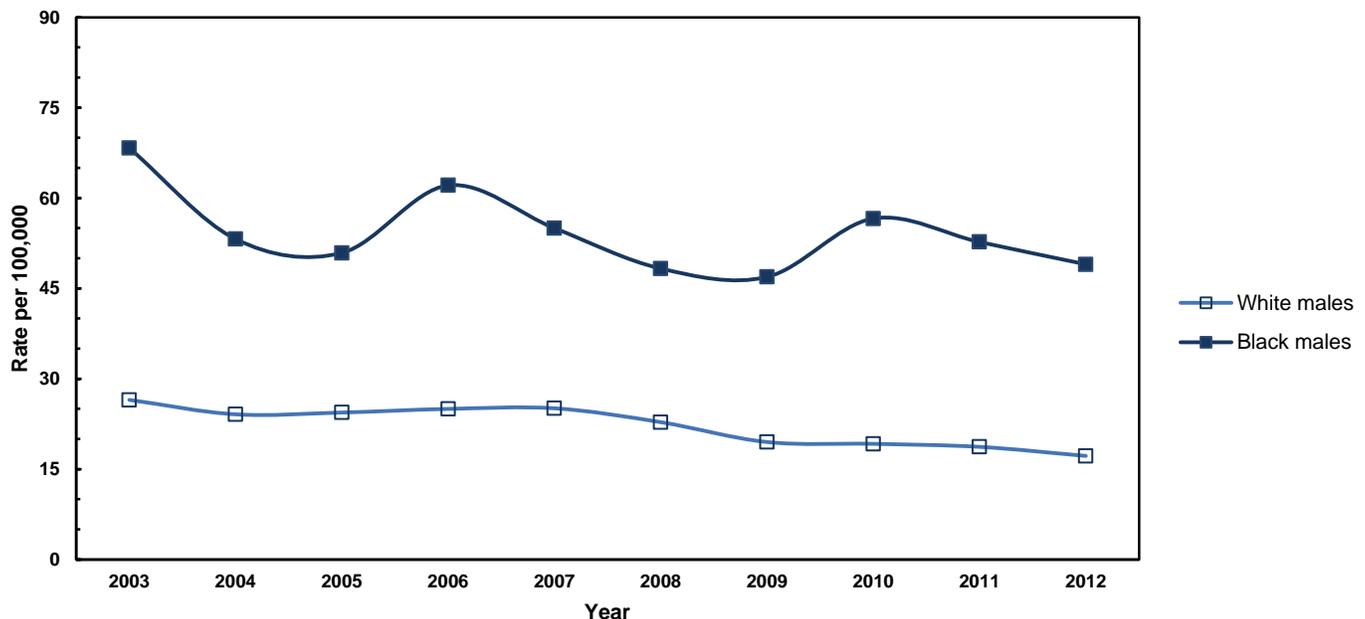
Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	1,282	19.0 (18.0-20.0)	1,073	17.2 (16.2-18.2)	194	49.0 (42.1-55.9)
2011	1,364	20.6 (19.5-21.7)	1,147	18.7 (17.6-19.8)	205	52.7 (45.5-59.9)
2010	1,363	21.1 (20.0-22.2)	1,143	19.2 (18.1-20.3)	212	56.6 (49.0-64.2)
2009	1,338	21.0 (19.9-22.1)	1,145	19.5 (18.4-20.6)	185	46.9 (40.1-53.7)
2008	1,451	24.1 (22.9-25.3)	1,266	22.8 (21.5-24.1)	179	48.3 (41.2-55.4)
2007	1,450	26.7 (25.3-28.1)	1,259	25.1 (23.7-26.5)	188	55.0 (47.1-62.9)
2006	1,453	27.1 (25.7-28.5)	1,233	25.0 (23.6-26.4)	212	62.1 (53.7-70.5)
2005	1,485	25.7 (24.4-27.0)	1,301	24.4 (23.1-25.7)	179	50.9 (43.4-58.4)
2004	1,467	25.7 (24.4-27.0)	1,276	24.1 (22.8-25.4)	185	53.2 (45.5-60.9)
2003	1,584	28.7 (27.3-30.1)	1,346	26.5 (25.1-27.9)	231	68.3 (59.5-77.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
15-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Male Residents, 2003-2012**



Cancer of the Prostate: MORTALITY

**TABLE
15-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Male Residents, 2008-2012**

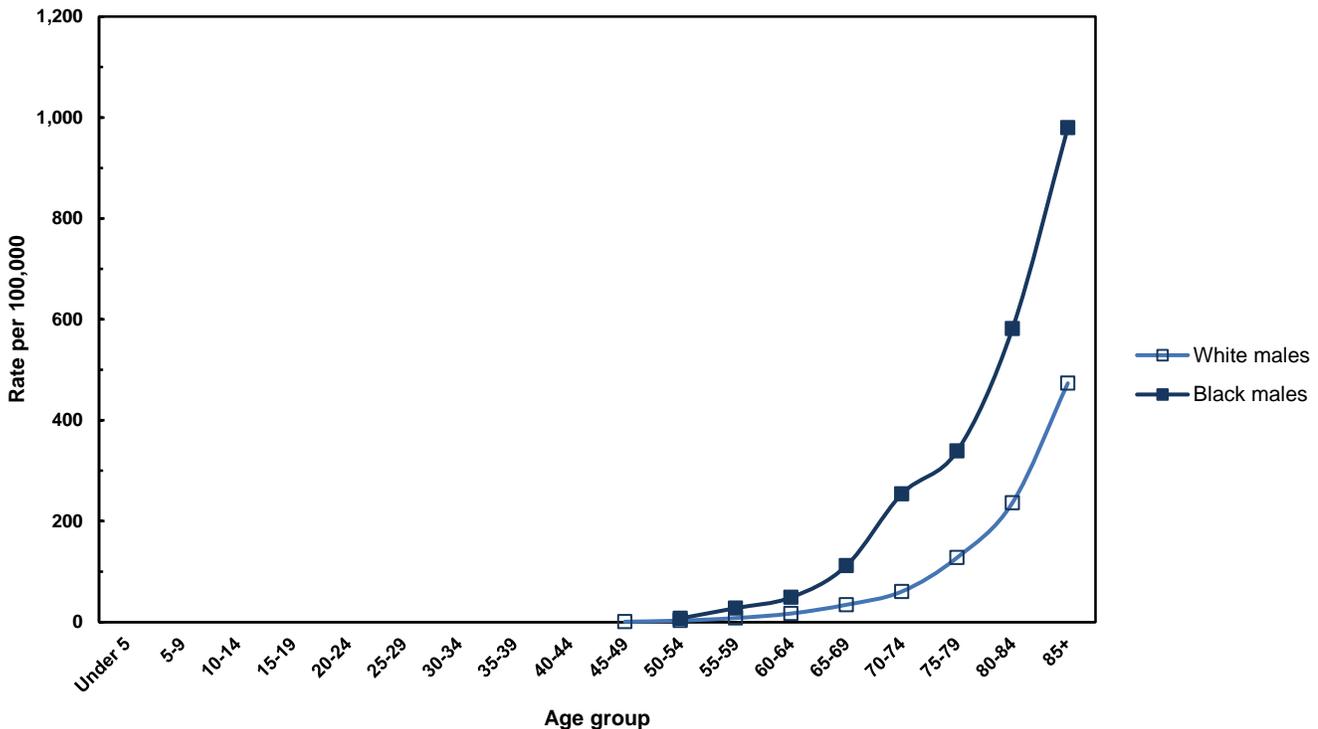
Age Group	All Males*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	6,798	22.1	5,774	22.2	975	29.3
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	0	ND	0	ND	0	ND
25-29	0	ND	0	ND	0	ND
30-34	1	ND	1	ND	0	ND
35-39	2	ND	2	ND	0	ND
40-44	4	ND	3	ND	1	ND
45-49	16	0.7	14	0.7	2	ND
50-54	74	3.2	58	2.8	15	7.2
55-59	200	9.5	149	7.9	47	27.6
60-64	336	19.0	270	16.9	63	48.8
65-69	507	38.9	406	34.2	95	111.6
70-74	707	72.0	542	60.4	159	253.9
75-79	1,053	138.8	893	127.7	154	339.0
80-84	1,454	253.5	1,264	236.4	179	581.6
85+	2,444	497.0	2,172	473.3	260	979.9

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
15-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Male Residents, 2008-2012**



Cancer of the Prostate: INCIDENCE (Invasive)

**TABLE
15-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Male Residents, 2008-2012**

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	47,606	131.3	(130.1-132.5)				
Adams	306	100.4	(89.2-111.6)	Juniata	47	61.9	(44.2-79.6)
Allegheny	4,498	126.9	(123.2-130.6)	Lackawanna	725	110.8	(102.7-118.9)
Armstrong	268	115.6	(101.8-129.4)	Lancaster	1,772	122.9	(117.2-128.6)
Beaver	551	98.5	(90.3-106.7)	Lawrence	339	116.4	(104.0-128.8)
Bedford	255	151.2	(132.6-169.8)	Lebanon	502	123.6	(112.8-134.4)
Berks	1,377	121.7	(115.3-128.1)	Lehigh	1,282	132.5	(125.2-139.8)
Blair	443	113.4	(102.8-124.0)	Luzerne	1,151	116.1	(109.4-122.8)
Bradford	279	134.2	(118.5-149.9)	Lycoming	462	129.3	(117.5-141.1)
Bucks	2,577	138.6	(133.2-144.0)	McKean	155	113.8	(95.9-131.7)
Butler	901	168.4	(157.4-179.4)	Mercer	584	158.0	(145.2-170.8)
Cambria	619	129.2	(119.0-139.4)	Mifflin	176	114.5	(97.6-131.4)
Cameron	43	216.1	(151.5-280.7)	Monroe	571	124.2	(114.0-134.4)
Carbon	254	119.1	(104.5-133.7)	Montgomery	3,322	146.8	(141.8-151.8)
Centre	440	128.1	(116.1-140.1)	Montour	98	168.8	(135.4-202.2)
Chester	1,877	138.4	(132.1-144.7)	Northampton	1,317	155.3	(146.9-163.7)
Clarion	207	167.0	(144.2-189.8)	Northumberland	422	138.6	(125.4-151.8)
Clearfield	356	135.0	(121.0-149.0)	Perry	106	77.7	(62.9-92.5)
Clinton	144	124.4	(104.1-144.7)	Philadelphia	5,496	166.4	(162.0-170.8)
Columbia	256	132.5	(116.3-148.7)	Pike	220	110.2	(95.6-124.8)
Crawford	405	143.5	(129.5-157.5)	Potter	91	142.9	(113.5-172.3)
Cumberland	627	91.7	(84.5-98.9)	Schuylkill	496	104.1	(94.9-113.3)
Dauphin	722	100.5	(93.2-107.8)	Snyder	139	122.4	(102.1-142.7)
Delaware	2,295	155.9	(149.5-162.3)	Somerset	317	119.3	(106.2-132.4)
Elk	218	200.0	(173.5-226.5)	Sullivan	36	129.7	(87.3-172.1)
Erie	1,023	133.5	(125.3-141.7)	Susquehanna	195	128.6	(110.5-146.7)
Fayette	496	109.4	(99.8-119.0)	Tioga	198	136.4	(117.4-155.4)
Forest	28	95.7	(60.3-131.1)	Union	165	129.9	(110.1-149.7)
Franklin	593	130.4	(119.9-140.9)	Venango	223	123.7	(107.5-139.9)
Fulton	63	123.9	(93.3-154.5)	Warren	266	178.8	(157.3-200.3)
Greene	115	95.0	(77.6-112.4)	Washington	816	122.7	(114.3-131.1)
Huntingdon	158	105.3	(88.9-121.7)	Wayne	168	84.2	(71.5-96.9)
Indiana	307	117.0	(103.9-130.1)	Westmoreland	1,375	110.8	(104.9-116.7)
Jefferson	227	155.4	(135.2-175.6)	Wyoming	113	119.9	(97.8-142.0)
				York	1,333	110.2	(104.3-116.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Prostate: MORTALITY

**TABLE
15-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Male Residents, 2008-2012**

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	6,798	21.1	(20.6-21.6)				
Adams	48	18.6	(13.3-23.9)	Juniata	12	ND	
Allegheny	703	20.4	(18.9-21.9)	Lackawanna	126	21.3	(17.6-25.0)
Armstrong	36	17.0	(11.4-22.6)	Lancaster	259	19.4	(17.0-21.8)
Beaver	121	22.4	(18.4-26.4)	Lawrence	53	18.7	(13.7-23.7)
Bedford	28	17.9	(11.3-24.5)	Lebanon	72	19.6	(15.1-24.1)
Berks	190	18.8	(16.1-21.5)	Lehigh	159	18.4	(15.5-21.3)
Blair	79	21.9	(17.1-26.7)	Luzerne	166	18.6	(15.8-21.4)
Bradford	41	23.6	(16.4-30.8)	Lycoming	67	20.9	(15.9-25.9)
Bucks	271	18.2	(16.0-20.4)	McKean	22	17.2	(10.0-24.4)
Butler	83	17.5	(13.7-21.3)	Mercer	68	19.1	(14.6-23.6)
Cambria	86	19.6	(15.5-23.7)	Mifflin	21	15.6	(8.9-22.3)
Cameron	5	ND		Monroe	71	20.6	(15.8-25.4)
Carbon	35	19.8	(13.2-26.4)	Montgomery	421	20.7	(18.7-22.7)
Centre	41	14.7	(10.2-19.2)	Montour	12	ND	
Chester	211	20.2	(17.5-22.9)	Northampton	149	19.4	(16.3-22.5)
Clarion	21	19.1	(10.9-27.3)	Northumberland	51	18.0	(13.1-22.9)
Clearfield	40	17.1	(11.8-22.4)	Perry	29	27.2	(17.3-37.1)
Clinton	17	ND		Philadelphia	940	32.5	(30.4-34.6)
Columbia	41	23.7	(16.4-31.0)	Pike	35	21.4	(14.3-28.5)
Crawford	57	24.0	(17.8-30.2)	Potter	17	ND	
Cumberland	113	19.1	(15.6-22.6)	Schuylkill	96	21.7	(17.4-26.0)
Dauphin	109	18.4	(14.9-21.9)	Snyder	28	28.7	(18.1-39.3)
Delaware	302	22.5	(20.0-25.0)	Somerset	41	16.4	(11.4-21.4)
Elk	22	21.4	(12.5-30.3)	Sullivan	9	ND	
Erie	165	24.4	(20.7-28.1)	Susquehanna	29	24.1	(15.3-32.9)
Fayette	92	22.4	(17.8-27.0)	Tioga	22	17.5	(10.2-24.8)
Forest	6	ND		Union	20	18.9	(10.6-27.2)
Franklin	56	13.6	(10.0-17.2)	Venango	31	19.3	(12.5-26.1)
Fulton	9	ND		Warren	26	19.6	(12.1-27.1)
Greene	16	ND		Washington	121	20.1	(16.5-23.7)
Huntingdon	22	20.0	(11.6-28.4)	Wayne	31	19.1	(12.4-25.8)
Indiana	57	24.0	(17.8-30.2)	Westmoreland	228	20.0	(17.4-22.6)
Jefferson	30	21.5	(13.8-29.2)	Wyoming	22	33.4	(19.4-47.4)
				York	191	19.0	(16.3-21.7)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

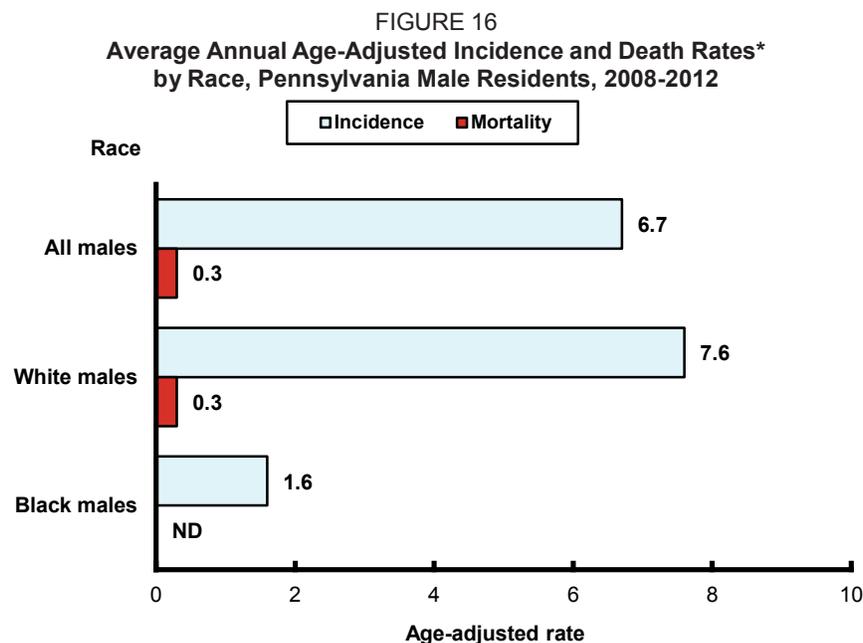
Cancer of the Testis

Data Highlights

The 2008-2012 average annual age-adjusted incidence rate for invasive testicular cancer was 7.6 per 100,000 for white males – more than four times higher than the rate for black males (1.6). In 2012, there were 390 invasive cases of testicular cancer diagnosed among male residents of Pennsylvania, resulting in an age-adjusted annual rate of 6.7, about 3 percent higher than the 2011 rate of 6.5. During the 10-year period of 2003-2012, the annual age-adjusted incidence rates for white males varied from a low of 6.4 in 2003 to a high of 8.5 in 2010. Overall, there was no discernible long term trend. Due to the small numbers of events, the annual age-adjusted incidence rates for black males were considered statistically unreliable and, therefore, not calculated.

White males accounted for 368 cases or 94 percent of all testicular cases in 2012. While cancers of the testis represented only about 1 percent of all the cancers diagnosed among males, it was the most common type of malignancy among males under 50 years of age in 2012. The average annual age-specific incidence rates for testicular cancer during the five-year period of 2008-2012 began to increase by age 15 and were highest for male residents between the ages of 25 and 39. During the five-year period of 2008-2012, approximately 92 percent of testicular cancers were diagnosed among males between the ages of 15 and 54. In 2012, the majority of testicular cases (70 percent) were diagnosed at an early stage (in situ or local) of the disease.

There were 13 deaths due to cancer of the testis among Pennsylvania men in 2012. Eleven of these cancer deaths were among white males. Because of the instability of the annual age-adjusted death rates (due to the small numbers of events), it is difficult to interpret any mortality trend. During the 2008-2012 period, about 70 percent of the deaths were for men under age 55.



*per 100,000 2000 U.S. standard million population
Note: Rates based on less than 20 events are statistically unreliable and are not displayed (ND).

Risk Factors

Etiological factors are obscure, but cryptorchidism, family and personal history of testicular cancer, and HIV/AIDS infections are associated with increased risk of testicular cancers.

Early Detection

Self-screening for testicular cancer may be beneficial, but conclusive evidence of a benefit is lacking.

The American Cancer Society recommends that testicular examinations be included as part of a man's routine cancer-related checkup.

Cancer of the Testis: INCIDENCE (Invasive)

**TABLE
16-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Male Residents, 2003-2012**

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	390	6.7 (6.0-7.4)	368	7.6 (6.8-8.4)	11	ND
2011	380	6.5 (5.8-7.2)	355	7.3 (6.5-8.1)	13	ND
2010	420	7.2 (6.5-7.9)	399	8.5 (7.7-9.3)	9	ND
2009	379	6.4 (5.8-7.0)	361	7.2 (6.5-7.9)	11	ND
2008	388	6.6 (5.9-7.3)	375	7.6 (6.8-8.4)	9	ND
2007	342	5.9 (5.3-6.5)	326	6.6 (5.9-7.3)	4	ND
2006	357	6.2 (5.6-6.8)	331	6.7 (6.0-7.4)	12	ND
2005	351	6.0 (5.4-6.6)	339	6.8 (6.1-7.5)	9	ND
2004	406	7.0 (6.3-7.7)	378	7.6 (6.8-8.4)	16	ND
2003	334	5.7 (5.1-6.3)	324	6.4 (5.7-7.1)	7	ND

* Includes any unknowns

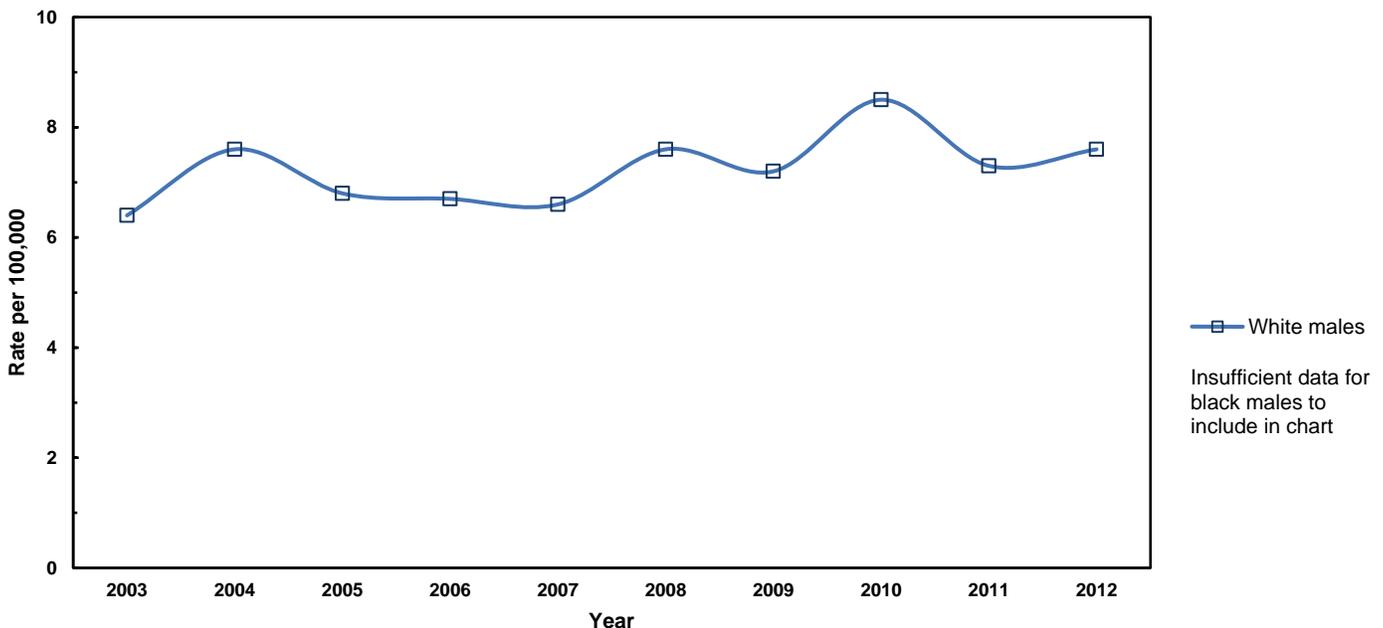
NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population.

Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below.

CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
16-A**

**Age-Adjusted Incidence Rates by Race
Pennsylvania Male Residents, 2003-2012**



Cancer of the Testis: INCIDENCE (Invasive)

**TABLE
16-B**

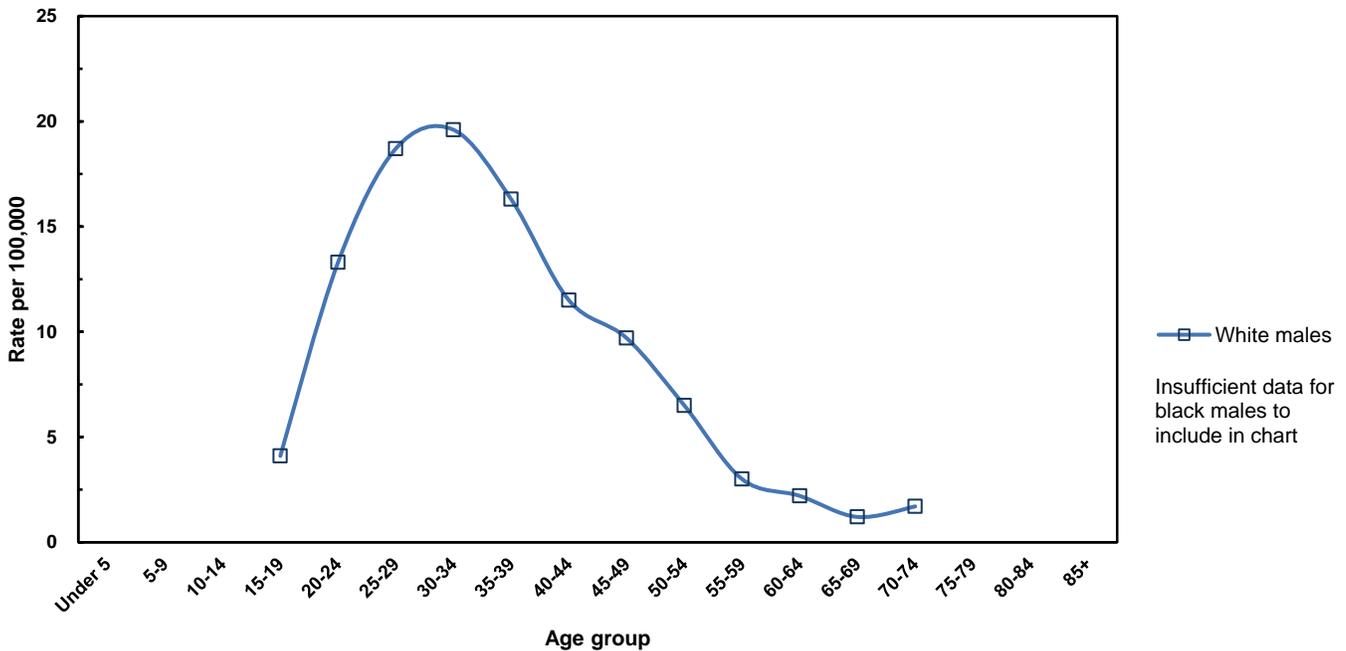
**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2008-2012**

Age Group	All Males	White	Black
Total	6.4	7.2	1.6
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	3.4	4.1	ND
20-24	11.3	13.3	ND
25-29	15.8	18.7	ND
30-34	17.0	19.6	ND
35-39	14.2	16.3	ND
40-44	10.4	11.5	ND
45-49	9.0	9.7	ND
50-54	5.8	6.5	ND
55-59	2.9	3.0	ND
60-64	2.0	2.2	ND
65-69	1.1	1.2	ND
70-74	1.6	1.7	ND
75-79	ND	ND	ND
80-84	ND	ND	ND
85+	ND	ND	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
16-B**

**Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2008-2012**



Cancer of the Testis: INCIDENCE (Invasive)

**TABLE
16-C**

**Total Number of Cancer Cases by Age and Race
Pennsylvania Male Residents, 2008-2012**

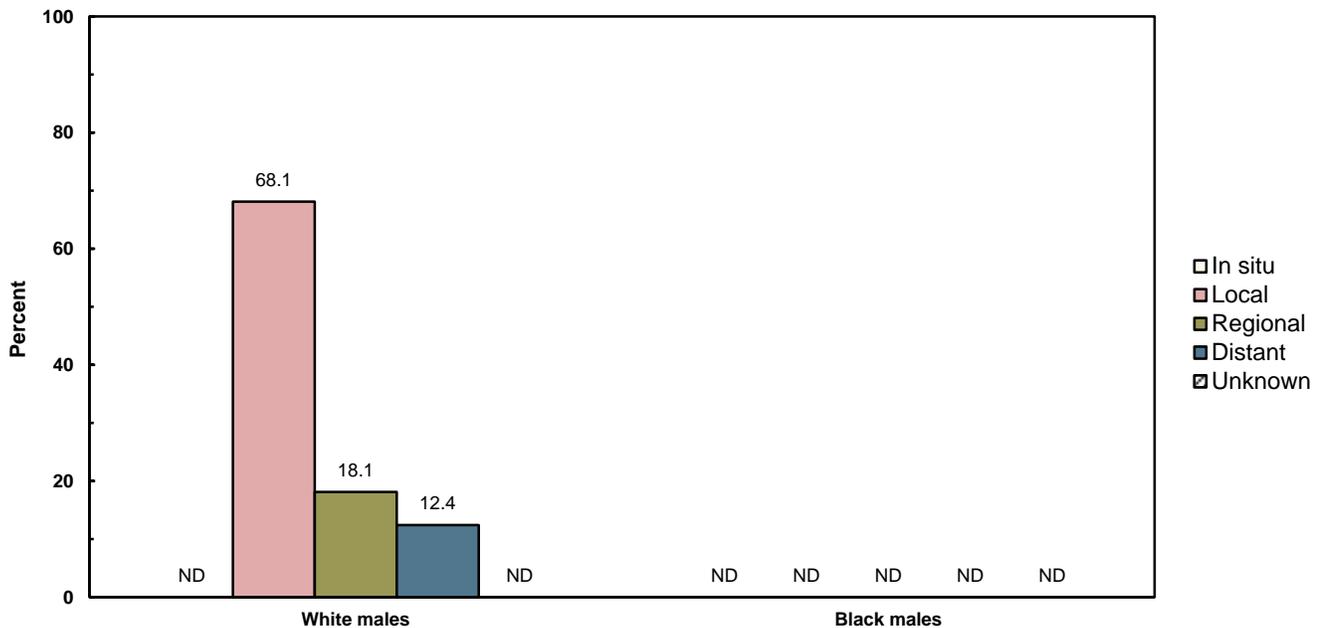
Age Group	All Males*	White	Black
Total	1,957	1,858	53
Under 5	9	9	0
5-9	3	2	1
10-14	5	5	0
15-19	78	75	2
20-24	255	239	7
25-29	311	298	5
30-34	319	301	9
35-39	269	257	8
40-44	221	207	8
45-49	204	191	6
50-54	135	132	3
55-59	61	57	3
60-64	36	35	1
65-69	14	14	0
70-74	16	15	0
75-79	9	9	0
80-84	5	5	0
85+	7	7	0

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
16-C**

**Stage of Disease at Diagnosis, Percent by Race
Pennsylvania Male Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 387 - 99.2%

Cancer of the Testis: MORTALITY

**TABLE
16-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Race and Year, Pennsylvania Male Residents, 2003-2012**

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	13	ND	11	ND	1	ND
2011	13	ND	11	ND	2	ND
2010	23	0.4 (0.2-0.6)	22	0.4 (0.2-0.6)	1	ND
2009	21	0.3 (0.2-0.4)	21	0.4 (0.2-0.6)	0	ND
2008	19	ND	18	ND	1	ND
2007	22	0.4 (0.2-0.6)	19	ND	3	ND
2006	12	ND	11	ND	1	ND
2005	17	ND	16	ND	1	ND
2004	20	0.3 (0.2-0.4)	19	ND	1	ND
2003	16	ND	14	ND	2	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER Program.

**FIGURE
16-D**

**Age-Adjusted Death Rates by Race
Pennsylvania Male Residents, 2003-2012**

Insufficient data to include a chart

Cancer of the Testis: MORTALITY

**TABLE
16-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Male Residents, 2008-2012**

Age Group	All Males*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	89	0.3	83	0.3	5	ND
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	1	ND	1	ND	0	ND
20-24	10	0.4	10	0.6	0	ND
25-29	11	0.6	11	0.7	0	ND
30-34	8	ND	8	ND	0	ND
35-39	10	0.5	8	ND	1	ND
40-44	4	ND	3	ND	1	ND
45-49	10	0.4	9	ND	1	ND
50-54	8	ND	7	ND	1	ND
55-59	7	ND	7	ND	0	ND
60-64	5	ND	5	ND	0	ND
65-69	0	ND	0	ND	0	ND
70-74	3	ND	3	ND	0	ND
75-79	2	ND	2	ND	0	ND
80-84	3	ND	2	ND	1	ND
85+	7	ND	7	ND	0	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
16-E**

**Average Annual Age-Specific Death Rates by Race
Pennsylvania Male Residents, 2008-2012**

Insufficient data to include a chart

Cancer of the Testis: INCIDENCE (Invasive)

**TABLE
16-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County, Pennsylvania Male Residents, 2008-2012**

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	1,957	6.7	(6.4-7.0)				
Adams	13	ND		Juniata	0	ND	
Allegheny	179	6.4	(5.5-7.3)	Lackawanna	35	7.2	(4.8-9.6)
Armstrong	9	ND		Lancaster	98	8.2	(6.6-9.8)
Beaver	33	8.9	(5.9-11.9)	Lawrence	13	ND	
Bedford	7	ND		Lebanon	18	ND	
Berks	63	6.6	(5.0-8.2)	Lehigh	46	5.7	(4.1-7.3)
Blair	17	ND		Luzerne	56	7.5	(5.5-9.5)
Bradford	10	ND		Lycoming	14	ND	
Bucks	117	8.3	(6.8-9.8)	McKean	7	ND	
Butler	29	6.9	(4.4-9.4)	Mercer	21	8.2	(4.7-11.7)
Cambria	29	8.9	(5.7-12.1)	Mifflin	11	ND	
Cameron	0	ND		Monroe	17	ND	
Carbon	9	ND		Montgomery	127	7.0	(5.8-8.2)
Centre	19	ND		Montour	2	ND	
Chester	86	7.4	(5.8-9.0)	Northampton	48	6.8	(4.9-8.7)
Clarion	3	ND		Northumberland	14	ND	
Clearfield	14	ND		Perry	6	ND	
Clinton	4	ND		Philadelphia	166	4.5	(3.8-5.2)
Columbia	11	ND		Pike	14	ND	
Crawford	12	ND		Potter	2	ND	
Cumberland	38	6.6	(4.5-8.7)	Schuylkill	27	7.2	(4.5-9.9)
Dauphin	37	6.2	(4.2-8.2)	Snyder	7	ND	
Delaware	86	6.7	(5.3-8.1)	Somerset	12	ND	
Elk	7	ND		Sullivan	1	ND	
Erie	39	6.1	(4.2-8.0)	Susquehanna	6	ND	
Fayette	24	7.4	(4.4-10.4)	Tioga	6	ND	
Forest	4	ND		Union	9	ND	
Franklin	22	6.7	(3.9-9.5)	Venango	10	ND	
Fulton	0	ND		Warren	5	ND	
Greene	4	ND		Washington	36	7.9	(5.3-10.5)
Huntingdon	10	ND		Wayne	8	ND	
Indiana	18	ND		Westmoreland	71	9.1	(7.0-11.2)
Jefferson	4	ND		Wyoming	3	ND	
				York	84	8.3	(6.5-10.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). In situ cancer cases are excluded. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

Cancer of the Testis: MORTALITY

**TABLE
16-G**

**Number of Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County, Pennsylvania Male Residents, 2008-2012**

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	89	0.3	(0.2-0.4)				
Adams	3	ND		Juniata	0	ND	
Allegheny	8	ND		Lackawanna	1	ND	
Armstrong	1	ND		Lancaster	3	ND	
Beaver	1	ND		Lawrence	0	ND	
Bedford	0	ND		Lebanon	0	ND	
Berks	5	ND		Lehigh	2	ND	
Blair	1	ND		Luzerne	5	ND	
Bradford	0	ND		Lycoming	0	ND	
Bucks	3	ND		McKean	0	ND	
Butler	0	ND		Mercer	1	ND	
Cambria	3	ND		Mifflin	0	ND	
Cameron	0	ND		Monroe	0	ND	
Carbon	0	ND		Montgomery	6	ND	
Centre	1	ND		Montour	0	ND	
Chester	3	ND		Northampton	2	ND	
Clarion	1	ND		Northumberland	1	ND	
Clearfield	0	ND		Perry	0	ND	
Clinton	0	ND		Philadelphia	11	ND	
Columbia	0	ND		Pike	0	ND	
Crawford	1	ND		Potter	1	ND	
Cumberland	1	ND		Schuylkill	2	ND	
Dauphin	0	ND		Snyder	1	ND	
Delaware	5	ND		Somerset	0	ND	
Elk	2	ND		Sullivan	0	ND	
Erie	0	ND		Susquehanna	0	ND	
Fayette	1	ND		Tioga	0	ND	
Forest	0	ND		Union	0	ND	
Franklin	1	ND		Venango	1	ND	
Fulton	0	ND		Warren	0	ND	
Greene	0	ND		Washington	1	ND	
Huntingdon	1	ND		Wayne	2	ND	
Indiana	1	ND		Westmoreland	3	ND	
Jefferson	0	ND		Wyoming	0	ND	
				York	3	ND	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

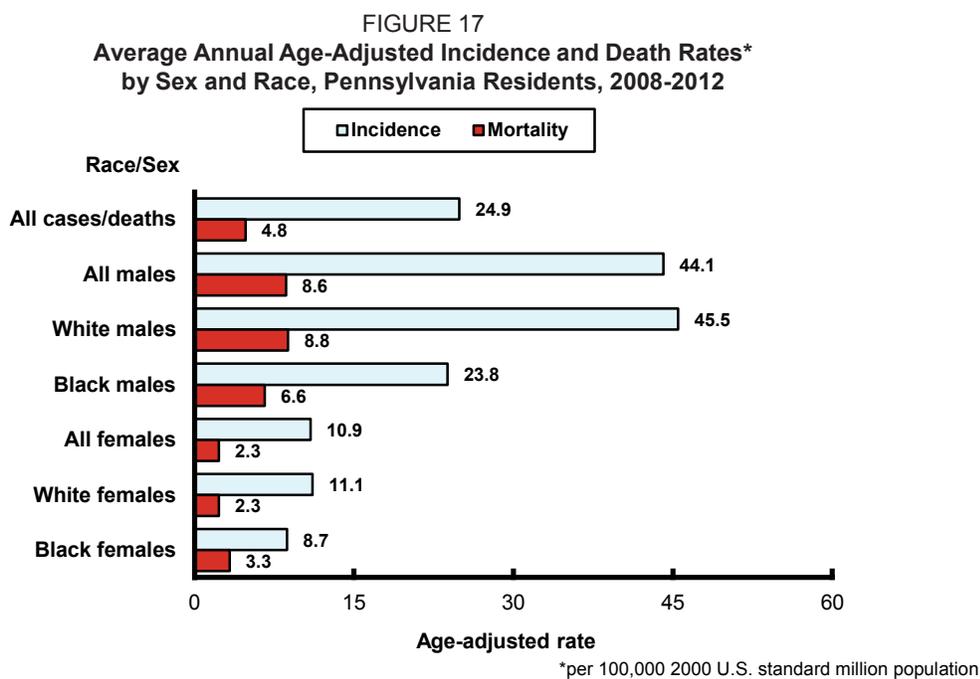
Cancer of the Urinary Bladder

Data Highlights

NOTE: Because of the uncertainty in interpreting the language used by pathologists to describe the extent of invasion, in situ bladder cancers are combined with invasive bladder cancers and are included in the total for all invasive cancer sites combined.

During the five-year period, 2008-2012, the average annual age-adjusted incidence rate for urinary bladder cancer was highest among white males (45.5 per 100,000) compared to 23.8 for black males and 10.9 for all females. In 2012, there were 3,993 new cases of urinary bladder cancer diagnosed among Pennsylvania residents, resulting in an age-adjusted rate of 24.4, the lowest annual rate observed over the 10-year period 2003-2012. The annual age-adjusted incidence rates for the period of 2003-2012 have not changed much among white males. There was no discernible trend among black males or among white or black females. During the five-year period, approximately 91 percent of bladder cancer cases were diagnosed among residents 55 years of age or older. White males had the highest average annual age-specific incidence rates during the period of 2008-2012 for age groups over 50. In 2012, 85 percent of urinary bladder cancers were diagnosed at early stages (in situ or local) of the disease, and about 11 percent were diagnosed at late stages (regional or distant).

The role of cigarette smoking as an important risk factor for bladder cancer is well established. According to the American Cancer Society, about half of all bladder cancers in both men and women are attributed to smoking. In 2012, there were 802 deaths among Pennsylvania residents — a decrease from the previous year, when there were 844 deaths. This resulted in an age-adjusted rate of 4.7 per 100,000. As observed with the incidence rates, age-adjusted death rates were highest among males, especially white males. Between 2003 and 2012, annual age-adjusted death rates for white males, black males, and white females did not have any discernible trends. It is difficult to interpret any mortality trend among black females because of the instability of the annual age-adjusted death rates (due to the small numbers of events).



Risk Factors

Etiological factors are obscure, although tobacco smoking is the greatest factor. Occupational exposures to aromatic amines (e.g., benzidine or beta-naphthylamine) and industries/jobs related to rubber products, leather, textiles, paint products, printing companies, painters, hairdressers, machinists and truck drivers (diesel fumes) can increase risk. Urinary infections, kidney/ bladder stones, schistosomiasis, bladder birth defects (especially exstrophy), arsenic in drinking water, chemotherapy, radiation therapy, low fluid consumption, genetics, and family history are associated with increased risk of urinary bladder cancers.

Early Detection

Screening for the public is not recommended, although bladder cancers can sometimes be found early among high-risk populations using urinalysis, urine cytology, and urine tests for tumor markers.

Cancer of the Urinary Bladder: INCIDENCE (Invasive and In Situ)

**TABLE
17-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

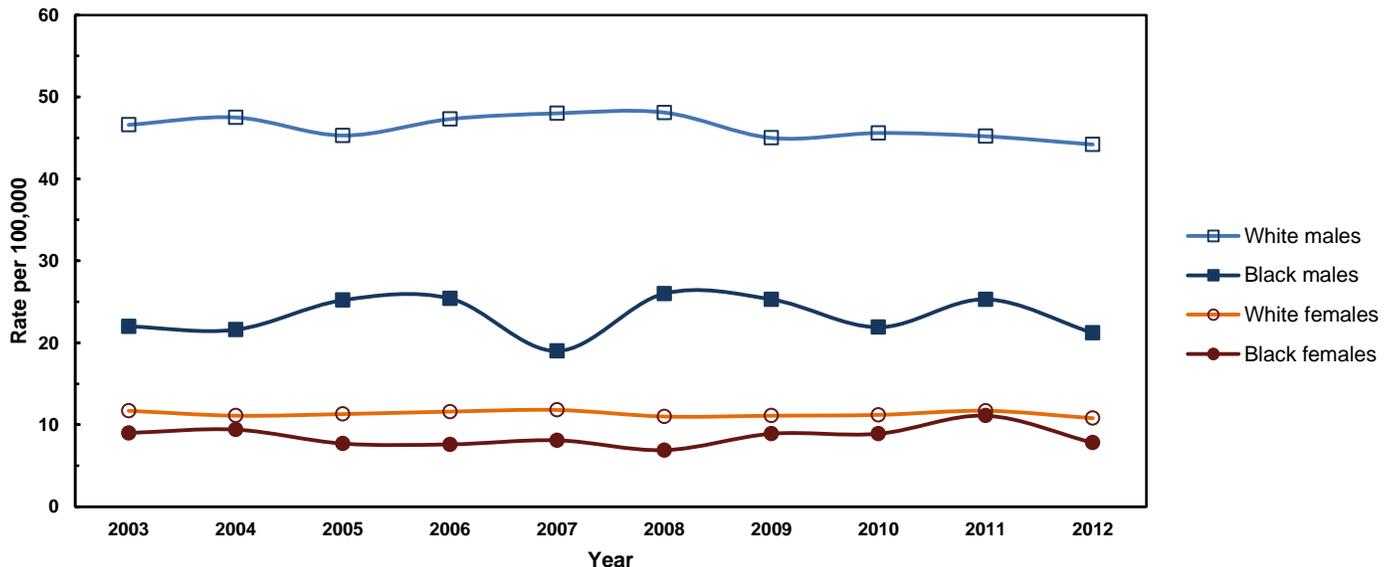
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	3,993	24.4 (23.6-25.2)	3,020	42.9 (41.4-44.4)	2,832	44.2 (42.6-45.8)	101	21.2 (17.1-25.3)	972	10.5 (9.8-11.2)	891	10.8 (10.1-11.5)	60	7.8 (5.8-9.8)
2011	4,093	25.4 (24.6-26.2)	3,039	43.9 (42.3-45.5)	2,850	45.2 (43.5-46.9)	121	25.3 (20.8-29.8)	1,054	11.7 (11.0-12.4)	948	11.7 (11.0-12.4)	80	11.1 (8.7-13.5)
2010	3,948	24.9 (24.1-25.7)	2,954	44.0 (42.4-45.6)	2,786	45.6 (43.9-47.3)	95	21.9 (17.5-26.3)	994	10.9 (10.2-11.6)	910	11.2 (10.5-11.9)	63	8.9 (6.7-11.1)
2009	3,845	24.6 (23.8-25.4)	2,867	43.7 (42.1-45.3)	2,706	45.0 (43.3-46.7)	106	25.3 (20.5-30.1)	978	10.9 (10.2-11.6)	898	11.1 (10.4-11.8)	62	8.9 (6.7-11.1)
2008	3,906	25.6 (24.8-26.4)	2,963	46.7 (45.0-48.4)	2,797	48.1 (46.3-49.9)	111	26.0 (21.2-30.8)	943	10.7 (10.0-11.4)	881	11.0 (10.3-11.7)	46	6.9 (4.9-8.9)
2007	3,850	25.6 (24.8-26.4)	2,833	46.1 (44.4-47.8)	2,707	48.0 (46.2-49.8)	79	19.0 (14.8-23.2)	1,017	11.5 (10.8-12.2)	944	11.8 (11.0-12.6)	54	8.1 (5.9-10.3)
2006	3,776	25.3 (24.5-26.1)	2,802	46.1 (44.4-47.8)	2,640	47.3 (45.5-49.1)	101	25.4 (20.4-30.4)	974	11.2 (10.5-11.9)	911	11.6 (10.8-12.4)	49	7.6 (5.5-9.7)
2005	3,678	24.5 (23.7-25.3)	2,722	44.0 (42.3-45.7)	2,585	45.3 (43.6-47.0)	97	25.2 (20.2-30.2)	956	11.0 (10.3-11.7)	894	11.3 (10.6-12.0)	48	7.7 (5.5-9.9)
2004	3,770	25.3 (24.5-26.1)	2,829	45.9 (44.2-47.6)	2,701	47.5 (45.7-49.3)	88	21.6 (17.1-26.1)	941	10.9 (10.2-11.6)	873	11.1 (10.4-11.8)	60	9.4 (7.0-11.8)
2003	3,741	25.2 (24.4-26.0)	2,746	45.1 (43.4-46.8)	2,618	46.6 (44.8-48.4)	86	22.0 (17.4-26.6)	995	11.4 (10.7-12.1)	926	11.7 (10.9-12.5)	57	9.0 (6.7-11.3)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
17-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Urinary Bladder: INCIDENCE (Invasive and In Situ)

**TABLE
17-B**

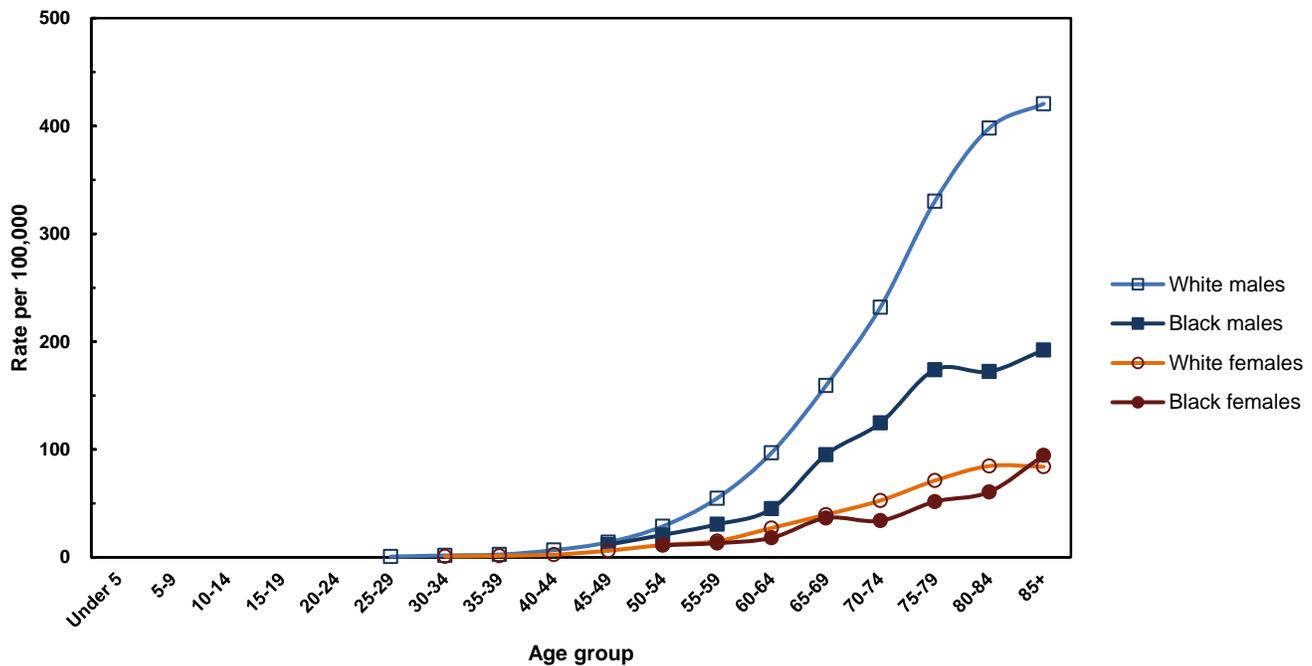
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	31.3	48.2	53.8	16.0	15.2	16.6	8.5
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	0.6	0.6	0.6	ND	0.6	ND	ND
30-34	1.1	1.5	1.7	ND	0.8	0.8	ND
35-39	2.0	2.5	2.5	ND	1.5	1.3	ND
40-44	4.3	6.3	6.6	ND	2.3	2.4	ND
45-49	9.5	13.5	13.9	11.7	5.6	6.1	ND
50-54	19.3	27.7	28.7	20.7	11.2	11.4	11.2
55-59	33.3	52.7	54.7	30.5	14.9	15.0	13.1
60-64	58.8	94.0	96.9	45.0	26.3	27.1	18.0
65-69	92.8	154.3	159.2	95.1	39.1	39.5	36.4
70-74	128.9	225.1	231.9	124.6	51.1	52.6	33.9
75-79	174.4	319.2	330.2	173.9	69.5	71.1	51.6
80-84	200.1	385.8	398.0	172.2	83.1	84.6	60.6
85+	188.3	411.8	420.6	192.2	85.1	84.0	94.5

NOTES: Rates are per 100,000 population and are based on invasive and in situ cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
17-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Urinary Bladder: INCIDENCE (Invasive and In Situ)

**TABLE
17-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

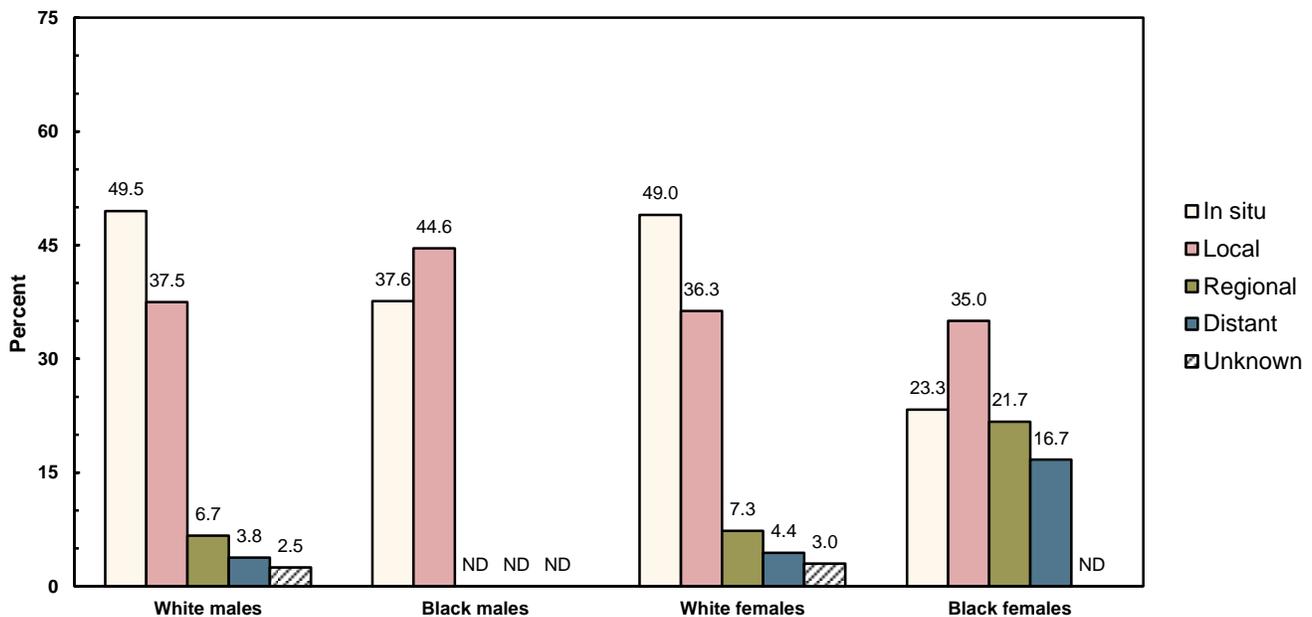
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	19,785	14,843	13,971	534	4,941	4,528	311
Under 5	2	1	1	0	1	0	0
5-9	2	1	1	0	1	1	0
10-14	2	2	1	1	0	0	0
15-19	5	2	2	0	3	3	0
20-24	6	4	4	0	2	2	0
25-29	22	11	10	0	11	9	2
30-34	43	29	26	3	14	12	1
35-39	76	48	39	4	28	21	3
40-44	182	133	118	5	49	44	3
45-49	438	308	274	26	130	122	4
50-54	916	645	586	43	271	238	27
55-59	1,443	1,113	1,027	52	330	293	27
60-64	2,171	1,665	1,547	58	505	461	30
65-69	2,595	2,011	1,888	81	584	529	43
70-74	2,831	2,210	2,080	78	621	576	32
75-79	3,150	2,422	2,309	79	728	678	40
80-84	2,970	2,213	2,128	53	757	709	37
85+	2,931	2,025	1,930	51	906	830	62

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
17-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Cases Microscopically Confirmed: 3,928 - 98.4%

Cancer of the Urinary Bladder: MORTALITY

**TABLE
17-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

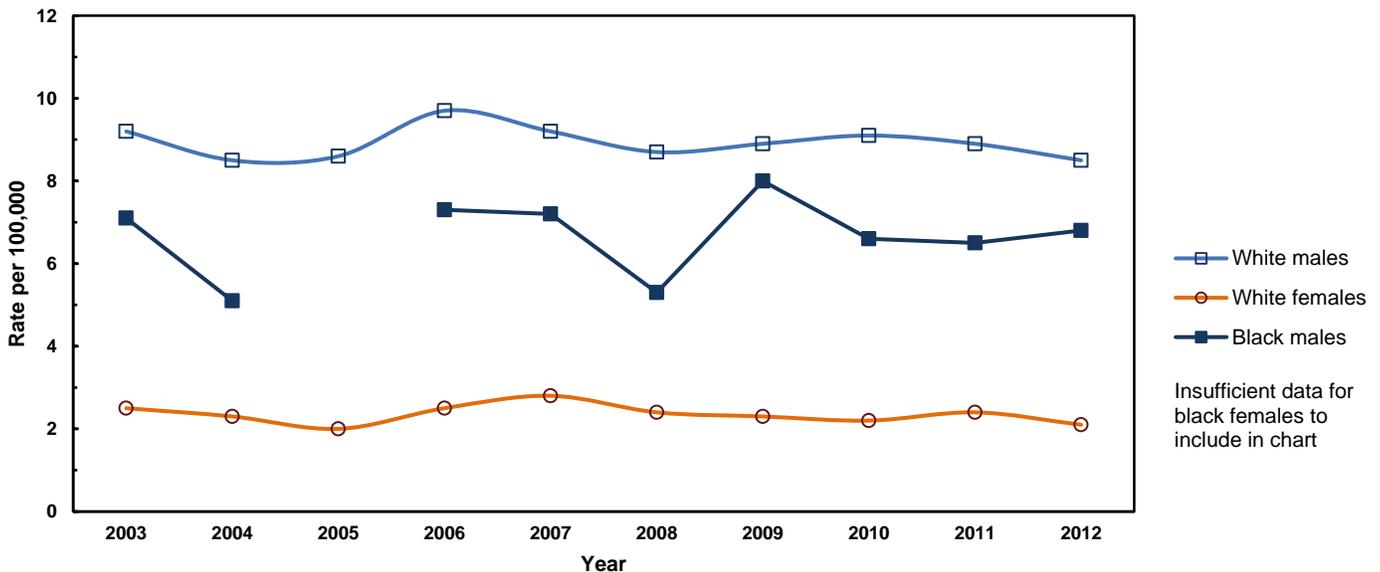
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	802	4.7 (4.4-5.0)	568	8.4 (7.7-9.1)	531	8.5 (7.8-9.2)	29	6.8 (4.3-9.3)	234	2.3 (2.0-2.6)	194	2.1 (1.8-2.4)	36	5.1 (3.4-6.8)
2011	844	5.0 (4.7-5.3)	584	8.7 (8.0-9.4)	551	8.9 (8.2-9.6)	30	6.5 (4.2-8.8)	260	2.5 (2.2-2.8)	227	2.4 (2.1-2.7)	31	4.3 (2.8-5.8)
2010	792	4.8 (4.5-5.1)	577	8.8 (8.1-9.5)	550	9.1 (8.3-9.9)	27	6.6 (4.1-9.1)	215	2.2 (1.9-2.5)	197	2.2 (1.9-2.5)	17	ND
2009	787	4.8 (4.5-5.1)	562	8.7 (8.0-9.4)	528	8.9 (8.1-9.7)	33	8.0 (5.3-10.7)	225	2.2 (1.9-2.5)	209	2.3 (2.0-2.6)	16	ND
2008	754	4.7 (4.4-5.0)	518	8.4 (7.7-9.1)	494	8.7 (7.9-9.5)	22	5.3 (3.1-7.5)	236	2.4 (2.1-2.7)	218	2.4 (2.1-2.7)	17	ND
2007	776	5.1 (4.7-5.5)	512	9.0 (8.2-9.8)	485	9.2 (8.4-10.0)	26	7.2 (4.4-10.0)	264	2.8 (2.5-3.1)	239	2.8 (2.4-3.2)	25	3.7 (2.2-5.2)
2006	773	5.1 (4.7-5.5)	535	9.5 (8.7-10.3)	506	9.7 (8.9-10.5)	28	7.3 (4.6-10.0)	238	2.6 (2.3-2.9)	212	2.5 (2.2-2.8)	25	3.8 (2.3-5.3)
2005	685	4.4 (4.1-4.7)	486	8.2 (7.5-8.9)	469	8.6 (7.8-9.4)	13	ND	199	2.1 (1.8-2.4)	181	2.0 (1.7-2.3)	17	ND
2004	717	4.7 (4.4-5.0)	485	8.3 (7.6-9.0)	463	8.5 (7.7-9.3)	21	5.1 (2.9-7.3)	232	2.4 (2.1-2.7)	206	2.3 (2.0-2.6)	26	4.0 (2.5-5.5)
2003	753	4.9 (4.6-5.2)	510	9.0 (8.2-9.8)	484	9.2 (8.4-10.0)	26	7.1 (4.4-9.8)	243	2.6 (2.3-2.9)	218	2.5 (2.2-2.8)	23	3.6 (2.1-5.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
17-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Urinary Bladder: MORTALITY

**TABLE
17-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

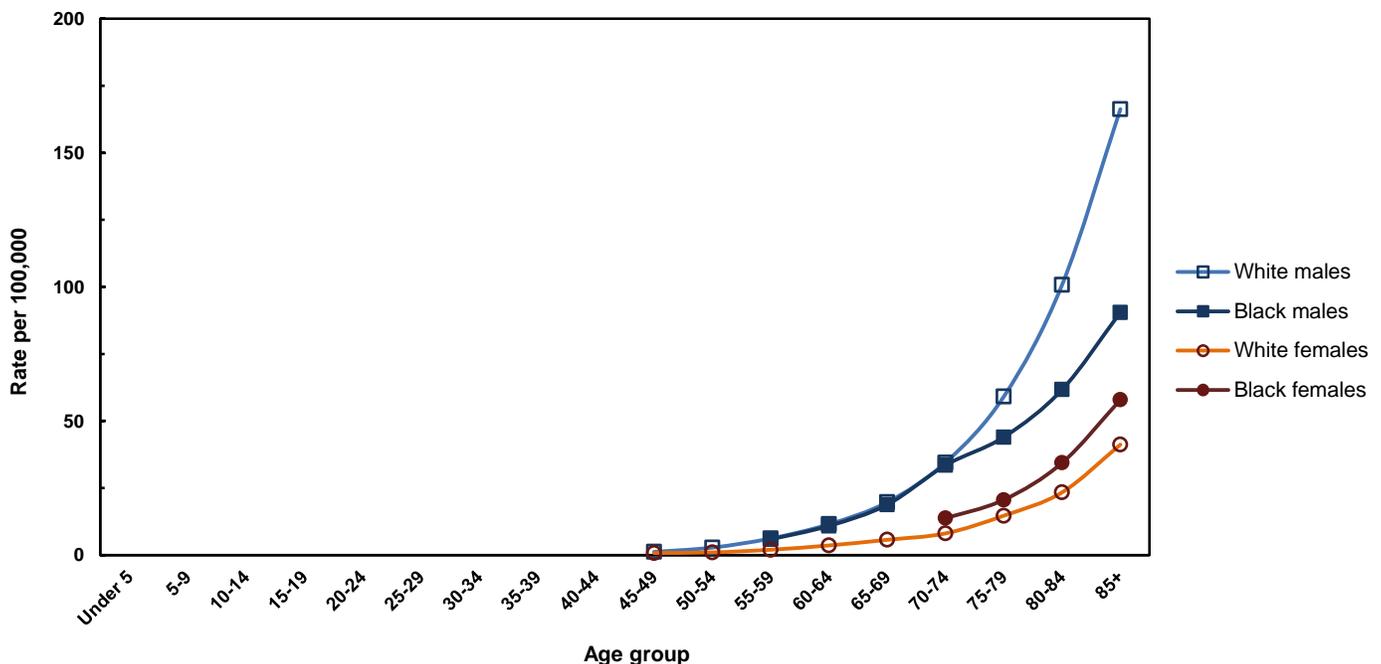
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	3,979	6.3	2,809	9.1	2,654	10.2	141	4.2	1,170	3.6	1,045	3.8	117	3.2
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	2	ND	2	ND	2	ND	0	ND	0	ND	0	ND	0	ND
25-29	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
30-34	2	ND	2	ND	2	ND	0	ND	0	ND	0	ND	0	ND
35-39	3	ND	1	ND	1	ND	0	ND	2	ND	0	ND	2	ND
40-44	14	0.3	11	0.5	9	ND	2	ND	3	ND	1	ND	1	ND
45-49	45	1.0	30	1.3	23	1.2	6	ND	15	0.6	15	0.8	0	ND
50-54	92	1.9	68	2.9	58	2.8	9	ND	24	1.0	21	1.0	3	ND
55-59	177	4.1	128	6.1	117	6.2	10	5.9	49	2.2	39	2.0	9	ND
60-64	267	7.2	201	11.3	184	11.5	14	10.9	66	3.4	61	3.6	5	ND
65-69	336	12.0	250	19.2	234	19.7	16	18.8	86	5.8	76	5.7	9	ND
70-74	433	19.7	331	33.7	309	34.5	21	33.5	102	8.4	89	8.1	13	13.8
75-79	591	32.7	435	57.3	413	59.1	20	44.0	156	14.9	140	14.7	16	20.6
80-84	777	52.3	559	97.5	539	100.8	19	61.7	218	23.9	196	23.4	21	34.4
85+	1,240	79.6	791	160.9	763	166.3	24	90.5	449	42.2	407	41.2	38	57.9

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
17-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Urinary Bladder: INCIDENCE (Invasive and In Situ)

**TABLE
17-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	19,785	14,843	44.1	(43.4-44.8)	4,941	10.9	(10.6-11.2)									
Adams	150	117	40.7	(33.3-48.1)	33	9.8	(6.5-13.1)	Juniata	34	28	39.4	(24.8-54.0)	6	ND		
Allegheny	2,158	1,588	46.7	(44.4-49.0)	570	11.8	(10.8-12.8)	Lackawanna	386	293	48.5	(42.9-54.1)	93	10.6	(8.4-12.8)	
Armstrong	116	93	42.3	(33.7-50.9)	23	8.1	(4.8-11.4)	Lancaster	686	521	38.6	(35.3-41.9)	165	9.1	(7.7-10.5)	
Beaver	367	273	51.3	(45.2-57.4)	94	13.0	(10.4-15.6)	Lawrence	168	129	45.5	(37.6-53.4)	39	10.3	(7.1-13.5)	
Bedford	110	80	50.6	(39.5-61.7)	30	16.4	(10.5-22.3)	Lebanon	246	179	45.6	(38.9-52.3)	67	12.8	(9.7-15.9)	
Berks	590	460	43.7	(39.7-47.7)	130	9.2	(7.6-10.8)	Lehigh	550	416	47.1	(42.6-51.6)	134	10.9	(9.1-12.7)	
Blair	220	175	48.0	(40.9-55.1)	45	8.9	(6.3-11.5)	Luzerne	556	396	42.7	(38.5-46.9)	160	12.6	(10.6-14.6)	
Bradford	116	86	45.2	(35.6-54.8)	30	13.1	(8.4-17.8)	Lycoming	204	155	47.2	(39.8-54.6)	49	10.4	(7.5-13.3)	
Bucks	1,012	770	46.7	(43.4-50.0)	242	11.3	(9.9-12.7)	McKean	75	56	44.5	(32.8-56.2)	19	ND		
Butler	297	232	46.4	(40.4-52.4)	65	10.3	(7.8-12.8)	Mercer	210	161	44.7	(37.8-51.6)	49	9.6	(6.9-12.3)	
Cambria	314	228	50.3	(43.8-56.8)	86	14.2	(11.2-17.2)	Mifflin	88	66	47.8	(36.3-59.3)	22	12.7	(7.4-18.0)	
Cameron	15	12	ND		3	ND		Monroe	228	170	42.1	(35.8-48.4)	58	11.7	(8.7-14.7)	
Carbon	125	100	51.6	(41.5-61.7)	25	9.7	(5.9-13.5)	Montgomery	1,289	988	47.2	(44.3-50.1)	301	10.6	(9.4-11.8)	
Centre	138	111	36.0	(29.3-42.7)	27	7.3	(4.5-10.1)	Montour	27	23	42.8	(25.3-60.3)	4	ND		
Chester	683	531	45.6	(41.7-49.5)	152	10.0	(8.4-11.6)	Northampton	565	426	53.5	(48.4-58.6)	139	12.9	(10.8-15.0)	
Clarion	73	55	47.1	(34.7-59.5)	18	ND		Northumberland	150	122	42.1	(34.6-49.6)	28	6.8	(4.3-9.3)	
Clearfield	121	94	37.1	(29.6-44.6)	27	9.0	(5.6-12.4)	Perry	64	51	41.1	(29.8-52.4)	13	ND		
Clinton	75	57	52.3	(38.7-65.9)	18	ND		Philadelphia	1,697	1,186	39.1	(36.9-41.3)	510	10.8	(9.9-11.7)	
Columbia	113	82	45.1	(35.3-54.9)	31	12.6	(8.2-17.0)	Pike	101	84	44.6	(35.1-54.1)	17	ND		
Crawford	129	104	40.4	(32.6-48.2)	25	7.9	(4.8-11.0)	Potter	24	17	ND		7	ND		
Cumberland	336	245	38.2	(33.4-43.0)	91	11.0	(8.7-13.3)	Schuylkill	287	200	43.6	(37.6-49.6)	87	14.6	(11.5-17.7)	
Dauphin	299	235	36.8	(32.1-41.5)	64	7.4	(5.6-9.2)	Snyder	49	41	40.3	(28.0-52.6)	8	ND		
Delaware	781	556	41.2	(37.8-44.6)	225	11.6	(10.1-13.1)	Somerset	146	104	41.2	(33.3-49.1)	42	13.7	(9.6-17.8)	
Elk	63	42	40.4	(28.2-52.6)	21	16.6	(9.5-23.7)	Sullivan	16	10	ND		6	ND		
Erie	387	304	41.9	(37.2-46.6)	83	9.1	(7.1-11.1)	Susquehanna	67	52	38.3	(27.9-48.7)	15	ND		
Fayette	285	223	52.6	(45.7-59.5)	62	11.5	(8.6-14.4)	Tioga	62	46	33.0	(23.5-42.5)	16	ND		
Forest	10	9	ND		1	ND		Union	36	28	25.7	(16.2-35.2)	8	ND		
Franklin	216	157	37.0	(31.2-42.8)	59	10.9	(8.1-13.7)	Venango	104	84	48.0	(37.7-58.3)	20	9.4	(5.3-13.5)	
Fulton	28	21	44.3	(25.4-63.2)	7	ND		Warren	93	72	53.9	(41.4-66.4)	21	13.2	(7.6-18.8)	
Greene	54	40	37.5	(25.9-49.1)	14	ND		Washington	391	292	47.6	(42.1-53.1)	99	12.3	(9.9-14.7)	
Huntingdon	69	50	39.5	(28.6-50.4)	19	ND		Wayne	100	80	45.5	(35.5-55.5)	20	10.2	(5.7-14.7)	
Indiana	150	116	46.0	(37.6-54.4)	34	11.2	(7.4-15.0)	Westmoreland	750	542	46.8	(42.9-50.7)	208	13.9	(12.0-15.8)	
Jefferson	83	61	43.3	(32.4-54.2)	22	13.0	(7.6-18.4)	Wyoming	42	31	40.5	(26.2-54.8)	11	ND		
								York	611	487	44.4	(40.5-48.3)	124	9.0	(7.4-10.6)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. With the exception of urinary bladder cancers, all in situ cancer cases are excluded.

Cancer of the Urinary Bladder: MORTALITY

**TABLE
17-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,979	2,809	8.6	(8.3-8.9)	1,170	2.3	(2.2-2.4)								
Adams	34	26	10.1	(6.2-14.0)	8	ND		Juniata	10	9	ND		1	ND	
Allegheny	467	316	9.2	(8.2-10.2)	151	2.7	(2.3-3.1)	Lackawanna	70	45	7.4	(5.2-9.6)	25	2.4	(1.5-3.3)
Armstrong	21	15	ND		6	ND		Lancaster	150	108	7.9	(6.4-9.4)	42	2.0	(1.4-2.6)
Beaver	83	58	10.9		25	3.0	(1.8-4.2)	Lawrence	31	28	9.8	(6.2-13.4)	3	ND	
Bedford	17	11	ND		6	ND		Lebanon	44	33	8.8	(5.8-11.8)	11	ND	
Berks	121	85	8.3	(6.5-10.1)	36	2.1	(1.4-2.8)	Lehigh	95	66	7.5	(5.7-9.3)	29	2.2	(1.4-3.0)
Blair	48	33	9.2	(6.1-12.3)	15	ND		Luzerne	99	74	8.3	(6.4-10.2)	25	1.7	(1.0-2.4)
Bradford	20	13	ND		7	ND		Lycoming	48	27	8.3	(5.2-11.4)	21	4.0	(2.3-5.7)
Bucks	182	139	9.2	(7.7-10.7)	43	1.9	(1.3-2.5)	McKean	12	9	ND		3	ND	
Butler	51	38	7.8	(5.3-10.3)	13	ND		Mercer	41	33	8.8	(5.8-11.8)	8	ND	
Cambria	62	41	8.8	(6.1-11.5)	21	2.6	(1.5-3.7)	Mifflin	19	6	ND		13	ND	
Cameron	3	1	ND		2	ND		Monroe	38	27	8.0	(5.0-11.0)	11	ND	
Carbon	27	23	12.8	(7.6-18.0)	4	ND		Montgomery	220	155	7.5	(6.3-8.7)	65	2.0	(1.5-2.5)
Centre	35	28	9.8	(6.2-13.4)	7	ND		Montour	5	4	ND		1	ND	
Chester	123	88	8.1	(6.4-9.8)	35	2.3	(1.5-3.1)	Northampton	98	68	8.7	(6.6-10.8)	30	2.5	(1.6-3.4)
Clarion	15	12	ND		3	ND		Northumberland	37	25	8.5	(5.2-11.8)	12	ND	
Clearfield	30	25	10.6	(6.4-14.8)	5	ND		Perry	14	9	ND		5	ND	
Clinton	17	13	ND		4	ND		Philadelphia	393	247	8.3	(7.3-9.3)	146	2.9	(2.4-3.4)
Columbia	28	20	11.5	(6.5-16.5)	8	ND		Pike	11	8	ND		3	ND	
Crawford	34	29	11.9	(7.6-16.2)	5	ND		Potter	12	8	ND		4	ND	
Cumberland	50	31	5.1	(3.3-6.9)	19	ND		Schuylkill	63	42	9.3	(6.5-12.1)	21	3.0	(1.7-4.3)
Dauphin	66	50	8.4	(6.1-10.7)	16	ND		Snyder	13	13	ND		0	ND	
Delaware	155	105	7.9	(6.4-9.4)	50	2.3	(1.7-2.9)	Somerset	23	14	ND		9	ND	
Elk	21	14	ND		7	ND		Sullivan	3	1	ND		2	ND	
Erie	84	64	9.2	(6.9-11.5)	20	1.8	(1.0-2.6)	Susquehanna	19	14	ND		5	ND	
Fayette	39	27	6.6	(4.1-9.1)	12	ND		Tioga	24	13	ND		11	ND	
Forest	5	4	ND		1	ND		Union	12	9	ND		3	ND	
Franklin	46	30	7.4	(4.8-10.0)	16	ND		Venango	22	18	ND		4	ND	
Fulton	4	2	ND		2	ND		Warren	17	14	ND		3	ND	
Greene	10	8	ND		2	ND		Washington	92	78	13.0	(10.1-15.9)	14	ND	
Huntingdon	14	12	ND		2	ND		Wayne	23	16	ND		7	ND	
Indiana	25	22	9.2	(5.4-13.0)	3	ND		Westmoreland	129	89	7.8	(6.2-9.4)	40	2.3	(1.6-3.0)
Jefferson	22	16	ND		6	ND		Wyoming	3	2	ND		1	ND	
								York	130	98	9.5	(7.6-11.4)	32	2.2	(1.4-3.0)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

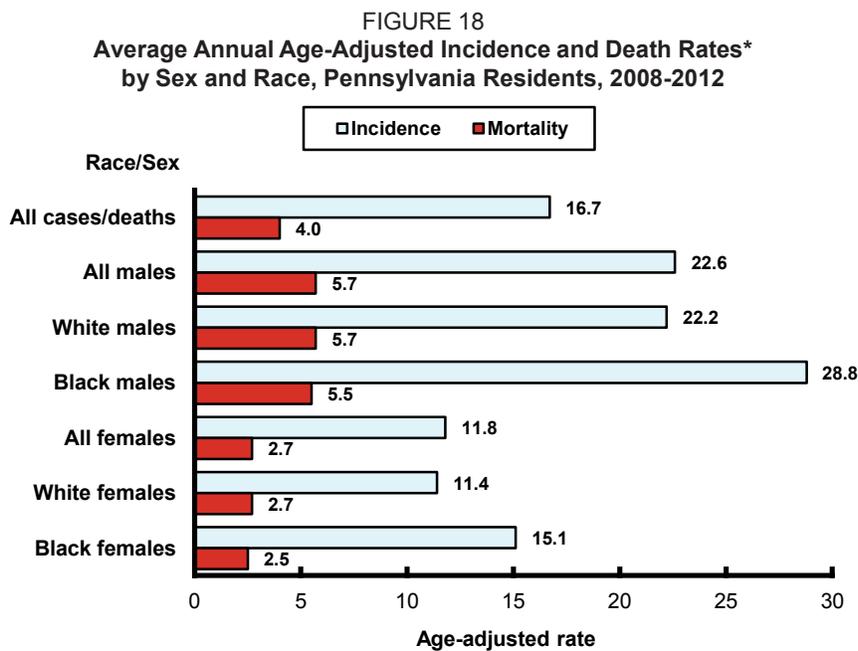
Cancer of the Kidney and Renal Pelvis

Data Highlights

In 2012, there were 2,587 cases of invasive cancer of the kidney and renal pelvis diagnosed among residents of Pennsylvania — a slight increase from the 2011 figure of 2,516. Males had an average annual (2008-2012) age-adjusted incidence rate (22.6 per 100,000) of almost twice the female rate (11.8). For the years 2003 through 2012, annual numbers of cases and age-adjusted incidence rates for white males and white females remained fairly stable. The age-adjusted incidence rates for black females also remained stable but had slightly increased rates from 2008 to 2010 before again decreasing. The rate for black males decreased from 24.0 in 2003 to a low of 21.8 in 2006. However, the rate began to increase again until 2010, when it dropped by 38 percent to its lowest annual rate of 20.0 per 100,000 during this 10-year period. The rate dramatically increased in 2011 to 33.1 and then dropped to 28.1 in 2012.

There are few understood causes of kidney cancer. However, cigarette smoking is an important risk factor. According to the American Cancer Society, risk of developing renal cell carcinoma appears to be related to the amount an individual smokes. As with age-adjusted rates, age-specific incidence rates were much higher among males for most age groups. Approximately 68 percent of the cases for 2012 were diagnosed at early stages (in situ or local) of the disease, and about 28 percent were diagnosed at late stages (regional or distant). During the five-year period of 2008-2012, 85 percent of the invasive cases of kidney and renal pelvis cancers were diagnosed among residents 50 years of age or older.

In 2012, there were 651 resident deaths due to cancer of the kidney and renal pelvis. The average annual (2008-2012) age-adjusted death rate (4.0 per 100,000) was about 76 percent lower than the average annual incidence rate (16.7). Among whites, the annual death rates for kidney/renal pelvis cancer remained fairly stable for the period of 2003-2012. Among black males, the annual age-adjusted death rates had a downward trend over the nine-year period 2003-2011, falling from 7.4 in 2003 to 4.6 in 2011. The death rate then rose sharply in 2012 to 7.3 per 100,000. Annual age-adjusted death rates for black females were insufficient for trend analysis due to the small number of deaths.



Risk Factors

Etiological factors are obscure. However, tobacco smoking, obesity, workplace exposure to cadmium/herbicides/trichloroethylene/organic solvents, family history, genetics, advanced kidney disease, high blood pressure, and use of diuretics and Phenacetin are associated with increased risk of kidney and renal pelvis cancers.

Early Detection

Screening for the public is not recommended, although kidney cancers can sometimes be found early among people who are at an increased risk using computed tomography (CT) scans, magnetic resonance imaging (MRI) scans, or ultrasound scans.

Cancer of the Kidney and Renal Pelvis: INCIDENCE (Invasive)

**TABLE
18-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

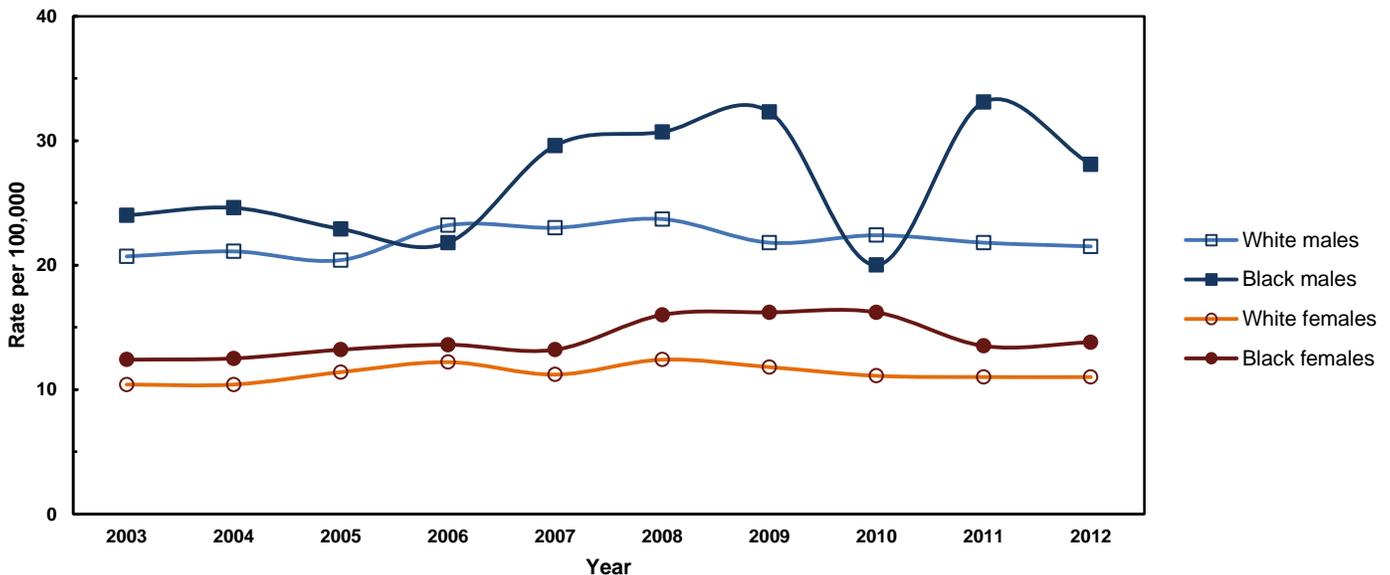
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	2,587	16.4 (15.8-17.0)	1,609	22.1 (21.0-23.2)	1,391	21.5 (20.4-22.6)	170	28.1 (23.9-32.3)	978	11.5 (10.8-12.2)	824	11.0 (10.2-11.8)	104	13.8 (11.1-16.5)
2011	2,516	16.2 (15.6-16.8)	1,582	22.4 (21.3-23.5)	1,372	21.8 (20.6-23.0)	184	33.1 (28.3-37.9)	934	11.1 (10.4-11.8)	818	11.0 (10.2-11.8)	102	13.5 (10.9-16.1)
2010	2,471	16.2 (15.6-16.8)	1,522	21.8 (20.7-22.9)	1,381	22.4 (21.2-23.6)	114	20.0 (16.3-23.7)	949	11.4 (10.7-12.1)	815	11.1 (10.3-11.9)	113	16.2 (13.2-19.2)
2009	2,492	16.8 (16.1-17.5)	1,500	22.4 (21.3-23.5)	1,320	21.8 (20.6-23.0)	150	32.3 (27.1-37.5)	992	12.2 (11.4-13.0)	857	11.8 (11.0-12.6)	109	16.2 (13.2-19.2)
2008	2,582	17.7 (17.0-18.4)	1,575	24.1 (22.9-25.3)	1,405	23.7 (22.5-24.9)	142	30.7 (25.7-35.7)	1,007	12.6 (11.8-13.4)	883	12.4 (11.6-13.2)	106	16.0 (13.0-19.0)
2007	2,421	16.6 (15.9-17.3)	1,518	23.4 (22.2-24.6)	1,353	23.0 (21.8-24.2)	139	29.6 (24.7-34.5)	902	11.2 (10.5-11.9)	806	11.2 (10.4-12.0)	88	13.2 (10.4-16.0)
2006	2,488	17.1 (16.4-17.8)	1,482	23.2 (22.0-24.4)	1,343	23.2 (22.0-24.4)	107	21.8 (17.7-25.9)	1,006	12.3 (11.5-13.1)	898	12.2 (11.4-13.0)	89	13.6 (10.8-16.4)
2005	2,248	15.5 (14.9-16.1)	1,312	20.6 (19.5-21.7)	1,186	20.4 (19.2-21.6)	102	22.9 (18.5-27.3)	936	11.5 (10.8-12.2)	836	11.4 (10.6-12.2)	86	13.2 (10.4-16.0)
2004	2,236	15.5 (14.9-16.1)	1,372	21.5 (20.4-22.6)	1,229	21.1 (19.9-22.3)	114	24.6 (20.1-29.1)	864	10.6 (9.9-11.3)	770	10.4 (9.7-11.1)	79	12.5 (9.7-15.3)
2003	2,176	15.1 (14.5-15.7)	1,322	21.0 (19.9-22.1)	1,187	20.7 (19.5-21.9)	109	24.0 (19.5-28.5)	854	10.5 (9.8-11.2)	766	10.4 (9.7-11.1)	79	12.4 (9.7-15.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
18-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Kidney and Renal Pelvis: INCIDENCE (Invasive)

**TABLE
18-B**

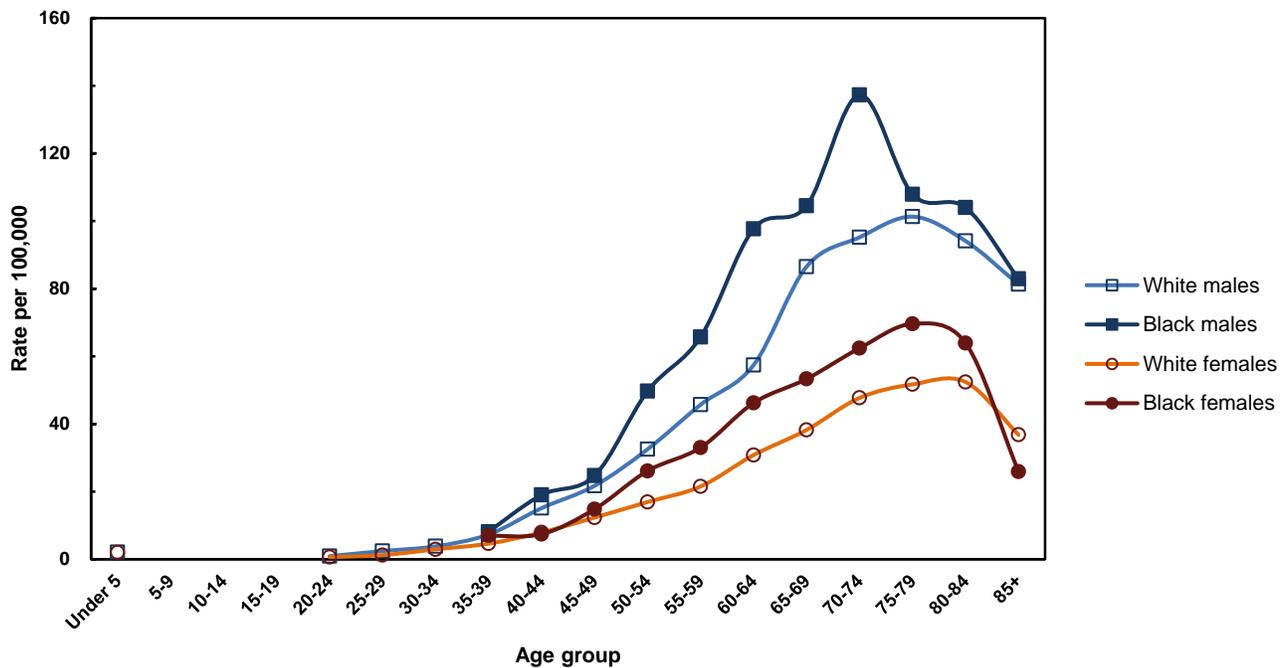
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	20.0	25.3	26.5	22.8	15.0	15.4	14.6
Under 5	2.2	2.2	2.1	ND	2.2	2.0	ND
5-9	0.5	ND	ND	ND	0.7	ND	ND
10-14	ND						
15-19	ND						
20-24	0.8	1.0	0.9	ND	0.7	0.6	ND
25-29	1.8	2.2	2.4	ND	1.4	1.2	ND
30-34	3.2	3.8	3.8	ND	2.7	2.9	ND
35-39	6.1	7.4	7.3	8.1	4.8	4.6	7.0
40-44	11.3	15.1	15.1	19.0	7.7	7.9	7.4
45-49	17.0	21.8	21.7	24.7	12.4	12.3	14.8
50-54	25.5	33.6	32.5	49.7	17.7	16.9	26.1
55-59	34.4	46.9	45.7	65.7	22.4	21.5	33.0
60-64	45.8	60.6	57.4	97.7	32.1	30.8	46.2
65-69	61.7	87.3	86.5	104.5	39.4	38.2	53.3
70-74	70.3	97.1	95.2	137.3	48.6	47.7	62.4
75-79	73.0	100.6	101.3	107.9	53.0	51.7	69.6
80-84	69.5	94.7	94.1	104.0	53.6	52.4	63.9
85+	51.6	82.0	81.3	82.9	37.6	36.8	25.9

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
18-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Kidney and Renal Pelvis: INCIDENCE (Invasive)

**TABLE
18-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

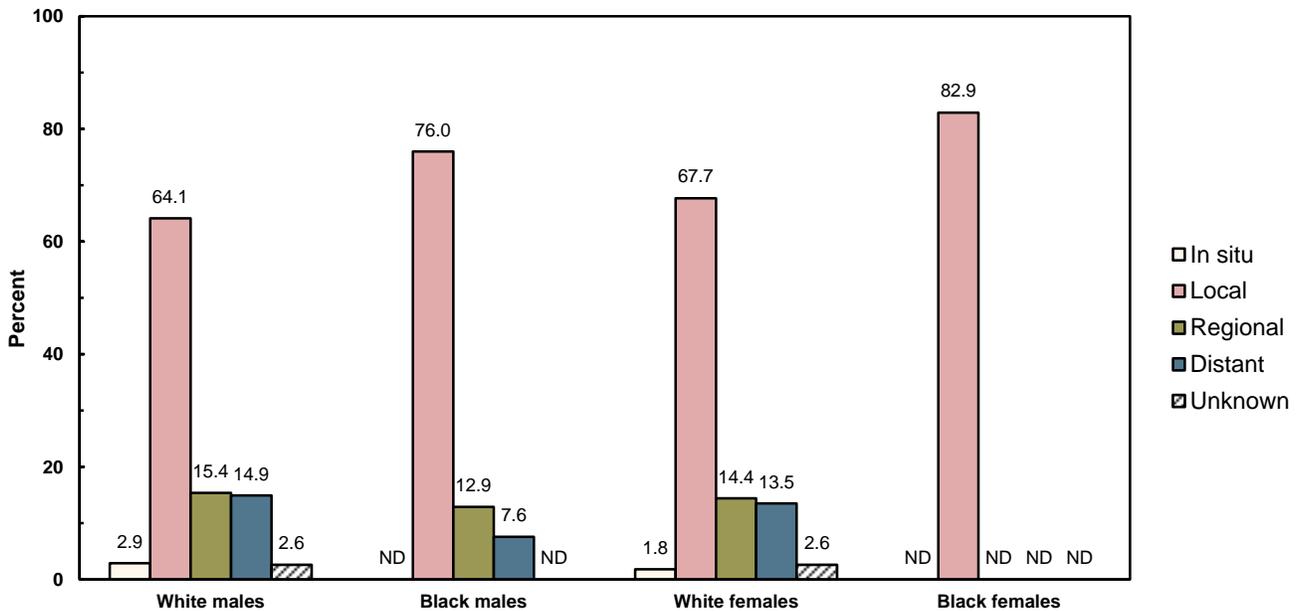
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	12,648	7,788	6,869	760	4,860	4,197	534
Under 5	81	41	30	9	40	27	5
5-9	20	7	6	1	13	9	1
10-14	1	1	1	0	0	0	0
15-19	8	3	3	0	5	4	0
20-24	37	22	17	5	15	10	5
25-29	70	44	38	5	26	18	5
30-34	121	71	59	7	50	43	7
35-39	232	140	115	17	92	72	16
40-44	485	320	271	42	165	143	18
45-49	785	495	427	55	290	246	37
50-54	1,209	781	664	103	428	354	63
55-59	1,488	990	858	112	498	418	68
60-64	1,690	1,074	916	126	616	523	77
65-69	1,726	1,137	1,026	89	589	512	63
70-74	1,543	953	854	86	590	522	59
75-79	1,318	763	708	49	555	493	54
80-84	1,031	543	503	32	488	439	39
85+	803	403	373	22	400	364	17

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
18-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 2,306 - 89.1%

Cancer of the Kidney and Renal Pelvis: MORTALITY

**TABLE
18-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

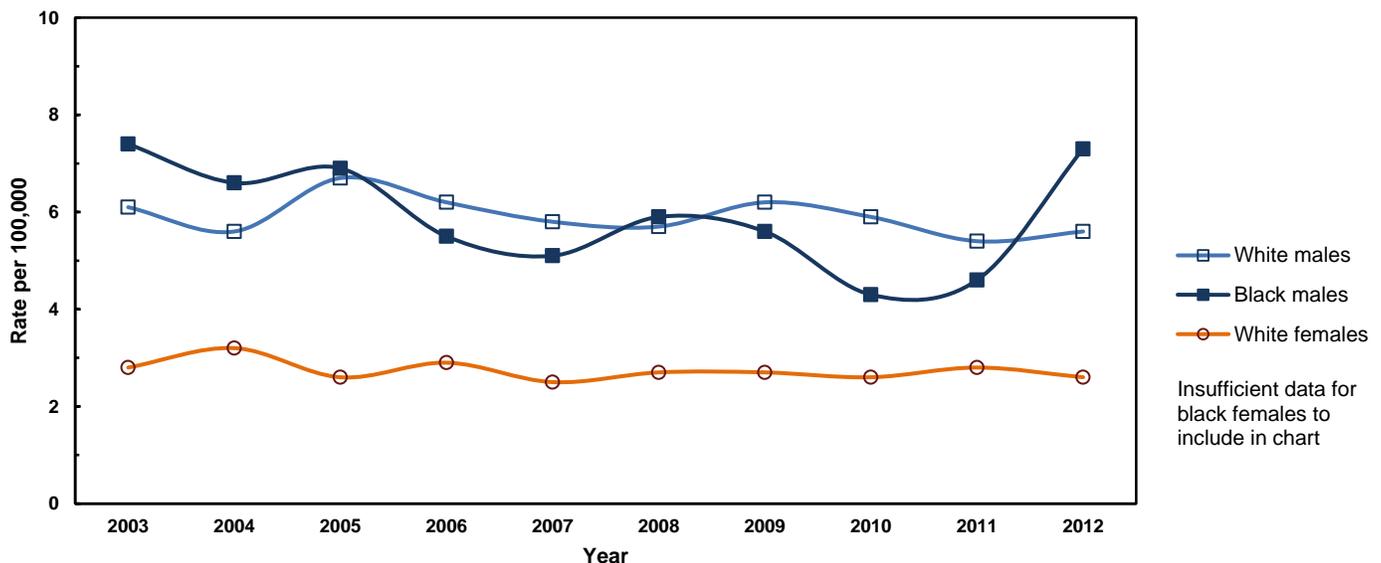
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	651	3.9 (3.6-4.2)	404	5.7 (5.1-6.3)	363	5.6 (5.0-6.2)	34	7.3 (4.8-9.8)	247	2.6 (2.3-2.9)	226	2.6 (2.3-2.9)	17	ND
2011	641	3.9 (3.6-4.2)	372	5.3 (4.8-5.8)	343	5.4 (4.8-6.0)	26	4.6 (2.8-6.4)	269	2.8 (2.5-3.1)	244	2.8 (2.4-3.2)	22	3.0 (1.7-4.3)
2010	623	3.9 (3.6-4.2)	385	5.6 (5.0-6.2)	363	5.9 (5.3-6.5)	21	4.3 (2.5-6.1)	238	2.6 (2.3-2.9)	218	2.6 (2.3-2.9)	18	ND
2009	648	4.2 (3.9-4.5)	403	6.1 (5.5-6.7)	377	6.2 (5.6-6.8)	24	5.6 (3.4-7.8)	245	2.6 (2.3-2.9)	227	2.7 (2.3-3.1)	17	ND
2008	603	3.9 (3.6-4.2)	366	5.7 (5.1-6.3)	339	5.7 (5.1-6.3)	27	5.9 (3.7-8.1)	237	2.7 (2.4-3.0)	219	2.7 (2.3-3.1)	14	ND
2007	569	3.8 (3.5-4.1)	351	5.7 (5.1-6.3)	327	5.8 (5.2-6.4)	23	5.1 (3.0-7.2)	218	2.4 (2.1-2.7)	203	2.5 (2.2-2.8)	14	ND
2006	635	4.3 (4.0-4.6)	371	6.1 (5.5-6.7)	348	6.2 (5.5-6.9)	23	5.5 (3.3-7.7)	264	3.0 (2.6-3.4)	234	2.9 (2.5-3.3)	28	4.3 (2.7-5.9)
2005	653	4.3 (4.0-4.6)	408	6.6 (6.0-7.2)	379	6.7 (6.0-7.4)	29	6.9 (4.4-9.4)	245	2.7 (2.4-3.0)	221	2.6 (2.3-2.9)	20	3.1 (1.7-4.5)
2004	626	4.2 (3.9-4.5)	347	5.6 (5.0-6.2)	318	5.6 (5.0-6.2)	29	6.6 (4.2-9.0)	279	3.1 (2.7-3.5)	260	3.2 (2.8-3.6)	19	ND
2003	627	4.2 (3.9-4.5)	379	6.1 (5.5-6.7)	348	6.1 (5.5-6.7)	30	7.4 (4.8-10.0)	248	2.7 (2.4-3.0)	232	2.8 (2.4-3.2)	16	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
18-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Kidney and Renal Pelvis: MORTALITY

**TABLE
18-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

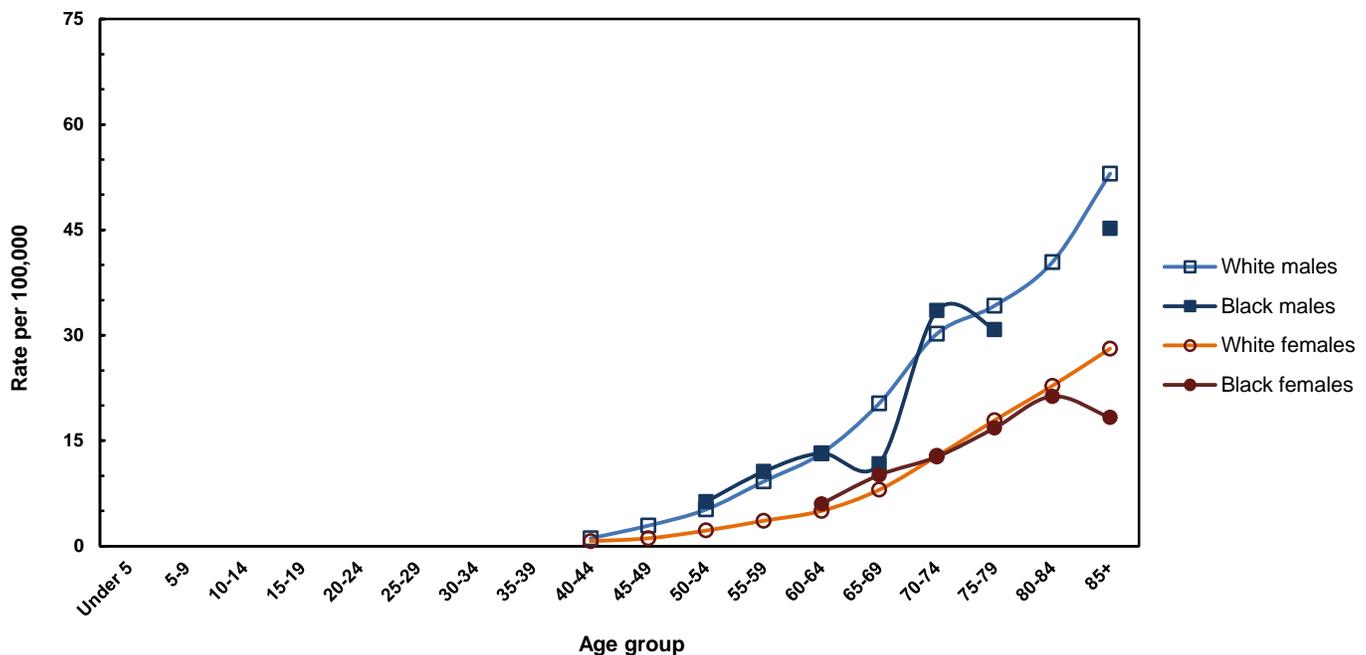
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	3,166	5.0	1,930	6.3	1,785	6.9	132	4.0	1,236	3.8	1,134	4.2	88	2.4
Under 5	2	ND	0	ND	0	ND	0	ND	2	ND	2	ND	0	ND
5-9	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	2	ND	1	ND	1	ND	0	ND	1	ND	1	ND	0	ND
20-24	4	ND	2	ND	0	ND	2	ND	2	ND	0	ND	2	ND
25-29	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
30-34	10	0.3	5	ND	5	ND	0	ND	5	ND	5	ND	0	ND
35-39	12	0.3	6	ND	3	ND	2	ND	6	ND	4	ND	1	ND
40-44	36	0.8	24	1.1	19	1.1	5	ND	12	0.6	12	0.7	0	ND
45-49	90	2.0	66	2.9	57	2.9	9	ND	24	1.0	21	1.1	3	ND
50-54	175	3.7	124	5.3	106	5.2	13	6.3	51	2.1	47	2.2	4	ND
55-59	267	6.2	190	9.0	172	9.2	18	10.6	77	3.5	70	3.6	6	ND
60-64	324	8.8	227	12.8	210	13.2	17	13.2	97	5.1	85	5.0	10	6.0
65-69	371	13.3	252	19.3	241	20.3	10	11.7	119	8.0	107	8.0	12	10.1
70-74	450	20.5	295	30.1	271	30.2	21	33.5	155	12.8	140	12.8	12	12.7
75-79	438	24.2	254	33.5	239	34.2	14	30.8	184	17.6	171	17.9	13	16.8
80-84	432	29.1	225	39.2	216	40.4	7	ND	207	22.7	191	22.8	13	21.3
85+	549	35.3	255	51.9	243	53.0	12	45.2	294	27.6	278	28.1	12	18.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
18-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Kidney and Renal Pelvis: INCIDENCE (Invasive)

**TABLE
18-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females				
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)		
All counties	12,648	7,788	22.6	(22.1-23.1)	4,860	11.8	(11.5-12.1)										
Adams	100	59	21.6	(16.1-27.1)	41	13.1	(9.1-17.1)	Juniata	25	15	ND		10	ND			
Allegheny	1,260	725	21.6	(20.0-23.2)	535	12.4	(11.3-13.5)	Lackawanna	226	139	22.5	(18.8-26.2)	87	11.1	(8.8-13.4)		
Armstrong	67	33	15.2	(10.0-20.4)	34	12.2	(8.1-16.3)	Lancaster	423	288	21.0	(18.6-23.4)	135	8.6	(7.1-10.1)		
Beaver	199	143	27.4	(22.9-31.9)	56	9.1	(6.7-11.5)	Lawrence	97	62	22.6	(17.0-28.2)	35	11.7	(7.8-15.6)		
Bedford	49	32	19.4	(12.7-26.1)	17	ND		Lebanon	138	79	21.4	(16.7-26.1)	59	13.7	(10.2-17.2)		
Berks	396	239	21.8	(19.0-24.6)	157	12.5	(10.5-14.5)	Lehigh	387	241	26.1	(22.8-29.4)	146	13.3	(11.1-15.5)		
Blair	149	85	23.5	(18.5-28.5)	64	13.5	(10.2-16.8)	Luzerne	321	193	20.8	(17.9-23.7)	128	11.5	(9.5-13.5)		
Bradford	69	42	22.4	(15.6-29.2)	27	12.9	(8.0-17.8)	Lycoming	121	73	22.6	(17.4-27.8)	48	12.3	(8.8-15.8)		
Bucks	635	423	23.9	(21.6-26.2)	212	10.4	(9.0-11.8)	McKean	42	26	20.1	(12.4-27.8)	16	ND			
Butler	163	103	19.8	(16.0-23.6)	60	10.0	(7.5-12.5)	Mercer	110	59	17.3	(12.9-21.7)	51	12.6	(9.1-16.1)		
Cambria	148	79	19.0	(14.8-23.2)	69	12.1	(9.2-15.0)	Mifflin	41	25	19.3	(11.7-26.9)	16	ND			
Cameron	7	3	ND		4	ND		Monroe	111	71	16.0	(12.3-19.7)	40	8.1	(5.6-10.6)		
Carbon	82	58	28.8	(21.4-36.2)	24	11.2	(6.7-15.7)	Montgomery	762	498	22.6	(20.6-24.6)	264	9.9	(8.7-11.1)		
Centre	94	53	16.2	(11.8-20.6)	41	11.9	(8.3-15.5)	Montour	24	13	ND		11	ND			
Chester	401	264	20.4	(17.9-22.9)	137	9.5	(7.9-11.1)	Northampton	324	196	24.1	(20.7-27.5)	128	12.9	(10.7-15.1)		
Clarion	44	26	22.5	(13.9-31.1)	18	ND		Northumberland	104	68	22.3	(17.0-27.6)	36	10.8	(7.3-14.3)		
Clearfield	107	71	28.1	(21.6-34.6)	36	13.8	(9.3-18.3)	Perry	35	24	18.9	(11.3-26.5)	11	ND			
Clinton	28	13	ND		15	ND		Philadelphia	1,526	913	28.2	(26.4-30.0)	613	14.1	(13.0-15.2)		
Columbia	70	38	20.6	(14.1-27.1)	32	15.3	(10.0-20.6)	Pike	53	33	17.6	(11.6-23.6)	20	10.2	(5.7-14.7)		
Crawford	82	49	17.4	(12.5-22.3)	33	10.6	(7.0-14.2)	Potter	21	15	ND		6	ND			
Cumberland	235	145	22.9	(19.2-26.6)	90	11.6	(9.2-14.0)	Schuylkill	172	97	21.1	(16.9-25.3)	75	13.9	(10.8-17.0)		
Dauphin	256	147	20.9	(17.5-24.3)	109	12.8	(10.4-15.2)	Snyder	30	21	19.5	(11.2-27.8)	9	ND			
Delaware	592	370	26.3	(23.6-29.0)	222	12.6	(10.9-14.3)	Somerset	71	44	17.7	(12.5-22.9)	27	9.6	(6.0-13.2)		
Elk	32	18	ND		14	ND		Sullivan	8	4	ND		4	ND			
Erie	244	133	17.8	(14.8-20.8)	111	12.8	(10.4-15.2)	Susquehanna	45	30	21.5	(13.8-29.2)	15	ND			
Fayette	178	116	27.7	(22.7-32.7)	62	12.7	(9.5-15.9)	Tioga	54	32	27.0	(17.6-36.4)	22	14.3	(8.3-20.3)		
Forest	6	2	ND		4	ND		Union	37	23	19.6	(11.6-27.6)	14	ND			
Franklin	169	108	25.3	(20.5-30.1)	61	12.6	(9.4-15.8)	Venango	75	47	29.2	(20.9-37.5)	28	13.6	(8.6-18.6)		
Fulton	19	13	ND		6	ND		Warren	37	29	20.2	(12.8-27.6)	8	ND			
Greene	56	28	27.6	(17.4-37.8)	28	24.3	(15.3-33.3)	Washington	223	137	22.5	(18.7-26.3)	86	11.6	(9.1-14.1)		
Huntingdon	36	20	14.1	(7.9-20.3)	16	ND		Wayne	57	41	23.0	(16.0-30.0)	16	ND			
Indiana	69	45	18.0	(12.7-23.3)	24	8.5	(5.1-11.9)	Westmoreland	429	263	22.9	(20.1-25.7)	166	12.0	(10.2-13.8)		
Jefferson	54	36	25.8	(17.4-34.2)	18	ND		Wyoming	25	16	ND		9	ND			
								York	398	254	21.8	(19.1-24.5)	144	10.9	(9.1-12.7)		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Kidney and Renal Pelvis: MORTALITY

**TABLE
18-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,166	1,930	5.7	(5.4-6.0)	1,236	2.7	(2.5-2.9)								
Adams	33	17	ND		16	ND		Juniata	5	3	ND		2	ND	
Allegheny	329	193	5.6	(4.8-6.4)	136	2.8	(2.3-3.3)	Lackawanna	68	38	6.4	(4.4-8.4)	30	3.5	(2.2-4.8)
Armstrong	26	14	ND		12	ND		Lancaster	123	78	5.7	(4.4-7.0)	45	2.5	(1.8-3.2)
Beaver	49	33	6.2	(4.1-8.3)	16	ND		Lawrence	34	23	8.0	(4.7-11.3)	11	ND	
Bedford	11	5	ND		6	ND		Lebanon	31	18	ND		13	ND	
Berks	94	56	5.3	(3.9-6.7)	38	2.8	(1.9-3.7)	Lehigh	90	55	6.4	(4.7-8.1)	35	2.8	(1.9-3.7)
Blair	38	23	6.4	(3.8-9.0)	15	ND		Luzerne	87	54	5.7	(4.2-7.2)	33	2.6	(1.7-3.5)
Bradford	23	11	ND		12	ND		Lycoming	32	17	ND		15	ND	
Bucks	128	78	4.6	(3.6-5.6)	50	2.3	(1.7-2.9)	McKean	12	6	ND		6	ND	
Butler	37	18	ND		19	ND		Mercer	39	23	6.4	(3.8-9.0)	16	ND	
Cambria	54	25	5.5	(3.3-7.7)	29	4.6	(2.9-6.3)	Mifflin	6	3	ND		3	ND	
Cameron	0	0	ND		0	ND		Monroe	32	22	5.6	(3.3-7.9)	10	ND	
Carbon	21	13	ND		8	ND		Montgomery	177	114	5.3	(4.3-6.3)	63	2.0	(1.5-2.5)
Centre	35	21	6.3	(3.6-9.0)	14	ND		Montour	12	8	ND		4	ND	
Chester	99	64	5.4	(4.1-6.7)	35	2.4	(1.6-3.2)	Northampton	84	47	5.7	(4.1-7.3)	37	3.5	(2.4-4.6)
Clarion	9	4	ND		5	ND		Northumberland	24	13	ND		11	ND	
Clearfield	30	25	10.2	(6.2-14.2)	5	ND		Perry	9	3	ND		6	ND	
Clinton	11	6	ND		5	ND		Philadelphia	302	191	6.2	(5.3-7.1)	111	2.3	(1.9-2.7)
Columbia	24	13	ND		11	ND		Pike	14	9	ND		5	ND	
Crawford	18	13	ND		5	ND		Potter	12	8	ND		4	ND	
Cumberland	52	37	5.9	(4.0-7.8)	15	ND		Schuylkill	49	31	6.4	(4.1-8.7)	18	ND	
Dauphin	59	41	6.2	(4.3-8.1)	18	ND		Snyder	8	5	ND		3	ND	
Delaware	118	62	4.5	(3.4-5.6)	56	2.8	(2.1-3.5)	Somerset	19	8	ND		11	ND	
Elk	7	3	ND		4	ND		Sullivan	2	1	ND		1	ND	
Erie	74	37	4.9	(3.3-6.5)	37	3.9	(2.6-5.2)	Susquehanna	11	9	ND		2	ND	
Fayette	38	31	7.5	(4.9-10.1)	7	ND		Tioga	12	7	ND		5	ND	
Forest	3	2	ND		1	ND		Union	11	6	ND		5	ND	
Franklin	42	29	6.5	(4.1-8.9)	13	ND		Venango	23	15	ND		8	ND	
Fulton	6	4	ND		2	ND		Warren	15	13	ND		2	ND	
Greene	8	1	ND		7	ND		Washington	70	41	6.4	(4.4-8.4)	29	3.3	(2.1-4.5)
Huntingdon	17	11	ND		6	ND		Wayne	18	12	ND		6	ND	
Indiana	18	13	ND		5	ND		Westmoreland	93	59	5.0	(3.7-6.3)	34	2.2	(1.5-2.9)
Jefferson	14	6	ND		8	ND		Wyoming	5	4	ND		1	ND	
								York	112	77	6.8	(5.3-8.3)	35	2.3	(1.5-3.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

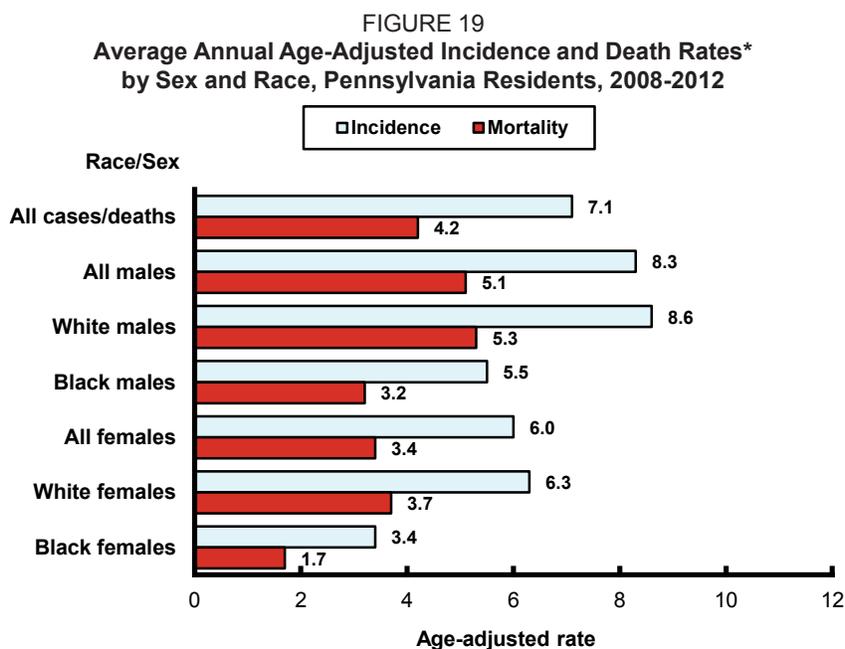
Cancer of the Brain and Other Nervous System

Data Highlights

During 2012, there were 1,033 invasive cases of brain and other central nervous system cancers reported to the Pennsylvania Cancer Registry – a slight increase from the previous year, 2011, when there were 1,007 cases. The average annual (2008-2012) age-adjusted incidence rates were higher for white males and females than blacks. In fact, the incidence rate for white males (8.6 per 100,000) was 56 percent higher than the rate for black males (5.5), and the rate for white females (6.3) was about 85 percent higher than the rate for black females (3.4). Between 2003 and 2012, the annual age-adjusted incidence rates for white males and white females did not have any obvious trends. Among blacks, the instability of the rates (due to the small number of cases) makes it difficult to interpret any trend.

Approximately 9 percent of invasive brain/other nervous system cancers occurred among residents under age 15 during the five-year period of 2008-2012. Average annual (2008-2012) age-specific incidence rates decreased between infancy and age 24. Thereafter, they increased to about age 84. Age-specific incidence rates were generally higher for white males compared to white females during the 2008-2012 period. Among blacks, the age specific rates were unstable and too difficult to interpret due to the small number of cases. In 2012, approximately 76 percent of brain/other nervous system cancers were diagnosed at early stages (in situ or local) of the disease, and 17 percent were diagnosed at late stages (regional or distant).

The average annual (2008-2012) age-adjusted death rates by sex and race were highest among white males (5.3 per 100,000) and lowest among black females (1.7). Among most age groups, white males had higher age-specific death rates than white females for the five-year time period 2008-2012. There were 648 resident deaths due to cancer of the brain/other nervous system in 2012, resulting in an annual age-adjusted rate of 4.2. The annual age-adjusted death rates by race for the period of 2003-2012 were relatively stable among whites of both sexes but were too difficult to interpret among blacks due to the small number of deaths.



Risk Factors

While some cases show an autosomal dominant pattern, no genetic factor has been found to influence the overall incidence of primary nervous system tumors. Radiation exposure to the head can increase the risk of developing brain cancers. Otherwise, etiological factors are obscure.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Cancer of the Brain and Other Nervous System: INCIDENCE (Invasive)

**TABLE
19-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

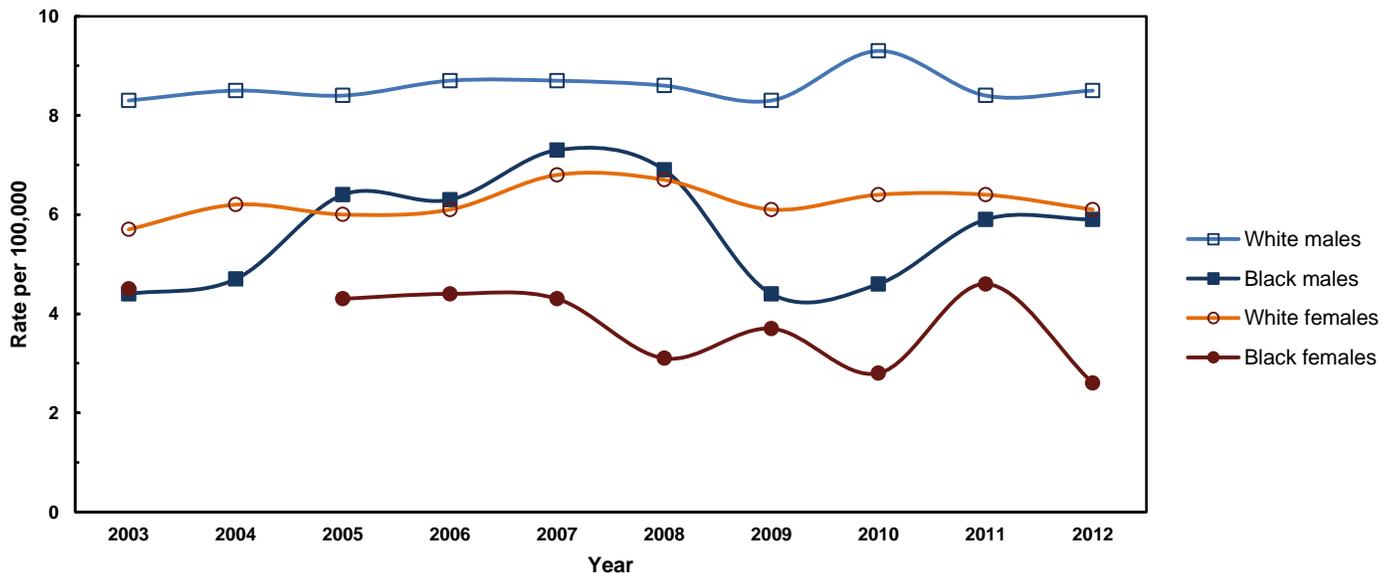
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,033	7.2 (6.8-7.6)	577	8.6 (7.9-9.3)	502	8.5 (7.8-9.2)	39	5.9 (4.0-7.8)	455	5.9 (5.4-6.4)	395	6.1 (5.5-6.7)	20	2.6 (1.5-3.7)
2011	1,007	7.0 (6.6-7.4)	539	8.1 (7.4-8.8)	493	8.4 (7.7-9.1)	33	5.9 (3.9-7.9)	468	6.1 (5.5-6.7)	425	6.4 (5.8-7.0)	34	4.6 (3.1-6.1)
2010	1,012	7.1 (6.7-7.5)	564	8.6 (7.9-9.3)	527	9.3 (8.5-10.1)	26	4.6 (2.8-6.4)	448	5.9 (5.4-6.4)	415	6.4 (5.8-7.0)	20	2.8 (1.6-4.0)
2009	976	6.9 (6.5-7.3)	530	8.1 (7.4-8.8)	485	8.3 (7.6-9.0)	27	4.4 (2.7-6.1)	446	5.8 (5.3-6.3)	415	6.1 (5.5-6.7)	26	3.7 (2.3-5.1)
2008	1,013	7.3 (6.9-7.7)	525	8.3 (7.6-9.0)	482	8.6 (7.8-9.4)	37	6.9 (4.7-9.1)	488	6.5 (5.9-7.1)	446	6.7 (6.1-7.3)	21	3.1 (1.8-4.4)
2007	1,028	7.5 (7.0-8.0)	535	8.5 (7.8-9.2)	482	8.7 (7.9-9.5)	37	7.3 (4.9-9.7)	493	6.5 (5.9-7.1)	453	6.8 (6.2-7.4)	29	4.3 (2.7-5.9)
2006	977	7.1 (6.7-7.5)	534	8.6 (7.9-9.3)	480	8.7 (7.9-9.5)	33	6.3 (4.2-8.4)	443	5.9 (5.4-6.4)	402	6.1 (5.5-6.7)	29	4.4 (2.8-6.0)
2005	948	6.9 (6.5-7.3)	520	8.3 (7.6-9.0)	469	8.4 (7.6-9.2)	31	6.4 (4.1-8.7)	428	5.8 (5.3-6.3)	390	6.0 (5.4-6.6)	29	4.3 (2.7-5.9)
2004	950	7.0 (6.6-7.4)	514	8.3 (7.6-9.0)	471	8.5 (7.7-9.3)	26	4.7 (2.9-6.5)	436	5.9 (5.3-6.5)	407	6.2 (5.6-6.8)	18	ND
2003	906	6.7 (6.3-7.1)	487	7.9 (7.2-8.6)	454	8.3 (7.5-9.1)	22	4.4 (2.6-6.2)	419	5.7 (5.2-6.2)	373	5.7 (5.1-6.3)	30	4.5 (2.9-6.1)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
19-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Brain and Other Nervous System: INCIDENCE (Invasive)

**TABLE
19-B**

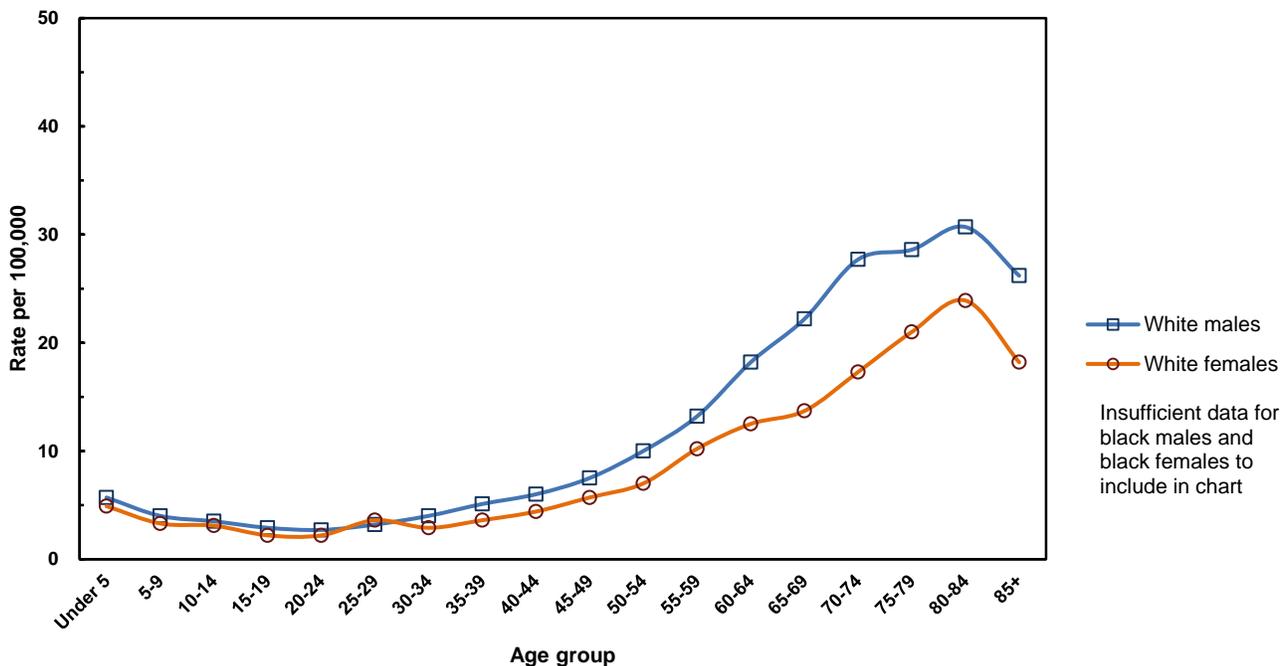
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	8.0	8.9	9.6	4.9	7.1	7.7	3.3
Under 5	5.1	5.6	5.7	4.1	4.6	4.9	ND
5-9	3.6	3.9	4.0	ND	3.4	3.3	4.3
10-14	3.0	3.2	3.5	ND	2.8	3.1	ND
15-19	2.5	3.0	2.9	3.4	2.0	2.2	ND
20-24	2.4	2.9	2.7	3.5	1.9	2.2	ND
25-29	3.0	2.8	3.2	ND	3.1	3.6	ND
30-34	3.3	3.9	4.0	ND	2.7	2.9	ND
35-39	4.1	4.9	5.1	ND	3.3	3.6	ND
40-44	5.0	5.7	6.0	5.0	4.3	4.4	ND
45-49	6.2	7.1	7.5	5.4	5.4	5.7	ND
50-54	8.0	9.4	10.0	4.8	6.6	7.0	4.1
55-59	11.3	12.8	13.2	10.0	9.9	10.2	5.8
60-64	14.5	17.6	18.2	13.2	11.7	12.5	ND
65-69	16.9	21.2	22.2	ND	13.3	13.7	ND
70-74	21.1	26.6	27.7	ND	16.6	17.3	ND
75-79	23.4	27.8	28.6	ND	20.2	21.0	ND
80-84	26.3	30.7	30.7	ND	23.5	23.9	ND
85+	21.0	26.0	26.2	ND	18.7	18.2	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
19-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Brain and Other Nervous System: INCIDENCE (Invasive)

**TABLE
19-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

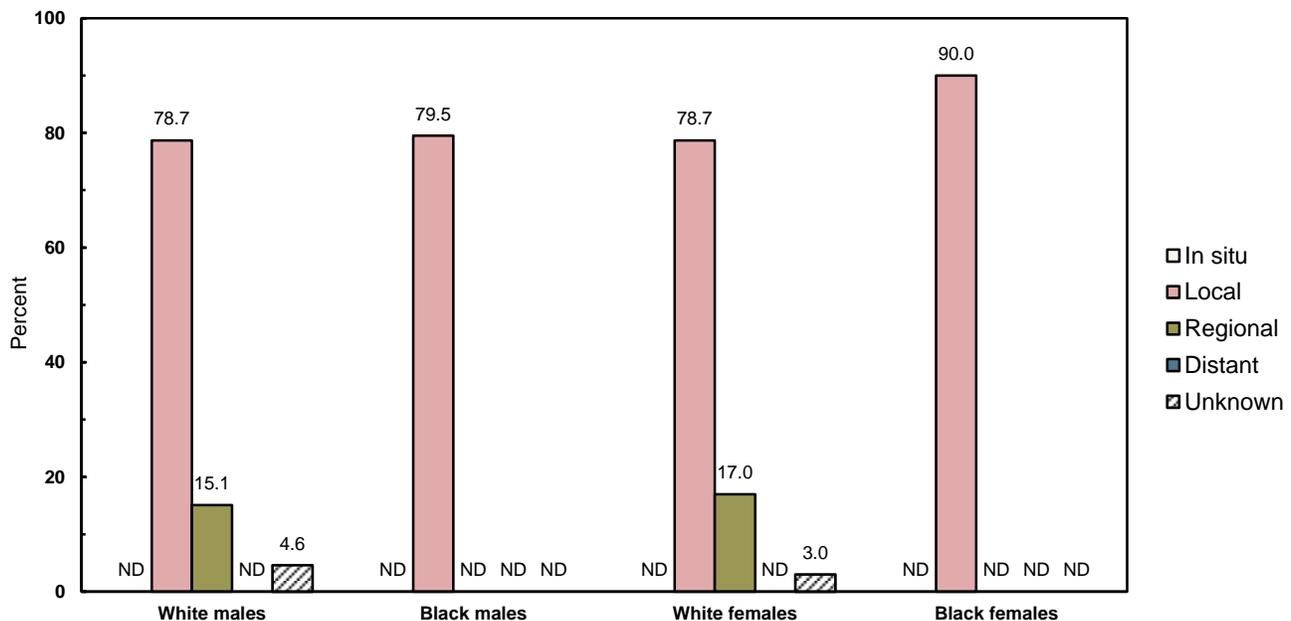
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	5,041	2,735	2,489	162	2,305	2,096	121
Under 5	187	105	83	11	82	67	7
5-9	137	75	61	9	62	47	11
10-14	119	65	56	5	54	48	5
15-19	113	69	54	11	44	39	5
20-24	106	65	48	11	41	38	2
25-29	116	56	51	3	60	55	3
30-34	124	73	62	4	51	43	6
35-39	157	93	80	9	64	57	3
40-44	212	120	108	11	92	80	5
45-49	287	161	148	12	126	114	8
50-54	379	219	205	10	160	146	10
55-59	491	270	248	17	220	198	12
60-64	536	312	290	17	224	212	9
65-69	474	276	263	7	198	183	9
70-74	463	261	248	6	202	189	8
75-79	423	211	200	9	212	200	7
80-84	390	176	164	6	214	200	7
85+	327	128	120	4	199	180	4

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
19-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 867 - 83.9%

Cancer of the Brain and Other Nervous System: MORTALITY

**TABLE
19-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

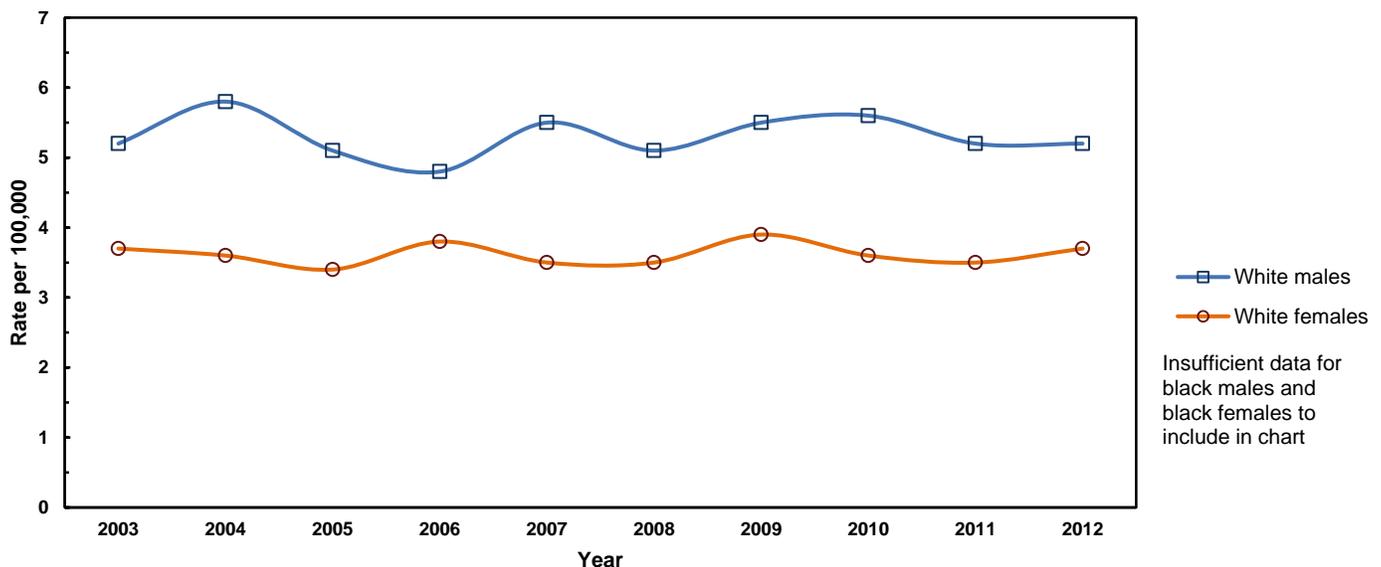
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	648	4.2 (3.9-4.5)	356	5.0 (4.5-5.5)	333	5.2 (4.6-5.8)	14	ND	292	3.5 (3.1-3.9)	271	3.7 (3.3-4.1)	14	ND
2011	619	4.0 (3.7-4.3)	346	5.0 (4.5-5.5)	322	5.2 (4.6-5.8)	17	ND	273	3.2 (2.8-3.6)	261	3.5 (3.1-3.9)	11	ND
2010	651	4.2 (3.9-4.5)	364	5.2 (4.7-5.7)	346	5.6 (5.0-6.2)	13	ND	287	3.3 (2.9-3.7)	274	3.6 (3.2-4.0)	10	ND
2009	664	4.4 (4.1-4.7)	354	5.3 (4.7-5.9)	329	5.5 (4.9-6.1)	22	4.2 (2.4-6.0)	310	3.7 (3.3-4.1)	294	3.9 (3.5-4.3)	14	ND
2008	581	4.0 (3.7-4.3)	320	5.0 (4.5-5.5)	298	5.1 (4.5-5.7)	21	4.2 (2.4-6.0)	261	3.3 (2.9-3.7)	248	3.5 (3.1-3.9)	13	ND
2007	598	4.2 (3.9-4.5)	333	5.2 (4.6-5.8)	313	5.5 (4.9-6.1)	19	ND	265	3.3 (2.9-3.7)	251	3.5 (3.1-3.9)	14	ND
2006	569	4.0 (3.7-4.3)	286	4.5 (4.0-5.0)	272	4.8 (4.2-5.4)	10	ND	283	3.6 (3.2-4.0)	268	3.8 (3.3-4.3)	13	ND
2005	566	4.0 (3.7-4.3)	314	5.0 (4.4-5.6)	293	5.1 (4.5-5.7)	18	ND	252	3.1 (2.7-3.5)	242	3.4 (3.0-3.8)	10	ND
2004	606	4.3 (4.0-4.6)	338	5.3 (4.7-5.9)	331	5.8 (5.2-6.4)	4	ND	268	3.4 (3.0-3.8)	258	3.6 (3.2-4.0)	7	ND
2003	587	4.2 (3.9-4.5)	312	5.0 (4.4-5.6)	296	5.2 (4.6-5.8)	15	ND	275	3.5 (3.1-3.9)	257	3.7 (3.2-4.2)	17	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
19-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Brain and Other Nervous System: MORTALITY

**TABLE
19-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

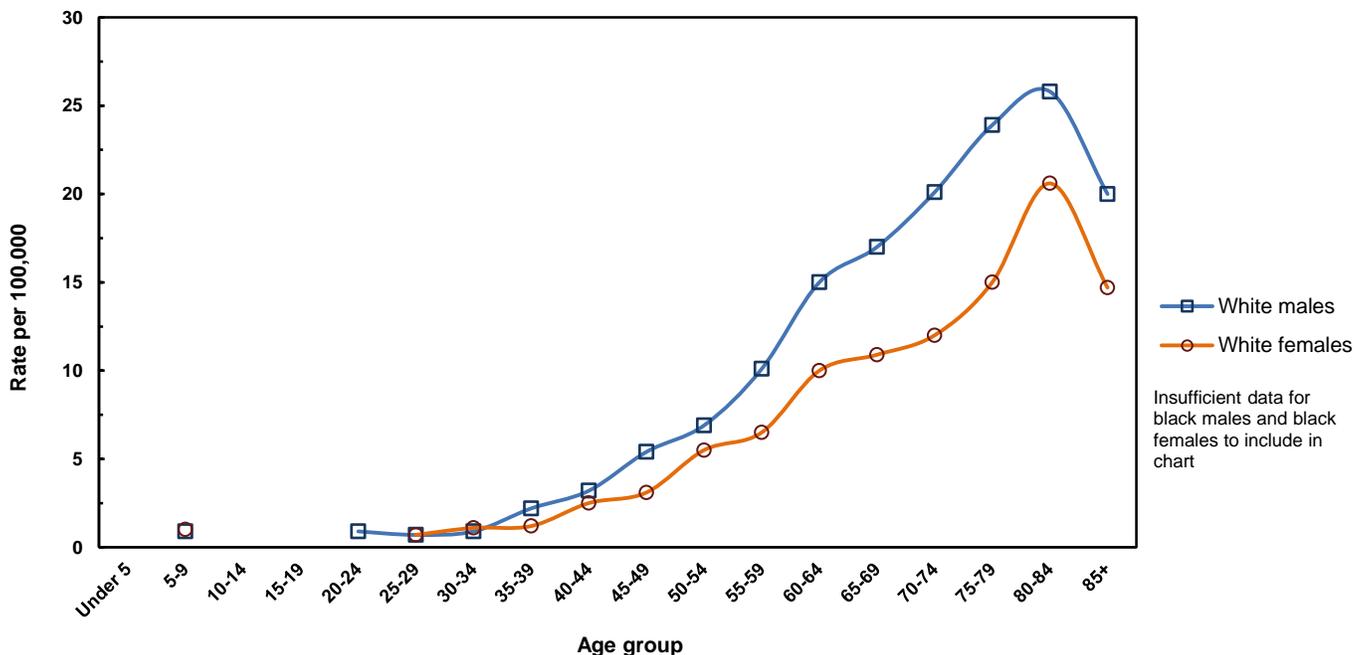
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	3,163	5.0	1,740	5.6	1,628	6.3	87	2.6	1,423	4.4	1,348	5.0	62	1.7
Under 5	22	0.6	13	0.7	9	ND	3	ND	9	ND	8	ND	1	ND
5-9	35	0.9	17	0.9	14	0.9	1	ND	18	1.0	14	1.0	3	ND
10-14	18	0.5	10	0.5	6	ND	3	ND	8	ND	7	ND	0	ND
15-19	23	0.5	10	0.4	8	ND	1	ND	13	0.6	8	ND	5	ND
20-24	26	0.6	18	0.8	16	0.9	1	ND	8	ND	8	ND	0	ND
25-29	22	0.6	12	0.6	11	0.7	1	ND	10	0.5	10	0.7	0	ND
30-34	35	0.9	16	0.9	14	0.9	1	ND	19	1.0	17	1.1	1	ND
35-39	60	1.6	38	2.0	35	2.2	3	ND	22	1.2	19	1.2	3	ND
40-44	114	2.7	66	3.1	58	3.2	8	ND	48	2.2	45	2.5	3	ND
45-49	186	4.0	115	5.1	106	5.4	8	ND	71	3.0	61	3.1	8	ND
50-54	272	5.7	150	6.5	142	6.9	6	ND	122	5.1	116	5.5	6	ND
55-59	337	7.8	205	9.7	190	10.1	12	7.0	132	5.9	127	6.5	4	ND
60-64	437	11.8	262	14.8	240	15.0	16	12.4	175	9.1	170	10.0	4	ND
65-69	357	12.8	207	15.9	202	17.0	5	ND	150	10.0	146	10.9	3	ND
70-74	329	15.0	190	19.4	180	20.1	6	ND	139	11.4	131	12.0	6	ND
75-79	319	17.7	172	22.7	167	23.9	4	ND	147	14.0	143	15.0	3	ND
80-84	321	21.6	141	24.6	138	25.8	3	ND	180	19.8	173	20.6	6	ND
85+	250	16.1	98	19.9	92	20.0	5	ND	152	14.3	145	14.7	6	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
19-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Brain and Other Nervous System: INCIDENCE (Invasive)

**TABLE
19-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	5,041	2,735	8.3	(8.0-8.6)	2,305	6.0	(5.8-6.2)									
Adams	45	27	9.7	(6.0-13.4)	18	ND		Juniata	6	4	ND		2	ND		
Allegheny	484	255	8.2	(7.2-9.2)	228	5.7	(5.0-6.4)	Lackawanna	108	56	10.0	(7.4-12.6)	52	7.9	(5.8-10.0)	
Armstrong	25	15	ND		10	ND		Lancaster	219	133	9.9	(8.2-11.6)	86	5.7	(4.5-6.9)	
Beaver	70	44	8.5	(6.0-11.0)	26	4.7	(2.9-6.5)	Lawrence	36	20	7.9	(4.4-11.4)	16	ND		
Bedford	25	14	ND		11	ND		Lebanon	49	24	6.7	(4.0-9.4)	25	6.2	(3.8-8.6)	
Berks	177	91	8.7	(6.9-10.5)	86	7.1	(5.6-8.6)	Lehigh	151	74	8.0	(6.2-9.8)	77	7.5	(5.8-9.2)	
Blair	63	30	8.2	(5.3-11.1)	33	7.5	(4.9-10.1)	Luzerne	128	66	7.8	(5.9-9.7)	62	5.6	(4.2-7.0)	
Bradford	14	6	ND		8	ND		Lycoming	47	24	7.3	(4.4-10.2)	23	7.1	(4.2-10.0)	
Bucks	272	149	9.2	(7.7-10.7)	123	6.4	(5.3-7.5)	McKean	9	7	ND		2	ND		
Butler	97	49	10.2	(7.3-13.1)	48	8.8	(6.3-11.3)	Mercer	49	23	7.1	(4.2-10.0)	26	7.1	(4.4-9.8)	
Cambria	64	35	8.3	(5.6-11.0)	29	5.8	(3.7-7.9)	Mifflin	28	11	ND		17	ND		
Cameron	4	1	ND		3	ND		Monroe	66	36	8.1	(5.5-10.7)	30	6.7	(4.3-9.1)	
Carbon	28	14	ND		14	ND		Montgomery	317	158	7.6	(6.4-8.8)	159	6.6	(5.6-7.6)	
Centre	43	29	7.9	(5.0-10.8)	14	ND		Montour	10	6	ND		4	ND		
Chester	222	118	9.3	(7.6-11.0)	104	7.5	(6.1-8.9)	Northampton	120	68	8.9	(6.8-11.0)	52	5.7	(4.2-7.2)	
Clarion	15	6	ND		9	ND		Northumberland	42	21	7.8	(4.5-11.1)	21	6.2	(3.5-8.9)	
Clearfield	33	20	8.5	(4.8-12.2)	13	ND		Perry	23	15	ND		8	ND		
Clinton	12	8	ND		4	ND		Philadelphia	466	249	7.5	(6.6-8.4)	217	5.1	(4.4-5.8)	
Columbia	19	9	ND		10	ND		Pike	21	15	ND		6	ND		
Crawford	41	21	8.1	(4.6-11.6)	20	8.0	(4.5-11.5)	Potter	13	7	ND		6	ND		
Cumberland	91	49	8.2	(5.9-10.5)	42	5.9	(4.1-7.7)	Schuylkill	70	34	8.0	(5.3-10.7)	36	8.3	(5.6-11.0)	
Dauphin	85	59	8.7	(6.5-10.9)	26	3.4	(2.1-4.7)	Snyder	26	13	ND		13	ND		
Delaware	232	127	9.2	(7.6-10.8)	105	6.2	(5.0-7.4)	Somerset	32	24	10.4	(6.2-14.6)	8	ND		
Elk	15	8	ND		7	ND		Sullivan	3	1	ND		2	ND		
Erie	95	54	7.8	(5.7-9.9)	41	5.1	(3.5-6.7)	Susquehanna	27	12	ND		15	ND		
Fayette	50	30	7.7	(4.9-10.5)	20	4.6	(2.6-6.6)	Tioga	16	13	ND		3	ND		
Forest	1	1	ND		0	ND		Union	10	5	ND		5	ND		
Franklin	49	26	6.8	(4.2-9.4)	23	5.0	(3.0-7.0)	Venango	22	11	ND		11	ND		
Fulton	3	2	ND		1	ND		Warren	17	10	ND		7	ND		
Greene	18	14	ND		4	ND		Washington	91	46	7.7	(5.5-9.9)	45	6.3	(4.5-8.1)	
Huntingdon	19	5	ND		14	ND		Wayne	20	11	ND		9	ND		
Indiana	39	26	10.5	(6.5-14.5)	13	ND		Westmoreland	163	90	8.6	(6.8-10.4)	73	6.2	(4.8-7.6)	
Jefferson	13	8	ND		5	ND		Wyoming	17	8	ND		9	ND		
								York	156	90	7.9	(6.3-9.5)	66	5.1	(3.9-6.3)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Brain and Other Nervous System: MORTALITY

**TABLE
19-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	3,163	1,740	5.1	(4.9-5.3)	1,423	3.4	(3.2-3.6)									
Adams	29	16	ND		13	ND		Juniata	9	5	ND		4	ND		
Allegheny	320	167	4.9	(4.2-5.6)	153	3.5	(2.9-4.1)	Lackawanna	66	36	6.2	(4.2-8.2)	30	3.8	(2.4-5.2)	
Armstrong	19	8	ND		11	ND		Lancaster	156	94	6.8	(5.4-8.2)	62	4.0	(3.0-5.0)	
Beaver	51	30	5.6	(3.6-7.6)	21	3.5	(2.0-5.0)	Lawrence	15	8	ND		7	ND		
Bedford	12	5	ND		7	ND		Lebanon	30	19	ND		11	ND		
Berks	96	53	5.0	(3.7-6.3)	43	3.3	(2.3-4.3)	Lehigh	81	42	4.7	(3.3-6.1)	39	3.4	(2.3-4.5)	
Blair	44	25	6.4	(3.9-8.9)	19	ND		Luzerne	82	42	4.5	(3.1-5.9)	40	3.2	(2.2-4.2)	
Bradford	9	4	ND		5	ND		Lycoming	27	12	ND		15	ND		
Bucks	181	105	6.1	(4.9-7.3)	76	3.7	(2.9-4.5)	McKean	11	9	ND		2	ND		
Butler	76	43	8.3	(5.8-10.8)	33	5.7	(3.8-7.6)	Mercer	30	18	ND		12	ND		
Cambria	40	24	5.4	(3.2-7.6)	16	ND		Mifflin	17	9	ND		8	ND		
Cameron	3	1	ND		2	ND		Monroe	35	14	ND		21	4.0	(2.3-5.7)	
Carbon	21	6	ND		15	ND		Montgomery	192	102	4.8	(3.9-5.7)	90	3.5	(2.8-4.2)	
Centre	32	21	5.9	(3.4-8.4)	11	ND		Montour	6	4	ND		2	ND		
Chester	128	53	4.1	(3.0-5.2)	75	5.0	(3.9-6.1)	Northampton	75	38	4.5	(3.1-5.9)	37	3.9	(2.6-5.2)	
Clarion	11	4	ND		7	ND		Northumberland	21	10	ND		11	ND		
Clearfield	25	19	ND		6	ND		Perry	15	13	ND		2	ND		
Clinton	11	6	ND		5	ND		Philadelphia	235	132	4.2	(3.5-4.9)	103	2.3	(1.9-2.7)	
Columbia	11	8	ND		3	ND		Pike	10	8	ND		2	ND		
Crawford	29	18	ND		11	ND		Potter	6	1	ND		5	ND		
Cumberland	60	35	5.5	(3.7-7.3)	25	3.2	(1.9-4.5)	Schuylkill	45	22	4.9	(2.9-6.9)	23	4.2	(2.5-5.9)	
Dauphin	57	35	5.1	(3.4-6.8)	22	2.6	(1.5-3.7)	Snyder	9	2	ND		7	ND		
Delaware	140	79	5.6	(4.4-6.8)	61	3.4	(2.5-4.3)	Somerset	23	17	ND		6	ND		
Elk	8	5	ND		3	ND		Sullivan	1	1	ND		0	ND		
Erie	60	33	4.6	(3.0-6.2)	27	3.0	(1.9-4.1)	Susquehanna	19	10	ND		9	ND		
Fayette	40	21	5.2	(3.0-7.4)	19	ND		Tioga	13	9	ND		4	ND		
Forest	1	1	ND		0	ND		Union	4	2	ND		2	ND		
Franklin	44	23	5.7	(3.4-8.0)	21	4.3	(2.5-6.1)	Venango	12	7	ND		5	ND		
Fulton	1	1	ND		0	ND		Warren	11	5	ND		6	ND		
Greene	7	7	ND		0	ND		Washington	53	32	4.9	(3.2-6.6)	21	2.6	(1.5-3.7)	
Huntingdon	15	2	ND		13	ND		Wayne	9	4	ND		5	ND		
Indiana	16	8	ND		8	ND		Westmoreland	121	71	6.4	(4.9-7.9)	50	3.7	(2.7-4.7)	
Jefferson	8	6	ND		2	ND		Wyoming	6	4	ND		2	ND		
								York	113	66	5.9	(4.5-7.3)	47	3.6	(2.6-4.6)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

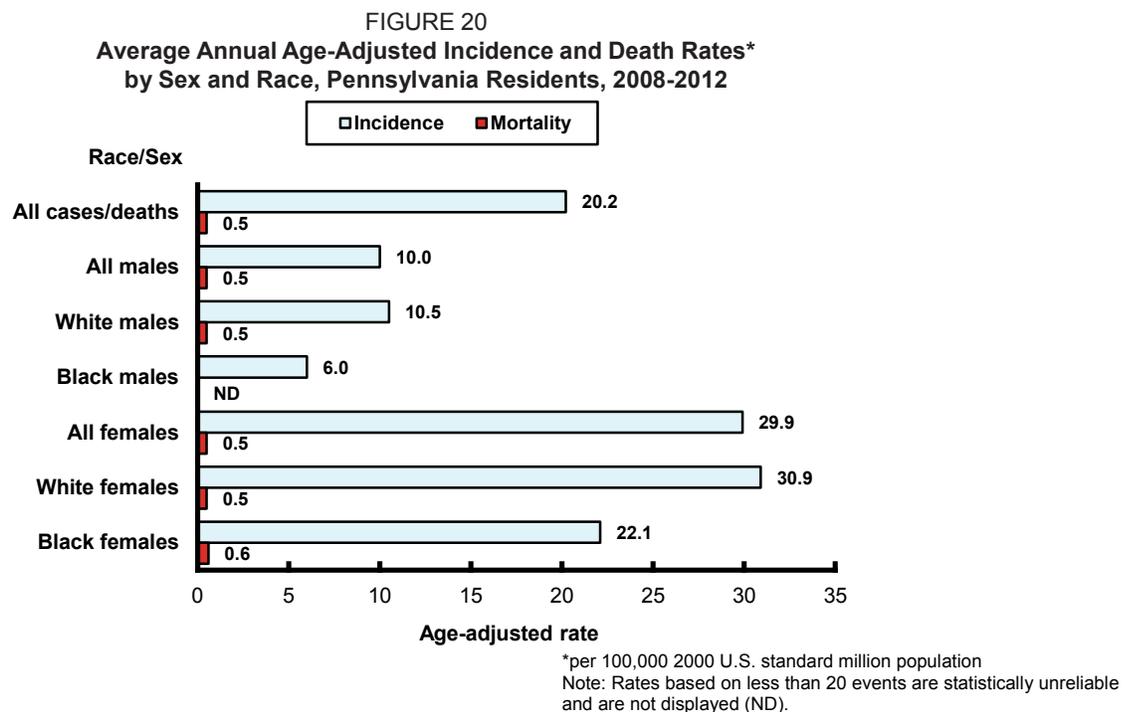
Cancer of the Thyroid

Data Highlights

In Pennsylvania, the average annual (2008-2012) age-adjusted incidence rate for thyroid cancer among females (29.9 per 100,000) was about three times the rate for males (10.0). In addition, white females had an elevated risk for thyroid cancer compared to black females. Specifically, the average annual age-adjusted incidence rate for thyroid cancer among white females (30.9) was 40 percent higher than the rate for black females (22.1).

Like thyroid cancer rates for the United States, Pennsylvania's annual age-adjusted incidence rates have been rising overall among both males and females. In 2012, there were 2,843 cases of invasive thyroid cancer – the highest number ever reported to the Pennsylvania Cancer Registry. The 2012 age-adjusted incidence rate (20.7) was over 60 percent higher than the 2003 rate (12.9). Higher incidence rates among females suggest the role of hormonal factors in the etiology. Approximately 23 percent of the invasive thyroid cancer cases diagnosed between 2008 and 2012 occurred among residents under 40 years of age. In 2012, 73 percent of the thyroid cancers were diagnosed at early stages (in situ or local) of the disease, and 25 percent were diagnosed at late stages (regional or distant).

Unlike the incidence rates, the average annual (2008-2012) age-adjusted death rates for cancer of the thyroid were the same for males and females, 0.5 per 100,000. The rate for black males was considered statistically unreliable due to the small number of deaths. In 2012, there were 85 thyroid cancer deaths among all Pennsylvania residents – an increase from the 77 deaths that occurred in the previous year, 2011. Females accounted for 52 deaths (61 percent) during 2012. The age-adjusted death rates among white males and white females showed no discernible trend for the period of 2003-2012. The instability of the annual age-adjusted death rates, due to the small numbers of deaths each year, makes it difficult to interpret the mortality trends for blacks during this 10-year period.



Risk Factors

Although etiological factors are obscure, exposure to radiation, diets low in iodine (rare in the United States), and several hereditary conditions are associated with an increased risk of thyroid cancer.

Early Detection

Most cases of thyroid cancer can be found early through routine checkups.

Cancer of the Thyroid: INCIDENCE (Invasive)

**TABLE
20-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

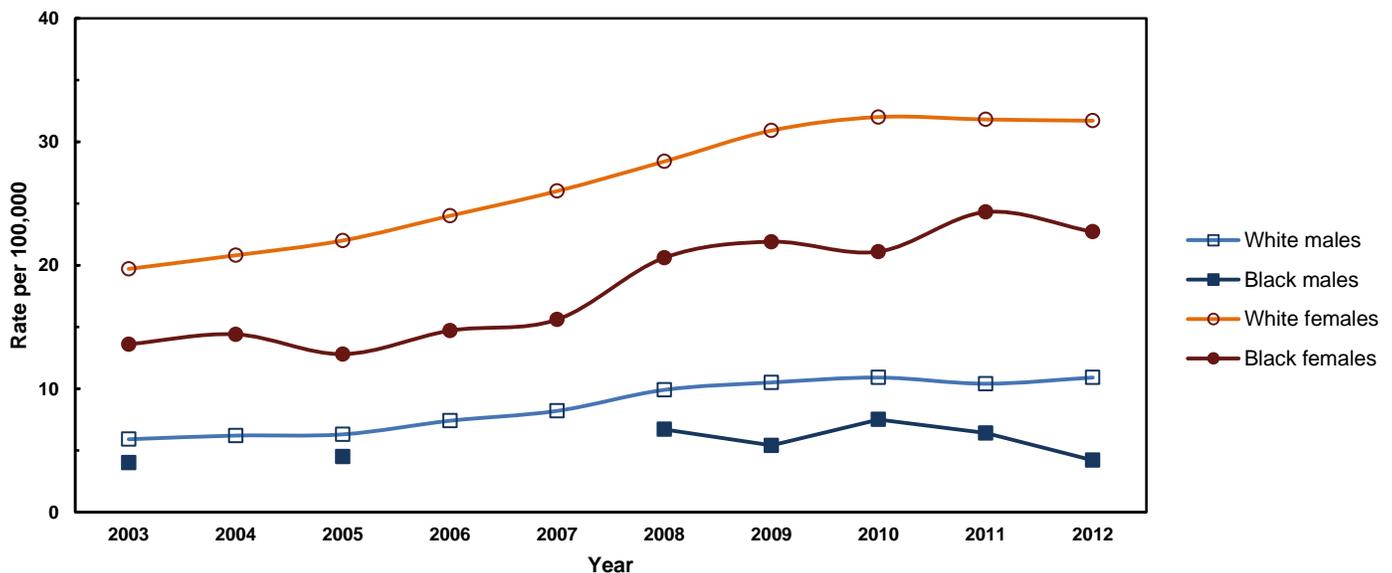
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	2,843	20.7 (19.9-21.5)	698	10.2 (9.4-11.0)	652	10.9 (10.1-11.7)	23	4.2 (2.5-5.9)	2,145	30.9 (29.6-32.2)	1,863	31.7 (30.4-33.1)	170	22.7 (19.3-26.1)
2011	2,833	20.7 (19.9-21.5)	691	10.0 (9.3-10.7)	626	10.4 (9.6-11.2)	36	6.4 (4.3-8.5)	2,142	30.9 (29.6-32.2)	1,871	31.8 (30.4-33.2)	179	24.3 (20.7-27.9)
2010	2,728	20.3 (19.5-21.1)	697	10.4 (9.6-11.2)	627	10.9 (10.0-11.8)	41	7.5 (5.2-9.8)	2,031	29.8 (28.5-31.1)	1,815	32.0 (30.5-33.5)	147	21.1 (17.7-24.5)
2009	2,686	20.2 (19.4-21.0)	652	10.0 (9.2-10.8)	607	10.5 (9.7-11.3)	26	5.4 (3.3-7.5)	2,034	30.1 (28.8-31.4)	1,801	30.9 (29.5-32.3)	149	21.9 (18.4-25.4)
2008	2,497	19.0 (18.3-19.7)	612	9.6 (8.8-10.4)	562	9.9 (9.1-10.7)	33	6.7 (4.4-9.0)	1,885	28.0 (26.7-29.3)	1,655	28.4 (27.0-29.8)	137	20.6 (17.2-24.0)
2007	2,219	16.9 (16.2-17.6)	504	7.9 (7.2-8.6)	466	8.2 (7.5-8.9)	19	ND	1,715	25.5 (24.3-26.7)	1,518	26.0 (24.7-27.3)	105	15.6 (12.6-18.6)
2006	2,016	15.4 (14.7-16.1)	455	7.1 (6.4-7.8)	422	7.4 (6.7-8.1)	18	ND	1,561	23.3 (22.1-24.5)	1,392	24.0 (22.7-25.3)	96	14.7 (11.8-17.6)
2005	1,834	13.9 (13.3-14.5)	395	6.2 (5.6-6.8)	360	6.3 (5.6-7.0)	23	4.5 (2.7-6.3)	1,439	21.3 (20.2-22.4)	1,301	22.0 (20.8-23.2)	84	12.8 (10.1-15.5)
2004	1,725	13.3 (12.7-13.9)	375	6.0 (5.4-6.6)	348	6.2 (5.5-6.9)	17	ND	1,350	20.3 (19.2-21.4)	1,204	20.8 (19.6-22.0)	94	14.4 (11.5-17.3)
2003	1,664	12.9 (12.3-13.5)	370	5.9 (5.3-6.5)	334	5.9 (5.3-6.5)	20	4.0 (2.2-5.8)	1,294	19.5 (18.4-20.6)	1,142	19.7 (18.6-20.8)	88	13.6 (10.8-16.4)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
20-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Thyroid: INCIDENCE (Invasive)

**TABLE
20-B**

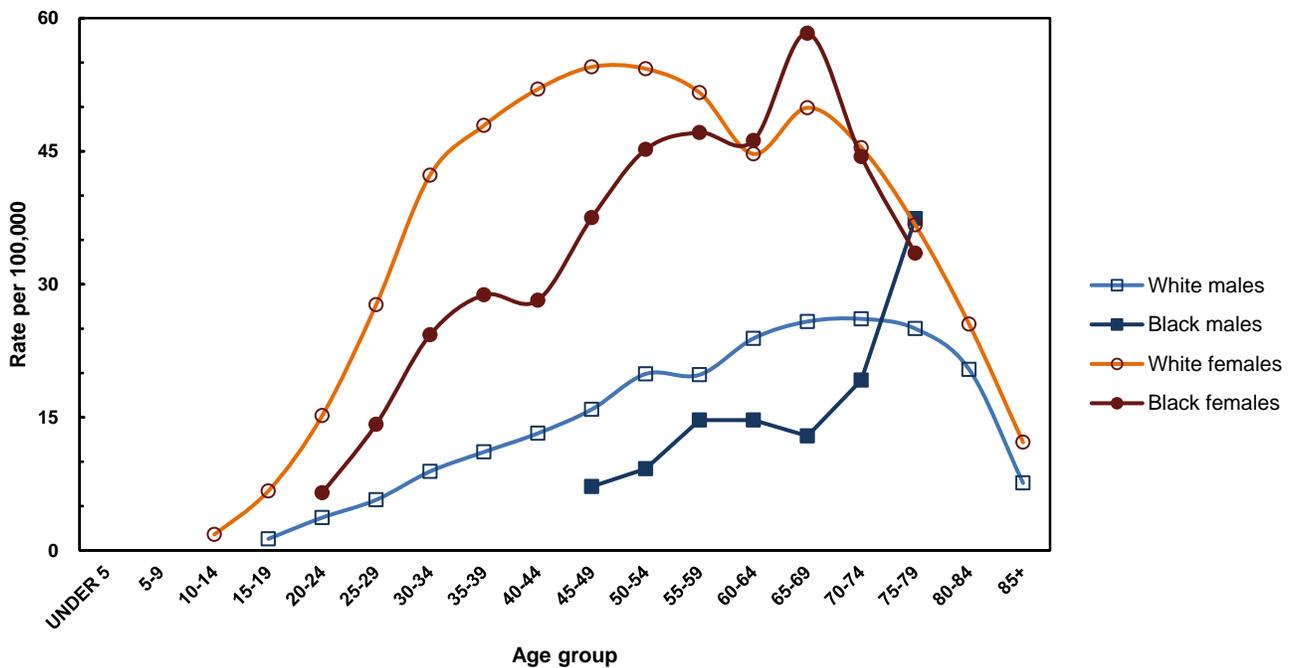
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	21.5	10.9	11.8	4.8	31.5	33.1	21.4
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	1.0	0.5	ND	ND	1.6	1.8	ND
15-19	3.6	1.3	1.3	ND	6.0	6.7	ND
20-24	8.5	3.1	3.7	ND	14.0	15.2	6.5
25-29	15.9	5.3	5.7	ND	26.7	27.7	14.2
30-34	23.8	8.0	8.9	ND	39.6	42.3	24.3
35-39	27.6	9.9	11.1	ND	45.2	47.9	28.8
40-44	30.9	12.2	13.2	ND	49.3	52.0	28.2
45-49	34.5	15.5	15.9	7.2	53.1	54.5	37.5
50-54	36.4	18.6	19.9	9.2	53.5	54.3	45.2
55-59	35.6	19.4	19.8	14.7	51.1	51.6	47.1
60-64	34.7	23.4	23.9	14.7	45.1	44.7	46.2
65-69	38.7	24.8	25.8	12.9	50.8	49.9	58.3
70-74	36.6	25.8	26.1	19.2	45.4	45.4	44.4
75-79	32.1	25.7	25.0	37.4	36.7	36.7	33.5
80-84	23.0	20.2	20.4	ND	24.7	25.5	ND
85+	11.0	7.9	7.6	ND	12.4	12.2	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
20-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Thyroid: INCIDENCE (Invasive)

**TABLE
20-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

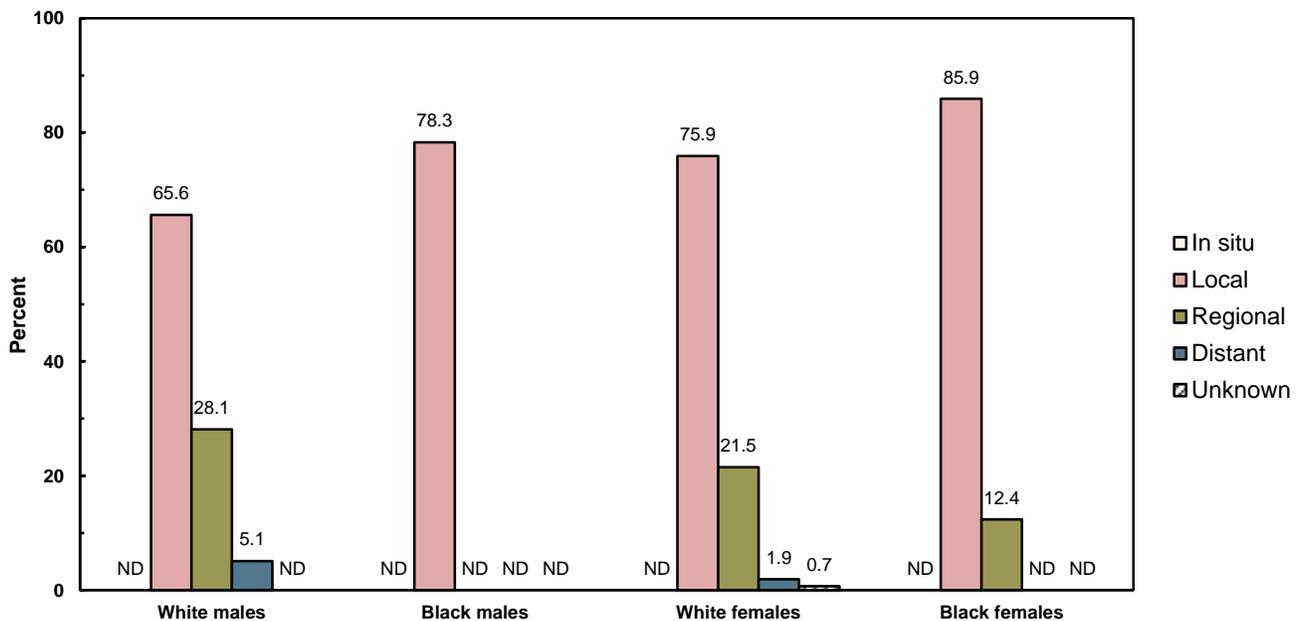
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	13,587	3,350	3,074	159	10,237	9,005	782
Under 5	4	1	1	0	3	2	0
5-9	6	2	2	0	4	4	0
10-14	40	10	7	2	30	28	2
15-19	162	29	24	3	133	119	5
20-24	375	69	67	0	306	265	20
25-29	616	105	91	5	511	424	36
30-34	889	151	137	6	738	634	58
35-39	1,052	188	175	5	864	750	66
40-44	1,322	259	237	9	1,063	939	69
45-49	1,594	352	313	16	1,242	1,089	94
50-54	1,723	433	407	19	1,290	1,135	109
55-59	1,544	410	373	25	1,134	1,005	97
60-64	1,281	415	381	19	866	760	77
65-69	1,082	323	306	11	759	668	69
70-74	804	253	234	12	551	497	42
75-79	580	195	175	17	385	350	26
80-84	341	116	109	6	225	214	9
85+	171	39	35	4	132	121	3

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
20-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Invasive Cases Microscopically Confirmed: 2,837 - 99.8%

Cancer of the Thyroid: MORTALITY

**TABLE
20-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

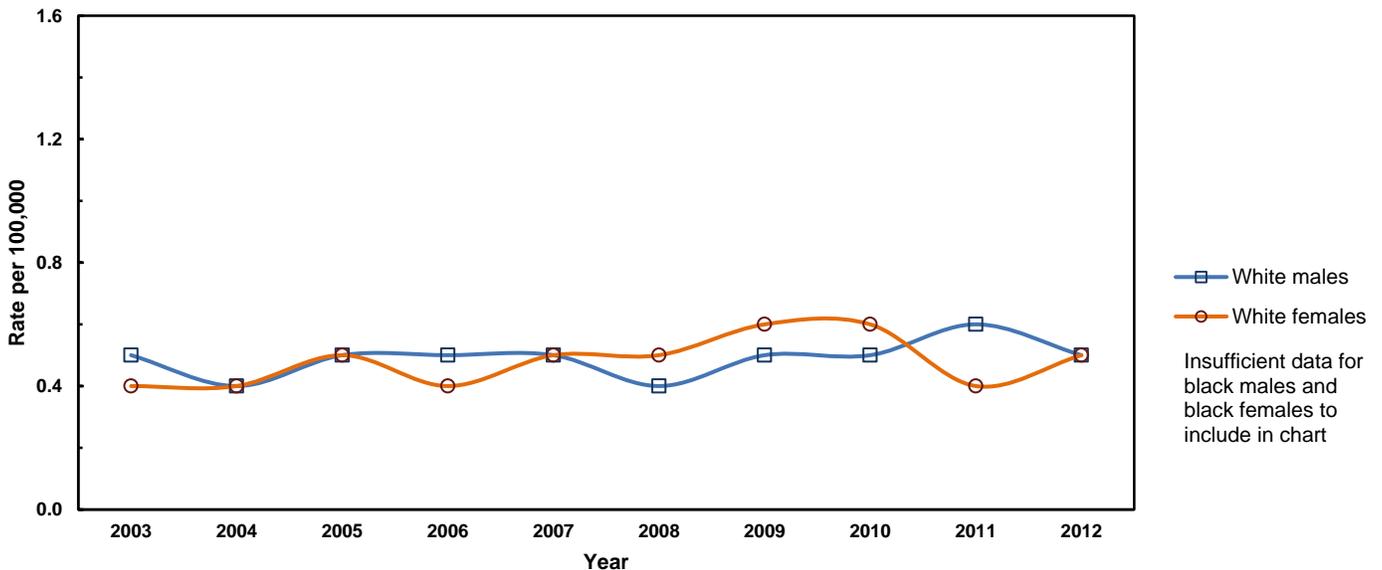
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	85	0.5 (0.4-0.6)	33	0.5 (0.3-0.7)	32	0.5 (0.3-0.7)	1	ND	52	0.6 (0.4-0.8)	44	0.5 (0.4-0.6)	6	ND
2011	77	0.5 (0.4-0.6)	39	0.6 (0.4-0.8)	36	0.6 (0.4-0.8)	3	ND	38	0.4 (0.3-0.5)	34	0.4 (0.3-0.5)	3	ND
2010	89	0.5 (0.4-0.6)	37	0.6 (0.4-0.8)	34	0.5 (0.3-0.7)	3	ND	52	0.5 (0.4-0.6)	51	0.6 (0.4-0.8)	1	ND
2009	85	0.5 (0.4-0.6)	29	0.4 (0.3-0.5)	28	0.5 (0.3-0.7)	1	ND	56	0.6 (0.4-0.8)	47	0.6 (0.4-0.8)	7	ND
2008	78	0.5 (0.4-0.6)	27	0.4 (0.2-0.6)	24	0.4 (0.2-0.6)	2	ND	51	0.5 (0.4-0.6)	46	0.5 (0.4-0.6)	4	ND
2007	82	0.5 (0.4-0.6)	33	0.5 (0.3-0.7)	30	0.5 (0.3-0.7)	3	ND	49	0.5 (0.4-0.6)	41	0.5 (0.3-0.7)	7	ND
2006	67	0.5 (0.4-0.6)	30	0.5 (0.3-0.7)	29	0.5 (0.3-0.7)	1	ND	37	0.4 (0.3-0.5)	33	0.4 (0.3-0.5)	4	ND
2005	82	0.6 (0.5-0.7)	31	0.5 (0.3-0.7)	30	0.5 (0.3-0.7)	1	ND	51	0.6 (0.4-0.8)	44	0.5 (0.4-0.6)	6	ND
2004	64	0.4 (0.3-0.5)	26	0.4 (0.2-0.6)	23	0.4 (0.2-0.6)	3	ND	38	0.4 (0.3-0.5)	36	0.4 (0.3-0.5)	1	ND
2003	66	0.4 (0.3-0.5)	31	0.5 (0.3-0.7)	27	0.5 (0.3-0.7)	3	ND	35	0.4 (0.3-0.5)	34	0.4 (0.3-0.5)	0	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
20-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Cancer of the Thyroid: MORTALITY

**TABLE
20-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

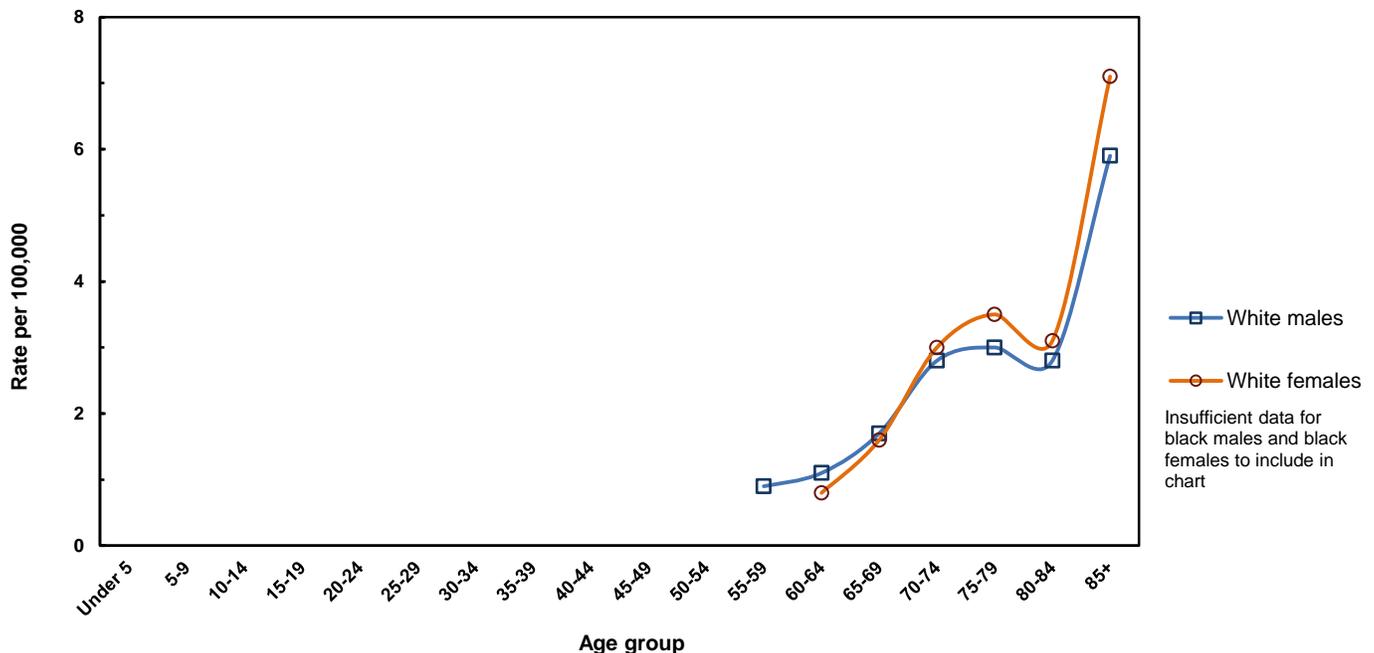
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	414	0.7	165	0.5	154	0.6	10	0.3	249	0.8	222	0.8	21	0.6
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
20-24	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
25-29	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
30-34	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
35-39	2	ND	1	ND	1	ND	0	ND	1	ND	1	ND	0	ND
40-44	5	ND	4	ND	3	ND	1	ND	1	ND	1	ND	0	ND
45-49	9	ND	4	ND	2	ND	2	ND	5	ND	4	ND	0	ND
50-54	19	0.4	7	ND	7	ND	0	ND	12	0.5	8	ND	3	ND
55-59	24	0.6	16	0.8	16	0.9	0	ND	8	ND	8	ND	0	ND
60-64	38	1.0	19	1.1	17	1.1	2	ND	19	1.0	14	0.8	5	ND
65-69	47	1.7	22	1.7	20	1.7	2	ND	25	1.7	21	1.6	3	ND
70-74	66	3.0	26	2.6	25	2.8	0	ND	40	3.3	33	3.0	5	ND
75-79	58	3.2	23	3.0	21	3.0	2	ND	35	3.3	33	3.5	2	ND
80-84	45	3.0	15	2.6	15	2.8	0	ND	30	3.3	26	3.1	3	ND
85+	98	6.3	28	5.7	27	5.9	1	ND	70	6.6	70	7.1	0	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
20-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Cancer of the Thyroid: INCIDENCE (Invasive)

**TABLE
20-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females				
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)		
All counties	13,587	3,350	10.0	(9.7-10.3)	10,237	29.9	(29.3-30.5)										
Adams	126	39	13.4	(9.2-17.6)	87	32.5	(25.7-39.3)	Juniata	15	3	ND		12	ND			
Allegheny	1,728	383	11.9	(10.7-13.1)	1,345	38.8	(36.7-40.9)	Lackawanna	284	64	11.1	(8.4-13.8)	220	38.9	(33.8-44.0)		
Armstrong	86	19	ND		67	35.5	(27.0-44.0)	Lancaster	445	115	9.0	(7.4-10.6)	330	24.3	(21.7-26.9)		
Beaver	168	37	7.7	(5.2-10.2)	131	29.1	(24.1-34.1)	Lawrence	158	46	18.0	(12.8-23.2)	112	45.9	(37.4-54.4)		
Bedford	73	16	ND		57	42.9	(31.8-54.0)	Lebanon	130	38	10.8	(7.4-14.2)	92	26.3	(20.9-31.7)		
Berks	357	95	8.8	(7.0-10.6)	262	24.6	(21.6-27.6)	Lehigh	370	92	10.1	(8.0-12.2)	278	30.0	(26.5-33.5)		
Blair	96	23	6.5	(3.8-9.2)	73	21.0	(16.2-25.8)	Luzerne	405	78	9.0	(7.0-11.0)	327	39.1	(34.9-43.3)		
Bradford	41	13	ND		28	15.6	(9.8-21.4)	Lycoming	169	42	13.4	(9.3-17.5)	127	39.8	(32.9-46.7)		
Bucks	715	190	11.1	(9.5-12.7)	525	30.1	(27.5-32.7)	McKean	40	12	ND		28	23.6	(14.9-32.3)		
Butler	325	84	16.7	(13.1-20.3)	241	47.7	(41.7-53.7)	Mercer	152	43	13.5	(9.5-17.5)	109	34.2	(27.8-40.6)		
Cambria	156	33	8.5	(5.6-11.4)	123	32.9	(27.1-38.7)	Mifflin	54	10	ND		44	37.9	(26.7-49.1)		
Cameron	5	2	ND		3	ND		Monroe	116	30	7.5	(4.8-10.2)	86	18.2	(14.4-22.0)		
Carbon	79	22	12.4	(7.2-17.6)	57	32.2	(23.8-40.6)	Montgomery	798	204	9.8	(8.5-11.1)	594	27.5	(25.3-29.7)		
Centre	109	28	8.6	(5.4-11.8)	81	26.1	(20.4-31.8)	Montour	20	4	ND		16	ND			
Chester	632	174	13.1	(11.2-15.0)	458	34.7	(31.5-37.9)	Northampton	385	99	12.5	(10.0-15.0)	286	36.1	(31.9-40.3)		
Clarion	38	8	ND		30	30.4	(19.5-41.3)	Northumberland	93	31	11.0	(7.1-14.9)	62	26.7	(20.1-33.3)		
Clearfield	65	17	ND		48	21.7	(15.6-27.8)	Perry	48	12	ND		36	30.0	(20.2-39.8)		
Clinton	48	13	ND		35	38.1	(25.5-50.7)	Philadelphia	1,193	264	7.9	(6.9-8.9)	929	22.7	(21.2-24.2)		
Columbia	75	18	ND		57	34.8	(25.8-43.8)	Pike	47	16	ND		31	21.5	(13.9-29.1)		
Crawford	94	19	ND		75	31.8	(24.6-39.0)	Potter	17	4	ND		13	ND			
Cumberland	208	49	7.8	(5.6-10.0)	159	25.0	(21.1-28.9)	Schuylkill	126	40	9.3	(6.4-12.2)	86	21.6	(17.0-26.2)		
Dauphin	221	49	7.1	(5.1-9.1)	172	22.7	(19.3-26.1)	Snyder	46	16	ND		30	30.7	(19.7-41.7)		
Delaware	532	133	9.5	(7.9-11.1)	399	26.2	(23.6-28.8)	Somerset	91	19	ND		72	38.4	(29.5-47.3)		
Elk	47	13	ND		34	37.9	(25.2-50.6)	Sullivan	7	3	ND		4	ND			
Erie	326	67	9.9	(7.5-12.3)	259	35.0	(30.7-39.3)	Susquehanna	31	6	ND		25	20.6	(12.5-28.7)		
Fayette	177	53	13.9	(10.2-17.6)	124	30.9	(25.5-36.3)	Tioga	34	7	ND		27	25.8	(16.1-35.5)		
Forest	12	6	ND		6	ND		Union	43	10	ND		33	35.2	(23.2-47.2)		
Franklin	117	29	7.2	(4.6-9.8)	88	22.7	(18.0-27.4)	Venango	68	18	ND		50	30.7	(22.2-39.2)		
Fulton	10	1	ND		9	ND		Warren	34	9	ND		25	23.4	(14.2-32.6)		
Greene	51	13	ND		38	37.2	(25.4-49.0)	Washington	217	54	9.4	(6.9-11.9)	163	28.3	(24.0-32.6)		
Huntingdon	31	8	ND		23	24.0	(14.2-33.8)	Wayne	63	20	12.0	(6.7-17.3)	43	31.1	(21.8-40.4)		
Indiana	90	21	8.8	(5.0-12.6)	69	32.4	(24.8-40.0)	Westmoreland	442	117	11.3	(9.3-13.3)	325	32.7	(29.1-36.3)		
Jefferson	30	10	ND		20	16.8	(9.4-24.2)	Wyoming	38	12	ND		26	37.6	(23.1-52.1)		
								York	540	127	10.8	(8.9-12.7)	413	35.4	(32.0-38.8)		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Cancer of the Thyroid: MORTALITY

**TABLE
20-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	414	165	0.5	(0.4-0.6)	249	0.5	(0.4-0.6)									
Adams	3	1	ND		2	ND		Juniata	2	1	ND		1	ND		
Allegheny	32	17	ND		15	ND		Lackawanna	7	2	ND		5	ND		
Armstrong	5	2	ND		3	ND		Lancaster	13	3	ND		10	ND		
Beaver	8	3	ND		5	ND		Lawrence	10	4	ND		6	ND		
Bedford	9	4	ND		5	ND		Lebanon	1	1	ND		0	ND		
Berks	5	2	ND		3	ND		Lehigh	10	3	ND		7	ND		
Blair	6	0	ND		6	ND		Luzerne	10	4	ND		6	ND		
Bradford	3	3	ND		0	ND		Lycoming	4	0	ND		4	ND		
Bucks	20	11	ND		9	ND		McKean	2	1	ND		1	ND		
Butler	1	0	ND		1	ND		Mercer	2	0	ND		2	ND		
Cambria	2	1	ND		1	ND		Mifflin	1	1	ND		0	ND		
Cameron	1	1	ND		0	ND		Monroe	2	2	ND		0	ND		
Carbon	1	1	ND		0	ND		Montgomery	32	15	ND		17	ND		
Centre	4	2	ND		2	ND		Montour	1	0	ND		1	ND		
Chester	18	5	ND		13	ND		Northampton	15	7	ND		8	ND		
Clarion	0	0	ND		0	ND		Northumberland	5	2	ND		3	ND		
Clearfield	4	1	ND		3	ND		Perry	2	2	ND		0	ND		
Clinton	3	2	ND		1	ND		Philadelphia	52	21	0.7	(0.4-1.0)	31	0.7	(0.5-0.9)	
Columbia	2	1	ND		1	ND		Pike	1	0	ND		1	ND		
Crawford	2	2	ND		0	ND		Potter	1	0	ND		1	ND		
Cumberland	7	2	ND		5	ND		Schuylkill	2	0	ND		2	ND		
Dauphin	11	3	ND		8	ND		Snyder	2	1	ND		1	ND		
Delaware	11	2	ND		9	ND		Somerset	3	1	ND		2	ND		
Elk	1	0	ND		1	ND		Sullivan	0	0	ND		0	ND		
Erie	8	5	ND		3	ND		Susquehanna	1	0	ND		1	ND		
Fayette	6	3	ND		3	ND		Tioga	3	0	ND		3	ND		
Forest	0	0	ND		0	ND		Union	0	0	ND		0	ND		
Franklin	7	3	ND		4	ND		Venango	1	0	ND		1	ND		
Fulton	0	0	ND		0	ND		Warren	0	0	ND		0	ND		
Greene	3	2	ND		1	ND		Washington	10	3	ND		7	ND		
Huntingdon	0	0	ND		0	ND		Wayne	3	0	ND		3	ND		
Indiana	5	2	ND		3	ND		Westmoreland	18	7	ND		11	ND		
Jefferson	0	0	ND		0	ND		Wyoming	0	0	ND		0	ND		
								York	10	3	ND		7	ND		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

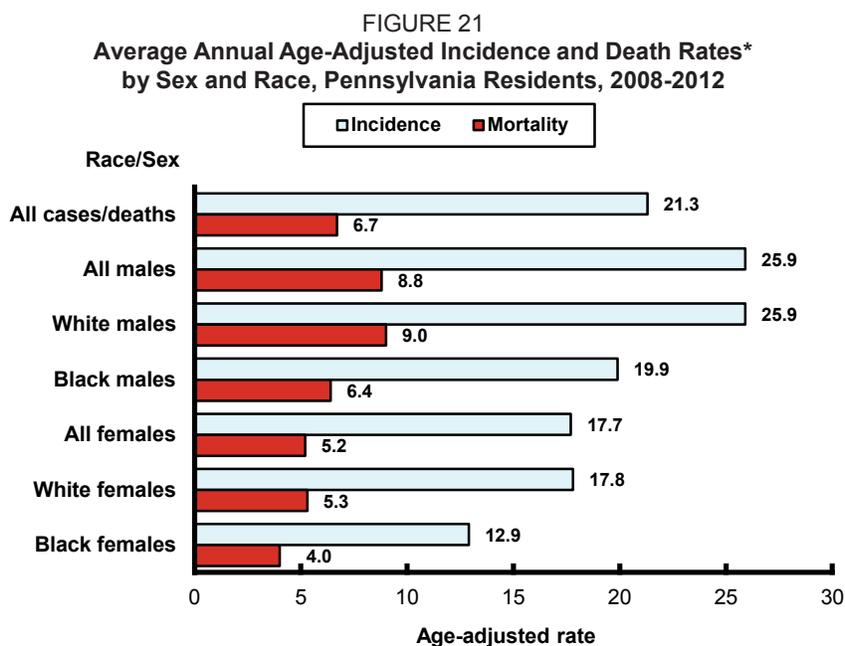
Non-Hodgkin Lymphoma

Data Highlights

Although little is understood about the causes of non-Hodgkin lymphoma, its study has aided researchers in understanding the immune response and carcinogenic mechanisms. Non-Hodgkin lymphoma is a type of cancer that originates in the immune system's lymphocytes (white blood cells). As the name suggests, non-Hodgkin lymphomas represent all lymphomas that are not classified as Hodgkin lymphomas. However, it should be noted that non-Hodgkin lymphomas include many distinct and unrelated types of lymphoma. The 2008-2012 average annual age-adjusted incidence rate was higher for males (25.9 per 100,000) than females (17.7). The rate for white males (25.9) was about 30 percent higher than the rate for black males (19.9).

There were 3,365 new cases of non-Hodgkin lymphoma diagnosed among Pennsylvania residents in 2012 - the same number of new cases observed in 2011 and also the highest number reported between 2003 and 2012. The annual age-adjusted incidence rates by sex and race for 2003 through 2012 have not changed much among white males and white females. Annual rates among black males decreased from 19.4 in 2003 to a low of 16.6 in 2005, followed by recent increases. The rate among black females reached a new high in 2009 (14.2) but has since been lower. The age-specific incidence curve, based on 2008-2012 data, began rising sharply around age 50, especially for white males and white females. During the period 2008-2012, about 88 percent of the cases were diagnosed among residents 50 years of age or older. In 2012, 49 percent of non-Hodgkin lymphoma were diagnosed at late stages (III/IV) of the disease, and 42 percent were diagnosed at early stages (I or II).

In 2012, there were 1,062 deaths among Pennsylvania residents, resulting in an age-adjusted rate of 6.4 per 100,000 – the lowest rate recorded for the 10-year period of 2003-2012. As seen with incidence rates, the 2008-2012 average annual age-adjusted death rates by sex and race were highest among white males (9.0). The average annual (2008-2012) age-specific death rates were highest among white males 65 years of age or older. During the 10-year period of 2003 through 2012, both white males and white females have experienced declines in age-adjusted death rates. The small annual numbers of deaths among black males and black females make the annual rates difficult to interpret.



Risk Factors

Excess exposure to benzene and certain herbicides and insecticides (weed and insect killing substances), exposure to radiation, immune system deficiency, HIV, autoimmune diseases, certain infections, organ transplants, and being overweight or obese are suggestive.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Non-Hodgkin Lymphoma: INCIDENCE

**TABLE
21-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

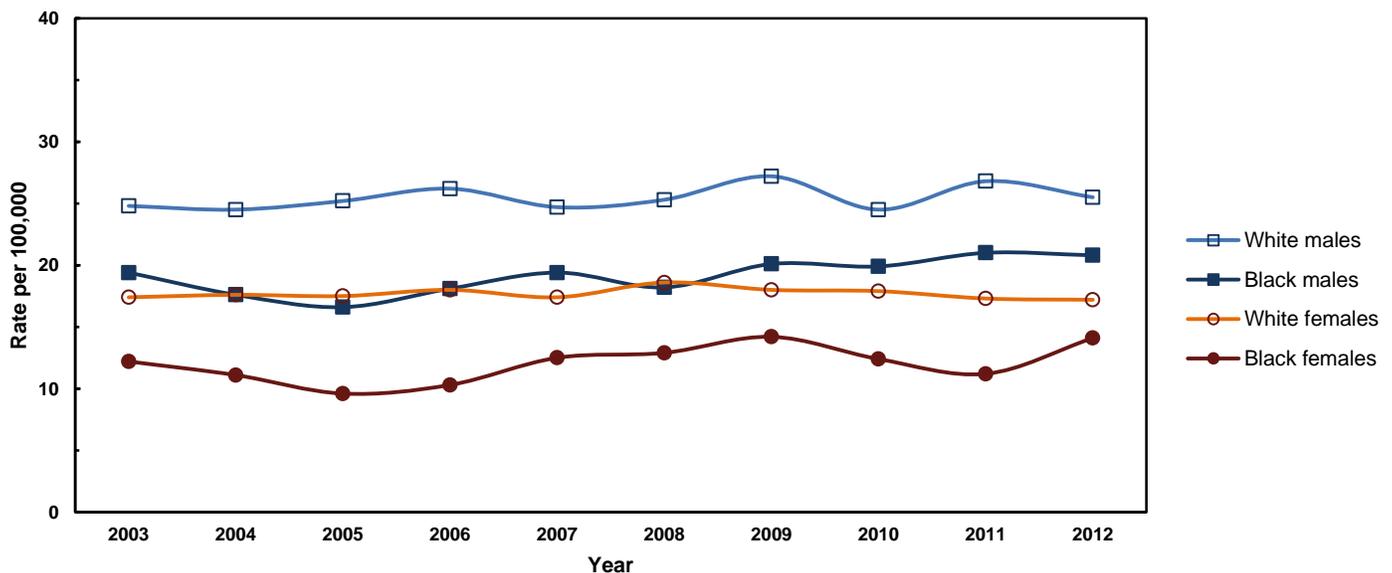
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	3,365	21.3 (20.6-22.0)	1,818	25.9 (24.7-27.1)	1,604	25.5 (24.3-26.7)	119	20.8 (17.1-24.5)	1,547	17.6 (16.7-18.5)	1,355	17.2 (16.3-18.1)	106	14.1 (11.4-16.8)
2011	3,365	21.4 (20.7-22.1)	1,880	26.8 (25.6-28.0)	1,696	26.8 (25.5-28.1)	117	21.0 (17.2-24.8)	1,485	17.1 (16.2-18.0)	1,345	17.3 (16.4-18.2)	84	11.2 (8.8-13.6)
2010	3,191	20.7 (20.0-21.4)	1,680	24.6 (23.4-25.8)	1,496	24.5 (23.3-25.7)	106	19.9 (16.1-23.7)	1,511	17.6 (16.7-18.5)	1,377	17.9 (17.0-18.8)	87	12.4 (9.8-15.0)
2009	3,302	22.0 (21.2-22.8)	1,773	27.2 (25.9-28.5)	1,607	27.2 (25.9-28.5)	108	20.1 (16.3-23.9)	1,529	18.0 (17.1-18.9)	1,383	18.0 (17.1-18.9)	95	14.2 (11.3-17.1)
2008	3,130	21.2 (20.5-21.9)	1,596	25.1 (23.9-26.3)	1,463	25.3 (24.0-26.6)	90	18.2 (14.4-22.0)	1,534	18.4 (17.5-19.3)	1,410	18.6 (17.6-19.6)	87	12.9 (10.2-15.6)
2007	2,982	20.4 (19.7-21.1)	1,548	24.6 (23.4-25.8)	1,410	24.7 (23.4-26.0)	96	19.4 (15.5-23.3)	1,433	17.3 (16.4-18.2)	1,308	17.4 (16.5-18.3)	82	12.5 (9.8-15.2)
2006	3,066	21.2 (20.4-22.0)	1,619	26.0 (24.7-27.3)	1,485	26.2 (24.9-27.5)	91	18.1 (14.4-21.8)	1,447	17.4 (16.5-18.3)	1,351	18.0 (17.0-19.0)	67	10.3 (7.8-12.8)
2005	2,983	20.5 (19.8-21.2)	1,559	25.0 (23.8-26.2)	1,434	25.2 (23.9-26.5)	84	16.6 (13.1-20.1)	1,424	17.1 (16.2-18.0)	1,323	17.5 (16.6-18.4)	62	9.6 (7.2-12.0)
2004	2,958	20.4 (19.7-21.1)	1,519	24.4 (23.2-25.6)	1,393	24.5 (23.2-25.8)	86	17.6 (13.9-21.3)	1,439	17.3 (16.4-18.2)	1,334	17.6 (16.7-18.5)	72	11.1 (8.5-13.7)
2003	2,939	20.4 (19.7-21.1)	1,518	24.7 (23.5-25.9)	1,392	24.8 (23.5-26.1)	93	19.4 (15.5-23.3)	1,421	17.2 (16.3-18.1)	1,304	17.4 (16.5-18.3)	78	12.2 (9.5-14.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
21-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Non-Hodgkin Lymphoma: INCIDENCE

**TABLE
21-B**

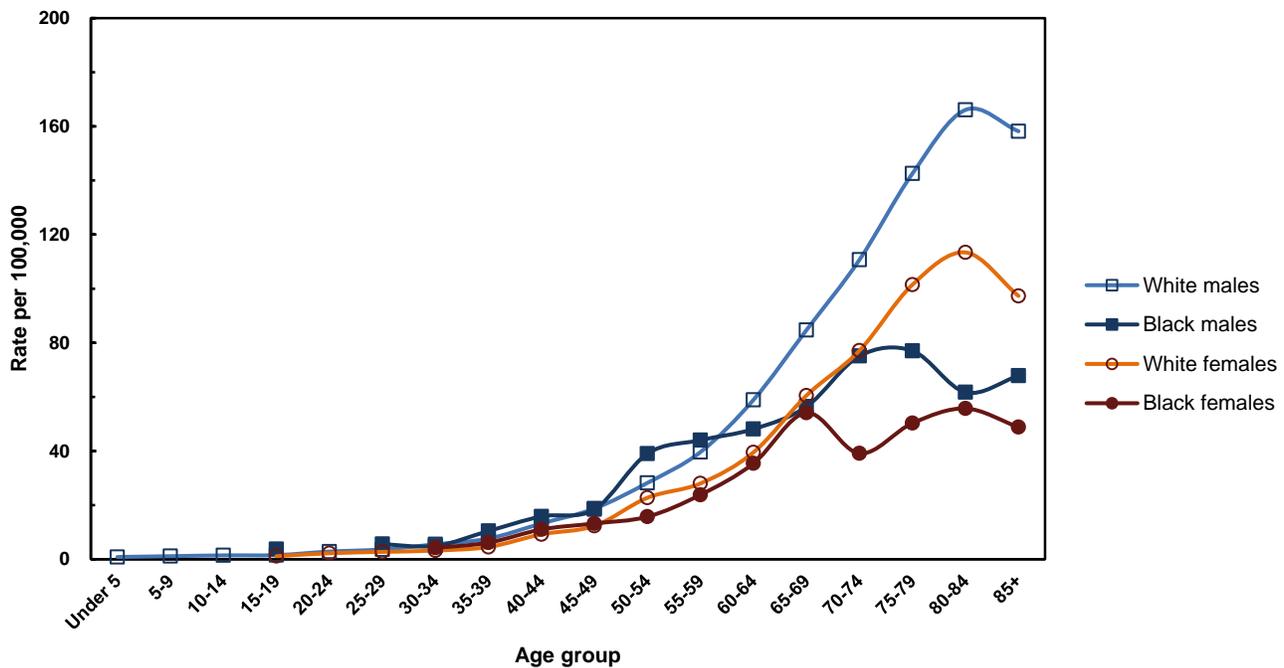
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	25.8	28.4	30.3	16.2	23.4	25.2	12.6
Under 5	0.5	0.7	0.8	ND	ND	ND	ND
5-9	0.7	1.1	1.1	ND	ND	ND	ND
10-14	1.2	1.5	1.4	ND	0.9	ND	ND
15-19	1.5	1.9	1.5	3.7	1.2	1.1	ND
20-24	2.5	2.9	2.8	ND	2.1	2.2	ND
25-29	3.4	4.0	3.6	5.6	2.7	2.7	ND
30-34	4.4	5.4	5.5	4.9	3.4	3.2	4.2
35-39	6.5	8.0	7.6	10.4	4.9	4.5	6.1
40-44	11.6	13.8	13.2	15.8	9.5	9.2	11.0
45-49	15.7	18.8	18.7	18.4	12.7	12.3	13.2
50-54	26.1	29.8	28.2	39.0	22.5	22.7	15.7
55-59	34.1	40.4	39.6	44.0	28.0	28.0	23.8
60-64	48.4	57.9	58.9	48.1	39.6	39.5	35.4
65-69	71.5	84.4	84.7	56.4	60.2	60.5	54.1
70-74	90.5	109.7	110.7	75.1	75.0	77.1	39.1
75-79	116.3	140.5	142.6	77.0	98.7	101.5	50.3
80-84	130.6	163.4	166.1	61.7	109.9	113.4	55.7
85+	114.7	155.8	158.2	67.8	95.8	97.3	48.8

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
21-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Non-Hodgkin Lymphoma: INCIDENCE

**TABLE
21-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

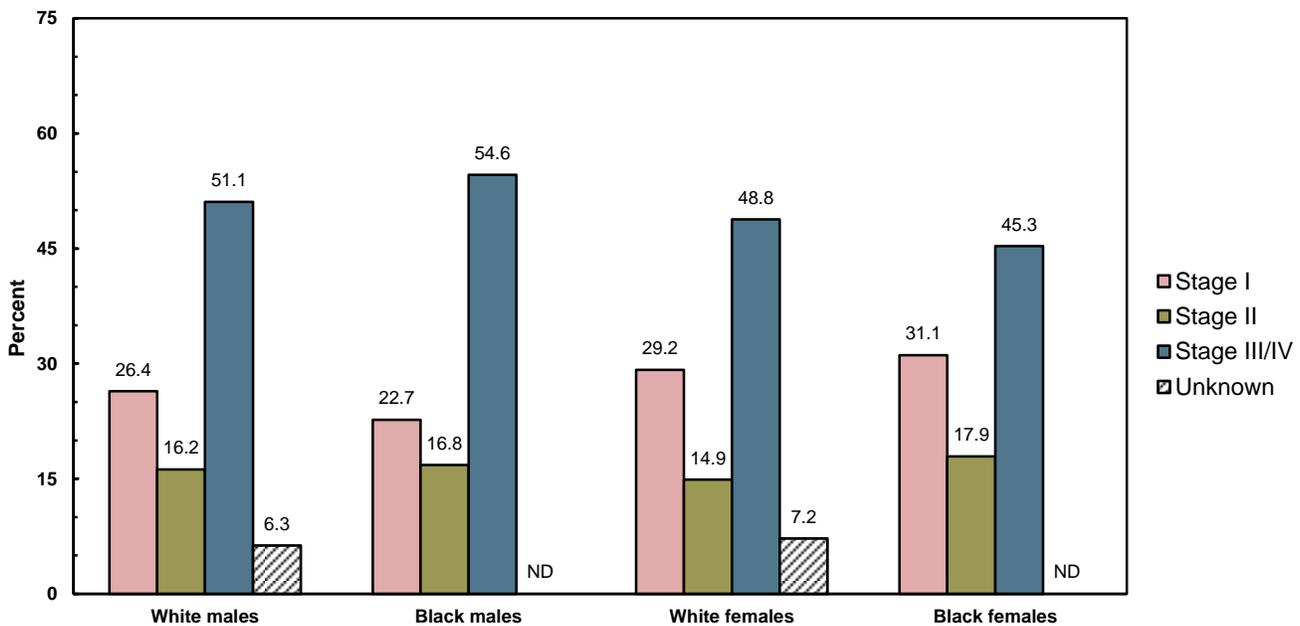
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	16,353	8,747	7,866	540	7,606	6,870	459
Under 5	19	13	12	1	6	6	0
5-9	27	22	17	3	5	2	3
10-14	48	30	23	7	18	9	4
15-19	69	43	28	12	26	20	3
20-24	112	66	51	9	46	39	6
25-29	131	79	57	14	52	41	7
30-34	166	102	85	11	64	48	10
35-39	246	152	120	22	94	70	14
40-44	497	293	237	35	204	166	27
45-49	725	428	367	41	297	245	33
50-54	1,236	692	576	81	544	475	38
55-59	1,476	853	744	75	623	546	49
60-64	1,787	1,026	940	62	761	671	59
65-69	1,999	1,099	1,004	48	900	810	64
70-74	1,988	1,077	993	47	911	844	37
75-79	2,100	1,066	997	35	1,034	967	39
80-84	1,938	937	888	19	1,001	950	34
85+	1,786	766	726	18	1,020	961	32

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
21-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Cases Microscopically Confirmed: 3,248 - 96.5%

Non-Hodgkin Lymphoma: MORTALITY

**TABLE
21-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

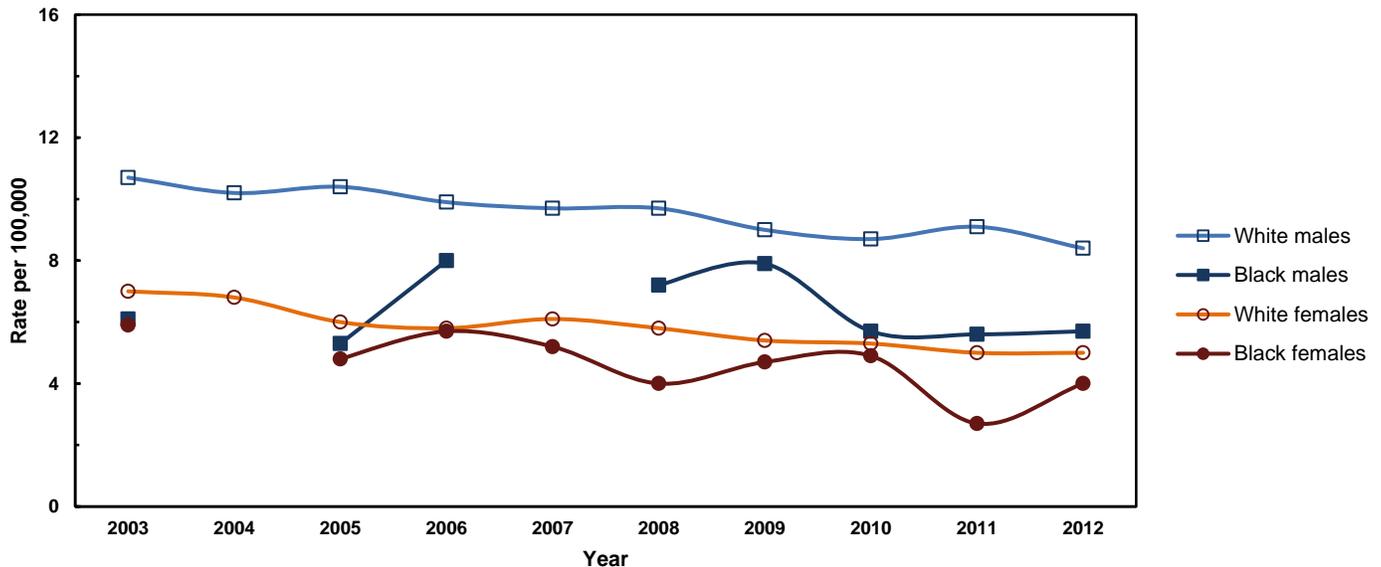
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	1,062	6.4 (6.0-6.8)	573	8.3 (7.6-9.0)	527	8.4 (7.7-9.1)	29	5.7 (3.6-7.8)	489	4.9 (4.5-5.3)	454	5.0 (4.5-5.5)	29	4.0 (2.5-5.5)
2011	1,075	6.5 (6.1-6.9)	611	8.9 (8.2-9.6)	571	9.1 (8.4-9.8)	30	5.6 (3.6-7.6)	464	4.8 (4.4-5.2)	441	5.0 (4.5-5.5)	20	2.7 (1.5-3.9)
2010	1,074	6.6 (6.2-7.0)	566	8.4 (7.7-9.1)	531	8.7 (8.0-9.4)	31	5.7 (3.7-7.7)	508	5.3 (4.8-5.8)	467	5.3 (4.8-5.8)	33	4.9 (3.2-6.6)
2009	1,074	6.8 (6.4-7.2)	571	8.9 (8.2-9.6)	530	9.0 (8.2-9.8)	38	7.9 (5.4-10.4)	503	5.3 (4.8-5.8)	468	5.4 (4.9-5.9)	32	4.7 (3.1-6.3)
2008	1,104	7.2 (6.8-7.6)	586	9.4 (8.6-10.2)	549	9.7 (8.9-10.5)	34	7.2 (4.8-9.6)	518	5.6 (5.1-6.1)	486	5.8 (5.3-6.3)	27	4.0 (2.5-5.5)
2007	1,109	7.4 (7.0-7.8)	561	9.3 (8.5-10.1)	538	9.7 (8.9-10.5)	19	ND	548	6.0 (5.5-6.5)	511	6.1 (5.6-6.6)	34	5.2 (3.5-6.9)
2006	1,091	7.4 (7.0-7.8)	575	9.7 (8.9-10.5)	537	9.9 (9.1-10.7)	36	8.0 (5.4-10.6)	516	5.7 (5.2-6.2)	479	5.8 (5.3-6.3)	37	5.7 (3.9-7.5)
2005	1,150	7.6 (7.2-8.0)	605	10.0 (9.2-10.8)	580	10.4 (9.6-11.2)	23	5.3 (3.1-7.5)	545	5.9 (5.4-6.4)	511	6.0 (5.5-6.5)	31	4.8 (3.1-6.5)
2004	1,179	7.8 (7.4-8.2)	596	9.8 (9.0-10.6)	573	10.2 (9.4-11.0)	19	ND	583	6.5 (6.0-7.0)	561	6.8 (6.2-7.4)	19	ND
2003	1,240	8.3 (7.8-8.8)	622	10.5 (9.7-11.3)	588	10.7 (9.8-11.6)	28	6.1 (3.8-8.4)	618	6.9 (6.4-7.4)	579	7.0 (6.4-7.6)	37	5.9 (4.0-7.8)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
21-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Non-Hodgkin Lymphoma: MORTALITY

**TABLE
21-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

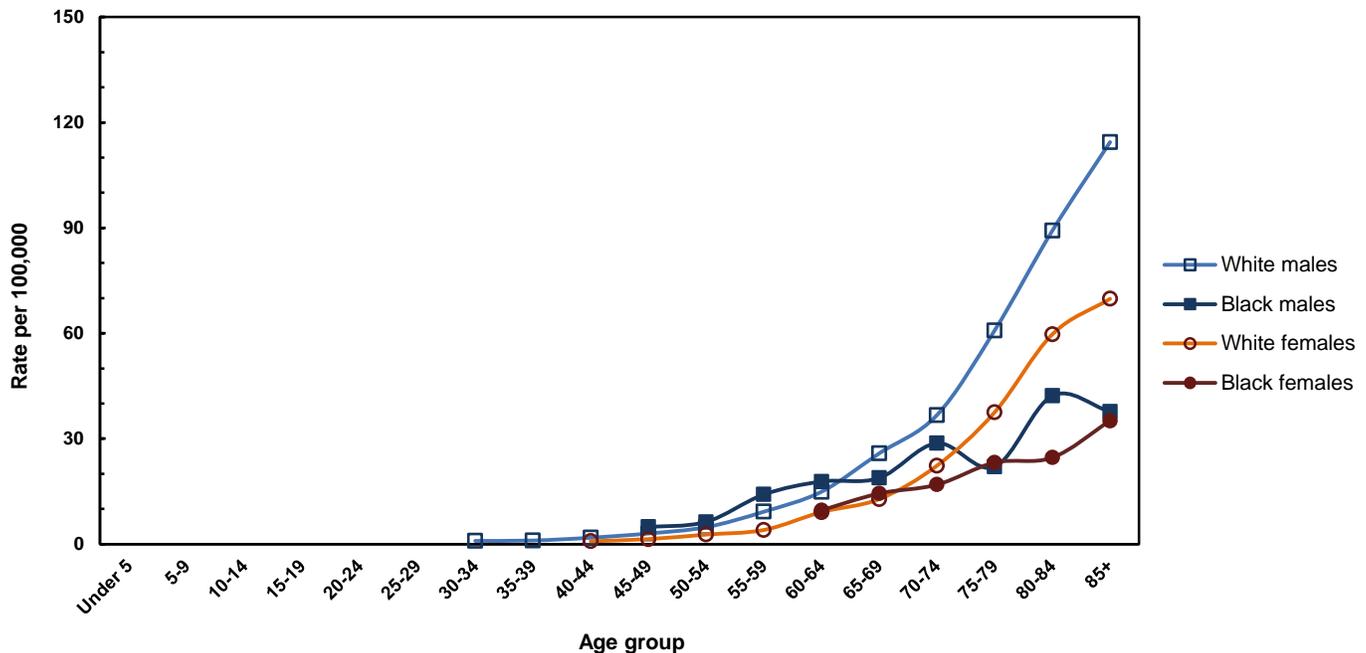
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	5,389	8.5	2,907	9.4	2,708	10.4	162	4.9	2,482	7.6	2,316	8.5	141	3.9
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	2	ND	2	ND	2	ND	0	ND	0	ND	0	ND	0	ND
10-14	3	ND	2	ND	2	ND	0	ND	1	ND	0	ND	1	ND
15-19	12	0.3	7	ND	5	ND	2	ND	5	ND	4	ND	1	ND
20-24	11	0.2	6	ND	4	ND	2	ND	5	ND	4	ND	0	ND
25-29	16	0.4	10	0.5	6	ND	4	ND	6	ND	4	ND	1	ND
30-34	24	0.6	18	1.0	14	0.9	3	ND	6	ND	4	ND	2	ND
35-39	31	0.8	21	1.1	15	1.0	6	ND	10	0.5	6	ND	4	ND
40-44	59	1.4	39	1.8	32	1.8	7	ND	20	0.9	14	0.8	6	ND
45-49	105	2.3	69	3.0	58	3.0	11	4.9	36	1.5	28	1.4	8	ND
50-54	181	3.8	115	4.9	98	4.8	13	6.3	66	2.7	57	2.7	8	ND
55-59	282	6.5	199	9.4	172	9.2	24	14.1	83	3.7	78	4.0	5	ND
60-64	440	11.9	265	15.0	238	14.9	23	17.8	175	9.1	155	9.1	16	9.6
65-69	515	18.4	325	24.9	306	25.8	16	18.8	190	12.7	171	12.8	17	14.4
70-74	619	28.2	354	36.1	329	36.7	18	28.7	265	21.8	244	22.3	16	16.9
75-79	824	45.6	443	58.4	425	60.8	10	22.0	381	36.4	357	37.5	18	23.2
80-84	1,010	68.0	493	85.9	477	89.2	13	42.2	517	56.8	500	59.7	15	24.6
85+	1,255	80.6	539	109.6	525	114.4	10	37.7	716	67.2	690	69.8	23	35.1

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
21-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Non-Hodgkin Lymphoma: INCIDENCE

**TABLE
21-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	16,353	8,747	25.9	(25.4-26.4)	7,606	17.7	(17.3-18.1)								
Adams	126	66	23.6	(17.9-29.3)	60	18.8	(14.0-23.6)	Juniata	38	19	ND		19	ND	
Allegheny	1,649	832	24.8	(23.1-26.5)	817	18.0	(16.8-19.2)	Lackawanna	266	153	25.9	(21.8-30.0)	113	13.6	(11.1-16.1)
Armstrong	95	59	28.5	(21.2-35.8)	36	12.9	(8.7-17.1)	Lancaster	649	347	25.8	(23.1-28.5)	302	18.4	(16.3-20.5)
Beaver	267	147	28.3	(23.7-32.9)	120	16.7	(13.7-19.7)	Lawrence	127	69	24.8	(18.9-30.7)	58	15.4	(11.4-19.4)
Bedford	75	36	22.0	(14.8-29.2)	39	21.5	(14.8-28.2)	Lebanon	175	92	23.8	(18.9-28.7)	83	17.8	(14.0-21.6)
Berks	532	278	26.4	(23.3-29.5)	254	19.3	(16.9-21.7)	Lehigh	454	241	26.8	(23.4-30.2)	213	18.7	(16.2-21.2)
Blair	199	108	29.5	(23.9-35.1)	91	18.4	(14.6-22.2)	Luzerne	471	248	26.1	(22.9-29.3)	223	17.9	(15.6-20.2)
Bradford	91	54	29.6	(21.7-37.5)	37	17.4	(11.8-23.0)	Lycoming	168	85	26.1	(20.6-31.6)	83	21.4	(16.8-26.0)
Bucks	886	482	28.5	(26.0-31.0)	404	19.5	(17.6-21.4)	McKean	54	32	25.9	(16.9-34.9)	22	14.2	(8.3-20.1)
Butler	271	139	27.1	(22.6-31.6)	132	21.5	(17.8-25.2)	Mercer	155	76	21.7	(16.8-26.6)	79	17.4	(13.6-21.2)
Cambria	223	119	27.5	(22.6-32.4)	104	18.9	(15.3-22.5)	Mifflin	56	31	22.0	(14.3-29.7)	25	15.1	(9.2-21.0)
Cameron	9	5	ND		4	ND		Monroe	169	94	22.2	(17.7-26.7)	75	15.8	(12.2-19.4)
Carbon	98	47	24.3	(17.4-31.2)	51	21.1	(15.3-26.9)	Montgomery	1,086	600	28.4	(26.1-30.7)	486	18.2	(16.6-19.8)
Centre	144	88	27.8	(22.0-33.6)	56	15.4	(11.4-19.4)	Montour	28	17	ND		11	ND	
Chester	595	329	26.7	(23.8-29.6)	266	18.2	(16.0-20.4)	Northampton	426	224	27.7	(24.1-31.3)	202	20.2	(17.4-23.0)
Clarion	62	38	32.6	(22.2-43.0)	24	18.3	(11.0-25.6)	Northumberland	138	78	27.6	(21.5-33.7)	60	16.5	(12.3-20.7)
Clearfield	118	67	27.2	(20.7-33.7)	51	17.3	(12.6-22.0)	Perry	66	38	33.0	(22.5-43.5)	28	20.6	(13.0-28.2)
Clinton	57	31	27.1	(17.6-36.6)	26	20.3	(12.5-28.1)	Philadelphia	1,496	791	24.6	(22.9-26.3)	705	15.8	(14.6-17.0)
Columbia	95	39	22.1	(15.2-29.0)	56	24.6	(18.2-31.0)	Pike	53	34	19.5	(12.9-26.1)	19	ND	
Crawford	108	64	24.9	(18.8-31.0)	44	15.0	(10.6-19.4)	Potter	21	15	ND		6	ND	
Cumberland	321	169	27.0	(22.9-31.1)	152	18.7	(15.7-21.7)	Schuylkill	198	106	24.0	(19.4-28.6)	92	15.8	(12.6-19.0)
Dauphin	306	170	25.9	(22.0-29.8)	136	15.7	(13.1-18.3)	Snyder	58	33	31.3	(20.6-42.0)	25	21.0	(12.8-29.2)
Delaware	665	360	26.4	(23.7-29.1)	305	16.7	(14.8-18.6)	Somerset	119	58	23.6	(17.5-29.7)	61	20.3	(15.2-25.4)
Elk	38	21	22.1	(12.6-31.6)	17	ND		Sullivan	16	10	ND		6	ND	
Erie	331	171	23.3	(19.8-26.8)	160	17.6	(14.9-20.3)	Susquehanna	57	28	20.4	(12.8-28.0)	29	18.7	(11.9-25.5)
Fayette	205	100	22.9	(18.4-27.4)	105	19.6	(15.9-23.3)	Tioga	57	30	22.7	(14.6-30.8)	27	16.3	(10.2-22.4)
Forest	6	4	ND		2	ND		Union	70	43	35.6	(25.0-46.2)	27	19.0	(11.8-26.2)
Franklin	202	115	27.9	(22.8-33.0)	87	16.9	(13.3-20.5)	Venango	78	40	23.3	(16.1-30.5)	38	18.4	(12.5-24.3)
Fulton	28	13	ND		15	ND		Warren	60	35	26.4	(17.7-35.1)	25	16.6	(10.1-23.1)
Greene	42	20	17.9	(10.1-25.7)	22	15.4	(9.0-21.8)	Washington	287	152	25.2	(21.2-29.2)	135	17.4	(14.5-20.3)
Huntingdon	63	28	20.2	(12.7-27.7)	35	22.9	(15.3-30.5)	Wayne	82	48	29.4	(21.1-37.7)	34	15.7	(10.4-21.0)
Indiana	90	51	21.5	(15.6-27.4)	39	12.6	(8.6-16.6)	Westmoreland	545	290	25.7	(22.7-28.7)	255	17.7	(15.5-19.9)
Jefferson	62	42	30.3	(21.1-39.5)	20	11.1	(6.2-16.0)	Wyoming	37	19	ND		18	ND	
								York	534	279	24.8	(21.9-27.7)	255	18.6	(16.3-20.9)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program.

Non-Hodgkin Lymphoma: MORTALITY

**TABLE
21-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,389	2,907	8.8	(8.5-9.1)	2,482	5.2	(5.0-5.4)								
Adams	33	17	ND		16	ND		Juniata	14	8	ND		6	ND	
Allegheny	580	298	8.7	(7.7-9.7)	282	5.5	(4.9-6.1)	Lackawanna	107	58	9.4	(7.0-11.8)	49	4.9	(3.5-6.3)
Armstrong	43	24	10.9	(6.5-15.3)	19	ND		Lancaster	206	122	9.1	(7.5-10.7)	84	4.5	(3.5-5.5)
Beaver	96	49	9.2	(6.6-11.8)	47	5.8	(4.1-7.5)	Lawrence	44	23	8.4	(5.0-11.8)	21	5.5	(3.1-7.9)
Bedford	32	16	ND		16	ND		Lebanon	53	27	6.8	(4.2-9.4)	26	5.2	(3.2-7.2)
Berks	152	85	8.3	(6.5-10.1)	67	4.4	(3.3-5.5)	Lehigh	148	85	9.8	(7.7-11.9)	63	5.0	(3.8-6.2)
Blair	87	54	15.0	(11.0-19.0)	33	5.5	(3.6-7.4)	Luzerne	154	80	8.8	(6.9-10.7)	74	5.3	(4.1-6.5)
Bradford	35	21	10.0	(5.7-14.3)	14	ND		Lycoming	43	23	7.2	(4.3-10.1)	20	4.5	(2.5-6.5)
Bucks	253	138	8.8	(7.3-10.3)	115	5.1	(4.2-6.0)	McKean	17	13	ND		4	ND	
Butler	83	41	8.4	(5.8-11.0)	42	6.3	(4.4-8.2)	Mercer	65	27	7.5	(4.7-10.3)	38	7.9	(5.4-10.4)
Cambria	72	36	8.5	(5.7-11.3)	36	5.1	(3.4-6.8)	Mifflin	20	13	ND		7	ND	
Cameron	2	1	ND		1	ND		Monroe	65	33	8.5	(5.6-11.4)	32	7.0	(4.6-9.4)
Carbon	26	19	ND		7	ND		Montgomery	335	170	8.1	(6.9-9.3)	165	5.5	(4.7-6.3)
Centre	47	26	9.0	(5.5-12.5)	21	5.0	(2.9-7.1)	Montour	11	6	ND		5	ND	
Chester	190	117	10.5	(8.6-12.4)	73	4.8	(3.7-5.9)	Northampton	113	64	8.1	(6.1-10.1)	49	4.6	(3.3-5.9)
Clarion	17	11	ND		6	ND		Northumberland	45	27	9.6	(6.0-13.2)	18	ND	
Clearfield	48	28	11.6	(7.3-15.9)	20	6.7	(3.8-9.6)	Perry	24	17	ND		7	ND	
Clinton	18	12	ND		6	ND		Philadelphia	478	248	8.0	(7.0-9.0)	230	4.8	(4.2-5.4)
Columbia	20	8	ND		12	ND		Pike	10	3	ND		7	ND	
Crawford	43	30	12.1	(7.8-16.4)	13	ND		Potter	2	1	ND		1	ND	
Cumberland	91	44	7.0	(4.9-9.1)	47	5.1	(3.6-6.6)	Schuylkill	69	38	8.6	(5.9-11.3)	31	4.9	(3.2-6.6)
Dauphin	97	57	9.2	(6.8-11.6)	40	4.4	(3.0-5.8)	Snyder	17	10	ND		7	ND	
Delaware	220	120	8.8	(7.2-10.4)	100	4.9	(3.9-5.9)	Somerset	40	22	8.7	(5.1-12.3)	18	ND	
Elk	12	6	ND		6	ND		Sullivan	3	0	ND		3	ND	
Erie	103	53	7.6	(5.6-9.6)	50	4.5	(3.3-5.7)	Susquehanna	22	13	ND		9	ND	
Fayette	77	45	10.6	(7.5-13.7)	32	5.1	(3.3-6.9)	Tioga	23	14	ND		9	ND	
Forest	4	2	ND		2	ND		Union	14	8	ND		6	ND	
Franklin	67	42	10.0	(7.0-13.0)	25	4.3	(2.6-6.0)	Venango	36	18	ND		18	ND	
Fulton	6	2	ND		4	ND		Warren	29	17	ND		12	ND	
Greene	24	14	ND		10	ND		Washington	115	55	8.9	(6.5-11.3)	60	6.8	(5.1-8.5)
Huntingdon	22	10	ND		12	ND		Wayne	28	14	ND		14	ND	
Indiana	48	25	10.4	(6.3-14.5)	23	6.5	(3.8-9.2)	Westmoreland	176	87	7.6	(6.0-9.2)	89	5.4	(4.3-6.5)
Jefferson	34	17	ND		17	ND		Wyoming	17	15	ND		2	ND	
								York	164	80	7.4	(5.8-9.0)	84	5.9	(4.6-7.2)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

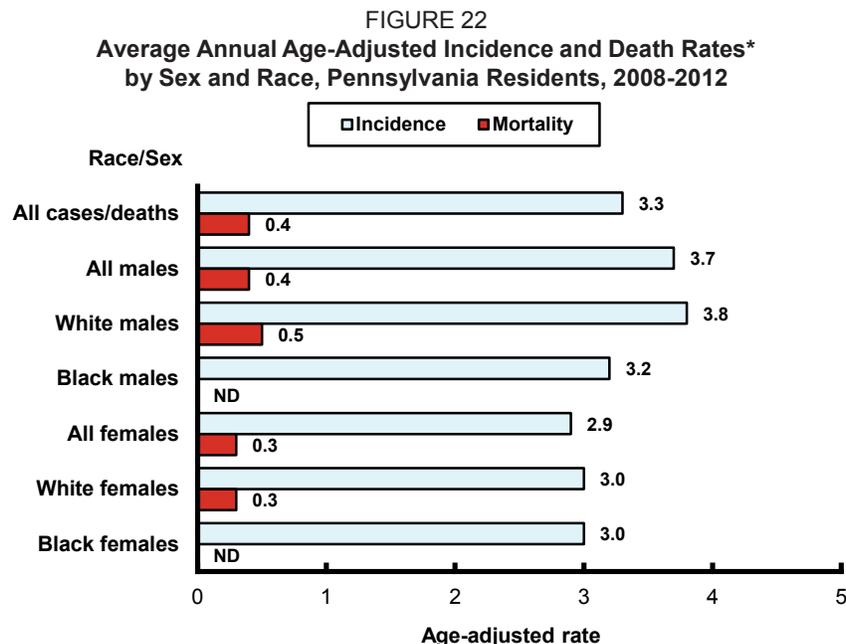
Hodgkin Lymphoma

Data Highlights

Hodgkin lymphoma is a group of similar cancers that originate in the immune system's lymphocytes (white blood cells). The 2008-2012 average annual age-adjusted incidence rate for Hodgkin lymphoma was 28 percent higher for males (3.7 per 100,000) than for females (2.9). The highest average annual rate for 2008-2012 was among white males (3.8 per 100,000) and lowest among both white females and black females (3.0). In 2012, there were 428 cases of Hodgkin lymphoma diagnosed among Pennsylvania residents and reported to the Pennsylvania Cancer Registry, resulting in an age-adjusted rate of 3.2.

In Pennsylvania, approximately 48 percent of Hodgkin lymphoma cases diagnosed during the 2008-2012 period were under the age of 40. The curves for the age-specific incidence rates were bimodal; the rates rose sharply in young adults, peaking for the 25-29 age group, then falling to lows for 50-54 age group before peaking again in the 80-84 age range. In 2012, about 43 percent of the Hodgkin lymphoma cases were diagnosed at stage III/IV of the disease, and about 3 percent of the cases were unstaged.

The 2008-2012 average annual age-adjusted death rate for Hodgkin lymphoma was higher among males (0.4 per 100,000) than females (0.3). In 2012, there were 64 Hodgkin lymphoma deaths among residents, which resulted in an age-adjusted death rate of 0.4. The age-adjusted death rate has remained constant at 0.4 since 2007. Due to the small numbers of deaths for all four sex/race groups, the annual death rates were unstable, making interpretation of trends difficult. However, United States mortality data (Surveillance, Epidemiology and End Results program) showed a decreasing trend of annual age-adjusted death rates from 1.3 per 100,000 in 1975 to 0.3 per 100,000 in 2012.



*per 100,000 2000 U.S. standard million population
Note: Rates based on less than 20 events are statistically unreliable and are not displayed (ND).

Risk Factors

Etiological factors are unknown, although mononucleosis (mono/Epstein-Barr virus), HIV infection, higher socioeconomic background, and a family history of Hodgkin lymphoma are suggestive.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Hodgkin Lymphoma: INCIDENCE

**TABLE
22-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

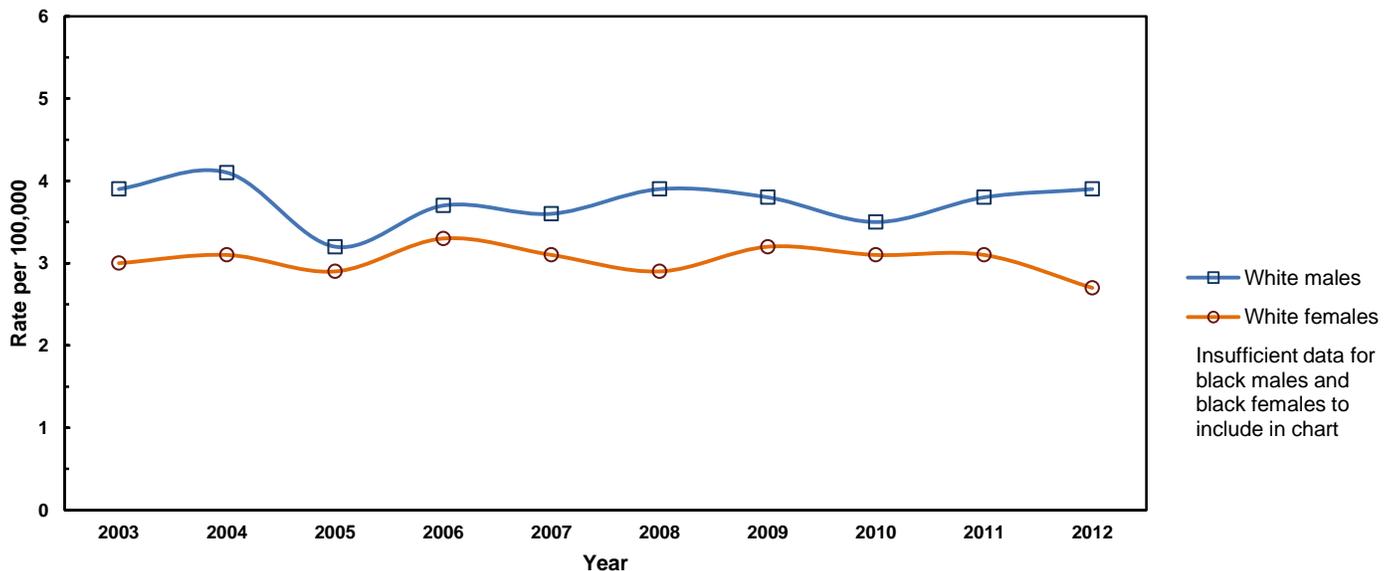
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	428	3.2 (2.9-3.5)	242	3.7 (3.2-4.2)	214	3.9 (3.4-4.4)	17	ND	185	2.8 (2.4-3.2)	150	2.7 (2.3-3.1)	27	3.6 (2.2-5.0)
2011	429	3.3 (3.0-3.6)	233	3.7 (3.2-4.2)	205	3.8 (3.3-4.3)	25	3.9 (2.4-5.4)	196	3.0 (2.6-3.4)	170	3.1 (2.6-3.6)	20	2.8 (1.6-4.0)
2010	411	3.1 (2.8-3.4)	219	3.4 (2.9-3.9)	187	3.5 (3.0-4.0)	24	3.7 (2.2-5.2)	192	2.9 (2.5-3.3)	170	3.1 (2.6-3.6)	15	ND
2009	446	3.5 (3.2-3.8)	236	3.9 (3.4-4.4)	206	3.8 (3.3-4.3)	23	3.7 (2.2-5.2)	210	3.2 (2.8-3.6)	179	3.2 (2.7-3.7)	26	3.7 (2.3-5.1)
2008	418	3.3 (3.0-3.6)	230	3.7 (3.2-4.2)	209	3.9 (3.4-4.4)	14	ND	188	2.9 (2.5-3.3)	163	2.9 (2.5-3.3)	20	3.0 (1.7-4.3)
2007	418	3.3 (3.0-3.6)	218	3.5 (3.0-4.0)	194	3.6 (3.1-4.1)	17	ND	200	3.0 (2.6-3.4)	178	3.1 (2.6-3.6)	19	ND
2006	421	3.3 (3.0-3.6)	215	3.5 (3.0-4.0)	194	3.7 (3.2-4.2)	19	ND	206	3.1 (2.7-3.5)	185	3.3 (2.8-3.8)	16	ND
2005	393	3.1 (2.8-3.4)	199	3.3 (2.8-3.8)	173	3.2 (2.7-3.7)	21	3.7 (2.1-5.3)	194	3.0 (2.6-3.4)	166	2.9 (2.5-3.3)	23	3.4 (2.0-4.8)
2004	436	3.5 (3.2-3.8)	248	4.1 (3.6-4.6)	218	4.1 (3.6-4.6)	22	3.5 (2.0-5.0)	188	2.9 (2.5-3.3)	174	3.1 (2.6-3.6)	11	ND
2003	433	3.4 (3.1-3.7)	229	3.8 (3.3-4.3)	202	3.9 (3.4-4.4)	18	ND	204	3.0 (2.6-3.4)	178	3.0 (2.6-3.4)	23	3.5 (2.1-4.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
22-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Hodgkin Lymphoma: INCIDENCE

**TABLE
22-B**

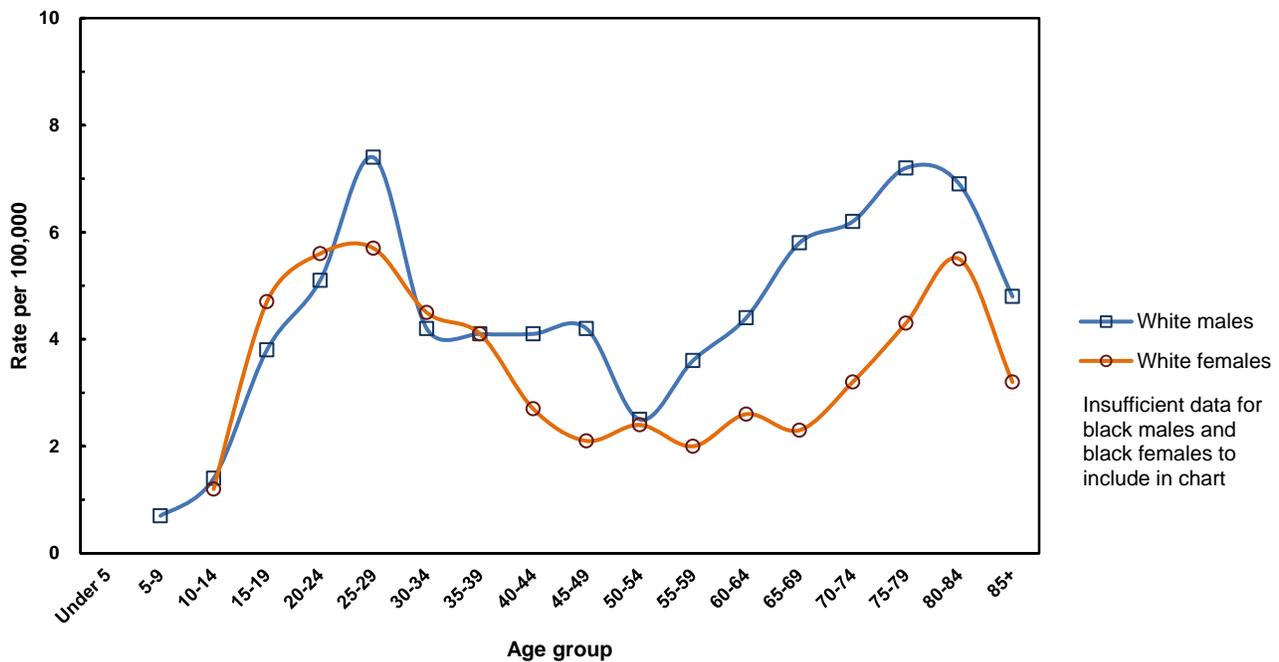
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	3.4	3.8	3.9	3.1	3.0	3.1	3.0
Under 5	ND						
5-9	0.5	0.8	0.7	ND	ND	ND	ND
10-14	1.2	1.1	1.4	ND	1.2	1.2	ND
15-19	4.1	3.7	3.8	4.3	4.5	4.7	3.9
20-24	4.7	4.5	5.1	ND	5.0	5.6	ND
25-29	6.3	7.1	7.4	6.0	5.3	5.7	5.1
30-34	4.2	3.9	4.2	ND	4.5	4.5	5.4
35-39	4.2	4.3	4.1	6.2	4.1	4.1	4.8
40-44	3.3	3.8	4.1	ND	2.8	2.7	ND
45-49	3.3	4.4	4.2	5.8	2.2	2.1	ND
50-54	2.6	2.7	2.5	ND	2.5	2.4	ND
55-59	2.8	3.7	3.6	ND	2.0	2.0	ND
60-64	3.4	4.3	4.4	ND	2.6	2.6	ND
65-69	4.0	5.7	5.8	ND	2.5	2.3	ND
70-74	4.3	5.9	6.2	ND	3.0	3.2	ND
75-79	5.4	6.9	7.2	ND	4.3	4.3	ND
80-84	6.0	6.8	6.9	ND	5.5	5.5	ND
85+	3.5	4.5	4.8	ND	3.1	3.2	ND

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
22-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Hodgkin Lymphoma: INCIDENCE

**TABLE
22-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

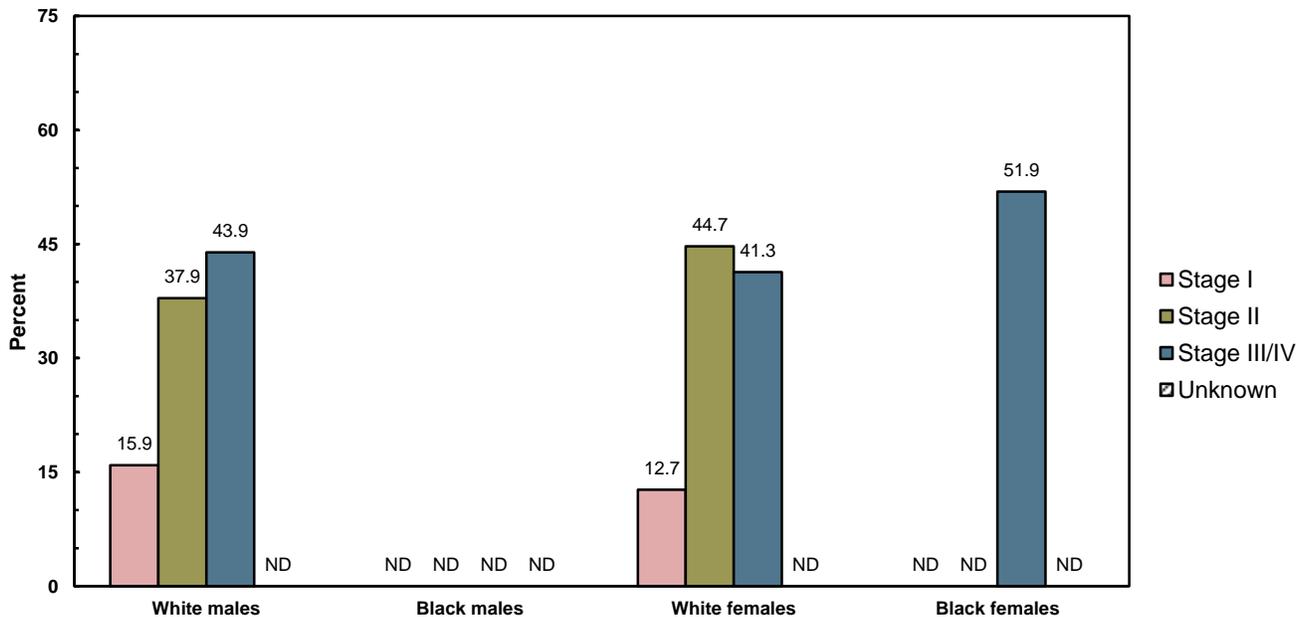
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	2,132	1,160	1,021	103	971	832	108
Under 5	1	0	0	0	1	0	0
5-9	20	16	10	4	4	3	1
10-14	47	23	22	1	24	19	5
15-19	184	84	69	14	100	84	12
20-24	210	101	92	6	109	98	8
25-29	243	140	118	15	102	87	13
30-34	157	74	65	7	83	67	13
35-39	159	81	65	13	78	64	11
40-44	141	81	73	6	60	49	9
45-49	150	99	83	13	51	41	9
50-54	123	62	52	8	61	51	8
55-59	123	78	68	5	45	39	3
60-64	126	76	70	4	50	45	4
65-69	112	74	69	3	38	31	6
70-74	95	58	56	1	37	35	2
75-79	97	52	50	1	45	41	3
80-84	89	39	37	2	50	46	1
85+	55	22	22	0	33	32	0

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
22-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Cases Microscopically Confirmed: 424 - 99.1%

Hodgkin Lymphoma: MORTALITY

**TABLE
22-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

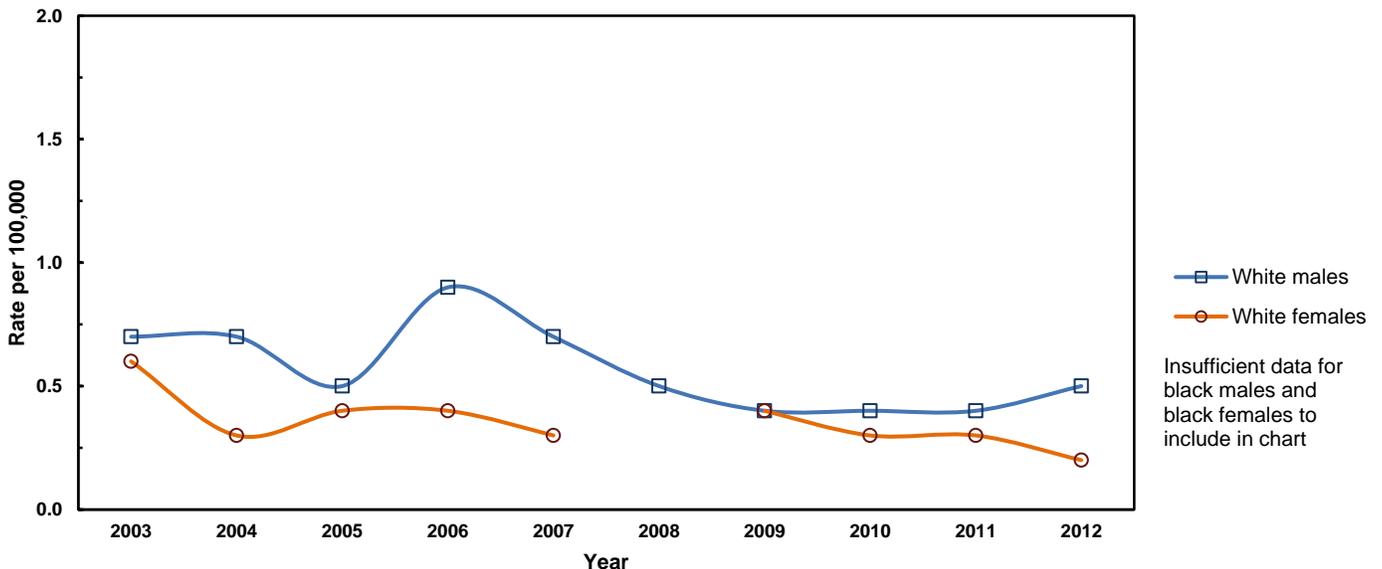
Year	All Deaths*		Males						Females					
	No.	Rate (CI)	All Races*		White		Black		All Races*		White		Black	
			No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	64	0.4 (0.3-0.5)	35	0.5 (0.3-0.7)	33	0.5 (0.3-0.7)	1	ND	29	0.3 (0.2-0.4)	20	0.2 (0.1-0.3)	6	ND
2011	54	0.4 (0.3-0.5)	26	0.4 (0.2-0.6)	24	0.4 (0.2-0.6)	2	ND	28	0.3 (0.2-0.4)	27	0.3 (0.2-0.4)	1	ND
2010	53	0.4 (0.3-0.5)	27	0.4 (0.2-0.6)	25	0.4 (0.2-0.6)	2	ND	26	0.3 (0.2-0.4)	24	0.3 (0.2-0.4)	2	ND
2009	57	0.4 (0.3-0.5)	27	0.4 (0.2-0.6)	25	0.4 (0.2-0.6)	2	ND	30	0.4 (0.3-0.5)	27	0.4 (0.2-0.6)	3	ND
2008	52	0.4 (0.3-0.5)	28	0.4 (0.3-0.5)	27	0.5 (0.3-0.7)	1	ND	24	0.3 (0.2-0.4)	19	ND	3	ND
2007	62	0.4 (0.3-0.5)	37	0.6 (0.4-0.8)	36	0.7 (0.5-0.9)	1	ND	25	0.3 (0.2-0.4)	23	0.3 (0.2-0.4)	2	ND
2006	85	0.6 (0.5-0.7)	53	0.9 (0.7-1.1)	47	0.9 (0.6-1.2)	6	ND	32	0.4 (0.3-0.5)	28	0.4 (0.3-0.5)	3	ND
2005	62	0.4 (0.3-0.5)	33	0.5 (0.3-0.7)	29	0.5 (0.3-0.7)	4	ND	29	0.4 (0.3-0.5)	28	0.4 (0.3-0.5)	1	ND
2004	68	0.5 (0.4-0.6)	41	0.7 (0.5-0.9)	38	0.7 (0.5-0.9)	3	ND	27	0.4 (0.2-0.6)	23	0.3 (0.2-0.4)	3	ND
2003	85	0.6 (0.5-0.7)	42	0.7 (0.5-0.9)	37	0.7 (0.5-0.9)	4	ND	43	0.6 (0.4-0.8)	40	0.6 (0.4-0.8)	3	ND

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
22-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Hodgkin Lymphoma: MORTALITY

**TABLE
22-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

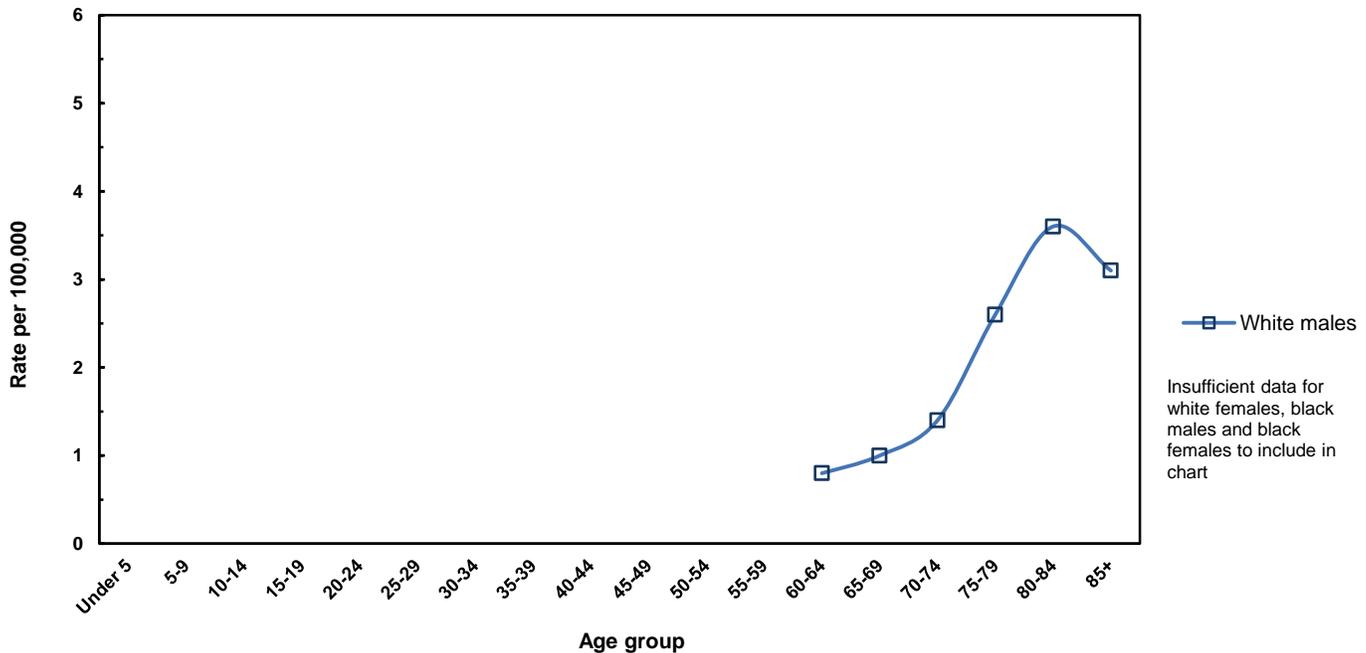
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	280	0.4	143	0.5	134	0.5	8	ND	137	0.4	117	0.4	15	0.4
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	4	ND	2	ND	1	ND	1	ND	2	ND	2	ND	0	ND
20-24	14	0.3	7	ND	6	ND	0	ND	7	ND	6	ND	1	ND
25-29	7	ND	5	ND	3	ND	2	ND	2	ND	0	ND	1	ND
30-34	13	0.3	7	ND	5	ND	2	ND	6	ND	4	ND	2	ND
35-39	7	ND	2	ND	2	ND	0	ND	5	ND	5	ND	0	ND
40-44	14	0.3	9	ND	9	ND	0	ND	5	ND	3	ND	2	ND
45-49	16	0.3	7	ND	7	ND	0	ND	9	ND	8	ND	1	ND
50-54	15	0.3	9	ND	8	ND	1	ND	6	ND	6	ND	0	ND
55-59	16	0.4	6	ND	5	ND	1	ND	10	0.5	6	ND	3	ND
60-64	27	0.7	12	0.7	12	0.8	0	ND	15	0.8	15	0.9	0	ND
65-69	24	0.9	13	1.0	12	1.0	1	ND	11	0.7	10	0.7	0	ND
70-74	20	0.9	13	1.3	13	1.4	0	ND	7	ND	5	ND	2	ND
75-79	27	1.5	18	2.4	18	2.6	0	ND	9	ND	7	ND	1	ND
80-84	41	2.8	19	3.3	19	3.6	0	ND	22	2.4	21	2.5	0	ND
85+	35	2.2	14	2.8	14	3.1	0	ND	21	2.0	19	1.9	2	ND

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
22-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Hodgkin Lymphoma: INCIDENCE

**TABLE
22-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	2,132	1,160	3.7	(3.5-3.9)	971	2.9	(2.7-3.1)									
Adams	11	5	ND		6	ND		Juniata	2	0	ND		2	ND		
Allegheny	190	102	3.4	(2.7-4.1)	87	2.7	(2.1-3.3)	Lackawanna	31	18	ND		13	ND		
Armstrong	8	3	ND		5	ND		Lancaster	72	40	3.2	(2.2-4.2)	32	2.5	(1.6-3.4)	
Beaver	34	20	5.0	(2.8-7.2)	14	ND		Lawrence	13	5	ND		8	ND		
Bedford	9	5	ND		4	ND		Lebanon	16	14	ND		2	ND		
Berks	81	40	3.9	(2.7-5.1)	41	3.7	(2.6-4.8)	Lehigh	75	42	4.9	(3.4-6.4)	33	3.8	(2.5-5.1)	
Blair	18	11	ND		7	ND		Luzerne	65	35	4.2	(2.8-5.6)	30	3.3	(2.1-4.5)	
Bradford	10	3	ND		7	ND		Lycoming	24	16	ND		8	ND		
Bucks	112	59	3.8	(2.8-4.8)	53	3.6	(2.6-4.6)	McKean	7	6	ND		1	ND		
Butler	30	15	ND		15	ND		Mercer	16	11	ND		5	ND		
Cambria	18	11	ND		7	ND		Mifflin	4	2	ND		2	ND		
Cameron	3	2	ND		1	ND		Monroe	30	18	ND		12	ND		
Carbon	16	10	ND		6	ND		Montgomery	150	74	3.8	(2.9-4.7)	76	3.7	(2.9-4.5)	
Centre	28	16	ND		12	ND		Montour	4	4	ND		0	ND		
Chester	75	35	2.8	(1.9-3.7)	40	3.1	(2.1-4.1)	Northampton	46	27	3.7	(2.3-5.1)	19	ND		
Clarion	2	2	ND		0	ND		Northumberland	19	12	ND		7	ND		
Clearfield	10	5	ND		5	ND		Perry	4	3	ND		1	ND		
Clinton	5	2	ND		3	ND		Philadelphia	242	136	3.9	(3.2-4.6)	106	2.5	(2.0-3.0)	
Columbia	14	8	ND		6	ND		Pike	9	5	ND		4	ND		
Crawford	11	8	ND		3	ND		Potter	6	4	ND		2	ND		
Cumberland	44	23	4.0	(2.4-5.6)	21	3.5	(2.0-5.0)	Schuylkill	28	14	ND		14	ND		
Dauphin	60	27	4.1	(2.6-5.6)	33	5.1	(3.4-6.8)	Snyder	5	3	ND		2	ND		
Delaware	92	52	3.9	(2.8-5.0)	40	2.8	(1.9-3.7)	Somerset	24	15	ND		9	ND		
Elk	4	3	ND		1	ND		Sullivan	5	3	ND		2	ND		
Erie	36	21	2.9	(1.7-4.1)	15	ND		Susquehanna	2	1	ND		1	ND		
Fayette	31	19	ND		12	ND		Tioga	3	1	ND		2	ND		
Forest	0	0	ND		0	ND		Union	6	1	ND		5	ND		
Franklin	20	11	ND		9	ND		Venango	7	3	ND		4	ND		
Fulton	4	3	ND		1	ND		Warren	9	5	ND		4	ND		
Greene	7	1	ND		6	ND		Washington	46	24	4.7	(2.8-6.6)	22	4.1	(2.4-5.8)	
Huntingdon	8	4	ND		4	ND		Wayne	9	4	ND		5	ND		
Indiana	18	7	ND		11	ND		Westmoreland	60	33	3.7	(2.4-5.0)	27	3.1	(1.9-4.3)	
Jefferson	7	6	ND		1	ND		Wyoming	2	1	ND		1	ND		
								York	75	41	4.0	(2.8-5.2)	34	3.0	(2.0-4.0)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program.

Hodgkin Lymphoma: MORTALITY

**TABLE
22-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	280	143	0.4	(0.3-0.5)	137	0.3	(0.2-0.4)									
Adams	0	0	ND		0	ND		Juniata	0	0	ND		0	ND		
Allegheny	24	14	ND		10	ND		Lackawanna	6	3	ND		3	ND		
Armstrong	3	1	ND		2	ND		Lancaster	5	1	ND		4	ND		
Beaver	5	2	ND		3	ND		Lawrence	4	1	ND		3	ND		
Bedford	1	1	ND		0	ND		Lebanon	4	4	ND		0	ND		
Berks	14	7	ND		7	ND		Lehigh	8	6	ND		2	ND		
Blair	3	3	ND		0	ND		Luzerne	10	6	ND		4	ND		
Bradford	1	0	ND		1	ND		Lycoming	3	2	ND		1	ND		
Bucks	16	8	ND		8	ND		McKean	1	1	ND		0	ND		
Butler	3	0	ND		3	ND		Mercer	3	3	ND		0	ND		
Cambria	2	0	ND		2	ND		Mifflin	1	0	ND		1	ND		
Cameron	0	0	ND		0	ND		Monroe	4	1	ND		3	ND		
Carbon	1	0	ND		1	ND		Montgomery	16	5	ND		11	ND		
Centre	2	0	ND		2	ND		Montour	0	0	ND		0	ND		
Chester	8	4	ND		4	ND		Northampton	4	3	ND		1	ND		
Clarion	0	0	ND		0	ND		Northumberland	2	1	ND		1	ND		
Clearfield	1	1	ND		0	ND		Perry	1	1	ND		0	ND		
Clinton	1	1	ND		0	ND		Philadelphia	29	14	ND		15	ND		
Columbia	0	0	ND		0	ND		Pike	0	0	ND		0	ND		
Crawford	0	0	ND		0	ND		Potter	1	1	ND		0	ND		
Cumberland	5	1	ND		4	ND		Schuylkill	7	3	ND		4	ND		
Dauphin	9	5	ND		4	ND		Snyder	0	0	ND		0	ND		
Delaware	10	5	ND		5	ND		Somerset	1	0	ND		1	ND		
Elk	2	2	ND		0	ND		Sullivan	0	0	ND		0	ND		
Erie	10	6	ND		4	ND		Susquehanna	1	0	ND		1	ND		
Fayette	4	2	ND		2	ND		Tioga	0	0	ND		0	ND		
Forest	0	0	ND		0	ND		Union	3	2	ND		1	ND		
Franklin	2	1	ND		1	ND		Venango	1	1	ND		0	ND		
Fulton	1	0	ND		1	ND		Warren	0	0	ND		0	ND		
Greene	1	1	ND		0	ND		Washington	7	5	ND		2	ND		
Huntingdon	2	1	ND		1	ND		Wayne	1	0	ND		1	ND		
Indiana	4	2	ND		2	ND		Westmoreland	8	4	ND		4	ND		
Jefferson	3	2	ND		1	ND		Wyoming	1	0	ND		1	ND		
								York	10	5	ND		5	ND		

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Myeloma

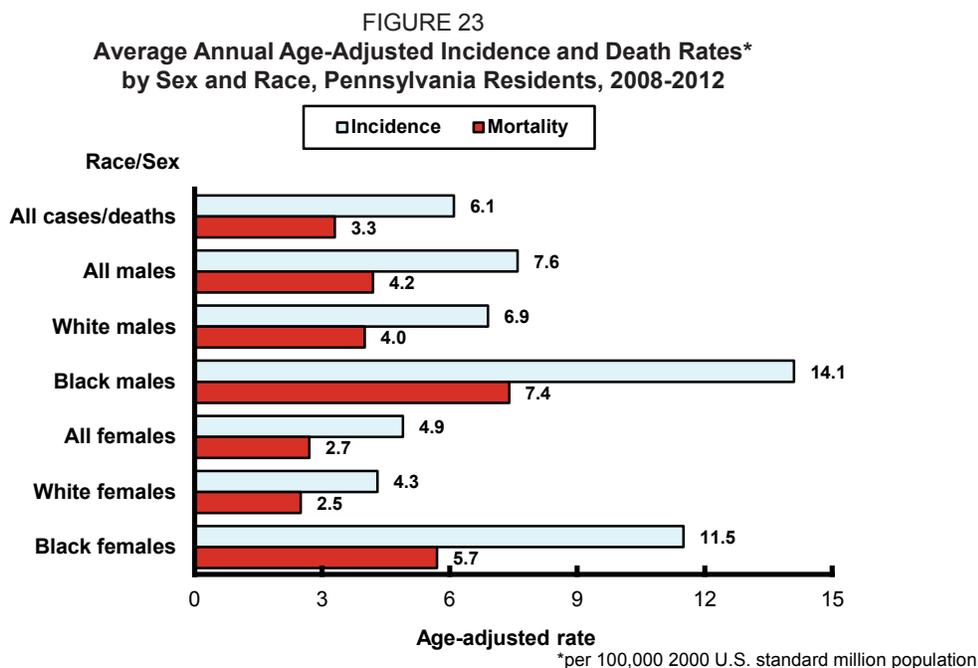
Data Highlights

Myeloma is a group of cancers that affect the immune system's plasma cells, often resulting in the formation of tumors in the bone marrow. The 2008-2012 average annual age-adjusted incidence rates for Pennsylvania showed that blacks had higher risk for myeloma compared to whites. The average annual rates for black male and black female residents were 14.1 per 100,000 and 11.5, respectively, compared to 6.9 for white males and 4.3 for white females. The 2008-2012 average annual age-adjusted incidence rate for males (7.6) was about 55 percent higher than the rate for females (4.9).

Myeloma accounted for 1,000 cancer cases diagnosed among Pennsylvania residents in 2012, resulting in an age-adjusted rate of 6.3 – the highest annual rate during the period 2003 to 2012. Annual age-adjusted incidence rates between 2003 and 2012 showed very small increases for white males and females. Among black males and females, the annual age-adjusted rates have been somewhat higher in recent years. Like many types of cancer, myeloma has a strong association with age. Approximately 77 percent of the cases diagnosed during the five-year period of 2008-2012 were for Pennsylvania residents 60 years of age or older. The average annual (2008-2012) age-specific incidence rates for myeloma were consistently higher among black males and females, compared to whites.

The death rates for myeloma were similar to the incidence rates, largely because nearly all cases were diagnosed at an advanced stage of the disease (see NOTE: below). Ninety-five percent of myelomas were diagnosed at the distant stage in 2012. In 2012, there were 517 deaths among Pennsylvania residents due to myeloma — a decrease from the 2011 figure of 563. This resulted in an age-adjusted rate of 3.1 per 100,000, down slightly from 3.4 in 2011. During the 10-year period, 2003-2012, myeloma death rates among the four sex/race groups displayed no evident trends. The average annual (2008-2012) age-specific death rates showed that black males and black females generally had the highest rates.

NOTE: This site includes myeloma and plasmacytomas (plasma cell tumors, malignant). Myeloma cancers are always staged as distant. However, plasmacytomas can be staged as other than distant.



Risk Factors

Etiological factors are unknown, although blacks are predisposed. Family history of myeloma, radiation exposure, obesity, and plasma cell diseases (e.g., solitary plasmacytoma, monoclonal gammopathy of undetermined significance – MGUS) are suggestive.

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Myeloma: INCIDENCE

**TABLE
23-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

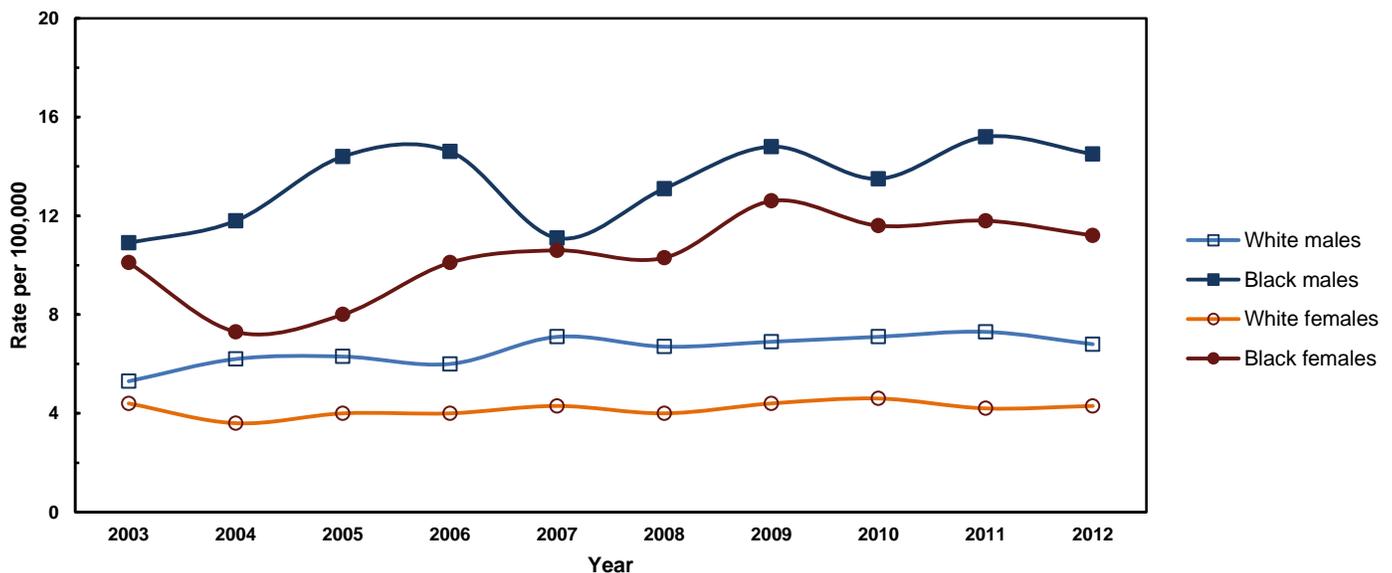
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2012	1,000	6.3 (5.9-6.7)	553	7.8 (7.1-8.5)	437	6.8 (6.2-7.4)	75	14.5 (11.2-17.8)	447	5.0 (4.5-5.5)	338	4.3 (3.8-4.8)	82	11.2 (8.8-13.6)
2011	986	6.2 (5.8-6.6)	549	7.9 (7.2-8.6)	461	7.3 (6.6-8.0)	75	15.2 (11.8-18.6)	437	4.9 (4.4-5.4)	339	4.2 (3.8-4.6)	85	11.8 (9.3-14.3)
2010	988	6.2 (5.8-6.6)	522	7.5 (6.9-8.1)	444	7.1 (6.4-7.8)	65	13.5 (10.2-16.8)	466	5.2 (4.7-5.7)	372	4.6 (4.1-5.1)	83	11.6 (9.1-14.1)
2009	948	6.1 (5.7-6.5)	506	7.6 (6.9-8.3)	420	6.9 (6.2-7.6)	67	14.8 (11.3-18.3)	442	5.1 (4.6-5.6)	349	4.4 (3.9-4.9)	86	12.6 (9.9-15.3)
2008	857	5.6 (5.2-6.0)	471	7.3 (6.6-8.0)	396	6.7 (6.0-7.4)	60	13.1 (9.8-16.4)	386	4.5 (4.1-4.9)	315	4.0 (3.6-4.4)	68	10.3 (7.9-12.7)
2007	879	5.9 (5.5-6.3)	459	7.4 (6.7-8.1)	400	7.1 (6.4-7.8)	50	11.1 (8.0-14.2)	420	4.9 (4.4-5.4)	343	4.3 (3.8-4.8)	70	10.6 (8.1-13.1)
2006	800	5.4 (5.0-5.8)	415	6.6 (6.0-7.2)	343	6.0 (5.4-6.6)	65	14.6 (11.1-18.1)	385	4.5 (4.1-4.9)	312	4.0 (3.6-4.4)	65	10.1 (7.6-12.6)
2005	806	5.4 (5.0-5.8)	432	6.9 (6.2-7.6)	361	6.3 (5.7-6.9)	62	14.4 (10.8-18.0)	374	4.3 (3.9-4.7)	316	4.0 (3.6-4.4)	51	8.0 (5.8-10.2)
2004	748	5.0 (4.6-5.4)	411	6.6 (6.0-7.2)	352	6.2 (5.6-6.8)	50	11.8 (8.5-15.1)	337	3.9 (3.5-4.3)	282	3.6 (3.2-4.0)	46	7.3 (5.2-9.4)
2003	767	5.2 (4.8-5.6)	352	5.7 (5.1-6.3)	300	5.3 (4.7-5.9)	45	10.9 (7.7-14.1)	415	4.9 (4.4-5.4)	342	4.4 (3.9-4.9)	64	10.1 (7.6-12.6)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
23-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Myeloma: INCIDENCE

**TABLE
23-B**

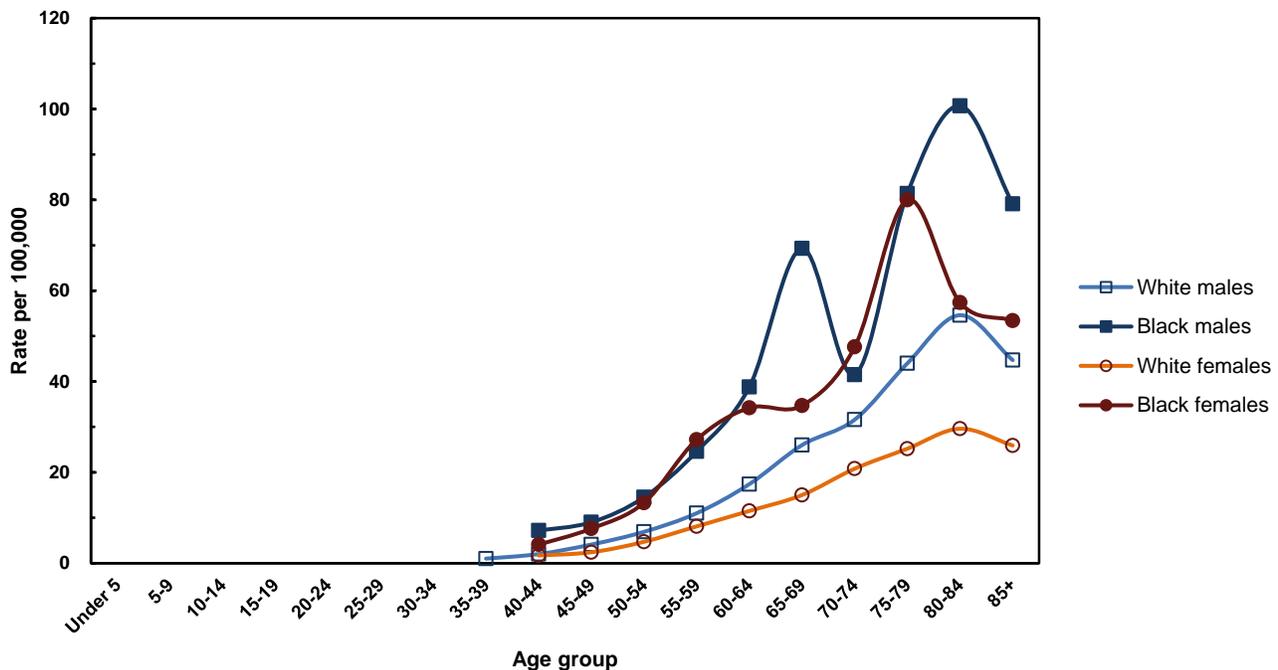
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	7.6	8.4	8.3	10.3	6.7	6.3	11.1
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	ND	ND	ND	ND	ND	ND	ND
30-34	0.4	ND	ND	ND	ND	ND	ND
35-39	0.9	1.0	1.0	ND	0.8	ND	ND
40-44	2.2	2.5	2.0	7.2	1.9	1.7	4.1
45-49	3.7	4.6	4.1	9.0	2.9	2.4	7.6
50-54	6.5	7.6	6.9	14.5	5.5	4.7	13.3
55-59	10.9	12.1	11.0	24.6	9.7	8.1	27.2
60-64	16.1	19.0	17.4	38.8	13.4	11.5	34.2
65-69	22.6	29.4	26.0	69.3	16.7	15.0	34.7
70-74	27.5	32.6	31.6	41.5	23.4	20.8	47.6
75-79	37.3	47.8	44.0	81.4	29.6	25.2	80.0
80-84	42.6	59.1	54.6	100.7	32.2	29.6	57.4
85+	34.5	48.0	44.7	79.1	28.3	25.9	53.4

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
23-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Myeloma: INCIDENCE

**TABLE
23-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

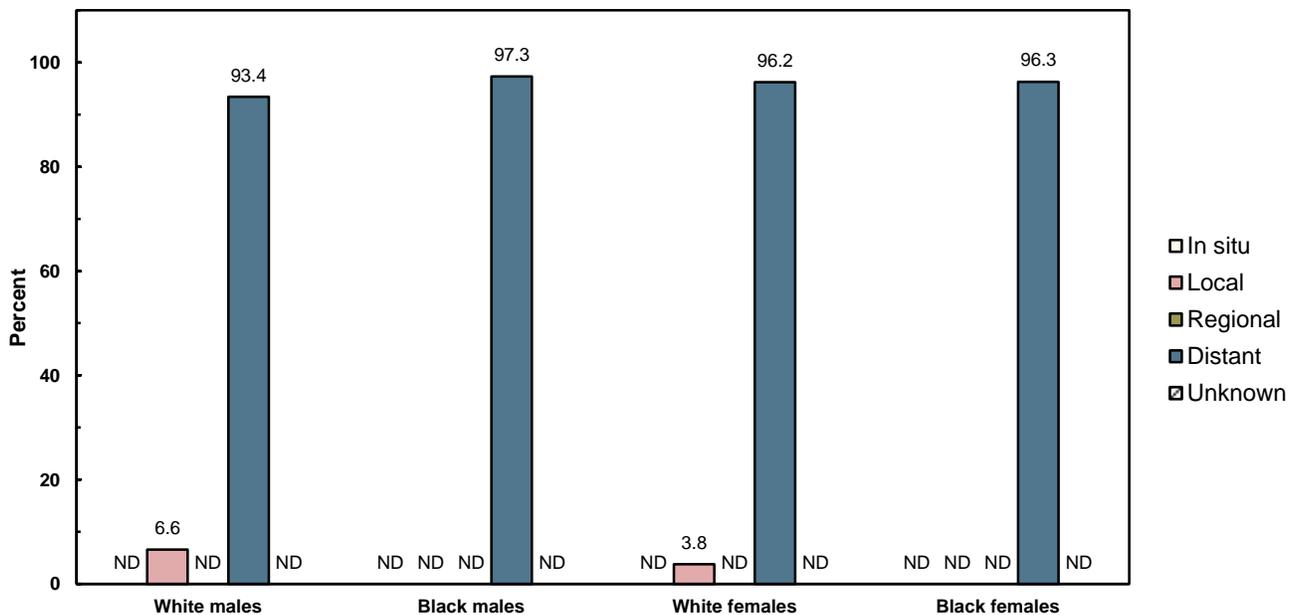
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	4,779	2,601	2,158	342	2,178	1,713	404
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	1	1	0	1	0	0	0
20-24	2	2	2	0	0	0	0
25-29	3	2	1	1	1	1	0
30-34	15	7	3	4	8	2	5
35-39	35	19	15	4	16	9	7
40-44	96	54	36	16	42	30	10
45-49	172	104	81	20	68	48	19
50-54	309	177	140	30	132	98	32
55-59	472	256	207	42	216	157	56
60-64	594	336	277	50	258	195	57
65-69	632	383	308	59	249	201	41
70-74	604	320	283	26	284	228	45
75-79	673	363	308	37	310	240	62
80-84	632	339	292	31	293	248	35
85+	537	236	205	21	301	256	35

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
23-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Cases Microscopically Confirmed: 899 - 89.9%

Myeloma: MORTALITY

**TABLE
23-D**

**Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

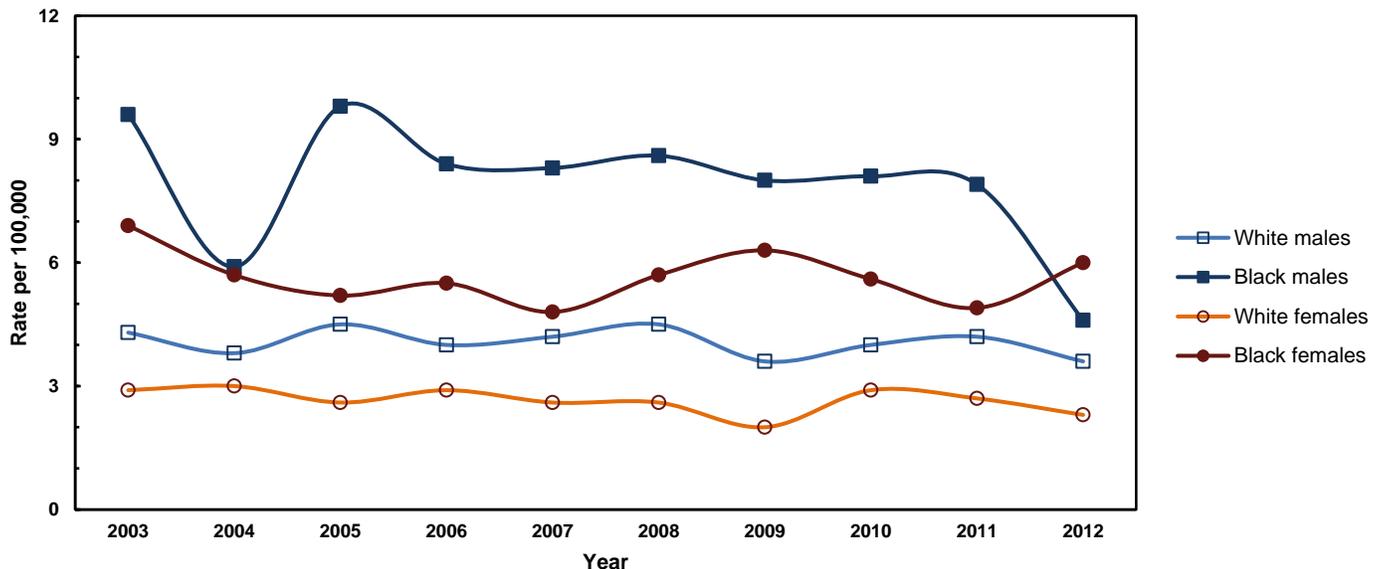
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	517	3.1 (2.8-3.4)	267	3.8 (3.3-4.3)	234	3.6 (3.1-4.1)	21	4.6 (2.6-6.6)	250	2.7 (2.4-3.0)	197	2.3 (2.0-2.6)	45	6.0 (4.2-7.8)
2011	563	3.4 (3.1-3.7)	292	4.3 (3.8-4.8)	256	4.2 (3.7-4.7)	35	7.9 (5.3-10.5)	271	2.8 (2.5-3.1)	231	2.7 (2.4-3.0)	38	4.9 (3.3-6.5)
2010	573	3.5 (3.2-3.8)	280	4.2 (3.7-4.7)	244	4.0 (3.5-4.5)	35	8.1 (5.4-10.8)	293	3.1 (2.7-3.5)	253	2.9 (2.5-3.3)	39	5.6 (3.8-7.4)
2009	462	3.0 (2.7-3.3)	252	3.9 (3.4-4.4)	211	3.6 (3.1-4.1)	37	8.0 (5.4-10.6)	210	2.3 (2.0-2.6)	167	2.0 (1.7-2.3)	43	6.3 (4.4-8.2)
2008	550	3.6 (3.3-3.9)	292	4.6 (4.1-5.1)	257	4.5 (3.9-5.1)	35	8.6 (5.8-11.4)	258	2.8 (2.5-3.1)	218	2.6 (2.3-2.9)	38	5.7 (3.9-7.5)
2007	512	3.4 (3.1-3.7)	263	4.4 (3.9-4.9)	228	4.2 (3.7-4.7)	34	8.3 (5.5-11.1)	249	2.8 (2.5-3.1)	216	2.6 (2.3-2.9)	32	4.8 (3.1-6.5)
2006	526	3.5 (3.2-3.8)	253	4.2 (3.7-4.7)	216	4.0 (3.5-4.5)	37	8.4 (5.7-11.1)	273	3.0 (2.6-3.4)	235	2.9 (2.5-3.3)	36	5.5 (3.7-7.3)
2005	542	3.6 (3.3-3.9)	291	4.8 (4.2-5.4)	251	4.5 (3.9-5.1)	39	9.8 (6.7-12.9)	251	2.8 (2.5-3.1)	217	2.6 (2.3-2.9)	33	5.2 (3.4-7.0)
2004	531	3.5 (3.2-3.8)	241	3.9 (3.4-4.4)	215	3.8 (3.3-4.3)	23	5.9 (3.5-8.3)	290	3.2 (2.8-3.6)	253	3.0 (2.6-3.4)	36	5.7 (3.8-7.6)
2003	559	3.7 (3.4-4.0)	277	4.6 (4.1-5.1)	239	4.3 (3.8-4.8)	38	9.6 (6.5-12.7)	282	3.1 (2.7-3.5)	239	2.9 (2.5-3.3)	43	6.9 (4.8-9.0)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
23-D**

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Myeloma: MORTALITY

**TABLE
23-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

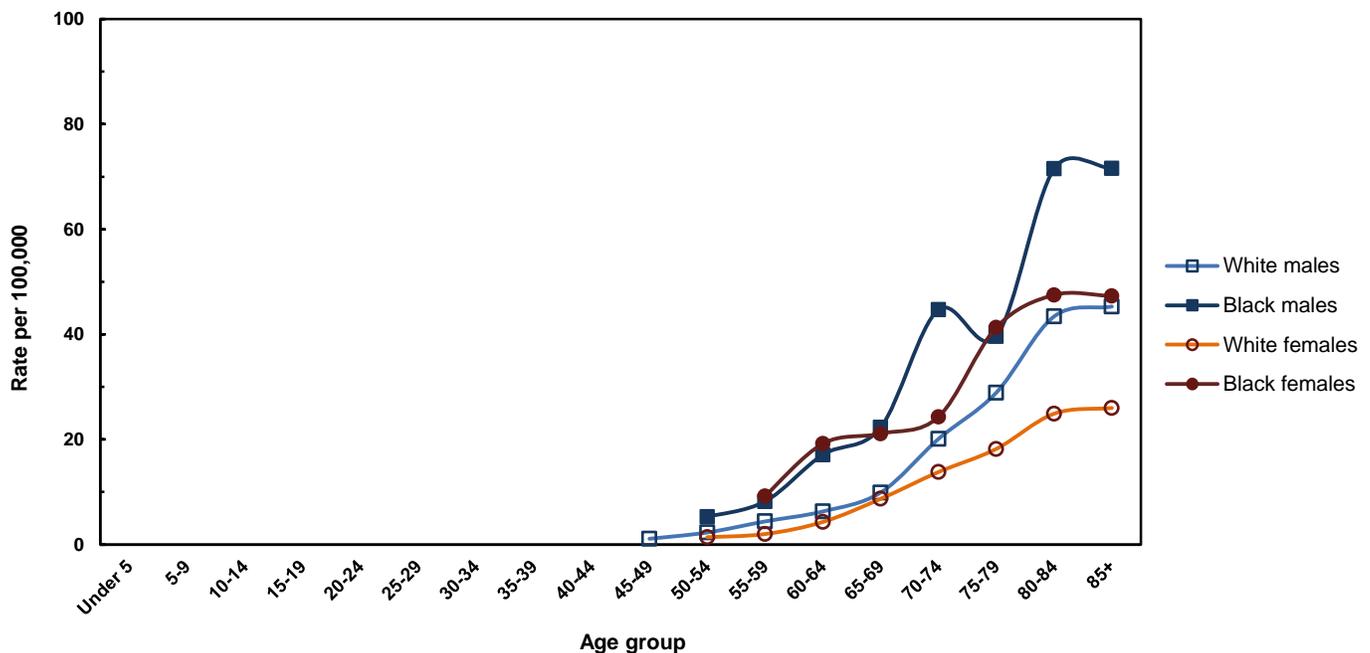
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	2,665	4.2	1,383	4.5	1,202	4.6	163	4.9	1,282	4.0	1,066	3.9	203	5.6
Under 5	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
20-24	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0	ND
25-29	1	ND	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND
30-34	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
35-39	5	ND	2	ND	2	ND	0	ND	3	ND	2	ND	1	ND
40-44	17	0.4	9	ND	7	ND	2	ND	8	ND	8	ND	0	ND
45-49	42	0.9	30	1.3	22	1.1	7	ND	12	0.5	8	ND	2	ND
50-54	97	2.0	59	2.5	47	2.3	11	5.3	38	1.6	29	1.4	9	ND
55-59	155	3.6	97	4.6	82	4.4	14	8.2	58	2.6	39	2.0	19	9.2
60-64	230	6.2	124	7.0	101	6.3	22	17.1	106	5.5	73	4.3	32	19.2
65-69	284	10.2	138	10.6	117	9.9	19	22.3	146	9.8	117	8.7	25	21.1
70-74	386	17.6	208	21.2	180	20.1	28	44.7	178	14.7	151	13.8	23	24.3
75-79	429	23.7	224	29.5	202	28.9	18	39.6	205	19.6	173	18.2	32	41.3
80-84	494	33.3	256	44.6	232	43.4	22	71.5	238	26.1	209	24.9	29	47.5
85+	523	33.6	233	47.4	208	45.3	19	71.6	290	27.2	257	26.0	31	47.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
23-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Myeloma: INCIDENCE

**TABLE
23-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	4,779	2,601	7.6	(7.3-7.9)	2,178	4.9	(4.7-5.1)									
Adams	36	21	7.4	(4.2-10.6)	15	ND		Juniata	8	6	ND		2	ND		
Allegheny	499	267	7.7	(6.8-8.6)	232	4.9	(4.3-5.5)	Lackawanna	79	49	7.9	(5.7-10.1)	30	3.6	(2.3-4.9)	
Armstrong	32	22	10.0	(5.8-14.2)	10	ND		Lancaster	163	92	6.8	(5.4-8.2)	71	4.0	(3.1-4.9)	
Beaver	78	37	7.1	(4.8-9.4)	41	6.2	(4.3-8.1)	Lawrence	46	24	8.6	(5.2-12.0)	22	5.6	(3.3-7.9)	
Bedford	19	13	ND		6	ND		Lebanon	47	31	8.2	(5.3-11.1)	16	ND		
Berks	144	80	7.4	(5.8-9.0)	64	5.0	(3.8-6.2)	Lehigh	139	79	8.7	(6.8-10.6)	60	5.2	(3.9-6.5)	
Blair	45	27	7.1	(4.4-9.8)	18	ND		Luzerne	133	83	8.7	(6.8-10.6)	50	4.0	(2.9-5.1)	
Bradford	24	13	ND		11	ND		Lycoming	58	30	9.4	(6.0-12.8)	28	6.3	(4.0-8.6)	
Bucks	220	123	7.2	(5.9-8.5)	97	4.7	(3.8-5.6)	McKean	13	8	ND		5	ND		
Butler	62	34	6.8	(4.5-9.1)	28	4.3	(2.7-5.9)	Mercer	35	18	ND		17	ND		
Cambria	55	22	4.9	(2.9-6.9)	33	5.6	(3.7-7.5)	Mifflin	15	7	ND		8	ND		
Cameron	0	0	ND		0	ND		Monroe	52	24	5.8	(3.5-8.1)	28	5.6	(3.5-7.7)	
Carbon	24	12	ND		12	ND		Montgomery	271	147	6.7	(5.6-7.8)	124	4.6	(3.8-5.4)	
Centre	28	17	ND		11	ND		Montour	8	1	ND		7	ND		
Chester	186	106	8.7	(7.0-10.4)	80	5.4	(4.2-6.6)	Northampton	133	70	9.0	(6.9-11.1)	63	6.2	(4.7-7.7)	
Clarion	14	10	ND		4	ND		Northumberland	33	19	ND		14	ND		
Clearfield	37	19	ND		18	ND		Perry	20	12	ND		8	ND		
Clinton	12	8	ND		4	ND		Philadelphia	645	322	10.2	(9.1-11.3)	323	7.2	(6.4-8.0)	
Columbia	24	13	ND		11	ND		Pike	34	22	11.3	(6.6-16.0)	12	ND		
Crawford	34	16	ND		18	ND		Potter	8	6	ND		2	ND		
Cumberland	90	50	7.7	(5.6-9.8)	40	4.7	(3.2-6.2)	Schuylkill	57	35	7.5	(5.0-10.0)	22	3.9	(2.3-5.5)	
Dauphin	76	39	6.2	(4.3-8.1)	37	4.6	(3.1-6.1)	Snyder	10	5	ND		5	ND		
Delaware	212	115	8.2	(6.7-9.7)	97	5.1	(4.1-6.1)	Somerset	43	16	ND		27	8.6	(5.4-11.8)	
Elk	17	13	ND		4	ND		Sullivan	4	3	ND		1	ND		
Erie	91	45	6.3	(4.5-8.1)	46	5.0	(3.6-6.4)	Susquehanna	11	6	ND		5	ND		
Fayette	57	30	6.5	(4.2-8.8)	27	5.0	(3.1-6.9)	Tioga	14	8	ND		6	ND		
Forest	1	1	ND		0	ND		Union	15	9	ND		6	ND		
Franklin	59	34	8.1	(5.4-10.8)	25	4.7	(2.9-6.5)	Venango	27	12	ND		15	ND		
Fulton	4	2	ND		2	ND		Warren	13	8	ND		5	ND		
Greene	14	7	ND		7	ND		Washington	64	42	6.5	(4.5-8.5)	22	2.5	(1.5-3.5)	
Huntingdon	14	6	ND		8	ND		Wayne	20	11	ND		9	ND		
Indiana	36	23	9.8	(5.8-13.8)	13	ND		Westmoreland	155	80	6.9	(5.4-8.4)	75	4.8	(3.7-5.9)	
Jefferson	17	8	ND		9	ND		Wyoming	14	10	ND		4	ND		
								York	131	73	6.4	(4.9-7.9)	58	4.1	(3.0-5.2)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Myeloma: MORTALITY

**TABLE
23-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,665	1,383	4.2	(4.0-4.4)	1,282	2.7	(2.6-2.8)								
Adams	16	9	ND		7	ND		Juniata	6	4	ND		2	ND	
Allegheny	300	149	4.3	(3.6-5.0)	151	3.1	(2.6-3.6)	Lackawanna	49	25	4.0	(2.4-5.6)	24	2.7	(1.6-3.8)
Armstrong	17	10	ND		7	ND		Lancaster	99	54	4.1	(3.0-5.2)	45	2.5	(1.8-3.2)
Beaver	43	22	4.2	(2.4-6.0)	21	2.8	(1.6-4.0)	Lawrence	27	14	ND		13	ND	
Bedford	8	6	ND		2	ND		Lebanon	28	15	ND		13	ND	
Berks	68	38	3.8	(2.6-5.0)	30	2.2	(1.4-3.0)	Lehigh	68	37	4.0	(2.7-5.3)	31	2.6	(1.7-3.5)
Blair	21	11	ND		10	ND		Luzerne	58	31	3.3	(2.1-4.5)	27	2.0	(1.2-2.8)
Bradford	16	9	ND		7	ND		Lycoming	31	17	ND		14	ND	
Bucks	108	60	3.7	(2.8-4.6)	48	2.2	(1.6-2.8)	McKean	8	4	ND		4	ND	
Butler	42	19	ND		23	3.4	(2.0-4.8)	Mercer	30	16	ND		14	ND	
Cambria	33	17	ND		16	ND		Mifflin	8	6	ND		2	ND	
Cameron	1	1	ND		0	ND		Monroe	23	11	ND		12	ND	
Carbon	11	7	ND		4	ND		Montgomery	144	77	3.6	(2.8-4.4)	67	2.2	(1.7-2.7)
Centre	17	9	ND		8	ND		Montour	4	2	ND		2	ND	
Chester	86	46	4.0	(2.8-5.2)	40	2.7	(1.9-3.5)	Northampton	65	34	4.5	(3.0-6.0)	31	2.8	(1.8-3.8)
Clarion	12	6	ND		6	ND		Northumberland	17	11	ND		6	ND	
Clearfield	21	12	ND		9	ND		Perry	12	4	ND		8	ND	
Clinton	10	4	ND		6	ND		Philadelphia	324	159	5.3	(4.5-6.1)	165	3.4	(2.9-3.9)
Columbia	11	6	ND		5	ND		Pike	14	12	ND		2	ND	
Crawford	19	8	ND		11	ND		Potter	3	2	ND		1	ND	
Cumberland	58	25	3.9	(2.4-5.4)	33	3.6	(2.4-4.8)	Schuylkill	26	14	ND		12	ND	
Dauphin	55	34	5.6	(3.7-7.5)	21	2.4	(1.4-3.4)	Snyder	8	2	ND		6	ND	
Delaware	117	62	4.6	(3.5-5.7)	55	2.6	(1.9-3.3)	Somerset	25	12	ND		13	ND	
Elk	7	5	ND		2	ND		Sullivan	2	1	ND		1	ND	
Erie	67	31	4.3	(2.8-5.8)	36	3.8	(2.6-5.0)	Susquehanna	9	6	ND		3	ND	
Fayette	46	25	6.3	(3.8-8.8)	21	3.5	(2.0-5.0)	Tioga	10	6	ND		4	ND	
Forest	1	1	ND		0	ND		Union	10	4	ND		6	ND	
Franklin	31	15	ND		16	ND		Venango	22	15	ND		7	ND	
Fulton	2	2	ND		0	ND		Warren	6	4	ND		2	ND	
Greene	7	3	ND		4	ND		Washington	33	15	ND		18	ND	
Huntingdon	8	1	ND		7	ND		Wayne	10	4	ND		6	ND	
Indiana	17	11	ND		6	ND		Westmoreland	112	55	4.8	(3.5-6.1)	57	3.4	(2.5-4.3)
Jefferson	13	4	ND		9	ND		Wyoming	6	3	ND		3	ND	
								York	79	39	3.7	(2.5-4.9)	40	2.8	(1.9-3.7)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

Leukemia

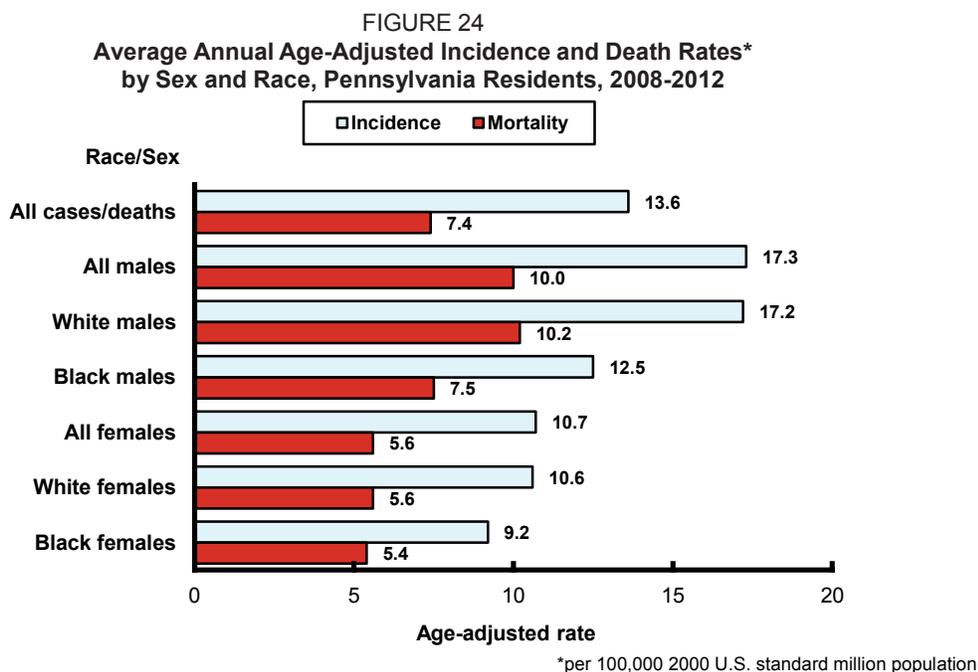
Data Highlights

Leukemia is a diverse group of blood and/or bone marrow cancers that usually affect leukocytes (a type of white blood cell). The 2008-2012 average annual age-adjusted incidence rate for leukemia was much higher for males (17.3 per 100,000) than for females (10.7). The 2,149 cases of leukemia diagnosed in 2012 among residents resulted in an age-adjusted rate of 13.9 - a decrease from 2011, when there were 2,255 cases, yielding an age-adjusted rate of 14.8. Annual age-adjusted incidence rates for the period of 2003-2012 did not have any obvious trends among the four sex/race groups. White males consistently had the highest rates among the four sex/race groups.

About 5 percent of leukemia cases occurred among children under 15 years of age during the period of 2008-2012. Among children under 15, the highest incidence rates occurred for those under 5 years of age. The average annual age-specific incidence rates for the five-year period of 2008-2012 decreased from infancy through 24 years of age and then began to rise, especially for ages over 55.

There were 1,170 deaths due to leukemia among Pennsylvania residents in 2012, resulting in an age-adjusted rate of 7.2 per 100,000. As observed with leukemia incidence rates, the 2008-2012 average annual age-adjusted death rates were higher for males (10.0) than for females (5.6). Annual age-adjusted death rates from 2003 to 2012 demonstrated no evident trends among the four sex/race groups. White males generally had the highest age-specific death rates. Average annual (2008-2012) age-specific death rates for males were generally higher than the rates for females, especially for age groups 60 and older.

NOTE: This site includes leukemia and myeloid sarcomas (granulocytic sarcoma and chloroma). Most leukemias are staged as distant, with the exception of death certificate-only cases, which are staged as unknown. However, myeloid sarcomas can be staged as other than distant.



Risk Factors

Suggestive risks include high dose radiation exposure, certain chemical exposures (benzene, chemotherapy drugs), Epstein-Barr virus (mononucleosis), tobacco smoking, inherited syndromes, immune system suppression, human t-cell leukemia viruses, chromosomal nondisjunction syndromes, and polycythemia vera (and other blood disorders).

Early Detection

No screening tests have proven to be effective or are currently being evaluated.

Leukemia: INCIDENCE

**TABLE
24-A**

**Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals
by Sex, Race and Year, Pennsylvania Residents, 2003-2012**

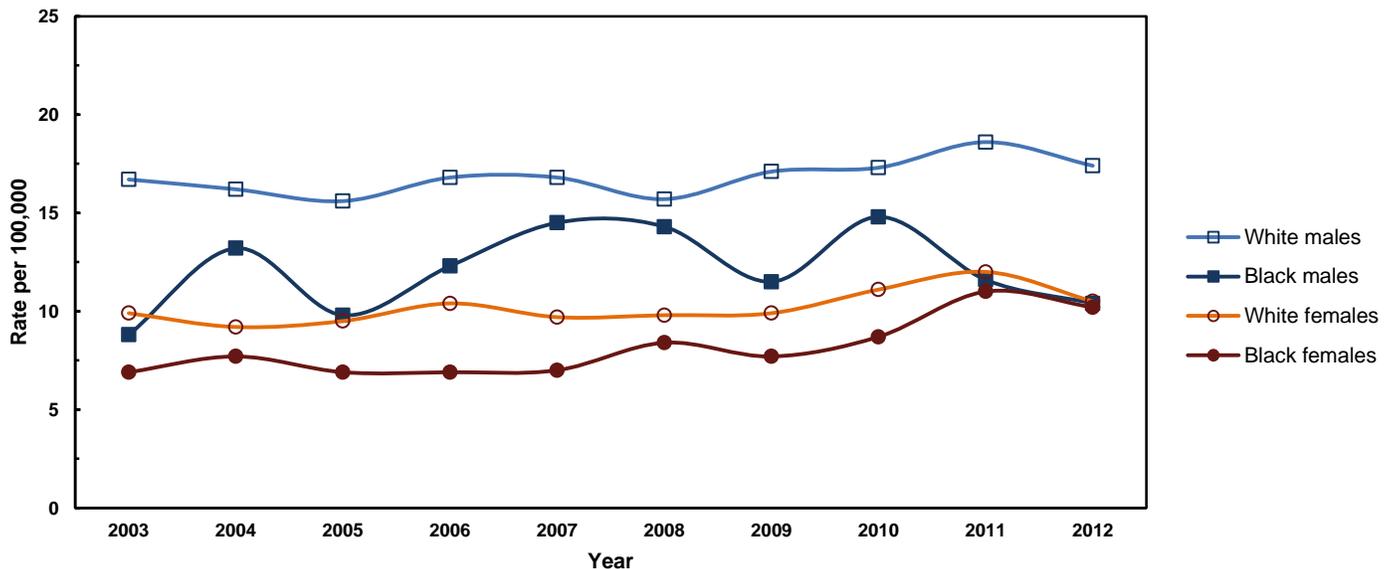
Year	All Cases*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	2,149	13.9 (13.3-14.5)	1,216	17.6 (16.6-18.6)	1,066	17.4 (16.4-18.4)	61	10.4 (7.8-13.0)	933	11.0 (10.3-11.7)	774	10.5 (9.8-11.2)	76	10.2 (7.9-12.5)
2011	2,255	14.8 (14.2-15.4)	1,261	18.4 (17.4-19.4)	1,141	18.6 (17.5-19.7)	61	11.6 (8.7-14.5)	994	12.0 (11.3-12.7)	871	12.0 (11.2-12.8)	82	11.0 (8.6-13.4)
2010	2,063	13.7 (13.1-14.3)	1,167	17.4 (16.4-18.4)	1,030	17.3 (16.2-18.4)	79	14.8 (11.5-18.1)	896	10.7 (10.0-11.4)	804	11.1 (10.3-11.9)	61	8.7 (6.5-10.9)
2009	1,937	13.1 (12.5-13.7)	1,107	17.1 (16.1-18.1)	994	17.1 (16.0-18.2)	56	11.5 (8.5-14.5)	830	9.9 (9.2-10.6)	738	9.9 (9.2-10.6)	55	7.7 (5.7-9.7)
2008	1,769	12.2 (11.6-12.8)	996	15.8 (14.8-16.8)	894	15.7 (14.7-16.7)	67	14.3 (10.9-17.7)	773	9.7 (9.0-10.4)	698	9.8 (9.1-10.5)	56	8.4 (6.2-10.6)
2007	1,806	12.7 (12.1-13.3)	1,043	17.0 (16.0-18.0)	930	16.8 (15.7-17.9)	65	14.5 (11.0-18.0)	763	9.6 (8.9-10.3)	686	9.7 (9.0-10.4)	47	7.0 (5.0-9.0)
2006	1,857	13.1 (12.5-13.7)	1,024	16.8 (15.8-17.8)	923	16.8 (15.7-17.9)	59	12.3 (9.2-15.4)	833	10.3 (9.6-11.0)	751	10.4 (9.7-11.1)	45	6.9 (4.9-8.9)
2005	1,756	12.2 (11.6-12.8)	981	15.9 (14.9-16.9)	876	15.6 (14.6-16.6)	50	9.8 (7.1-12.5)	775	9.5 (8.8-10.2)	699	9.5 (8.8-10.2)	45	6.9 (4.9-8.9)
2004	1,735	12.2 (11.6-12.8)	1,005	16.4 (15.4-17.4)	901	16.2 (15.1-17.3)	64	13.2 (10.0-16.4)	730	9.2 (8.5-9.9)	656	9.2 (8.5-9.9)	50	7.7 (5.6-9.8)
2003	1,774	12.5 (11.9-13.1)	991	16.4 (15.4-17.4)	915	16.7 (15.6-17.8)	39	8.8 (6.0-11.6)	783	9.7 (9.0-10.4)	714	9.9 (9.2-10.6)	45	6.9 (4.9-8.9)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are considered statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
24-A**

**Age-Adjusted Incidence Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Leukemia: INCIDENCE

**TABLE
24-B**

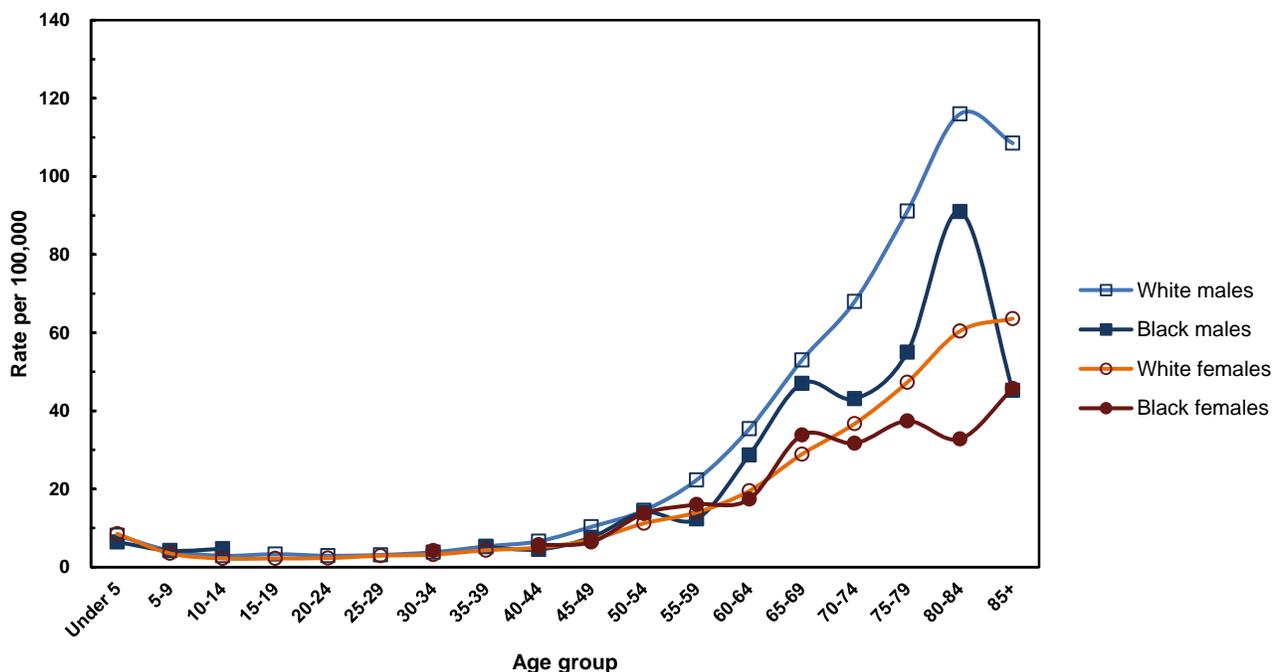
**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	16.1	18.7	19.7	9.7	13.6	14.3	9.0
Under 5	7.7	8.0	8.1	6.4	7.4	8.5	ND
5-9	3.7	4.1	4.2	4.2	3.3	3.5	ND
10-14	2.8	3.2	2.9	4.7	2.4	2.2	ND
15-19	2.7	3.1	3.3	ND	2.3	2.2	ND
20-24	2.6	2.9	2.9	ND	2.2	2.3	ND
25-29	3.0	3.2	3.1	ND	2.7	2.9	ND
30-34	3.5	3.6	3.8	ND	3.4	3.2	4.2
35-39	4.9	5.6	5.3	5.2	4.2	4.3	ND
40-44	5.8	6.5	6.6	4.5	5.0	5.0	5.7
45-49	8.5	10.1	10.3	7.6	7.0	7.0	6.4
50-54	13.0	14.5	14.5	14.0	11.6	11.2	13.7
55-59	18.0	22.0	22.3	12.3	14.2	14.0	16.0
60-64	27.3	35.7	35.4	28.7	19.5	19.5	17.4
65-69	41.0	53.9	53.0	47.0	29.9	28.9	33.8
70-74	50.8	67.7	68.0	43.1	37.1	36.7	31.7
75-79	65.8	90.7	91.1	55.0	47.7	47.3	37.4
80-84	82.6	117.0	116.0	91.0	60.9	60.4	32.8
85+	79.9	111.2	108.5	45.2	65.4	63.6	45.7

NOTES: Rates are per 100,000 population and are based on only invasive cancer cases. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
24-B**

**Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Leukemia: INCIDENCE

**TABLE
24-C**

**Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2008-2012**

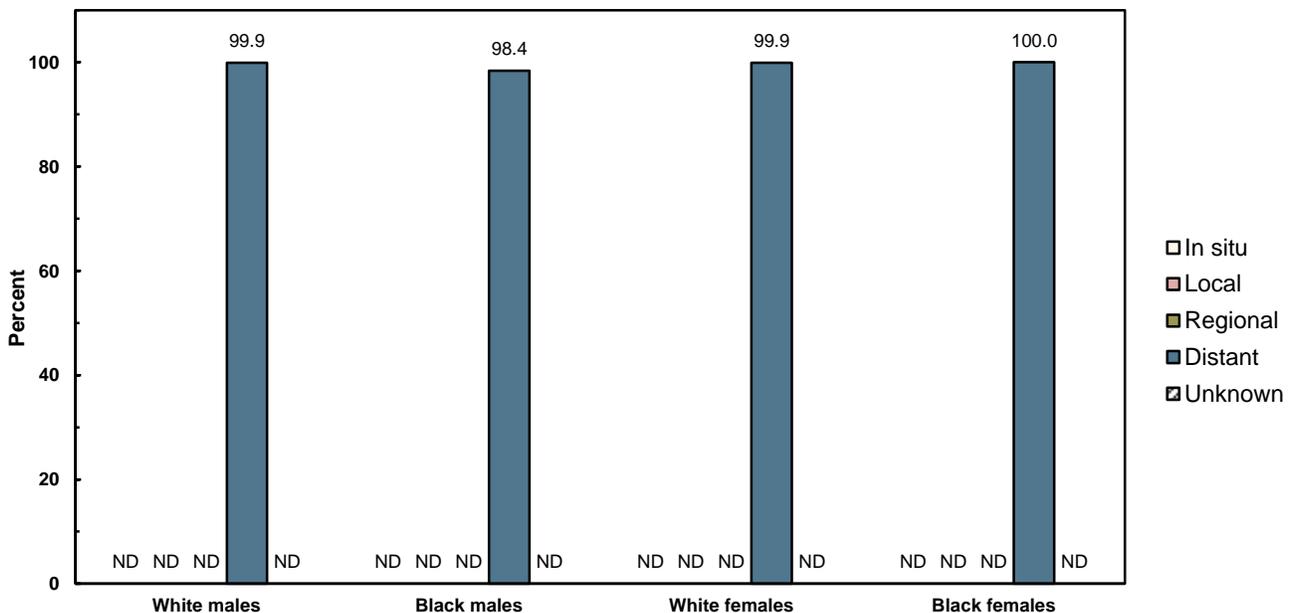
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	10,173	5,747	5,125	324	4,426	3,885	330
Under 5	282	150	117	17	132	117	5
5-9	140	79	64	11	61	51	6
10-14	111	65	46	13	46	34	8
15-19	123	72	60	8	51	40	7
20-24	115	66	52	4	49	40	6
25-29	115	63	50	8	52	44	7
30-34	131	68	58	6	63	48	10
35-39	187	106	83	11	81	68	7
40-44	246	138	118	10	108	91	14
45-49	393	229	202	17	164	139	16
50-54	615	336	297	29	279	234	33
55-59	780	465	419	21	315	273	33
60-64	1,007	633	565	37	374	331	29
65-69	1,148	702	628	40	446	387	40
70-74	1,116	665	610	27	451	402	30
75-79	1,188	688	637	25	500	451	29
80-84	1,226	671	620	28	555	506	20
85+	1,244	547	498	12	697	628	30

* Includes any unknowns

NOTE: Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

**FIGURE
24-C**

**Stage of Disease at Diagnosis, Percent by Sex and Race
Pennsylvania Residents, 2012**



NOTE: Percentages based on less than 10 events are statistically unreliable and not displayed (ND).

Number and Percent of Cases Microscopically Confirmed: 1,958 - 91.1%

Leukemia: MORTALITY

TABLE 24-D

Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2003-2012

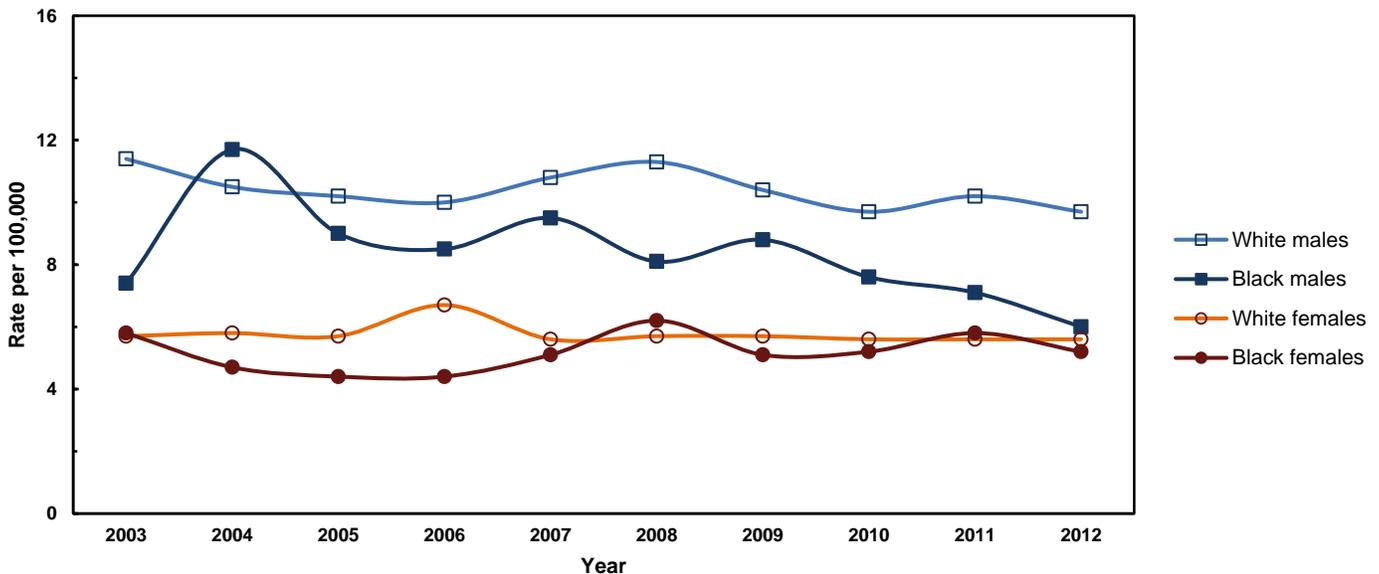
Year	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)		
2012	1,170	7.2 (6.8-7.6)	654	9.5 (8.8-10.2)	605	9.7 (8.9-10.5)	30	6.0 (3.9-8.1)	516	5.6 (5.1-6.1)	462	5.6 (5.1-6.1)	39	5.2 (3.6-6.8)
2011	1,194	7.4 (7.0-7.8)	673	9.9 (9.2-10.6)	631	10.2 (9.4-11.0)	36	7.1 (4.8-9.4)	521	5.6 (5.1-6.1)	473	5.6 (5.1-6.1)	42	5.8 (4.0-7.6)
2010	1,127	7.1 (6.7-7.5)	621	9.4 (8.7-10.1)	580	9.7 (8.9-10.5)	37	7.6 (5.2-10.0)	506	5.5 (5.0-6.0)	467	5.6 (5.1-6.1)	34	5.2 (3.5-6.9)
2009	1,157	7.5 (7.1-7.9)	653	10.2 (9.4-11.0)	608	10.4 (9.6-11.2)	40	8.8 (6.1-11.5)	504	5.6 (5.1-6.1)	467	5.7 (5.2-6.2)	35	5.1 (3.4-6.8)
2008	1,193	7.9 (7.5-8.3)	682	11.0 (10.2-11.8)	642	11.3 (10.4-12.2)	35	8.1 (5.4-10.8)	511	5.7 (5.2-6.2)	465	5.7 (5.2-6.2)	41	6.2 (4.3-8.1)
2007	1,136	7.6 (7.2-8.0)	639	10.7 (9.9-11.5)	591	10.8 (9.9-11.7)	41	9.5 (6.6-12.4)	497	5.6 (5.1-6.1)	456	5.6 (5.1-6.1)	34	5.1 (3.4-6.8)
2006	1,134	7.7 (7.3-8.1)	574	9.8 (9.0-10.6)	534	10.0 (9.2-10.8)	36	8.5 (5.7-11.3)	560	6.5 (6.0-7.0)	527	6.7 (6.1-7.3)	29	4.4 (2.8-6.0)
2005	1,113	7.4 (7.0-7.8)	607	10.1 (9.3-10.9)	566	10.2 (9.4-11.0)	39	9.0 (6.2-11.8)	506	5.6 (5.1-6.1)	473	5.7 (5.2-6.2)	30	4.4 (2.8-6.0)
2004	1,132	7.6 (7.2-8.0)	634	10.4 (9.6-11.2)	584	10.5 (9.6-11.4)	48	11.7 (8.4-15.0)	498	5.7 (5.2-6.2)	466	5.8 (5.3-6.3)	31	4.7 (3.0-6.4)
2003	1,145	7.8 (7.3-8.3)	652	11.1 (10.2-12.0)	616	11.4 (10.5-12.3)	32	7.4 (4.8-10.0)	493	5.6 (5.1-6.1)	456	5.7 (5.2-6.2)	37	5.8 (3.9-7.7)

* Includes any unknowns

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND) above and below. CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the definitions used by the National Cancer Institute's SEER program.

FIGURE 24-D

**Age-Adjusted Death Rates by Sex and Race
Pennsylvania Residents, 2003-2012**



Leukemia: MORTALITY

**TABLE
24-E**

**Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**

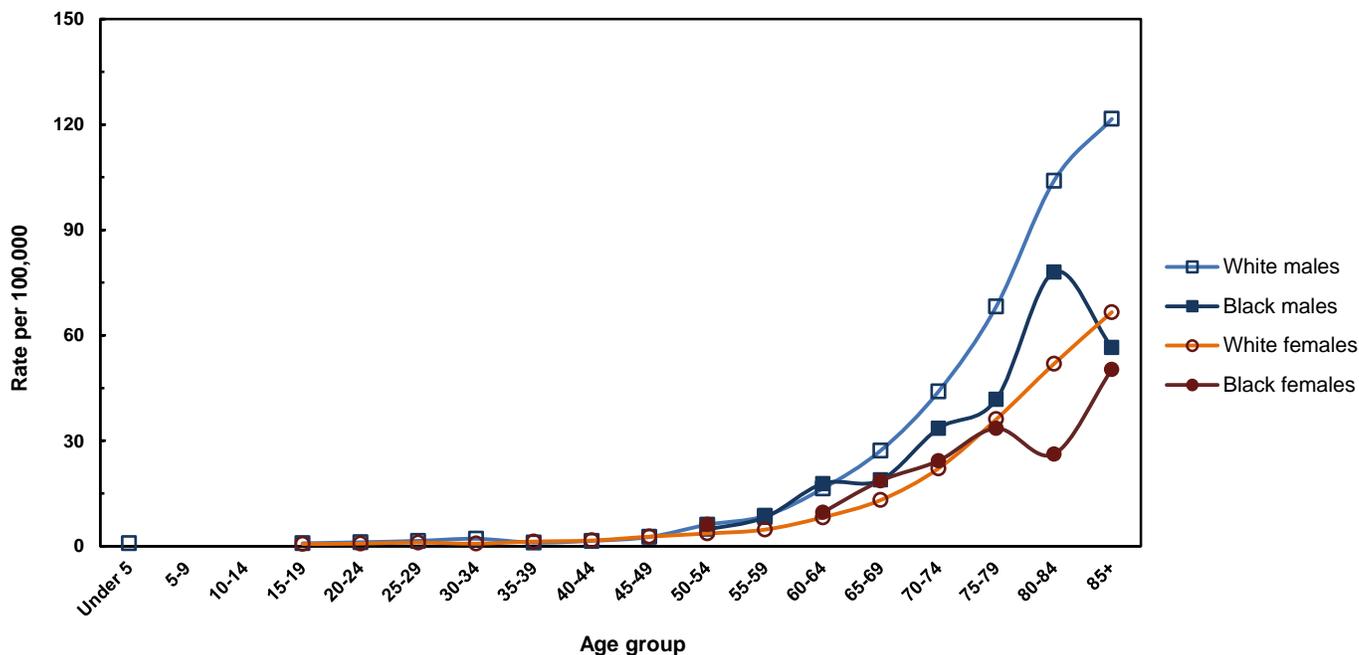
Age Group	All Deaths*		Males						Females					
	All Races*		White		Black		All Races*		White		Black			
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
Total*	5,841	9.2	3,283	10.7	3,066	11.8	178	5.3	2,558	7.9	2,334	8.6	191	5.2
Under 5	27	0.7	15	0.8	11	0.8	4	ND	12	0.7	8	ND	2	ND
5-9	16	0.4	10	0.5	9	ND	1	ND	6	ND	5	ND	1	ND
10-14	23	0.6	10	0.5	9	ND	1	ND	13	0.7	9	ND	3	ND
15-19	32	0.7	20	0.9	14	0.8	5	ND	12	0.5	11	0.6	1	ND
20-24	42	0.9	24	1.1	19	1.1	4	ND	18	0.8	12	0.7	6	ND
25-29	48	1.2	30	1.5	24	1.5	4	ND	18	0.9	16	1.0	2	ND
30-34	47	1.3	36	1.9	32	2.1	2	ND	11	0.6	11	0.7	0	ND
35-39	48	1.3	22	1.2	15	1.0	4	ND	26	1.4	21	1.3	2	ND
40-44	70	1.6	32	1.5	27	1.5	4	ND	38	1.8	28	1.6	9	ND
45-49	123	2.7	62	2.7	52	2.6	7	ND	61	2.6	54	2.7	6	ND
50-54	227	4.8	135	5.8	124	6.1	10	4.8	92	3.8	75	3.6	15	6.2
55-59	278	6.4	177	8.4	161	8.6	14	8.2	101	4.5	91	4.7	8	ND
60-64	448	12.1	289	16.3	261	16.4	23	17.8	159	8.3	139	8.2	16	9.6
65-69	543	19.4	343	26.3	322	27.2	16	18.8	200	13.4	175	13.1	22	18.6
70-74	688	31.3	421	42.9	395	44.0	21	33.5	267	22.0	242	22.1	23	24.3
75-79	873	48.3	499	65.8	477	68.2	19	41.8	374	35.7	344	36.1	26	33.5
80-84	1,037	69.9	582	101.5	556	104.0	24	78.0	455	50.0	435	51.9	16	26.2
85+	1,271	81.6	576	117.1	558	121.6	15	56.5	695	65.3	658	66.6	33	50.3

* Includes any unknowns

NOTES: Rates are per 100,000 for each specified group. Crude rates based on less than 10 events are statistically unreliable and are not displayed (ND) above and below. Cancer primary site/type groupings follow the site definitions used by the National Cancer Institute's SEER program.

**FIGURE
24-E**

**Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2008-2012**



Leukemia: INCIDENCE

**TABLE
24-F**

**Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Cases	Males			Females			County	Total Cases	Males			Females			
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)	
All counties	10,173	5,747	17.3	(16.9-17.7)	4,426	10.7	(10.4-11.0)									
Adams	84	48	17.5	(12.5-22.5)	36	11.4	(7.7-15.1)	Juniata	18	10	ND		8	ND		
Allegheny	1,037	559	16.9	(15.5-18.3)	478	11.0	(10.0-12.0)	Lackawanna	166	94	16.0	(12.8-19.2)	72	9.3	(7.2-11.4)	
Armstrong	61	38	18.0	(12.3-23.7)	23	8.8	(5.2-12.4)	Lancaster	429	238	17.7	(15.5-19.9)	191	11.8	(10.1-13.5)	
Beaver	155	91	17.6	(14.0-21.2)	64	9.5	(7.2-11.8)	Lawrence	81	51	20.4	(14.8-26.0)	30	8.4	(5.4-11.4)	
Bedford	37	18	ND		19	ND		Lebanon	113	68	18.7	(14.3-23.1)	45	10.5	(7.4-13.6)	
Berks	332	206	19.9	(17.2-22.6)	126	9.8	(8.1-11.5)	Lehigh	320	185	21.2	(18.1-24.3)	135	11.7	(9.7-13.7)	
Blair	132	73	20.1	(15.5-24.7)	59	12.5	(9.3-15.7)	Luzerne	324	179	19.7	(16.8-22.6)	145	12.5	(10.5-14.5)	
Bradford	67	39	20.9	(14.3-27.5)	28	12.1	(7.6-16.6)	Lycoming	109	66	20.2	(15.3-25.1)	43	10.8	(7.6-14.0)	
Bucks	448	247	15.2	(13.3-17.1)	201	10.4	(9.0-11.8)	McKean	33	15	ND		18	ND		
Butler	165	82	16.3	(12.8-19.8)	83	13.2	(10.4-16.0)	Mercer	86	48	14.0	(10.0-18.0)	38	9.9	(6.8-13.0)	
Cambria	172	104	24.1	(19.5-28.7)	68	13.0	(9.9-16.1)	Mifflin	39	21	15.0	(8.6-21.4)	18	ND		
Cameron	6	3	ND		3	ND		Monroe	111	67	16.1	(12.2-20.0)	44	9.5	(6.7-12.3)	
Carbon	59	38	21.0	(14.3-27.7)	21	9.9	(5.7-14.1)	Montgomery	604	348	17.0	(15.2-18.8)	256	9.7	(8.5-10.9)	
Centre	103	64	20.9	(15.8-26.0)	39	11.6	(8.0-15.2)	Montour	21	12	ND		9	ND		
Chester	419	246	19.7	(17.2-22.2)	173	12.3	(10.5-14.1)	Northampton	295	172	22.1	(18.8-25.4)	123	12.9	(10.6-15.2)	
Clarion	39	20	16.9	(9.5-24.3)	19	ND		Northumberland	90	53	18.9	(13.8-24.0)	37	12.1	(8.2-16.0)	
Clearfield	81	51	21.3	(15.5-27.1)	30	10.4	(6.7-14.1)	Perry	39	25	22.2	(13.5-30.9)	14	ND		
Clinton	39	21	19.4	(11.1-27.7)	18	ND		Philadelphia	890	465	14.4	(13.1-15.7)	425	9.6	(8.7-10.5)	
Columbia	62	38	22.2	(15.1-29.3)	24	12.1	(7.3-16.9)	Pike	62	32	17.7	(11.6-23.8)	30	16.6	(10.7-22.5)	
Crawford	63	34	13.9	(9.2-18.6)	29	8.9	(5.7-12.1)	Potter	12	7	ND		5	ND		
Cumberland	157	87	14.1	(11.1-17.1)	70	8.8	(6.7-10.9)	Schuylkill	157	92	20.7	(16.5-24.9)	65	12.1	(9.2-15.0)	
Dauphin	161	89	13.6	(10.8-16.4)	72	8.8	(6.8-10.8)	Snyder	41	24	23.0	(13.8-32.2)	17	ND		
Delaware	388	219	15.4	(13.4-17.4)	169	9.6	(8.2-11.0)	Somerset	87	55	22.4	(16.5-28.3)	32	11.5	(7.5-15.5)	
Elk	31	19	ND		12	ND		Sullivan	13	7	ND		6	ND		
Erie	226	133	18.6	(15.4-21.8)	93	10.9	(8.7-13.1)	Susquehanna	25	11	ND		14	ND		
Fayette	78	47	11.9	(8.5-15.3)	31	6.4	(4.1-8.7)	Tioga	48	21	17.5	(10.0-25.0)	27	19.0	(11.8-26.2)	
Forest	4	4	ND		0	ND		Union	33	25	21.0	(12.8-29.2)	8	ND		
Franklin	133	66	16.2	(12.3-20.1)	67	13.2	(10.0-16.4)	Venango	44	28	18.1	(11.4-24.8)	16	ND		
Fulton	14	8	ND		6	ND		Warren	44	29	22.3	(14.2-30.4)	15	ND		
Greene	35	21	20.7	(11.8-29.6)	14	ND		Washington	179	100	17.0	(13.7-20.3)	79	11.1	(8.7-13.5)	
Huntingdon	44	20	15.1	(8.5-21.7)	24	17.9	(10.7-25.1)	Wayne	39	22	13.0	(7.6-18.4)	17	ND		
Indiana	67	41	18.1	(12.6-23.6)	26	8.3	(5.1-11.5)	Westmoreland	300	170	16.0	(13.6-18.4)	130	9.8	(8.1-11.5)	
Jefferson	37	24	16.8	(10.1-23.5)	13	ND		Wyoming	30	14	ND		16	ND		
								York	355	195	17.5	(15.0-20.0)	160	12.3	(10.4-14.2)	

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings match the National Cancer Institute's SEER program. In situ cancer cases are excluded.

Leukemia: MORTALITY

**TABLE
24-G**

**Number of Cancer Deaths, Average Annual Age-Adjusted Death Rates and 95% Confidence Intervals
by County and Sex, Pennsylvania Residents, 2008-2012**

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,841	3,283	10.0	(9.7-10.3)	2,558	5.6	(5.4-5.8)								
Adams	51	27	9.7	(6.0-13.4)	24	6.5	(3.9-9.1)	Juniata	11	6	ND		5	ND	
Allegheny	620	341	10.3	(9.2-11.4)	279	5.6	(4.9-6.3)	Lackawanna	134	74	12.7	(9.8-15.6)	60	7.0	(5.2-8.8)
Armstrong	39	18	ND		21	7.1	(4.1-10.1)	Lancaster	230	138	10.3	(8.6-12.0)	92	5.0	(4.0-6.0)
Beaver	101	59	11.2	(8.3-14.1)	42	6.0	(4.2-7.8)	Lawrence	62	40	14.6	(10.1-19.1)	22	5.1	(3.0-7.2)
Bedford	24	14	ND		10	ND		Lebanon	79	44	11.6	(8.2-15.0)	35	6.9	(4.6-9.2)
Berks	175	110	10.6	(8.6-12.6)	65	4.7	(3.6-5.8)	Lehigh	167	99	11.1	(8.9-13.3)	68	5.6	(4.3-6.9)
Blair	72	44	12.5	(8.8-16.2)	28	5.2	(3.3-7.1)	Luzerne	160	81	9.0	(7.0-11.0)	79	5.5	(4.3-6.7)
Bradford	29	15	ND		14	ND		Lycoming	54	29	8.3	(5.3-11.3)	25	5.6	(3.4-7.8)
Bucks	263	152	9.7	(8.2-11.2)	111	5.2	(4.2-6.2)	McKean	21	13	ND		8	ND	
Butler	85	52	10.3	(7.5-13.1)	33	4.9	(3.2-6.6)	Mercer	62	36	10.2	(6.9-13.5)	26	5.6	(3.4-7.8)
Cambria	77	51	11.4	(8.3-14.5)	26	4.1	(2.5-5.7)	Mifflin	22	9	ND		13	ND	
Cameron	7	4	ND		3	ND		Monroe	53	35	10.1	(6.8-13.4)	18	ND	
Carbon	40	25	12.9	(7.8-18.0)	15	ND		Montgomery	333	172	8.4	(7.1-9.7)	161	5.5	(4.7-6.3)
Centre	46	32	10.8	(7.1-14.5)	14	ND		Montour	5	3	ND		2	ND	
Chester	165	96	8.4	(6.7-10.1)	69	4.8	(3.7-5.9)	Northampton	158	89	11.2	(8.9-13.5)	69	6.0	(4.6-7.4)
Clarion	15	10	ND		5	ND		Northumberland	63	34	12.1	(8.0-16.2)	29	6.8	(4.3-9.3)
Clearfield	47	24	10.2	(6.1-14.3)	23	7.3	(4.3-10.3)	Perry	23	12	ND		11	ND	
Clinton	17	9	ND		8	ND		Philadelphia	562	296	9.5	(8.4-10.6)	266	5.7	(5.0-6.4)
Columbia	29	20	11.2	(6.3-16.1)	9	ND		Pike	20	7	ND		13	ND	
Crawford	36	20	8.2	(4.6-11.8)	16	ND		Potter	5	2	ND		3	ND	
Cumberland	121	69	11.7	(8.9-14.5)	52	6.1	(4.4-7.8)	Schuylkill	84	41	8.9	(6.2-11.6)	43	7.0	(4.9-9.1)
Dauphin	93	54	8.7	(6.4-11.0)	39	4.2	(2.9-5.5)	Snyder	24	15	ND		9	ND	
Delaware	246	136	10.0	(8.3-11.7)	110	5.8	(4.7-6.9)	Somerset	36	23	9.5	(5.6-13.4)	13	ND	
Elk	21	11	ND		10	ND		Sullivan	3	2	ND		1	ND	
Erie	128	69	9.7	(7.4-12.0)	59	6.5	(4.8-8.2)	Susquehanna	18	13	ND		5	ND	
Fayette	58	36	9.2	(6.2-12.2)	22	3.9	(2.3-5.5)	Tioga	31	15	ND		16	ND	
Forest	4	4	ND		0	ND		Union	12	8	ND		4	ND	
Franklin	76	34	8.0	(5.3-10.7)	42	7.6	(5.3-9.9)	Venango	29	18	ND		11	ND	
Fulton	5	2	ND		3	ND		Warren	23	15	ND		8	ND	
Greene	22	10	ND		12	ND		Washington	121	63	10.3	(7.8-12.8)	58	7.1	(5.3-8.9)
Huntingdon	25	11	ND		14	ND		Wayne	24	14	ND		10	ND	
Indiana	38	19	ND		19	ND		Westmoreland	207	123	11.4	(9.4-13.4)	84	5.6	(4.4-6.8)
Jefferson	16	8	ND		8	ND		Wyoming	10	5	ND		5	ND	
								York	204	123	11.4	(9.4-13.4)	81	5.8	(4.5-7.1)

NOTES: Age-adjusted rates are per 100,000 and are computed by the direct method using the 2000 U.S. standard million population. Rates based on less than 20 events are statistically unreliable and are not displayed (ND). CI = 95% confidence interval based on a formula for estimating the standard error or SE (see Technical Notes). Cancer primary site/type groupings follow the primary site definitions used by the National Cancer Institute's SEER program.

TECHNICAL NOTES

A. SOURCES OF DATA

1. Incidence:

The Pennsylvania Cancer Registry (PCR) requires all data items included on the Required Data Set for Reporting Facilities to be reported for each cancer case. Approximately 79 percent of cases from all sources are transmitted electronically, and 100 percent are transmitted electronically by hospitals. A list of consolidated data items is included in Appendix E.

Abstracts are primarily reported from the hospital cancer registry or health information management department. Each acute care hospital and laboratory is required to report all cases newly diagnosed and/or treated at their facility. If an individual had more than one primary tumor, each tumor is reported and counted. Thus, counts (cases) reported in this publication are based on the number of primary sites of cancer rather than the number of people. All primary malignancies, including in situ cases (except in situ cervix uteri cancers), are reported – with the exception of squamous and basal cell carcinomas of the skin. These lesions are, however, reported for skin of mucocutaneous junctures. Beginning with cases diagnosed on or after January 1, 2004, all primary intracranial and central nervous system tumors are reportable, although not included in this publication.

The PCR also collects cancer cases from non-hospital sources, such as laboratories, radiation treatment centers, medical oncology centers, physician offices, nursing homes/hospices, and other hospital outpatient units/surgery centers.

A policy change of the Department of Veterans Affairs (VA) resulted in no reporting of cancer cases by VA hospitals in Pa. for 2006-2010. Reporting from VA hospitals has been re-established. Cancer cases are starting to be submitted again.

Starting with the 1999 edition, cancer primary site groupings used in this report follow the definitions used by the National Cancer Institute's SEER program. Unless otherwise noted, only invasive (and in situ cases of urinary bladder) cancers are included in the counts and rates of cancer cases appearing in this report and may not be comparable to statistics appearing in previous Pennsylvania Cancer Incidence and Mortality annual reports

2. Mortality:

Pennsylvania's Certificate of Death is the source document for the cancer mortality data contained in this report. Death certificates are usually completed by hospital personnel, physicians, and funeral directors.

There is a cutoff date of March 1 of the following year for compiling annual mortality files, e.g., the cutoff date for 2012 death certificates was March 1, 2013. Any data pertaining to a

2012 death for which a certificate was filed after the cutoff date are not included in the initial release of data, including the annual report of vital statistics, "Pennsylvania Vital Statistics 2012." Files are then updated on an annual basis with data from certificates received after the cutoff date, and corrections to previously filed records are made at these times. Therefore, it is possible that cancer mortality data obtained from updated files by the Division of Health Informatics may differ slightly from the data that appear in this report.

3. Population:

The 2000 U.S. standard million population used in calculating age-adjusted rates is shown below:

AGE	POPULATION
All ages	1,000,000
Under 5	69,135
5-9	72,533
10-14	73,032
15-19	72,169
20-24	66,478
25-29	64,529
30-34	71,044
35-39	80,762
40-44	81,851
45-49	72,118
50-54	62,716
55-59	48,454
60-64	38,793
65-69	34,264
70-74	31,773
75-79	26,999
80-84	17,842
85+	15,508

Population estimates for the years 1986-1989 (white and all races), 1991-1999, 2001-2009, and 2011-2012 (white, black and all races) used to compute rates were produced jointly by the census bureau and the State Data Center of the Pennsylvania State University at Harrisburg under the Federal-State Cooperative Program for Local Population Estimates. The estimates are published by the census bureau in Current Population Reports, Series P-26. Numbers are generated by a combination of a component procedure that depends on administrative records and a regression method. The estimates of state (white and all races) and county total populations for earlier years are revised by the

census bureau from time to time. The 2000 and 2010 state and county populations by age, sex and race used in this report are based on the U.S. Bureau of the Census enumerated population figures as of April 1, 2010. The 2012 Pennsylvania population figures by age, sex, and race used to compute rates appear in Appendix B. Copies of other Pennsylvania and county population data used for this report can be obtained by contacting the Division of Health Informatics.

B. DATA QUALITY

1. Incidence:

The quality of cancer incidence data presented in this report is directly related to the completeness and accuracy of the information reported. The PCR works to ensure that the information received is as complete and accurate as possible and maintains two major program operations for improving the quality of information received — the data quality and field programs.

The internal data quality program focuses on assuring the completeness, timeliness and accuracy of data reported to the PCR. Completeness and timeliness, are monitored through management reports to identify compliance to monthly reporting requirements. To ensure accuracy, relational validations and value ranges are routinely run against computerized files. Data items reported to the PCR include basic identifying and demographic characteristics of each patient and medical information about the cancer, including site, histology, laterality, method of diagnosis, and stage of disease. Reports are routinely edited for completeness and consistency according to national standards. Cases are also edited for consistency between coded data items and text information contained in electronic text fields and photocopies of health record reports provided to the PCR. This type of visual editing is performed to detect discrepancies not detectable by the computer edits. Telephone contacts are made if clarification of information is necessary to correct or confirm a suspected error.

Reports are received from each facility, independently of other institutions. Therefore, patients who are diagnosed at one facility and receive treatment at a second facility are reported twice to the PCR. Multiple reports on the same person are identified using a computerized matching system. Once matches are identified, the reports are compared to determine whether the tumors represent the same primary or independent primaries. Counts (cases) listed in this publication are based on the number of primaries rather than the number of people.

The PCR field program involves field representatives monitoring the completeness, accuracy, and timeliness of facility reporting. Internal reports identify facilities for follow up when not in compliance with monthly reporting requirements. Annual reconciliation of cancer cases is performed by comparing cancer patients seen at each facility with cases reported by the facility. Cases not reported are reviewed and submitted if reporting criteria are met. Field staff develop and conduct training for staff at reporting facilities and visually review cases submitted by new facility contacts to assure data accuracy. Timeliness is monitored by calculating the percent of cases reported within 180

days for each facility. A list of cases reported after 180 days is provided to the facility to identify problem cases. PCR field representatives also conduct periodic quality assessment reviews at acute care hospitals in the commonwealth. During the review, case-finding completeness, data quality through reabstracting studies, and timeliness of reporting are evaluated. At the conclusion of the review, findings and recommendations are discussed with hospital personnel. Results of the review are documented in a written report and sent to the hospital.

The PCR also maintains a toll-free telephone number for use by staff at reporting facilities to answer any questions or concerns regarding the correct completion of their cancer reports. In addition, educational programs are conducted by PCR staff. Persons responsible for reporting to the PCR across the state are encouraged to attend.

The PCR currently has agreements with the states of Alabama, Alaska, Colorado, Delaware, Florida, Idaho, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Montana, New Jersey, New York, North Carolina, Ohio, Puerto Rico, South Carolina, and West Virginia for exchange of data on Pennsylvania resident cases that were diagnosed in other states.

2. Mortality:

The Bureau of Health Statistics and Registries also maintains query and field programs for monitoring and improving the quality of data collected on death certificates.

The query program is a system used to follow back with hospital personnel, funeral directors, and/or physicians concerning incomplete or conflicting information. The follow-back contact is usually done by telephone and is based on both a manual and a computer editing procedure.

The field program attempts to improve death certificate information by educating the participants in the death registration system, i.e., hospital personnel, funeral directors, physicians, etc., of the uses and importance of mortality statistics. The field program completes this mission by conducting seminars with various associations representing the types of individuals listed above. In addition to regularly scheduled seminars, the field representatives make site visits when problems with registration relating to a particular area or institution are discovered.

The National Center for Health Statistics (NCHS) monitors Pennsylvania's coding of statistical data on death certificates. A 0.5 percent sample of death records coded and submitted monthly by the state is used as a quality control mechanism by NCHS. NCHS codes these sample records independently and then conducts an item-by-item computer match of codes entered by the state and NCHS. NCHS has established a 2 percent upper limit for a coding difference involving any one data item of these sample records, with the exception of cause of death. A 5 percent limit is established for that item, due to the complexity of the coding.

Deaths relating to Pennsylvania residents occurring in another state are included in this report. The inclusion of these data is

made possible by an agreement among all registration areas in the United States for resident exchange of copies of death certificates.

C. DATA CONFIDENTIALITY

1. Incidence:

The PCR maintains the confidentiality of the information in the reports submitted. Strict security measures are taken to ensure confidentiality. Published reports and documents released by the Department of Health include only aggregate data. The identification of patients is strictly prohibited by the Pennsylvania Cancer Control, Prevention and Research Act (Act 224), except for specific approved research purposes and with strict supervision by the Department of Health.

2. Mortality:

The confidentiality of death certificates is strictly maintained by the Division of Health Informatics. All published reports of vital statistics contain only aggregated data. Individually identifiable information is only released, as provided for in Act 66, Vital Statistics Law of 1953, for health research purposes and to government agencies in pursuance of their official duties upon completion, review, and approval of an application for access to protected data. Certified copies are also released to family members or legal representatives for determination of personal or property rights.

D. GEOGRAPHIC ALLOCATION of RESIDENCE

Allocation of events by place of residence is sometimes difficult because classification depends entirely on the statement of the usual place of residence as furnished by the patient/informant at the time the original death certificate or medical record is being completed. For various reasons, this statement may be incorrect or incomplete. For example, mailing addresses often differ from the actual physical addresses. When the residential address is a rural delivery number, or if an unincorporated place is given, it may be impossible to allocate the event to the correct minor civil division (city, borough, township).

The addresses on the Pennsylvania cancer abstracts have been matched to an address reference file. One of the purposes of matching the addresses is to correctly assign the minor civil division. Addresses that cannot be matched include post office boxes and most rural route and rural delivery addresses. The population-weighted centroids of the zip codes are used to assign the minor civil division for these unmatched addresses. Approximately 90 percent of the addresses from the abstracts are matched to the address reference file. The remaining addresses are assigned a minor civil division based on the population-weighted centroid of the zip code.

E. COMPARABILITY of ICD-O and ICD CODES

Appendix C shows a comparability table of ICD-O-2 (International Classification of Diseases for Oncology - Second Edition), ICD-O-3 (International Classification of Dis-

eases for Oncology - Third Edition), ICD-9 (International Classification of Diseases - Ninth Revision) and ICD-10 (International Classification of Diseases - Tenth Revision) codes for 23 primary cancer sites. Starting in 2001, cancer incidence data were coded according to ICD-O-3. Previous cancer incidence reports were based on ICD-O-2 coding. Although the topography codes, which indicate the site of origin of a neoplasm, are identical in ICD-O-2 and ICD-O-3, the morphology codes, which records the kind of tumor that has developed and how it behaves, may be slightly different. Also, because of this change, some additional morphology codes are now reportable to the PCR. Beginning in 2010, the ICD-O-3 recode with adjustment for WHO 2008 hematopoietic histologies was used and, as a result, Mesothelioma and Kaposi Sarcoma are excluded from many primary sites. In addition, new histologies for hematopoietic cancers are included or grouped differently. Details on reportable cancers are provided in Appendix A.

To determine the underlying cause of death for the cancer mortality data, the ICD-9 classification system was used from 1979 through 1998. Starting with 1999 data, the cause-of-death classification system was changed from ICD-9 to ICD-10. The change from ICD-9 to ICD-10 may affect the reporting of cancer deaths, thereby creating discontinuity in mortality trend data.

The rationale for periodic revisions to the ICD and ICD-O systems has been to reflect advances in medical science and changes in diagnostic terminology. The Surveillance Epidemiology End Results (SEER) Site Groupings that appeared in the appendix of the publication SEER Cancer Statistics Review by the National Cancer Institute (see section H References) was used as a guide in determining comparability.

It should be noted that, for some cancer sites, no absolute equivalence in coding between mortality and morbidity can ever be achieved. Revisions and updates of established coding structures, varying coding practices, differences in coding structures between the ICD-O and ICD codes, and differences in the level of detail in reporting incidence and mortality data are just some of the major obstacles in achieving true comparability. Users of the data in this report should keep in mind these potential problems related to determining coding equivalencies.

F. DEFINITIONS OF TERMS

CASE: An incidence of a primary site of cancer as reportable to the PCR. See Appendix A for details on reportable cancers. Unless otherwise noted, the statistics appearing in this report are only for invasive (and in situ cases for urinary bladder) cancers. A cancer patient may have more than one primary site of cancer. In this report, the number of cases refers to the number of primary sites reported, not the number of people.

SITE: The primary organ or tissue of the body where the malignancy has been determined by microscopic examination, endoscopy, radiology, clinical examination, or other method of diagnosis to be the place of origin.

MULTIPLE PRIMARY DETERMINATION: If a person is

diagnosed with more than one solid malignant tumor or benign and borderline central nervous system tumor, a separate report must be submitted for each primary. Because the PCR receives abstracts from hospital and non-hospital reporting sources, standard rules are applied to determine if multiple abstracts received for the same person represent new primaries or previously reported primaries. The PCR, like other central registries in the United States, follows the rules published by the SEER Program for determination of multiple primaries. For solid tumors diagnosed on or after January 1, 2007, the PCR requires the use of The 2007 Multiple Primary and Histology Coding Rules. If diagnosed prior to January 1, 2007, rules documented in the SEER Program Coding and Staging Manual 2004, page 7-18, are used to determine multiple primaries. For multiple primary determination of hematopoietic and lymphoid malignancies, the PCR uses the SEER table Single Versus Subsequent Primary of Lymphatic and Hematopoietic Diseases, 2/28/2001.

STAGE OF DISEASE: The classification system which groups cases into broad categories according to how far the disease has spread from the site of origin at the time of diagnosis. SEER Summary Stage 2000 is the data item used to express these categories. Effective with 2004 diagnosed cases, the SEER Summary Stage 2000 values are derived from the Collaborative Stage Algorithm. For 2001-2003 data, the SEER Summary Staging Manual 2000 was used directly to categorize stage of disease at diagnosis for all sites, as well as for Hodgkin and non-Hodgkin lymphomas. Prior to 2001, the Summary Staging Guide 1977 of the SEER Reporting Program was used to categorize stage of disease. These changes may affect the classification of stage, thereby creating discontinuity in cancer incidence trend data by stage.

The five categories used in both the guide and the manual are: in situ, localized only, regional, distant, and unknown. In addition, for cases diagnosed in 2001 and after, the regional stage is sub-categorized by method of spread as a) regional by direct extension only; b) regional by lymph nodes involved only; c) regional by both direct extension and lymph node involvement; and d) regional, not otherwise specified. These stage categories are defined below.

IN SITU - An in situ diagnosis means that the cancer has not penetrated or spread beyond the basement membrane of the epithelial tissue involved. Microscopic examination is necessary to make this determination. Other terms used instead of in situ include non-invasive, pre-invasive, non-infiltrating, intra-epithelial and Stage 0.

LOCAL - A cancer that is invasive, but is confined entirely to the organ of origin. The lesion does not extend beyond the outer limits of the primary organ, and there is no evidence of metastasis anywhere else in the body.

REGIONAL - A cancer which has extended beyond the limits of the organ of origin with no evidence of distant metastasis. The regional subcategories are:

(a) Regional by direct extension only: invasion of the cancer through the entire wall of the organ of origin into surrounding

organs and/or adjacent tissues.

(b) Regional lymph nodes involved only: the cancer invades the walls of lymphatics where cells travel through lymphatic vessels to nearby lymph nodes, are filtered out, and begin to grow in the nodes.

(c) Regional by both direct extension and lymph node involvement: the cancer has extended beyond the limits of the primary site by a combination of direct extension and lymph node involvement.

(d) Regional, not otherwise specified: The cancer has extended beyond the primary site with no evidence of distant metastases, but it is unclear whether the tissues are involved by direct extension or lymph nodes.

DISTANT - Cancer cells have broken away from the primary cancer, have traveled to other parts of the body and have begun to grow at the new location. Distant stage is also called remote, diffuse, disseminated, metastatic, or secondary disease. This category includes all leukemias and myelomas (systemic disease).

ANN ARBOR STAGING CLASSIFICATION - The summary stage categories for Hodgkin and non-Hodgkin lymphomas are based on the Ann Arbor Staging Classification and limited to localized, regional not otherwise specified, distant, and unknown.

MICROSCOPIC CONFIRMATION: The microscopic examination of tissue or cells from the site of a suspected cancer for the purpose of verifying a malignancy. Microscopically confirmed diagnoses are based on specimens from biopsy, frozen section, surgery, blood morphology, bone marrow, autopsy, sputum, secretions, body fluids, aspiration, washings, brushings, smears, and sediment.

G. RATES

1. Definitions:

CRUDE RATE - The total number of events per 100,000 total population.

AGE-SPECIFIC RATE - Number of events for a specified age group per 100,000 population in the same age group.

AGE-ADJUSTED RATE (Direct Method) - Age-specific rates for a selected population are applied to a standard population in order to calculate what rate **would be expected** if the selected population had the same age distribution as the standard. The total of these **expected** events divided by the total of the standard population and multiplied by 100,000 yields the age-adjusted rate per 100,000. (It is important to use the same standard population in the computation of each age-adjusted rate to allow comparability. In this report, the 2000 U.S. standard million population was used. See section A3 for a list of these population figures. Also note that age-adjusted rates should never be compared with any other type of rate or be used as absolute measure-

ments of vital events.)

WARNING: The “Pennsylvania Cancer Incidence and Mortality” report has used the 2000 standard million population for calculation of all age-adjusted rates since 1999. Age-adjusted rates that appeared in previous editions (1985-1998) used the 1970 standard and are not comparable to the age-adjusted rates that appear in this report.

2. Reliability of Rates:

Precautions should always be taken when comparing any rates, especially crude rates, based on vital events and population. Both the numbers of events and the characteristics of the population are important indicators of a rate’s real value.

All statistics are subject to variation by chance. Rates based on unusually small or large numbers of events over a specified period of time, or on sparsely populated geographic areas, should be of particular concern and caution. When small events or populations are evident in calculating/studying rates, multiple-year summary rates will sometimes provide a much better perspective or measurement of an outcome. Expanding the period of time studied enlarges the absolute numbers of events and adds more credence to a statement regarding a rate.

There are many characteristics of a population that can also render a crude rate of little use. Any unique demographic factors (e.g., age, sex, and race) are not accounted for in crude rates. Age, sex, and race-adjusted rates can offer a more refined measurement to compare experiences over geographic areas or time periods. However, there are limitations to their use, and one should be familiar with these types of rates before using them.

Beginning with the 2006 edition of this publication, age-adjusted rates based on less than 20 events were considered statistically unreliable and were not displayed. Likewise, crude rates (e.g., percentages and age-specific rates) based on less than 10 events were not displayed.

3. Variability of Rates:

Standard Errors and Confidence Intervals

As mentioned in the definition, age-adjusted rates are only to be used for comparison purposes and only if the same standard population was used in the calculation. Age-adjusted rates are point estimates. The standard error (S.E.) for an age-adjusted rate defines the variability in this point estimate. Therefore, appropriate consideration should be given to standard errors when comparing age-adjusted rates. With a standard error for a rate, a confidence interval (C.I.) can be computed, i.e., a range for an observed rate which should include the actual or real rate 95 percent of the time. Age-adjusted rates for two different populations are considered to be significantly different when 95% confidence intervals for their age-adjusted rates do not overlap.

The S.E. for a rate per 100,000 population, as presented in this report, can be **estimated** by dividing that rate by the square root of the number of cases (N) upon which the rate was based:

$$\text{RATE} / \sqrt{N}$$

The standard formula for determining the 95% C.I. of a rate (based on the estimated S.E.) is:

$$\text{RATE} \pm (1.96 \times \text{S.E.})$$

This estimate assumes the rate to be a binomial proportion. As an example, let’s use the state’s 2012 age-adjusted incidence rate for all cancer sites of 476.1 per 100,000 in the calculation of this estimated S.E. and 95% C.I. The rate was based on 75,587 invasive cancers. The square root of 78,164 is about 274.93. By dividing the rate of 476.1 by the square root of 75,587, one obtains the estimated S.E. of about 1.73.

This formula produces an equation of $476.1 \pm (1.96 \times 1.73)$. Then, by subtracting and adding 3.39 against the original rate of 476.1, a range can be calculated and considered the estimated 95% confidence interval for the rate, i.e., 472.7 - 479.5. One could then state, with 95 percent certainty, that the actual 2012 age-adjusted cancer incidence rate for the state was between 472.7 and 479.5.

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APPENDICES

APPENDIX A

REPORTABLE CONDITIONS Pennsylvania Cancer Registry

The Pennsylvania Cancer Registry collects data on: 1) each form of invasive cancer with the exception of basal cell and squamous cell carcinoma of the skin; 2) each form of in situ cancer except carcinoma in situ of the cervix uteri; and 3) malignant, benign, and borderline primary tumors of the intracranial and central nervous system tumors diagnosed on or after January 1, 2004.

The International Classification of Diseases for Oncology (ICD-O) is used to determine reportability of solid tumors; the 2012 “Hematopoietic and Lymphoid Neoplasm Case Reportability and Coding Manual, Case Reportability Instructions” is used to determine reportability of hematopoietic and lymphoid neoplasms.

Solid Tumors

All histologic diagnoses with a behavior code of /2 (in situ) or /3 (malignant) in the International Classification of Diseases for Oncology, Second Edition (ICD-O-2) or Third Edition (ICD-O-3) are reportable.

Exceptions:

Cancers primary to the skin (C44.0-C44.9) with the following histologies are not reportable:

- Neoplasms, malignant, NOS of the skin (8000-8005)
- Epithelial carcinomas of the skin (8010-8046)
- Squamous cell carcinoma of the skin (8050-8084)
- Basal cell carcinoma of the skin (8090-8110)

Note: The above lesions are reportable for squamous and basal cell cancers originating in mucoepidermoid sites: lip, anus, vulva, vagina, penis, or scrotum (ICD-O codes C00.0-C00.9, C21.0, C51.0-C51.9, C52.9, C60.0-C60.9 and C63.2).

Cervical intraepithelial neoplasia, grade III, (CIN III) is not reportable (8077/2).

Prostatic intraepithelial neoplasia, grade III, (PIN III) is not reportable (8148/2).

Pilocytic/juvenile astrocytoma is reportable and is coded with a behavior of /3 (9421/3 (ICD-O-2) and 9421/1 in (ICD-O-3).

All histologic diagnoses with a behavior code of /0 (benign) or /1 (borderline or uncertain) when primary to the intracranial and central nervous system (CNS) sites listed below are reportable when diagnosed **on or after January 1, 2004**.

- Meninges (C70.0 - C70.9)
- Brain (C71.0 - C71.9)
- Spinal Cord (C72.0)
- Cauda equina (C72.1)
- Cranial nerves (C72.2 - C72.5)
- Other CNS (C72.8, C72.9)
- Pituitary gland (C75.1)
- Craniopharyngeal duct (C75.2)
- Pineal gland (C75.3)

Cystadenomas or tumors primary to the ovary or peritoneum qualified by the phrases borderline malignancy or low malignant potential are reportable only if **diagnosed prior to January 1, 2001**.

Carcinoids of the appendix are reportable only if stated as malignant by the pathologist or by virtue of metastasis, e.g., positive lymph nodes and/or implants are metastatic with pathologist reporting histology as carcinoid of the appendix.

Hematopoietic and Lymphoid Neoplasms

The 2012 “Hematopoietic and Lymphoid Neoplasm Case Reportability and Coding Manual, Case Reportability Instructions” must be used to determine reportability of hematopoietic and lymphoid neoplasms because not all reportable terms are indexed in ICD-O-3.

The behavior code for hematopoietic neoplasms listed below changed from /1 (borderline or uncertain) to /3 (malignant) and are reportable when diagnosed on or after **January 1, 2010**.

Chronic lymphoproliferative disorder of NK-cells (9831/3)
T-cell large granular lymphocytic leukemia (9831/3)
Langerhans cell histiocytosis, NOS (9751/3)
Langerhans cell histiocytosis, unifocal (9751/3)
Langerhans cell histiocytosis, multifocal (9751/3)
Myelodysplastic/Myeloproliferative neoplasm, unclassifiable (9975/3)
Myeloproliferative disease, NOS (9975/3)
Myeloproliferative neoplasm, unclassifiable (9975/3)

APPENDIX B

2012 Estimated Pennsylvania Population by Age, Sex and Race

	Total	Male	Female	White Male	White Female	Black Male	Black Female
All Ages	12,763,536	6,230,177	6,533,359	5,216,145	5,439,803	698,283	758,694
Under 5	719,703	367,772	351,931	278,901	265,328	55,171	53,560
5-9	748,984	382,349	366,635	296,367	281,570	54,266	53,047
10-14	778,466	398,535	379,931	314,260	298,155	56,685	53,759
15-19	866,475	441,841	424,634	349,779	335,959	64,691	61,080
20-24	889,526	450,597	438,929	355,176	344,037	67,185	66,340
25-29	809,102	408,934	400,168	331,829	319,548	51,122	52,725
30-34	767,429	384,456	382,973	313,393	306,022	46,752	50,057
35-39	716,664	356,965	359,699	293,124	290,467	41,738	45,165
40-44	833,228	414,001	419,227	347,249	347,274	46,003	49,868
45-49	902,425	445,278	457,147	381,157	386,498	46,604	51,486
50-54	978,411	480,375	498,036	419,515	429,497	45,602	51,694
55-59	923,920	451,642	472,278	399,357	412,258	39,276	45,473
60-64	786,342	379,297	407,045	339,689	357,958	29,447	37,238
65-69	613,966	289,350	324,616	262,645	289,815	19,575	26,493
70-74	449,030	203,824	245,206	185,478	219,762	13,400	19,796
75-79	354,658	152,380	202,278	139,793	182,791	9,500	15,727
80-84	303,155	119,480	183,675	111,514	168,791	6,248	12,365
85+	322,052	103,101	218,951	96,919	204,073	5,018	12,821

Source: State Data Center, Pennsylvania State University at Harrisburg

APPENDIX C

Comparability Table of ICD-O-2, ICD-O-3, ICD-9 and ICD-10 Codes For 23 Primary Sites

<u>PRIMARY SITE</u>	<u>ICD-O-2</u>	<u>ICD-O-3</u>	<u>ICD-9</u>	<u>ICD-10</u>
Oral Cavity and Pharynx	C00.0-C14.8	C00.0-C14.8	140.0-149.9	C00.0-C14.8
Esophagus	C15.0-C15.9	C15.0-C15.9	150.0-150.9	C15.0-C15.9
Stomach	C16.0-C16.9	C16.0-C16.9	151.0-151.9	C16.0-C16.9
Colon and Rectum	C18.0-C20.9, C26.0	C18.0-C20.9, C26.0	153.0-154.1, 159.0	C18.0-C20.9, C26.0
Liver/Intrahepatic Bile Duct	C22.0-C22.1	C22.0-C22.1	155.0-155.2	C22.0-C22.9
Pancreas	C25.0-C25.9	C25.0-C25.9	157.0-157.9	C25.0-C25.9
Larynx	C32.0-C32.9	C32.0-C32.9	161.0-161.9	C32.0-C32.9
Lung and Bronchus	C34.0-C34.9	C34.0-C34.9	162.2-162.9	C34.0-C34.9
Melanoma of the Skin	C44.0-C44.9 & M8720-M8790	C44.0-C44.9 & M8720-M8790	172.0-172.9	C43.0-C43.9
Female Breast	C50.0-C50.9	C50.0-C50.9	174.0-174.9	C50.0-C50.9
Cervix Uteri	C53.0-C53.9	C53.0-C53.9	180.0-180.9	C53.0-C53.9
Corpus/Uterus, NOS	C54.0-C55.9	C54.0-C55.9	182.0-182.8, 179	C54.0-C54.9, C55
Ovary	C56.9	C56.9	183.0	C56
Prostate	C61.9	C61.9	185	C61
Testis	C62.0-C62.9	C62.0-C62.9	186.0-186.9	C62.0-C62.9
Urinary Bladder	C67.0-C67.9 *	C67.0-C67.9 *	188.0-188.9	C67.0-C67.9
Kidney and Renal Pelvis	C64.9, C65.9	C64.9, C65.9	189.0-189.1	C64, C65
Brain/Other Nervous System	C70.0-C72.9	C70.0-C72.9	191.0-192.9	C70.0-C72.9
Thyroid	C73.9	C73.9	193	C73
Non-Hodgkin Lymphoma	M9590-M9595, M9670-M9717	M9590-M9597, M9670-M9671, M9673, M9675, M9678-M9680, M9684, M9687, M9688, M9689-M9691, M9695, M9698-M9702, M9705, M9708-M9709, M9712, M9714-M9719, M9724-M9729, M9735, M9737, M9738, M9811-M9818†, M9823†, M9827†, M9837†	200.0-200.8, 202.0-202.2, 202.8-202.9	C82.0-C85.9, C96.3
Hodgkin Lymphoma	M9650-M9667	M9650-M9667	201.0-201.9	C81.0-C81.9
Myeloma	M9731-M9732	M9731-M9732, M9734	203.0, 203.2-203.8	C90.0, C90.2
Leukemia	M9800-M9941	M9733, M9742, M9800, M9801, M9805, M9806-M9809, M9811-M9818§, M9820, M9823§, M9826, M9827§, M9831, M9832-M9834, M9835-M9836, M9837§, M9840, M9860, M9861, M9863, M9865, M9866, M9867, M9869, M9870, M9871-M9874, M9875, M9876, M9891, M9895-M9897, M9898, M9910, M9911, M9920, M9930, M9931, M9940, M9945, M9946, M9948, M9963, M9964	202.4, 203.1, 204.0-208.9	C90.1, C91.0-C95.9

* Includes in situ cases.

† Excludes topography codes C42.0, C42.1, and C42.4.

§ Includes only topography codes C42.0, C42.1, and C42.4.

NOTES: Sites Oral Cavity to Thyroid, as listed above, exclude histologies M9050 to M9055, M9140 and M9590 to M9992 of the ICD-O-2 and ICD-O-3. See "Comparability of Codes" in the Technical Notes section for more information. Unless otherwise noted, only invasive and in situ urinary bladder cancers are included in the counts of incidence cases and in the calculation of all rates in this report. The abbreviation "NOS" means "Not Otherwise Specified."

APPENDIX D

Additional Cancer Incidence and Mortality Data Available

The cancer incidence and mortality data presented in this report are only a part of the information collected by the Pennsylvania Cancer Registry and via the death certificate. The Bureau of Health Statistics and Research maintains current and historical tabulations in different formats not contained in this report (most notably, data at the minor civil division level). Copies of these tabulations can be obtained by contacting the bureau. All of the 1985 through 2012 annual tabulations and multiple-year tabulations are available in .PDF file format (requires free Adobe Acrobat Reader software) and text (.TXT) file formats. The bureau can also produce, for a fee, special computer-generated output to the user's specifications. The following is a list of the cross-tabulations readily available by type of record. Annual tabulations of cancer mortality data are available for every year back to 1960, except for data at the minor civil division level, which are available only back to 1961. Statewide cancer incidence data are available back to 1985. Some regional cancer incidence data are available for 1983 and 1984. Please contact the bureau regarding the limited availability of incidence data for those years. Both annual and multiple-year tabulations are available at the county and minor civil division levels (as indicated below).

NOTE: Starting with the availability of 1999 data, the cancer primary site groupings were changed to match the definitions used by the National Cancer Institute's SEER program. Unless otherwise noted, only invasive (and in situ urinary bladder) cancers are included in the counts of cancer incidence cases. Historical data, back to 1985, have also been re-tabulated using these new primary site groupings.

IMPORTANT NOTE: Most of the cancer incidence and mortality tabulations shown here, back to 1990, can be accessed on the Health Statistics web pages of the Department's website at www.statistics.health.pa.gov/ (select Cancer Statistics under My Health Statistics). The Pennsylvania Department of Health has also developed an interactive web tool for health data users to create customized data tables, charts, maps and county assessments/profiles of birth, teen pregnancies, death, infant death, cancer, behavioral risk, sexually transmitted diseases, other communicable diseases, and population statistics. This online web tool is called Epidemiologic Query and Mapping System (EpiQMS) and contains historical data back to 1990 for most datasets. EpiQMS can be accessed from the Health Statistics Web pages at www.statistics.health.pa.gov/ (select EpiQMS under Statistical Resources).

ANNUAL TABULATIONS

Mortality

Resident Cancer Deaths by Age, Sex and Race, by County, 23 Primary Sites, Pa., 1960-2012

Resident Cancer Deaths by Minor Civil Division, 23 Primary Sites, Pa., 1961-2012

Resident Cancer Deaths by 4-digit ICD Cause of Death Code, by Age, Sex and Race, by County, Pa., 1960-2012

Resident Cancer Deaths by Age, Sex, Race and Hispanic Origin, 23 Primary Sites, Pa., 1989-2012

Incidence

Number of Cancer Cases by Age, Sex and Race, by County, 75 Primary Sites, Pa. Residents, 1985-2012

Number of Cancer Cases by Minor Civil Division, 23 Primary Sites, Pa. Residents, 1985-2012

Number of Cancer Cases by Stage of Disease, by Sex and Race, by County, Selected Primary Sites, Pa. Residents, 1985-2012

Number of Cancer Cases by Stage of Disease, by Age, by County, Selected Primary Sites, Pa. Residents, 1985-2012

MULTIPLE-YEAR TABULATIONS

Mortality (1985-2012)

Resident Cancer Deaths by Age, Sex and Race, by Minor Civil Division, 23 Primary Sites, Pa.

Resident Cancer Deaths by Primary Site, Sex and Year, by County, Pa.

Incidence (1985-2012)

Number of Cancer Cases by Age, Sex and Race, by County, 75 Primary Sites, Pa. Residents,

Number of Cancer Cases by Age, Sex and Race, by Minor Civil Division, 23 Primary Sites, Pa. Residents

Number of Cancer Cases by Primary Site, Sex and Year, by County, Pa. Residents

NOTES: Ages are listed by five-year age groupings (0-4, 5-9, 10-14, etc.).
Racial breakdowns for annual tabulations are for whites and blacks.

APPENDIX E

LIST OF CONSOLIDATED DATA ITEMS Pennsylvania Cancer Registry

This list includes various data items found in the consolidated cancer file as reported to or derived by the Pennsylvania Cancer Registry. The consolidated items serve as an abridgement to the items found in the cancer abstract file, which follows the requirements and recommendations for collection of each item by standard-setting groups, such as the National Program of Cancer Registries, the Commission on Cancer and the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program. The consolidated list replaces the Pennsylvania Cancer Registry report form (Figure 1) appearing in previous editions (2003 and earlier) of the "Pennsylvania Cancer Incidence and Mortality" report. It provides cancer data users with an overview of the various data items collected or derived and is not considered to be comprehensive. Contact the Division of Health Informatics for additional information on the data items.

Patient ID Number	Usual Industry (only text collected)
Sequence Number -- Central	Date of Diagnosis
Tumor Record Number	Type of Reporting Source
Name -- Alias	Physician -- Follow-up
Name -- Last	Primary Site*
Name -- First	Laterality
Name -- Middle	Histology Type*
Name -- Suffix	(1992-2000 ICD-O-2, 2001+ ICD-O-3)
Name -- Maiden	Behavior Code*
Address at Diagnosis -- No. & Street	(1992-2000 ICD-O-2, 2001+ ICD-O-3)
Address at Diagnosis -- City	ICD-O-3 Conversion Flag
Address at Diagnosis -- State	Grade*
Address at Diagnosis -- Postal Zip	Diagnostic Confirmation
County at Diagnosis	Primary Payer at Diagnosis
Geocoded Items	Collaborative Staging (2004+)
-- Municipality	-- Derived SEER Summary Stage 1977
-- Census Tract	-- Derived SEER Summary Stage 2000
-- Census Tract Block Group	-- Derived AJCC Stage Group
-- Census Tract Certainty	Treatment Provided/Planned
-- Latitude	Date of First Course of Treatment
-- Longitude	Date of Last Contact
Age at Diagnosis	Vital Status
Date of Birth	Follow-Up Source Central
Birth Place	Cause of Death Place of
Social Security Number	Death County of Death
Sex	Date Case Last Changed
Spanish/Hispanic Origin	Unusual Follow-Up Method
Race (single designation race)	Date Patient Updated
Race (multiple race designation)	Date Tumor Record Updated
Usual Occupation (only text collected)	Date Tumor Record Available

* Reported from registry hospitals only. These data items are coded by the PCR when reported from other (non-registry) facilities.

