Pennsylvania Cancer Incidence and Mortality

2013

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PENNSYLVANIA
CANCER INCIDENCE and MORTALITY
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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 29th 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 2013 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

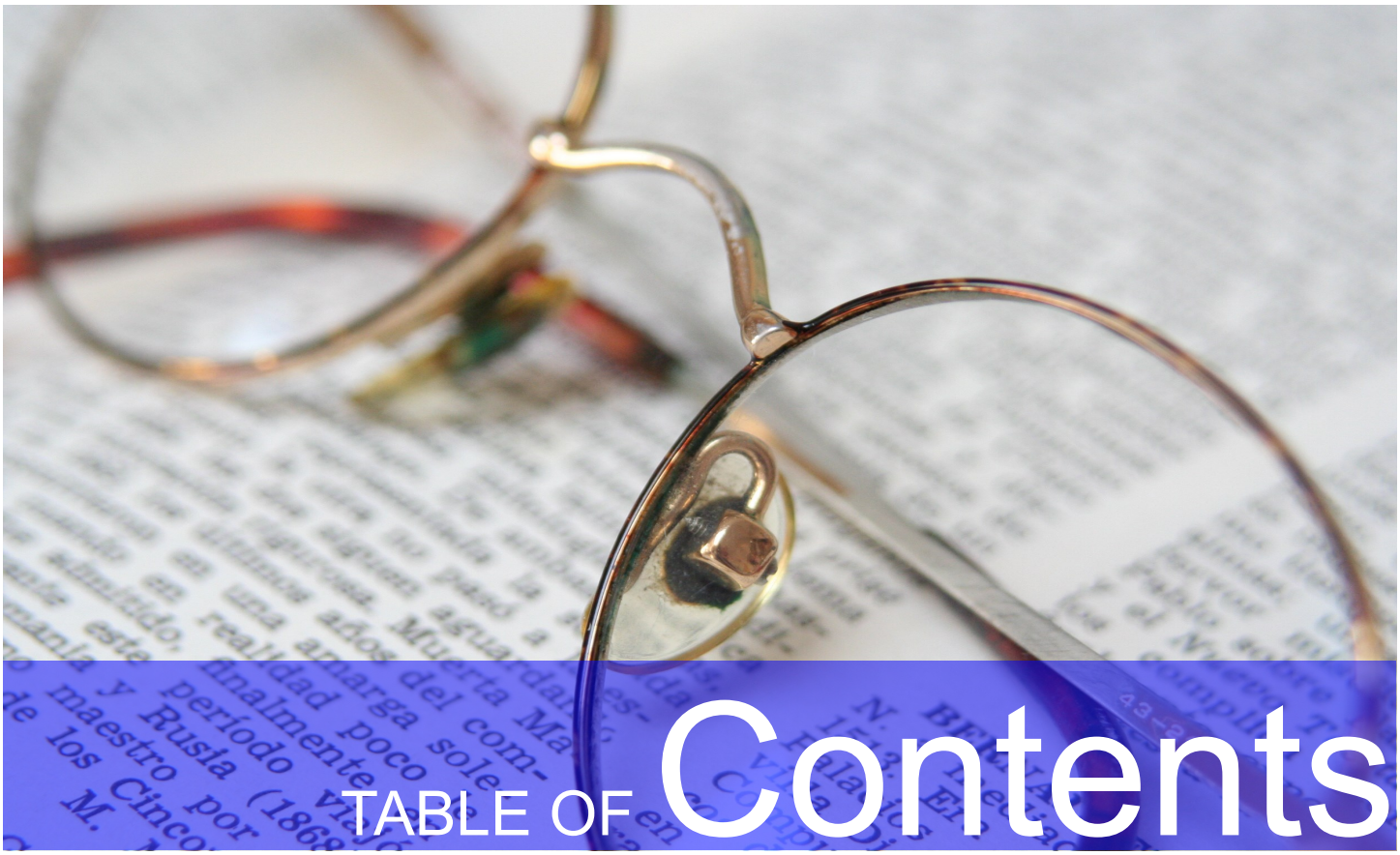
"Pennsylvania Cancer Incidence and Mortality" is divided into 24 sections – an All Sites section plus 23 sections for each major cancer site. These 23 sites comprise approximately 91 percent of the invasive cases for both males and females diagnosed among Pennsylvania residents and reported to the registry during 2013. 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 2009-2013. 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 2013 state census population, blacks represented 11.5 percent of Pennsylvania's population and 68.6 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 2004 through 2013 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 2009-2013 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 2013 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 2009 through 2013. 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 2009-2013.



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CANCER INCIDENCE and MORTALITY by SITE

All Cancer Sites

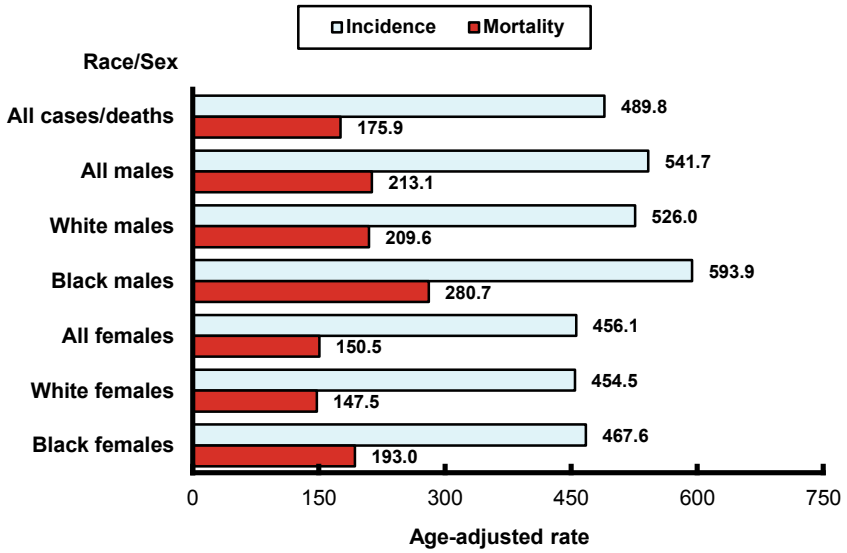
Data Highlights

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 2013, a total of 77,565 new invasive cancer cases were diagnosed among Pennsylvania residents and reported to the Pennsylvania Cancer Registry. Compared to 2012, there were 1,978 more invasive cancers diagnosed during 2013. The average annual age-adjusted incidence rate for all invasive cancers combined covering the five-year period of 2009-2013 was 18.8 percent higher among males (541.7 per 100,000) compared to females (456.1). Black males had the highest average annual age-adjusted incidence rate for that period among the four sex/race groups (593.9), followed by white males (526.0) – a difference of about 13 percent. For the period 2009-2013, the difference between rates for white and black females was less than 3 percent. Annual age-adjusted cancer incidence rates were consistently higher among black males compared to white males (2004-2013) but similar for both white and black females (2004-2008, 2011, 2012, and 2013). Black females, however, had significantly higher annual rates than whites in 2009 and 2010. Annual age-adjusted incidence rates among white and black females generally had an upward trend during the years 2004-2013. The incidence rates for white and black males had an overall downward trend from 2004 to 2013. Since 2004, the incidence rate for black males has decreased by 15 percent from 672.6 to 574.1. The cancer incidence rates among white males 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 to 497.5, the lowest annual incidence rate observed during the 10-year period 2004-2013. The rate increased slightly to 509.8 in 2013.

The risk of developing cancer rose dramatically with age. During the period 2009-2013, about 69 percent of all cancer cases were diagnosed among residents aged 60 and over. Staging data for 2013 by sex and race (Figure 1-C) show that approximately 45 percent of the primary cancer cases (excluding lymphomas) among black females and black males were diagnosed in the regional or distant stages, compared to 44 percent for white males and 40 percent for white females.

FIGURE 1
Average Annual Age-Adjusted Incidence and Death Rates* by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

The average annual age-adjusted cancer death rate for 2009-2013 among males (213.1 per 100,000) was about 42 percent higher than the rate for females (150.5). The cancer death rate of 280.7 for black males was, by far, the highest among the four sex/race groups.

The 2013 age-adjusted death rate (170.3) for all cancers among all residents was the lowest recorded between 2004 and 2013. This was also true for black males, black females, white males and white females.

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, 2004-2013

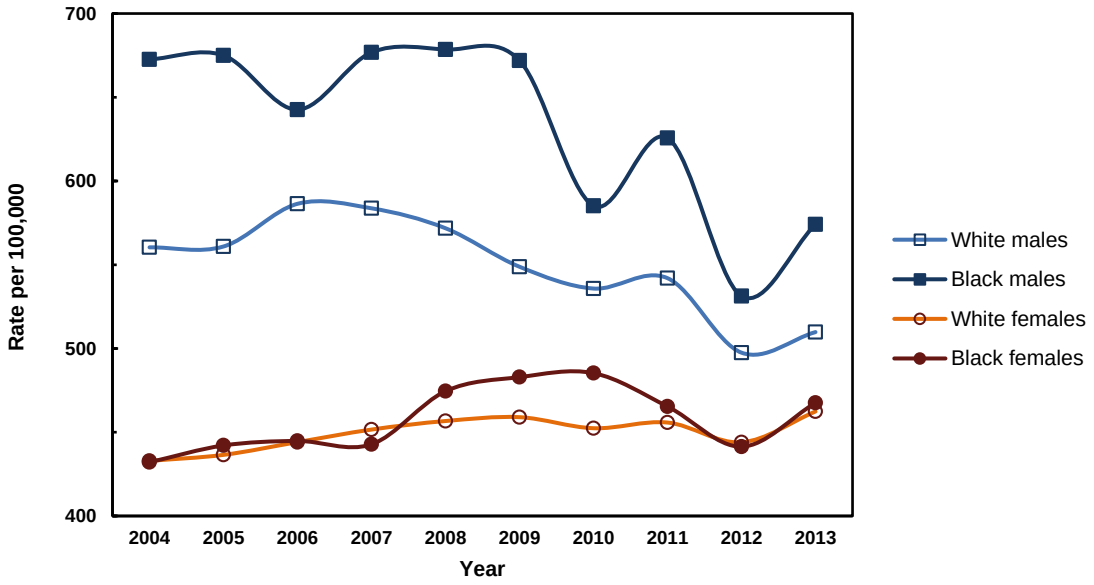
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**77,565**	**483.0** (479.6-486.4)	**38,161**	**519.7** (514.5-524.9)	**33,520**	**509.8** (504.3-515.3)	**3,242**	**574.1** (554.3-593.9)	**39,401**	**461.4** (456.8-466.0)	**34,746**	**462.4** (457.5-467.3)	**3,557**	**467.6** (452.2-483.0)
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)

* Includes unknown/other race and sex.

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, 2004-2013



All Cancer Sites: INCIDENCE (Invasive)

TABLE 1-B

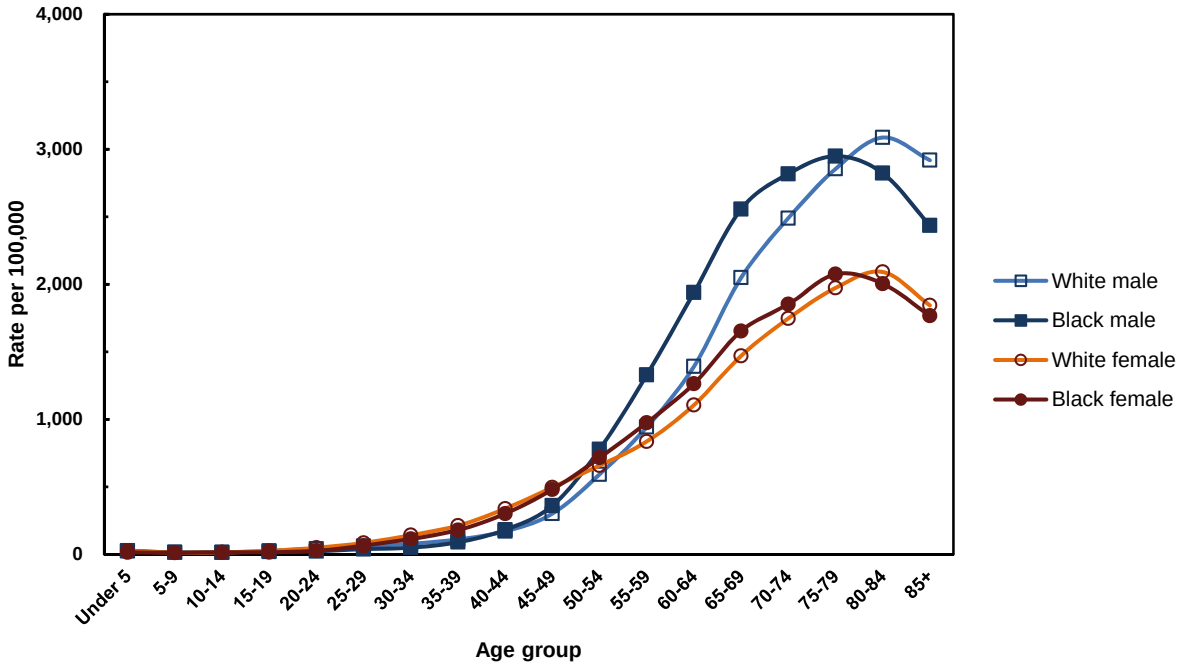
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**602.2**	**617.2**	**642.9**	**461.7**	**587.9**	**620.1**	**458.4**
Under 5	25.2	25.9	26.4	23.5	24.4	25.4	14.7
5-9	12.9	13.9	14.0	14.3	12.0	12.3	11.6
10-14	14.3	14.7	14.9	13.6	13.8	13.8	14.6
15-19	24.0	23.9	25.0	19.2	24.2	25.3	15.9
20-24	41.1	37.6	40.7	22.8	44.7	48.7	26.3
25-29	69.7	57.4	60.8	38.7	82.2	84.2	63.4
30-34	105.4	73.9	77.9	49.8	137.0	142.1	114.5
35-39	158.0	108.1	110.5	89.7	207.5	212.0	178.8
40-44	252.6	173.0	170.5	181.5	330.9	337.8	301.5
45-49	402.6	309.1	301.2	360.9	493.5	495.6	480.0
50-54	641.0	617.1	592.0	777.4	664.2	657.8	715.5
55-59	917.9	990.9	941.9	1,328.3	848.2	835.6	974.3
60-64	1,284.9	1,464.3	1,391.1	1,938.5	1,118.4	1,105.5	1,263.9
65-69	1,786.6	2,130.1	2,049.1	2,556.6	1,483.7	1,470.2	1,653.6
70-74	2,122.0	2,567.7	2,488.9	2,817.7	1,756.4	1,747.2	1,852.3
75-79	2,388.1	2,929.1	2,855.0	2,949.1	1,988.4	1,972.8	2,074.8
80-84	2,514.0	3,147.0	3,087.2	2,823.5	2,108.5	2,091.8	2,004.5
85+	2,235.3	2,976.4	2,919.2	2,435.6	1,888.4	1,844.5	1,766.6

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, 2009-2013



All Cancer Sites: INCIDENCE (Invasive)

TABLE 1-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

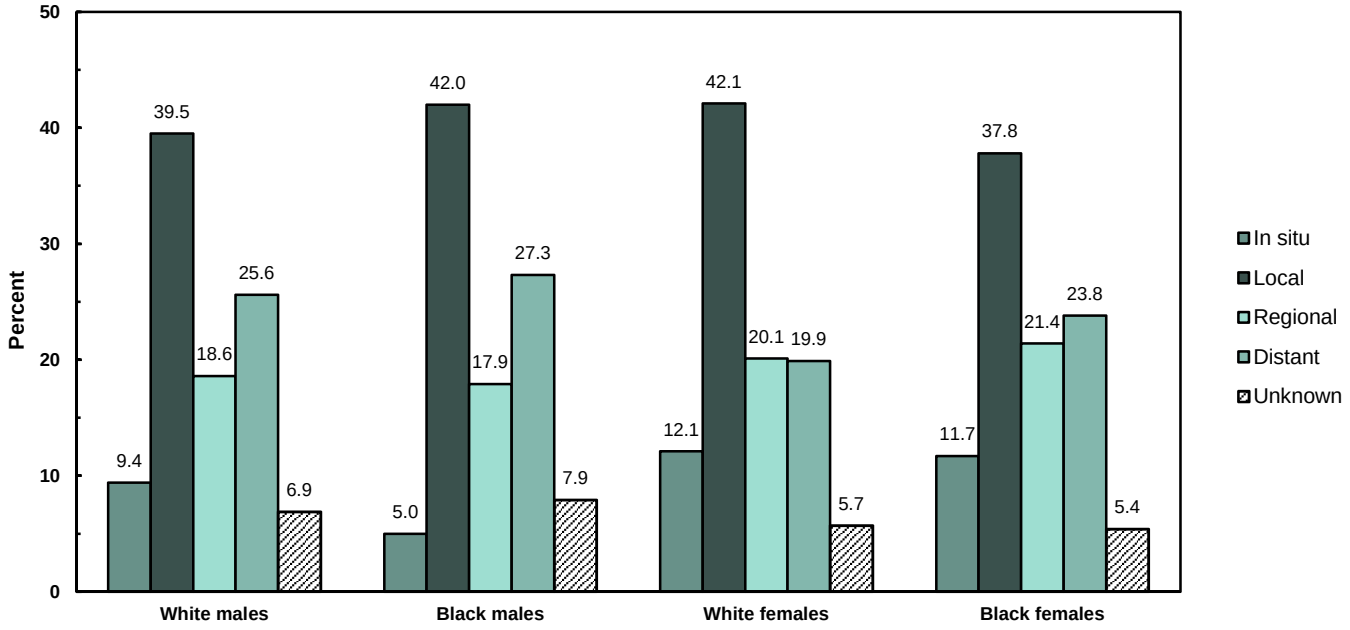
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**382,905**	**191,351**	**166,939**	**15,711**	**191,545**	**168,494**	**17,010**
Under 5	915	481	373	64	434	341	39
5-9	486	266	209	38	220	174	30
10-14	561	296	237	38	265	208	39
15-19	1,067	540	448	62	527	437	49
20-24	1,821	845	723	73	976	839	83
25-29	2,768	1,154	988	98	1,613	1,316	164
30-34	3,984	1,403	1,201	114	2,581	2,138	278
35-39	5,885	2,006	1,686	189	3,879	3,215	408
40-44	10,639	3,615	2,995	407	7,022	5,956	740
45-49	18,435	6,979	5,838	822	11,456	9,760	1,216
50-54	30,845	14,575	12,230	1,690	16,270	13,910	1,786
55-59	41,038	21,621	18,226	2,421	19,414	16,714	2,107
60-64	49,072	26,909	22,946	2,665	22,161	19,326	2,216
65-69	51,871	28,979	25,305	2,326	22,892	20,268	2,062
70-74	47,254	25,767	22,765	1,826	21,487	19,209	1,789
75-79	42,870	22,339	20,018	1,365	20,530	18,465	1,619
80-84	37,555	18,358	16,790	873	19,197	17,506	1,224
85+	35,814	15,202	13,955	640	20,612	18,709	1,161

* 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, 2013



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: 72,406 - 93.3%

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, 2004-2013

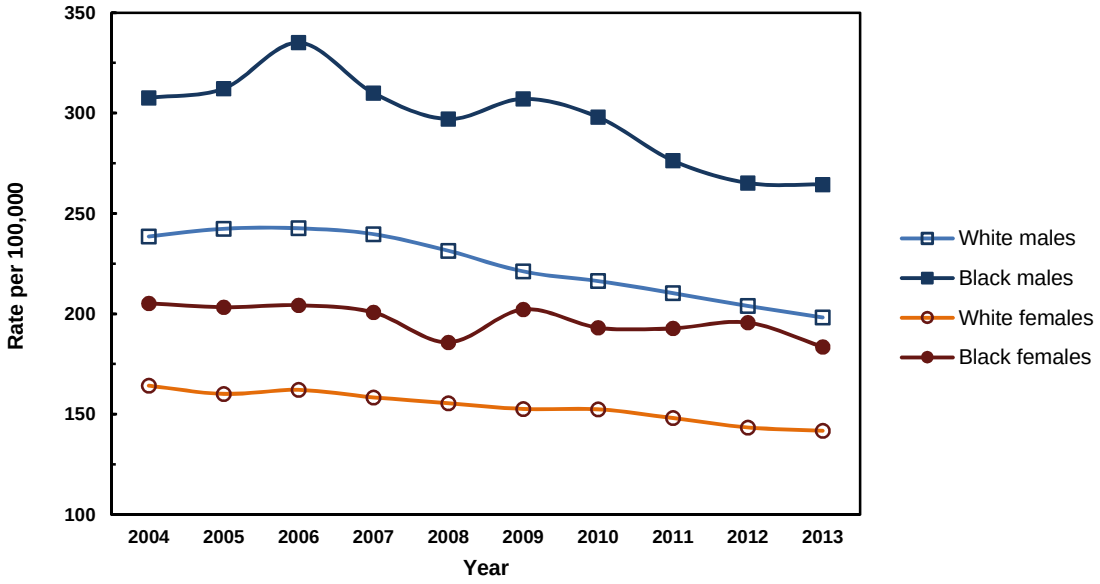
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	28,418	169.4 (167.4-171.4)	14,631	203.4 (200.1-206.7)	12,932	198.1 (194.7-201.5)	1,318	263.3 (249.1-277.5)	13,787	146.0 (143.6-148.4)	12,069	141.7 (139.2-144.2)	1,386	183.4 (173.7-193.1)
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)

* 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, 2004-2013



All Cancer Sites: MORTALITY

TABLE 1-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

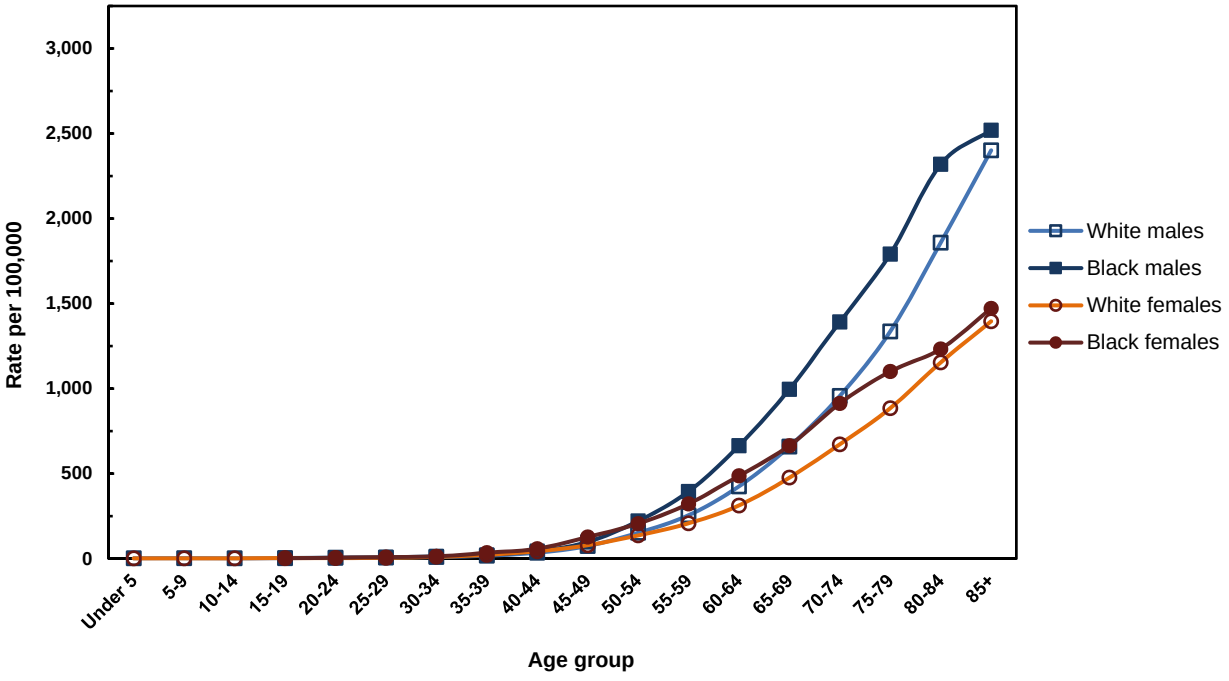
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**143,171**	**225.2**	**73,500**	**237.1**	**65,750**	**253.2**	**6,588**	**193.6**	**69,671**	**213.8**	**61,638**	**226.9**	**6,995**	**188.5**
Under 5	69	1.9	35	1.9	28	2.0	5	ND	34	1.9	26	1.9	5	ND
5-9	88	2.3	51	2.7	44	2.9	5	ND	37	2.0	27	1.9	8	ND
10-14	72	1.8	38	1.9	32	2.0	4	ND	34	1.8	27	1.8	2	ND
15-19	127	2.9	68	3.0	48	2.7	13	4.0	59	2.7	46	2.7	10	3.2
20-24	209	4.7	127	5.7	102	5.7	16	5.0	82	3.8	64	3.7	15	4.7
25-29	230	5.8	126	6.3	105	6.5	18	7.1	104	5.3	71	4.5	24	9.3
30-34	411	10.9	190	10.0	150	9.7	31	13.6	221	11.7	175	11.6	31	12.8
35-39	756	20.3	325	17.5	262	17.2	45	21.4	431	23.1	330	21.8	80	35.1
40-44	1,682	39.9	734	35.1	609	34.7	99	44.1	948	44.7	759	43.0	143	58.3
45-49	3,632	79.3	1,699	75.2	1,440	74.3	223	97.9	1,933	83.3	1,552	78.8	323	127.5
50-54	7,204	149.7	3,721	157.5	3,143	152.1	481	221.3	3,483	142.2	2,891	136.7	514	205.9
55-59	10,722	239.8	5,782	265.0	4,936	255.1	719	394.5	4,940	215.8	4,155	207.7	697	322.3
60-64	14,501	379.7	8,079	439.6	7,007	424.8	913	664.1	6,422	324.1	5,459	312.3	854	487.1
65-69	16,718	575.8	9,191	675.6	8,141	659.2	906	995.8	7,527	487.8	6,571	476.7	828	664.0
70-74	18,160	815.5	9,792	975.8	8,752	956.9	902	1,391.9	8,368	684.0	7,388	672.0	882	913.2
75-79	19,618	1,092.8	10,350	1,357.1	9,368	1,336.1	829	1,791.0	9,268	897.6	8,281	884.7	859	1,100.8
80-84	21,467	1,437.1	10,948	1,876.7	10,105	1,858.0	717	2,319.0	10,519	1,155.4	9,656	1,153.8	753	1,233.1
85+	27,503	1,716.5	12,244	2,397.3	11,478	2,401.0	662	2,519.3	15,259	1,398.0	14,158	1,395.8	967	1,471.4

* 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 1-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	**382,905**	**191,351**	**541.7**	(539.3-544.1)	**191,545**	**456.1**	(454.1-458.1)
Adams	**2,941**	**1,452**	**486.5**	(461.5-511.5)	**1,489**	**447.5**	(424.8-470.2)
Allegheny	**39,434**	**18,739**	**539.9**	(532.2-547.6)	**20,693**	**475.3**	(468.8-481.8)
Armstrong	**2,311**	**1,144**	**512.7**	(483.0-542.4)	**1,167**	**462.4**	(435.9-488.9)
Beaver	**5,767**	**2,862**	**532.4**	(512.9-551.9)	**2,905**	**454.2**	(437.7-470.7)
Bedford	**1,627**	**884**	**535.3**	(500.0-570.6)	**743**	**421.7**	(391.4-452.0)
Berks	**11,642**	**5,908**	**533.3**	(519.7-546.9)	**5,733**	**445.9**	(434.4-457.4)
Blair	**4,107**	**2,085**	**545.8**	(522.4-569.2)	**2,022**	**434.6**	(415.7-453.5)
Bradford	**2,133**	**1,069**	**534.7**	(502.6-566.8)	**1,064**	**487.2**	(457.9-516.5)
Bucks	**19,369**	**9,805**	**551.5**	(540.6-562.4)	**9,564**	**463.9**	(454.6-473.2)
Butler	**5,723**	**2,988**	**566.1**	(545.8-586.4)	**2,735**	**453.0**	(436.0-470.0)
Cambria	**4,913**	**2,516**	**551.2**	(529.7-572.7)	**2,397**	**454.6**	(436.4-472.8)
Cameron	**214**	**120**	**630.5**	(517.7-743.3)	**94**	**497.9**	(397.2-598.6)
Carbon	**2,311**	**1,171**	**569.4**	(536.8-602.0)	**1,140**	**489.3**	(460.9-517.7)
Centre	**3,218**	**1,669**	**496.6**	(472.8-520.4)	**1,549**	**418.7**	(397.8-439.6)
Chester	**13,709**	**6,946**	**535.9**	(523.3-548.5)	**6,763**	**453.6**	(442.8-464.4)
Clarion	**1,268**	**670**	**569.2**	(526.1-612.3)	**598**	**457.8**	(421.1-494.5)
Clearfield	**2,577**	**1,381**	**541.6**	(513.0-570.2)	**1,196**	**420.8**	(397.0-444.6)
Clinton	**1,164**	**585**	**520.6**	(478.4-562.8)	**579**	**474.9**	(436.2-513.6)
Columbia	**2,151**	**1,064**	**569.9**	(535.7-604.1)	**1,087**	**496.4**	(466.9-525.9)
Crawford	**2,774**	**1,465**	**542.0**	(514.2-569.8)	**1,309**	**437.7**	(414.0-461.4)
Cumberland	**6,820**	**3,295**	**496.0**	(479.1-512.9)	**3,525**	**448.9**	(434.1-463.7)
Dauphin	**7,238**	**3,462**	**497.1**	(480.5-513.7)	**3,776**	**442.6**	(428.5-456.7)
Delaware	**16,989**	**8,421**	**587.2**	(574.7-599.7)	**8,568**	**474.9**	(464.8-485.0)
Elk	**1,182**	**641**	**598.6**	(552.3-644.9)	**541**	**462.3**	(423.3-501.3)
Erie	**7,790**	**3,843**	**509.5**	(493.4-525.6)	**3,947**	**449.6**	(435.6-463.6)
Fayette	**4,560**	**2,340**	**542.7**	(520.7-564.7)	**2,220**	**440.6**	(422.3-458.9)
Forest	**208**	**124**	**434.2**	(357.8-510.6)	**84**	**415.9**	(327.0-504.8)
Franklin	**4,273**	**2,262**	**513.4**	(492.2-534.6)	**2,011**	**399.6**	(382.1-417.1)
Fulton	**454**	**242**	**514.2**	(449.4-579.0)	**212**	**423.4**	(366.4-480.4)
Greene	**1,227**	**600**	**527.6**	(485.4-569.8)	**627**	**511.3**	(471.3-551.3)
Huntingdon	**1,245**	**648**	**452.9**	(418.0-487.8)	**597**	**413.5**	(380.3-446.7)
Indiana	**2,282**	**1,203**	**480.1**	(453.0-507.2)	**1,079**	**379.0**	(356.4-401.6)
Jefferson	**1,509**	**829**	**575.0**	(535.9-614.1)	**680**	**417.9**	(386.5-449.3)
Juniata	**661**	**320**	**432.7**	(385.3-480.1)	**341**	**428.9**	(383.4-474.4)
Lackawanna	**6,949**	**3,450**	**546.5**	(528.3-564.7)	**3,499**	**459.1**	(443.9-474.3)
Lancaster	**13,798**	**6,919**	**488.3**	(476.8-499.8)	**6,879**	**418.9**	(409.0-428.8)
Lawrence	**3,006**	**1,475**	**517.2**	(490.8-543.6)	**1,528**	**460.2**	(437.1-483.3)
Lebanon	**4,082**	**2,026**	**508.2**	(486.1-530.3)	**2,056**	**444.6**	(425.4-463.8)
Lehigh	**10,294**	**5,180**	**552.7**	(537.6-567.8)	**5,114**	**452.6**	(440.2-465.0)
Luzerne	**11,088**	**5,445**	**568.0**	(552.9-583.1)	**5,643**	**486.0**	(473.3-498.7)
Lycoming	**3,835**	**1,896**	**557.0**	(531.9-582.1)	**1,939**	**492.3**	(470.4-514.2)
McKean	**1,294**	**678**	**513.6**	(474.9-552.3)	**616**	**438.0**	(403.4-472.6)
Mercer	**3,933**	**2,008**	**553.4**	(529.2-577.6)	**1,925**	**464.8**	(444.0-485.6)
Mifflin	**1,527**	**766**	**524.9**	(487.7-562.1)	**761**	**459.7**	(427.0-492.4)
Monroe	**4,427**	**2,304**	**513.0**	(492.1-533.9)	**2,123**	**423.0**	(405.0-441.0)
Montgomery	**24,178**	**12,010**	**544.4**	(534.7-554.1)	**12,168**	**459.8**	(451.6-468.0)
Montour	**624**	**316**	**562.3**	(500.3-624.3)	**308**	**438.4**	(389.4-487.4)
Northampton	**9,861**	**5,052**	**602.6**	(586.0-619.2)	**4,809**	**485.0**	(471.3-498.7)
Northumberland	**3,147**	**1,667**	**554.7**	(528.1-581.3)	**1,480**	**436.0**	(413.8-458.2)
Perry	**1,326**	**691**	**525.6**	(486.4-564.8)	**635**	**448.2**	(413.3-483.1)
Philadelphia	**40,978**	**20,018**	**608.4**	(600.0-616.8)	**20,957**	**470.1**	(463.7-476.5)
Pike	**1,716**	**899**	**470.1**	(439.4-500.8)	**817**	**419.5**	(390.7-448.3)
Potter	**613**	**345**	**564.7**	(505.1-624.3)	**268**	**425.9**	(374.9-476.9)
Schuylkill	**5,098**	**2,540**	**542.6**	(521.5-563.7)	**2,558**	**477.1**	(458.6-495.6)
Snyder	**1,109**	**566**	**518.1**	(475.4-560.8)	**543**	**435.7**	(399.1-472.3)
Somerset	**2,548**	**1,333**	**517.4**	(489.6-545.2)	**1,215**	**439.9**	(415.2-464.6)
Sullivan	**304**	**154**	**586.9**	(494.2-679.6)	**150**	**546.8**	(459.3-634.3)
Susquehanna	**1,316**	**715**	**490.1**	(454.2-526.0)	**601**	**405.1**	(372.7-437.5)
Tioga	**1,360**	**706**	**508.9**	(471.4-546.4)	**654**	**454.4**	(419.6-489.2)
Union	**1,141**	**596**	**479.7**	(441.2-518.2)	**545**	**418.3**	(383.2-453.4)
Venango	**1,812**	**946**	**534.7**	(500.6-568.8)	**866**	**438.4**	(409.2-467.6)
Warren	**1,437**	**757**	**531.0**	(493.2-568.8)	**680**	**455.9**	(421.6-490.2)
Washington	**6,782**	**3,398**	**530.6**	(512.8-548.4)	**3,384**	**450.0**	(434.8-465.2)
Wayne	**1,668**	**906**	**488.4**	(456.6-520.2)	**762**	**414.5**	(385.1-443.9)
Westmoreland	**12,454**	**6,132**	**518.5**	(505.5-531.5)	**6,322**	**458.8**	(447.5-470.1)
Wyoming	**972**	**491**	**561.4**	(511.7-611.1)	**481**	**525.7**	(478.7-572.7)
York	**12,437**	**6,213**	**523.1**	(510.1-536.1)	**6,224**	**460.6**	(449.2-472.0)

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. 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, 2009-2013

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	**143,171**	**73,500**	**213.1**	(211.6-214.6)	**69,671**	**150.5**	(149.4-151.6)								
Adams	**1,089**	**580**	**199.0**	(182.8-215.2)	**509**	**140.2**	(128.0-152.4)	Juniata	**272**	**146**	**205.8**	(172.4-239.2)	**126**	**143.0**	(118.0-168.0)
Allegheny	**15,437**	**7,671**	**219.6**	(214.7-224.5)	**7,766**	**156.4**	(152.9-159.9)	Lackawanna	**2,719**	**1,369**	**219.1**	(207.5-230.7)	**1,350**	**150.8**	(142.8-158.8)
Armstrong	**886**	**439**	**196.5**	(178.1-214.9)	**447**	**157.8**	(143.2-172.4)	Lancaster	**5,138**	**2,672**	**189.9**	(182.7-197.1)	**2,466**	**135.2**	(129.9-140.5)
Beaver	**2,318**	**1,262**	**230.8**	(218.1-243.5)	**1,056**	**144.7**	(136.0-153.4)	Lawrence	**1,255**	**656**	**227.2**	(209.8-244.6)	**599**	**155.7**	(143.2-168.2)
Bedford	**546**	**290**	**176.7**	(156.4-197.0)	**256**	**129.9**	(114.0-145.8)	Lebanon	**1,603**	**849**	**214.6**	(200.2-229.0)	**754**	**144.1**	(133.8-154.4)
Berks	**4,054**	**2,084**	**192.5**	(184.2-200.8)	**1,970**	**140.1**	(133.9-146.3)	Lehigh	**3,691**	**1,898**	**206.7**	(197.4-216.0)	**1,793**	**141.4**	(134.9-147.9)
Blair	**1,635**	**893**	**233.4**	(218.1-248.7)	**742**	**141.9**	(131.7-152.1)	Luzerne	**4,165**	**2,131**	**225.4**	(215.8-235.0)	**2,034**	**152.7**	(146.1-159.3)
Bradford	**809**	**408**	**206.3**	(186.3-226.3)	**401**	**166.5**	(150.2-182.8)	Lycoming	**1,387**	**705**	**207.1**	(191.8-222.4)	**682**	**154.3**	(142.7-165.9)
Bucks	**6,562**	**3,335**	**199.5**	(192.7-206.3)	**3,227**	**146.0**	(141.0-151.0)	McKean	**499**	**258**	**197.7**	(173.6-221.8)	**241**	**150.4**	(131.4-169.4)
Butler	**2,021**	**1,112**	**216.9**	(204.2-229.6)	**909**	**135.4**	(126.6-144.2)	Mercer	**1,571**	**824**	**223.9**	(208.6-239.2)	**747**	**157.8**	(146.5-169.1)
Cambria	**1,821**	**931**	**205.2**	(192.0-218.4)	**890**	**142.3**	(133.0-151.6)	Mifflin	**566**	**299**	**203.3**	(180.3-226.3)	**267**	**146.8**	(129.2-164.4)
Cameron	**65**	**43**	**232.4**	(162.9-301.9)	**22**	**92.3**	(53.7-130.9)	Monroe	**1,622**	**880**	**213.5**	(199.4-227.6)	**742**	**149.2**	(138.5-159.9)
Carbon	**874**	**450**	**224.7**	(203.9-245.5)	**424**	**167.4**	(151.5-183.3)	Montgomery	**8,319**	**4,092**	**189.7**	(183.9-195.5)	**4,227**	**143.6**	(139.3-147.9)
Centre	**1,043**	**574**	**179.7**	(165.0-194.4)	**469**	**116.6**	(106.0-127.2)	Montour	**203**	**104**	**193.1**	(156.0-230.2)	**99**	**127.6**	(102.5-152.7)
Chester	**4,449**	**2,246**	**186.1**	(178.4-193.8)	**2,203**	**140.9**	(135.0-146.8)	Northampton	**3,341**	**1,735**	**210.0**	(200.1-219.9)	**1,606**	**145.4**	(138.3-152.5)
Clarion	**460**	**261**	**227.6**	(200.0-255.2)	**199**	**143.7**	(123.7-163.7)	Northumberland	**1,238**	**673**	**227.1**	(209.9-244.3)	**565**	**144.1**	(132.2-156.0)
Clearfield	**1,057**	**577**	**231.5**	(212.6-250.4)	**480**	**149.1**	(135.8-162.4)	Perry	**510**	**302**	**242.6**	(215.2-270.0)	**208**	**142.6**	(123.2-162.0)
Clinton	**489**	**270**	**241.3**	(212.5-270.1)	**219**	**162.0**	(140.5-183.5)	Philadelphia	**16,283**	**8,048**	**257.5**	(251.9-263.1)	**8,235**	**175.8**	(172.0-179.6)
Columbia	**754**	**400**	**219.8**	(198.3-241.3)	**354**	**147.6**	(132.2-163.0)	Pike	**513**	**279**	**153.9**	(135.8-172.0)	**234**	**117.7**	(102.6-132.8)
Crawford	**1,112**	**594**	**226.7**	(208.5-244.9)	**518**	**162.7**	(148.7-176.7)	Potter	**259**	**135**	**218.9**	(182.0-255.8)	**124**	**167.1**	(137.7-196.5)
Cumberland	**2,359**	**1,189**	**184.4**	(173.9-194.9)	**1,170**	**135.1**	(127.4-142.8)	Schuylkill	**2,036**	**1,043**	**224.4**	(210.8-238.0)	**993**	**160.7**	(150.7-170.7)
Dauphin	**2,665**	**1,357**	**204.8**	(193.9-215.7)	**1,308**	**146.0**	(138.1-153.9)	Snyder	**393**	**219**	**207.7**	(180.2-235.2)	**174**	**128.5**	(109.4-147.6)
Delaware	**6,319**	**3,100**	**221.5**	(213.7-229.3)	**3,219**	**163.3**	(157.7-168.9)	Somerset	**949**	**514**	**199.2**	(182.0-216.4)	**435**	**131.8**	(119.4-144.2)
Elk	**466**	**255**	**241.0**	(211.4-270.6)	**211**	**152.6**	(132.0-173.2)	Sullivan	**104**	**55**	**221.1**	(162.7-279.5)	**49**	**153.5**	(110.5-196.5)
Erie	**3,078**	**1,561**	**214.4**	(203.8-225.0)	**1,517**	**158.1**	(150.1-166.1)	Susquehanna	**484**	**282**	**205.8**	(181.8-229.8)	**202**	**128.9**	(111.1-146.7)
Fayette	**1,972**	**1,068**	**251.4**	(236.3-266.5)	**904**	**160.6**	(150.1-171.1)	Tioga	**509**	**266**	**193.8**	(170.5-217.1)	**243**	**150.4**	(131.5-169.3)
Forest	**108**	**67**	**246.0**	(187.1-304.9)	**41**	**175.0**	(121.4-228.6)	Union	**402**	**212**	**181.6**	(157.2-206.0)	**190**	**125.5**	(107.7-143.3)
Franklin	**1,595**	**865**	**198.6**	(185.4-211.8)	**730**	**131.9**	(122.3-141.5)	Venango	**792**	**421**	**241.1**	(218.1-264.1)	**371**	**166.8**	(149.8-183.8)
Fulton	**171**	**90**	**199.7**	(158.4-241.0)	**81**	**151.0**	(118.1-183.9)	Warren	**557**	**296**	**207.6**	(183.9-231.3)	**261**	**154.9**	(136.1-173.7)
Greene	**476**	**249**	**229.8**	(201.3-258.3)	**227**	**167.8**	(146.0-189.6)	Washington	**2,793**	**1,415**	**222.9**	(211.3-234.5)	**1,378**	**162.3**	(153.7-170.9)
Huntingdon	**525**	**283**	**208.6**	(184.3-232.9)	**242**	**153.2**	(133.9-172.5)	Wayne	**678**	**370**	**201.1**	(180.6-221.6)	**308**	**150.9**	(134.0-167.8)
Indiana	**857**	**444**	**182.4**	(165.4-199.4)	**413**	**128.1**	(115.7-140.5)	Westmoreland	**4,898**	**2,546**	**215.3**	(206.9-223.7)	**2,352**	**149.0**	(143.0-155.0)
Jefferson	**597**	**309**	**219.1**	(194.7-243.5)	**288**	**157.9**	(139.7-176.1)	Wyoming	**356**	**204**	**246.9**	(213.0-280.8)	**152**	**148.7**	(125.1-172.3)
								York	**4,397**	**2,345**	**205.5**	(197.2-213.8)	**2,052**	**143.3**	(137.1-149.5)

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 Insitute's SEER program.

Cancer of the Oral Cavity and Pharynx

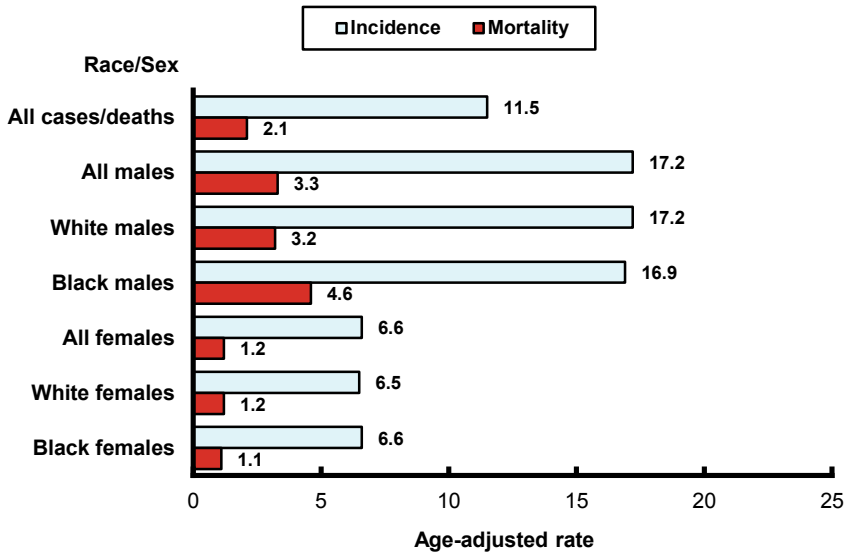
Data Highlights

There were 1,927 cases of invasive cancer of the oral cavity and pharynx diagnosed in 2013 among Pennsylvania residents. The average annual age-adjusted incidence rate for 2009-2013 was dramatically higher among males compared to females (17.2 versus 6.6 per 100,000, respectively). The 2009-2013 average annual age-adjusted incidence rate among black males was 16.9 per 100,000, which was not significantly different when compared to the rate of 17.2 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 2004 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. The rate has since fluctuated. In 2011, the incidence rate for black males increased drastically to its highest point during the 10-year period, 2004-2013, before decreasing in 2012 and increasing in 2013. Rates for black females did not have any obvious trends. Among white males, the rates appear to be increasing slowly throughout the period 2004-2013. Rates for white females have been increasing slightly since 2004. 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 2009-2013 period. Among the four sex/race groups, average annual age-specific incidence rates for 2009-2013 were noticeably higher for black males, ages 65-79. Black residents had a higher percentage of cases diagnosed at the distant stage compared to whites. Among black males, 29.9 percent of the cases in 2013 were diagnosed at the distant stage compared to 19.7 percent among white males. Regional stage diagnoses among black females represented 47.9 percent of cases compared to 33.9 percent for white females.

In 2013, there were 344 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 2009-2013 were higher among males compared to females. The 2009-2013 average annual age-adjusted death rate for males was 3.3 per 100,000 compared to 1.2 for females. During the period 2004-2013, 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 2004-2013 showed no discernible trends.

FIGURE 2
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

Risk Factors

Excessive use of alcohol, cigarette/cigar/pipe smoking, smokeless tobacco, betel quid, gutka, excess sunlight (e.g., lip cancers), poor nutrition, immune system suppression, graft-versus-host disease, lichen planus, Fanconi anemia, dyskeratosis congenita, 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, 2004-2013

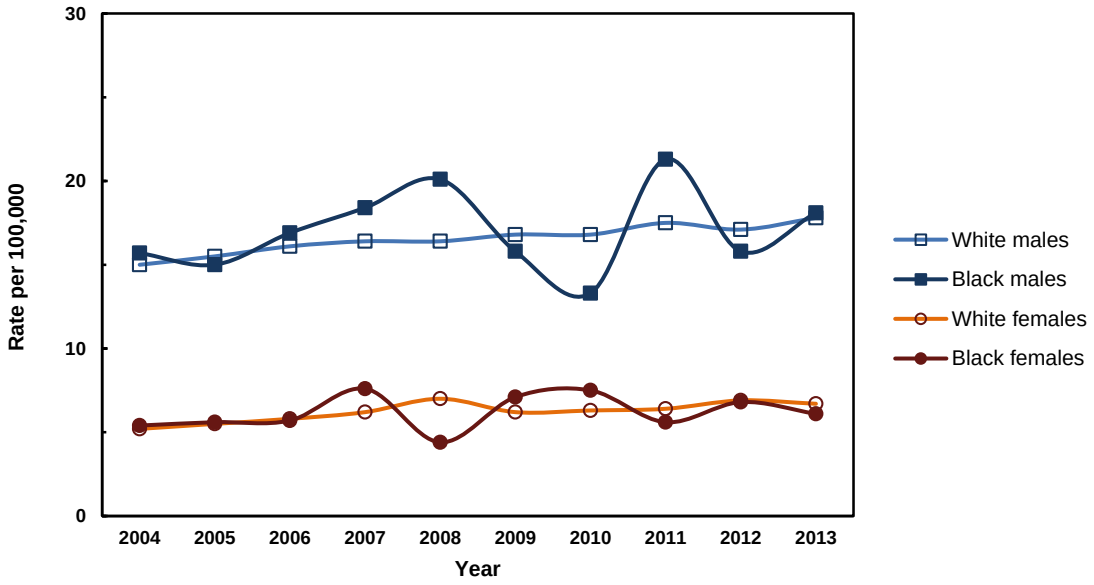
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,927**	**11.9** (11.4-12.4)	**1,341**	**17.7** (16.8-18.6)	**1,203**	**17.8** (16.8-18.8)	**103**	**18.1** (14.6-21.6)	**585**	**6.7** (6.2-7.2)	**517**	**6.7** (6.1-7.3)	**48**	**6.1** (4.4-7.8)
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)

* Includes unknown/other race and sex.

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, 2004-2013



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

TABLE 2-B

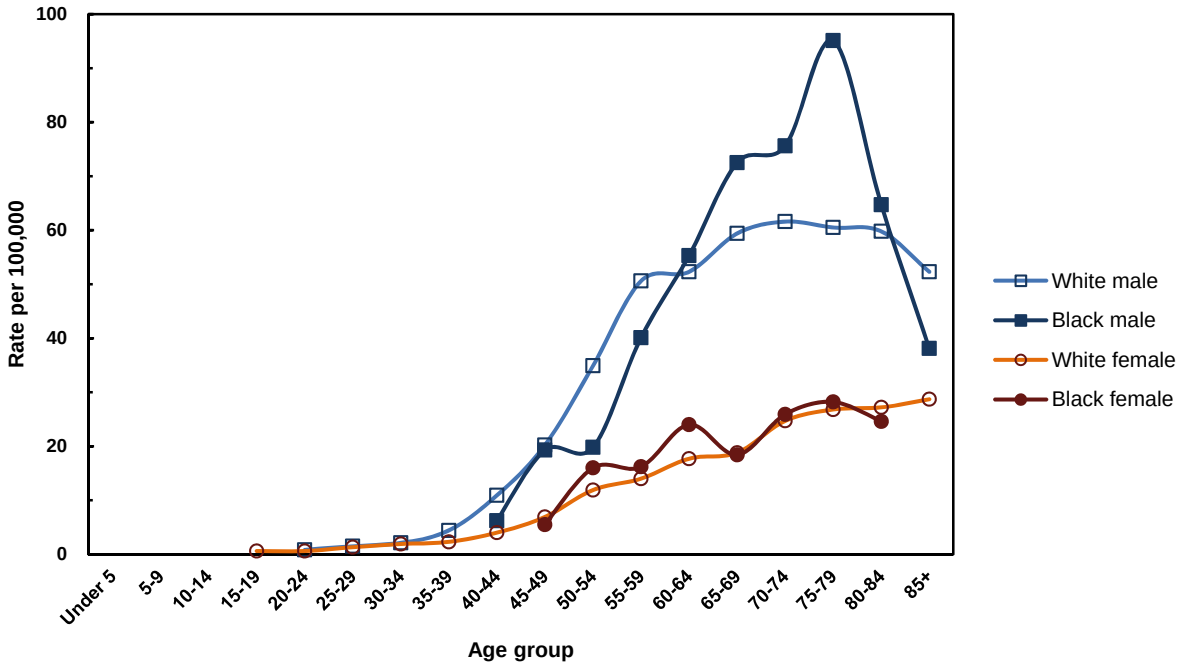
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**14.2**	**20.1**	**21.5**	**13.4**	**8.6**	**9.0**	**6.6**
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	0.4	ND	ND	0.5	0.6	ND
20-24	0.7	0.8	0.8	ND	0.5	0.6	ND
25-29	1.5	1.5	1.5	ND	1.4	1.3	ND
30-34	2.0	2.1	2.1	ND	1.9	1.9	ND
35-39	3.2	4.3	4.4	ND	2.1	2.3	ND
40-44	7.1	10.3	10.9	6.2	4.0	4.0	ND
45-49	13.5	20.2	20.2	19.3	6.8	6.9	5.5
50-54	22.6	33.3	34.9	19.8	12.3	11.9	16.0
55-59	31.4	49.4	50.6	40.1	14.2	14.0	16.2
60-64	34.9	52.5	52.3	55.3	18.6	17.7	24.0
65-69	38.5	60.3	59.4	72.5	19.2	18.8	18.4
70-74	41.8	62.3	61.6	75.6	24.9	24.7	25.9
75-79	43.0	63.7	60.5	95.1	27.6	26.8	28.2
80-84	40.5	61.0	59.8	64.7	27.3	27.2	24.6
85+	35.9	52.3	52.3	38.1	28.2	28.7	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, 2009-2013



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

TABLE 2-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

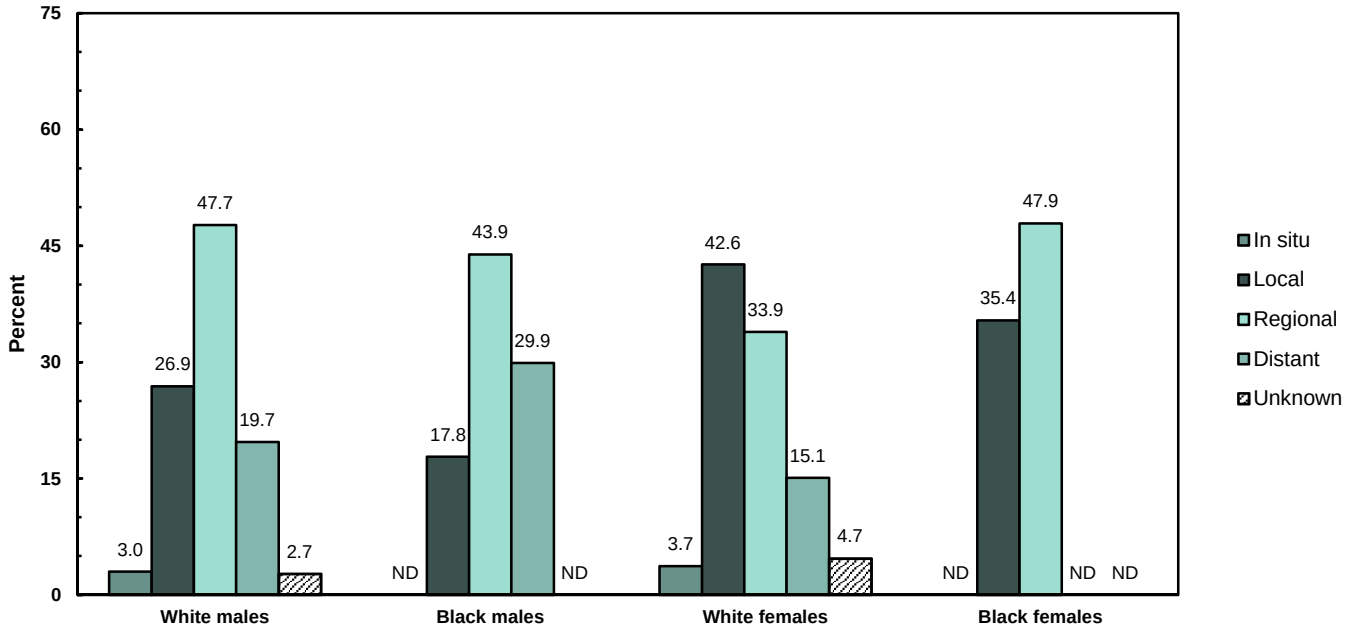
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**9,055**	**6,246**	**5,591**	**455**	**2,808**	**2,457**	**244**
Under 5	0	0	0	0	0	0	0
5-9	2	1	1	0	1	1	0
10-14	11	8	7	0	3	3	0
15-19	20	10	4	3	10	10	0
20-24	30	18	14	4	12	10	1
25-29	58	30	24	2	28	20	4
30-34	75	40	32	2	35	29	4
35-39	118	79	67	5	39	35	4
40-44	300	216	191	14	84	70	8
45-49	616	457	392	44	159	136	14
50-54	1,087	786	722	43	301	251	40
55-59	1,403	1,079	979	73	324	281	35
60-64	1,333	965	862	76	368	310	42
65-69	1,117	821	734	66	296	259	23
70-74	930	625	563	49	305	272	25
75-79	772	486	424	44	285	251	22
80-84	605	356	325	20	249	228	15
85+	575	267	250	10	308	291	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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 1,894 - 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, 2004-2013

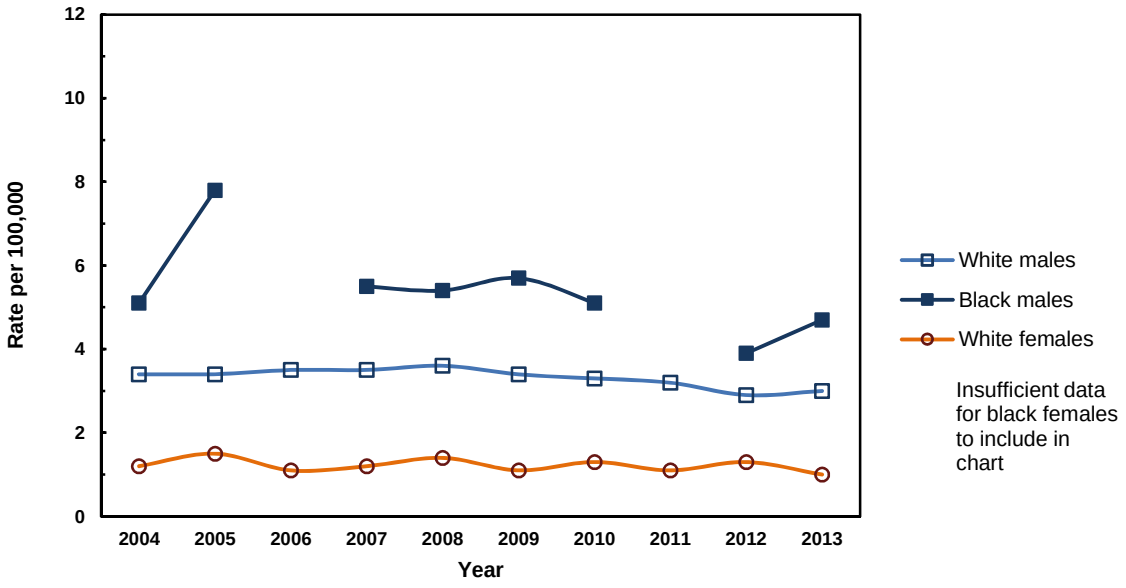
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	344	2.0 (1.8-2.2)	243	3.2 (2.8-3.6)	208	3.0 (2.6-3.4)	24	4.7 (2.8-6.6)	101	1.1 (0.9-1.3)	90	1.0 (0.8-1.2)	7	ND
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

* 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, 2004-2013



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, 2009-2013

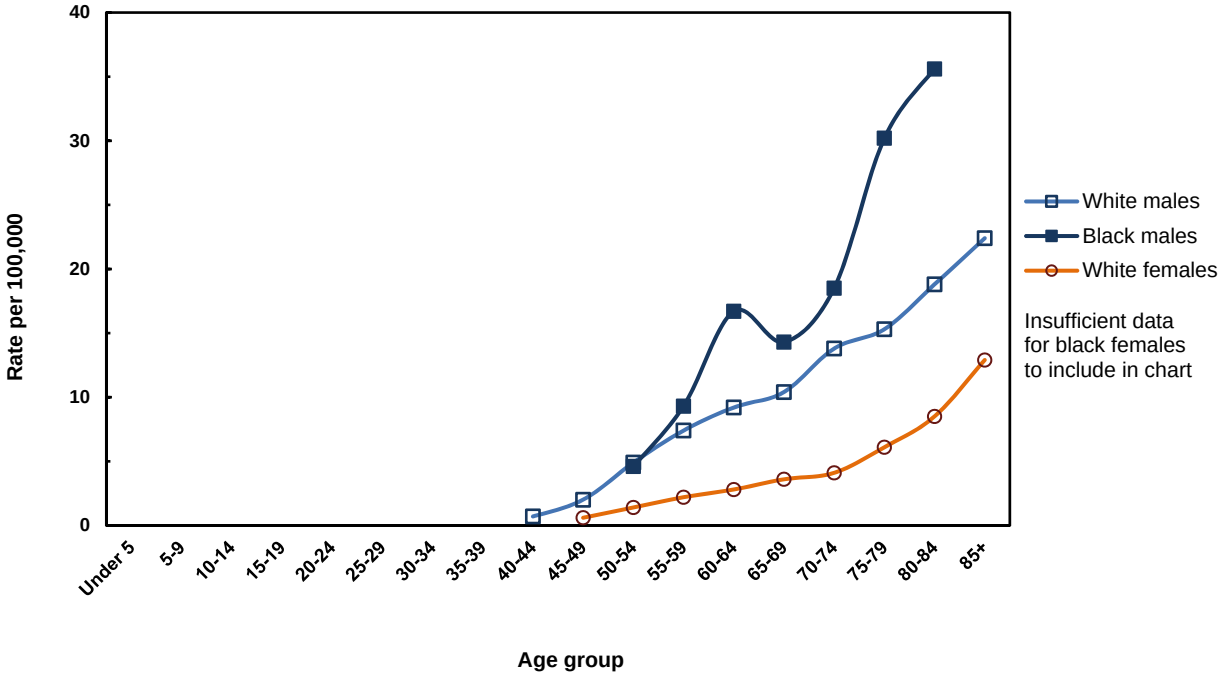
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**1,728**	**2.7**	**1,177**	**3.8**	**1,030**	**4.0**	**114**	**3.4**	**551**	**1.7**	**498**	**1.8**	**41**	**1.1**
Under 5	0	ND	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	3	ND	1	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	5	ND	3	ND	2	ND	0	ND	2	ND	1	ND	1	ND
35-39	14	0.4	11	0.6	9	ND	2	ND	3	ND	2	ND	1	ND
40-44	20	0.5	14	0.7	12	0.7	0	ND	6	ND	6	ND	0	ND
45-49	60	1.3	48	2.1	39	2.0	5	ND	12	0.5	11	0.6	0	ND
50-54	149	3.1	113	4.8	101	4.9	10	4.6	36	1.5	29	1.4	4	ND
55-59	215	4.8	163	7.5	143	7.4	17	9.3	52	2.3	45	2.2	6	ND
60-64	238	6.2	180	9.8	152	9.2	23	16.7	58	2.9	49	2.8	7	ND
65-69	200	6.9	144	10.6	128	10.4	13	14.3	56	3.6	49	3.6	6	ND
70-74	196	8.8	144	14.3	126	13.8	12	18.5	52	4.3	45	4.1	5	ND
75-79	187	10.4	124	16.3	107	15.3	14	30.2	63	6.1	57	6.1	6	ND
80-84	188	12.6	115	19.7	102	18.8	11	35.6	73	8.0	71	8.5	1	ND
85+	251	15.7	115	22.5	107	22.4	7	ND	136	12.5	131	12.9	4	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	9,055	6,246	17.2	(16.8-17.6)	2,808	6.6	(6.4-6.8)
Adams	83	57	18.7	(13.8-23.6)	26	7.2	(4.4-10.0)
Allegheny	894	597	17.1	(15.7-18.5)	297	6.8	(6.0-7.6)
Armstrong	60	43	20.0	(14.0-26.0)	17	ND	
Beaver	124	87	15.4	(12.2-18.6)	37	6.1	(4.1-8.1)
Bedford	37	29	18.2	(11.6-24.8)	8	ND	
Berks	272	187	16.1	(13.8-18.4)	85	6.4	(5.0-7.8)
Blair	106	84	22.3	(17.5-27.1)	22	4.9	(2.9-6.9)
Bradford	55	38	18.4	(12.5-24.3)	17	ND	
Bucks	495	321	17.3	(15.4-19.2)	174	8.2	(7.0-9.4)
Butler	109	75	13.4	(10.4-16.4)	34	5.4	(3.6-7.2)
Cambria	107	66	14.4	(10.9-17.9)	41	7.7	(5.3-10.1)
Cameron	3	2	ND		1	ND	
Carbon	47	28	13.0	(8.2-17.8)	19	ND	
Centre	73	50	14.6	(10.6-18.6)	23	6.0	(3.5-8.5)
Chester	333	225	16.5	(14.3-18.7)	108	7.1	(5.8-8.4)
Clarion	25	19	ND		6	ND	
Clearfield	66	52	19.9	(14.5-25.3)	14	ND	
Clinton	23	14	ND		9	ND	
Columbia	55	45	23.4	(16.6-30.2)	10	ND	
Crawford	76	57	21.4	(15.8-27.0)	19	ND	
Cumberland	175	117	17.4	(14.2-20.6)	58	7.6	(5.6-9.6)
Dauphin	177	118	16.4	(13.4-19.4)	59	6.8	(5.1-8.5)
Delaware	391	272	18.3	(16.1-20.5)	119	6.5	(5.3-7.7)
Elk	16	10	ND		6	ND	
Erie	191	130	16.3	(13.5-19.1)	61	6.6	(4.9-8.3)
Fayette	119	88	19.9	(15.7-24.1)	31	6.4	(4.1-8.7)
Forest	8	4	ND		4	ND	
Franklin	106	80	18.0	(14.1-21.9)	26	5.2	(3.2-7.2)
Fulton	13	9	ND		4	ND	
Greene	38	27	23.3	(14.5-32.1)	11	ND	
Huntingdon	33	26	17.2	(10.6-23.8)	7	ND	
Indiana	49	35	13.2	(8.8-17.6)	14	ND	
Jefferson	39	27	19.5	(12.1-26.9)	12	ND	
Juniata	17	12	ND		5	ND	
Lackawanna	197	140	21.8	(18.2-25.4)	57	7.6	(5.6-9.6)
Lancaster	299	220	15.0	(13.0-17.0)	79	4.6	(3.6-5.6)
Lawrence	70	49	16.3	(11.7-20.9)	20	5.8	(3.3-8.3)
Lebanon	88	63	15.8	(11.9-19.7)	25	4.9	(3.0-6.8)
Lehigh	256	165	17.4	(14.7-20.1)	91	7.6	(6.0-9.2)
Luzerne	285	201	20.6	(17.8-23.4)	84	7.0	(5.5-8.5)
Lycoming	75	54	15.7	(11.5-19.9)	21	4.9	(2.8-7.0)
McKean	36	26	19.3	(11.9-26.7)	10	ND	
Mercer	84	56	15.6	(11.5-19.7)	28	6.2	(3.9-8.5)
Mifflin	28	19	ND		9	ND	
Monroe	105	75	15.3	(11.8-18.8)	30	5.9	(3.8-8.0)
Montgomery	529	361	15.9	(14.3-17.5)	168	6.2	(5.3-7.1)
Montour	17	15	ND		2	ND	
Northampton	224	151	17.6	(14.8-20.4)	73	7.4	(5.7-9.1)
Northumberland	84	59	19.2	(14.3-24.1)	25	6.8	(4.1-9.5)
Perry	37	22	15.4	(9.0-21.8)	15	ND	
Philadelphia	945	630	18.5	(17.1-19.9)	315	7.0	(6.2-7.8)
Pike	55	37	19.2	(13.0-25.4)	18	ND	
Potter	10	5	ND		5	ND	
Schuylkill	123	90	18.4	(14.6-22.2)	33	6.2	(4.1-8.3)
Snyder	30	24	22.6	(13.6-31.6)	6	ND	
Somerset	66	46	17.3	(12.3-22.3)	20	7.8	(4.4-11.2)
Sullivan	8	1	ND		7	ND	
Susquehanna	35	27	19.1	(11.9-26.3)	8	ND	
Tioga	30	18	ND		12	ND	
Union	27	21	14.9	(8.5-21.3)	6	ND	
Venango	46	37	18.8	(12.7-24.9)	9	ND	
Warren	22	18	ND		4	ND	
Washington	169	116	17.2	(14.1-20.3)	53	6.8	(5.0-8.6)
Wayne	41	30	16.4	(10.5-22.3)	11	ND	
Westmoreland	279	182	15.6	(13.3-17.9)	97	6.8	(5.4-8.2)
Wyoming	24	16	ND		8	ND	
York	316	241	18.9	(16.5-21.3)	75	5.5	(4.3-6.7)

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 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, 2009-2013

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	1,728	1,177	3.3	(3.1-3.5)	551	1.2	(1.1-1.3)								
Adams	14	8	ND		6	ND		Juniata	3	2	ND		1	ND	
Allegheny	149	102	2.8	(2.3-3.3)	47	1.0	(0.7-1.3)	Lackawanna	49	34	5.0	(3.3-6.7)	15	ND	
Armstrong	10	4	ND		6	ND		Lancaster	57	35	2.5	(1.7-3.3)	22	1.1	(0.6-1.6)
Beaver	22	16	ND		6	ND		Lawrence	21	16	ND		5	ND	
Bedford	8	8	ND		0	ND		Lebanon	23	20	4.8	(2.7-6.9)	3	ND	
Berks	54	30	2.8	(1.8-3.8)	24	1.6	(1.0-2.2)	Lehigh	47	29	3.2	(2.0-4.4)	18	ND	
Blair	24	15	ND		9	ND		Luzerne	67	46	4.5	(3.2-5.8)	21	1.6	(0.9-2.3)
Bradford	5	1	ND		4	ND		Lycoming	17	12	ND		5	ND	
Bucks	87	53	2.9	(2.1-3.7)	34	1.5	(1.0-2.0)	McKean	3	1	ND		2	ND	
Butler	23	16	ND		7	ND		Mercer	17	10	ND		7	ND	
Cambria	21	12	ND		9	ND		Mifflin	15	9	ND		6	ND	
Cameron	0	0	ND		0	ND		Monroe	9	6	ND		3	ND	
Carbon	14	11	ND		3	ND		Montgomery	94	61	2.8	(2.1-3.5)	33	1.1	(0.7-1.5)
Centre	13	8	ND		5	ND		Montour	1	0	ND		1	ND	
Chester	41	29	2.2	(1.4-3.0)	12	ND		Northampton	44	26	3.2	(2.0-4.4)	18	ND	
Clarion	6	4	ND		2	ND		Northumberland	15	10	ND		5	ND	
Clearfield	14	9	ND		5	ND		Perry	5	2	ND		3	ND	
Clinton	3	3	ND		0	ND		Philadelphia	195	138	4.2	(3.5-4.9)	57	1.2	(0.9-1.5)
Columbia	13	8	ND		5	ND		Pike	7	4	ND		3	ND	
Crawford	15	12	ND		3	ND		Potter	4	3	ND		1	ND	
Cumberland	32	25	3.9	(2.4-5.4)	7	ND		Schuylkill	21	15	ND		6	ND	
Dauphin	41	26	3.5	(2.2-4.8)	15	ND		Snyder	5	4	ND		1	ND	
Delaware	76	57	3.9	(2.9-4.9)	19	ND		Somerset	10	7	ND		3	ND	
Elk	2	2	ND		0	ND		Sullivan	2	0	ND		2	ND	
Erie	35	24	3.1	(1.9-4.3)	11	ND		Susquehanna	8	6	ND		2	ND	
Fayette	29	21	4.9	(2.8-7.0)	8	ND		Tioga	7	6	ND		1	ND	
Forest	3	3	ND		0	ND		Union	4	3	ND		1	ND	
Franklin	13	11	ND		2	ND		Venango	9	7	ND		2	ND	
Fulton	1	0	ND		1	ND		Warren	9	9	ND		0	ND	
Greene	4	4	ND		0	ND		Washington	32	19	ND		13	ND	
Huntingdon	6	4	ND		2	ND		Wayne	8	6	ND		2	ND	
Indiana	8	3	ND		5	ND		Westmoreland	58	43	3.3	(2.3-4.3)	15	ND	
Jefferson	7	4	ND		3	ND		Wyoming	5	5	ND		0	ND	
								York	64	50	4.0	(2.9-5.1)	14	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 Insitute's SEER program.

Cancer of the Esophagus

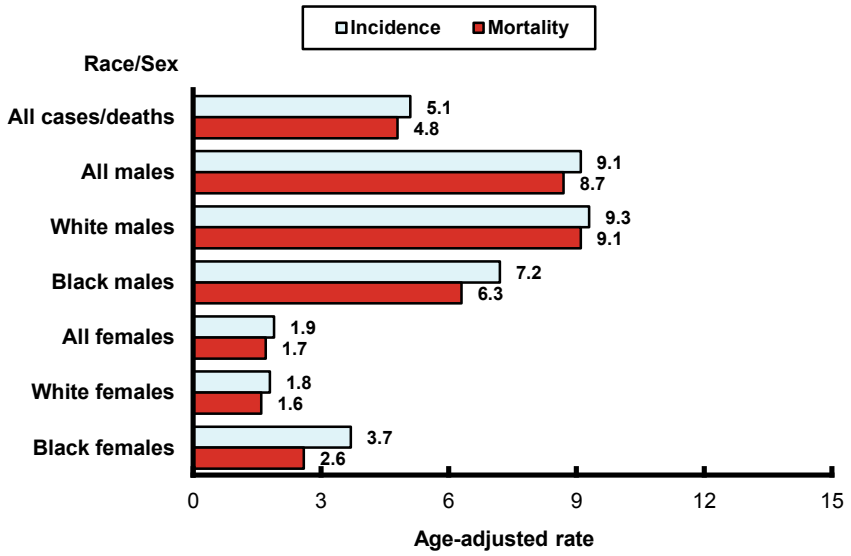
Data Highlights

As with other tobacco and alcohol-related cancers, males had a much higher average annual (2009-2013) age-adjusted incidence rate, 9.1 per 100,000, compared to 1.9 for females. In 2013, there were 866 cases of invasive esophageal cancer diagnosed among Pennsylvania residents. This is a 4.5 percent increase compared to the 829 invasive cases diagnosed and reported in the previous year, 2012. 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 2004-2013 showed a decreasing trend among black males. In fact, with the exception of 2005, annual age-adjusted rates for black males were lower than the corresponding rates for white males. Among white males and females, no distinguishable trend was observed between 2004 and 2013. 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 to 3.0 in 2012 and 4.3 in 2013. The average annual age-specific incidence rates for the five-year period of 2009-2013 were higher among males compared to females, especially for ages 55 and over. Approximately 76 percent of invasive esophageal cancers were diagnosed among those age 60 and older during the 2009-2013 period.

In 2013, most cases of esophageal cancer were diagnosed at advanced stages (regional or distant stages) – about 74 percent of cases among white males and 65 percent among white females. Early stage (in situ or local) cancers accounted for 18 percent of esophagus cases among white males and 23 percent among white females. Reported five-year relative survival rates are very poor – 18.4 percent for all invasive stages (2006-2012). This is reflected in the population-based death rates compared to the incidence rates. The 2009-2013 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 5.1. As observed for the incidence rates, females had a lower annual age-adjusted death rate in 2009-2013 compared to males (1.7 versus 8.7). The annual age-adjusted death rates among white males increased from 2004 to 2007 but have since been slightly lower. Rates among black males have decreased overall since 2004. Recent trends were inconclusive for white and black females. Among Pennsylvania residents, the total number of deaths in 2013 for esophageal cancers was 794 – the highest annual number observed over the 10-year period, 2004-2013.

FIGURE 3
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

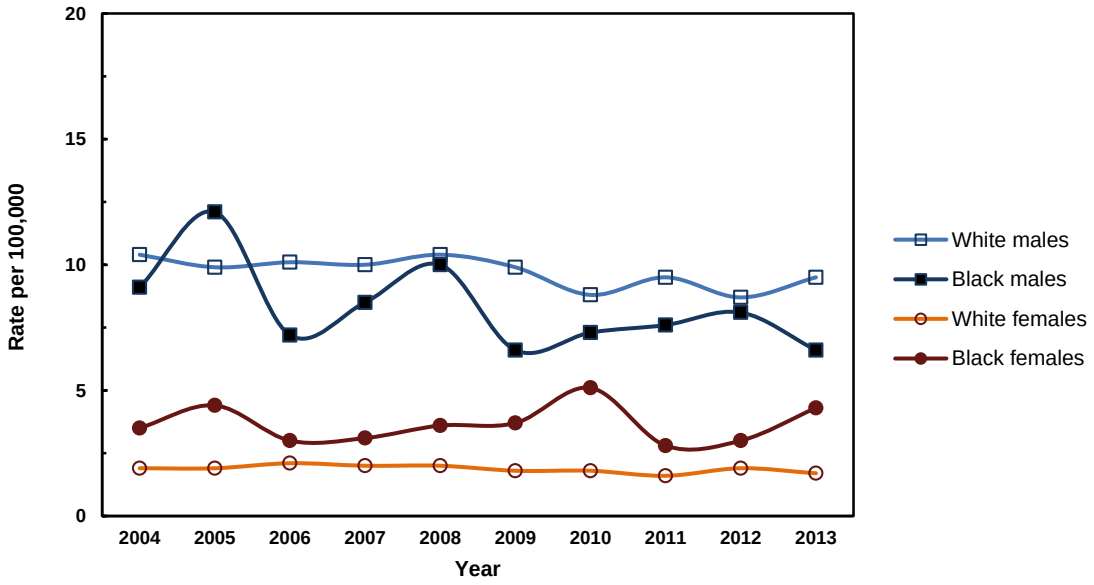
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**866**	**5.2** (4.9-5.5)	**685**	**9.2** (8.5-9.9)	**633**	**9.5** (8.8-10.2)	**39**	**6.6** (4.5-8.7)	**181**	**2.0** (1.7-2.3)	**143**	**1.7** (1.4-2.0)	**32**	**4.3** (2.8-5.8)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Cancer of the Esophagus: INCIDENCE (Invasive)

TABLE 3-B

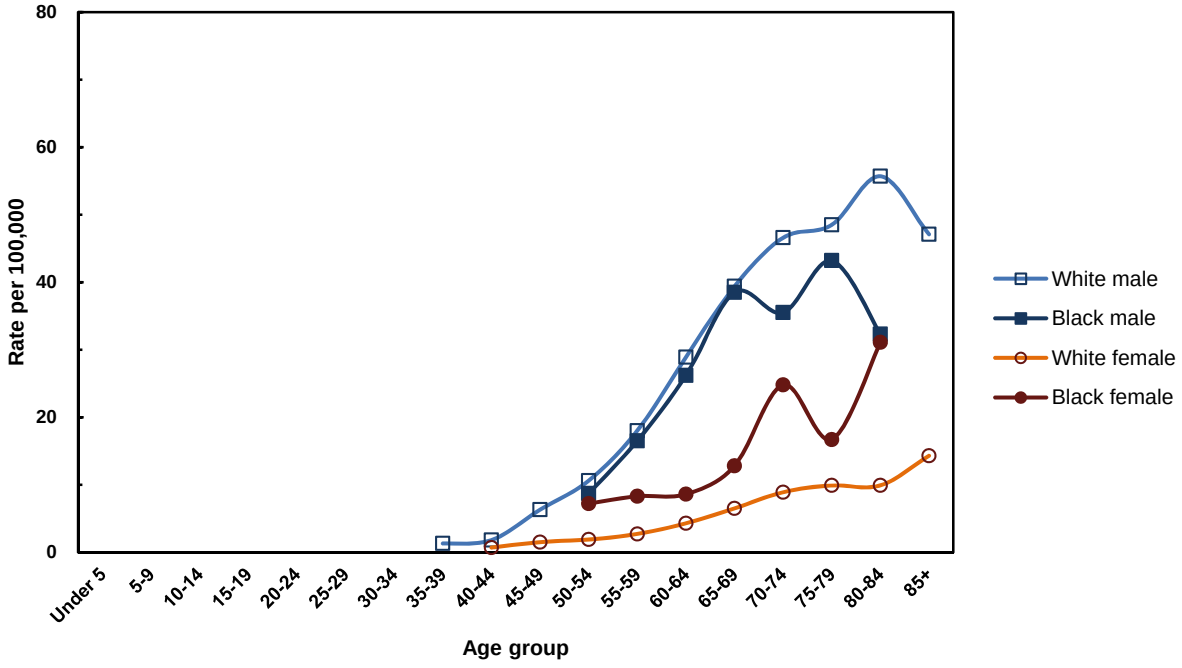
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**6.5**	**10.5**	**11.6**	**5.5**	**2.7**	**2.7**	**3.7**
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	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	1.1	1.3	ND	ND	ND	ND
40-44	1.2	1.8	1.8	ND	0.6	0.7	ND
45-49	3.6	5.7	6.3	ND	1.5	1.5	ND
50-54	6.3	10.4	10.6	8.7	2.4	1.9	7.2
55-59	10.4	17.8	18.0	16.5	3.3	2.7	8.3
60-64	16.1	28.4	28.9	26.2	4.7	4.3	8.6
65-69	22.1	39.1	39.4	38.5	7.2	6.5	12.8
70-74	26.3	45.6	46.6	35.5	10.4	8.9	24.8
75-79	26.5	48.3	48.5	43.2	10.4	9.9	16.7
80-84	28.2	54.5	55.7	32.3	11.4	9.9	31.1
85+	25.0	47.4	47.1	ND	14.5	14.3	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 3-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Cancer of the Esophagus: INCIDENCE (Invasive)

TABLE 3-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

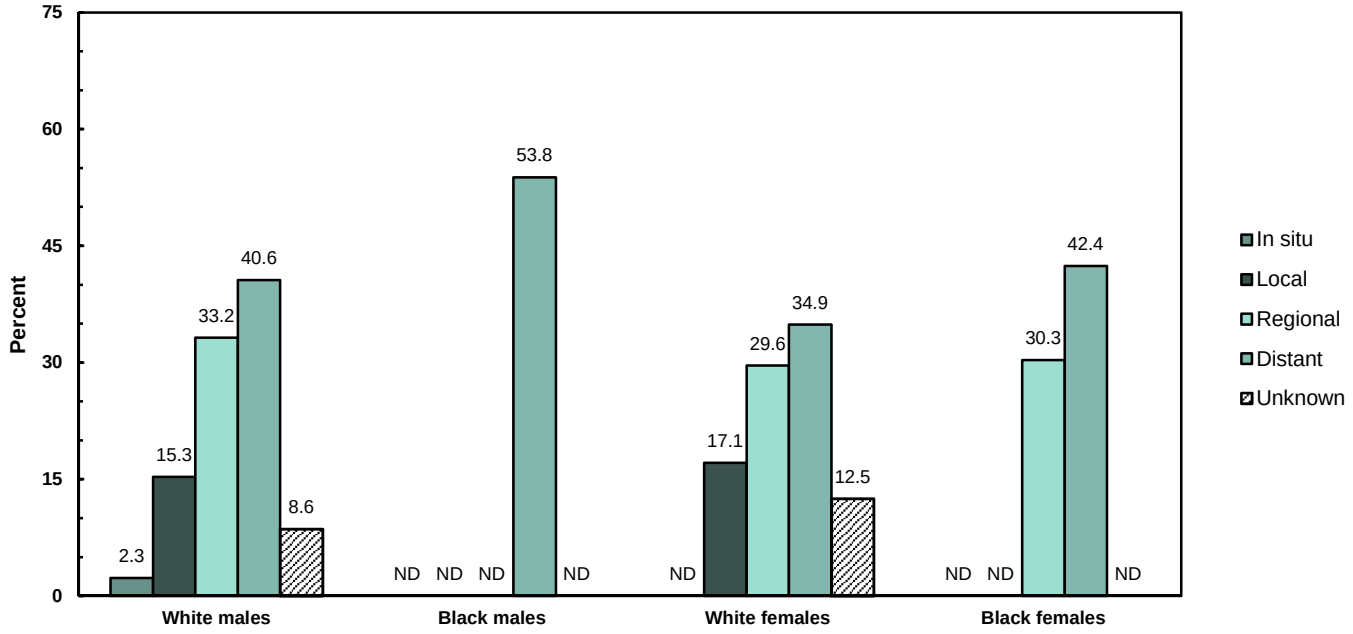
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**4,155**	**3,270**	**3,007**	**188**	**885**	**725**	**136**
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	1	1	1	0	0	0	0
25-29	3	3	3	0	0	0	0
30-34	8	6	5	1	2	2	0
35-39	22	21	20	1	1	1	0
40-44	49	37	32	2	12	12	0
45-49	163	128	122	5	35	30	4
50-54	304	245	219	19	59	41	18
55-59	464	389	349	30	75	55	18
60-64	616	522	476	36	94	75	15
65-69	643	532	486	35	111	90	16
70-74	585	458	426	23	127	98	24
75-79	475	368	340	20	107	93	13
80-84	422	318	303	10	104	83	19
85+	400	242	225	6	158	145	9

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 835 - 96.4%

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, 2004-2013

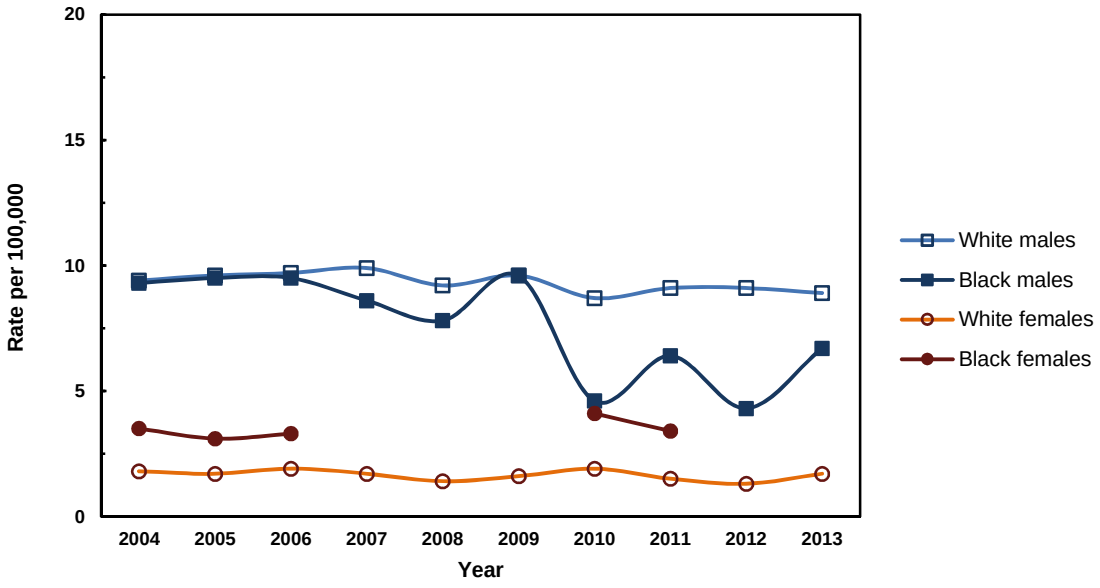
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	794	4.8 (4.5-5.1)	637	8.7 (8.0-9.4)	596	8.9 (8.2-9.6)	34	6.7 (4.4-9.0)	157	1.7 (1.4-2.0)	144	1.7 (1.4-2.0)	12	ND
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)

* 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, 2004-2013



Cancer of the Esophagus: MORTALITY

TABLE 3-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

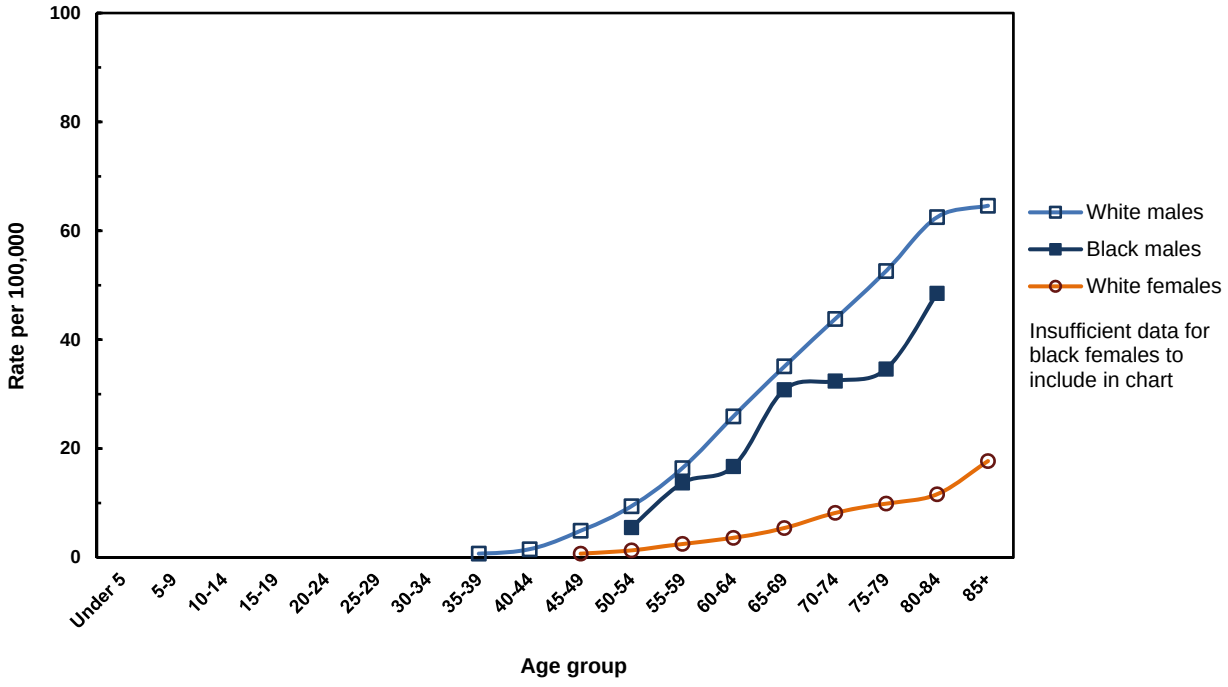
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**3,905**	**6.1**	**3,109**	**10.0**	**2,931**	**11.3**	**156**	**4.6**	**796**	**2.4**	**695**	**2.6**	**95**	**2.6**
Under 5	0	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	8	ND	8	ND	8	ND	0	ND	0	ND	0	ND	0	ND
35-39	12	0.3	11	0.6	10	0.7	1	ND	1	ND	0	ND	1	ND
40-44	38	0.9	30	1.4	27	1.5	3	ND	8	ND	7	ND	1	ND
45-49	116	2.5	100	4.4	94	4.9	5	ND	16	0.7	14	0.7	2	ND
50-54	241	5.0	208	8.8	195	9.4	12	5.5	33	1.3	27	1.3	6	ND
55-59	412	9.2	344	15.8	317	16.4	25	13.7	68	3.0	50	2.5	18	8.3
60-64	536	14.0	456	24.8	427	25.9	23	16.7	80	4.0	63	3.6	14	8.0
65-69	549	18.9	465	34.2	433	35.1	28	30.8	84	5.4	74	5.4	9	ND
70-74	529	23.8	422	42.1	401	43.8	21	32.4	107	8.7	90	8.2	16	16.6
75-79	491	27.4	390	51.1	369	52.6	16	34.6	101	9.8	93	9.9	8	ND
80-84	467	31.3	356	61.0	340	62.5	15	48.5	111	12.2	97	11.6	13	21.3
85+	505	31.5	318	62.3	309	64.6	7	ND	187	17.1	180	17.7	7	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	4,155	3,270	9.1	(8.8-9.4)	885	1.9	(1.8-2.0)
Adams	38	31	9.7	(6.3-13.1)	7	ND	
Allegheny	378	281	8.0	(7.1-8.9)	97	2.0	(1.6-2.4)
Armstrong	17	14	ND		3	ND	
Beaver	54	39	6.9	(4.7-9.1)	15	ND	
Bedford	21	16	ND		5	ND	
Berks	133	112	9.9	(8.1-11.7)	21	1.5	(0.9-2.1)
Blair	54	44	10.8	(7.6-14.0)	10	ND	
Bradford	20	16	ND		4	ND	
Bucks	221	178	9.6	(8.2-11.0)	43	2.1	(1.5-2.7)
Butler	52	46	8.1	(5.8-10.4)	6	ND	
Cambria	63	52	11.9	(8.7-15.1)	11	ND	
Cameron	3	3	ND		0	ND	
Carbon	30	24	11.9	(7.1-16.7)	6	ND	
Centre	47	39	11.4	(7.8-15.0)	8	ND	
Chester	132	97	7.4	(5.9-8.9)	35	2.4	(1.6-3.2)
Clarion	14	9	ND		5	ND	
Clearfield	30	22	8.0	(4.7-11.3)	8	ND	
Clinton	8	6	ND		2	ND	
Columbia	27	23	13.1	(7.7-18.5)	4	ND	
Crawford	41	35	12.7	(8.5-16.9)	6	ND	
Cumberland	60	49	7.3	(5.3-9.3)	11	ND	
Dauphin	64	50	7.4	(5.3-9.5)	14	ND	
Delaware	169	131	8.9	(7.4-10.4)	38	2.0	(1.4-2.6)
Elk	10	8	ND		2	ND	
Erie	81	63	8.3	(6.3-10.3)	18	ND	
Fayette	53	46	10.5	(7.5-13.5)	7	ND	
Forest	1	1	ND		0	ND	
Franklin	50	45	10.5	(7.4-13.6)	5	ND	
Fulton	7	6	ND		1	ND	
Greene	12	10	ND		2	ND	
Huntingdon	13	9	ND		4	ND	
Indiana	23	19	ND		4	ND	
Jefferson	21	18	ND		3	ND	
Juniata	8	7	ND		1	ND	
Lackawanna	82	59	9.1	(6.8-11.4)	23	2.9	(1.7-4.1)
Lancaster	117	101	6.9	(5.6-8.2)	16	ND	
Lawrence	39	30	10.4	(6.7-14.1)	9	ND	
Lebanon	49	40	9.7	(6.7-12.7)	9	ND	
Lehigh	97	80	8.6	(6.7-10.5)	17	ND	
Luzerne	158	124	12.4	(10.2-14.6)	34	2.8	(1.9-3.7)
Lycoming	41	29	8.1	(5.2-11.0)	12	ND	
McKean	19	16	ND		3	ND	
Mercer	47	42	11.8	(8.2-15.4)	5	ND	
Mifflin	13	11	ND		2	ND	
Monroe	54	40	9.2	(6.3-12.1)	14	ND	
Montgomery	233	193	8.9	(7.6-10.2)	40	1.3	(0.9-1.7)
Montour	10	8	ND		2	ND	
Northampton	101	77	8.9	(6.9-10.9)	24	2.3	(1.4-3.2)
Northumberland	35	28	9.5	(6.0-13.0)	7	ND	
Perry	18	14	ND		4	ND	
Philadelphia	456	310	9.5	(8.4-10.6)	146	3.2	(2.7-3.7)
Pike	20	15	ND		5	ND	
Potter	13	13	ND		0	ND	
Schuylkill	63	50	10.2	(7.4-13.0)	13	ND	
Snyder	13	11	ND		2	ND	
Somerset	32	28	10.6	(6.7-14.5)	4	ND	
Sullivan	1	1	ND		0	ND	
Susquehanna	13	11	ND		2	ND	
Tioga	11	10	ND		1	ND	
Union	19	14	ND		5	ND	
Venango	26	22	13.3	(7.7-18.9)	4	ND	
Warren	25	21	13.6	(7.8-19.4)	4	ND	
Washington	75	60	9.0	(6.7-11.3)	15	ND	
Wayne	26	21	10.3	(5.9-14.7)	5	ND	
Westmoreland	128	104	8.5	(6.9-10.1)	24	1.6	(1.0-2.2)
Wyoming	11	10	ND		1	ND	
York	155	128	10.5	(8.7-12.3)	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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,905	3,109	8.7	(8.4-9.0)	796	1.7	(1.6-1.8)
Adams	43	34	11.1	(7.4-14.8)	9	ND	
Allegheny	374	281	7.9	(7.0-8.8)	93	1.9	(1.5-2.3)
Armstrong	27	21	9.3	(5.3-13.3)	6	ND	
Beaver	60	43	7.8	(5.5-10.1)	17	ND	
Bedford	20	19	ND		1	ND	
Berks	115	100	9.0	(7.2-10.8)	15	ND	
Blair	54	42	10.6	(7.4-13.8)	12	ND	
Bradford	17	14	ND		3	ND	
Bucks	177	135	7.6	(6.3-8.9)	42	1.9	(1.3-2.5)
Butler	70	60	11.4	(8.5-14.3)	10	ND	
Cambria	50	42	9.4	(6.6-12.2)	8	ND	
Cameron	2	2	ND		0	ND	
Carbon	23	18	ND		5	ND	
Centre	34	28	8.2	(5.2-11.2)	6	ND	
Chester	112	83	6.6	(5.2-8.0)	29	1.8	(1.1-2.5)
Clarion	9	5	ND		4	ND	
Clearfield	30	22	8.1	(4.7-11.5)	8	ND	
Clinton	13	11	ND		2	ND	
Columbia	27	24	13.3	(8.0-18.6)	3	ND	
Crawford	31	28	10.3	(6.5-14.1)	3	ND	
Cumberland	56	46	6.7	(4.8-8.6)	10	ND	
Dauphin	55	39	5.4	(3.7-7.1)	16	ND	
Delaware	151	118	8.0	(6.6-9.4)	33	1.7	(1.1-2.3)
Elk	10	8	ND		2	ND	
Erie	86	69	9.5	(7.3-11.7)	17	ND	
Fayette	54	47	10.9	(7.8-14.0)	7	ND	
Forest	1	1	ND		0	ND	
Franklin	47	42	9.4	(6.6-12.2)	5	ND	
Fulton	4	4	ND		0	ND	
Greene	15	13	ND		2	ND	
Huntingdon	17	12	ND		5	ND	
Indiana	20	19	ND		1	ND	
Jefferson	22	18	ND		4	ND	
Juniata	10	9	ND		1	ND	
Lackawanna	84	70	10.6	(8.1-13.1)	14	ND	
Lancaster	111	92	6.4	(5.1-7.7)	19	ND	
Lawrence	37	27	9.3	(5.8-12.8)	10	ND	
Lebanon	50	43	10.4	(7.3-13.5)	7	ND	
Lehigh	95	80	8.6	(6.7-10.5)	15	ND	
Luzerne	142	110	11.3	(9.2-13.4)	32	2.4	(1.6-3.2)
Lycoming	43	33	9.0	(5.9-12.1)	10	ND	
McKean	18	16	ND		2	ND	
Mercer	62	54	14.7	(10.8-18.6)	8	ND	
Mifflin	13	10	ND		3	ND	
Monroe	49	39	9.5	(6.5-12.5)	10	ND	
Montgomery	201	167	7.6	(6.4-8.8)	34	1.0	(0.7-1.3)
Montour	9	6	ND		3	ND	
Northampton	84	65	7.6	(5.8-9.4)	19	ND	
Northumberland	37	28	9.5	(6.0-13.0)	9	ND	
Perry	9	8	ND		1	ND	
Philadelphia	387	273	8.5	(7.5-9.5)	114	2.4	(2.0-2.8)
Pike	19	15	ND		4	ND	
Potter	10	8	ND		2	ND	
Schuylkill	67	52	10.8	(7.9-13.7)	15	ND	
Snyder	7	6	ND		1	ND	
Somerset	44	38	14.1	(9.6-18.6)	6	ND	
Sullivan	0	0	ND		0	ND	
Susquehanna	15	15	ND		0	ND	
Tioga	9	9	ND		0	ND	
Union	17	13	ND		4	ND	
Venango	25	25	13.8	(8.4-19.2)	0	ND	
Warren	31	26	17.3	(10.7-23.9)	5	ND	
Washington	73	62	9.6	(7.2-12.0)	11	ND	
Wayne	16	13	ND		3	ND	
Westmoreland	127	98	8.1	(6.5-9.7)	29	1.7	(1.1-2.3)
Wyoming	12	11	ND		1	ND	
York	166	140	12.2	(10.2-14.2)	26	1.8	(1.1-2.5)

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 Insitute's SEER program.

Cancer of the Stomach

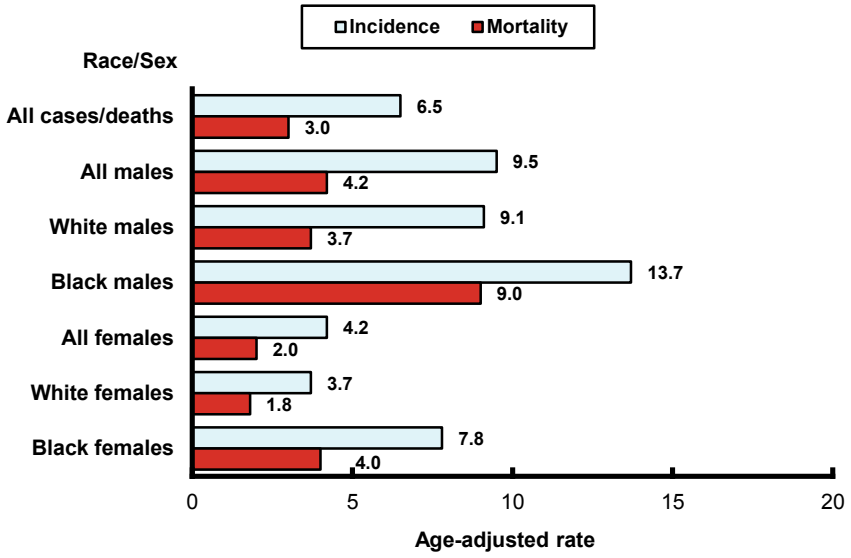
Data Highlights

The 2009-2013 average annual age-adjusted incidence rate for invasive stomach cancer was more than twice as high among males compared to females (9.5 per 100,000 versus 4.2, respectively). Black males had the highest average annual age-adjusted incidence rate (13.7) compared to the other three sex/race groups. The lowest average annual rate (3.7) was recorded for white females and was about 53 percent lower than the next lowest rate (7.8) recorded for black females.

There were 993 new cases of invasive stomach cancer diagnosed among residents of the state in 2013 – slightly less than the 1,001 cases recorded during 2012. During the 2004-2013 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 2006 at 4.2 but has since been lower. The annual rate for black males decreased from a high of 18.5 in 2008 to a low of 11.2 in 2012 before it increased to 14.4 in 2013. Annual rates for black females displayed no evident trends. Stomach cancer incidence rose steeply with advanced age. During the period of 2009-2013, approximately 77 percent of the cases were diagnosed among Pennsylvania residents 60 years of age or older.

In 2013, about 64 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 2013. In Pennsylvania, as in the rest of the United States, the death rates have generally been slowly declining for many years. In 2013, there were 441 resident deaths for an age-adjusted rate of 2.7 per 100,000 – the lowest rate observed during the 10-year period, 2004-2013. The 2013 annual age-adjusted death rate for males (3.8) was over two times the rate for females (1.8). Annual age-adjusted death rates between 2004 and 2013 have generally been on the decline for all four sex/race groups, however, the rates have fluctuated more among black males and black females.

FIGURE 4
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the 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

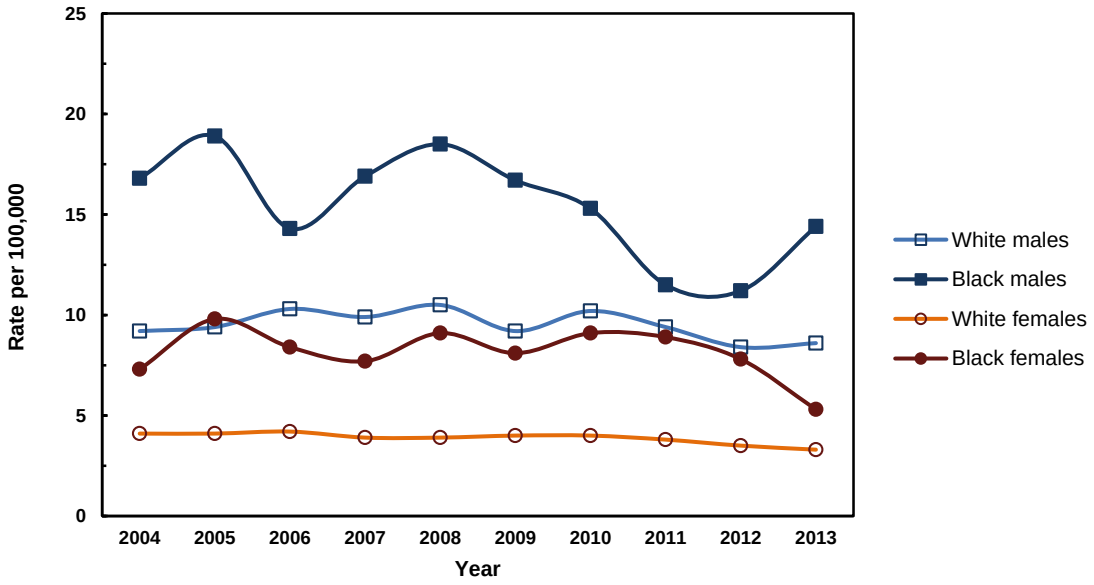
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

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)
2013	**993**	**6.1** (5.7-6.5)	**665**	**9.2** (8.5-9.9)	**560**	**8.6** (7.9-9.3)	**76**	**14.4** (11.2-17.6)	**328**	**3.7** (3.3-4.1)	**272**	**3.3** (2.9-3.7)	**39**	**5.3** (3.6-7.0)
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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Stomach: INCIDENCE (Invasive)

TABLE 4-B

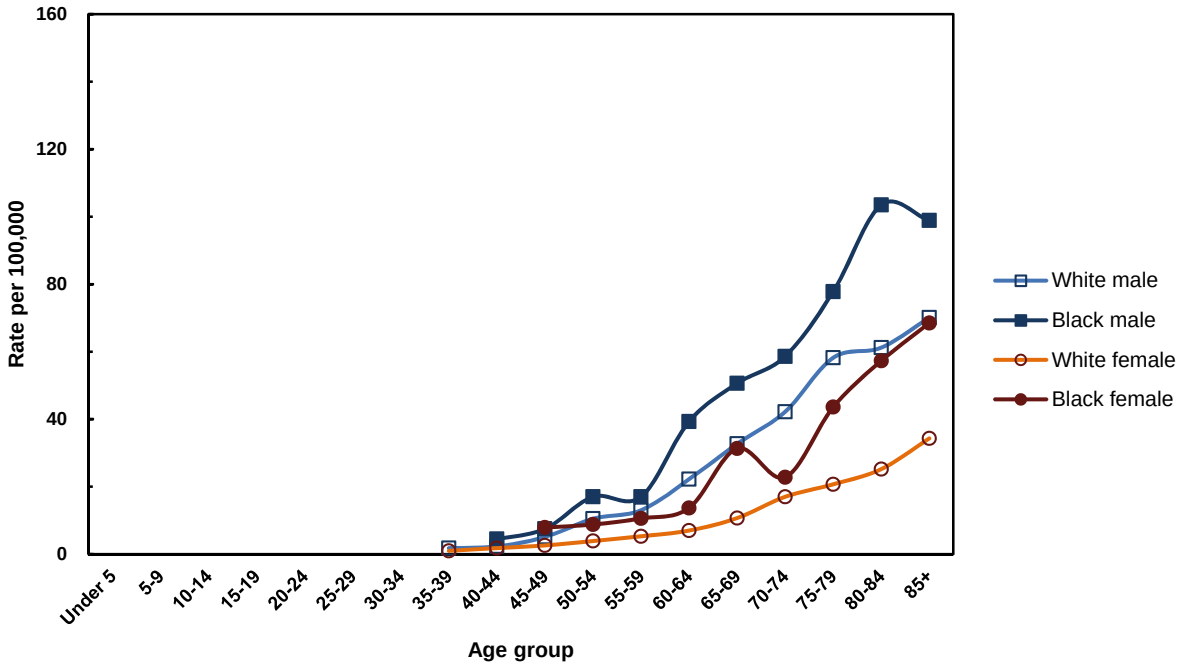
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**8.2**	**10.7**	**11.1**	**9.8**	**5.8**	**5.6**	**7.6**
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	0.7	0.7	ND	ND	0.6	ND	ND
35-39	1.5	1.8	1.8	ND	1.3	1.0	ND
40-44	2.4	2.8	2.3	4.5	2.0	1.8	ND
45-49	4.5	5.4	5.1	7.5	3.6	2.6	7.9
50-54	7.8	11.3	10.5	17.0	4.4	3.9	8.8
55-59	9.6	13.3	13.0	17.0	5.9	5.3	10.6
60-64	15.6	23.8	22.2	39.3	8.0	7.0	13.7
65-69	22.6	33.8	32.7	50.6	12.6	10.7	31.3
70-74	29.1	43.0	42.2	58.6	17.7	17.0	22.8
75-79	38.9	60.6	58.2	77.8	22.9	20.7	43.6
80-84	42.0	63.6	61.2	103.5	28.1	25.2	57.3
85+	48.4	72.2	70.1	98.9	37.2	34.3	68.5

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, 2009-2013



Cancer of the Stomach: INCIDENCE (Invasive)

TABLE 4-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

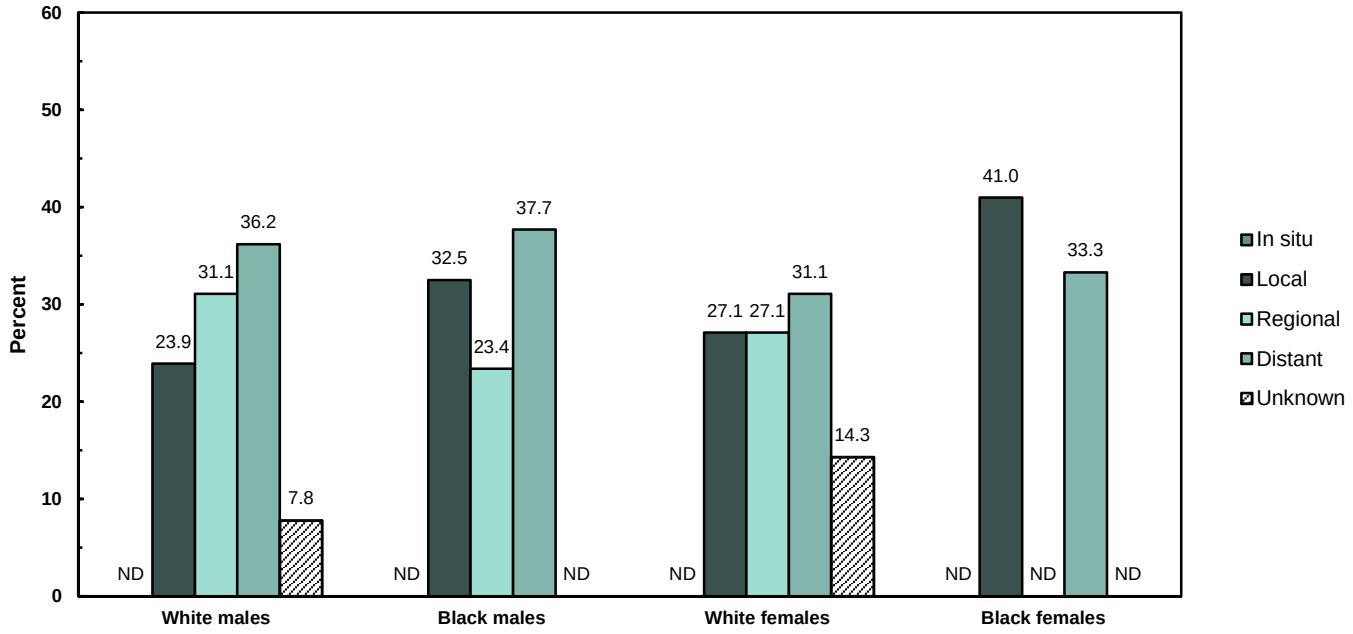
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**5,217**	**3,325**	**2,881**	**335**	**1,892**	**1,516**	**281**
Under 5	3	1	1	0	2	2	0
5-9	0	0	0	0	0	0	0
10-14	2	0	0	0	2	2	0
15-19	4	3	3	0	1	1	0
20-24	6	2	2	0	4	4	0
25-29	10	3	1	0	7	6	1
30-34	25	13	9	3	12	6	5
35-39	57	33	27	5	24	15	2
40-44	101	58	41	10	43	31	9
45-49	206	122	98	17	84	51	20
50-54	375	267	216	37	108	82	22
55-59	427	291	251	31	136	106	23
60-64	597	438	366	54	159	123	24
65-69	655	460	404	46	195	147	39
70-74	649	432	386	38	217	187	22
75-79	698	462	408	36	236	194	34
80-84	627	371	333	32	256	211	35
85+	775	369	335	26	406	348	45

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 964 - 97.1%

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, 2004-2013

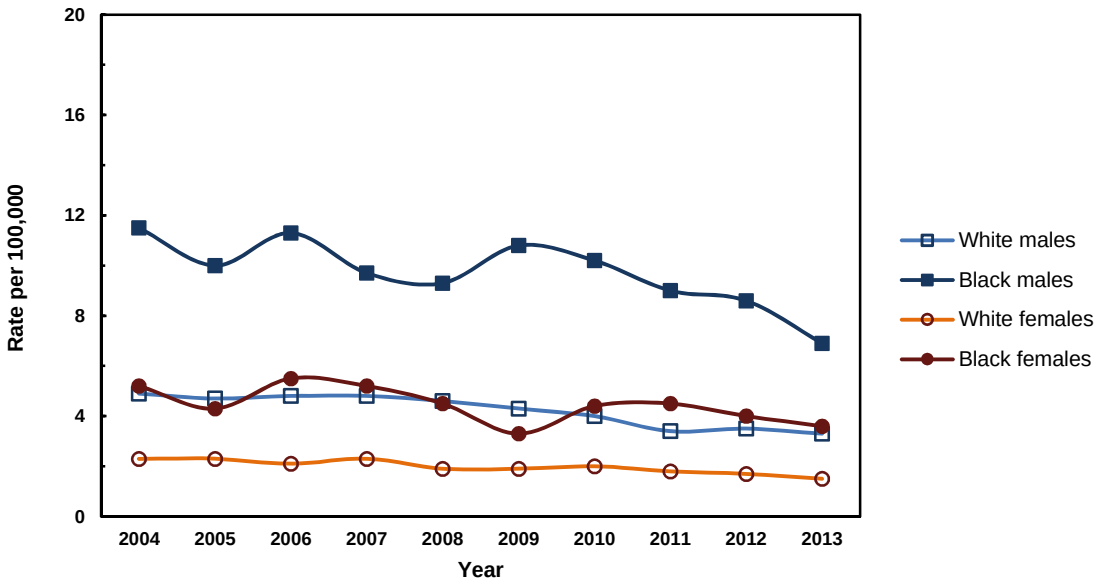
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	441	2.7 (2.4-3.0)	271	3.8 (3.3-4.3)	215	3.3 (2.9-3.7)	35	6.8 (4.5-9.1)	170	1.8 (1.5-2.1)	135	1.5 (1.2-1.8)	25	3.6 (2.2-5.0)
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)

* 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, 2004-2013



Cancer of the Stomach: MORTALITY

TABLE 4-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

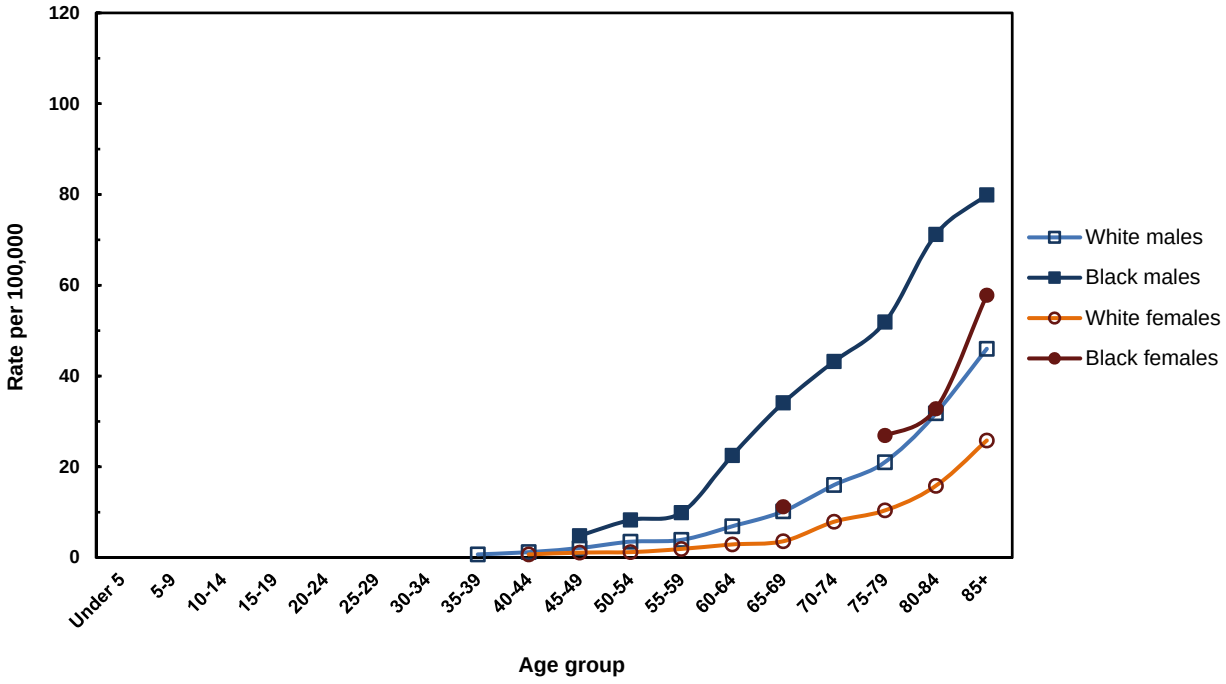
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**2,395**	**3.8**	**1,435**	**4.6**	**1,149**	**4.4**	**214**	**6.3**	**960**	**2.9**	**782**	**2.9**	**143**	**3.9**
Under 5	0	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	6	ND	4	ND	4	ND	0	ND	2	ND	1	ND	1	ND
30-34	3	ND	1	ND	0	ND	0	ND	2	ND	1	ND	0	ND
35-39	26	0.7	18	1.0	11	0.7	4	ND	8	ND	4	ND	3	ND
40-44	47	1.1	29	1.4	21	1.2	6	ND	18	0.8	12	0.7	4	ND
45-49	88	1.9	54	2.4	40	2.1	11	4.8	34	1.5	22	1.1	8	ND
50-54	134	2.8	96	4.1	72	3.5	18	8.3	38	1.6	25	1.2	8	ND
55-59	152	3.4	101	4.6	76	3.9	18	9.9	51	2.2	39	1.9	8	ND
60-64	213	5.6	149	8.1	113	6.9	31	22.5	64	3.2	50	2.9	9	ND
65-69	231	8.0	166	12.2	126	10.2	31	34.1	65	4.2	50	3.6	14	11.2
70-74	282	12.7	185	18.4	146	16.0	28	43.2	97	7.9	87	7.9	9	ND
75-79	309	17.2	187	24.5	147	21.0	24	51.9	122	11.8	97	10.4	21	26.9
80-84	351	23.5	197	33.8	173	31.8	22	71.2	154	16.9	132	15.8	20	32.8
85+	553	34.5	248	48.6	220	46.0	21	79.9	305	27.9	262	25.8	38	57.8

* 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 4-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,217	3,325	9.5	(9.2-9.8)	1,892	4.2	(4.0-4.4)
Adams	34	22	7.1	(4.1-10.1)	12	ND	
Allegheny	614	390	11.3	(10.2-12.4)	224	4.4	(3.8-5.0)
Armstrong	38	25	11.3	(6.9-15.7)	13	ND	
Beaver	77	52	9.5	(6.9-12.1)	25	3.3	(2.0-4.6)
Bedford	21	15	ND		6	ND	
Berks	152	108	9.8	(8.0-11.6)	44	3.3	(2.3-4.3)
Blair	68	41	11.3	(7.8-14.8)	27	5.1	(3.2-7.0)
Bradford	26	14	ND		12	ND	
Bucks	229	141	7.9	(6.6-9.2)	88	4.1	(3.2-5.0)
Butler	81	59	11.1	(8.3-13.9)	22	3.3	(1.9-4.7)
Cambria	81	54	11.9	(8.7-15.1)	27	4.1	(2.6-5.6)
Cameron	6	4	ND		2	ND	
Carbon	21	16	ND		5	ND	
Centre	32	18	ND		14	ND	
Chester	168	107	8.4	(6.8-10.0)	61	4.1	(3.1-5.1)
Clarion	13	9	ND		4	ND	
Clearfield	28	17	ND		11	ND	
Clinton	14	10	ND		4	ND	
Columbia	26	14	ND		12	ND	
Crawford	23	17	ND		6	ND	
Cumberland	83	50	7.5	(5.4-9.6)	33	4.1	(2.7-5.5)
Dauphin	91	62	9.1	(6.8-11.4)	29	3.0	(1.9-4.1)
Delaware	199	134	9.6	(8.0-11.2)	65	3.5	(2.6-4.4)
Elk	15	8	ND		7	ND	
Erie	102	65	8.8	(6.7-10.9)	37	4.1	(2.8-5.4)
Fayette	68	38	8.8	(6.0-11.6)	30	4.9	(3.1-6.7)
Forest	3	2	ND		1	ND	
Franklin	50	33	7.7	(5.1-10.3)	17	ND	
Fulton	5	4	ND		1	ND	
Greene	20	15	ND		5	ND	
Huntingdon	9	5	ND		4	ND	
Indiana	24	14	ND		10	ND	
Jefferson	24	18	ND		6	ND	
Juniata	9	5	ND		4	ND	
Lackawanna	98	68	10.5	(8.0-13.0)	30	3.1	(2.0-4.2)
Lancaster	194	121	8.6	(7.1-10.1)	73	4.1	(3.2-5.0)
Lawrence	33	21	7.0	(4.0-10.0)	12	ND	
Lebanon	48	32	7.9	(5.2-10.6)	16	ND	
Lehigh	138	95	10.5	(8.4-12.6)	43	3.5	(2.5-4.5)
Luzerne	171	108	11.3	(9.2-13.4)	63	4.6	(3.5-5.7)
Lycoming	47	32	8.8	(5.8-11.8)	15	ND	
McKean	13	8	ND		5	ND	
Mercer	47	37	9.6	(6.5-12.7)	10	ND	
Mifflin	19	13	ND		6	ND	
Monroe	67	43	10.2	(7.2-13.2)	24	4.7	(2.8-6.6)
Montgomery	292	180	8.3	(7.1-9.5)	112	4.1	(3.3-4.9)
Montour	6	3	ND		3	ND	
Northampton	152	95	11.7	(9.3-14.1)	57	5.5	(4.1-6.9)
Northumberland	40	31	10.9	(7.1-14.7)	9	ND	
Perry	22	13	ND		9	ND	
Philadelphia	696	388	12.3	(11.1-13.5)	308	6.6	(5.9-7.3)
Pike	27	17	ND		10	ND	
Potter	5	2	ND		3	ND	
Schuylkill	80	47	10.0	(7.1-12.9)	33	5.6	(3.7-7.5)
Snyder	8	5	ND		3	ND	
Somerset	37	27	10.3	(6.4-14.2)	10	ND	
Sullivan	0	0	ND		0	ND	
Susquehanna	15	9	ND		6	ND	
Tioga	18	14	ND		4	ND	
Union	11	9	ND		2	ND	
Venango	21	17	ND		4	ND	
Warren	24	14	ND		10	ND	
Washington	84	52	8.1	(5.9-10.3)	32	4.2	(2.7-5.7)
Wayne	25	18	ND		7	ND	
Westmoreland	185	123	10.4	(8.6-12.2)	62	4.1	(3.1-5.1)
Wyoming	9	8	ND		1	ND	
York	131	89	7.6	(6.0-9.2)	42	3.0	(2.1-3.9)

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. 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,395	1,435	4.2	(4.0-4.4)	960	2.0	(1.9-2.1)
Adams	17	9	ND		8	ND	
Allegheny	280	166	4.8	(4.1-5.5)	114	2.1	(1.7-2.5)
Armstrong	21	13	ND		8	ND	
Beaver	32	23	4.2	(2.5-5.9)	9	ND	
Bedford	4	2	ND		2	ND	
Berks	55	35	3.4	(2.3-4.5)	20	1.4	(0.8-2.0)
Blair	31	19	ND		12	ND	
Bradford	15	9	ND		6	ND	
Bucks	104	57	3.4	(2.5-4.3)	47	2.1	(1.5-2.7)
Butler	23	16	ND		7	ND	
Cambria	35	18	ND		17	ND	
Cameron	3	3	ND		0	ND	
Carbon	7	5	ND		2	ND	
Centre	13	6	ND		7	ND	
Chester	81	50	4.1	(3.0-5.2)	31	2.0	(1.3-2.7)
Clarion	1	0	ND		1	ND	
Clearfield	17	8	ND		9	ND	
Clinton	3	2	ND		1	ND	
Columbia	7	2	ND		5	ND	
Crawford	12	8	ND		4	ND	
Cumberland	35	20	3.2	(1.8-4.6)	15	ND	
Dauphin	41	29	4.6	(2.9-6.3)	12	ND	
Delaware	109	70	5.0	(3.8-6.2)	39	1.9	(1.3-2.5)
Elk	7	1	ND		6	ND	
Erie	51	31	4.2	(2.7-5.7)	20	2.1	(1.2-3.0)
Fayette	34	17	ND		17	ND	
Forest	3	2	ND		1	ND	
Franklin	20	13	ND		7	ND	
Fulton	1	1	ND		0	ND	
Greene	7	4	ND		3	ND	
Huntingdon	5	4	ND		1	ND	
Indiana	17	7	ND		10	ND	
Jefferson	14	7	ND		7	ND	
Juniata	3	2	ND		1	ND	
Lackawanna	51	35	5.7	(3.8-7.6)	16	ND	
Lancaster	90	56	4.1	(3.0-5.2)	34	1.8	(1.2-2.4)
Lawrence	15	7	ND		8	ND	
Lebanon	22	15	ND		7	ND	
Lehigh	64	45	4.8	(3.4-6.2)	19	ND	
Luzerne	74	37	4.0	(2.7-5.3)	37	2.4	(1.6-3.2)
Lycoming	21	9	ND		12	ND	
McKean	7	3	ND		4	ND	
Mercer	22	15	ND		7	ND	
Mifflin	8	5	ND		3	ND	
Monroe	38	25	6.5	(4.0-9.0)	13	ND	
Montgomery	131	76	3.6	(2.8-4.4)	55	1.8	(1.3-2.3)
Montour	4	1	ND		3	ND	
Northampton	65	38	4.8	(3.3-6.3)	27	2.2	(1.4-3.0)
Northumberland	16	13	ND		3	ND	
Perry	7	4	ND		3	ND	
Philadelphia	376	226	7.2	(6.3-8.1)	150	3.1	(2.6-3.6)
Pike	8	4	ND		4	ND	
Potter	3	3	ND		0	ND	
Schuylkill	25	16	ND		9	ND	
Snyder	4	2	ND		2	ND	
Somerset	9	7	ND		2	ND	
Sullivan	0	0	ND		0	ND	
Susquehanna	5	4	ND		1	ND	
Tioga	5	3	ND		2	ND	
Union	6	4	ND		2	ND	
Venango	11	8	ND		3	ND	
Warren	9	5	ND		4	ND	
Washington	39	24	3.8	(2.3-5.3)	15	ND	
Wayne	9	6	ND		3	ND	
Westmoreland	82	44	3.7	(2.6-4.8)	38	2.6	(1.8-3.4)
Wyoming	3	2	ND		1	ND	
York	58	34	3.0	(2.0-4.0)	24	1.8	(1.1-2.5)

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 Insitute's SEER program.

Cancer of the Colon and Rectum

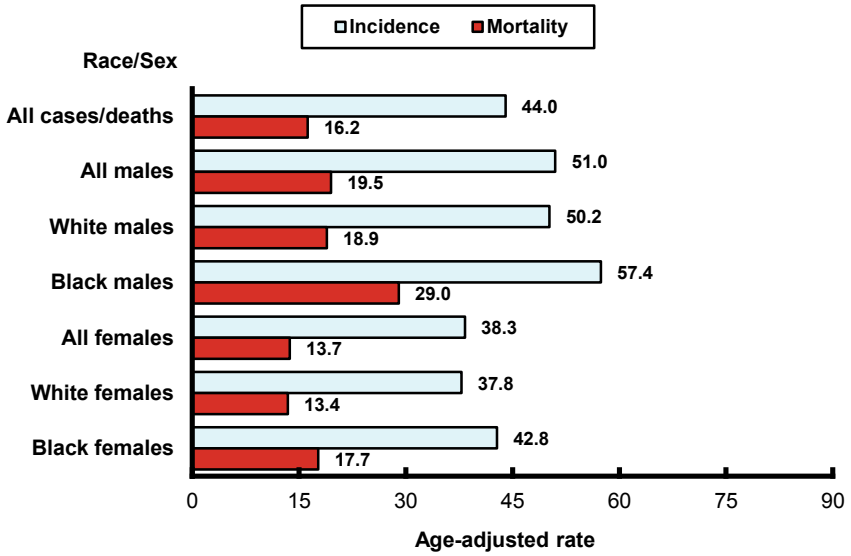
Data Highlights

There were 6,913 cases of invasive colon and rectum cancers diagnosed among residents in 2013, an increase of about 1 percent from 2012, when there were 6,851 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 2013.

The average annual age-adjusted incidence rate for colon and rectum cancers during the period of 2009-2013 was 33 percent higher among males (51.0 per 100,000) compared to females (38.3). Black males had the highest average annual incidence rate (57.4) among the four sex/race groups, and white females had the lowest rate (37.8). Annual age-adjusted incidence rates during the 10 years from 2004 to 2013 showed that the incidence rates for each of the four sex/race groups have declined. Age-adjusted incidence rates for white females reached a 10-year low in 2013. The age-adjusted incidence rate among black males decreased 3.6 percent in 2013 to 53.1 per 100,000. Compared to 2004, the 2013 incidence rates among white males decreased by about 24 percent to 48.9. Among black males, the rate decreased by 23 percent to 53.1. Similarly, among white females, the rate decreased by 22 percent to 36.3 and for black females by 20 percent to 41.2. During the period of 2009-2013, about 91 percent of the invasive colon/rectum cancer cases were diagnosed among Pennsylvania residents 50 years of age or older.

In 2013, there were 2,653 residents who died of colon and rectum cancers – an increase from the 2,612 resident deaths in 2012. The average annual age-adjusted death rates for 2009-2013 showed males (19.5 per 100,000) with higher rates than females (13.7). Of the four sex/race groups, black males had the highest death rate (29.0) 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 2013, 41 percent of colon/rectum cancers were diagnosed at the early stage (in situ or local), and 54 percent of the cases were diagnosed at the late stage (regional or distant). Between 2004 and 2013, 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 has been declining in recent years, hitting a low of 26.7 in 2012.

FIGURE 5
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

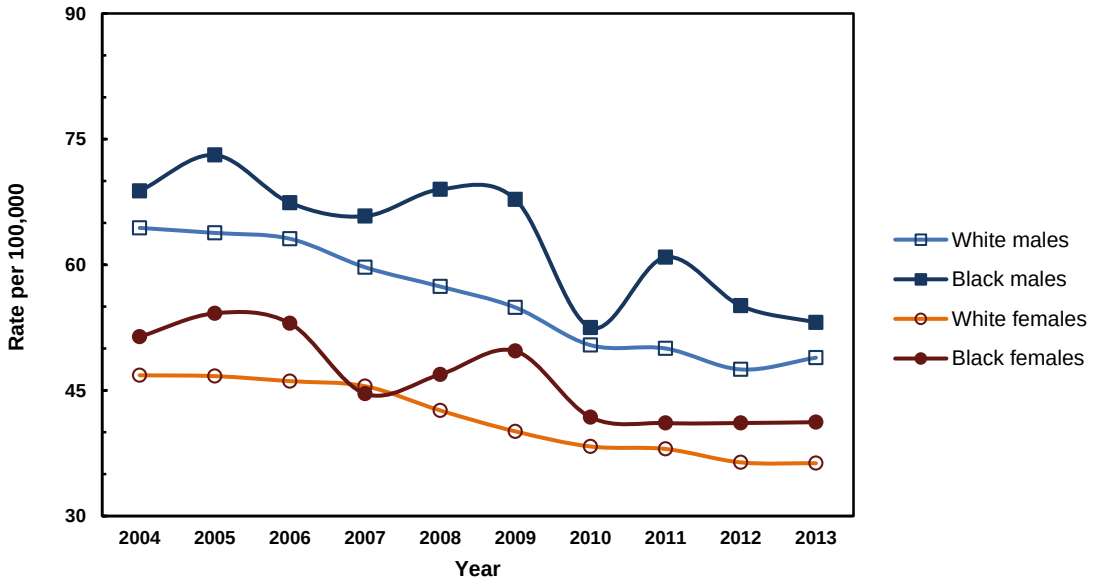
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**6,913**	**42.3** (41.3-43.3)	**3,554**	**49.2** (47.6-50.8)	**3,170**	**48.9** (47.2-50.6)	**285**	**53.1** (46.9-59.3)	**3,359**	**36.8** (35.6-38.0)	**2,961**	**36.3** (35.0-37.6)	**319**	**41.2** (36.7-45.7)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Cancer of the Colon and Rectum: INCIDENCE (Invasive)

TABLE 5-B

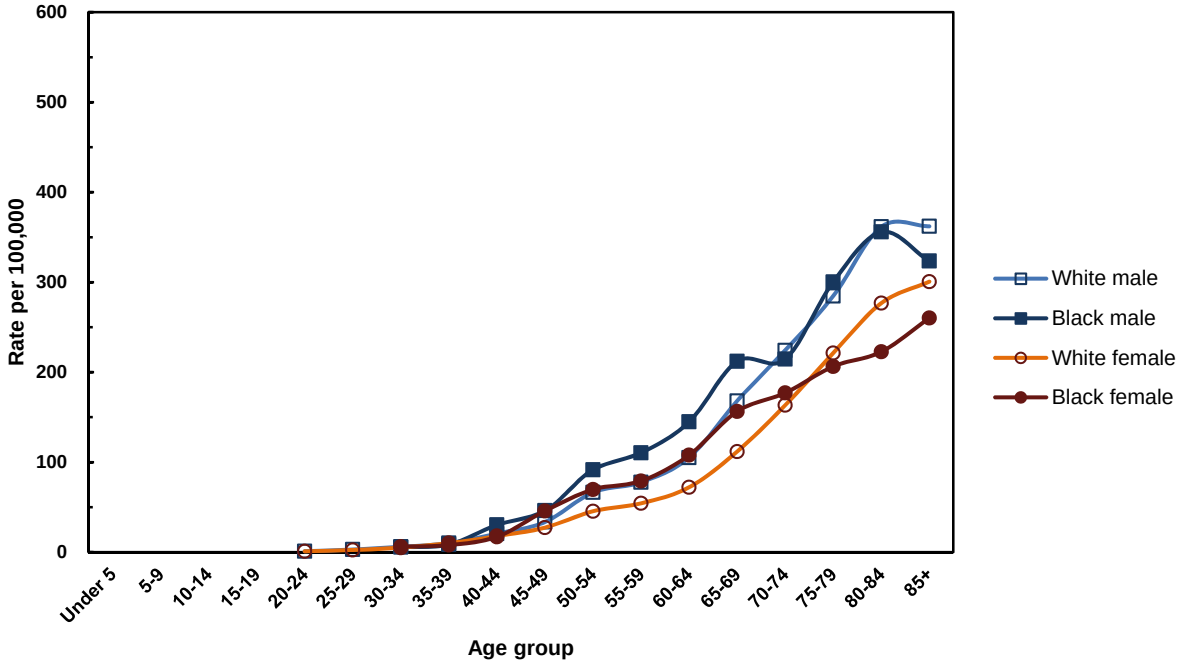
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**55.0**	**57.2**	**60.7**	**43.5**	**52.9**	**56.1**	**42.1**
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	0.5	0.5	ND	ND	ND	ND	ND
20-24	0.9	0.9	1.0	ND	0.9	1.0	ND
25-29	2.5	2.8	2.9	ND	2.2	2.5	ND
30-34	5.3	5.6	6.0	5.7	5.1	5.0	6.2
35-39	9.8	9.6	10.0	8.5	10.0	10.2	7.9
40-44	19.5	21.4	20.6	30.3	17.6	18.0	17.1
45-49	32.0	34.7	33.5	46.1	29.5	27.3	45.8
50-54	58.7	69.4	66.4	91.5	48.3	45.5	69.7
55-59	68.4	80.7	77.7	110.3	56.7	54.3	79.1
60-64	91.4	108.9	105.1	144.8	75.2	72.1	107.8
65-69	141.6	170.9	167.9	212.1	115.8	111.8	156.4
70-74	191.2	224.0	224.2	214.5	164.2	163.3	177.0
75-79	247.2	285.4	284.5	300.3	218.9	221.2	206.3
80-84	309.5	364.1	361.5	355.8	274.5	276.7	222.7
85+	320.9	362.4	362.1	323.5	301.5	300.6	260.2

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 5-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Cancer of the Colon and Rectum: INCIDENCE (Invasive)

TABLE 5-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

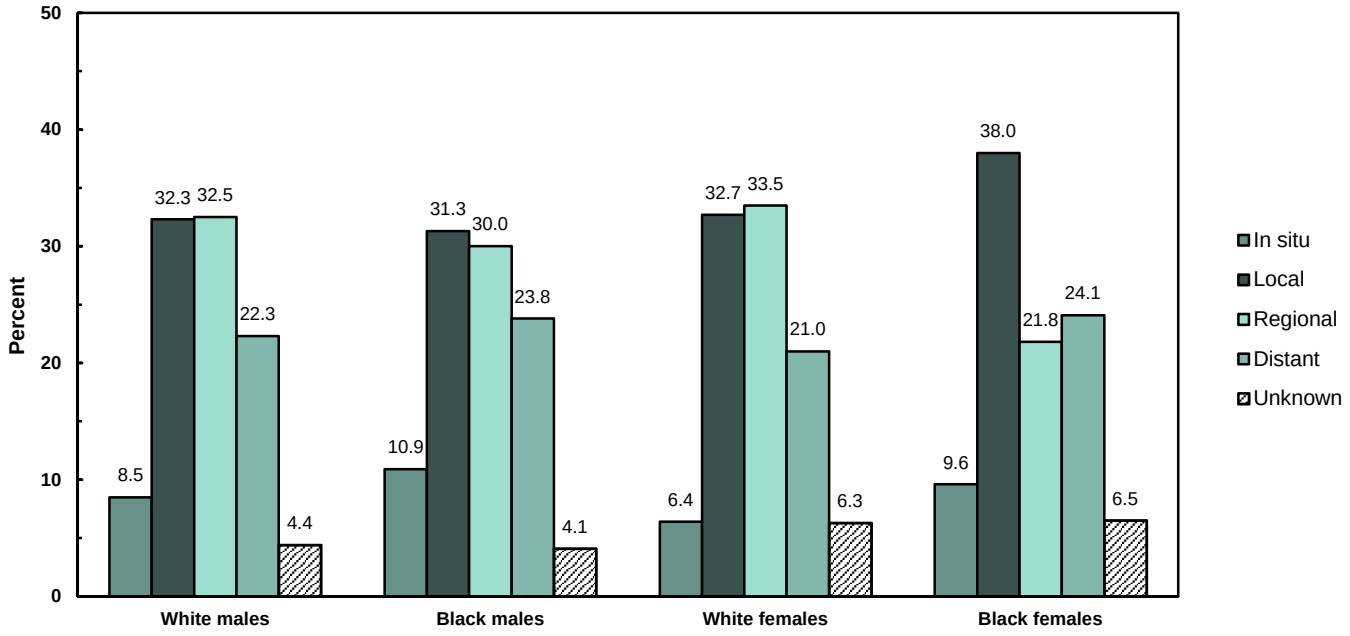
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**34,963**	**17,735**	**15,755**	**1,480**	**17,228**	**15,236**	**1,563**
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	4	2	2	0	2	2	0
15-19	21	12	7	3	9	9	0
20-24	40	21	17	4	19	18	1
25-29	99	56	47	4	43	39	3
30-34	202	106	92	13	96	76	15
35-39	366	179	152	18	187	155	18
40-44	821	448	362	68	373	318	42
45-49	1,467	783	649	105	684	537	116
50-54	2,823	1,640	1,372	199	1,183	963	174
55-59	3,057	1,760	1,503	201	1,297	1,087	171
60-64	3,491	2,001	1,734	199	1,490	1,261	189
65-69	4,111	2,325	2,073	193	1,786	1,541	195
70-74	4,257	2,248	2,051	139	2,009	1,795	171
75-79	4,437	2,177	1,995	139	2,260	2,070	161
80-84	4,623	2,124	1,966	110	2,499	2,316	136
85+	5,142	1,851	1,731	85	3,291	3,049	171

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 6,646 - 96.1%

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, 2004-2013

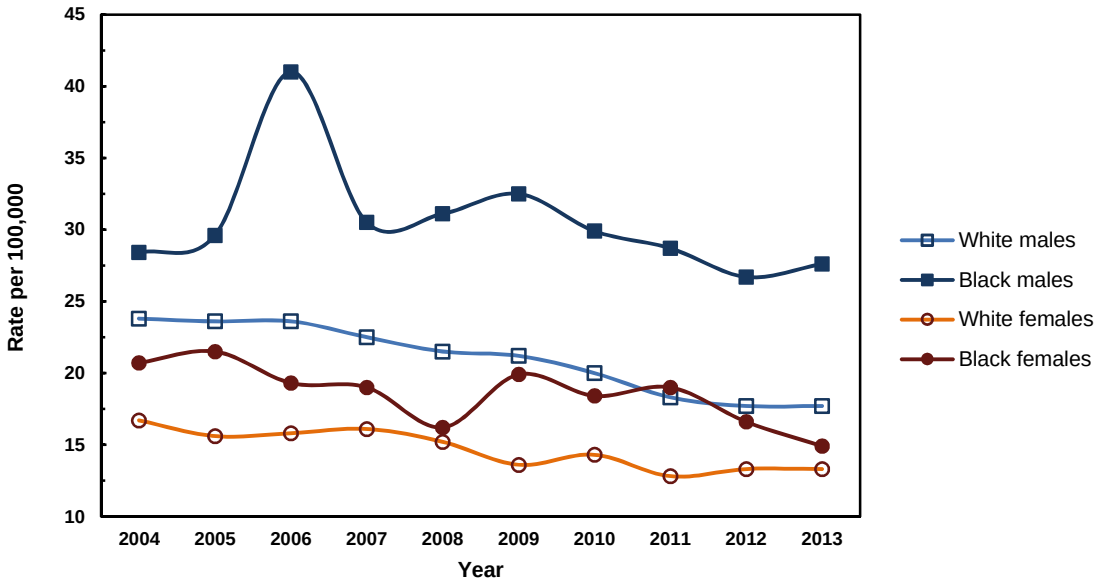
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	2,653	15.8 (15.2-16.4)	1,312	18.5 (17.5-19.5)	1,138	17.7 (16.7-18.7)	136	27.3 (22.7-31.9)	1,341	13.5 (12.8-14.2)	1,190	13.3 (12.5-14.1)	116	14.9 (12.2-17.6)
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)

* 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, 2004-2013



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, 2009-2013

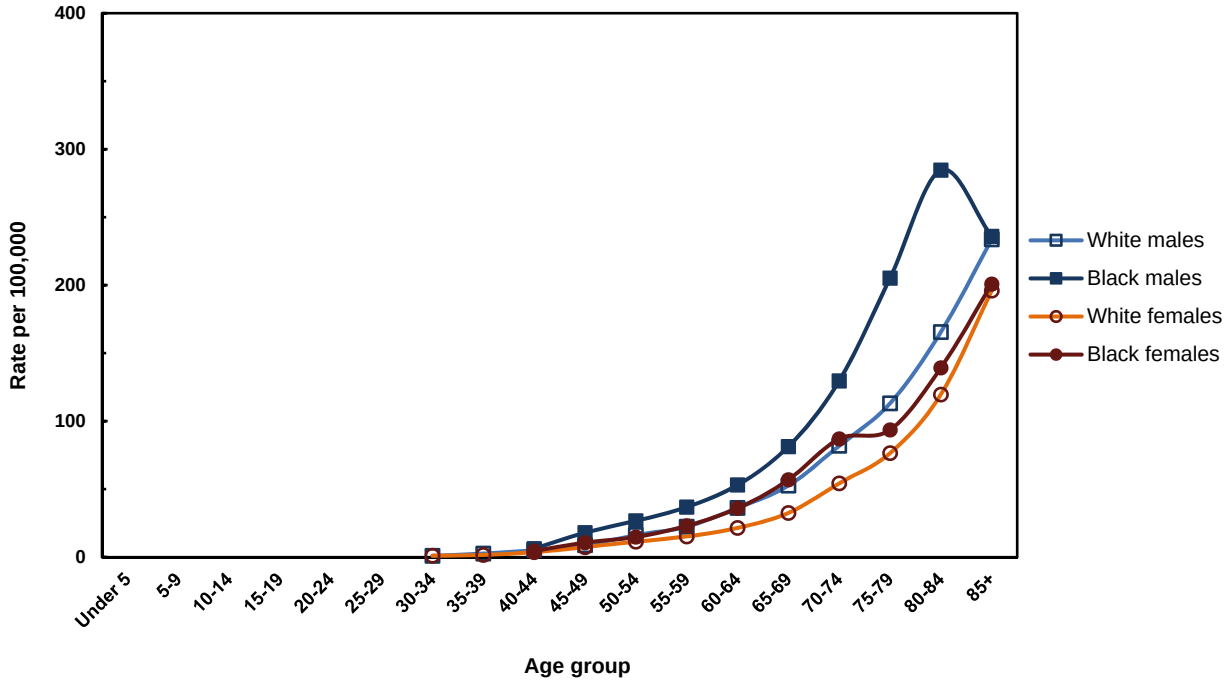
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**13,344**	**21.0**	**6,685**	**21.6**	**5,902**	**22.7**	**673**	**19.8**	**6,659**	**20.4**	**5,925**	**21.8**	**641**	**17.3**
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	1	ND	1	ND	0	ND	1	ND	0	ND	0	ND	0	ND
20-24	9	ND	7	ND	4	ND	2	ND	2	ND	2	ND	0	ND
25-29	13	0.3	10	0.5	7	ND	2	ND	3	ND	2	ND	0	ND
30-34	41	1.1	22	1.2	15	1.0	7	ND	19	1.0	16	1.1	2	ND
35-39	77	2.1	45	2.4	40	2.6	5	ND	32	1.7	24	1.6	6	ND
40-44	191	4.5	111	5.3	91	5.2	14	6.2	80	3.8	65	3.7	11	4.5
45-49	390	8.5	217	9.6	171	8.8	41	18.0	173	7.5	144	7.3	27	10.7
50-54	686	14.3	403	17.1	334	16.2	58	26.7	283	11.6	242	11.4	37	14.8
55-59	878	19.6	518	23.7	434	22.4	67	36.8	360	15.7	304	15.2	50	23.1
60-64	1,128	29.5	682	37.1	597	36.2	73	53.1	446	22.5	376	21.5	63	35.9
65-69	1,266	43.6	734	54.0	650	52.6	74	81.3	532	34.5	448	32.5	71	56.9
70-74	1,528	68.6	842	83.9	749	81.9	84	129.6	686	56.1	597	54.3	84	87.0
75-79	1,702	94.8	898	117.7	793	113.1	95	205.2	804	77.9	716	76.5	73	93.6
80-84	2,100	140.6	1,002	171.8	900	165.5	88	284.6	1,098	120.6	1,001	119.6	85	139.2
85+	3,334	208.1	1,193	233.6	1,117	233.7	62	235.9	2,141	196.2	1,988	196.0	132	200.8

* 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 5-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	34,963	17,735	51.0	(50.2-51.8)	17,228	38.3	(37.7-38.9)
Adams	273	139	48.2	(40.2-56.2)	134	38.0	(31.6-44.4)
Allegheny	3,533	1,763	51.1	(48.7-53.5)	1,770	36.9	(35.2-38.6)
Armstrong	235	123	55.9	(46.0-65.8)	112	40.8	(33.2-48.4)
Beaver	491	239	44.8	(39.1-50.5)	252	35.8	(31.4-40.2)
Bedford	149	91	55.2	(43.9-66.5)	58	30.3	(22.5-38.1)
Berks	1,060	553	50.6	(46.4-54.8)	507	36.7	(33.5-39.9)
Blair	435	209	56.1	(48.5-63.7)	226	44.3	(38.5-50.1)
Bradford	195	87	45.3	(35.8-54.8)	108	48.8	(39.6-58.0)
Bucks	1,568	817	47.3	(44.1-50.5)	751	34.8	(32.3-37.3)
Butler	516	292	58.1	(51.4-64.8)	224	33.9	(29.5-38.3)
Cambria	557	290	62.7	(55.5-69.9)	267	45.0	(39.6-50.4)
Cameron	28	16	ND		12	ND	
Carbon	186	92	45.3	(36.0-54.6)	94	37.4	(29.8-45.0)
Centre	271	133	40.5	(33.6-47.4)	138	35.0	(29.2-40.8)
Chester	1,046	515	41.0	(37.5-44.5)	531	34.4	(31.5-37.3)
Clarion	133	65	56.0	(42.4-69.6)	68	47.5	(36.2-58.8)
Clearfield	259	134	53.4	(44.4-62.4)	125	39.1	(32.2-46.0)
Clinton	123	59	54.0	(40.2-67.8)	64	45.9	(34.7-57.1)
Columbia	184	86	46.1	(36.4-55.8)	98	41.8	(33.5-50.1)
Crawford	278	144	55.7	(46.6-64.8)	134	42.4	(35.2-49.6)
Cumberland	656	336	50.9	(45.5-56.3)	320	38.7	(34.5-42.9)
Dauphin	693	317	46.1	(41.0-51.2)	376	42.2	(37.9-46.5)
Delaware	1,544	783	55.8	(51.9-59.7)	761	39.9	(37.1-42.7)
Elk	108	64	58.2	(43.9-72.5)	44	34.7	(24.4-45.0)
Erie	631	342	46.4	(41.5-51.3)	289	30.8	(27.2-34.4)
Fayette	473	262	62.5	(54.9-70.1)	211	39.2	(33.9-44.5)
Forest	18	13	ND		5	ND	
Franklin	443	230	53.2	(46.3-60.1)	213	38.4	(33.2-43.6)
Fulton	38	18	ND		20	36.7	(20.6-52.8)
Greene	132	70	63.4	(48.5-78.3)	62	49.3	(37.0-61.6)
Huntingdon	118	65	45.6	(34.5-56.7)	53	35.2	(25.7-44.7)
Indiana	235	125	52.2	(43.0-61.4)	110	35.9	(29.2-42.6)
Jefferson	152	81	55.7	(43.6-67.8)	71	39.7	(30.5-48.9)
Juniata	68	43	54.8	(38.4-71.2)	25	30.0	(18.2-41.8)
Lackawanna	669	322	52.0	(46.3-57.7)	347	41.3	(37.0-45.6)
Lancaster	1,231	642	45.8	(42.3-49.3)	589	34.1	(31.3-36.9)
Lawrence	252	114	40.3	(32.9-47.7)	138	35.9	(29.9-41.9)
Lebanon	361	182	46.0	(39.3-52.7)	179	34.9	(29.8-40.0)
Lehigh	883	437	47.4	(43.0-51.8)	446	36.2	(32.8-39.6)
Luzerne	1,159	577	61.8	(56.8-66.8)	582	44.1	(40.5-47.7)
Lycoming	349	159	46.7	(39.4-54.0)	190	44.4	(38.1-50.7)
McKean	137	76	57.7	(44.7-70.7)	61	37.7	(28.2-47.2)
Mercer	397	207	56.5	(48.8-64.2)	190	41.7	(35.8-47.6)
Mifflin	153	90	61.2	(48.6-73.8)	63	34.9	(26.3-43.5)
Monroe	379	191	43.4	(37.2-49.6)	188	38.1	(32.7-43.5)
Montgomery	2,041	983	44.8	(42.0-47.6)	1,058	37.1	(34.9-39.3)
Montour	57	25	48.3	(29.4-67.2)	32	44.0	(28.8-59.2)
Northampton	804	409	49.0	(44.3-53.7)	395	37.0	(33.4-40.6)
Northumberland	272	132	44.3	(36.7-51.9)	140	38.2	(31.9-44.5)
Perry	103	61	46.6	(34.9-58.3)	42	28.7	(20.0-37.4)
Philadelphia	3,807	1,923	60.0	(57.3-62.7)	1,884	41.2	(39.3-43.1)
Pike	149	76	42.2	(32.7-51.7)	73	37.2	(28.7-45.7)
Potter	63	32	52.7	(34.4-71.0)	31	45.8	(29.7-61.9)
Schuylkill	578	278	59.4	(52.4-66.4)	300	49.5	(43.9-55.1)
Snyder	94	44	40.3	(28.4-52.2)	50	37.5	(27.1-47.9)
Somerset	279	152	59.3	(49.9-68.7)	127	41.4	(34.2-48.6)
Sullivan	24	19	ND		5	ND	
Susquehanna	100	58	40.5	(30.1-50.9)	42	28.0	(19.5-36.5)
Tioga	123	73	52.8	(40.7-64.9)	50	32.4	(23.4-41.4)
Union	92	51	40.8	(29.6-52.0)	41	28.2	(19.6-36.8)
Venango	170	83	44.8	(35.2-54.4)	87	40.5	(32.0-49.0)
Warren	118	59	42.7	(31.8-53.6)	59	35.3	(26.3-44.3)
Washington	684	350	55.3	(49.5-61.1)	334	40.7	(36.3-45.1)
Wayne	153	72	38.6	(29.7-47.5)	81	43.2	(33.8-52.6)
Westmoreland	1,213	616	52.7	(48.5-56.9)	597	38.8	(35.7-41.9)
Wyoming	75	42	49.7	(34.7-64.7)	33	33.2	(21.9-44.5)
York	1,165	604	51.0	(46.9-55.1)	561	39.8	(36.5-43.1)

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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	13,344	6,685	19.5	(19.0-20.0)	6,659	13.7	(13.4-14.0)
Adams	114	63	22.3	(16.8-27.8)	51	13.8	(10.0-17.6)
Allegheny	1,329	656	18.8	(17.4-20.2)	673	12.9	(11.9-13.9)
Armstrong	77	33	14.8	(9.8-19.8)	44	15.8	(11.1-20.5)
Beaver	218	108	19.5	(15.8-23.2)	110	14.7	(12.0-17.4)
Bedford	42	19	ND		23	11.4	(6.7-16.1)
Berks	384	203	18.6	(16.0-21.2)	181	12.1	(10.3-13.9)
Blair	178	83	22.2	(17.4-27.0)	95	16.6	(13.3-19.9)
Bradford	78	35	17.3	(11.6-23.0)	43	17.9	(12.5-23.3)
Bucks	580	284	17.2	(15.2-19.2)	296	12.9	(11.4-14.4)
Butler	187	104	20.1	(16.2-24.0)	83	12.0	(9.4-14.6)
Cambria	187	102	22.0	(17.7-26.3)	85	12.7	(10.0-15.4)
Cameron	11	8	ND		3	ND	
Carbon	65	29	13.7	(8.7-18.7)	36	13.3	(9.0-17.6)
Centre	88	42	13.5	(9.4-17.6)	46	11.2	(8.0-14.4)
Chester	416	212	17.3	(15.0-19.6)	204	12.6	(10.9-14.3)
Clarion	41	24	21.2	(12.7-29.7)	17	ND	
Clearfield	122	60	24.2	(18.1-30.3)	62	17.8	(13.4-22.2)
Clinton	56	31	29.0	(18.8-39.2)	25	17.4	(10.6-24.2)
Columbia	57	29	16.4	(10.4-22.4)	28	11.5	(7.2-15.8)
Crawford	111	58	23.7	(17.6-29.8)	53	15.9	(11.6-20.2)
Cumberland	218	105	16.1	(13.0-19.2)	113	12.4	(10.1-14.7)
Dauphin	245	127	18.6	(15.4-21.8)	118	12.7	(10.4-15.0)
Delaware	644	312	22.1	(19.6-24.6)	332	16.2	(14.5-17.9)
Elk	39	20	19.0	(10.7-27.3)	19	ND	
Erie	271	135	19.0	(15.8-22.2)	136	13.5	(11.2-15.8)
Fayette	201	116	27.8	(22.7-32.9)	85	14.2	(11.2-17.2)
Forest	10	9	ND		1	ND	
Franklin	149	75	17.5	(13.5-21.5)	74	12.2	(9.4-15.0)
Fulton	18	7	ND		11	ND	
Greene	40	22	20.9	(12.2-29.6)	18	ND	
Huntingdon	46	27	19.3	(12.0-26.6)	19	ND	
Indiana	92	49	19.9	(14.3-25.5)	43	12.3	(8.6-16.0)
Jefferson	68	36	26.0	(17.5-34.5)	32	17.8	(11.6-24.0)
Juniata	28	15	ND		13	ND	
Lackawanna	237	118	19.6	(16.1-23.1)	119	12.2	(10.0-14.4)
Lancaster	485	254	17.9	(15.7-20.1)	231	12.3	(10.7-13.9)
Lawrence	119	48	16.4	(11.8-21.0)	71	17.6	(13.5-21.7)
Lebanon	129	63	16.2	(12.2-20.2)	66	11.7	(8.9-14.5)
Lehigh	341	168	18.5	(15.7-21.3)	173	12.4	(10.6-14.2)
Luzerne	456	224	24.2	(21.0-27.4)	232	16.2	(14.1-18.3)
Lycoming	123	54	15.8	(11.6-20.0)	69	15.3	(11.7-18.9)
McKean	54	31	23.6	(15.3-31.9)	23	12.4	(7.3-17.5)
Mercer	184	98	26.8	(21.5-32.1)	86	17.5	(13.8-21.2)
Mifflin	49	29	19.8	(12.6-27.0)	20	10.6	(6.0-15.2)
Monroe	131	63	16.9	(12.7-21.1)	68	13.8	(10.5-17.1)
Montgomery	719	326	15.2	(13.5-16.9)	393	12.5	(11.3-13.7)
Montour	24	13	ND		11	ND	
Northampton	268	131	15.6	(12.9-18.3)	137	11.7	(9.7-13.7)
Northumberland	112	57	19.5	(14.4-24.6)	55	13.0	(9.6-16.4)
Perry	43	23	20.0	(11.8-28.2)	20	13.2	(7.4-19.0)
Philadelphia	1,498	756	24.6	(22.8-26.4)	742	15.1	(14.0-16.2)
Pike	53	31	19.1	(12.4-25.8)	22	10.7	(6.2-15.2)
Potter	21	11	ND		10	ND	
Schuylkill	209	93	20.5	(16.3-24.7)	116	17.0	(13.9-20.1)
Snyder	40	20	17.6	(9.9-25.3)	20	15.1	(8.5-21.7)
Somerset	104	56	21.5	(15.9-27.1)	48	13.6	(9.8-17.4)
Sullivan	10	5	ND		5	ND	
Susquehanna	36	26	18.6	(11.5-25.7)	10	ND	
Tioga	49	25	17.6	(10.7-24.5)	24	14.9	(8.9-20.9)
Union	30	13	ND		17	ND	
Venango	86	40	21.8	(15.0-28.6)	46	22.1	(15.7-28.5)
Warren	61	33	22.3	(14.7-29.9)	28	15.0	(9.4-20.6)
Washington	274	131	20.8	(17.2-24.4)	143	16.3	(13.6-19.0)
Wayne	65	31	17.5	(11.3-23.7)	34	18.0	(11.9-24.1)
Westmoreland	490	249	21.1	(18.5-23.7)	241	14.2	(12.4-16.0)
Wyoming	33	19	ND		14	ND	
York	401	208	18.4	(15.9-20.9)	193	12.9	(11.1-14.7)

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 Insitute's SEER program.

Cancer of the Liver and Intrahepatic Bile Duct

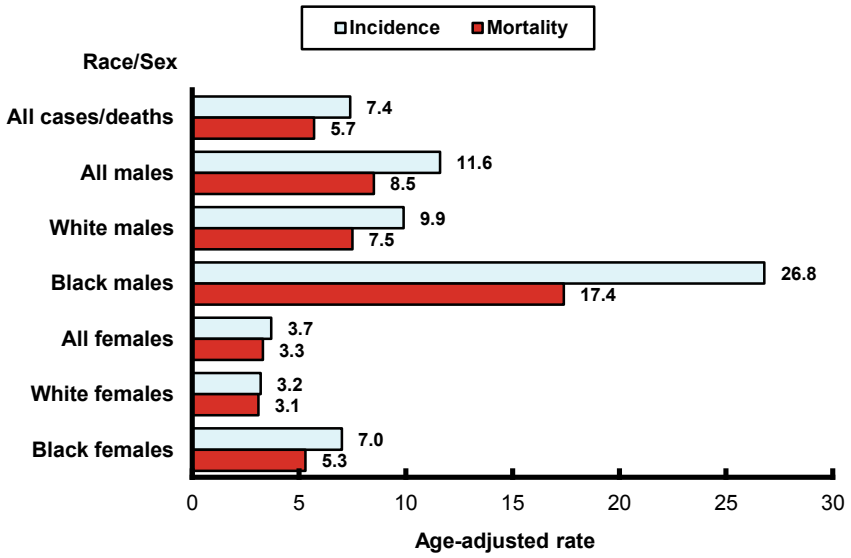
Data Highlights

The 2009-2013 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 (11.6 compared to 3.7 per 100,000). The highest rate occurred among black males (26.8) and was over 2 1/2 times the rate among white males (9.9).

In 2013, there were 1,351 cases of invasive liver/intrahepatic bile duct cancers diagnosed among residents for an age-adjusted rate of 7.9 per 100,000. The annual age-adjusted incidence rates by sex and race for the last 10 years (2004-2013) showed increasing rates among males, especially black males and smaller increases among females of both races. The 2009-2013 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 2009-2013, 97 percent of the cases were diagnosed among residents 45 years of age or older. In 2013, 46 percent of the liver/intrahepatic bile duct cancers were diagnosed at the late stage (regional or distant) of the disease, and approximately 42 percent were diagnosed at the early stage (local).

As observed with incidence rates, the 2009-2013 average annual age-adjusted death rates for cancer of the liver and intrahepatic bile duct were much higher for black males (17.4 per 100,000) compared to white males (7.5). Black females (5.3) also had higher death rates compared to white females (3.1). 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 2004-2013, the annual age-adjusted death rates had increasing trends among black males. Annual death rates among white males, white females and black females displayed no discernible long-term trends.

FIGURE 6
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

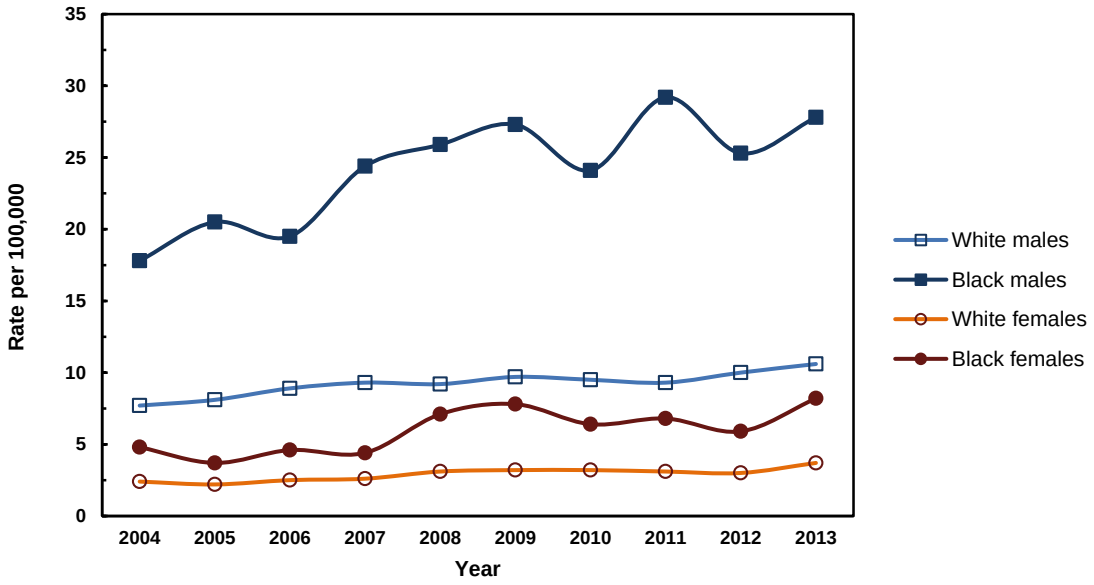
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,351**	**7.9** (7.5-8.3)	**975**	**12.3** (11.5-13.1)	**748**	**10.6** (9.8-11.4)	**179**	**27.8** (23.7-31.9)	**376**	**4.2** (3.8-4.6)	**289**	**3.7** (3.3-4.1)	**66**	**8.2** (6.2-10.2)
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)

* Includes unknown/other race and sex.

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, 2004-2013



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

TABLE 6-B

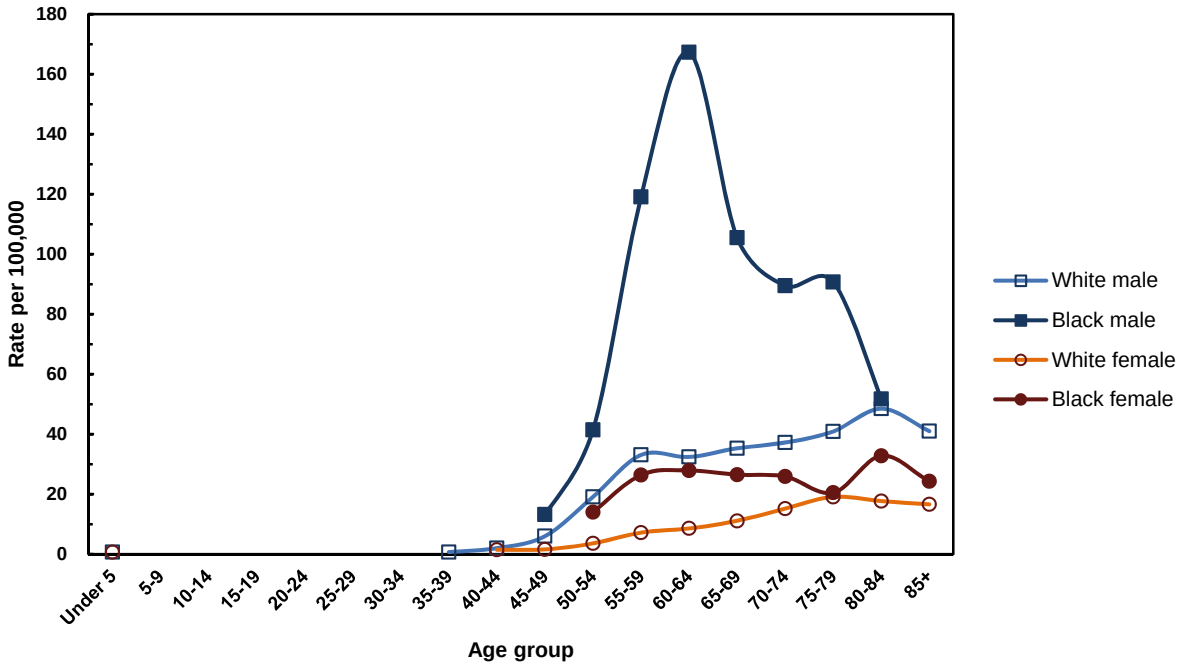
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**9.5**	**14.1**	**12.7**	**23.7**	**5.1**	**4.7**	**7.2**
Under 5	0.8	0.9	0.7	ND	0.7	0.7	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	0.2	ND	ND	ND	ND	ND	ND
25-29	0.3	ND	ND	ND	ND	ND	ND
30-34	0.4	ND	ND	ND	ND	ND	ND
35-39	0.6	0.9	0.7	ND	ND	ND	ND
40-44	2.0	2.4	2.0	ND	1.6	1.5	ND
45-49	4.3	7.0	6.0	13.2	1.6	1.6	ND
50-54	13.4	22.2	19.1	41.4	5.0	3.6	14.0
55-59	25.1	41.9	33.1	119.1	9.0	7.2	26.4
60-64	27.0	44.6	32.4	167.3	10.6	8.6	27.9
65-69	26.5	41.8	35.3	105.5	13.0	11.1	26.5
70-74	28.0	41.7	37.2	89.5	16.8	15.2	25.9
75-79	30.9	44.4	40.9	90.7	20.8	19.1	20.5
80-84	32.3	50.7	48.5	51.7	20.5	17.7	32.8
85+	25.4	41.1	41.0	ND	18.0	16.6	24.3

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 6-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

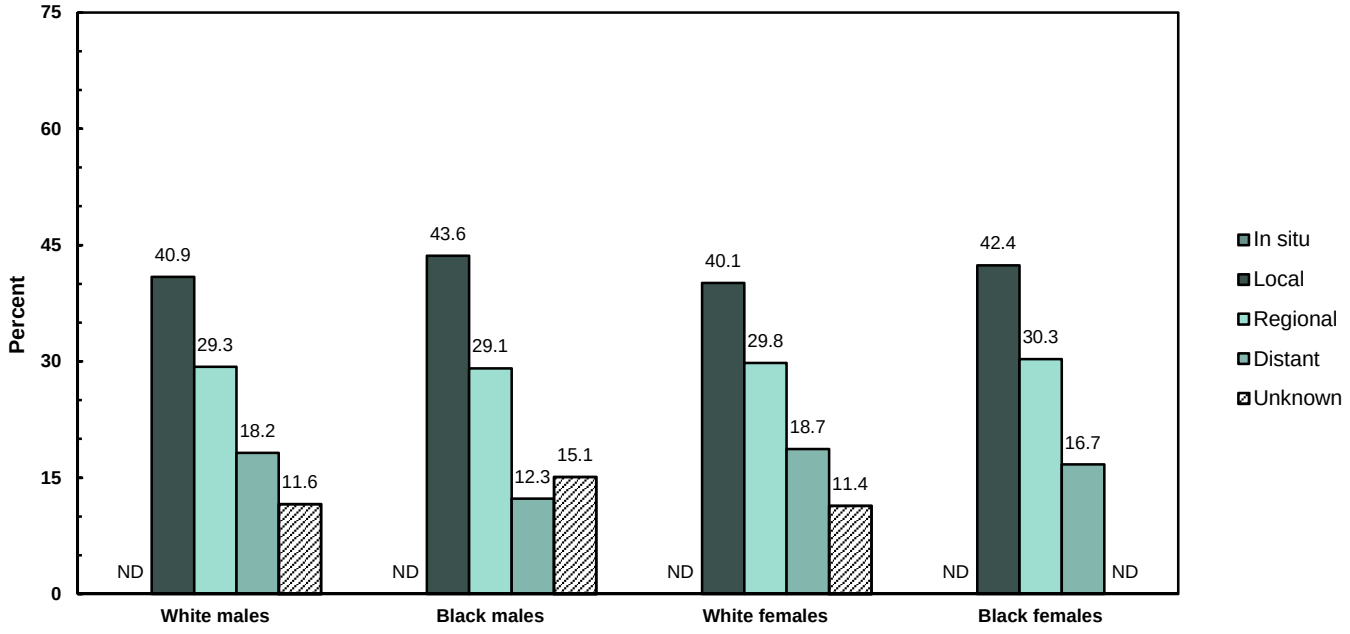
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**6,021**	**4,367**	**3,288**	**808**	**1,654**	**1,273**	**269**
Under 5	28	16	10	3	12	10	2
5-9	3	1	1	0	2	2	0
10-14	4	4	4	0	0	0	0
15-19	8	5	4	0	3	2	1
20-24	11	8	5	2	3	2	0
25-29	13	7	5	2	6	4	2
30-34	16	8	4	4	8	5	2
35-39	21	17	10	3	4	3	1
40-44	83	50	36	8	33	27	5
45-49	197	159	116	30	38	31	5
50-54	647	525	395	90	122	77	35
55-59	1,122	915	640	217	207	144	57
60-64	1,031	820	535	230	211	151	49
65-69	770	569	436	96	201	153	33
70-74	623	418	340	58	205	167	25
75-79	554	339	287	42	215	179	16
80-84	483	296	264	16	187	148	20
85+	407	210	196	7	197	168	16

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 786 - 58.2%

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, 2004-2013

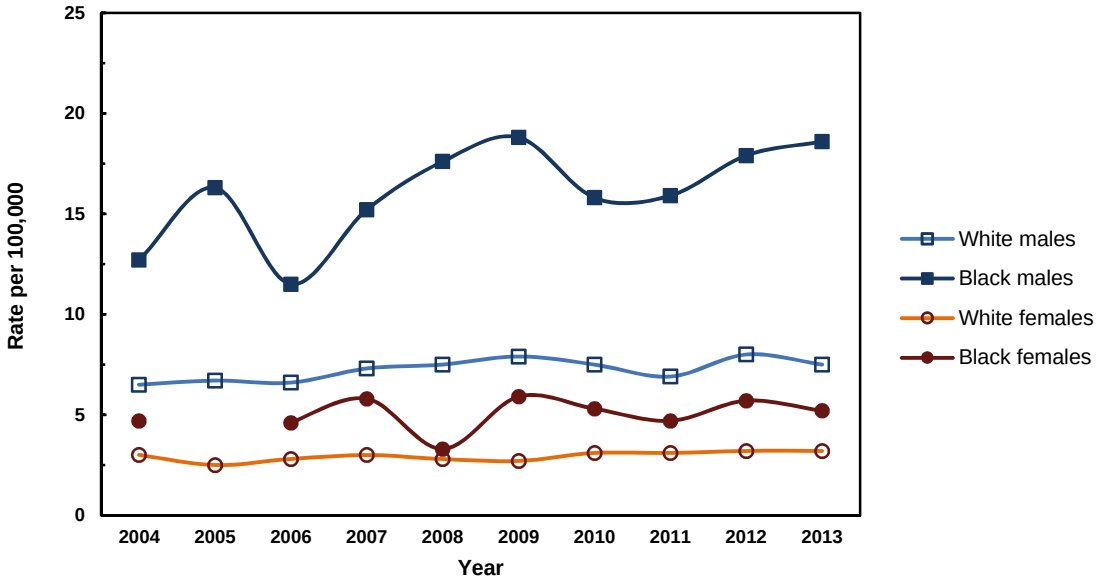
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	1,014	5.9 (5.5-6.3)	680	8.8 (8.1-9.5)	510	7.5 (6.8-8.2)	112	18.4 (15.0-21.8)	334	3.6 (3.2-4.0)	277	3.2 (2.8-3.6)	41	5.2 (3.6-6.8)
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)

* 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, 2004-2013



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, 2009-2013

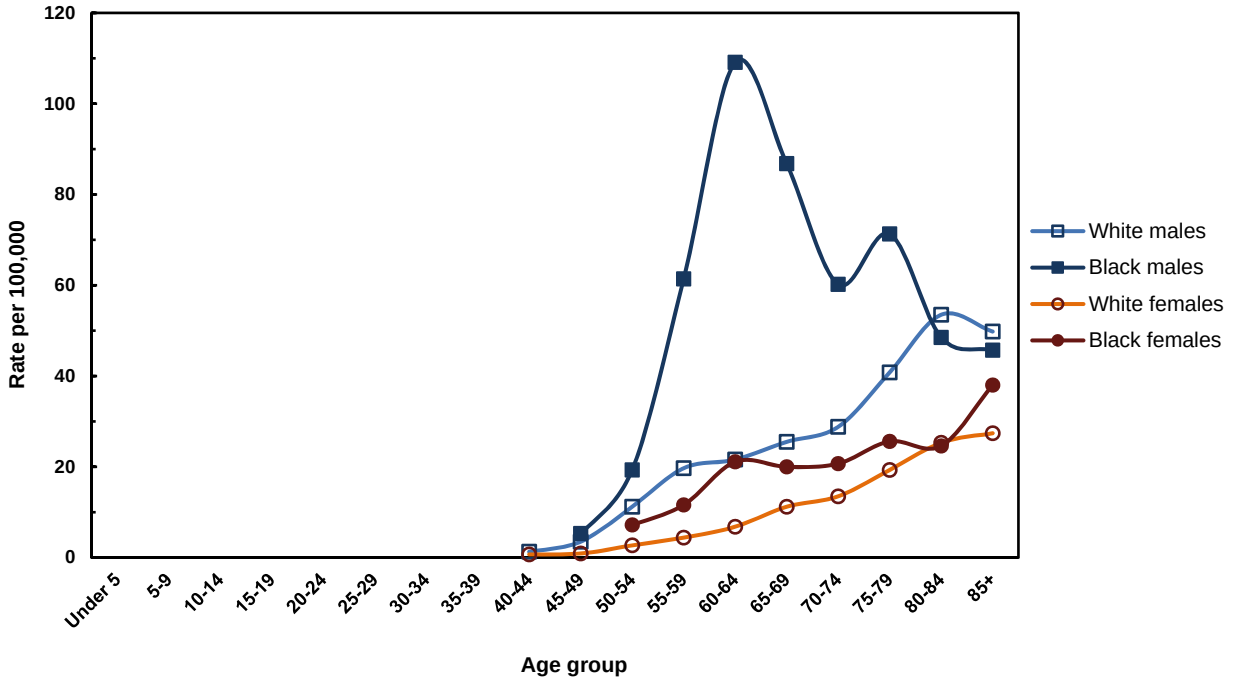
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**4,653**	**7.3**	**3,113**	**10.0**	**2,468**	**9.5**	**501**	**14.7**	**1,540**	**4.7**	**1,284**	**4.7**	**199**	**5.4**
Under 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	1	ND	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND
15-19	3	ND	0	ND	0	ND	0	ND	3	ND	2	ND	1	ND
20-24	2	ND	0	ND	0	ND	0	ND	2	ND	1	ND	0	ND
25-29	6	ND	3	ND	2	ND	1	ND	3	ND	1	ND	2	ND
30-34	9	ND	4	ND	3	ND	1	ND	5	ND	3	ND	1	ND
35-39	22	0.6	12	0.6	6	ND	2	ND	10	0.5	7	ND	1	ND
40-44	44	1.0	27	1.3	23	1.3	3	ND	17	0.8	13	0.7	3	ND
45-49	111	2.4	86	3.8	68	3.5	12	5.3	25	1.1	18	0.9	5	ND
50-54	372	7.7	292	12.4	232	11.2	42	19.3	80	3.3	57	2.7	18	7.2
55-59	639	14.3	521	23.9	382	19.7	112	61.4	118	5.2	89	4.4	25	11.6
60-64	699	18.3	538	29.3	357	21.6	150	109.1	161	8.1	119	6.8	37	21.1
65-69	595	20.5	408	30.0	315	25.5	79	86.8	187	12.1	154	11.2	25	20.0
70-74	491	22.0	317	31.6	263	28.8	39	60.2	174	14.2	148	13.5	20	20.7
75-79	544	30.3	332	43.5	286	40.8	33	71.3	212	20.5	181	19.3	20	25.6
80-84	553	37.0	317	54.3	291	53.5	15	48.5	236	25.9	212	25.3	15	24.6
85+	559	34.9	254	49.7	238	49.8	12	45.7	305	27.9	278	27.4	25	38.0

* 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 6-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	6,021	4,367	11.6	(11.3-11.9)	1,654	3.7	(3.5-3.9)
Adams	42	30	9.1	(5.8-12.4)	12	ND	
Allegheny	634	470	12.6	(11.5-13.7)	164	3.5	(3.0-4.0)
Armstrong	28	18	ND		10	ND	
Beaver	75	58	10.7	(7.9-13.5)	17	ND	
Bedford	17	10	ND		7	ND	
Berks	162	108	9.2	(7.5-10.9)	54	4.0	(2.9-5.1)
Blair	58	46	11.6	(8.2-15.0)	12	ND	
Bradford	27	20	9.6	(5.4-13.8)	7	ND	
Bucks	286	204	10.6	(9.1-12.1)	82	3.8	(3.0-4.6)
Butler	64	45	8.4	(5.9-10.9)	19	ND	
Cambria	64	53	11.8	(8.6-15.0)	11	ND	
Cameron	1	1	ND		0	ND	
Carbon	30	20	9.0	(5.1-12.9)	10	ND	
Centre	37	27	7.7	(4.8-10.6)	10	ND	
Chester	169	133	9.5	(7.9-11.1)	36	2.3	(1.5-3.1)
Clarion	10	8	ND		2	ND	
Clearfield	44	30	11.4	(7.3-15.5)	14	ND	
Clinton	13	8	ND		5	ND	
Columbia	27	18	ND		9	ND	
Crawford	30	18	ND		12	ND	
Cumberland	77	53	7.8	(5.7-9.9)	24	2.9	(1.7-4.1)
Dauphin	127	91	11.4	(9.1-13.7)	36	4.4	(3.0-5.8)
Delaware	298	208	13.4	(11.6-15.2)	90	4.6	(3.6-5.6)
Elk	15	12	ND		3	ND	
Erie	90	59	7.3	(5.4-9.2)	31	3.4	(2.2-4.6)
Fayette	76	47	9.9	(7.1-12.7)	29	5.6	(3.6-7.6)
Forest	1	0	ND		1	ND	
Franklin	36	28	6.3	(4.0-8.6)	8	ND	
Fulton	5	3	ND		2	ND	
Greene	16	13	ND		3	ND	
Huntingdon	17	12	ND		5	ND	
Indiana	25	17	ND		8	ND	
Jefferson	18	11	ND		7	ND	
Juniata	7	3	ND		4	ND	
Lackawanna	106	78	11.8	(9.2-14.4)	28	3.3	(2.1-4.5)
Lancaster	178	134	8.9	(7.4-10.4)	44	2.5	(1.8-3.2)
Lawrence	45	30	10.2	(6.5-13.9)	15	ND	
Lebanon	49	41	9.7	(6.7-12.7)	8	ND	
Lehigh	172	130	13.2	(10.9-15.5)	42	3.5	(2.4-4.6)
Luzerne	146	97	9.7	(7.8-11.6)	49	3.9	(2.8-5.0)
Lycoming	52	38	10.0	(6.8-13.2)	14	ND	
McKean	17	13	ND		4	ND	
Mercer	47	37	10.3	(7.0-13.6)	10	ND	
Mifflin	18	11	ND		7	ND	
Monroe	83	65	13.3	(10.1-16.5)	18	ND	
Montgomery	353	245	10.5	(9.2-11.8)	108	3.9	(3.2-4.6)
Montour	5	4	ND		1	ND	
Northampton	150	113	12.8	(10.4-15.2)	37	3.7	(2.5-4.9)
Northumberland	36	23	6.6	(3.9-9.3)	13	ND	
Perry	7	6	ND		1	ND	
Philadelphia	1,290	965	27.0	(25.3-28.7)	325	7.1	(6.3-7.9)
Pike	18	12	ND		6	ND	
Potter	6	5	ND		1	ND	
Schuylkill	50	39	8.2	(5.6-10.8)	11	ND	
Snyder	14	9	ND		5	ND	
Somerset	26	20	7.4	(4.2-10.6)	6	ND	
Sullivan	2	2	ND		0	ND	
Susquehanna	11	7	ND		4	ND	
Tioga	12	7	ND		5	ND	
Union	9	9	ND		0	ND	
Venango	24	17	ND		7	ND	
Warren	14	12	ND		2	ND	
Washington	98	64	9.6	(7.2-12.0)	34	4.2	(2.8-5.6)
Wayne	34	28	13.3	(8.4-18.2)	6	ND	
Westmoreland	161	108	8.7	(7.1-10.3)	53	3.8	(2.8-4.8)
Wyoming	19	14	ND		5	ND	
York	143	102	8.1	(6.5-9.7)	41	3.1	(2.2-4.0)

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. 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	4,653	3,113	8.5	(8.2-8.8)	1,540	3.3	(3.1-3.5)
Adams	29	18	ND		11	ND	
Allegheny	493	323	8.6	(7.7-9.5)	170	3.3	(2.8-3.8)
Armstrong	24	17	ND		7	ND	
Beaver	73	48	8.7	(6.2-11.2)	25	3.3	(2.0-4.6)
Bedford	13	6	ND		7	ND	
Berks	145	96	8.4	(6.7-10.1)	49	3.3	(2.4-4.2)
Blair	60	38	9.4	(6.4-12.4)	22	4.7	(2.7-6.7)
Bradford	23	15	ND		8	ND	
Bucks	212	142	7.7	(6.4-9.0)	70	3.2	(2.5-3.9)
Butler	60	41	7.8	(5.4-10.2)	19	ND	
Cambria	46	29	6.4	(4.1-8.7)	17	ND	
Cameron	1	1	ND		0	ND	
Carbon	25	18	ND		7	ND	
Centre	22	15	ND		7	ND	
Chester	136	100	7.5	(6.0-9.0)	36	2.4	(1.6-3.2)
Clarion	19	12	ND		7	ND	
Clearfield	30	19	ND		11	ND	
Clinton	12	8	ND		4	ND	
Columbia	23	15	ND		8	ND	
Crawford	33	14	ND		19	ND	
Cumberland	58	37	5.6	(3.8-7.4)	21	2.4	(1.4-3.4)
Dauphin	88	63	8.1	(6.1-10.1)	25	3.0	(1.8-4.2)
Delaware	205	136	9.3	(7.7-10.9)	69	3.6	(2.8-4.4)
Elk	13	11	ND		2	ND	
Erie	90	58	7.5	(5.6-9.4)	32	3.3	(2.2-4.4)
Fayette	63	39	8.4	(5.8-11.0)	24	4.1	(2.5-5.7)
Forest	1	1	ND		0	ND	
Franklin	38	31	7.3	(4.7-9.9)	7	ND	
Fulton	5	5	ND		0	ND	
Greene	8	7	ND		1	ND	
Huntingdon	13	9	ND		4	ND	
Indiana	22	14	ND		8	ND	
Jefferson	11	7	ND		4	ND	
Juniata	6	2	ND		4	ND	
Lackawanna	87	48	7.9	(5.7-10.1)	39	4.2	(2.9-5.5)
Lancaster	161	96	6.6	(5.3-7.9)	65	3.6	(2.7-4.5)
Lawrence	48	30	10.0	(6.4-13.6)	18	ND	
Lebanon	40	26	6.2	(3.8-8.6)	14	ND	
Lehigh	125	86	8.7	(6.9-10.5)	39	3.2	(2.2-4.2)
Luzerne	97	66	6.8	(5.2-8.4)	31	2.2	(1.4-3.0)
Lycoming	31	21	5.8	(3.3-8.3)	10	ND	
McKean	11	10	ND		1	ND	
Mercer	42	27	7.3	(4.5-10.1)	15	ND	
Mifflin	18	7	ND		11	ND	
Monroe	59	42	8.7	(6.1-11.3)	17	ND	
Montgomery	247	170	7.5	(6.4-8.6)	77	2.7	(2.1-3.3)
Montour	6	4	ND		2	ND	
Northampton	119	81	9.4	(7.4-11.4)	38	3.4	(2.3-4.5)
Northumberland	30	20	6.3	(3.5-9.1)	10	ND	
Perry	11	8	ND		3	ND	
Philadelphia	852	595	17.2	(15.8-18.6)	257	5.5	(4.8-6.2)
Pike	18	11	ND		7	ND	
Potter	6	4	ND		2	ND	
Schuylkill	58	39	8.4	(5.8-11.0)	19	ND	
Snyder	10	7	ND		3	ND	
Somerset	25	19	ND		6	ND	
Sullivan	1	1	ND		0	ND	
Susquehanna	13	9	ND		4	ND	
Tioga	11	3	ND		8	ND	
Union	7	6	ND		1	ND	
Venango	27	18	ND		9	ND	
Warren	12	9	ND		3	ND	
Washington	75	48	7.3	(5.2-9.4)	27	3.2	(2.0-4.4)
Wayne	28	24	11.3	(6.8-15.8)	4	ND	
Westmoreland	146	97	7.8	(6.2-9.4)	49	3.1	(2.2-4.0)
Wyoming	15	9	ND		6	ND	
York	117	77	6.2	(4.8-7.6)	40	2.7	(1.9-3.5)

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 Insitute's SEER program.

Cancer of the Pancreas

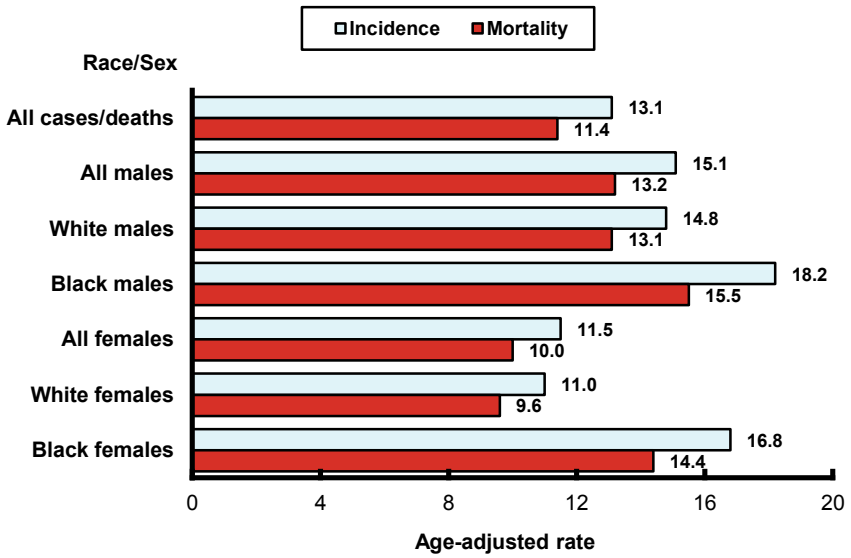
Data Highlights

The highest 2009-2013 average annual age-adjusted incidence rate among the four sex/race groups for invasive pancreatic cancer occurred in black males, with a rate of 18.2 per 100,000. Black females had the second highest rate (16.8). The rate of 14.8 for white males was about 19 percent lower than the rate for black males. The rate for white females (11.0) was about 35 percent lower than the rate for black females. A total of 2,223 cases of invasive pancreatic cancer were diagnosed among residents of Pennsylvania in 2013 — the highest annual number of cases recorded since statewide reporting began in 1985. Annual age-adjusted incidence rates by sex and race between 2004 and 2013 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, the risk of getting pancreatic cancer is two times as likely among smokers than those who never smoked. According to national estimates, the five-year relative survival rate of pancreatic cancer is only 8 percent for all stages combined because most cases are diagnosed at advanced stages. In 2013, only 9.3 percent of pancreatic cancers were diagnosed in the early (in situ and localized) stages of the disease among Pennsylvania residents, while 7.6 percent of such cancers were unstaged and 83.0 percent were diagnosed in the late stage (regional and distant).

While pancreatic cancer represented 2.9 percent of all new invasive cancers in 2013, it accounted for about 6.6 percent of the cancer deaths that year. In fact, the 2009-2013 average annual age-adjusted death rate (11.4 per 100,000) for this cancer was almost as high as the average annual incidence rate (13.1). The 2013 annual number of deaths was similar to the 2013 annual number of cases for each sex/race group. For both white males and white females, over the 10-year period of 2004 to 2013, the age-adjusted death rates were highest in 2006. The rate for white males was lowest in 2009 and 2013, and the rate for white females was lowest in 2004 and 2013. The death rates among black males and black females showed inconclusive trends, as reflected in the annual deviations (Figure 7-D).

FIGURE 7
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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 pancreatic 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, 2004-2013

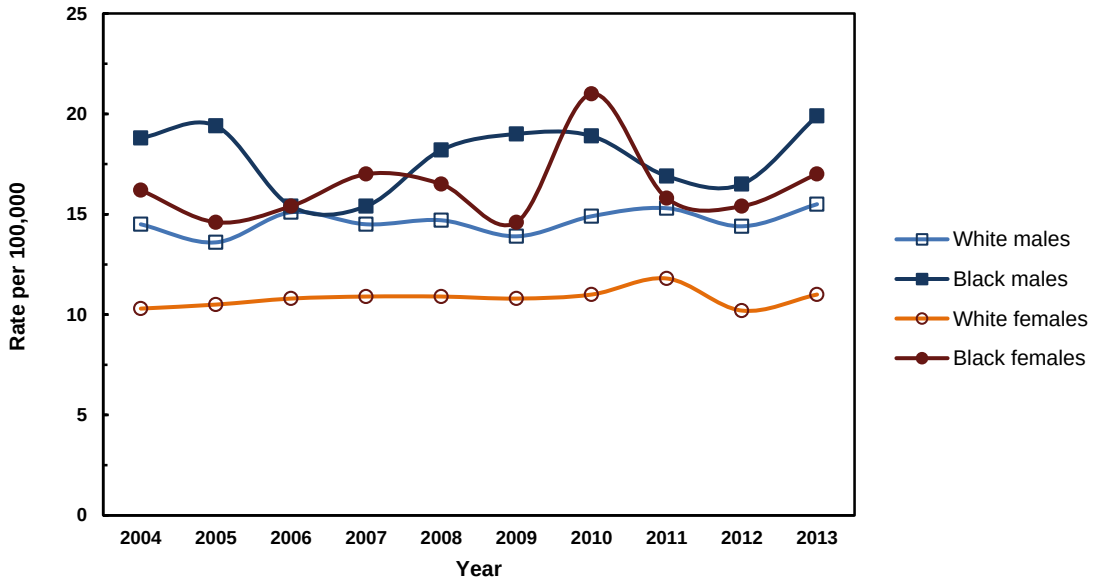
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**2,223**	**13.4** (12.8-14.0)	**1,151**	**15.7** (14.8-16.6)	**1,027**	**15.5** (14.6-16.4)	**105**	**19.9** (16.1-23.7)	**1,072**	**11.4** (10.7-12.1)	**925**	**11.0** (10.3-11.7)	**128**	**17.0** (14.1-19.9)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Cancer of the Pancreas: INCIDENCE (Invasive)

TABLE 7-B

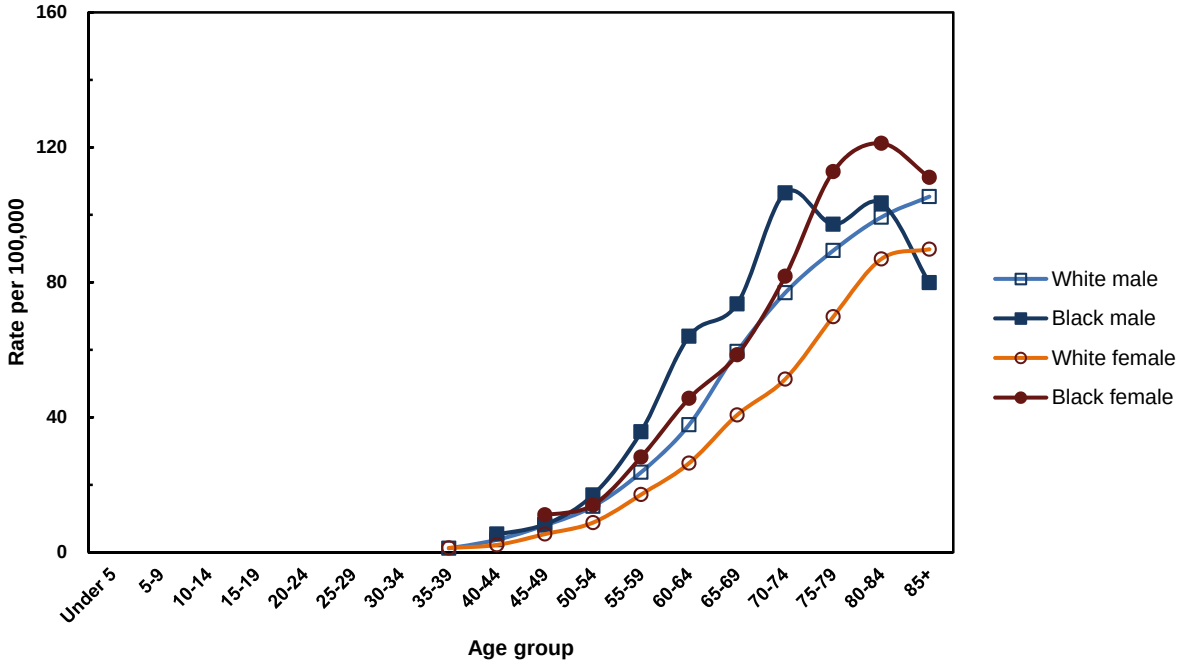
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**16.8**	**17.2**	**18.2**	**13.6**	**16.4**	**16.9**	**16.3**
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	0.3	ND	ND	ND	ND	ND	ND
35-39	1.4	1.4	1.2	ND	1.4	1.3	ND
40-44	3.0	3.8	3.7	5.4	2.2	2.2	ND
45-49	6.8	7.8	8.0	8.3	5.9	5.4	11.1
50-54	11.6	13.9	13.6	17.0	9.3	8.8	14.0
55-59	21.2	24.7	23.7	35.7	17.8	17.1	28.2
60-64	33.5	39.7	37.8	64.0	27.9	26.4	45.6
65-69	50.7	60.5	59.5	73.6	42.0	40.7	58.5
70-74	64.7	78.2	76.9	106.5	53.5	51.3	81.8
75-79	80.7	90.6	89.4	97.2	73.4	69.8	112.8
80-84	94.3	99.4	99.3	103.5	90.9	86.9	121.2
85+	98.4	106.3	105.4	79.9	94.7	89.8	111.1

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 7-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Cancer of the Pancreas: INCIDENCE (Invasive)

TABLE 7-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

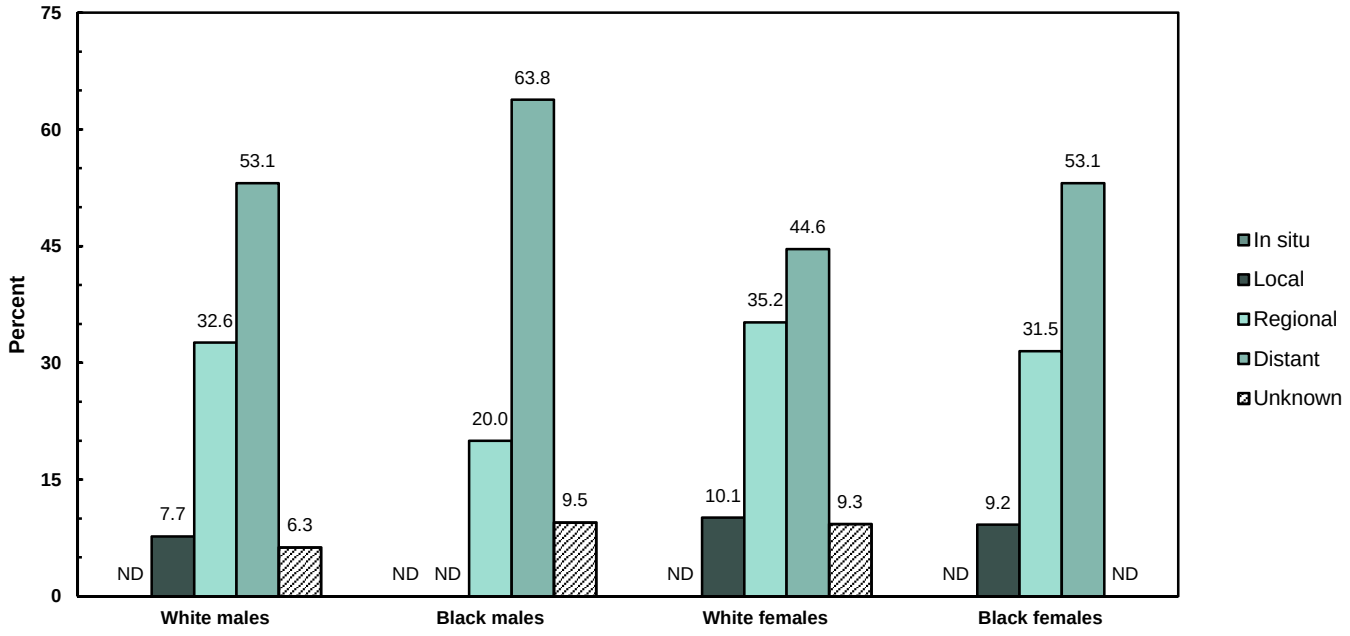
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**10,655**	**5,319**	**4,728**	**462**	**5,336**	**4,583**	**605**
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	1	1	0	1	0	0	0
20-24	9	4	4	0	5	3	2
25-29	12	6	6	0	6	3	1
30-34	13	9	7	0	4	4	0
35-39	53	26	19	6	27	20	5
40-44	126	80	65	12	46	39	6
45-49	313	176	155	19	137	107	28
50-54	556	328	280	37	228	187	35
55-59	946	538	459	65	408	342	61
60-64	1,281	729	624	88	552	462	80
65-69	1,471	823	735	67	648	561	73
70-74	1,440	785	703	69	655	564	79
75-79	1,449	691	627	45	758	653	88
80-84	1,408	580	540	32	828	727	74
85+	1,577	543	504	21	1,034	911	73

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 1,898 - 85.4%

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, 2004-2013

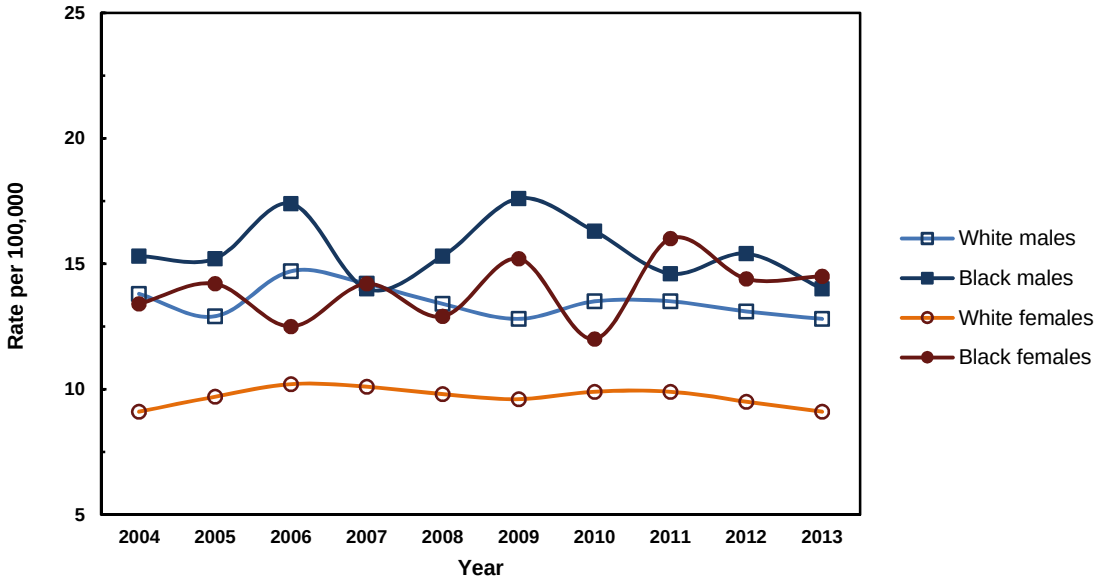
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	1,863	11.0 (10.5-11.5)	946	13.0 (12.2-13.8)	851	12.8 (11.9-13.7)	74	14.0 (10.8-17.2)	917	9.5 (8.9-10.1)	795	9.1 (8.5-9.7)	107	14.5 (11.8-17.2)
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)

* 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, 2004-2013



Cancer of the Pancreas: MORTALITY

TABLE 7-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

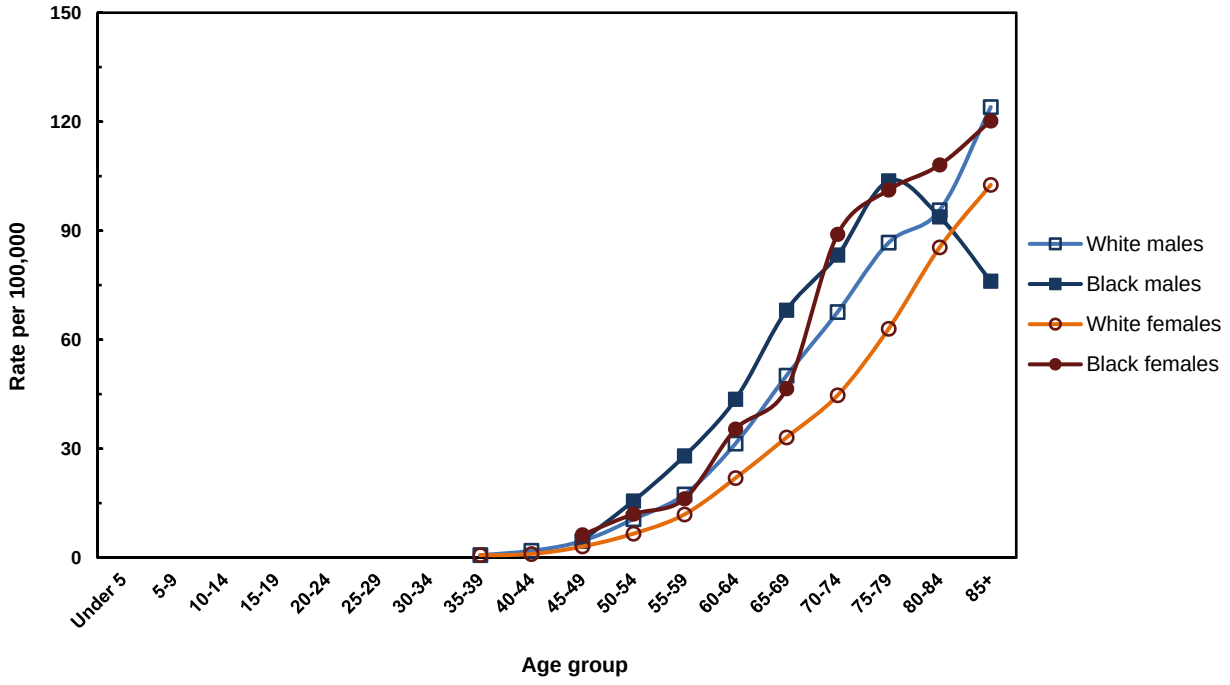
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**9,360**	**14.7**	**4,624**	**14.9**	**4,174**	**16.1**	**383**	**11.3**	**4,736**	**14.5**	**4,149**	**15.3**	**515**	**13.9**
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	0	ND	1	ND
30-34	10	0.3	5	ND	5	ND	0	ND	5	ND	4	ND	0	ND
35-39	28	0.8	16	0.9	11	0.7	4	ND	12	0.6	10	0.7	1	ND
40-44	68	1.6	44	2.1	34	1.9	9	ND	24	1.1	18	1.0	2	ND
45-49	183	4.0	103	4.6	90	4.6	11	4.8	80	3.4	62	3.1	16	6.3
50-54	433	9.0	259	11.0	219	10.6	34	15.6	174	7.1	140	6.6	30	12.0
55-59	673	15.1	397	18.2	337	17.4	51	28.0	276	12.1	239	11.9	35	16.2
60-64	1,041	27.3	588	32.0	518	31.4	60	43.6	453	22.9	383	21.9	62	35.4
65-69	1,212	41.7	691	50.8	619	50.1	62	68.1	521	33.8	456	33.1	58	46.5
70-74	1,269	57.0	685	68.3	618	67.6	54	83.3	584	47.7	491	44.7	86	89.0
75-79	1,341	74.7	661	86.7	608	86.7	48	103.7	680	65.9	590	63.0	79	101.2
80-84	1,351	90.4	554	95.0	520	95.6	29	93.8	797	87.5	715	85.4	66	108.1
85+	1,746	109.0	618	121.0	593	124.0	20	76.1	1,128	103.3	1,041	102.6	79	120.2

* 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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	10,655	5,319	15.1	(14.7-15.5)	5,336	11.5	(11.2-11.8)
Adams	93	38	12.1	(8.3-15.9)	55	16.0	(11.8-20.2)
Allegheny	1,128	533	15.3	(14.0-16.6)	595	12.1	(11.1-13.1)
Armstrong	51	18	ND		33	11.6	(7.6-15.6)
Beaver	186	104	19.2	(15.5-22.9)	82	11.2	(8.8-13.6)
Bedford	48	27	16.5	(10.3-22.7)	21	10.8	(6.2-15.4)
Berks	303	154	13.9	(11.7-16.1)	149	10.7	(9.0-12.4)
Blair	110	62	16.5	(12.4-20.6)	48	8.5	(6.1-10.9)
Bradford	57	23	11.5	(6.8-16.2)	34	14.1	(9.4-18.8)
Bucks	542	262	14.9	(13.1-16.7)	280	12.5	(11.0-14.0)
Butler	121	60	11.4	(8.5-14.3)	61	9.2	(6.9-11.5)
Cambria	152	86	17.9	(14.1-21.7)	66	10.2	(7.7-12.7)
Cameron	2	0	ND		2	ND	
Carbon	66	30	15.0	(9.6-20.4)	36	14.9	(10.0-19.8)
Centre	79	41	12.5	(8.7-16.3)	38	9.3	(6.3-12.3)
Chester	346	181	14.2	(12.1-16.3)	165	10.6	(9.0-12.2)
Clarion	50	23	19.7	(11.6-27.8)	27	18.1	(11.3-24.9)
Clearfield	77	42	16.8	(11.7-21.9)	35	11.1	(7.4-14.8)
Clinton	37	20	18.0	(10.1-25.9)	17	ND	
Columbia	52	28	15.7	(9.9-21.5)	24	9.5	(5.7-13.3)
Crawford	85	48	17.0	(12.2-21.8)	37	11.3	(7.7-14.9)
Cumberland	198	99	14.6	(11.7-17.5)	99	11.3	(9.1-13.5)
Dauphin	205	101	15.0	(12.1-17.9)	104	11.4	(9.2-13.6)
Delaware	458	229	16.0	(13.9-18.1)	229	11.5	(10.0-13.0)
Elk	32	16	ND		16	ND	
Erie	220	107	14.2	(11.5-16.9)	113	12.0	(9.8-14.2)
Fayette	111	58	13.3	(9.9-16.7)	53	9.3	(6.8-11.8)
Forest	6	4	ND		2	ND	
Franklin	123	66	14.8	(11.2-18.4)	57	9.9	(7.3-12.5)
Fulton	22	6	ND		16	ND	
Greene	31	20	18.4	(10.3-26.5)	11	ND	
Huntingdon	41	21	15.0	(8.6-21.4)	20	13.5	(7.6-19.4)
Indiana	46	24	9.1	(5.5-12.7)	22	6.9	(4.0-9.8)
Jefferson	40	21	14.3	(8.2-20.4)	19	ND	
Juniata	19	10	ND		9	ND	
Lackawanna	189	96	15.3	(12.2-18.4)	93	10.4	(8.3-12.5)
Lancaster	380	199	14.1	(12.1-16.1)	181	10.0	(8.5-11.5)
Lawrence	92	47	16.3	(11.6-21.0)	45	11.1	(7.9-14.3)
Lebanon	109	47	11.7	(8.4-15.0)	62	11.5	(8.6-14.4)
Lehigh	294	138	14.8	(12.3-17.3)	156	12.6	(10.6-14.6)
Luzerne	309	166	17.3	(14.7-19.9)	143	10.9	(9.1-12.7)
Lycoming	90	39	11.1	(7.6-14.6)	51	11.3	(8.2-14.4)
McKean	32	14	ND		18	ND	
Mercer	93	41	10.8	(7.5-14.1)	52	11.0	(8.0-14.0)
Mifflin	36	18	ND		18	ND	
Monroe	141	83	18.9	(14.8-23.0)	58	11.5	(8.5-14.5)
Montgomery	734	349	16.0	(14.3-17.7)	385	13.1	(11.8-14.4)
Montour	11	5	ND		6	ND	
Northampton	266	135	16.0	(13.3-18.7)	131	11.8	(9.8-13.8)
Northumberland	89	50	16.5	(11.9-21.1)	39	9.8	(6.7-12.9)
Perry	34	17	ND		17	ND	
Philadelphia	1,185	557	17.4	(16.0-18.8)	628	13.5	(12.4-14.6)
Pike	47	24	12.5	(7.5-17.5)	23	10.6	(6.3-14.9)
Potter	14	11	ND		3	ND	
Schuylkill	155	81	16.8	(13.1-20.5)	74	12.1	(9.3-14.9)
Snyder	24	10	ND		14	ND	
Somerset	83	42	16.2	(11.3-21.1)	41	12.3	(8.5-16.1)
Sullivan	9	4	ND		5	ND	
Susquehanna	35	19	ND		16	ND	
Tioga	45	22	15.1	(8.8-21.4)	23	14.0	(8.3-19.7)
Union	31	21	16.7	(9.6-23.8)	10	ND	
Venango	45	23	12.4	(7.3-17.5)	22	10.1	(5.9-14.3)
Warren	26	10	ND		16	ND	
Washington	177	94	14.7	(11.7-17.7)	83	10.0	(7.8-12.2)
Wayne	47	20	10.8	(6.1-15.5)	27	12.9	(8.0-17.8)
Westmoreland	332	183	15.2	(13.0-17.4)	149	9.5	(8.0-11.0)
Wyoming	26	13	ND		13	ND	
York	338	179	15.3	(13.1-17.5)	159	10.8	(9.1-12.5)

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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	9,360	4,624	13.2	(12.8-13.6)	4,736	10.0	(9.7-10.3)
Adams	74	33	11.0	(7.2-14.8)	41	11.7	(8.1-15.3)
Allegheny	976	469	13.5	(12.3-14.7)	507	9.9	(9.0-10.8)
Armstrong	44	19	ND		25	8.1	(4.9-11.3)
Beaver	166	96	17.8	(14.2-21.4)	70	9.3	(7.1-11.5)
Bedford	32	17	ND		15	ND	
Berks	269	133	12.2	(10.1-14.3)	136	9.5	(7.9-11.1)
Blair	112	63	16.6	(12.5-20.7)	49	8.8	(6.3-11.3)
Bradford	49	21	9.8	(5.6-14.0)	28	11.0	(6.9-15.1)
Bucks	483	236	13.6	(11.9-15.3)	247	10.8	(9.5-12.1)
Butler	103	48	9.1	(6.5-11.7)	55	8.1	(6.0-10.2)
Cambria	120	66	14.0	(10.6-17.4)	54	8.3	(6.1-10.5)
Cameron	1	0	ND		1	ND	
Carbon	58	22	10.9	(6.3-15.5)	36	14.7	(9.9-19.5)
Centre	70	38	12.0	(8.2-15.8)	32	7.9	(5.2-10.6)
Chester	324	159	12.8	(10.8-14.8)	165	10.4	(8.8-12.0)
Clarion	46	23	20.9	(12.4-29.4)	23	15.8	(9.3-22.3)
Clearfield	58	31	12.4	(8.0-16.8)	27	8.3	(5.2-11.4)
Clinton	36	19	ND		17	ND	
Columbia	44	27	15.0	(9.3-20.7)	17	ND	
Crawford	68	33	12.0	(7.9-16.1)	35	10.6	(7.1-14.1)
Cumberland	160	83	12.6	(9.9-15.3)	77	8.4	(6.5-10.3)
Dauphin	164	85	13.0	(10.2-15.8)	79	8.6	(6.7-10.5)
Delaware	397	200	14.1	(12.1-16.1)	197	9.7	(8.3-11.1)
Elk	32	17	ND		15	ND	
Erie	209	115	15.6	(12.7-18.5)	94	9.8	(7.8-11.8)
Fayette	101	50	11.3	(8.2-14.4)	51	8.6	(6.2-11.0)
Forest	7	4	ND		3	ND	
Franklin	123	70	15.7	(12.0-19.4)	53	9.2	(6.7-11.7)
Fulton	17	6	ND		11	ND	
Greene	22	14	ND		8	ND	
Huntingdon	34	18	ND		16	ND	
Indiana	48	20	7.3	(4.1-10.5)	28	9.0	(5.7-12.3)
Jefferson	34	18	ND		16	ND	
Juniata	15	6	ND		9	ND	
Lackawanna	158	72	11.4	(8.8-14.0)	86	8.7	(6.9-10.5)
Lancaster	342	175	12.4	(10.6-14.2)	167	9.0	(7.6-10.4)
Lawrence	86	44	15.4	(10.8-20.0)	42	9.9	(6.9-12.9)
Lebanon	109	48	12.2	(8.7-15.7)	61	10.9	(8.2-13.6)
Lehigh	254	119	12.8	(10.5-15.1)	135	10.8	(9.0-12.6)
Luzerne	257	141	14.7	(12.3-17.1)	116	8.7	(7.1-10.3)
Lycoming	92	37	10.5	(7.1-13.9)	55	11.9	(8.8-15.0)
McKean	30	10	ND		20	12.3	(6.9-17.7)
Mercer	97	44	11.7	(8.2-15.2)	53	10.8	(7.9-13.7)
Mifflin	32	16	ND		16	ND	
Monroe	101	51	11.9	(8.6-15.2)	50	9.6	(6.9-12.3)
Montgomery	658	292	13.5	(12.0-15.0)	366	12.2	(11.0-13.4)
Montour	12	6	ND		6	ND	
Northampton	233	110	13.1	(10.7-15.5)	123	10.2	(8.4-12.0)
Northumberland	89	51	16.9	(12.3-21.5)	38	9.0	(6.1-11.9)
Perry	30	14	ND		16	ND	
Philadelphia	1,010	477	15.1	(13.7-16.5)	533	11.4	(10.4-12.4)
Pike	25	13	ND		12	ND	
Potter	11	8	ND		3	ND	
Schuylkill	129	65	13.8	(10.4-17.2)	64	10.3	(7.8-12.8)
Snyder	25	11	ND		14	ND	
Somerset	72	39	15.0	(10.3-19.7)	33	9.0	(5.9-12.1)
Sullivan	7	5	ND		2	ND	
Susquehanna	39	20	14.5	(8.1-20.9)	19	ND	
Tioga	38	23	16.5	(9.8-23.2)	15	ND	
Union	23	14	ND		9	ND	
Venango	40	21	11.2	(6.4-16.0)	19	ND	
Warren	26	8	ND		18	ND	
Washington	155	81	12.4	(9.7-15.1)	74	8.1	(6.3-9.9)
Wayne	49	21	10.8	(6.2-15.4)	28	12.9	(8.1-17.7)
Westmoreland	308	159	13.3	(11.2-15.4)	149	9.3	(7.8-10.8)
Wyoming	26	12	ND		14	ND	
York	301	158	13.5	(11.4-15.6)	143	9.7	(8.1-11.3)

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 Insitute's SEER program.

Cancer of the Larynx

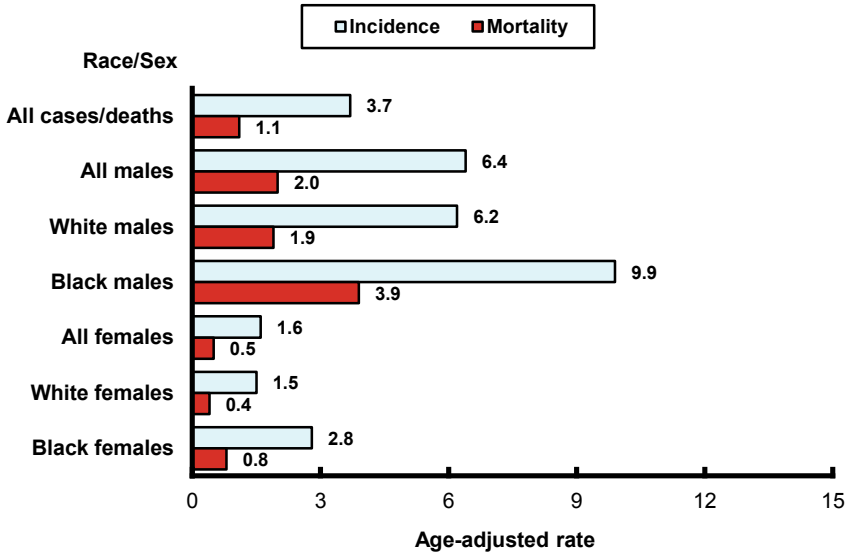
Data Highlights

Laryngeal cancer is predominately a male disease. The average annual (2009-2013) age-adjusted incidence rate for invasive cancer of the larynx was four times higher among males than for females (6.4 per 100,000 compared to 1.6, respectively). The average annual age-adjusted incidence rate for black males (9.9) was 60 percent higher than the rate for white males (6.2).

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 2013, there were 611 cases of invasive laryngeal cancer diagnosed among residents of Pennsylvania for a rate of 3.7. Annual age-adjusted incidence rates for 2004 through 2013 displayed an overall decrease for black males and white males, but no discernible trends were observed for 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 2009-2013.

Fifty-five percent of laryngeal cancer cases were diagnosed at the in situ or localized stage in 2013. 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 2009-2013 were 2.0 and 0.5 per 100,000. The average annual age-adjusted death rates were disproportionately higher among black males (3.9) compared to white males (1.9). There were 194 resident deaths reported for this disease in 2013 – an increase from the previous year (2012) when there were 180 deaths. For white males, black males and white females, there were no apparent trends in the annual age-adjusted death rates between 2004 and 2013. The annual death rate trends for black females was statistically unreliable due to the small number of events.

FIGURE 8
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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

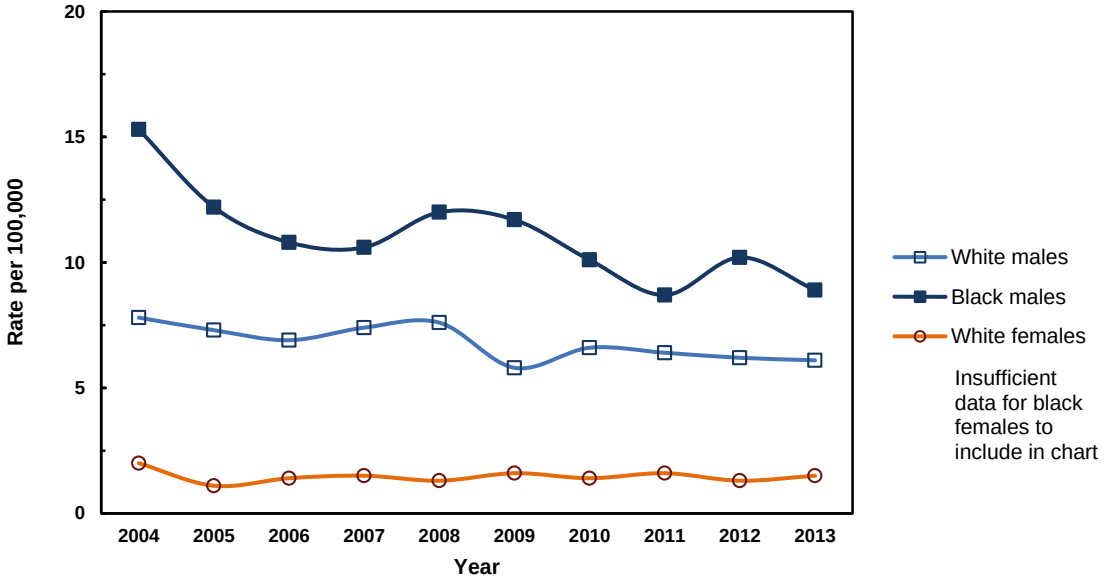
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

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)
2013	**611**	**3.7** (3.4-4.0)	**468**	**6.2** (5.6-6.8)	**412**	**6.1** (5.5-6.7)	**51**	**8.9** (6.5-11.3)	**143**	**1.6** (1.3-1.9)	**122**	**1.5** (1.2-1.8)	**20**	**2.5** (1.4-3.6)
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**

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Larynx: INCIDENCE (Invasive)

TABLE 8-B

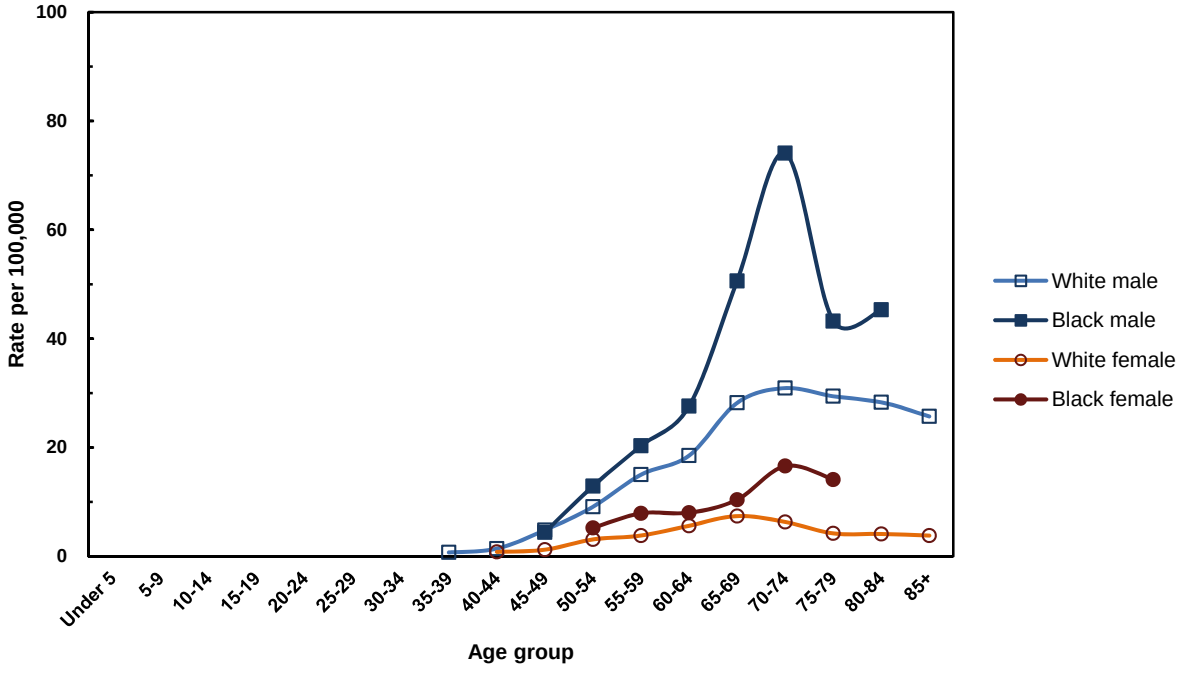
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**4.7**	**7.5**	**7.8**	**7.4**	**2.1**	**2.1**	**2.7**
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	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	0.5	0.8	0.7	ND	ND	ND	ND
40-44	1.0	1.3	1.4	ND	0.7	0.8	ND
45-49	2.9	4.6	4.8	4.4	1.2	1.2	ND
50-54	6.3	9.4	9.1	12.9	3.3	3.1	5.2
55-59	9.6	15.4	15.0	20.3	4.1	3.8	7.9
60-64	12.3	19.4	18.5	27.6	5.8	5.6	8.0
65-69	17.8	29.5	28.2	50.6	7.5	7.4	10.4
70-74	19.0	33.5	30.9	74.1	7.0	6.3	16.6
75-79	15.5	29.9	29.4	43.2	4.8	4.2	14.1
80-84	14.2	29.5	28.3	45.3	4.4	4.1	ND
85+	11.2	26.6	25.7	ND	4.0	3.8	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 8-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Cancer of the Larynx: INCIDENCE (Invasive)

TABLE 8-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

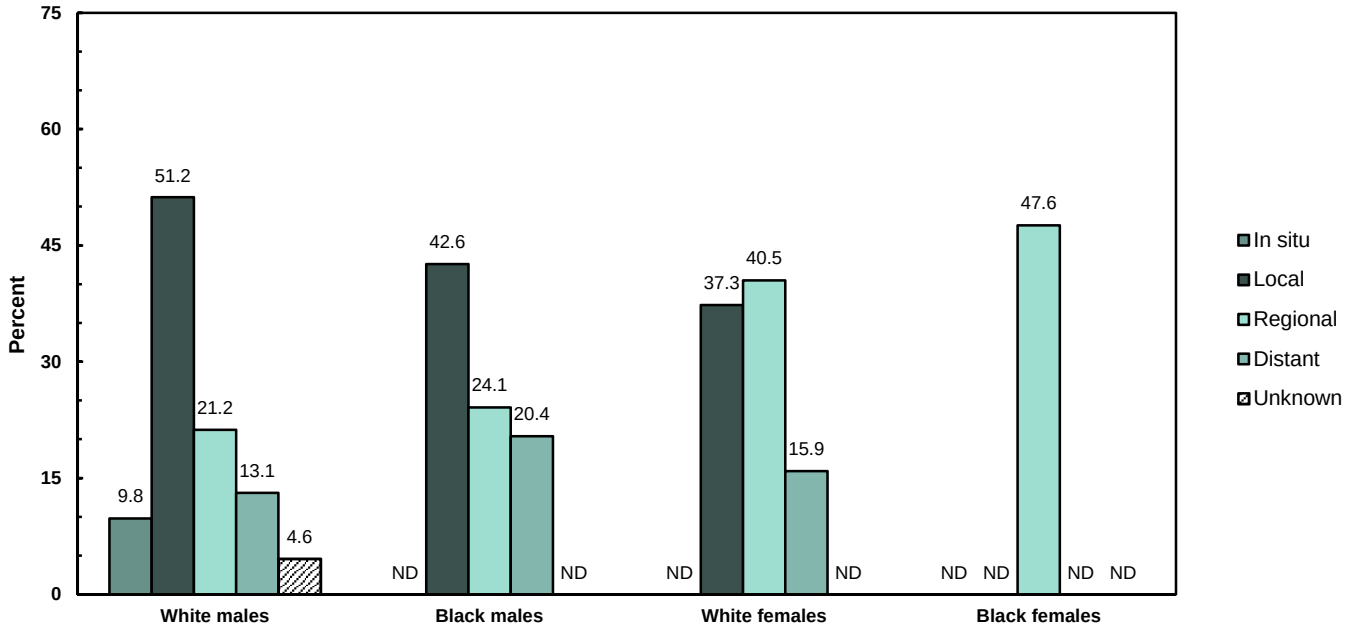
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**3,014**	**2,340**	**2,031**	**253**	**674**	**564**	**101**
Under 5	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	1	1	1	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	2	1	1	0	1	0	0
25-29	1	1	1	0	0	0	0
30-34	7	4	4	0	3	3	0
35-39	17	15	11	1	2	2	0
40-44	43	28	24	3	15	14	1
45-49	133	104	93	10	29	23	5
50-54	302	222	187	28	80	65	13
55-59	429	335	290	37	94	76	17
60-64	470	356	305	38	114	98	14
65-69	517	401	348	46	116	102	13
70-74	422	336	283	48	86	69	16
75-79	278	228	206	20	50	39	11
80-84	212	172	154	14	40	34	6
85+	180	136	123	8	44	39	5

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 594 - 97.2%

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, 2004-2013

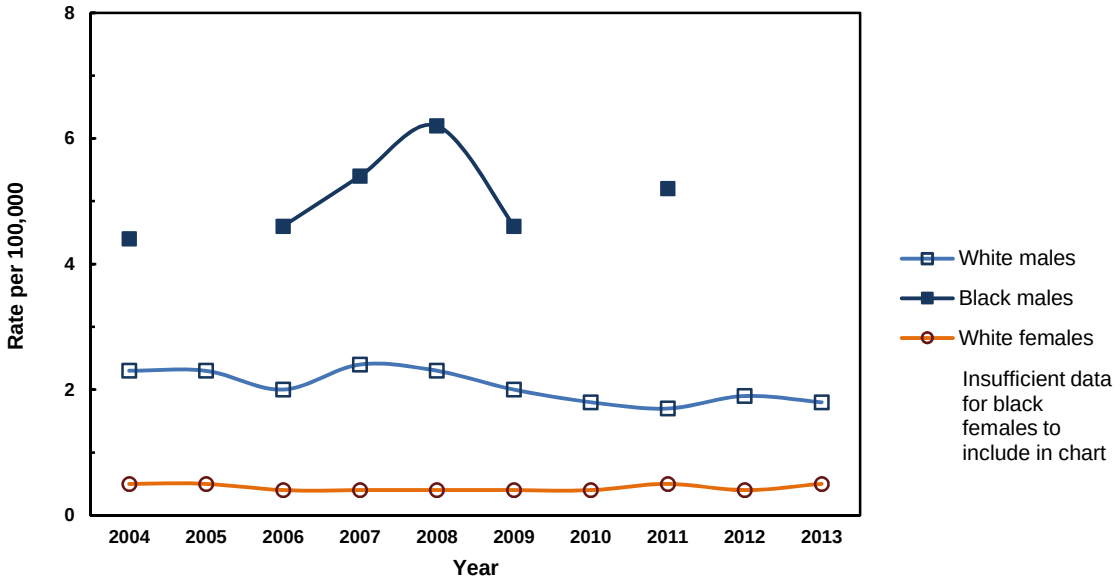
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	194	1.1 (0.9-1.3)	148	2.0 (1.7-2.3)	124	1.8 (1.5-2.1)	19	ND	46	0.5 (0.4-0.6)	39	0.5 (0.3-0.7)	7	ND
2012	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

* 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, 2004-2013



Cancer of the Larynx: MORTALITY

TABLE 8-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

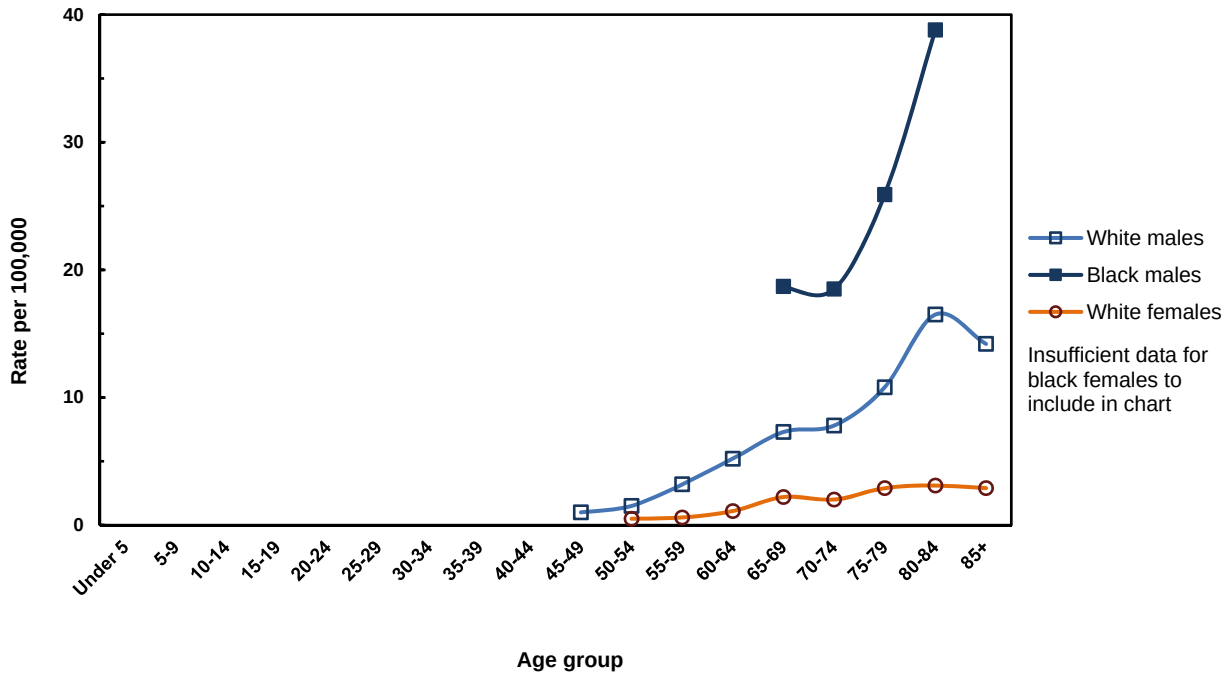
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**914**	**1.4**	**702**	**2.3**	**598**	**2.3**	**90**	**2.6**	**212**	**0.7**	**180**	**0.7**	**30**	**0.8**
Under 5	0	ND	0	ND	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	1	ND	1	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	26	0.6	22	1.0	19	1.0	3	ND	4	ND	4	ND	0	ND
50-54	55	1.1	43	1.8	30	1.5	9	ND	12	0.5	10	0.5	2	ND
55-59	85	1.9	69	3.2	62	3.2	6	ND	16	0.7	12	0.6	4	ND
60-64	128	3.4	97	5.3	85	5.2	9	ND	31	1.6	20	1.1	11	6.3
65-69	139	4.8	107	7.9	90	7.3	17	18.7	32	2.1	30	2.2	2	ND
70-74	109	4.9	84	8.4	71	7.8	12	18.5	25	2.0	22	2.0	2	ND
75-79	121	6.7	89	11.7	76	10.8	12	25.9	32	3.1	27	2.9	5	ND
80-84	133	8.9	105	18.0	90	16.5	12	38.8	28	3.1	26	3.1	1	ND
85+	108	6.7	76	14.9	68	14.2	8	ND	32	2.9	29	2.9	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,014	2,340	6.4	(6.1-6.7)	674	1.6	(1.5-1.7)
Adams	17	16	ND		1	ND	
Allegheny	341	258	7.3	(6.4-8.2)	83	1.9	(1.5-2.3)
Armstrong	14	11	ND		3	ND	
Beaver	43	35	6.5	(4.3-8.7)	8	ND	
Bedford	15	11	ND		4	ND	
Berks	88	67	6.0	(4.6-7.4)	21	1.6	(0.9-2.3)
Blair	41	30	7.6	(4.9-10.3)	11	ND	
Bradford	17	15	ND		2	ND	
Bucks	123	104	5.5	(4.4-6.6)	19	ND	
Butler	38	30	5.6	(3.6-7.6)	8	ND	
Cambria	40	31	7.0	(4.5-9.5)	9	ND	
Cameron	2	2	ND		0	ND	
Carbon	18	13	ND		5	ND	
Centre	24	20	5.9	(3.3-8.5)	4	ND	
Chester	69	52	3.9	(2.8-5.0)	17	ND	
Clarion	5	4	ND		1	ND	
Clearfield	29	23	8.4	(5.0-11.8)	6	ND	
Clinton	8	5	ND		3	ND	
Columbia	12	10	ND		2	ND	
Crawford	18	12	ND		6	ND	
Cumberland	43	36	5.4	(3.6-7.2)	7	ND	
Dauphin	53	42	5.6	(3.9-7.3)	11	ND	
Delaware	139	106	7.3	(5.9-8.7)	33	1.7	(1.1-2.3)
Elk	9	7	ND		2	ND	
Erie	57	48	6.3	(4.5-8.1)	9	ND	
Fayette	57	46	10.3	(7.3-13.3)	11	ND	
Forest	1	1	ND		0	ND	
Franklin	35	29	6.2	(3.9-8.5)	6	ND	
Fulton	2	2	ND		0	ND	
Greene	14	12	ND		2	ND	
Huntingdon	16	13	ND		3	ND	
Indiana	12	8	ND		4	ND	
Jefferson	14	11	ND		3	ND	
Juniata	5	4	ND		1	ND	
Lackawanna	75	51	7.7	(5.6-9.8)	24	3.1	(1.9-4.3)
Lancaster	82	72	5.0	(3.8-6.2)	10	ND	
Lawrence	25	20	7.1	(4.0-10.2)	5	ND	
Lebanon	34	27	6.4	(4.0-8.8)	7	ND	
Lehigh	77	64	6.6	(5.0-8.2)	13	ND	
Luzerne	91	70	6.9	(5.3-8.5)	21	1.7	(1.0-2.4)
Lycoming	32	24	7.2	(4.3-10.1)	8	ND	
McKean	13	7	ND		6	ND	
Mercer	26	24	6.7	(4.0-9.4)	2	ND	
Mifflin	10	6	ND		4	ND	
Monroe	37	27	5.0	(3.1-6.9)	10	ND	
Montgomery	130	104	4.6	(3.7-5.5)	26	0.9	(0.6-1.2)
Montour	6	5	ND		1	ND	
Northampton	66	50	5.9	(4.3-7.5)	16	ND	
Northumberland	35	27	9.2	(5.7-12.7)	8	ND	
Perry	20	16	ND		4	ND	
Philadelphia	407	290	8.6	(7.6-9.6)	117	2.7	(2.2-3.2)
Pike	15	9	ND		6	ND	
Potter	8	6	ND		2	ND	
Schuylkill	44	37	7.5	(5.1-9.9)	7	ND	
Snyder	11	9	ND		2	ND	
Somerset	18	15	ND		3	ND	
Sullivan	4	3	ND		1	ND	
Susquehanna	5	3	ND		2	ND	
Tioga	9	7	ND		2	ND	
Union	9	7	ND		2	ND	
Venango	14	11	ND		3	ND	
Warren	15	13	ND		2	ND	
Washington	54	40	6.1	(4.2-8.0)	14	ND	
Wayne	18	13	ND		5	ND	
Westmoreland	112	91	7.5	(6.0-9.0)	21	1.5	(0.9-2.1)
Wyoming	7	5	ND		2	ND	
York	86	73	5.7	(4.4-7.0)	13	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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	914	702	2.0	(1.9-2.1)	212	0.5	(0.4-0.6)
Adams	9	9	ND		0	ND	
Allegheny	93	67	1.9	(1.4-2.4)	26	0.5	(0.3-0.7)
Armstrong	7	5	ND		2	ND	
Beaver	14	13	ND		1	ND	
Bedford	5	5	ND		0	ND	
Berks	30	25	2.3	(1.4-3.2)	5	ND	
Blair	13	9	ND		4	ND	
Bradford	5	4	ND		1	ND	
Bucks	31	23	1.3	(0.8-1.8)	8	ND	
Butler	9	8	ND		1	ND	
Cambria	10	8	ND		2	ND	
Cameron	1	1	ND		0	ND	
Carbon	7	6	ND		1	ND	
Centre	7	5	ND		2	ND	
Chester	22	12	ND		10	ND	
Clarion	1	0	ND		1	ND	
Clearfield	7	4	ND		3	ND	
Clinton	2	1	ND		1	ND	
Columbia	5	4	ND		1	ND	
Crawford	2	2	ND		0	ND	
Cumberland	9	8	ND		1	ND	
Dauphin	14	11	ND		3	ND	
Delaware	45	30	2.2	(1.4-3.0)	15	ND	
Elk	1	1	ND		0	ND	
Erie	16	13	ND		3	ND	
Fayette	11	11	ND		0	ND	
Forest	1	1	ND		0	ND	
Franklin	10	9	ND		1	ND	
Fulton	0	0	ND		0	ND	
Greene	2	2	ND		0	ND	
Huntingdon	10	10	ND		0	ND	
Indiana	6	4	ND		2	ND	
Jefferson	2	1	ND		1	ND	
Juniata	1	1	ND		0	ND	
Lackawanna	22	11	ND		11	ND	
Lancaster	34	32	2.2	(1.4-3.0)	2	ND	
Lawrence	6	4	ND		2	ND	
Lebanon	7	5	ND		2	ND	
Lehigh	32	27	2.9	(1.8-4.0)	5	ND	
Luzerne	34	28	2.9	(1.8-4.0)	6	ND	
Lycoming	8	5	ND		3	ND	
McKean	3	2	ND		1	ND	
Mercer	11	9	ND		2	ND	
Mifflin	3	3	ND		0	ND	
Monroe	5	3	ND		2	ND	
Montgomery	46	37	1.7	(1.2-2.2)	9	ND	
Montour	3	2	ND		1	ND	
Northampton	27	24	2.9	(1.7-4.1)	3	ND	
Northumberland	6	5	ND		1	ND	
Perry	2	2	ND		0	ND	
Philadelphia	125	85	2.7	(2.1-3.3)	40	0.8	(0.6-1.0)
Pike	4	3	ND		1	ND	
Potter	2	1	ND		1	ND	
Schuylkill	10	8	ND		2	ND	
Snyder	2	2	ND		0	ND	
Somerset	6	6	ND		0	ND	
Sullivan	0	0	ND		0	ND	
Susquehanna	4	3	ND		1	ND	
Tioga	5	4	ND		1	ND	
Union	4	2	ND		2	ND	
Venango	3	3	ND		0	ND	
Warren	5	5	ND		0	ND	
Washington	18	13	ND		5	ND	
Wayne	5	4	ND		1	ND	
Westmoreland	28	22	1.8	(1.0-2.6)	6	ND	
Wyoming	3	1	ND		2	ND	
York	33	28	2.3	(1.4-3.2)	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 Insitute's SEER program.

Cancer of the Lung and Bronchus

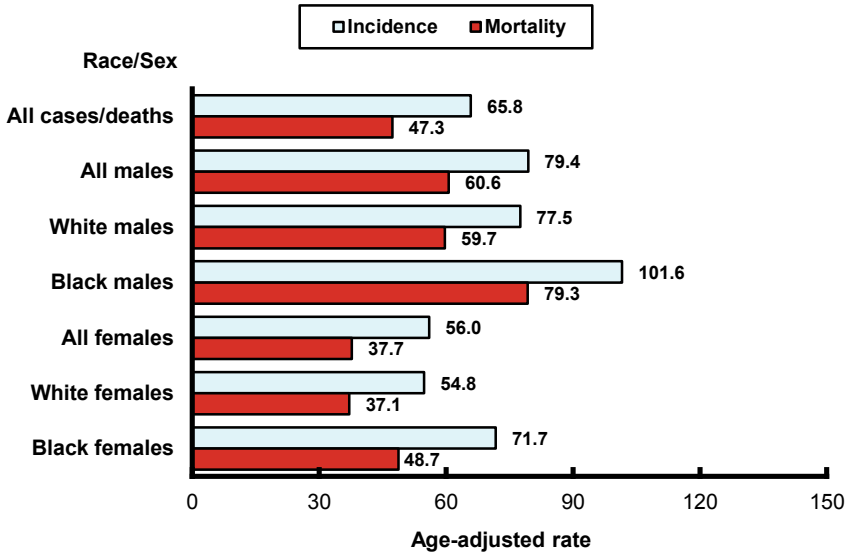
Data Highlights

In Pennsylvania, the average annual (2009-2013) age-adjusted incidence rate for invasive lung and bronchus cancer among males (79.4 per 100,000) was about 42 percent higher than the rate for females (56.0). Black males were disproportionately burdened. The 2009-2013 average annual rate for black males (101.6) was about 31 percent higher than the rate for white males (77.5).

There were 10,656 cases of invasive lung and bronchus cancers diagnosed among Pennsylvania residents in 2013 – the highest number of annual cases observed during the 10-year period, 2004-2013. Lung and bronchus cancers accounted for approximately 14 percent of all invasive cancers in 2013. The annual age-adjusted incidence rates for white and black males have generally shown a decreasing trend during the period 2004-2013. Rates among white females and black females did not have any obvious trends, although incidence rates for both groups decreased in each successive year from 2009 to 2012 before increasing in 2013. During the period of 2009-2013, about 99 percent of the invasive cases were diagnosed among residents 45 years of age or older. Starting with age group 55-59, males had higher average annual age-specific incidence rates than females during the 2009-2013 period.

In 2013, about 75 percent of lung and bronchus cancer cases were diagnosed at the late stage (regional or distant) of the disease, and 19 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 19 percent for 2008 diagnoses. The 2009-2013 average annual age-adjusted death rate was highest among black males (79.3 per 100,000) and lowest for white females (37.1). In 2013, about 28 percent of all cancer deaths among males were from lung and bronchus cancers (4,150), while the proportion was about 24 percent (3,357) for females, making this site the leading cause of cancer mortality in 2013. According to the American Cancer Society's report, "Cancer Facts and Figures 2016," 80 percent of the estimated 158,080 lung cancer deaths that will occur in the U.S. in 2016 are caused by tobacco smoking. In Pennsylvania, the annual age-adjusted death rates from 2004 to 2013 showed declines among males of both races but no discernible trend among black or white females.

FIGURE 9
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

Risk Factors

Tobacco smoking, secondhand smoke, radon, asbestos, uranium, arsenic, beryllium, cadmium, silica, vinyl chloride, nickel, chromium, coal products, mustard gas, chloromenthyl ethers, diesel exhaust, air pollution, radiation therapy to the lungs, arsenic in drinking water, personal or family history of lung cancer, 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 within 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, 2004-2013

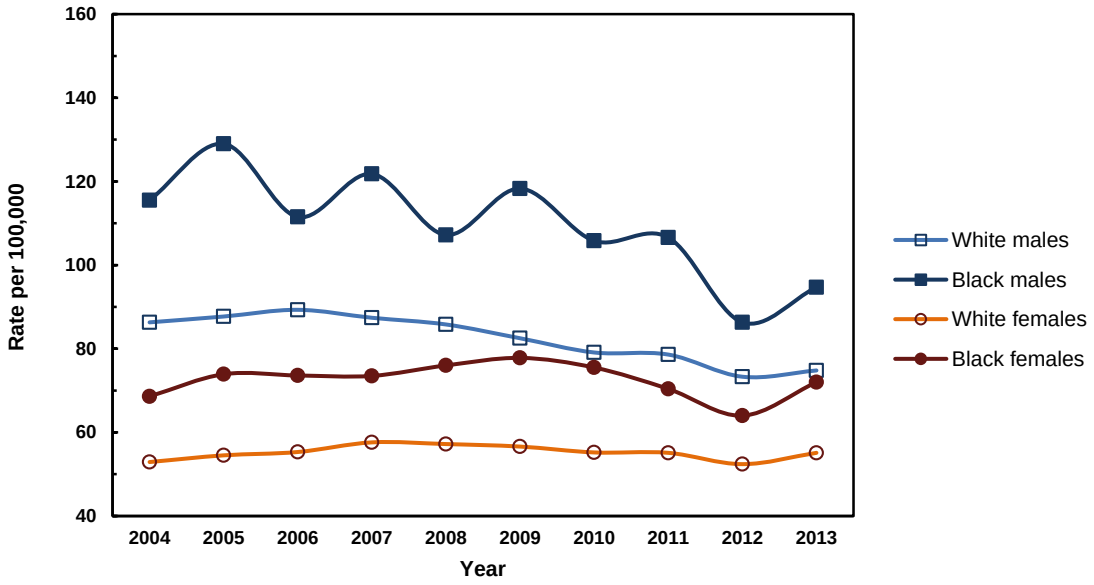
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**10,656**	**64.3** (63.1-65.5)	**5,596**	**75.9** (73.9-77.9)	**4,992**	**74.8** (72.7-76.9)	**500**	**94.7** (86.4-103.0)	**5,059**	**55.9** (54.4-57.4)	**4,450**	**55.1** (53.5-56.7)	**538**	**72.0** (65.9-78.1)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

TABLE 9-B

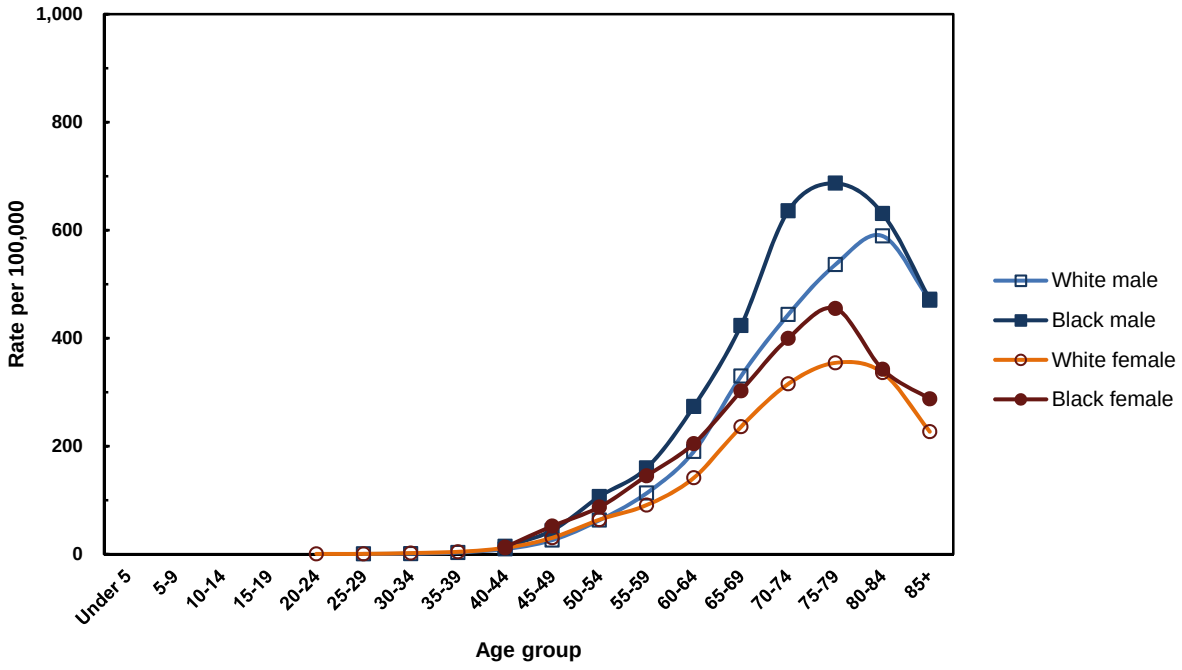
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**82.8**	**89.8**	**95.2**	**72.8**	**76.1**	**79.9**	**69.7**
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	ND	ND	ND	ND	ND	ND	ND
20-24	0.4	ND	ND	ND	0.5	0.6	ND
25-29	0.6	0.5	0.6	ND	0.7	0.6	ND
30-34	1.5	0.9	0.9	ND	2.1	2.1	ND
35-39	3.5	3.0	3.0	ND	4.0	4.3	ND
40-44	10.9	10.1	9.7	14.3	11.6	11.7	13.0
45-49	29.7	27.3	26.0	43.9	32.0	30.3	52.1
50-54	65.8	66.2	62.9	106.7	65.3	64.0	87.3
55-59	105.4	116.6	113.1	159.7	94.7	90.9	145.2
60-64	169.5	195.8	190.1	273.5	145.1	141.4	204.8
65-69	283.9	334.8	329.7	423.2	239.0	236.0	302.3
70-74	380.0	452.8	443.7	635.8	320.2	315.4	399.6
75-79	439.8	546.5	536.3	687.0	361.0	354.3	454.9
80-84	441.5	600.5	589.3	630.7	339.6	336.1	342.3
85+	315.4	479.5	470.2	471.9	238.7	226.9	287.6

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, 2009-2013



Cancer of the Lung and Bronchus: INCIDENCE (Invasive)

TABLE 9-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

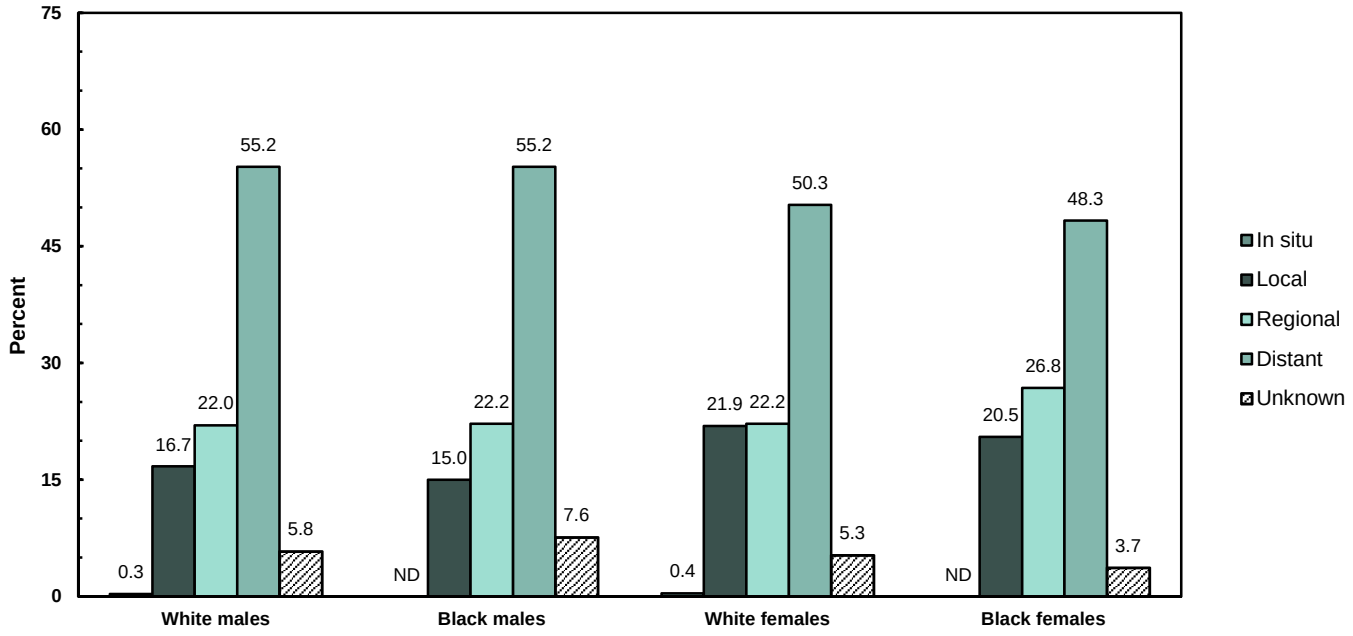
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**52,656**	**27,852**	**24,720**	**2,476**	**24,803**	**21,715**	**2,587**
Under 5	3	2	2	0	1	1	0
5-9	0	0	0	0	0	0	0
10-14	1	1	0	0	0	0	0
15-19	6	4	2	1	2	2	0
20-24	18	7	5	1	11	10	1
25-29	24	11	10	0	13	10	2
30-34	58	18	14	2	40	31	4
35-39	131	56	46	7	75	65	9
40-44	458	211	171	32	247	207	32
45-49	1,359	617	503	100	742	596	132
50-54	3,164	1,564	1,300	232	1,600	1,353	218
55-59	4,713	2,544	2,189	291	2,168	1,819	314
60-64	6,474	3,598	3,136	376	2,876	2,471	359
65-69	8,242	4,555	4,071	385	3,687	3,253	377
70-74	8,461	4,544	4,058	412	3,917	3,467	386
75-79	7,895	4,168	3,760	318	3,727	3,316	355
80-84	6,595	3,503	3,205	195	3,092	2,813	209
85+	5,054	2,449	2,248	124	2,605	2,301	189

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 9,369 - 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, 2004-2013

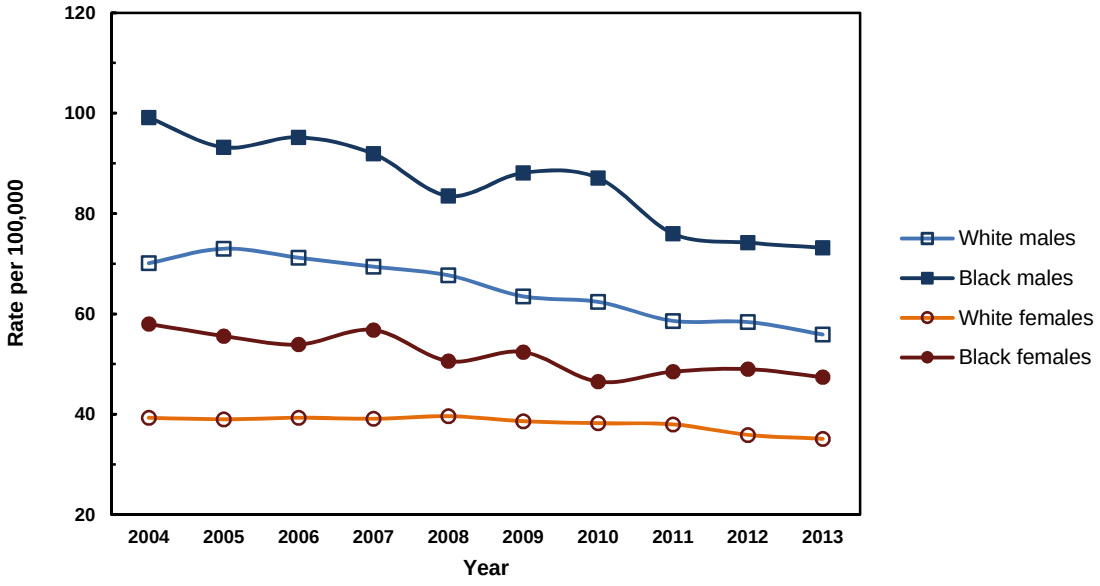
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	7,507	44.9 (43.9-45.9)	4,150	57.1 (55.4-58.8)	3,693	55.9 (54.1-57.7)	364	72.9 (65.4-80.4)	3,357	36.0 (34.8-37.2)	2,936	35.1 (33.8-36.4)	360	47.4 (42.5-52.3)
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)

* 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, 2004-2013



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, 2009-2013

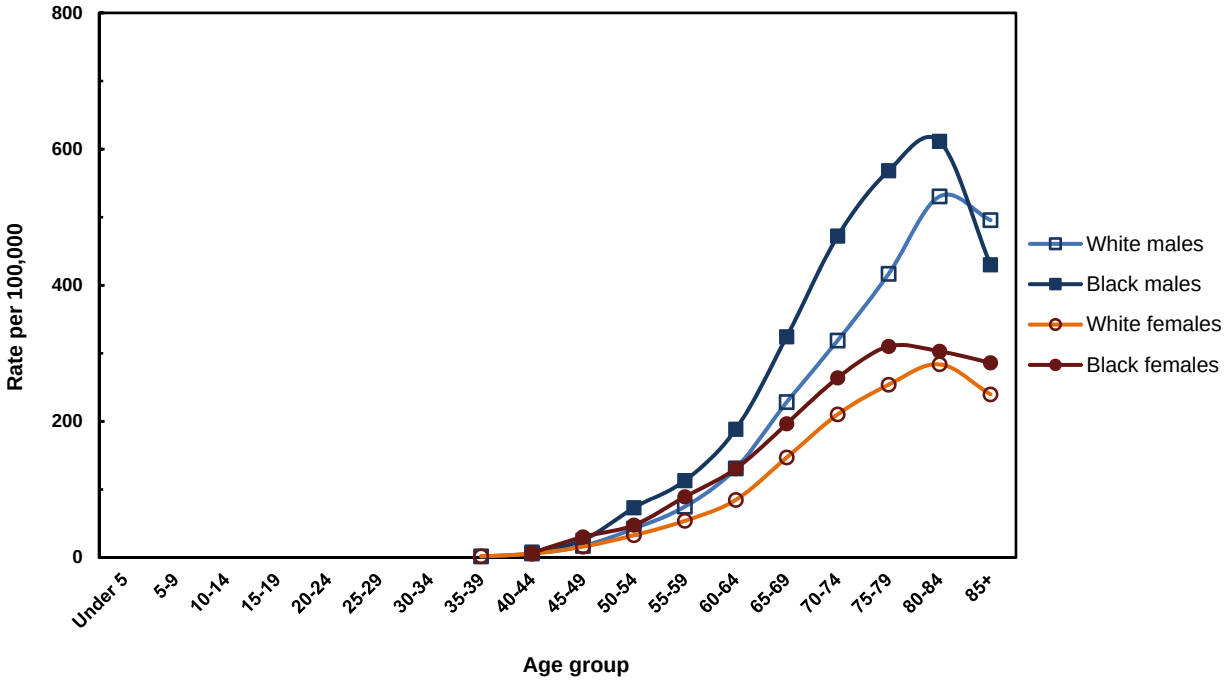
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**38,211**	**60.1**	**21,040**	**67.9**	**18,875**	**72.7**	**1,876**	**55.1**	**17,171**	**52.7**	**15,231**	**56.1**	**1,756**	**47.3**
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	1	ND	1	ND	1	ND	0	ND	0	ND	0	ND	0	ND
20-24	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
25-29	7	ND	3	ND	3	ND	0	ND	4	ND	3	ND	1	ND
30-34	18	0.5	12	0.6	9	ND	3	ND	6	ND	5	ND	0	ND
35-39	73	2.0	36	1.9	26	1.7	7	ND	37	2.0	31	2.0	5	ND
40-44	247	5.9	128	6.1	106	6.0	18	8.0	119	5.6	100	5.7	17	6.9
45-49	793	17.3	392	17.4	331	17.1	58	25.5	401	17.3	317	16.1	77	30.4
50-54	1,877	39.0	1,054	44.6	880	42.6	159	73.1	823	33.6	693	32.8	119	47.7
55-59	2,967	66.4	1,680	77.0	1,448	74.8	206	113.0	1,287	56.2	1,080	54.0	193	89.2
60-64	4,182	109.5	2,458	133.8	2,159	130.9	259	188.4	1,724	87.0	1,480	84.7	229	130.6
65-69	5,464	188.2	3,163	232.5	2,821	228.4	295	324.3	2,301	149.1	2,026	147.0	245	196.5
70-74	5,848	262.6	3,258	324.7	2,915	318.7	306	472.2	2,590	211.7	2,312	210.3	255	264.0
75-79	5,880	327.5	3,234	424.0	2,922	416.7	263	568.2	2,646	256.3	2,376	253.9	242	310.1
80-84	5,697	381.4	3,114	533.8	2,885	530.5	189	611.3	2,583	283.7	2,376	283.9	185	303.0
85+	5,156	321.8	2,507	490.9	2,369	495.6	113	430.0	2,649	242.7	2,431	239.7	188	286.1

* 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 9-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	52,656	27,852	79.4	(78.5-80.3)	24,803	56.0	(55.3-56.7)
Adams	389	202	66.9	(57.7-76.1)	187	52.6	(45.1-60.1)
Allegheny	5,897	2,920	83.9	(80.9-86.9)	2,977	64.1	(61.8-66.4)
Armstrong	328	183	80.9	(69.2-92.6)	145	54.1	(45.3-62.9)
Beaver	944	531	97.5	(89.2-105.8)	413	60.2	(54.4-66.0)
Bedford	182	108	64.5	(52.3-76.7)	74	38.2	(29.5-46.9)
Berks	1,566	823	75.0	(69.9-80.1)	742	55.6	(51.6-59.6)
Blair	584	327	83.4	(74.4-92.4)	257	52.1	(45.7-58.5)
Bradford	312	169	82.0	(69.6-94.4)	143	60.8	(50.8-70.8)
Bucks	2,417	1,250	72.4	(68.4-76.4)	1,167	54.9	(51.8-58.0)
Butler	699	384	74.7	(67.2-82.2)	315	49.7	(44.2-55.2)
Cambria	589	329	72.5	(64.7-80.3)	260	45.4	(39.9-50.9)
Cameron	26	16	ND		10	ND	
Carbon	348	203	96.3	(83.1-109.5)	145	57.4	(48.1-66.7)
Centre	385	221	67.2	(58.3-76.1)	164	42.5	(36.0-49.0)
Chester	1,493	758	60.6	(56.3-64.9)	735	49.0	(45.5-52.5)
Clarion	154	92	78.6	(62.5-94.7)	62	44.7	(33.6-55.8)
Clearfield	341	198	76.9	(66.2-87.6)	143	46.4	(38.8-54.0)
Clinton	166	93	82.0	(65.3-98.7)	73	56.4	(43.5-69.3)
Columbia	251	160	83.2	(70.3-96.1)	91	39.2	(31.1-47.3)
Crawford	397	223	81.5	(70.8-92.2)	174	54.4	(46.3-62.5)
Cumberland	855	456	68.9	(62.6-75.2)	399	47.6	(42.9-52.3)
Dauphin	1,040	527	77.8	(71.2-84.4)	513	58.5	(53.4-63.6)
Delaware	2,319	1,116	79.3	(74.6-84.0)	1,203	63.8	(60.2-67.4)
Elk	161	86	79.5	(62.7-96.3)	75	55.2	(42.7-67.7)
Erie	1,104	569	75.5	(69.3-81.7)	535	58.3	(53.4-63.2)
Fayette	741	423	97.8	(88.5-107.1)	318	59.6	(53.0-66.2)
Forest	38	20	70.0	(39.3-100.7)	18	ND	
Franklin	566	325	72.4	(64.5-80.3)	241	45.5	(39.8-51.2)
Fulton	54	36	76.0	(51.2-100.8)	18	ND	
Greene	206	112	100.0	(81.5-118.5)	94	69.8	(55.7-83.9)
Huntingdon	175	103	73.0	(58.9-87.1)	72	46.4	(35.7-57.1)
Indiana	289	154	62.4	(52.5-72.3)	135	43.6	(36.2-51.0)
Jefferson	212	121	82.9	(68.1-97.7)	91	51.9	(41.2-62.6)
Juniata	91	55	71.9	(52.9-90.9)	36	42.5	(28.6-56.4)
Lackawanna	1,028	579	90.6	(83.2-98.0)	449	56.3	(51.1-61.5)
Lancaster	1,672	909	64.3	(60.1-68.5)	763	43.6	(40.5-46.7)
Lawrence	466	244	84.2	(73.6-94.8)	222	60.8	(52.8-68.8)
Lebanon	584	335	82.8	(73.9-91.7)	249	49.4	(43.3-55.5)
Lehigh	1,340	707	76.7	(71.0-82.4)	633	53.2	(49.1-57.3)
Luzerne	1,528	826	86.2	(80.3-92.1)	702	56.8	(52.6-61.0)
Lycoming	504	295	87.7	(77.7-97.7)	209	51.2	(44.3-58.1)
McKean	196	103	79.2	(63.9-94.5)	93	61.5	(49.0-74.0)
Mercer	536	303	83.2	(73.8-92.6)	233	52.4	(45.7-59.1)
Mifflin	238	143	93.5	(78.2-108.8)	95	54.1	(43.2-65.0)
Monroe	682	380	86.7	(78.0-95.4)	302	59.5	(52.8-66.2)
Montgomery	2,822	1,426	65.5	(62.1-68.9)	1,396	50.2	(47.6-52.8)
Montour	73	34	60.0	(39.8-80.2)	39	56.3	(38.6-74.0)
Northampton	1,237	692	83.4	(77.2-89.6)	545	50.9	(46.6-55.2)
Northumberland	448	270	89.0	(78.4-99.6)	178	49.3	(42.1-56.5)
Perry	206	129	98.8	(81.8-115.8)	77	51.4	(39.9-62.9)
Philadelphia	6,238	3,031	95.6	(92.2-99.0)	3,207	70.7	(68.3-73.1)
Pike	247	132	67.3	(55.8-78.8)	115	56.2	(45.9-66.5)
Potter	106	53	83.2	(60.8-105.6)	53	74.3	(54.3-94.3)
Schuylkill	716	408	86.7	(78.3-95.1)	308	54.7	(48.6-60.8)
Snyder	127	82	73.6	(57.7-89.5)	45	33.5	(23.7-43.3)
Somerset	273	159	61.1	(51.6-70.6)	114	38.9	(31.8-46.0)
Sullivan	41	23	83.4	(49.3-117.5)	18	ND	
Susquehanna	172	106	71.0	(57.5-84.5)	66	40.3	(30.6-50.0)
Tioga	206	116	82.1	(67.2-97.0)	90	58.4	(46.3-70.5)
Union	150	73	62.6	(48.2-77.0)	77	54.6	(42.4-66.8)
Venango	294	173	97.3	(82.8-111.8)	121	55.7	(45.8-65.6)
Warren	186	91	61.6	(48.9-74.3)	95	57.7	(46.1-69.3)
Washington	993	532	82.1	(75.1-89.1)	461	57.9	(52.6-63.2)
Wayne	255	146	74.9	(62.8-87.0)	109	53.6	(43.5-63.7)
Westmoreland	1,901	1,022	84.6	(79.4-89.8)	879	58.7	(54.8-62.6)
Wyoming	144	88	102.3	(80.9-123.7)	56	57.4	(42.4-72.4)
York	1,728	949	80.2	(75.1-85.3)	779	55.1	(51.2-59.0)

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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	38,211	21,040	60.6	(59.8-61.4)	17,171	37.7	(37.1-38.3)
Adams	272	159	53.6	(45.3-61.9)	113	31.4	(25.6-37.2)
Allegheny	4,290	2,241	64.4	(61.7-67.1)	2,049	42.1	(40.3-43.9)
Armstrong	242	138	60.4	(50.3-70.5)	104	37.5	(30.3-44.7)
Beaver	641	368	67.2	(60.3-74.1)	273	36.8	(32.4-41.2)
Bedford	149	88	53.8	(42.6-65.0)	61	31.9	(23.9-39.9)
Berks	1,049	561	51.4	(47.1-55.7)	488	35.5	(32.4-38.6)
Blair	392	244	63.0	(55.1-70.9)	148	30.0	(25.2-34.8)
Bradford	221	130	64.1	(53.1-75.1)	91	38.7	(30.7-46.7)
Bucks	1,684	904	53.9	(50.4-57.4)	780	36.1	(33.6-38.6)
Butler	568	351	69.0	(61.8-76.2)	217	33.2	(28.8-37.6)
Cambria	474	267	58.1	(51.1-65.1)	207	33.6	(29.0-38.2)
Cameron	12	5	ND		7	ND	
Carbon	243	143	69.5	(58.1-80.9)	100	38.8	(31.2-46.4)
Centre	278	161	49.0	(41.4-56.6)	117	29.1	(23.8-34.4)
Chester	1,095	557	45.4	(41.6-49.2)	538	35.2	(32.2-38.2)
Clarion	116	83	71.0	(55.7-86.3)	33	24.8	(16.3-33.3)
Clearfield	264	163	63.8	(54.0-73.6)	101	32.3	(26.0-38.6)
Clinton	145	78	67.7	(52.7-82.7)	67	49.7	(37.8-61.6)
Columbia	189	113	60.9	(49.7-72.1)	76	32.0	(24.8-39.2)
Crawford	318	179	65.5	(55.9-75.1)	139	44.0	(36.7-51.3)
Cumberland	610	334	50.9	(45.4-56.4)	276	32.6	(28.8-36.4)
Dauphin	718	379	57.0	(51.3-62.7)	339	37.3	(33.3-41.3)
Delaware	1,740	869	62.2	(58.1-66.3)	871	45.4	(42.4-48.4)
Elk	135	76	70.4	(54.6-86.2)	59	43.2	(32.2-54.2)
Erie	817	428	58.6	(53.0-64.2)	389	41.1	(37.0-45.2)
Fayette	600	362	83.9	(75.3-92.5)	238	42.3	(36.9-47.7)
Forest	37	21	74.2	(42.5-105.9)	16	ND	
Franklin	444	263	59.5	(52.3-66.7)	181	32.9	(28.1-37.7)
Fulton	49	33	69.9	(46.1-93.7)	16	ND	
Greene	147	82	74.8	(58.6-91.0)	65	48.1	(36.4-59.8)
Huntingdon	142	86	61.5	(48.5-74.5)	56	33.6	(24.8-42.4)
Indiana	206	111	45.5	(37.0-54.0)	95	29.6	(23.6-35.6)
Jefferson	136	81	56.2	(44.0-68.4)	55	31.1	(22.9-39.3)
Juniata	72	45	63.1	(44.7-81.5)	27	29.9	(18.6-41.2)
Lackawanna	713	384	59.8	(53.8-65.8)	329	39.3	(35.1-43.5)
Lancaster	1,243	718	51.0	(47.3-54.7)	525	28.9	(26.4-31.4)
Lawrence	345	203	69.9	(60.3-79.5)	142	36.8	(30.7-42.9)
Lebanon	455	277	70.0	(61.8-78.2)	178	34.3	(29.3-39.3)
Lehigh	892	491	53.7	(49.0-58.4)	401	31.8	(28.7-34.9)
Luzerne	1,045	591	61.9	(56.9-66.9)	454	35.8	(32.5-39.1)
Lycoming	389	222	66.2	(57.5-74.9)	167	39.1	(33.2-45.0)
McKean	148	77	59.5	(46.2-72.8)	71	45.2	(34.7-55.7)
Mercer	419	235	63.9	(55.7-72.1)	184	39.5	(33.8-45.2)
Mifflin	178	106	70.7	(57.2-84.2)	72	40.2	(30.9-49.5)
Monroe	510	299	70.1	(62.2-78.0)	211	42.8	(37.0-48.6)
Montgomery	2,032	1,070	49.7	(46.7-52.7)	962	33.6	(31.5-35.7)
Montour	42	23	40.5	(23.9-57.1)	19	ND	
Northampton	870	514	62.3	(56.9-67.7)	356	32.5	(29.1-35.9)
Northumberland	364	229	76.6	(66.7-86.5)	135	36.1	(30.0-42.2)
Perry	148	103	82.9	(66.9-98.9)	45	30.6	(21.7-39.5)
Philadelphia	4,451	2,273	72.8	(69.8-75.8)	2,178	47.2	(45.2-49.2)
Pike	139	82	43.8	(34.3-53.3)	57	29.3	(21.7-36.9)
Potter	76	40	64.9	(44.8-85.0)	36	47.8	(32.2-63.4)
Schuylkill	570	337	71.6	(64.0-79.2)	233	39.3	(34.3-44.3)
Snyder	96	63	56.5	(42.5-70.5)	33	24.8	(16.3-33.3)
Somerset	217	125	48.7	(40.2-57.2)	92	29.6	(23.6-35.6)
Sullivan	28	22	77.7	(45.2-110.2)	6	ND	
Susquehanna	133	76	52.2	(40.5-63.9)	57	35.6	(26.4-44.8)
Tioga	129	74	51.8	(40.0-63.6)	55	34.6	(25.5-43.7)
Union	98	49	42.3	(30.5-54.1)	49	32.2	(23.2-41.2)
Venango	226	130	73.6	(60.9-86.3)	96	42.7	(34.2-51.2)
Warren	153	74	51.6	(39.8-63.4)	79	46.1	(35.9-56.3)
Washington	777	436	67.6	(61.3-73.9)	341	41.0	(36.6-45.4)
Wayne	188	114	59.1	(48.3-69.9)	74	34.5	(26.6-42.4)
Westmoreland	1,353	761	63.7	(59.2-68.2)	592	37.6	(34.6-40.6)
Wyoming	96	63	72.0	(54.2-89.8)	33	32.8	(21.6-44.0)
York	1,193	676	58.1	(53.7-62.5)	517	36.5	(33.4-39.6)

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 Insitute's SEER program.

Melanoma of the Skin

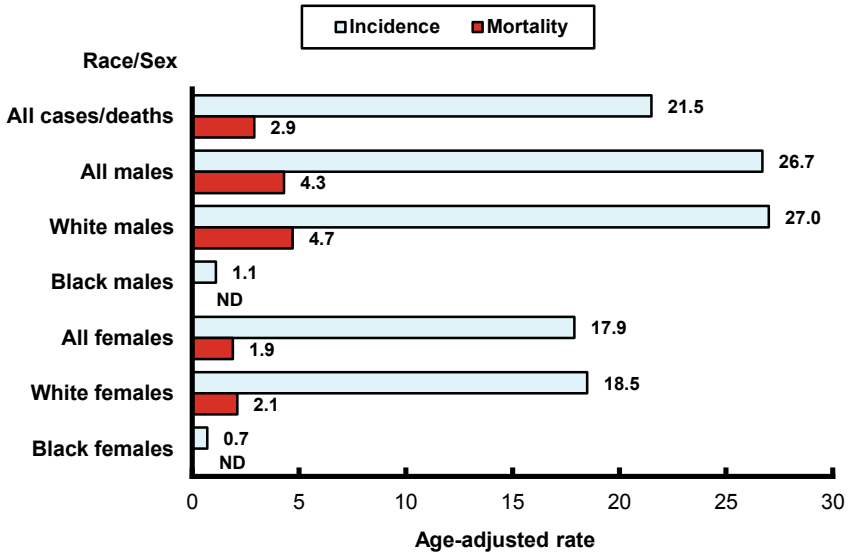
Data Highlights

Average annual (2009-2013) age-adjusted incidence rates for invasive melanoma of the skin were higher among white males (27.0 per 100,000) compared to white females (18.5). Among black males and black females, the rates were much lower, 1.1 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 3,728 invasive cases of malignant melanoma of the skin diagnosed in 2013 among residents. This is the largest annual number of cases reported during the period of 2004-2013 and is 58 percent higher than the annual number of cases (2,366) reported in 2004. 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 2013. The Pennsylvania average annual age-specific incidence rates for 2009-2013 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 2013, 82 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 2009-2013 were much higher for white males compared to white females. There were 446 deaths due to melanoma skin cancer among state residents in 2013, yielding an age-adjusted death rate of 2.8 per 100,000, an increase from 2012 when there were 430 resident deaths and an age-adjusted death rate of 2.6. 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 2004-2013, although both groups experienced slight increases in 2013.

FIGURE 10
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



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

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

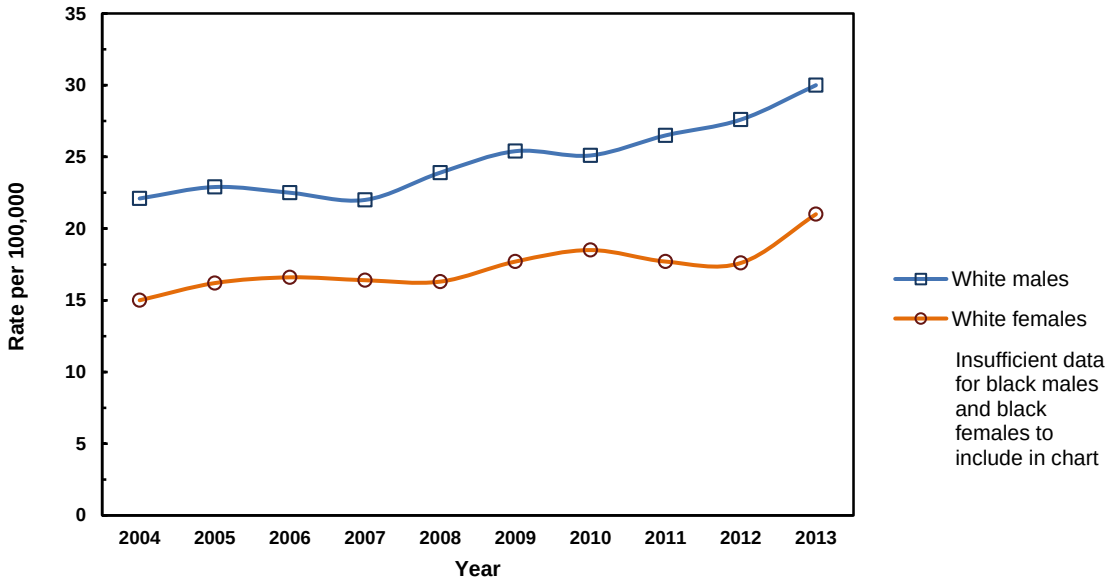
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

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)
2013	**3,728**	**24.3** (23.5-25.1)	**2,137**	**30.0** (28.7-31.3)	**1,912**	**30.0** (28.7-31.3)	**5**	**ND**	**1,591**	**20.4** (19.4-21.4)	**1,406**	**21.0** (19.9-22.1)	**6**	**ND**
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**

* Includes unknown/other race and sex.
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, 2004-2013



Melanoma of the Skin: INCIDENCE (Invasive)

TABLE 10-B

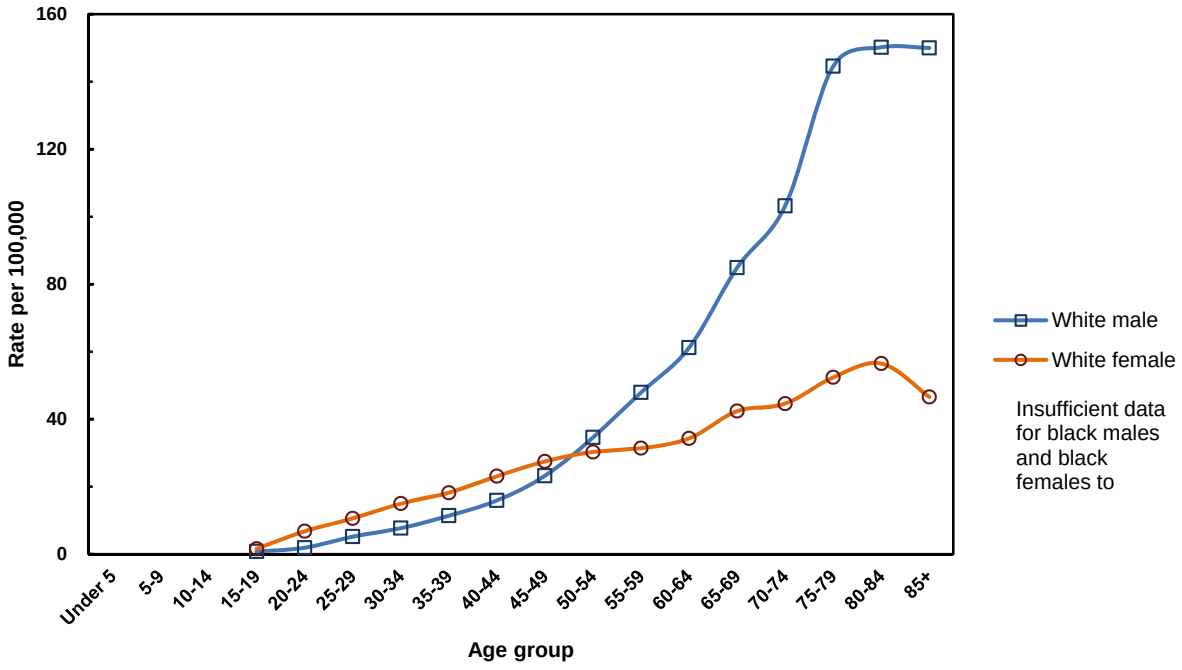
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**25.4**	**29.8**	**32.2**	**0.9**	**21.2**	**22.7**	**0.7**
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	0.3	ND	ND	ND	ND	ND	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	1.1	0.8	0.8	ND	1.5	1.6	ND
20-24	3.7	1.6	1.9	ND	5.9	6.8	ND
25-29	7.1	4.7	5.2	ND	9.6	10.6	ND
30-34	10.0	6.9	7.7	ND	13.2	15.0	ND
35-39	14.2	11.2	11.4	ND	17.2	18.2	ND
40-44	18.3	15.5	15.9	ND	21.0	23.1	ND
45-49	24.7	22.9	23.2	ND	26.6	27.5	ND
50-54	32.2	34.7	34.6	ND	29.8	30.3	ND
55-59	39.4	47.8	47.9	ND	31.3	31.4	ND
60-64	47.5	61.2	61.2	ND	34.8	34.3	ND
65-69	62.0	84.2	84.9	ND	42.4	42.4	ND
70-74	69.9	101.6	103.2	ND	43.9	44.6	ND
75-79	90.8	142.8	144.6	ND	52.4	52.4	ND
80-84	93.6	150.5	150.2	ND	57.1	56.5	ND
85+	81.6	153.7	150.0	ND	47.9	46.6	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, 2009-2013



Melanoma of the Skin: INCIDENCE (Invasive)

TABLE 10-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

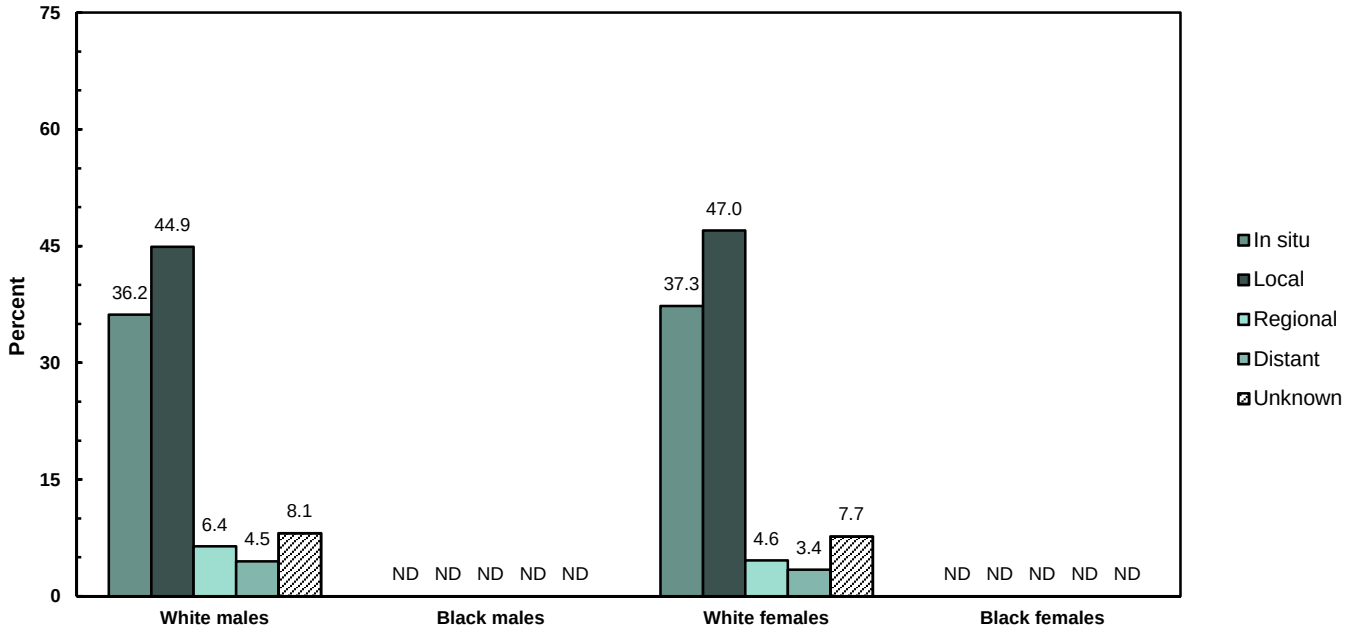
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**16,151**	**9,238**	**8,351**	**30**	**6,912**	**6,156**	**26**
Under 5	9	4	3	1	5	5	0
5-9	10	4	2	2	6	6	0
10-14	9	3	3	0	6	6	0
15-19	49	17	14	1	32	27	0
20-24	165	35	33	0	130	117	0
25-29	283	95	84	0	188	166	1
30-34	379	130	118	1	249	225	0
35-39	529	207	174	2	322	276	1
40-44	769	323	279	2	446	407	3
45-49	1,133	516	449	1	617	542	3
50-54	1,549	819	715	2	730	640	2
55-59	1,760	1,043	927	4	716	628	2
60-64	1,814	1,124	1,010	3	690	600	4
65-69	1,800	1,146	1,048	4	654	585	2
70-74	1,557	1,020	944	2	537	490	2
75-79	1,630	1,089	1,014	1	541	490	2
80-84	1,398	878	817	2	520	473	3
85+	1,308	785	717	2	523	473	1

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 3,712 - 99.6%

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, 2004-2013

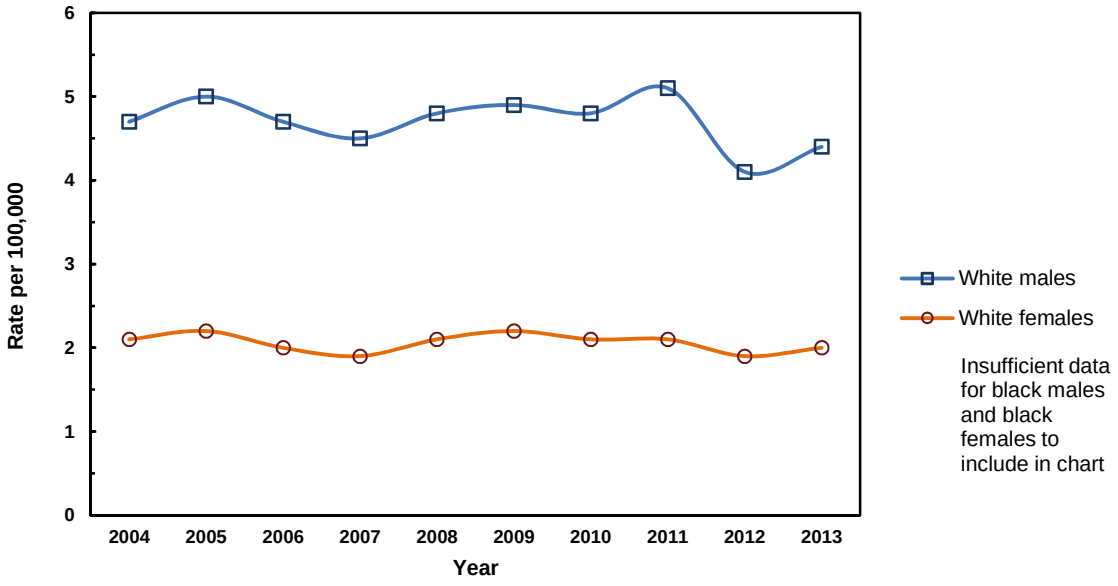
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	446	2.7 (2.4-3.0)	282	4.0 (3.5-4.5)	277	4.4 (3.9-4.9)	3	ND	164	1.8 (1.5-2.1)	159	2.0 (1.7-2.3)	0	ND
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

* 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, 2004-2013



Melanoma of the Skin: MORTALITY

TABLE 10-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

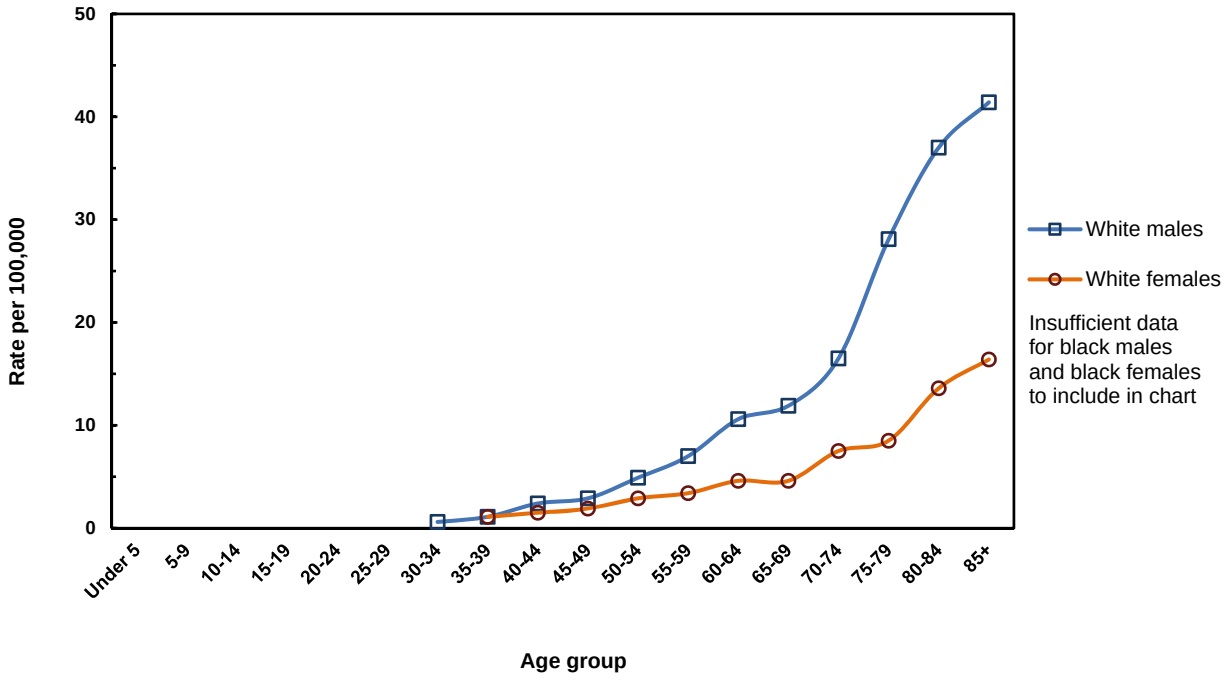
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**2,290**	**3.6**	**1,463**	**4.7**	**1,446**	**5.6**	**12**	**0.4**	**827**	**2.5**	**809**	**3.0**	**8**	**ND**
Under 5	0	ND	0	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	2	ND	1	ND	1	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	10	0.3	6	ND	6	ND	0	ND	4	ND	4	ND	0	ND
30-34	19	0.5	10	0.5	10	0.6	0	ND	9	ND	9	ND	0	ND
35-39	35	0.9	17	0.9	17	1.1	0	ND	18	1.0	16	1.1	1	ND
40-44	73	1.7	45	2.2	43	2.4	2	ND	28	1.3	26	1.5	0	ND
45-49	95	2.1	58	2.6	57	2.9	1	ND	37	1.6	37	1.9	0	ND
50-54	166	3.4	103	4.4	102	4.9	0	ND	63	2.6	61	2.9	2	ND
55-59	208	4.7	137	6.3	135	7.0	1	ND	71	3.1	68	3.4	1	ND
60-64	259	6.8	177	9.6	175	10.6	2	ND	82	4.1	81	4.6	1	ND
65-69	214	7.4	147	10.8	147	11.9	0	ND	67	4.3	64	4.6	1	ND
70-74	236	10.6	153	15.2	151	16.5	2	ND	83	6.8	82	7.5	1	ND
75-79	282	15.7	201	26.4	197	28.1	3	ND	81	7.8	80	8.5	0	ND
80-84	317	21.2	202	34.6	201	37.0	0	ND	115	12.6	114	13.6	1	ND
85+	368	23.0	200	39.2	198	41.4	1	ND	168	15.4	166	16.4	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 10-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	**16,151**	**9,238**	**26.7**	(26.2-27.2)	**6,912**	**17.9**	(17.5-18.3)
Adams	**161**	**94**	**31.1**	(24.8-37.4)	**67**	**21.9**	(16.7-27.1)
Allegheny	**1,310**	**722**	**21.2**	(19.7-22.7)	**588**	**15.4**	(14.2-16.6)
Armstrong	**85**	**45**	**20.8**	(14.7-26.9)	**40**	**19.9**	(13.7-26.1)
Beaver	**159**	**81**	**15.4**	(12.0-18.8)	**78**	**14.0**	(10.9-17.1)
Bedford	**69**	**50**	**31.5**	(22.8-40.2)	**19**	**ND**	
Berks	**539**	**303**	**27.9**	(24.8-31.0)	**236**	**19.8**	(17.3-22.3)
Blair	**156**	**100**	**26.9**	(21.6-32.2)	**56**	**13.1**	(9.7-16.5)
Bradford	**106**	**59**	**30.3**	(22.6-38.0)	**47**	**24.9**	(17.8-32.0)
Bucks	**1,120**	**665**	**36.8**	(34.0-39.6)	**455**	**23.4**	(21.2-25.6)
Butler	**250**	**148**	**28.0**	(23.5-32.5)	**102**	**19.3**	(15.6-23.0)
Cambria	**181**	**107**	**23.7**	(19.2-28.2)	**74**	**17.3**	(13.4-21.2)
Cameron	**4**	**2**	**ND**		**2**	**ND**	
Carbon	**87**	**47**	**24.0**	(17.1-30.9)	**40**	**18.8**	(13.0-24.6)
Centre	**227**	**129**	**40.1**	(33.2-47.0)	**98**	**26.8**	(21.5-32.1)
Chester	**868**	**509**	**40.3**	(36.8-43.8)	**359**	**24.4**	(21.9-26.9)
Clarion	**50**	**28**	**26.1**	(16.4-35.8)	**22**	**20.9**	(12.2-29.6)
Clearfield	**99**	**63**	**25.5**	(19.2-31.8)	**36**	**15.2**	(10.2-20.2)
Clinton	**46**	**27**	**23.9**	(14.9-32.9)	**19**	**ND**	
Columbia	**109**	**64**	**35.7**	(27.0-44.4)	**45**	**22.1**	(15.6-28.6)
Crawford	**101**	**56**	**21.0**	(15.5-26.5)	**45**	**15.3**	(10.8-19.8)
Cumberland	**433**	**244**	**36.6**	(32.0-41.2)	**189**	**26.9**	(23.1-30.7)
Dauphin	**379**	**215**	**32.1**	(27.8-36.4)	**164**	**20.6**	(17.4-23.8)
Delaware	**880**	**503**	**35.9**	(32.8-39.0)	**377**	**22.0**	(19.8-24.2)
Elk	**37**	**19**	**ND**		**18**	**ND**	
Erie	**262**	**135**	**18.3**	(15.2-21.4)	**127**	**15.7**	(13.0-18.4)
Fayette	**90**	**59**	**14.4**	(10.7-18.1)	**31**	**6.8**	(4.4-9.2)
Forest	**9**	**5**	**ND**		**4**	**ND**	
Franklin	**240**	**146**	**33.5**	(28.1-38.9)	**94**	**21.2**	(16.9-25.5)
Fulton	**28**	**17**	**ND**		**11**	**ND**	
Greene	**34**	**22**	**18.5**	(10.8-26.2)	**12**	**ND**	
Huntingdon	**46**	**24**	**17.7**	(10.6-24.8)	**22**	**17.1**	(10.0-24.2)
Indiana	**76**	**50**	**22.2**	(16.0-28.4)	**26**	**9.5**	(5.8-13.2)
Jefferson	**60**	**29**	**20.9**	(13.3-28.5)	**31**	**25.5**	(16.5-34.5)
Juniata	**40**	**19**	**ND**		**21**	**32.0**	(18.3-45.7)
Lackawanna	**225**	**123**	**20.5**	(16.9-24.1)	**102**	**13.4**	(10.8-16.0)
Lancaster	**674**	**397**	**28.7**	(25.9-31.5)	**277**	**18.5**	(16.3-20.7)
Lawrence	**109**	**62**	**22.5**	(16.9-28.1)	**46**	**16.6**	(11.8-21.4)
Lebanon	**182**	**103**	**26.6**	(21.5-31.7)	**79**	**19.2**	(15.0-23.4)
Lehigh	**502**	**288**	**31.1**	(27.5-34.7)	**214**	**19.8**	(17.1-22.5)
Luzerne	**375**	**228**	**24.2**	(21.1-27.3)	**147**	**14.4**	(12.1-16.7)
Lycoming	**195**	**103**	**31.5**	(25.4-37.6)	**92**	**26.5**	(21.1-31.9)
McKean	**53**	**30**	**23.3**	(15.0-31.6)	**23**	**20.1**	(11.9-28.3)
Mercer	**147**	**82**	**22.7**	(17.8-27.6)	**65**	**18.5**	(14.0-23.0)
Mifflin	**72**	**37**	**27.0**	(18.3-35.7)	**35**	**24.0**	(16.0-32.0)
Monroe	**153**	**73**	**17.0**	(13.1-20.9)	**80**	**16.8**	(13.1-20.5)
Montgomery	**1,385**	**803**	**37.0**	(34.4-39.6)	**582**	**23.3**	(21.4-25.2)
Montour	**30**	**22**	**40.5**	(23.6-57.4)	**8**	**ND**	
Northampton	**468**	**275**	**33.7**	(29.7-37.7)	**193**	**20.9**	(18.0-23.8)
Northumberland	**129**	**63**	**20.4**	(15.4-25.4)	**66**	**23.5**	(17.8-29.2)
Perry	**71**	**41**	**31.7**	(22.0-41.4)	**30**	**21.7**	(13.9-29.5)
Philadelphia	**822**	**484**	**15.2**	(13.8-16.6)	**338**	**7.6**	(6.8-8.4)
Pike	**59**	**39**	**18.9**	(13.0-24.8)	**20**	**10.0**	(5.6-14.4)
Potter	**35**	**22**	**35.4**	(20.6-50.2)	**13**	**ND**	
Schuylkill	**198**	**104**	**22.9**	(18.5-27.3)	**94**	**20.4**	(16.3-24.5)
Snyder	**63**	**32**	**31.9**	(20.8-43.0)	**31**	**26.7**	(17.3-36.1)
Somerset	**114**	**67**	**26.7**	(20.3-33.1)	**47**	**18.6**	(13.3-23.9)
Sullivan	**13**	**6**	**ND**		**7**	**ND**	
Susquehanna	**56**	**33**	**22.5**	(14.8-30.2)	**23**	**22.3**	(13.2-31.4)
Tioga	**72**	**42**	**32.2**	(22.5-41.9)	**30**	**24.1**	(15.5-32.7)
Union	**63**	**26**	**20.0**	(12.3-27.7)	**37**	**29.6**	(20.1-39.1)
Venango	**74**	**46**	**27.6**	(19.6-35.6)	**28**	**17.5**	(11.0-24.0)
Warren	**54**	**31**	**23.5**	(15.2-31.8)	**23**	**21.3**	(12.6-30.0)
Washington	**233**	**134**	**22.0**	(18.3-25.7)	**99**	**14.6**	(11.7-17.5)
Wayne	**53**	**30**	**18.2**	(11.7-24.7)	**23**	**13.0**	(7.7-18.3)
Westmoreland	**348**	**201**	**17.6**	(15.2-20.0)	**147**	**13.7**	(11.5-15.9)
Wyoming	**45**	**24**	**27.1**	(16.3-37.9)	**21**	**23.2**	(13.3-33.1)
York	**738**	**401**	**33.8**	(30.5-37.1)	**337**	**27.0**	(24.1-29.9)

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. 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,290	1,463	4.3	(4.1-4.5)	827	1.9	(1.8-2.0)
Adams	22	16	ND		6	ND	
Allegheny	212	134	4.0	(3.3-4.7)	78	1.7	(1.3-2.1)
Armstrong	12	9	ND		3	ND	
Beaver	32	24	4.5	(2.7-6.3)	8	ND	
Bedford	11	8	ND		3	ND	
Berks	73	41	3.6	(2.5-4.7)	32	2.2	(1.4-3.0)
Blair	23	16	ND		7	ND	
Bradford	13	9	ND		4	ND	
Bucks	131	91	5.3	(4.2-6.4)	40	1.8	(1.2-2.4)
Butler	32	19	ND		13	ND	
Cambria	28	16	ND		12	ND	
Cameron	2	1	ND		1	ND	
Carbon	24	15	ND		9	ND	
Centre	19	10	ND		9	ND	
Chester	106	66	5.6	(4.2-7.0)	40	2.5	(1.7-3.3)
Clarion	12	9	ND		3	ND	
Clearfield	20	12	ND		8	ND	
Clinton	6	2	ND		4	ND	
Columbia	14	11	ND		3	ND	
Crawford	13	6	ND		7	ND	
Cumberland	39	26	4.1	(2.5-5.7)	13	ND	
Dauphin	39	24	3.8	(2.3-5.3)	15	ND	
Delaware	120	78	5.6	(4.4-6.8)	42	2.2	(1.5-2.9)
Elk	2	2	ND		0	ND	
Erie	52	32	4.5	(2.9-6.1)	20	2.0	(1.1-2.9)
Fayette	36	23	5.7	(3.4-8.0)	13	ND	
Forest	1	1	ND		0	ND	
Franklin	26	21	4.7	(2.7-6.7)	5	ND	
Fulton	7	4	ND		3	ND	
Greene	4	2	ND		2	ND	
Huntingdon	13	9	ND		4	ND	
Indiana	12	8	ND		4	ND	
Jefferson	13	8	ND		5	ND	
Juniata	4	3	ND		1	ND	
Lackawanna	38	25	3.9	(2.4-5.4)	13	ND	
Lancaster	101	64	4.6	(3.5-5.7)	37	2.0	(1.4-2.6)
Lawrence	24	13	ND		11	ND	
Lebanon	32	17	ND		15	ND	
Lehigh	66	39	4.0	(2.7-5.3)	27	2.1	(1.3-2.9)
Luzerne	80	48	5.1	(3.7-6.5)	32	2.6	(1.7-3.5)
Lycoming	35	19	ND		16	ND	
McKean	5	4	ND		1	ND	
Mercer	27	15	ND		12	ND	
Mifflin	8	6	ND		2	ND	
Monroe	22	15	ND		7	ND	
Montgomery	140	88	4.1	(3.2-5.0)	52	1.8	(1.3-2.3)
Montour	3	1	ND		2	ND	
Northampton	51	35	4.2	(2.8-5.6)	16	ND	
Northumberland	18	13	ND		5	ND	
Perry	11	9	ND		2	ND	
Philadelphia	150	98	3.2	(2.6-3.8)	52	1.1	(0.8-1.4)
Pike	6	4	ND		2	ND	
Potter	5	3	ND		2	ND	
Schuylkill	30	21	4.7	(2.7-6.7)	9	ND	
Snyder	9	4	ND		5	ND	
Somerset	16	7	ND		9	ND	
Sullivan	2	1	ND		1	ND	
Susquehanna	10	8	ND		2	ND	
Tioga	9	7	ND		2	ND	
Union	5	3	ND		2	ND	
Venango	12	8	ND		4	ND	
Warren	5	2	ND		3	ND	
Washington	32	22	3.5	(2.0-5.0)	10	ND	
Wayne	15	9	ND		6	ND	
Westmoreland	63	42	3.6	(2.5-4.7)	21	1.4	(0.8-2.0)
Wyoming	4	2	ND		2	ND	
York	83	55	4.6	(3.4-5.8)	28	2.0	(1.3-2.7)

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 Insitute's SEER program.

Cancer of the Female Breast

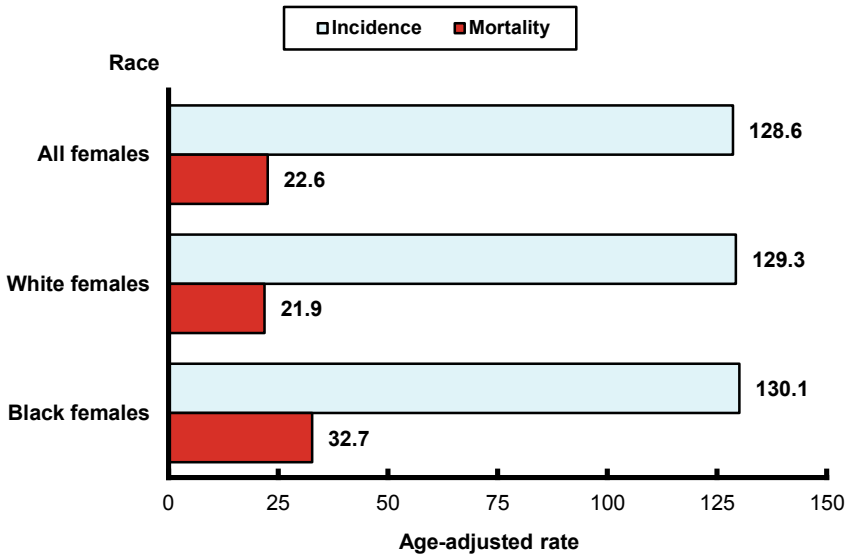
Data Highlights

As in previous years, breast cancer represented the leading cancer site for females. In Pennsylvania, there were 10,973 cases, accounting for approximately 28 percent of all invasive female cancer cases diagnosed in 2013. The 2009-2013 annual age-adjusted incidence rate for white females (129.3 per 100,000) was lower than the rate for black females (130.1). The annual age-adjusted rates among black females were higher than the rates for white females from 2006 to 2010; however, the rate for black females has since been less than the rate for white females. During the period 2004-2013, the rates among black women varied dramatically from a low of 118.9 in 2005 to high of 140.0 in 2008. Among white women, the annual rates were lowest for the years 2004 through 2007. The average annual age-specific incidence rates for 2009-2013 rose rapidly for females aged 30 and over. During the period of 2009-2013, approximately 96 percent of the female breast cancer cases were diagnosed among Pennsylvania residents aged 40 years or older.

In 2013, breast cancer was the second most frequent cause of cancer mortality among females, with 1,994 deaths – surpassed only by lung/bronchus cancers, which were responsible for 3,357 resident female deaths. Stage of disease is the single best predictor of survival. In 2013, about 25 percent of the female breast cancers were diagnosed at the late stage (regional or distant) of the disease, and 74 percent were diagnosed at the early (in situ or local) stage. According to national estimates, five-year survival rates were 85 percent for regionally staged cancers but dropped to 26 percent for distant staged cancers.

The 2009-2013 average annual age-adjusted death rate among black females (32.7 per 100,000) was about 49 percent higher than the rate for white females (21.9). The annual age-adjusted death rate for 2013 among all females was 21.7, representing the lowest rate recorded during the 10-year period of 2004-2013. Annual age-adjusted death rates for white female residents have declined slightly. The death rates among black females reached a high of 37.5 in 2009 but have since been lower. 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, 2009-2013



* rate per 100,000 using the U.S. standard million population

Risk Factors

Genetic risk factors (gene defects/mutations), family history of breast cancer (mother, sister or daughter), personal history of breast cancer, 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 breastfeeding, 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 and, occasionally, MRI screening for high risk women.

Cancer of the Female Breast: INCIDENCE (Invasive)

TABLE 11-A

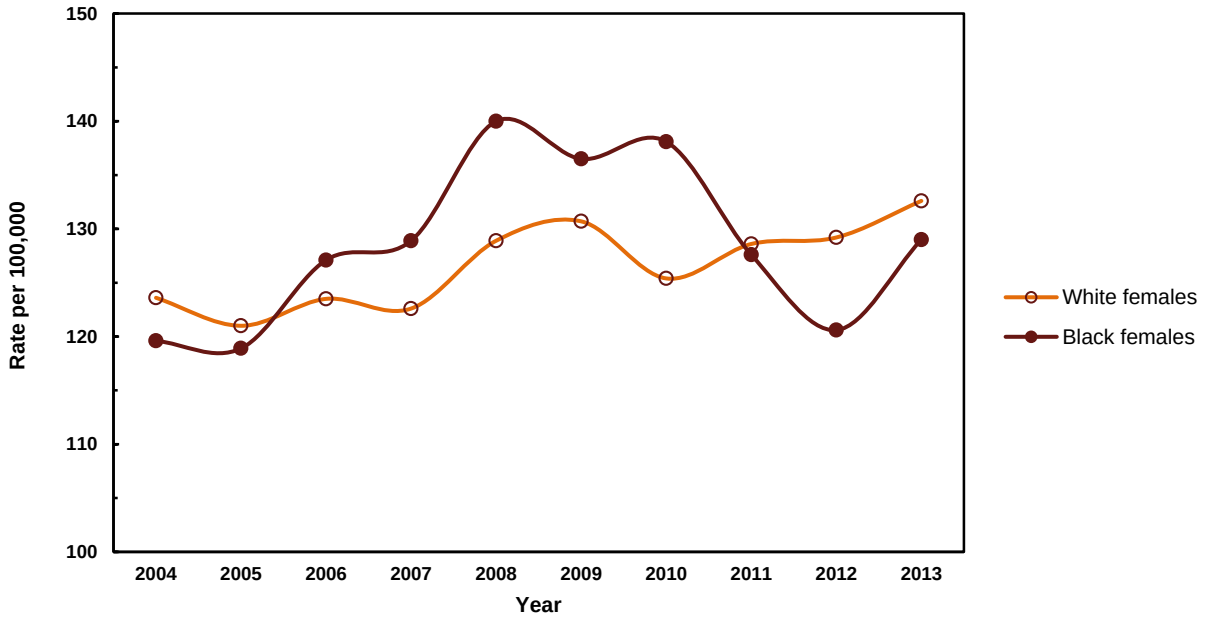
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Female Residents, 2004-2013

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**10,973**	**130.8** (128.4-133.2)	**9,763**	**132.6** (130.0-135.2)	**984**	**129.0** (120.9-137.1)
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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Female Breast: INCIDENCE (Invasive)

TABLE 11-B

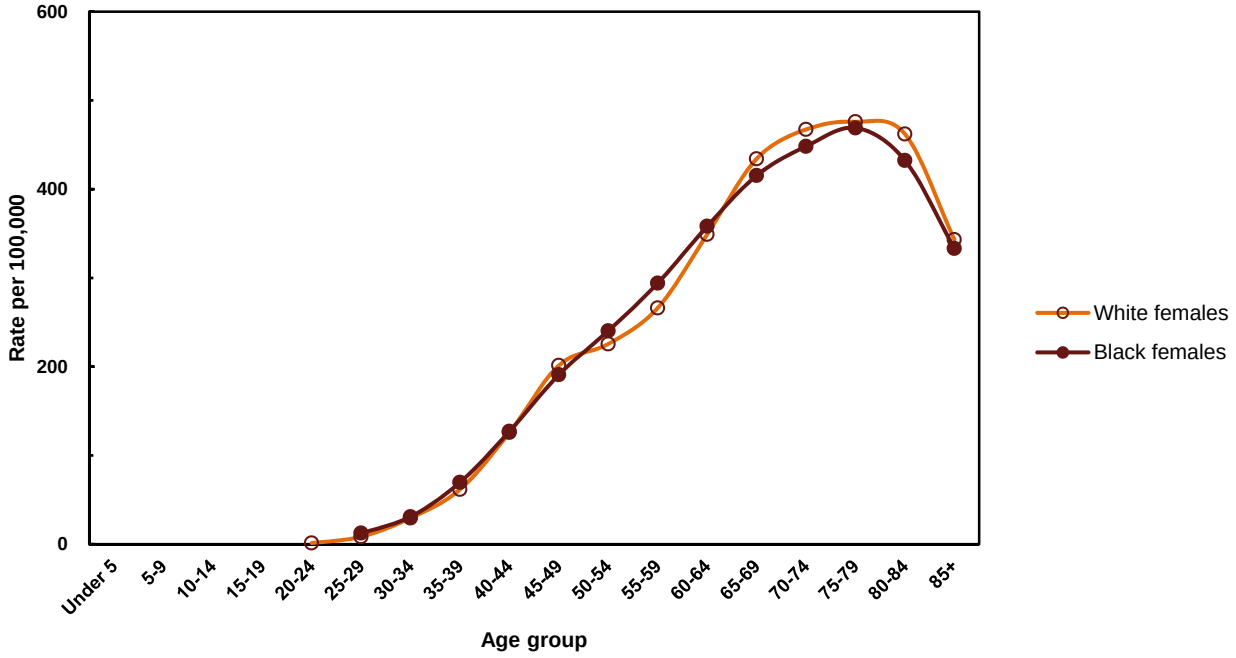
Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013

Age Group	All Females	White	Black
Total	**162.1**	**172.4**	**127.4**
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	9.2	8.4	12.4
30-34	29.3	29.5	30.9
35-39	62.2	61.7	69.7
40-44	124.2	125.8	127.1
45-49	198.4	201.5	191.0
50-54	225.1	225.6	240.4
55-59	266.8	266.2	294.1
60-64	346.5	349.1	358.2
65-69	429.1	434.2	415.4
70-74	463.4	467.3	448.3
75-79	474.1	476.0	469.0
80-84	460.1	462.1	432.3
85+	347.1	343.2	333.2

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 11-B

Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013



Cancer of the Female Breast: INCIDENCE (Invasive)

TABLE 11-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2009-2013

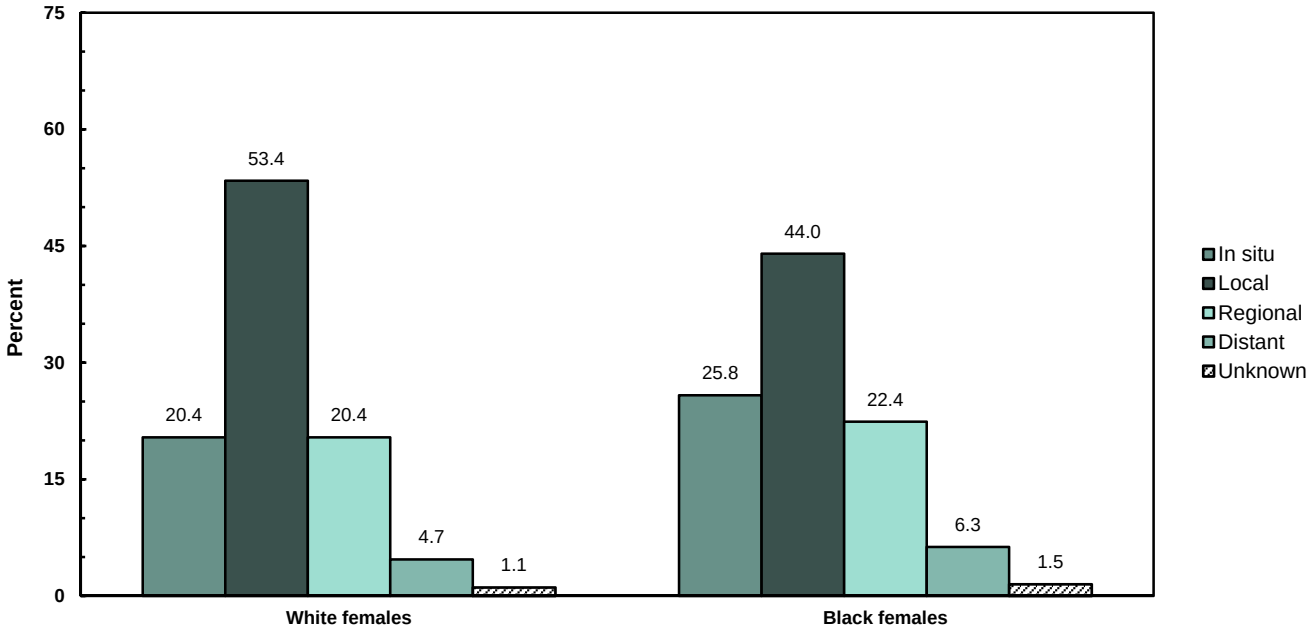
Age Group	All Females*	White	Black
Total	**52,813**	**46,847**	**4,728**
Under 5	0	0	0
5-9	0	0	0
10-14	1	1	0
15-19	3	1	1
20-24	24	23	1
25-29	181	132	32
30-34	551	444	75
35-39	1,163	936	159
40-44	2,636	2,219	312
45-49	4,606	3,969	484
50-54	5,515	4,770	600
55-59	6,106	5,324	636
60-64	6,865	6,102	628
65-69	6,620	5,985	518
70-74	5,669	5,137	433
75-79	4,895	4,455	366
80-84	4,189	3,867	264
85+	3,788	3,481	219

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 10,839 - 98.8%

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, 2004-2013

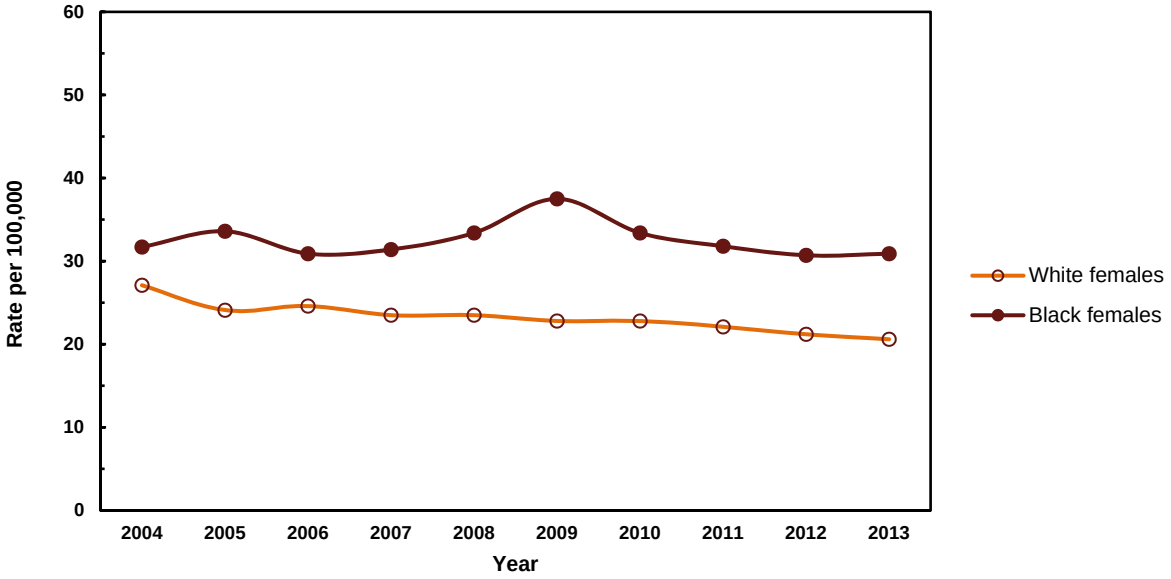
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,994**	**21.6** (20.7-22.5)	**1,713**	**20.6** (19.6-21.6)	**234**	**30.9** (26.9-34.9)
2012	**2,012**	**22.2** (21.2-23.2)	**1,733**	**21.2** (20.2-22.2)	**236**	**30.7** (26.8-34.6)
2011	**2,042**	**22.7** (21.7-23.7)	**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)

* 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, 2004-2013



Cancer of the Female Breast: MORTALITY

TABLE 11-E

Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2009-2013

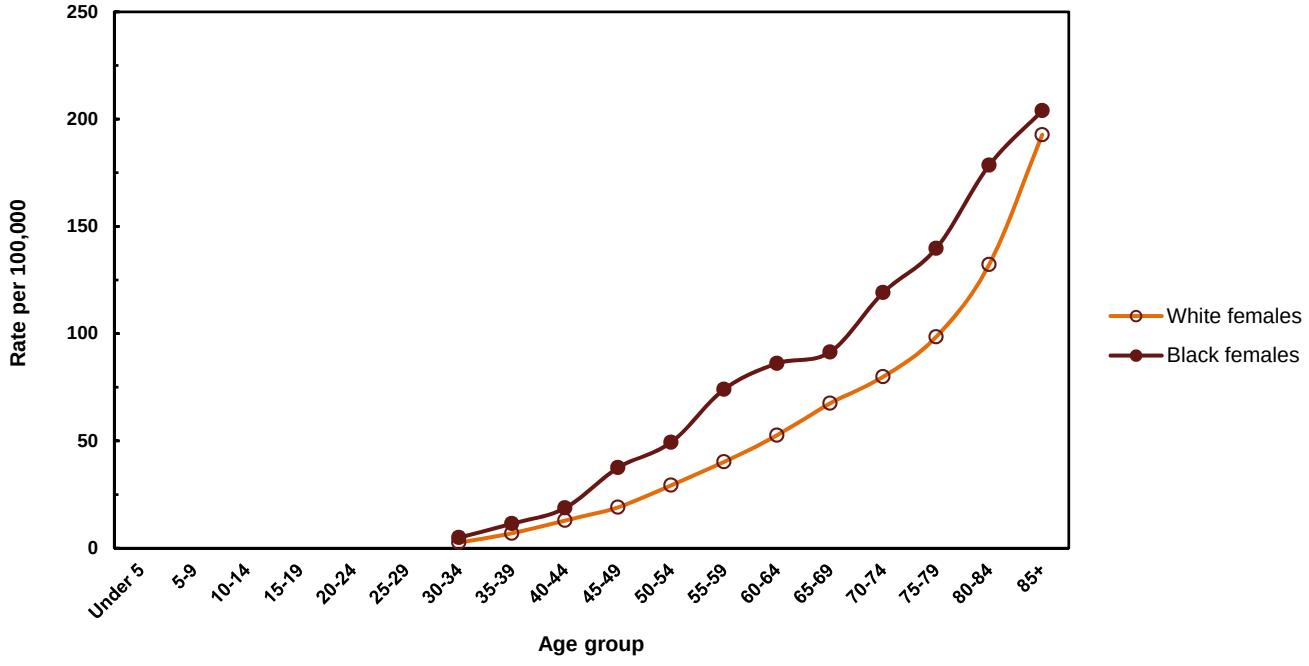
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**10,230**	**31.4**	**8,888**	**32.7**	**1,200**	**32.3**
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	2	ND	2	ND	0	ND
25-29	10	0.5	4	ND	6	ND
30-34	55	2.9	39	2.6	12	4.9
35-39	134	7.2	105	6.9	26	11.4
40-44	286	13.5	227	12.9	46	18.7
45-49	486	20.9	374	19.0	95	37.5
50-54	759	31.0	620	29.3	123	49.3
55-59	984	43.0	805	40.2	160	74.0
60-64	1,087	54.9	919	52.6	151	86.1
65-69	1,061	68.8	931	67.5	114	91.4
70-74	1,000	81.7	878	79.9	115	119.1
75-79	1,041	100.8	922	98.5	109	139.7
80-84	1,219	133.9	1,106	132.2	109	178.5
85+	2,105	192.9	1,955	192.7	134	203.9

* 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, 2009-2013



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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**52,813**	**128.6**	(127.5-129.7)				
Adams	**414**	**122.5**	(110.7-134.3)	Juniata	**84**	**105.9**	(83.3-128.5)
Allegheny	**5,705**	**134.7**	(131.2-138.2)	Lackawanna	**932**	**126.5**	(118.4-134.6)
Armstrong	**322**	**129.6**	(115.4-143.8)	Lancaster	**1,945**	**122.1**	(116.7-127.5)
Beaver	**861**	**139.5**	(130.2-148.8)	Lawrence	**437**	**132.7**	(120.3-145.1)
Bedford	**215**	**126.9**	(109.9-143.9)	Lebanon	**559**	**121.4**	(111.3-131.5)
Berks	**1,606**	**127.6**	(121.4-133.8)	Lehigh	**1,390**	**126.9**	(120.2-133.6)
Blair	**523**	**117.2**	(107.2-127.2)	Luzerne	**1,374**	**122.5**	(116.0-129.0)
Bradford	**271**	**124.2**	(109.4-139.0)	Lycoming	**566**	**143.6**	(131.8-155.4)
Bucks	**2,826**	**137.7**	(132.6-142.8)	McKean	**154**	**113.6**	(95.7-131.5)
Butler	**820**	**137.3**	(127.9-146.7)	Mercer	**584**	**143.1**	(131.5-154.7)
Cambria	**600**	**118.3**	(108.8-127.8)	Mifflin	**221**	**132.8**	(115.3-150.3)
Cameron	**30**	**155.2**	(99.7-210.7)	Monroe	**593**	**116.3**	(106.9-125.7)
Carbon	**298**	**127.4**	(112.9-141.9)	Montgomery	**3,572**	**138.4**	(133.9-142.9)
Centre	**479**	**134.2**	(122.2-146.2)	Montour	**87**	**119.4**	(94.3-144.5)
Chester	**1,982**	**133.2**	(127.3-139.1)	Northampton	**1,311**	**136.7**	(129.3-144.1)
Clarion	**155**	**118.2**	(99.6-136.8)	Northumberland	**393**	**117.5**	(105.9-129.1)
Clearfield	**301**	**110.4**	(97.9-122.9)	Perry	**169**	**116.5**	(98.9-134.1)
Clinton	**140**	**114.6**	(95.6-133.6)	Philadelphia	**5,428**	**124.7**	(121.4-128.0)
Columbia	**285**	**131.7**	(116.4-147.0)	Pike	**208**	**106.0**	(91.6-120.4)
Crawford	**354**	**119.9**	(107.4-132.4)	Potter	**62**	**101.0**	(75.9-126.1)
Cumberland	**1,023**	**132.8**	(124.7-140.9)	Schuylkill	**613**	**118.8**	(109.4-128.2)
Dauphin	**1,044**	**122.8**	(115.4-130.2)	Snyder	**152**	**122.5**	(103.0-142.0)
Delaware	**2,434**	**138.7**	(133.2-144.2)	Somerset	**284**	**103.4**	(91.4-115.4)
Elk	**155**	**135.0**	(113.7-156.3)	Sullivan	**40**	**139.8**	(96.5-183.1)
Erie	**1,127**	**129.7**	(122.1-137.3)	Susquehanna	**169**	**112.8**	(95.8-129.8)
Fayette	**585**	**116.2**	(106.8-125.6)	Tioga	**173**	**121.4**	(103.3-139.5)
Forest	**20**	**106.0**	(59.5-152.5)	Union	**143**	**112.8**	(94.3-131.3)
Franklin	**516**	**105.7**	(96.6-114.8)	Venango	**234**	**122.3**	(106.6-138.0)
Fulton	**58**	**115.5**	(85.8-145.2)	Warren	**196**	**128.2**	(110.3-146.1)
Greene	**167**	**137.5**	(116.6-158.4)	Washington	**937**	**126.9**	(118.8-135.0)
Huntingdon	**155**	**103.6**	(87.3-119.9)	Wayne	**197**	**107.9**	(92.8-123.0)
Indiana	**296**	**104.3**	(92.4-116.2)	Westmoreland	**1,779**	**131.0**	(124.9-137.1)
Jefferson	**174**	**111.9**	(95.3-128.5)	Wyoming	**134**	**144.4**	(120.0-168.8)
				York	**1,752**	**130.5**	(124.4-136.6)

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). 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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**10,230**	**22.6**	(22.2-23.0)				
Adams	**75**	**20.7**	(16.0-25.4)	Juniata	**21**	**23.6**	(13.5-33.7)
Allegheny	**1,125**	**23.4**	(22.0-24.8)	Lackawanna	**182**	**20.1**	(17.2-23.0)
Armstrong	**61**	**21.4**	(16.0-26.8)	Lancaster	**383**	**22.0**	(19.8-24.2)
Beaver	**160**	**23.3**	(19.7-26.9)	Lawrence	**92**	**24.7**	(19.7-29.7)
Bedford	**33**	**17.2**	(11.3-23.1)	Lebanon	**112**	**22.6**	(18.4-26.8)
Berks	**280**	**20.3**	(17.9-22.7)	Lehigh	**269**	**22.3**	(19.6-25.0)
Blair	**114**	**23.4**	(19.1-27.7)	Luzerne	**280**	**21.5**	(19.0-24.0)
Bradford	**49**	**20.9**	(15.0-26.8)	Lycoming	**78**	**17.6**	(13.7-21.5)
Bucks	**553**	**25.0**	(22.9-27.1)	McKean	**36**	**23.4**	(15.8-31.0)
Butler	**139**	**20.9**	(17.4-24.4)	Mercer	**112**	**25.9**	(21.1-30.7)
Cambria	**121**	**20.2**	(16.6-23.8)	Mifflin	**35**	**18.9**	(12.6-25.2)
Cameron	**0**	**ND**		Monroe	**93**	**18.5**	(14.7-22.3)
Carbon	**67**	**26.3**	(20.0-32.6)	Montgomery	**617**	**21.7**	(20.0-23.4)
Centre	**54**	**14.8**	(10.9-18.7)	Montour	**12**	**ND**	
Chester	**355**	**22.5**	(20.2-24.8)	Northampton	**230**	**21.7**	(18.9-24.5)
Clarion	**28**	**20.0**	(12.6-27.4)	Northumberland	**77**	**19.3**	(15.0-23.6)
Clearfield	**60**	**19.4**	(14.5-24.3)	Perry	**32**	**20.5**	(13.4-27.6)
Clinton	**19**	**ND**		Philadelphia	**1,280**	**27.5**	(26.0-29.0)
Columbia	**46**	**20.3**	(14.4-26.2)	Pike	**36**	**18.1**	(12.2-24.0)
Crawford	**62**	**19.9**	(14.9-24.9)	Potter	**17**	**ND**	
Cumberland	**163**	**19.9**	(16.8-23.0)	Schuylkill	**139**	**23.2**	(19.3-27.1)
Dauphin	**202**	**23.2**	(20.0-26.4)	Snyder	**23**	**16.9**	(10.0-23.8)
Delaware	**490**	**25.2**	(23.0-27.4)	Somerset	**51**	**15.2**	(11.0-19.4)
Elk	**37**	**28.5**	(19.3-37.7)	Sullivan	**8**	**ND**	
Erie	**218**	**22.7**	(19.7-25.7)	Susquehanna	**28**	**19.1**	(12.0-26.2)
Fayette	**143**	**26.6**	(22.2-31.0)	Tioga	**42**	**27.1**	(18.9-35.3)
Forest	**7**	**ND**		Union	**24**	**15.3**	(9.2-21.4)
Franklin	**95**	**18.4**	(14.7-22.1)	Venango	**43**	**18.8**	(13.2-24.4)
Fulton	**11**	**ND**		Warren	**34**	**20.8**	(13.8-27.8)
Greene	**28**	**20.9**	(13.2-28.6)	Washington	**208**	**26.0**	(22.5-29.5)
Huntingdon	**32**	**20.4**	(13.3-27.5)	Wayne	**50**	**26.0**	(18.8-33.2)
Indiana	**69**	**22.0**	(16.8-27.2)	Westmoreland	**340**	**22.2**	(19.8-24.6)
Jefferson	**40**	**23.5**	(16.2-30.8)	Wyoming	**20**	**20.0**	(11.2-28.8)
				York	**290**	**20.4**	(18.1-22.7)

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 Cervix Uteri

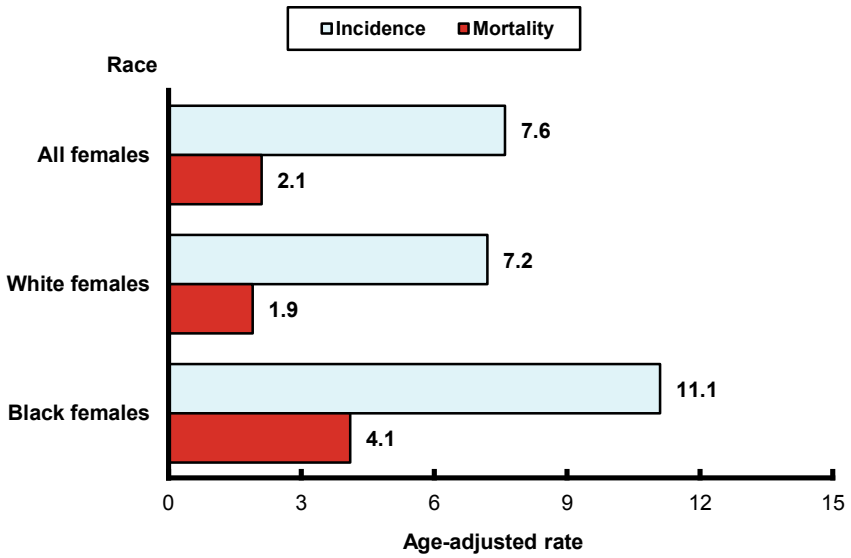
Data Highlights

During 2009-2013, the average annual age-adjusted incidence rate for invasive cancer of the cervix uteri was noticeably higher for black females compared to white females (11.1 versus 7.2 per 100,000). A total of 507 invasive cervical cancer cases were diagnosed among Pennsylvania females in 2013 – a decrease from the 521 cases observed in the prior year, 2012. The 2013 annual age-adjusted incidence rate (7.1) was about 8 percent lower than the 2012 annual rate (7.7). The trends for annual age-adjusted incidence rates during the 10-year period 2004-2013 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 (2009-2013) age-specific incidence rates among white females rose to 14.7 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 22 percent of the cases were diagnosed among residents under 40 years of age during the five-year period of 2009-2013. Diagnoses of invasive cervical cancer cases represent missed opportunities at screening and early diagnosis. In 2013, 41 percent of the invasive cervix uteri cancer cases were diagnosed at the early (local) stage of the disease, and about 55 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 (2009-2013) age-adjusted death rate for black females (4.1 per 100,000) was noticeably higher than the rate for whites (1.9). In 2013, there were 170 cervical cancer deaths among residents of the state: an increase of 12 percent from 2012, when there were 152 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 2004-2013.

FIGURE 12
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2009-2013



* rate per 100,000 using the 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

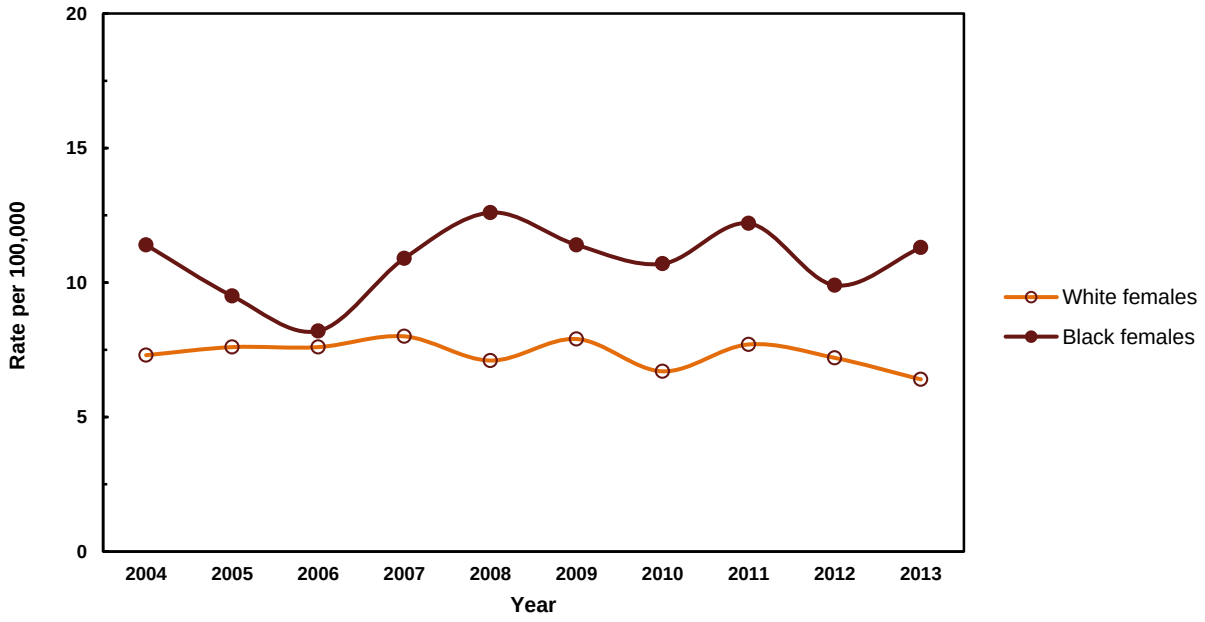
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Female Residents, 2004-2013

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**507**	**7.1** (6.5-7.7)	**390**	**6.4** (5.8-7.0)	**83**	**11.3** (8.9-13.7)
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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Cervix Uteri: INCIDENCE (Invasive)

TABLE 12-B

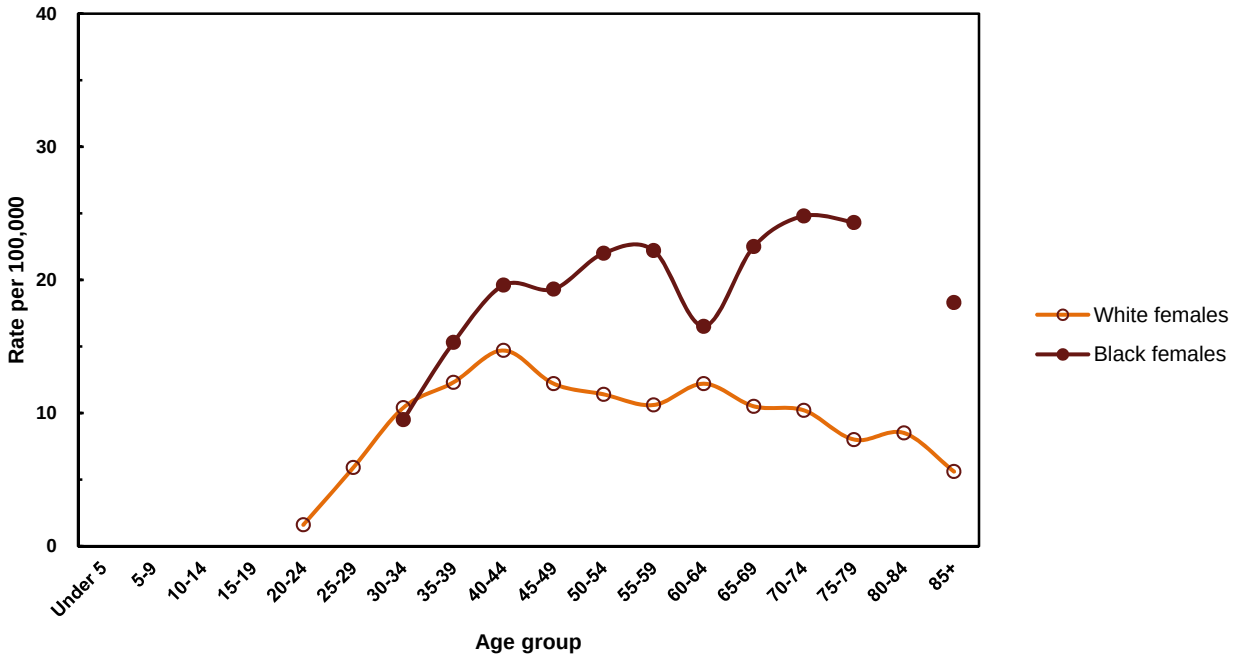
Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013

Age Group	All Females	White	Black
Total	**8.1**	**7.7**	**10.6**
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	ND	ND	ND
20-24	1.6	1.6	ND
25-29	5.6	5.9	ND
30-34	10.0	10.4	9.5
35-39	12.5	12.3	15.3
40-44	15.4	14.7	19.6
45-49	13.2	12.2	19.3
50-54	13.0	11.4	22.0
55-59	12.2	10.6	22.2
60-64	12.8	12.2	16.5
65-69	11.7	10.5	22.5
70-74	11.8	10.2	24.8
75-79	9.5	8.0	24.3
80-84	9.1	8.5	ND
85+	6.9	5.6	18.3

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 12-B

Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013



Cancer of the Cervix Uteri: INCIDENCE (Invasive)

TABLE 12-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2009-2013

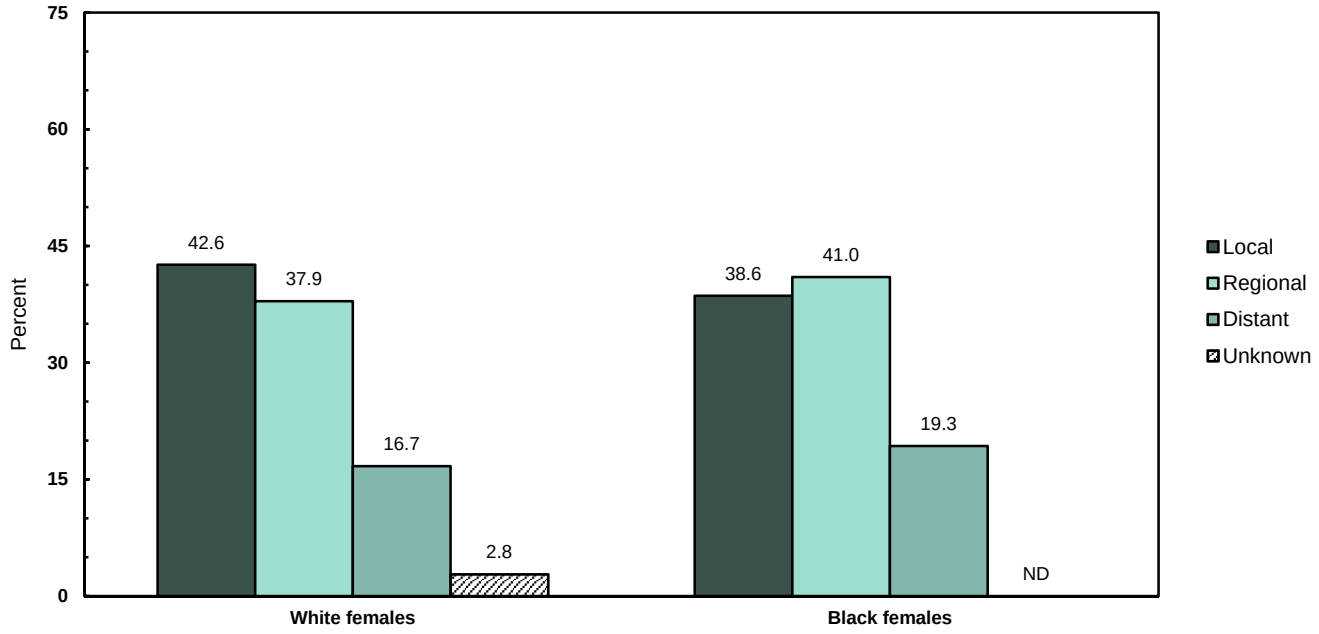
Age Group	All Females*	White	Black
Total	**2,636**	**2,092**	**394**
Under 5	0	0	0
5-9	0	0	0
10-14	1	1	0
15-19	4	3	1
20-24	34	27	6
25-29	109	93	9
30-34	189	156	23
35-39	234	187	35
40-44	326	259	48
45-49	307	240	49
50-54	319	240	55
55-59	279	213	48
60-64	253	213	29
65-69	181	145	28
70-74	144	112	24
75-79	98	75	19
80-84	83	71	8
85+	75	57	12

* 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, 2013



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: 498 - 98.2%

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, 2004-2013

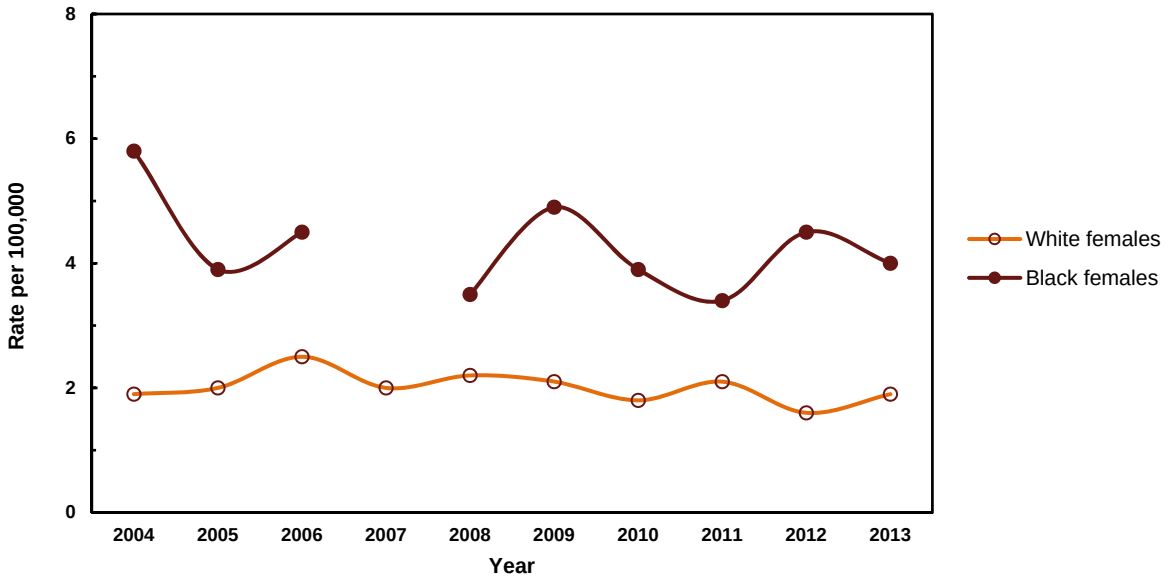
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**170**	**2.2** (1.9-2.5)	**125**	**1.9** (1.6-2.2)	**29**	**4.0** (2.5-5.5)
2012	**152**	**1.9** (1.6-2.2)	**107**	**1.6** (1.3-1.9)	**34**	**4.5** (3.0-6.0)
2011	**179**	**2.2** (1.9-2.5)	**151**	**2.1** (1.8-2.4)	**24**	**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)

* 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, 2004-2013



Cancer of the Cervix Uteri: MORTALITY

TABLE 12-E

Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2009-2013

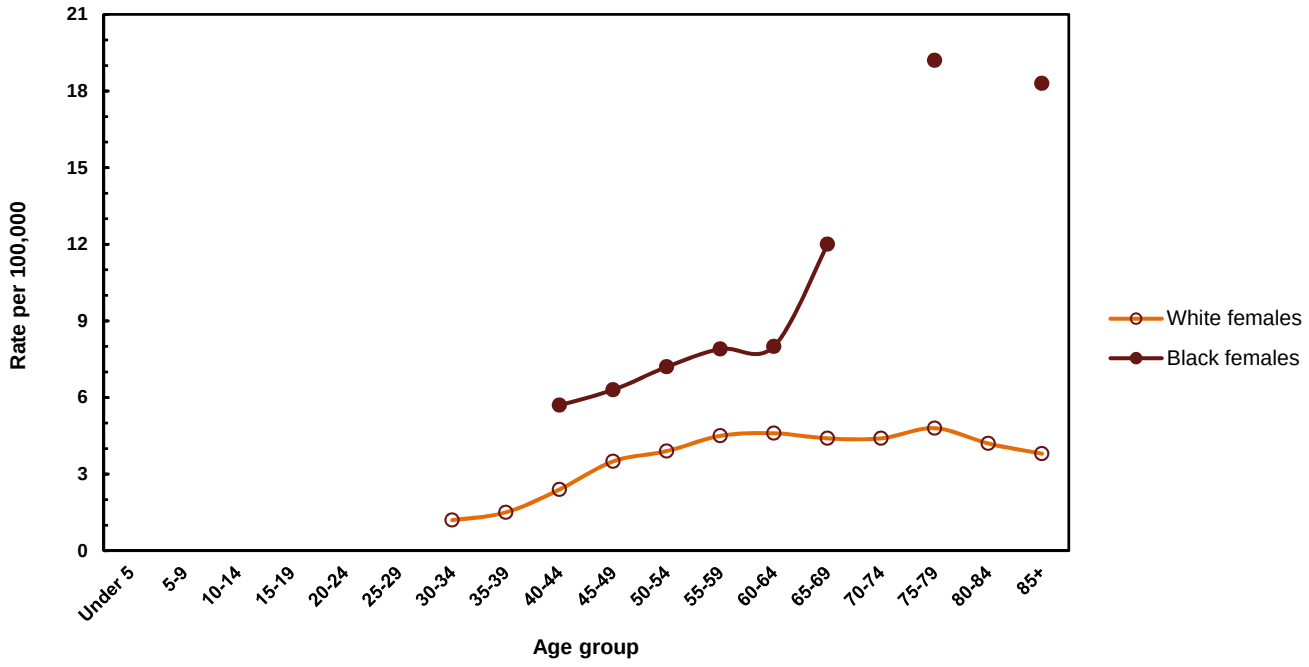
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**826**	**2.5**	**644**	**2.4**	**147**	**4.0**
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	3	ND	3	ND	0	ND
25-29	10	0.5	8	ND	2	ND
30-34	20	1.1	18	1.2	2	ND
35-39	32	1.7	23	1.5	6	ND
40-44	59	2.8	42	2.4	14	5.7
45-49	86	3.7	69	3.5	16	6.3
50-54	103	4.2	82	3.9	18	7.2
55-59	114	5.0	90	4.5	17	7.9
60-64	101	5.1	81	4.6	14	8.0
65-69	80	5.2	61	4.4	15	12.0
70-74	60	4.9	48	4.4	9	ND
75-79	60	5.8	45	4.8	15	19.2
80-84	43	4.7	35	4.2	7	ND
85+	55	5.0	39	3.8	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, 2009-2013



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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	2,636	7.6	(7.3-7.9)				
Adams	26	10.3	(6.3-14.3)	Juniata	5	ND	
Allegheny	226	6.7	(5.8-7.6)	Lackawanna	51	8.9	(6.5-11.3)
Armstrong	14	ND		Lancaster	101	7.3	(5.9-8.7)
Beaver	28	5.2	(3.3-7.1)	Lawrence	17	ND	
Bedford	8	ND		Lebanon	29	8.1	(5.2-11.0)
Berks	58	5.6	(4.2-7.0)	Lehigh	79	8.6	(6.7-10.5)
Blair	20	5.9	(3.3-8.5)	Luzerne	94	10.9	(8.7-13.1)
Bradford	18	ND		Lycoming	25	7.6	(4.6-10.6)
Bucks	98	5.3	(4.3-6.3)	McKean	12	ND	
Butler	30	5.7	(3.7-7.7)	Mercer	29	9.6	(6.1-13.1)
Cambria	33	7.7	(5.1-10.3)	Mifflin	8	ND	
Cameron	3	ND		Monroe	39	8.8	(6.0-11.6)
Carbon	13	ND		Montgomery	141	6.1	(5.1-7.1)
Centre	13	ND		Montour	0	ND	
Chester	75	5.4	(4.2-6.6)	Northampton	57	6.5	(4.8-8.2)
Clarion	5	ND		Northumberland	21	9.2	(5.3-13.1)
Clearfield	18	ND		Perry	9	ND	
Clinton	4	ND		Philadelphia	479	11.9	(10.8-13.0)
Columbia	15	ND		Pike	10	ND	
Crawford	25	11.1	(6.7-15.5)	Potter	1	ND	
Cumberland	33	5.2	(3.4-7.0)	Schuylkill	40	10.9	(7.5-14.3)
Dauphin	56	7.9	(5.8-10.0)	Snyder	1	ND	
Delaware	135	8.7	(7.2-10.2)	Somerset	20	9.7	(5.4-14.0)
Elk	7	ND		Sullivan	1	ND	
Erie	40	5.2	(3.6-6.8)	Susquehanna	12	ND	
Fayette	35	8.9	(6.0-11.8)	Tioga	8	ND	
Forest	2	ND		Union	7	ND	
Franklin	27	6.7	(4.2-9.2)	Venango	6	ND	
Fulton	3	ND		Warren	10	ND	
Greene	9	ND		Washington	56	10.3	(7.6-13.0)
Huntingdon	8	ND		Wayne	9	ND	
Indiana	14	ND		Westmoreland	74	7.3	(5.6-9.0)
Jefferson	7	ND		Wyoming	7	ND	
				York	72	6.0	(4.6-7.4)

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 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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	826	2.1	(2.0-2.2)				
Adams	9	ND		Juniata	1	ND	
Allegheny	73	1.9	(1.5-2.3)	Lackawanna	11	ND	
Armstrong	1	ND		Lancaster	29	1.9	(1.2-2.6)
Beaver	16	ND		Lawrence	2	ND	
Bedford	4	ND		Lebanon	10	ND	
Berks	16	ND		Lehigh	17	ND	
Blair	9	ND		Luzerne	29	3.0	(1.9-4.1)
Bradford	4	ND		Lycoming	7	ND	
Bucks	35	1.8	(1.2-2.4)	McKean	4	ND	
Butler	8	ND		Mercer	10	ND	
Cambria	10	ND		Mifflin	3	ND	
Cameron	0	ND		Monroe	19	ND	
Carbon	3	ND		Montgomery	37	1.4	(0.9-1.9)
Centre	5	ND		Montour	1	ND	
Chester	13	ND		Northampton	19	ND	
Clarion	2	ND		Northumberland	8	ND	
Clearfield	6	ND		Perry	2	ND	
Clinton	1	ND		Philadelphia	161	3.7	(3.1-4.3)
Columbia	4	ND		Pike	2	ND	
Crawford	7	ND		Potter	3	ND	
Cumberland	12	ND		Schuylkill	15	ND	
Dauphin	21	2.6	(1.5-3.7)	Snyder	1	ND	
Delaware	36	1.9	(1.3-2.5)	Somerset	7	ND	
Elk	4	ND		Sullivan	1	ND	
Erie	14	ND		Susquehanna	3	ND	
Fayette	11	ND		Tioga	3	ND	
Forest	0	ND		Union	2	ND	
Franklin	13	ND		Venango	2	ND	
Fulton	0	ND		Warren	2	ND	
Greene	2	ND		Washington	15	ND	
Huntingdon	4	ND		Wayne	1	ND	
Indiana	2	ND		Westmoreland	23	1.9	(1.1-2.7)
Jefferson	0	ND		Wyoming	1	ND	
				York	30	2.4	(1.5-3.3)

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 Corpus and Uterus, Not Otherwise Specified (NOS)

Data Highlights

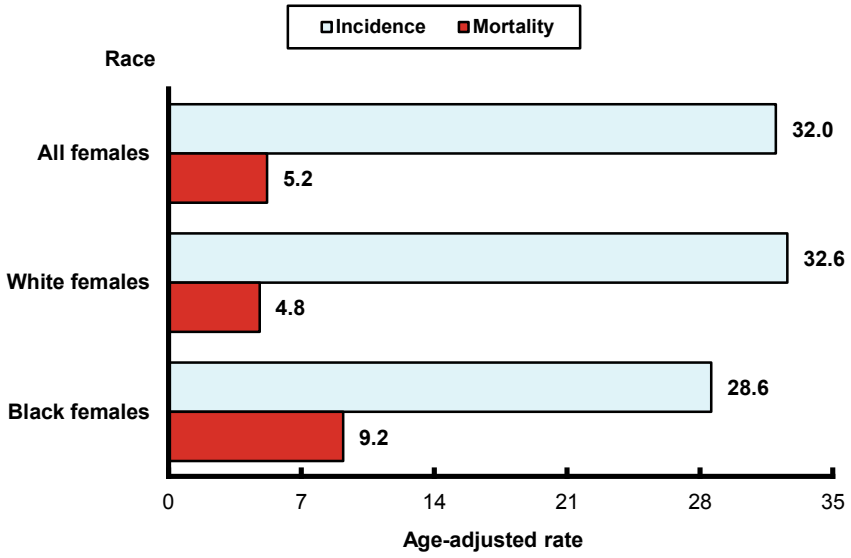
The average annual (2009-2013) age-adjusted incidence rate for invasive cancer of the corpus and uterus, NOS, among white females (32.6 per 100,000) was 14 percent higher than the rate for black females (28.6). In 2013, there were 2,873 cases of invasive corpus and uterus cancer diagnosed among female residents of Pennsylvania – an increase from the 2,748 cases observed in 2012.

Annual age-adjusted incidence rates for the years 2004 through 2007 showed that corpus and uterus cancers for blacks had several deviations and no clear trend; however, the rates have shown an increasing trend in recent years. Among white females, the incidence rates did not fluctuate much, and the trend was inconclusive during this 10-year period. Over the 2009-2013 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 2013, about 67 percent of corpus and uterus cases were diagnosed at the early stage (in situ or local) of the disease, and approximately 29 percent of cases were diagnosed at the late stage (regional or distant). Approximately 42 percent of the cases diagnosed among blacks were at the regional or distant stages, compared to 29 percent for whites.

In contrast to the lower incidence rates among blacks, the average annual age-adjusted death rate was higher among black females (9.2 per 100,000) than for white females (4.8) during the five-year period of 2009-2013. 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 2004 through 2013.

NOTE: The abbreviation "NOS" means "Not Otherwise Specified."

FIGURE 13
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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

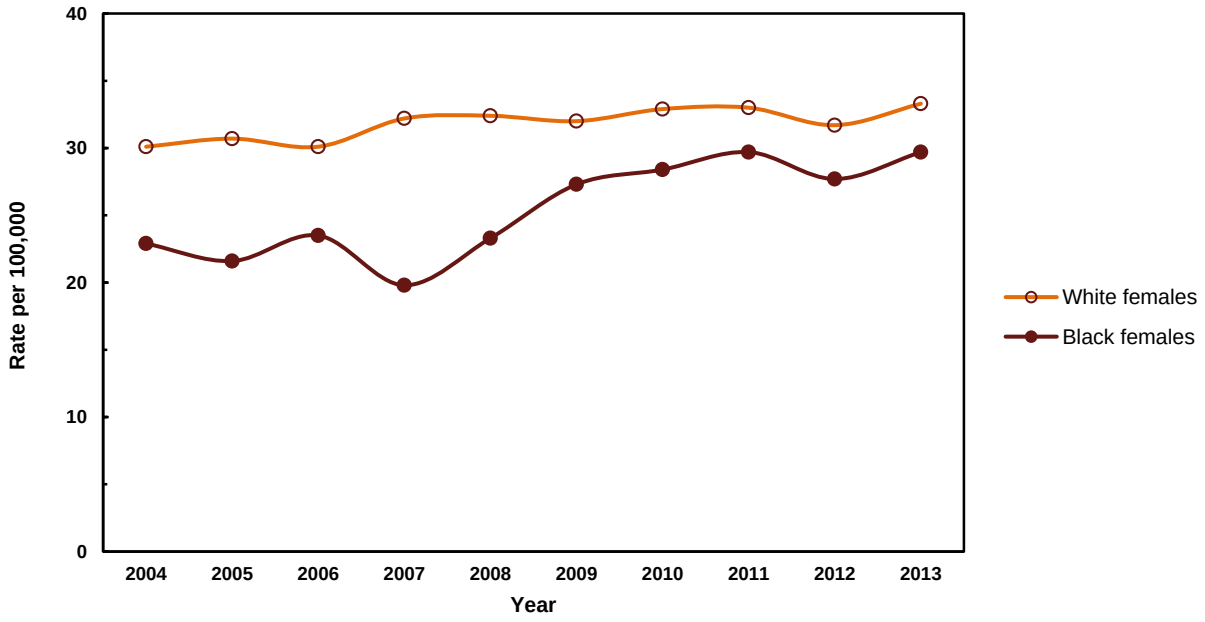
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Female Residents, 2004-2013

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**2,873**	**32.7** (31.5-33.9)	**2,573**	**33.3** (32.0-34.6)	**235**	**29.7** (25.9-33.5)
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)

* Includes unknown/other race and sex.
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, 2004-2013



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

TABLE 13-B

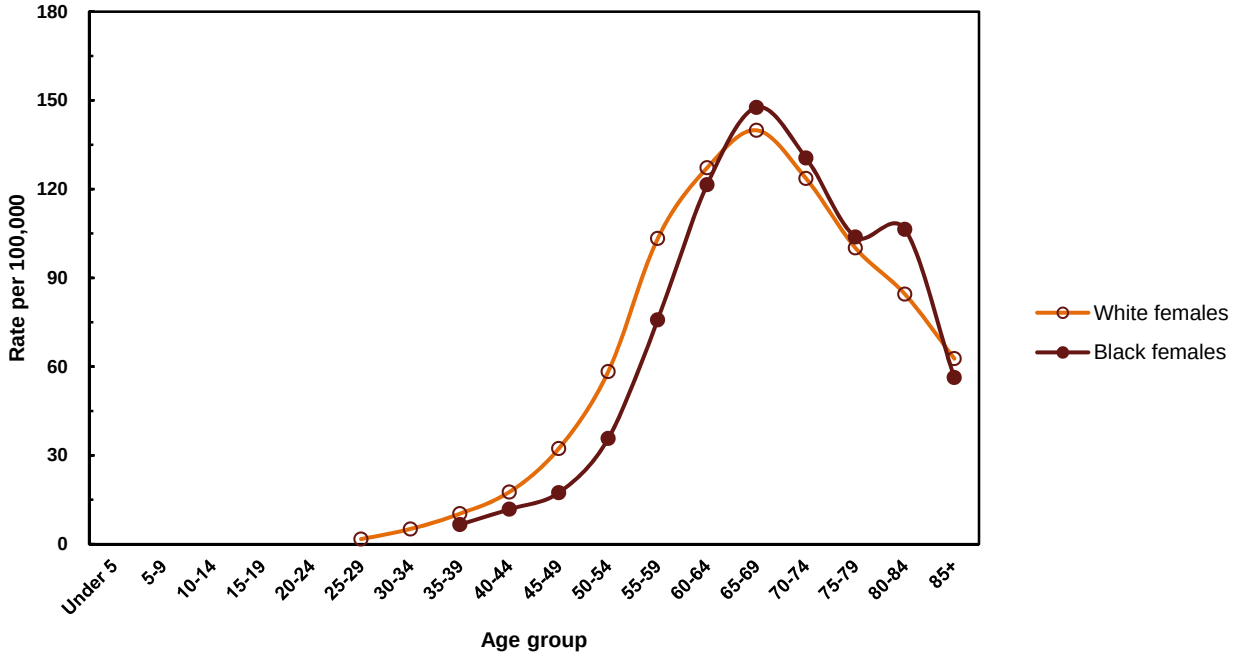
Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013

Age Group	All Females	White	Black
Total	**42.1**	**45.3**	**28.7**
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	1.9	1.7	ND
30-34	4.8	5.1	ND
35-39	9.4	10.3	6.6
40-44	17.1	17.6	11.8
45-49	30.1	32.3	17.4
50-54	56.2	58.3	35.7
55-59	100.1	103.3	75.8
60-64	125.8	127.2	121.5
65-69	139.0	139.9	147.6
70-74	123.6	123.6	130.5
75-79	100.5	100.1	103.8
80-84	86.0	84.5	106.4
85+	63.6	62.7	56.3

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 13-B

Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013



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

TABLE 13-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2009-2013

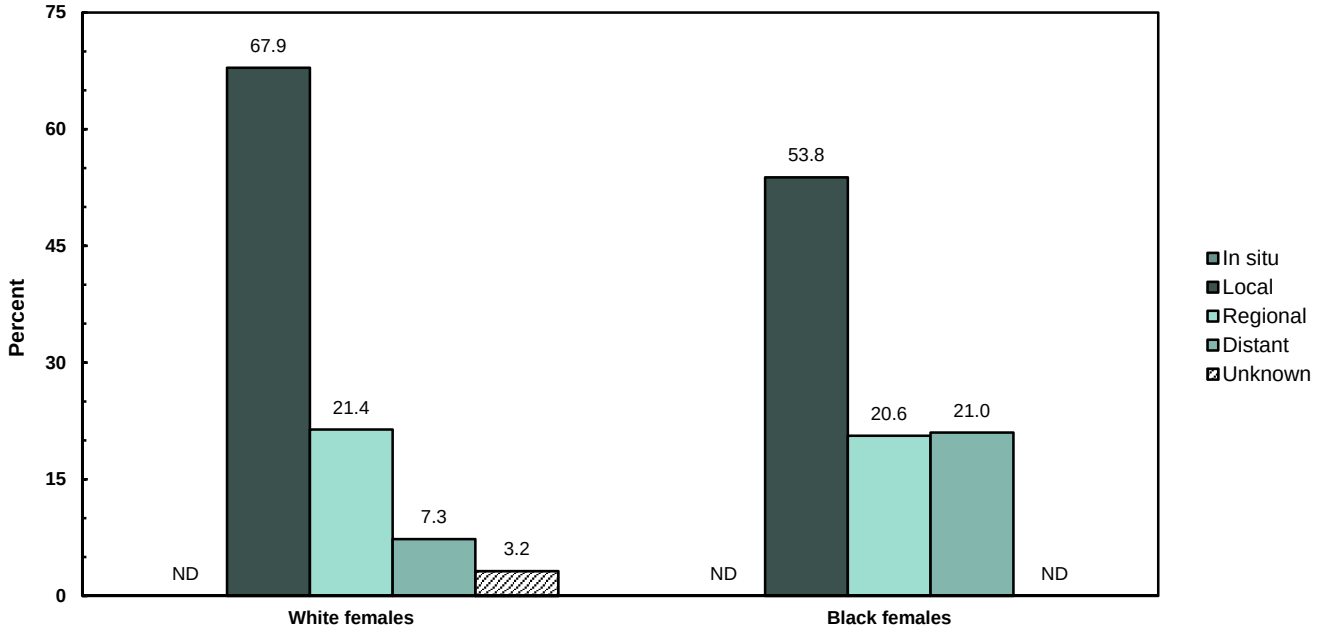
Age Group	All Females*	White	Black
Total	**13,708**	**12,301**	**1,066**
Under 5	0	0	0
5-9	0	0	0
10-14	0	0	0
15-19	0	0	0
20-24	8	5	3
25-29	37	26	8
30-34	91	77	8
35-39	176	156	15
40-44	363	311	29
45-49	699	636	44
50-54	1,377	1,232	89
55-59	2,292	2,066	164
60-64	2,492	2,224	213
65-69	2,145	1,929	184
70-74	1,512	1,359	126
75-79	1,038	937	81
80-84	783	707	65
85+	694	636	37

* 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, 2013



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 - 98.7%

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, 2004-2013

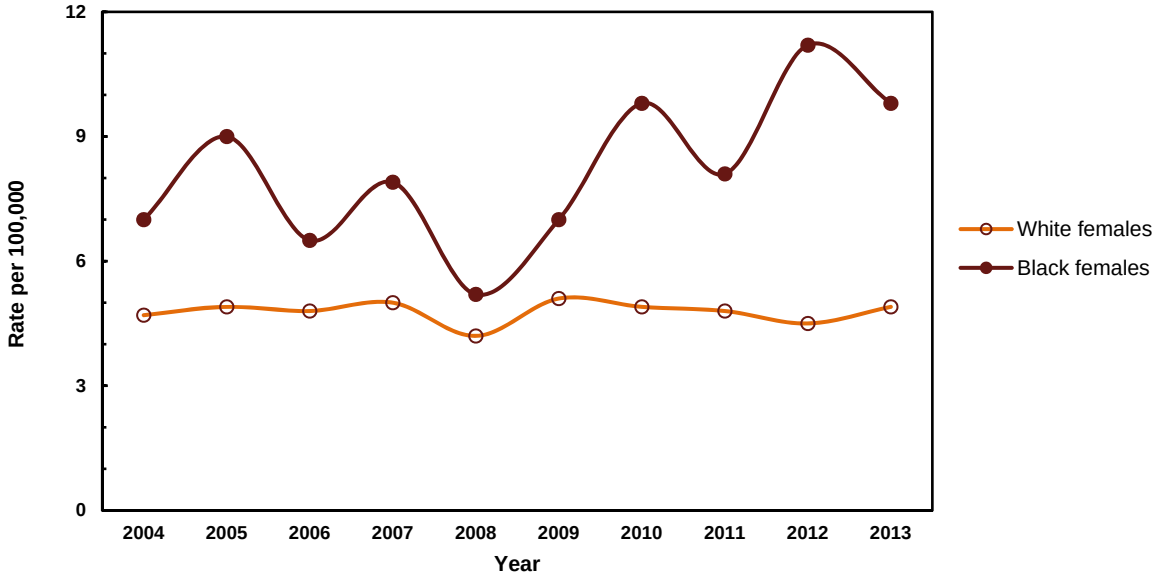
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**508**	**5.3** (4.8-5.8)	**420**	**4.9** (4.4-5.4)	**74**	**9.7** (7.5-11.9)
2012	**475**	**5.1** (4.6-5.6)	**382**	**4.5** (4.0-5.0)	**81**	**11.2** (8.8-13.6)
2011	**463**	**5.0** (4.5-5.5)	**396**	**4.8** (4.3-5.3)	**62**	**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)

* 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, 2004-2013



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, 2009-2013

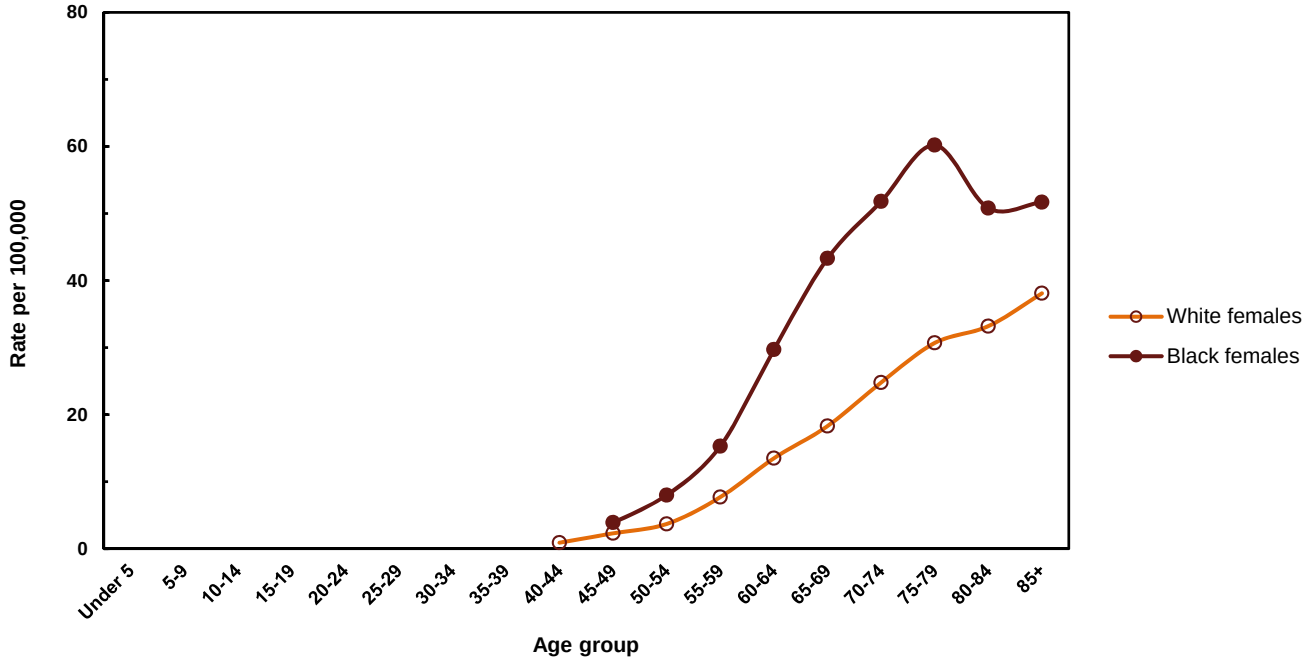
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**2,387**	**7.3**	**2,015**	**7.4**	**332**	**8.9**
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	1	ND	1	ND	0	ND
25-29	3	ND	1	ND	0	ND
30-34	4	ND	4	ND	0	ND
35-39	4	ND	4	ND	0	ND
40-44	18	0.8	15	0.9	1	ND
45-49	59	2.5	45	2.3	10	3.9
50-54	101	4.1	78	3.7	20	8.0
55-59	191	8.3	155	7.7	33	15.3
60-64	298	15.0	236	13.5	52	29.7
65-69	311	20.2	252	18.3	54	43.3
70-74	327	26.7	273	24.8	50	51.8
75-79	337	32.6	287	30.7	47	60.2
80-84	311	34.2	278	33.2	31	50.8
85+	422	38.7	386	38.1	34	51.7

* 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, 2009-2013



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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	13,708	32.0	(31.5-32.5)				
Adams	91	27.5	(21.8-33.2)	Juniata	37	45.7	(31.0-60.4)
Allegheny	1,309	30.0	(28.4-31.6)	Lackawanna	256	33.2	(29.1-37.3)
Armstrong	78	30.8	(24.0-37.6)	Lancaster	581	35.0	(32.2-37.8)
Beaver	190	28.7	(24.6-32.8)	Lawrence	93	27.8	(22.1-33.5)
Bedford	48	26.2	(18.8-33.6)	Lebanon	182	39.6	(33.8-45.4)
Berks	366	27.9	(25.0-30.8)	Lehigh	380	33.1	(29.8-36.4)
Blair	149	32.9	(27.6-38.2)	Luzerne	466	40.0	(36.4-43.6)
Bradford	78	34.6	(26.9-42.3)	Lycoming	125	30.9	(25.5-36.3)
Bucks	689	31.9	(29.5-34.3)	McKean	43	32.8	(23.0-42.6)
Butler	160	26.3	(22.2-30.4)	Mercer	145	35.1	(29.4-40.8)
Cambria	189	37.4	(32.1-42.7)	Mifflin	42	23.2	(16.2-30.2)
Cameron	5	ND		Monroe	153	28.0	(23.6-32.4)
Carbon	91	37.2	(29.6-44.8)	Montgomery	897	33.3	(31.1-35.5)
Centre	119	31.5	(25.8-37.2)	Montour	29	39.8	(25.3-54.3)
Chester	471	30.0	(27.3-32.7)	Northampton	394	39.1	(35.2-43.0)
Clarion	44	32.5	(22.9-42.1)	Northumberland	116	32.8	(26.8-38.8)
Clearfield	87	30.2	(23.9-36.5)	Perry	65	43.5	(32.9-54.1)
Clinton	47	38.2	(27.3-49.1)	Philadelphia	1,469	32.4	(30.7-34.1)
Columbia	90	42.4	(33.6-51.2)	Pike	64	30.8	(23.3-38.3)
Crawford	85	27.1	(21.3-32.9)	Potter	20	33.0	(18.5-47.5)
Cumberland	263	32.7	(28.7-36.7)	Schuylkill	194	37.3	(32.1-42.5)
Dauphin	292	33.3	(29.5-37.1)	Snyder	49	39.1	(28.2-50.0)
Delaware	574	31.0	(28.5-33.5)	Somerset	93	33.5	(26.7-40.3)
Elk	38	33.8	(23.1-44.5)	Sullivan	15	ND	
Erie	265	29.4	(25.9-32.9)	Susquehanna	51	33.6	(24.4-42.8)
Fayette	147	27.6	(23.1-32.1)	Tioga	46	31.6	(22.5-40.7)
Forest	5	ND		Union	40	30.8	(21.3-40.3)
Franklin	145	28.2	(23.6-32.8)	Venango	55	27.7	(20.4-35.0)
Fulton	13	ND		Warren	47	31.1	(22.2-40.0)
Greene	48	40.0	(28.7-51.3)	Washington	245	31.8	(27.8-35.8)
Huntingdon	42	29.0	(20.2-37.8)	Wayne	46	23.4	(16.6-30.2)
Indiana	85	29.6	(23.3-35.9)	Westmoreland	412	29.0	(26.2-31.8)
Jefferson	49	29.8	(21.5-38.1)	Wyoming	37	38.9	(26.4-51.4)
				York	469	33.3	(30.3-36.3)

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). 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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	2,387	5.2	(5.0-5.4)				
Adams	6	ND		Juniata	7	ND	
Allegheny	248	5.0	(4.4-5.6)	Lackawanna	46	5.1	(3.6-6.6)
Armstrong	11	ND		Lancaster	82	4.5	(3.5-5.5)
Beaver	29	3.6	(2.3-4.9)	Lawrence	13	ND	
Bedford	11	ND		Lebanon	25	4.9	(3.0-6.8)
Berks	63	4.7	(3.5-5.9)	Lehigh	71	5.6	(4.3-6.9)
Blair	20	3.5	(2.0-5.0)	Luzerne	63	4.6	(3.5-5.7)
Bradford	13	ND		Lycoming	23	5.1	(3.0-7.2)
Bucks	104	4.7	(3.8-5.6)	McKean	5	ND	
Butler	33	5.0	(3.3-6.7)	Mercer	20	4.4	(2.5-6.3)
Cambria	35	5.8	(3.9-7.7)	Mifflin	8	ND	
Cameron	1	ND		Monroe	25	4.9	(3.0-6.8)
Carbon	14	ND		Montgomery	160	5.6	(4.7-6.5)
Centre	8	ND		Montour	5	ND	
Chester	70	4.6	(3.5-5.7)	Northampton	73	6.7	(5.2-8.2)
Clarion	8	ND		Northumberland	23	6.3	(3.7-8.9)
Clearfield	18	ND		Perry	6	ND	
Clinton	3	ND		Philadelphia	342	7.3	(6.5-8.1)
Columbia	22	9.1	(5.3-12.9)	Pike	7	ND	
Crawford	19	ND		Potter	5	ND	
Cumberland	33	3.8	(2.5-5.1)	Schuylkill	37	5.9	(4.0-7.8)
Dauphin	52	5.9	(4.3-7.5)	Snyder	6	ND	
Delaware	115	5.8	(4.7-6.9)	Somerset	14	ND	
Elk	6	ND		Sullivan	2	ND	
Erie	43	4.5	(3.2-5.8)	Susquehanna	9	ND	
Fayette	29	5.3	(3.4-7.2)	Tioga	8	ND	
Forest	1	ND		Union	7	ND	
Franklin	18	ND		Venango	16	ND	
Fulton	2	ND		Warren	7	ND	
Greene	3	ND		Washington	50	5.9	(4.3-7.5)
Huntingdon	8	ND		Wayne	8	ND	
Indiana	10	ND		Westmoreland	74	4.8	(3.7-5.9)
Jefferson	8	ND		Wyoming	7	ND	
				York	69	4.9	(3.7-6.1)

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 Ovary

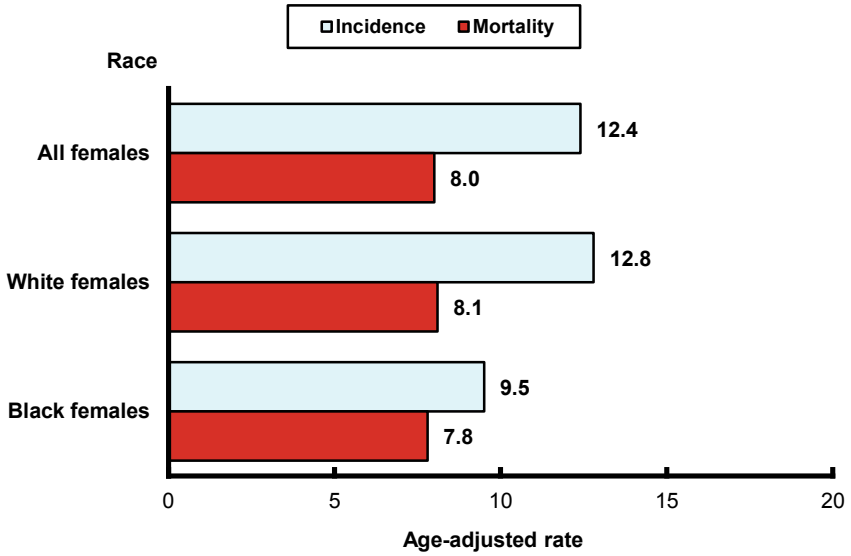
Data Highlights

The 2009-2013 average annual age-adjusted incidence rate for invasive ovarian cancer among white females (12.8 per 100,000) was about 35 percent higher than the rate for black females (9.5). In 2013, there were 998 cases of invasive ovarian cancer diagnosed and reported to the Pennsylvania Cancer Registry – a small decrease from the previous year, 2012, when there were 1,013 cases. The 2013 age-adjusted incidence rate for females was 11.7, compared to 13.2 for females diagnosed in 2004. Annual age-adjusted incidence rates for the 10-year period of 2004-2013 showed no discernible trends among white and black females.

Average annual (2009-2013) age-specific incidence rates for this site began rising dramatically at about age 40. During 2009-2013, about 95 percent of the invasive ovarian cancers were diagnosed in women aged 40 and older. In 2013, about 77 percent of the ovarian cancer cases were diagnosed at the late stage (regional or distant) of the disease, and about 16 percent were diagnosed at the early stage (in situ or local).

The 2009-2013 average annual age-adjusted death rate for white females (8.1 per 100,000) was about 4 percent higher than the rate for black females (7.8). In 2013, ovarian cancer claimed the lives of 713 female residents of Pennsylvania, resulting in an age-adjusted death rate of 7.7. As observed with incidence rates, the age-adjusted death rates by race were consistently higher for whites compared to blacks for the period 2004-2009; however, from 2010 to 2012, the age-adjusted death rate for blacks were higher than the rate for whites. In 2013, the rate for white females once again surpassed the rate for black females. For most age groups, the 2009-2013 age-specific death rates were higher among whites compared to blacks. Among white and black females, annual age-adjusted death rates from 2004 through 2013 showed no discernible long-term trends.

FIGURE 14
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Female Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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

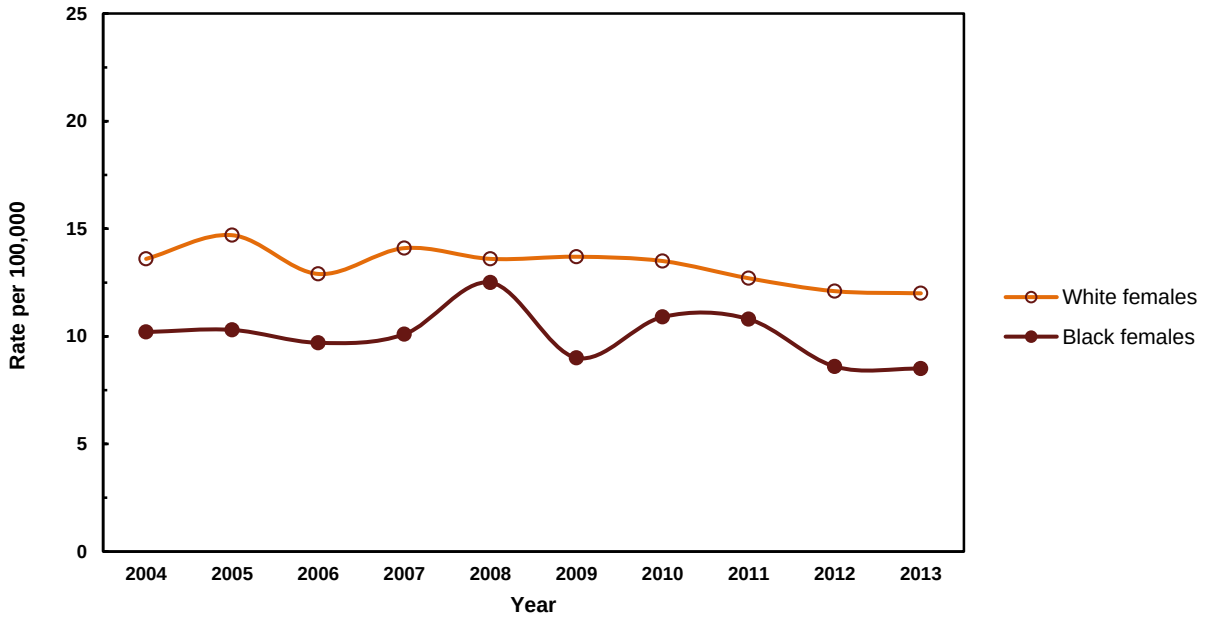
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Female Residents, 2004-2013

Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	998	11.7 (11.0-12.4)	905	12.0 (11.2-12.8)	64	8.5 (6.4-10.6)
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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Ovary: INCIDENCE (Invasive)

TABLE 14-B

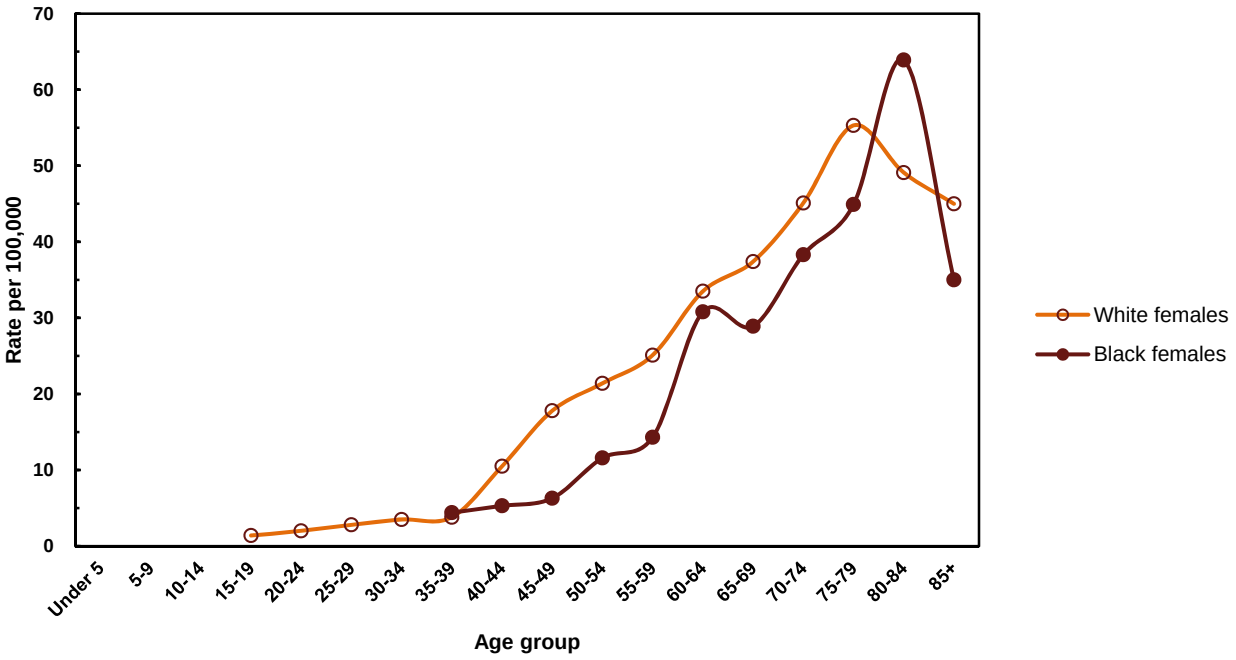
Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013

Age Group	All Females	White	Black
Total	**15.9**	**17.3**	**9.3**
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	0.7	ND	ND
15-19	1.4	1.4	ND
20-24	2.1	2.0	ND
25-29	2.5	2.8	ND
30-34	3.1	3.5	ND
35-39	4.0	3.8	4.4
40-44	9.8	10.5	5.3
45-49	16.4	17.8	6.3
50-54	20.0	21.4	11.6
55-59	24.2	25.1	14.3
60-64	33.4	33.5	30.8
65-69	36.3	37.4	28.9
70-74	44.3	45.1	38.3
75-79	54.0	55.3	44.9
80-84	50.2	49.1	63.9
85+	45.8	45.0	35.0

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 14-B

Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Female Residents, 2009-2013



Cancer of the Ovary: INCIDENCE (Invasive)

TABLE 14-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Female Residents, 2009-2013

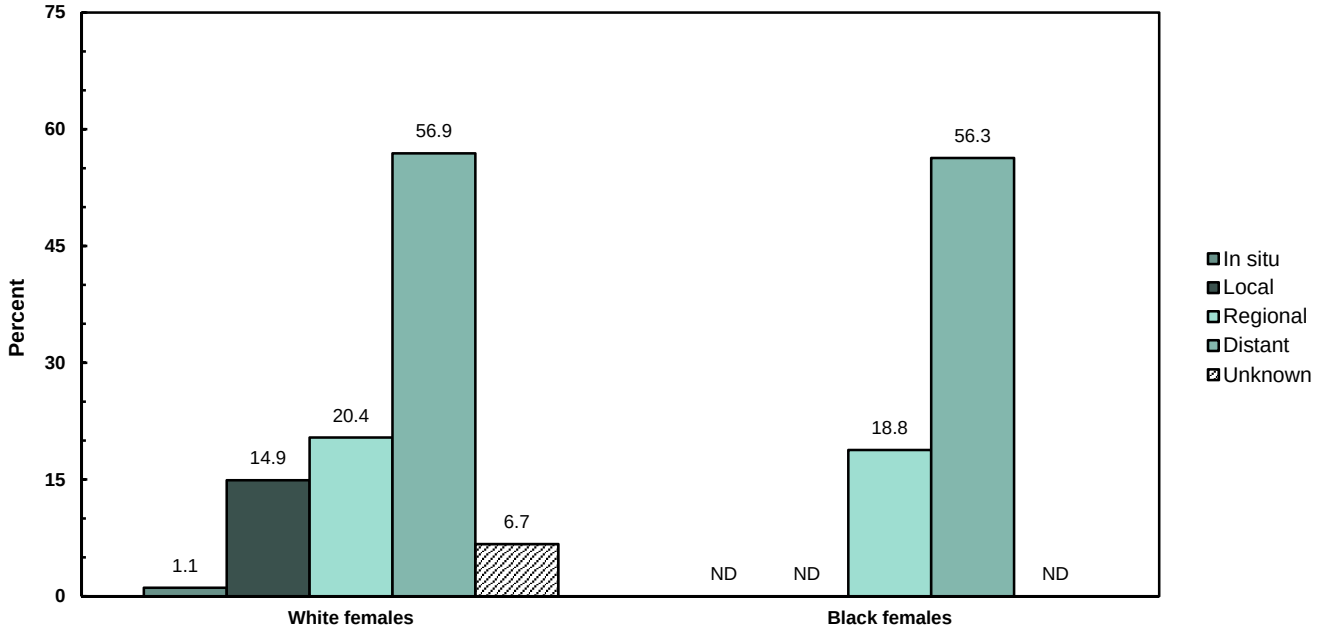
Age Group	All Females*	White	Black
Total	**5,186**	**4,695**	**345**
Under 5	1	0	0
5-9	2	2	0
10-14	13	7	4
15-19	30	25	4
20-24	45	35	6
25-29	49	43	4
30-34	59	53	4
35-39	75	57	10
40-44	208	185	13
45-49	381	351	16
50-54	490	452	29
55-59	555	503	31
60-64	661	586	54
65-69	560	515	36
70-74	542	496	37
75-79	558	518	35
80-84	457	411	39
85+	500	456	23

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 911 - 91.3%

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, 2004-2013

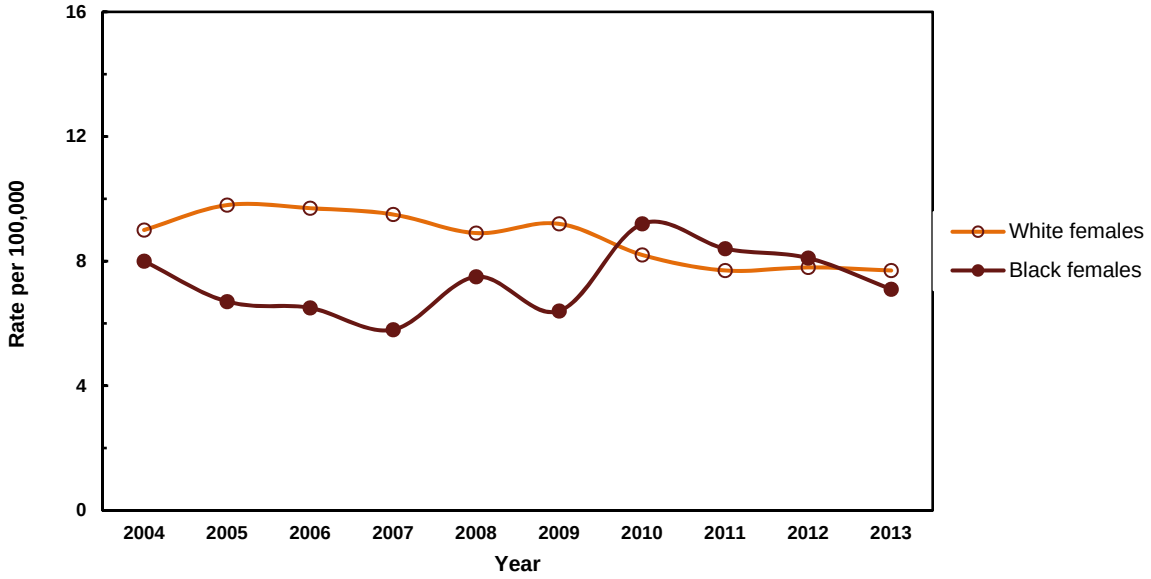
Year	All Females*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**713**	**7.7** (7.1-8.3)	**642**	**7.7** (7.1-8.3)	**54**	**7.1** (5.2-9.0)
2012	**721**	**7.8** (7.2-8.4)	**644**	**7.8** (7.2-8.4)	**61**	**8.1** (6.1-10.1)
2011	**682**	**7.6** (7.0-8.2)	**620**	**7.7** (7.1-8.3)	**61**	**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)

* 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, 2004-2013



Cancer of the Ovary: MORTALITY

TABLE 14-E

Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2009-2013

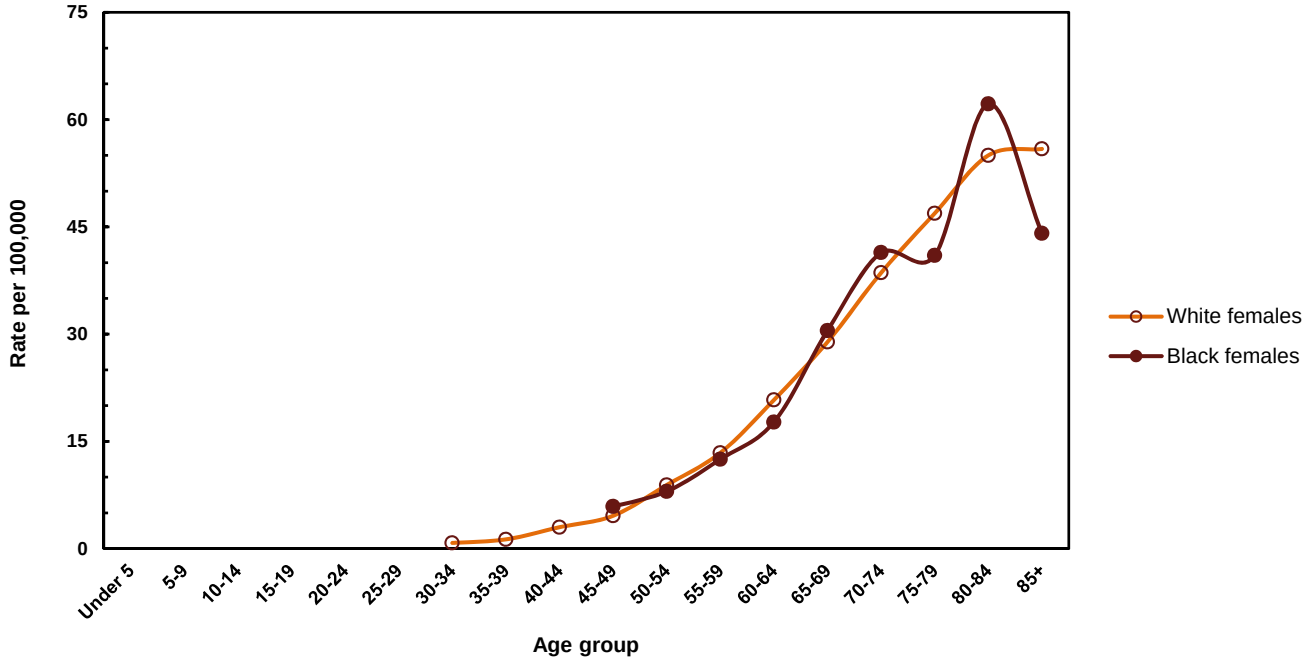
Age Group	All Females*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**3,622**	**11.1**	**3,295**	**12.1**	**281**	**7.6**
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	4	ND	2	ND	1	ND
20-24	4	ND	4	ND	0	ND
25-29	6	ND	4	ND	1	ND
30-34	14	0.7	12	0.8	2	ND
35-39	21	1.1	19	1.3	2	ND
40-44	60	2.8	53	3.0	5	ND
45-49	108	4.7	91	4.6	15	5.9
50-54	214	8.7	188	8.9	20	8.0
55-59	301	13.2	269	13.4	27	12.5
60-64	401	20.2	364	20.8	31	17.7
65-69	443	28.7	399	28.9	38	30.5
70-74	470	38.4	424	38.6	40	41.4
75-79	476	46.1	439	46.9	32	41.0
80-84	502	55.1	460	55.0	38	62.2
85+	598	54.8	567	55.9	29	44.1

* 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 14-E

Average Annual Age-Specific Death Rates by Race
Pennsylvania Female Residents, 2009-2013



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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**5,186**	**12.4**	(12.1-12.7)				
Adams	**32**	**9.2**	(6.0-12.4)	Juniata	**11**	**ND**	
Allegheny	**535**	**12.1**	(11.1-13.1)	Lackawanna	**104**	**14.0**	(11.3-16.7)
Armstrong	**28**	**11.0**	(6.9-15.1)	Lancaster	**221**	**13.3**	(11.5-15.1)
Beaver	**80**	**13.0**	(10.2-15.8)	Lawrence	**41**	**12.8**	(8.9-16.7)
Bedford	**20**	**10.7**	(6.0-15.4)	Lebanon	**44**	**9.9**	(7.0-12.8)
Berks	**147**	**11.4**	(9.6-13.2)	Lehigh	**132**	**11.7**	(9.7-13.7)
Blair	**52**	**11.6**	(8.4-14.8)	Luzerne	**154**	**14.1**	(11.9-16.3)
Bradford	**28**	**13.0**	(8.2-17.8)	Lycoming	**49**	**13.0**	(9.4-16.6)
Bucks	**287**	**14.3**	(12.6-16.0)	McKean	**15**	**ND**	
Butler	**79**	**12.6**	(9.8-15.4)	Mercer	**49**	**12.5**	(9.0-16.0)
Cambria	**70**	**13.3**	(10.2-16.4)	Mifflin	**20**	**12.2**	(6.9-17.5)
Cameron	**0**	**ND**		Monroe	**71**	**14.0**	(10.7-17.3)
Carbon	**27**	**12.8**	(8.0-17.6)	Montgomery	**385**	**14.7**	(13.2-16.2)
Centre	**41**	**10.4**	(7.2-13.6)	Montour	**8**	**ND**	
Chester	**213**	**13.9**	(12.0-15.8)	Northampton	**141**	**14.8**	(12.4-17.2)
Clarion	**19**	**ND**		Northumberland	**42**	**12.7**	(8.9-16.5)
Clearfield	**41**	**14.2**	(9.9-18.5)	Perry	**17**	**ND**	
Clinton	**14**	**ND**		Philadelphia	**503**	**11.2**	(10.2-12.2)
Columbia	**29**	**13.8**	(8.8-18.8)	Pike	**23**	**11.4**	(6.7-16.1)
Crawford	**32**	**11.1**	(7.3-14.9)	Potter	**6**	**ND**	
Cumberland	**83**	**10.8**	(8.5-13.1)	Schuylkill	**49**	**8.9**	(6.4-11.4)
Dauphin	**85**	**10.5**	(8.3-12.7)	Snyder	**18**	**ND**	
Delaware	**221**	**12.2**	(10.6-13.8)	Somerset	**37**	**13.6**	(9.2-18.0)
Elk	**11**	**ND**		Sullivan	**3**	**ND**	
Erie	**120**	**14.0**	(11.5-16.5)	Susquehanna	**18**	**ND**	
Fayette	**72**	**14.0**	(10.8-17.2)	Tioga	**26**	**20.4**	(12.6-28.2)
Forest	**2**	**ND**		Union	**8**	**ND**	
Franklin	**55**	**11.4**	(8.4-14.4)	Venango	**28**	**14.6**	(9.2-20.0)
Fulton	**2**	**ND**		Warren	**25**	**18.3**	(11.1-25.5)
Greene	**11**	**ND**		Washington	**78**	**10.0**	(7.8-12.2)
Huntingdon	**13**	**ND**		Wayne	**26**	**14.4**	(8.9-19.9)
Indiana	**22**	**7.6**	(4.4-10.8)	Westmoreland	**179**	**13.0**	(11.1-14.9)
Jefferson	**18**	**ND**		Wyoming	**17**	**ND**	
				York	**149**	**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). 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, 2009-2013

County	Females			County	Females		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	3,622	8.0	(7.7-8.3)				
Adams	30	8.2	(5.3-11.1)	Juniata	3	ND	
Allegheny	405	8.3	(7.5-9.1)	Lackawanna	73	8.8	(6.8-10.8)
Armstrong	31	11.2	(7.3-15.1)	Lancaster	145	8.0	(6.7-9.3)
Beaver	47	6.7	(4.8-8.6)	Lawrence	26	7.5	(4.6-10.4)
Bedford	12	ND		Lebanon	42	7.9	(5.5-10.3)
Berks	95	7.1	(5.7-8.5)	Lehigh	95	7.4	(5.9-8.9)
Blair	43	8.3	(5.8-10.8)	Luzerne	99	7.9	(6.3-9.5)
Bradford	19	ND		Lycoming	37	8.5	(5.8-11.2)
Bucks	166	7.7	(6.5-8.9)	McKean	11	ND	
Butler	39	5.9	(4.0-7.8)	Mercer	45	9.9	(7.0-12.8)
Cambria	62	10.3	(7.7-12.9)	Mifflin	10	ND	
Cameron	1	ND		Monroe	38	7.8	(5.3-10.3)
Carbon	25	10.5	(6.4-14.6)	Montgomery	244	8.6	(7.5-9.7)
Centre	38	9.5	(6.5-12.5)	Montour	7	ND	
Chester	147	9.5	(8.0-11.0)	Northampton	71	6.9	(5.3-8.5)
Clarion	5	ND		Northumberland	31	8.7	(5.6-11.8)
Clearfield	24	7.7	(4.6-10.8)	Perry	7	ND	
Clinton	7	ND		Philadelphia	344	7.5	(6.7-8.3)
Columbia	15	ND		Pike	13	ND	
Crawford	32	10.1	(6.6-13.6)	Potter	6	ND	
Cumberland	67	8.1	(6.2-10.0)	Schuylkill	47	7.4	(5.3-9.5)
Dauphin	60	6.9	(5.2-8.6)	Snyder	9	ND	
Delaware	168	8.7	(7.4-10.0)	Somerset	21	6.9	(3.9-9.9)
Elk	9	ND		Sullivan	2	ND	
Erie	90	9.6	(7.6-11.6)	Susquehanna	10	ND	
Fayette	55	10.2	(7.5-12.9)	Tioga	11	ND	
Forest	0	ND		Union	14	ND	
Franklin	38	7.3	(5.0-9.6)	Venango	20	8.8	(4.9-12.7)
Fulton	0	ND		Warren	14	ND	
Greene	10	ND		Washington	93	10.9	(8.7-13.1)
Huntingdon	9	ND		Wayne	12	ND	
Indiana	21	6.5	(3.7-9.3)	Westmoreland	140	9.0	(7.5-10.5)
Jefferson	11	ND		Wyoming	13	ND	
				York	88	6.3	(5.0-7.6)

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 Prostate

Data Highlights

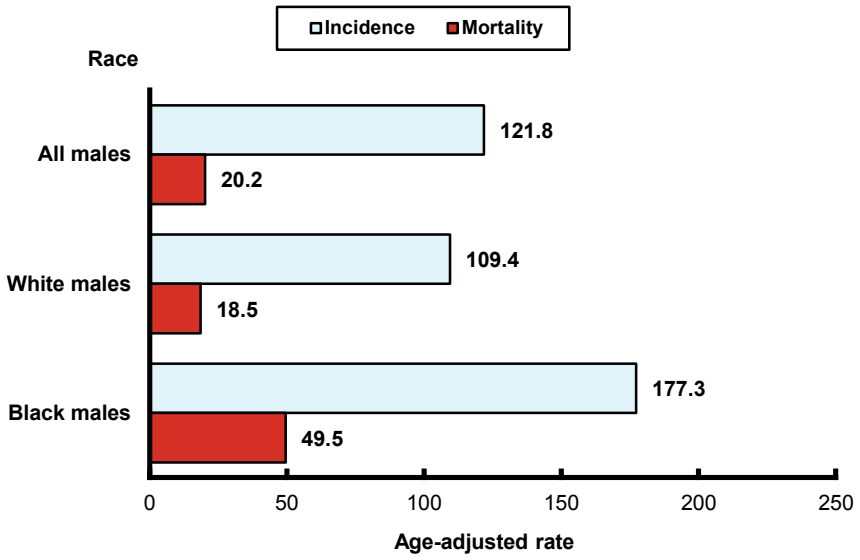
Cancer of the prostate accounted for the largest number (7,973) and percentage (20.9) of all invasive cancer cases diagnosed among male residents in 2013. The average annual (2009-2013) age-adjusted incidence rate for prostate cancer among black males was 177.3 per 100,000, approximately 62 percent higher than the rate of 109.4 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. The rate increased slightly in 2013 to 93.4 per 100,000. 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 2009 to 2013 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 2013, 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 19 percent of prostate cancers in 2013 were diagnosed at a late stage (regional or distant).

There were 1,359 resident deaths in 2013 due to prostate cancer, an increase from 2012, when there were 1,282 resident deaths. The average annual (2009-2013) age-adjusted death rate among black males (49.5 per 100,000) was over twice the rate for white males (18.5). As expected, the average annual (2009-2013) 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 blacks and whites have declined during the period 2004-2013.

FIGURE 15
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Male Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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

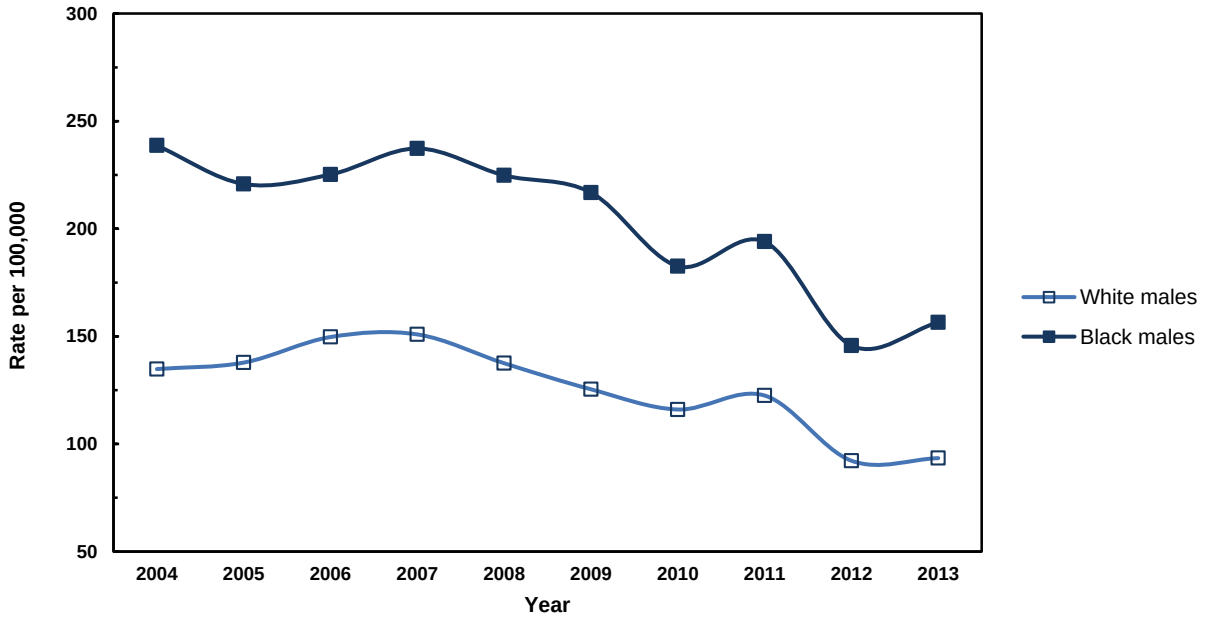
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Male Residents, 2004-2013

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**7,973**	**101.2** (99.0-103.4)	**6,625**	**93.4** (91.2-95.6)	**927**	**156.5** (146.4-166.6)
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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Prostate: INCIDENCE (Invasive)

TABLE 15-B

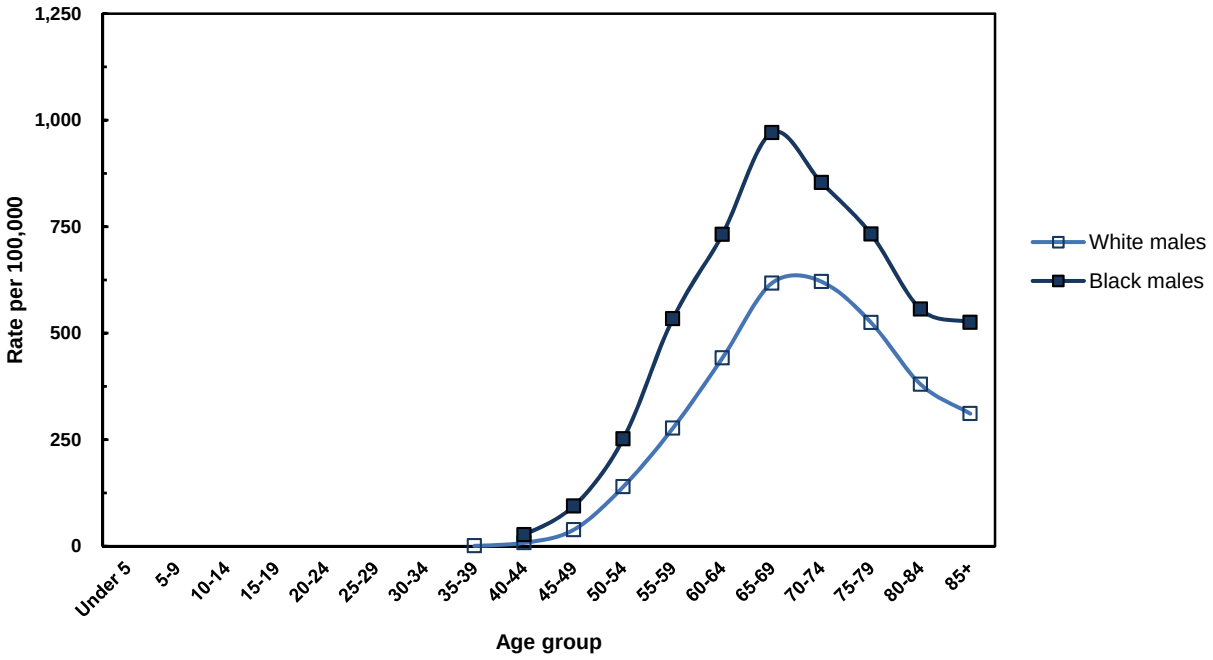
Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2009-2013

Age Group	All Males	White	Black
Total	**146.7**	**142.3**	**143.6**
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	0.8	0.8	ND
40-44	10.2	7.9	26.8
45-49	45.1	38.5	94.0
50-54	154.1	139.6	251.6
55-59	309.0	276.8	533.8
60-64	485.6	441.6	731.8
65-69	679.3	617.3	970.6
70-74	687.9	620.9	853.3
75-79	589.9	524.7	732.4
80-84	428.0	379.7	556.3
85+	348.9	311.1	525.2

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 15-B

Average Annual Age-Specific Incidence Rates by Race
Pennsylvania Male Residents, 2009-2013



Cancer of the Prostate: INCIDENCE (Invasive)

TABLE 15-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Male Residents, 2009-2013

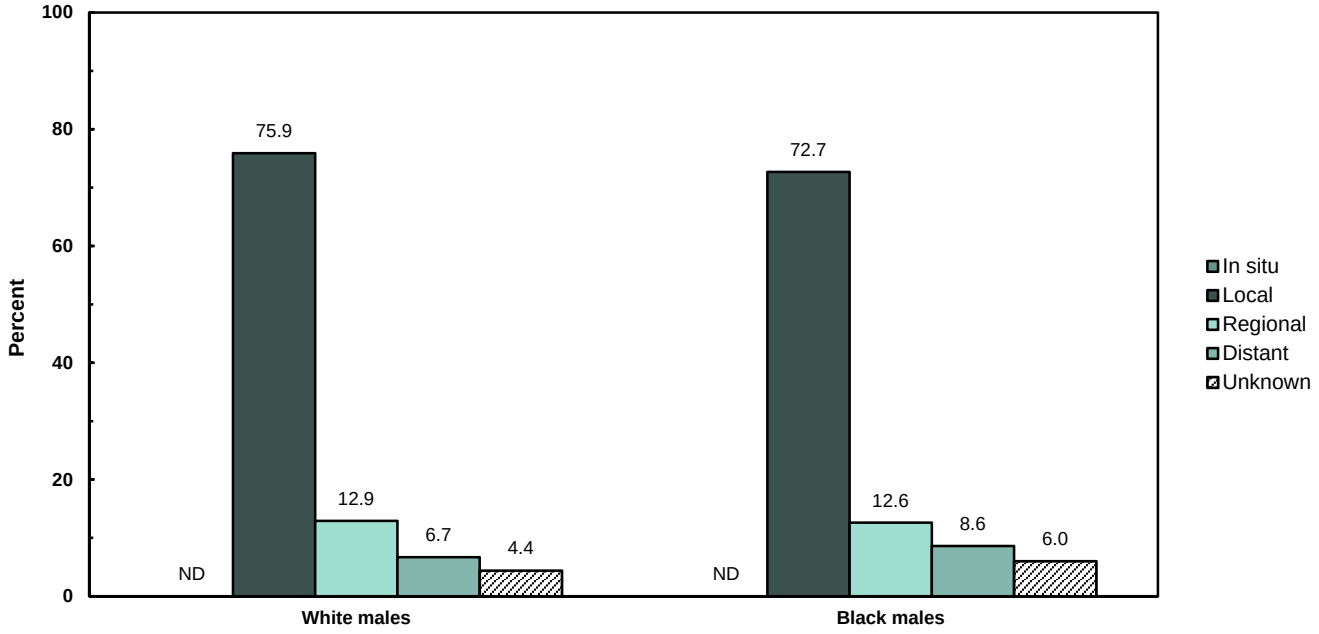
Age Group	All Males*	White	Black
Total	**45,481**	**36,960**	**4,887**
Under 5	2	2	0
5-9	0	0	0
10-14	0	0	0
15-19	0	0	0
20-24	0	0	0
25-29	0	0	0
30-34	4	2	0
35-39	14	12	2
40-44	213	139	60
45-49	1,019	746	214
50-54	3,639	2,884	547
55-59	6,742	5,356	973
60-64	8,924	7,284	1,006
65-69	9,241	7,623	883
70-74	6,903	5,679	553
75-79	4,499	3,679	339
80-84	2,497	2,065	172
85+	1,782	1,487	138

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 7,732 - 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, 2004-2013

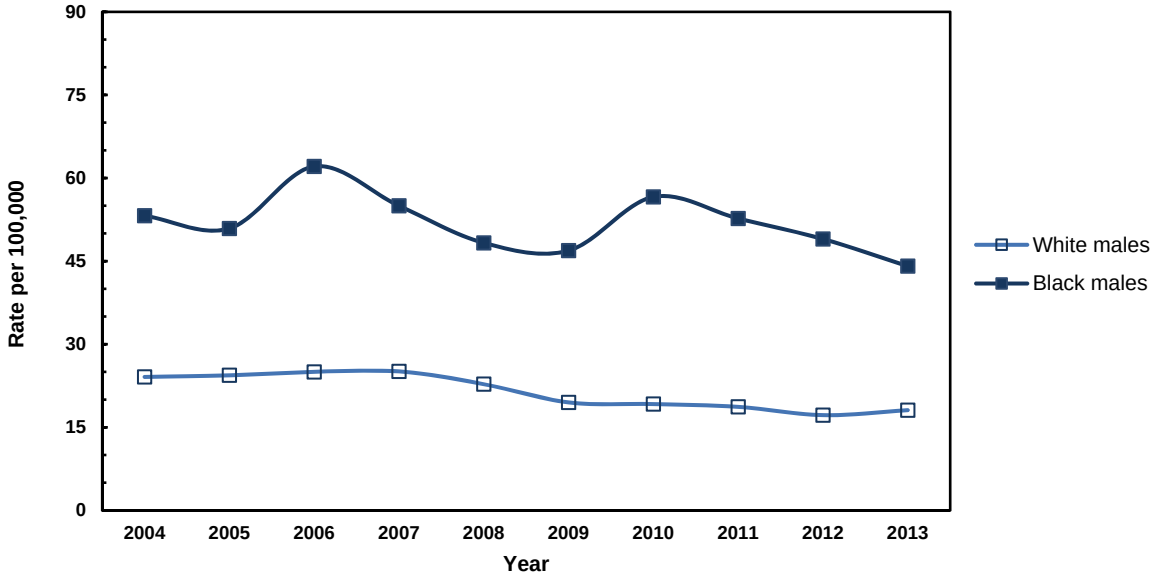
Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,359**	**19.6** (18.6-20.6)	**1,147**	**18.1** (17.1-19.1)	**192**	**44.1** (37.9-50.3)
2012	**1,282**	**19.0** (18.0-20.0)	**1,073**	**17.2** (16.2-18.2)	**194**	**49.0** (42.1-55.9)
2011	**1,364**	**20.6** (19.5-21.7)	**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)

* 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, 2004-2013



Cancer of the Prostate: MORTALITY

TABLE 15-E

Number of Deaths and Average Annual Age-Specific Death Rates by Race
Pennsylvania Male Residents, 2009-2013

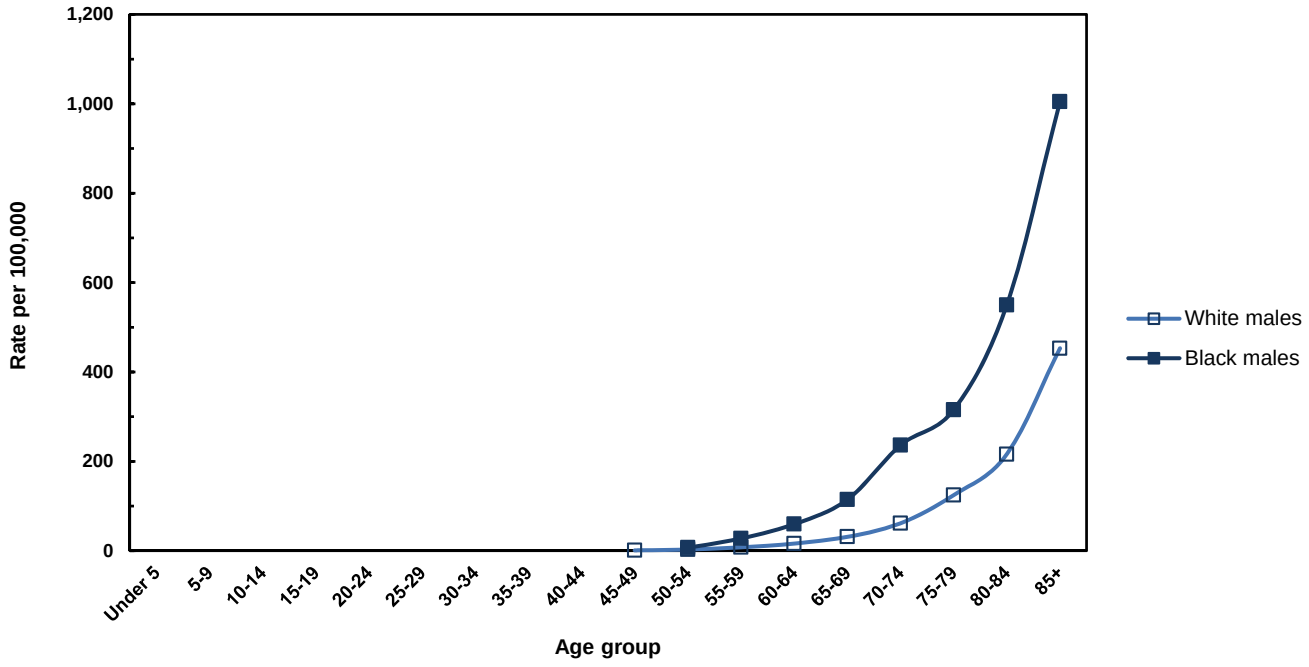
Age Group	All Males*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**6,706**	**21.6**	**5,655**	**21.8**	**988**	**29.0**
Under 5	0	ND	0	ND	0	ND
5-9	0	ND	0	ND	0	ND
10-14	0	ND	0	ND	0	ND
15-19	0	ND	0	ND	0	ND
20-24	0	ND	0	ND	0	ND
25-29	0	ND	0	ND	0	ND
30-34	1	ND	1	ND	0	ND
35-39	3	ND	3	ND	0	ND
40-44	5	ND	3	ND	2	ND
45-49	19	0.8	17	0.9	2	ND
50-54	71	3.0	55	2.7	15	6.9
55-59	207	9.5	151	7.8	50	27.4
60-64	349	19.0	264	16.0	82	59.6
65-69	501	36.8	387	31.3	104	114.3
70-74	720	71.7	562	61.4	153	236.1
75-79	1,029	134.9	873	124.5	146	315.4
80-84	1,360	233.1	1,174	215.9	170	549.8
85+	2,441	477.9	2,165	452.9	264	1,004.7

* 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, 2009-2013



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, 2009-2013

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**45,481**	**121.8**	(120.7-122.9)				
Adams	**295**	**93.3**	(82.7-103.9)	Juniata	**44**	**56.1**	(39.5-72.7)
Allegheny	**4,270**	**117.9**	(114.4-121.4)	Lackawanna	**762**	**113.7**	(105.6-121.8)
Armstrong	**260**	**109.4**	(96.1-122.7)	Lancaster	**1,633**	**110.2**	(104.9-115.5)
Beaver	**539**	**93.9**	(86.0-101.8)	Lawrence	**301**	**99.9**	(88.6-111.2)
Bedford	**227**	**130.8**	(113.8-147.8)	Lebanon	**467**	**111.7**	(101.6-121.8)
Berks	**1,370**	**118.1**	(111.8-124.4)	Lehigh	**1,187**	**119.5**	(112.7-126.3)
Blair	**394**	**97.7**	(88.1-107.3)	Luzerne	**1,139**	**112.1**	(105.6-118.6)
Bradford	**254**	**117.3**	(102.9-131.7)	Lycoming	**426**	**117.5**	(106.3-128.7)
Bucks	**2,487**	**129.3**	(124.2-134.4)	McKean	**152**	**108.2**	(91.0-125.4)
Butler	**853**	**152.7**	(142.5-162.9)	Mercer	**525**	**138.8**	(126.9-150.7)
Cambria	**572**	**116.1**	(106.6-125.6)	Mifflin	**155**	**99.1**	(83.5-114.7)
Cameron	**41**	**201.0**	(139.5-262.5)	Monroe	**553**	**116.4**	(106.7-126.1)
Carbon	**250**	**112.2**	(98.3-126.1)	Montgomery	**3,159**	**135.9**	(131.2-140.6)
Centre	**442**	**123.8**	(112.3-135.3)	Montour	**92**	**155.2**	(123.5-186.9)
Chester	**1,836**	**130.7**	(124.7-136.7)	Northampton	**1,269**	**144.1**	(136.2-152.0)
Clarion	**173**	**138.5**	(117.9-159.1)	Northumberland	**408**	**129.7**	(117.1-142.3)
Clearfield	**347**	**129.4**	(115.8-143.0)	Perry	**112**	**77.8**	(63.4-92.2)
Clinton	**123**	**102.1**	(84.1-120.1)	Philadelphia	**5,273**	**154.9**	(150.7-159.1)
Columbia	**240**	**121.2**	(105.9-136.5)	Pike	**210**	**102.0**	(88.2-115.8)
Crawford	**398**	**136.9**	(123.5-150.3)	Potter	**90**	**135.6**	(107.6-163.6)
Cumberland	**621**	**87.5**	(80.6-94.4)	Schuylkill	**475**	**96.5**	(87.8-105.2)
Dauphin	**754**	**100.6**	(93.4-107.8)	Snyder	**129**	**107.9**	(89.3-126.5)
Delaware	**2,185**	**145.1**	(139.0-151.2)	Somerset	**285**	**103.7**	(91.7-115.7)
Elk	**220**	**194.3**	(168.6-220.0)	Sullivan	**36**	**127.0**	(85.5-168.5)
Erie	**1,026**	**129.4**	(121.5-137.3)	Susquehanna	**202**	**125.0**	(107.8-142.2)
Fayette	**440**	**95.1**	(86.2-104.0)	Tioga	**166**	**110.2**	(93.4-127.0)
Forest	**31**	**100.6**	(65.2-136.0)	Union	**151**	**115.9**	(97.4-134.4)
Franklin	**510**	**109.6**	(100.1-119.1)	Venango	**212**	**113.0**	(97.8-128.2)
Fulton	**52**	**100.0**	(72.8-127.2)	Warren	**222**	**144.6**	(125.6-163.6)
Greene	**101**	**81.4**	(65.5-97.3)	Washington	**750**	**108.4**	(100.6-116.2)
Huntingdon	**149**	**96.6**	(81.1-112.1)	Wayne	**190**	**93.1**	(79.9-106.3)
Indiana	**304**	**112.4**	(99.8-125.0)	Westmoreland	**1,330**	**104.0**	(98.4-109.6)
Jefferson	**223**	**149.1**	(129.5-168.7)	Wyoming	**117**	**119.7**	(98.0-141.4)
				York	**1,272**	**102.0**	(96.4-107.6)

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). 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, 2009-2013

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**6,706**	**20.2**	(19.7-20.7)				
Adams	**49**	**18.0**	(13.0-23.0)	Juniata	**11**	**ND**	
Allegheny	**700**	**19.9**	(18.4-21.4)	Lackawanna	**101**	**16.5**	(13.3-19.7)
Armstrong	**32**	**14.7**	(9.6-19.8)	Lancaster	**247**	**17.7**	(15.5-19.9)
Beaver	**129**	**23.5**	(19.4-27.6)	Lawrence	**47**	**16.5**	(11.8-21.2)
Bedford	**23**	**14.2**	(8.4-20.0)	Lebanon	**71**	**18.7**	(14.4-23.0)
Berks	**196**	**18.7**	(16.1-21.3)	Lehigh	**153**	**17.2**	(14.5-19.9)
Blair	**83**	**22.1**	(17.3-26.9)	Luzerne	**172**	**18.8**	(16.0-21.6)
Bradford	**40**	**21.7**	(15.0-28.4)	Lycoming	**69**	**21.3**	(16.3-26.3)
Bucks	**282**	**18.3**	(16.2-20.4)	McKean	**24**	**18.3**	(11.0-25.6)
Butler	**80**	**16.3**	(12.7-19.9)	Mercer	**71**	**19.4**	(14.9-23.9)
Cambria	**81**	**17.9**	(14.0-21.8)	Mifflin	**24**	**17.0**	(10.2-23.8)
Cameron	**4**	**ND**		Monroe	**68**	**19.1**	(14.6-23.6)
Carbon	**28**	**15.4**	(9.7-21.1)	Montgomery	**417**	**19.6**	(17.7-21.5)
Centre	**42**	**14.4**	(10.0-18.8)	Montour	**11**	**ND**	
Chester	**207**	**19.1**	(16.5-21.7)	Northampton	**156**	**19.5**	(16.4-22.6)
Clarion	**19**	**ND**		Northumberland	**44**	**15.2**	(10.7-19.7)
Clearfield	**44**	**18.7**	(13.2-24.2)	Perry	**22**	**21.1**	(12.3-29.9)
Clinton	**21**	**18.8**	(10.8-26.8)	Philadelphia	**936**	**32.1**	(30.0-34.2)
Columbia	**40**	**22.9**	(15.8-30.0)	Pike	**39**	**23.0**	(15.8-30.2)
Crawford	**64**	**26.4**	(19.9-32.9)	Potter	**11**	**ND**	
Cumberland	**104**	**17.0**	(13.7-20.3)	Schuylkill	**97**	**21.6**	(17.3-25.9)
Dauphin	**104**	**16.9**	(13.7-20.1)	Snyder	**25**	**24.6**	(15.0-34.2)
Delaware	**287**	**20.9**	(18.5-23.3)	Somerset	**45**	**17.7**	(12.5-22.9)
Elk	**21**	**19.9**	(11.4-28.4)	Sullivan	**11**	**ND**	
Erie	**148**	**21.6**	(18.1-25.1)	Susquehanna	**30**	**24.0**	(15.4-32.6)
Fayette	**88**	**21.1**	(16.7-25.5)	Tioga	**22**	**17.0**	(9.9-24.1)
Forest	**6**	**ND**		Union	**25**	**22.6**	(13.7-31.5)
Franklin	**68**	**16.2**	(12.3-20.1)	Venango	**34**	**20.7**	(13.7-27.7)
Fulton	**8**	**ND**		Warren	**23**	**16.6**	(9.8-23.4)
Greene	**16**	**ND**		Washington	**128**	**21.0**	(17.4-24.6)
Huntingdon	**21**	**17.9**	(10.2-25.6)	Wayne	**35**	**21.0**	(14.0-28.0)
Indiana	**48**	**19.7**	(14.1-25.3)	Westmoreland	**225**	**19.3**	(16.8-21.8)
Jefferson	**27**	**18.7**	(11.6-25.8)	Wyoming	**21**	**30.4**	(17.4-43.4)
				York	**181**	**17.3**	(14.8-19.8)

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 follow the primary site definitions used by the National Cancer Institute's SEER program.

Cancer of the Testis

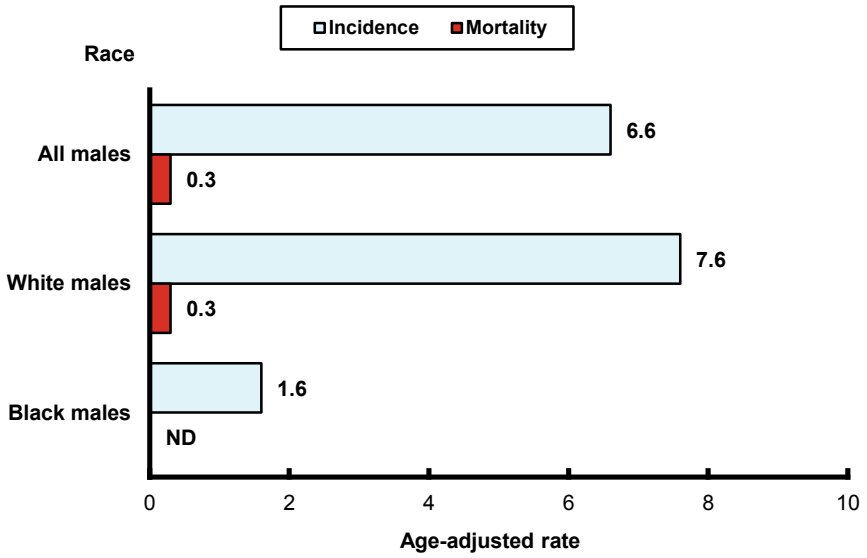
Data Highlights

The 2009-2013 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 2013, there were 374 invasive cases of testicular cancer diagnosed among male residents of Pennsylvania, resulting in an age-adjusted annual rate of 6.4, about 4 percent lower than the 2012 rate of 6.7. During the 10-year period of 2004-2013, the annual age-adjusted incidence rates for white males varied from a low of 6.6 in 2007 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 357 cases or 95 percent of all testicular cases in 2013. 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 45 years of age in 2013. The average annual age-specific incidence rates for testicular cancer during the five-year period of 2009-2013 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 2009-2013, approximately 92 percent of testicular cancers were diagnosed among males between the ages of 15 and 54. In 2013, the majority of testicular cases (68 percent) were diagnosed at an early stage (in situ or local) of the disease.

There were 11 deaths due to cancer of the testis among Pennsylvania men in 2013. All 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 2009-2013 period, about 72 percent of the deaths were for men under age 55.

FIGURE 16
Average Annual Age-Adjusted Incidence and Death Rates*
by Race, Pennsylvania Male Residents, 2009-2013



* rate per 100,000 using the 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

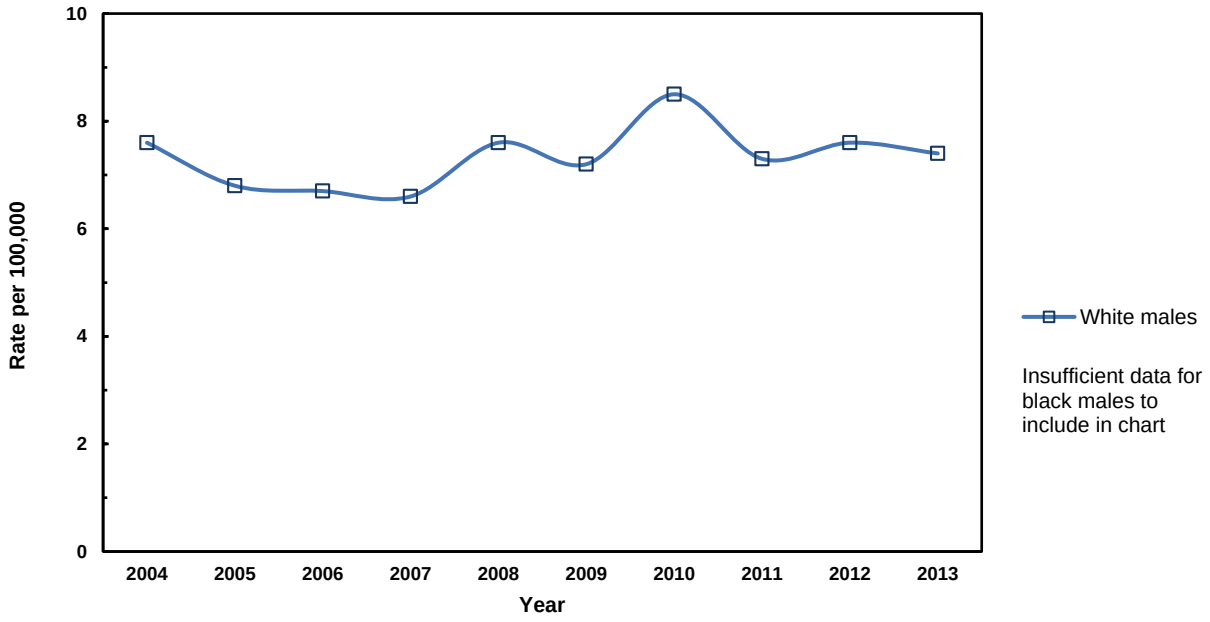
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Race and Year, Pennsylvania Male Residents, 2004-2013

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	374	6.4 (5.8-7.0)	357	7.4 (6.6-8.2)	10	ND
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

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Testis: INCIDENCE (Invasive)

TABLE 16-B

Average Annual Age-Specific Incidence Rates by Race

Pennsylvania Male Residents, 2009-2013

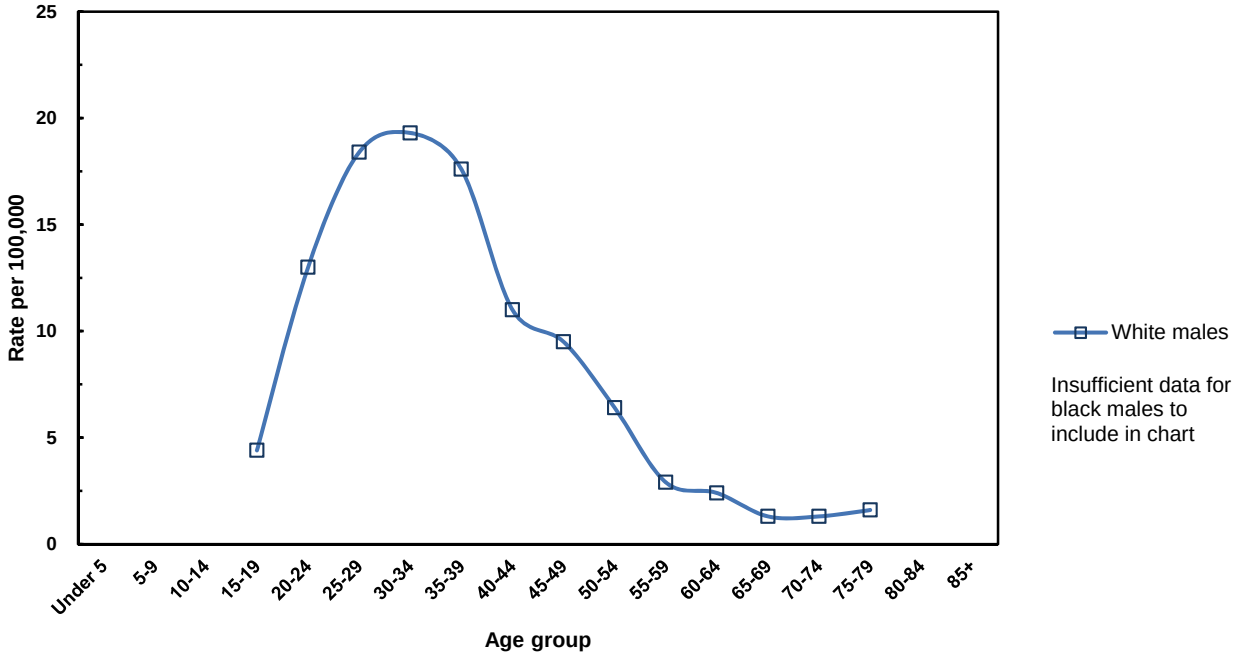
Age Group	All Males	White	Black
Total	**6.3**	**7.1**	**1.6**
Under 5	ND	ND	ND
5-9	ND	ND	ND
10-14	ND	ND	ND
15-19	3.7	4.4	ND
20-24	11.0	13.0	ND
25-29	15.6	18.4	ND
30-34	16.6	19.3	ND
35-39	15.2	17.6	4.7
40-44	10.1	11.0	ND
45-49	8.6	9.5	ND
50-54	5.8	6.4	ND
55-59	2.8	2.9	ND
60-64	2.2	2.4	ND
65-69	1.2	1.3	ND
70-74	1.3	1.3	ND
75-79	1.4	1.6	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, 2009-2013



Cancer of the Testis: INCIDENCE (Invasive)

TABLE 16-C

Total Number of Cancer Cases by Age and Race
Pennsylvania Male Residents, 2009-2013

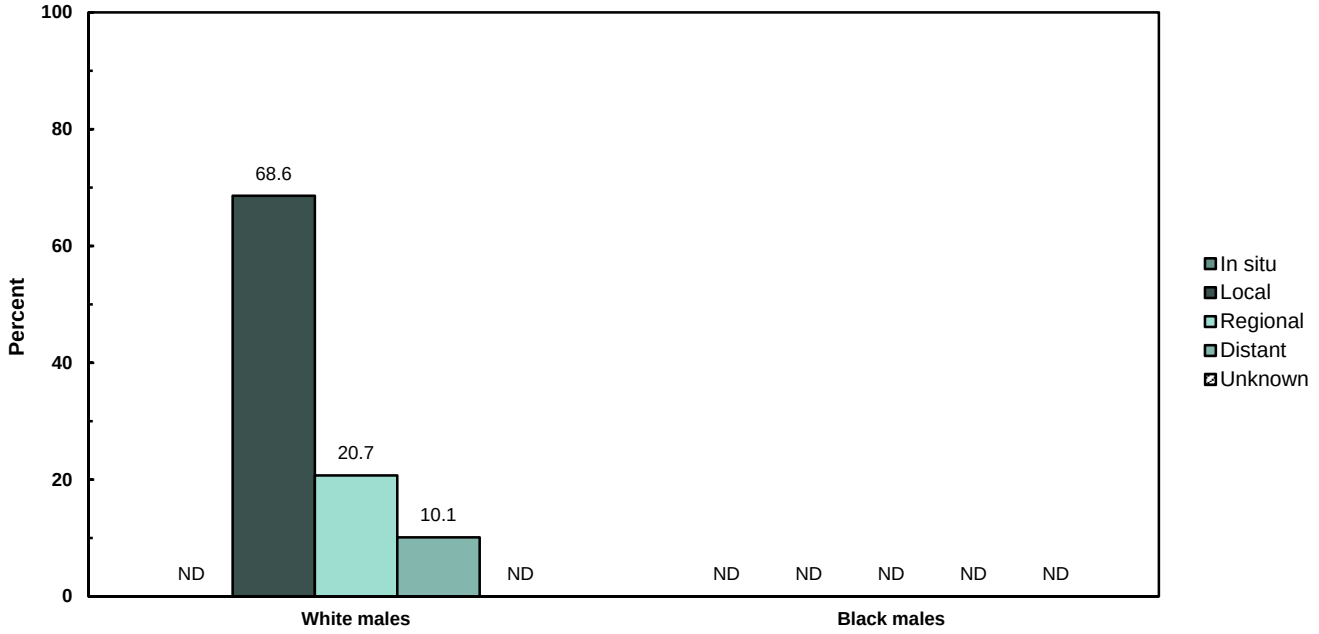
Age Group	All Males*	White	Black
Total	**1,943**	**1,840**	**54**
Under 5	7	7	0
5-9	3	2	1
10-14	4	4	0
15-19	83	78	3
20-24	248	231	6
25-29	313	298	7
30-34	314	298	6
35-39	282	268	10
40-44	210	194	9
45-49	194	184	5
50-54	136	133	3
55-59	61	57	3
60-64	40	39	1
65-69	16	16	0
70-74	13	12	0
75-79	11	11	0
80-84	2	2	0
85+	6	6	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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 374 - 100.0%

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, 2004-2013

Year	All Males*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	11	ND	11	ND	0	ND
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

* 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, 2004-2013

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, 2009-2013

Age Group	All Males*		White		Black	
	No.	Rate	No.	Rate	No.	Rate
Total*	**81**	**0.3**	**76**	**0.3**	**4**	**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	2	ND	2	ND	0	ND
20-24	9	ND	9	ND	0	ND
25-29	10	0.5	10	0.6	0	ND
30-34	7	ND	7	ND	0	ND
35-39	8	ND	6	ND	1	ND
40-44	2	ND	2	ND	0	ND
45-49	11	0.5	10	0.5	1	ND
50-54	9	ND	8	ND	1	ND
55-59	8	ND	8	ND	0	ND
60-64	3	ND	3	ND	0	ND
65-69	1	ND	1	ND	0	ND
70-74	3	ND	3	ND	0	ND
75-79	1	ND	1	ND	0	ND
80-84	3	ND	2	ND	1	ND
85+	4	ND	4	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, 2009-2013

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, 2009-2013

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	1,943	6.6	(6.3-6.9)				
Adams	11	ND		Juniata	1	ND	
Allegheny	186	6.6	(5.7-7.5)	Lackawanna	33	6.9	(4.5-9.3)
Armstrong	10	ND		Lancaster	89	7.4	(5.9-8.9)
Beaver	37	10.2	(6.9-13.5)	Lawrence	11	ND	
Bedford	10	ND		Lebanon	16	ND	
Berks	59	5.9	(4.4-7.4)	Lehigh	47	5.8	(4.1-7.5)
Blair	16	ND		Luzerne	47	6.2	(4.4-8.0)
Bradford	14	ND		Lycoming	13	ND	
Bucks	125	8.8	(7.3-10.3)	McKean	6	ND	
Butler	27	6.6	(4.1-9.1)	Mercer	20	8.1	(4.6-11.6)
Cambria	30	9.5	(6.1-12.9)	Mifflin	11	ND	
Cameron	0	ND		Monroe	22	5.4	(3.1-7.7)
Carbon	10	ND		Montgomery	133	7.4	(6.1-8.7)
Centre	15	ND		Montour	1	ND	
Chester	83	7.3	(5.7-8.9)	Northampton	49	6.9	(5.0-8.8)
Clarion	3	ND		Northumberland	15	ND	
Clearfield	12	ND		Perry	7	ND	
Clinton	4	ND		Philadelphia	161	4.2	(3.6-4.8)
Columbia	11	ND		Pike	10	ND	
Crawford	13	ND		Potter	1	ND	
Cumberland	36	6.2	(4.2-8.2)	Schuylkill	26	7.2	(4.4-10.0)
Dauphin	39	6.5	(4.5-8.5)	Snyder	7	ND	
Delaware	85	6.7	(5.3-8.1)	Somerset	10	ND	
Elk	6	ND		Sullivan	2	ND	
Erie	42	6.7	(4.7-8.7)	Susquehanna	10	ND	
Fayette	22	7.1	(4.1-10.1)	Tioga	5	ND	
Forest	3	ND		Union	7	ND	
Franklin	22	6.7	(3.9-9.5)	Venango	13	ND	
Fulton	0	ND		Warren	5	ND	
Greene	4	ND		Washington	40	9.0	(6.2-11.8)
Huntingdon	11	ND		Wayne	5	ND	
Indiana	14	ND		Westmoreland	73	9.6	(7.4-11.8)
Jefferson	4	ND		Wyoming	3	ND	
				York	80	8.0	(6.2-9.8)

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). 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, 2009-2013

County	Males			County	Males		
	No.	Rate	(CI)		No.	Rate	(CI)
All counties	**81**	**0.3**	(0.2-0.4)				
Adams	**2**	**ND**		Juniata	**0**	**ND**	
Allegheny	**8**	**ND**		Lackawanna	**0**	**ND**	
Armstrong	**1**	**ND**		Lancaster	**3**	**ND**	
Beaver	**1**	**ND**		Lawrence	**0**	**ND**	
Bedford	**0**	**ND**		Lebanon	**0**	**ND**	
Berks	**2**	**ND**		Lehigh	**2**	**ND**	
Blair	**0**	**ND**		Luzerne	**6**	**ND**	
Bradford	**0**	**ND**		Lycoming	**0**	**ND**	
Bucks	**2**	**ND**		McKean	**0**	**ND**	
Butler	**0**	**ND**		Mercer	**1**	**ND**	
Cambria	**3**	**ND**		Mifflin	**0**	**ND**	
Cameron	**0**	**ND**		Monroe	**2**	**ND**	
Carbon	**0**	**ND**		Montgomery	**6**	**ND**	
Centre	**1**	**ND**		Montour	**0**	**ND**	
Chester	**3**	**ND**		Northampton	**2**	**ND**	
Clarion	**0**	**ND**		Northumberland	**1**	**ND**	
Clearfield	**0**	**ND**		Perry	**0**	**ND**	
Clinton	**1**	**ND**		Philadelphia	**9**	**ND**	
Columbia	**0**	**ND**		Pike	**0**	**ND**	
Crawford	**2**	**ND**		Potter	**1**	**ND**	
Cumberland	**2**	**ND**		Schuylkill	**1**	**ND**	
Dauphin	**0**	**ND**		Snyder	**1**	**ND**	
Delaware	**5**	**ND**		Somerset	**0**	**ND**	
Elk	**1**	**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	**0**	**ND**	
Fulton	**0**	**ND**		Warren	**0**	**ND**	
Greene	**0**	**ND**		Washington	**1**	**ND**	
Huntingdon	**1**	**ND**		Wayne	**1**	**ND**	
Indiana	**2**	**ND**		Westmoreland	**3**	**ND**	
Jefferson	**0**	**ND**		Wyoming	**0**	**ND**	
				York	**2**	**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

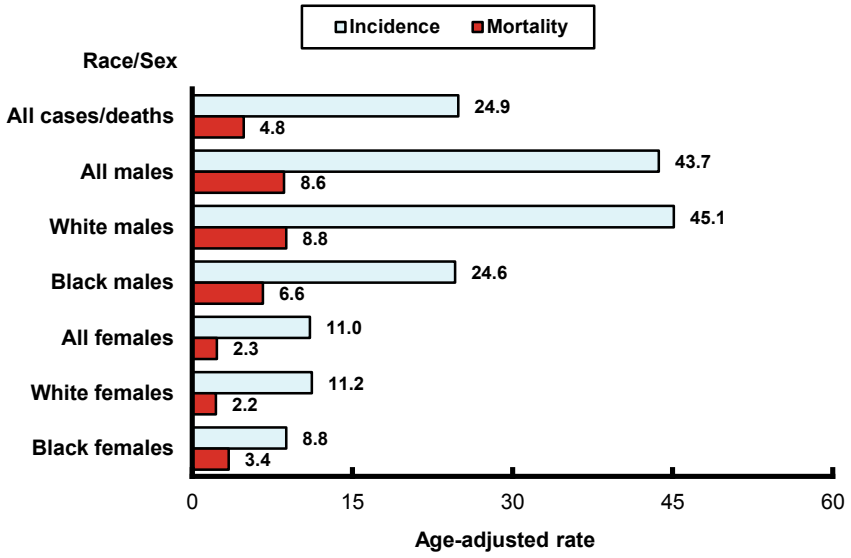
Data Highlights

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, 2009-2013, the average annual age-adjusted incidence rate for urinary bladder cancer was highest among white males (45.1 per 100,000) compared to 24.6 for black males and 11.0 for all females. In 2013, there were 4,198 new cases of urinary bladder cancer diagnosed among Pennsylvania residents, resulting in an age-adjusted rate of 25.3 — an increase from 2012, when there were 3,993 new cases and an age-adjusted rate of 24.4. The annual age-adjusted incidence rates for the period of 2004-2013 have not changed much among white males or white females. There was no discernible trend among black males or black females. During the five-year period, approximately 92 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 2009-2013 for age groups over 50. In 2013, 84 percent of urinary bladder cancers were diagnosed at early stages (in situ or local) of the disease, and about 12 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 2013, there were 821 deaths among Pennsylvania residents — an increase from the previous year, when there were 802 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 2004 and 2013, 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).

FIGURE 17
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

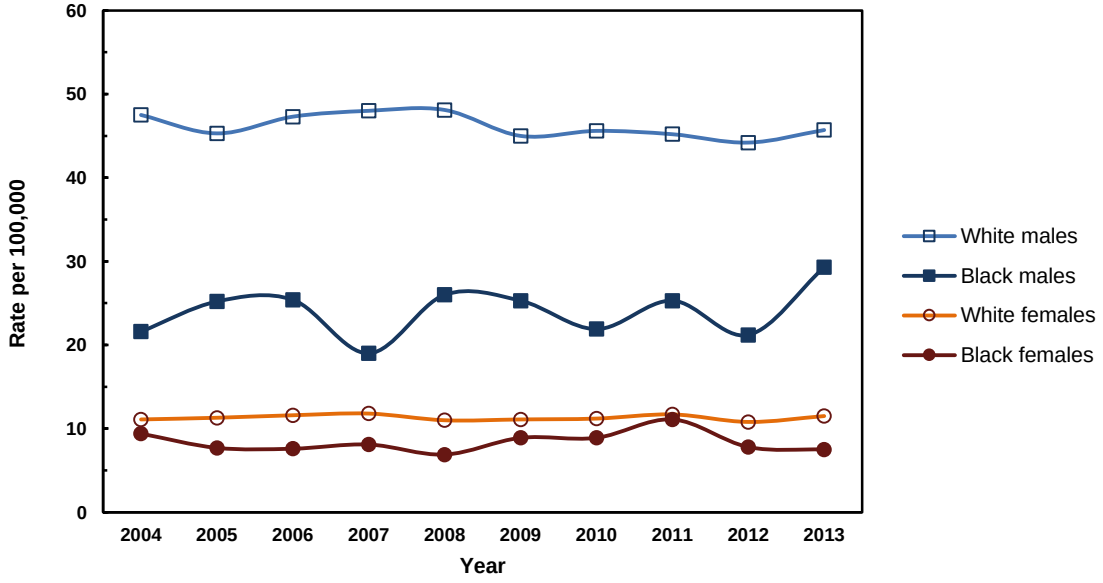
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**4,198**	**25.3** (24.5-26.1)	**3,164**	**44.3** (42.8-45.8)	**2,963**	**45.7** (44.1-47.3)	**146**	**29.3** (24.5-34.1)	**1,034**	**11.1** (10.4-11.8)	**962**	**11.5** (10.8-12.2)	**56**	**7.5** (5.5-9.5)
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)

* Includes unknown/other race and sex.

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, 2004-2013



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

TABLE 17-B

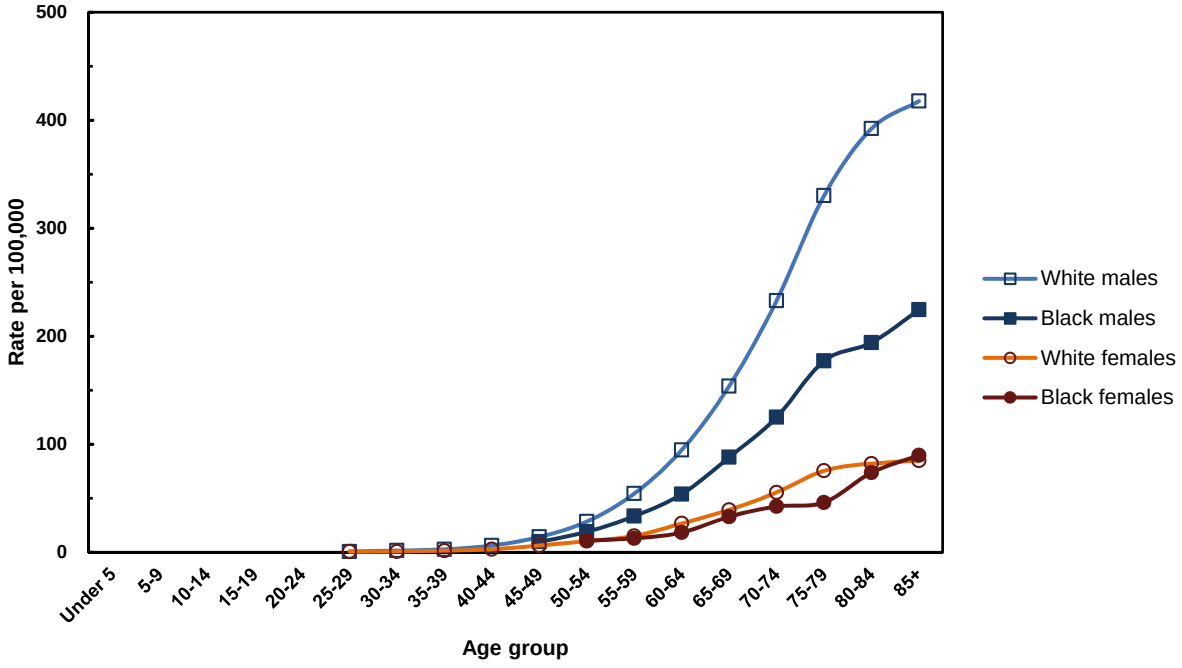
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**31.6**	**48.5**	**54.4**	**16.7**	**15.4**	**17.0**	**8.7**
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	ND	ND	ND	ND	ND	ND	ND
20-24	ND	ND	ND	ND	ND	ND	ND
25-29	0.6	0.5	0.6	ND	0.7	0.7	ND
30-34	1.0	1.5	1.6	ND	0.6	0.7	ND
35-39	2.0	2.5	2.6	ND	1.4	1.5	ND
40-44	4.2	5.9	6.2	ND	2.5	2.7	ND
45-49	9.5	13.5	14.2	9.7	5.6	6.2	ND
50-54	18.6	27.3	28.4	18.9	10.2	10.3	10.8
55-59	33.3	52.5	54.3	33.5	14.9	15.0	12.9
60-64	57.8	92.3	94.6	53.8	25.8	26.7	18.3
65-69	90.2	148.6	153.8	87.9	38.6	39.2	32.9
70-74	131.4	225.5	232.9	125.0	54.1	55.4	42.4
75-79	177.3	318.8	330.2	177.2	72.8	75.5	46.1
80-84	198.4	380.9	392.2	194.1	81.5	82.1	73.7
85+	189.4	411.2	417.7	224.5	85.7	84.9	89.8

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, 2009-2013



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, 2009-2013

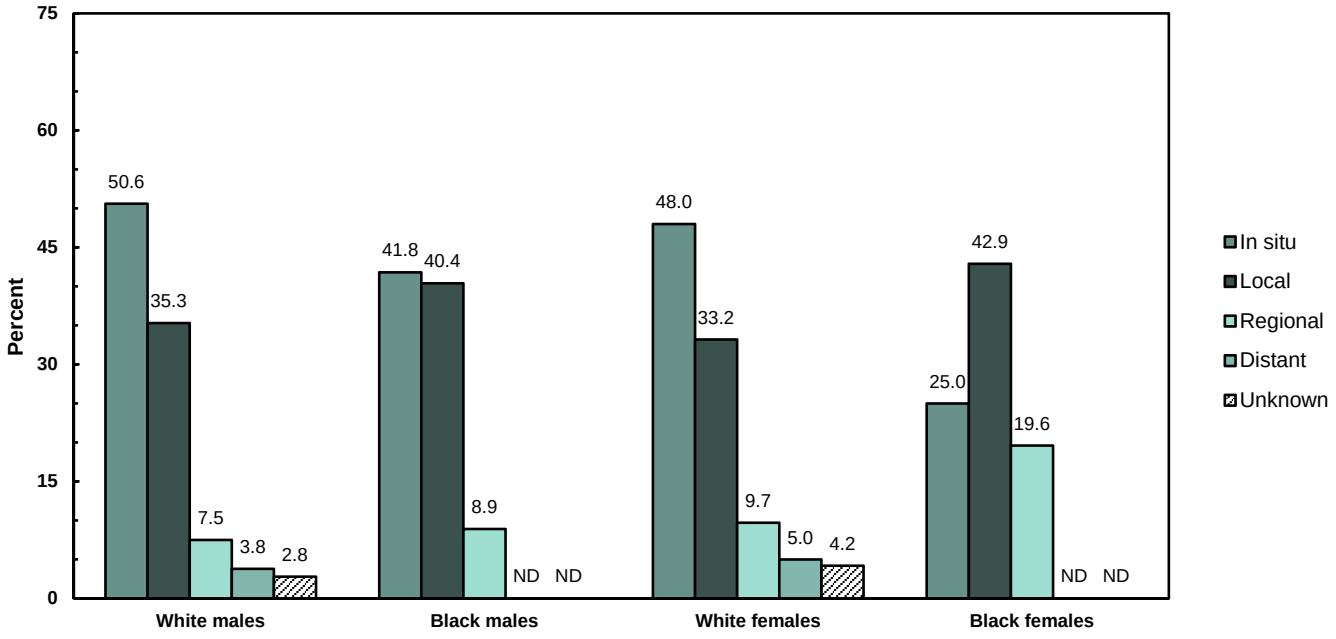
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**20,077**	**15,044**	**14,137**	**569**	**5,032**	**4,609**	**321**
Under 5	1	0	0	0	1	0	0
5-9	1	1	1	0	0	0	0
10-14	1	1	1	0	0	0	0
15-19	5	1	1	0	4	4	0
20-24	7	5	5	0	2	2	0
25-29	23	10	10	0	13	11	2
30-34	39	28	24	1	11	10	1
35-39	73	46	40	2	27	22	2
40-44	178	124	109	6	54	48	4
45-49	433	304	275	22	129	123	3
50-54	895	644	586	41	251	217	27
55-59	1,488	1,146	1,051	61	342	301	28
60-64	2,208	1,696	1,560	74	511	466	32
65-69	2,618	2,022	1,899	80	596	541	41
70-74	2,925	2,263	2,130	81	662	609	41
75-79	3,183	2,431	2,315	82	752	707	36
80-84	2,964	2,222	2,133	60	742	687	45
85+	3,035	2,100	1,997	59	935	861	59

* 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, 2013



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

Number and Percent of Cases Microscopically Confirmed: 4,129 - 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, 2004-2013

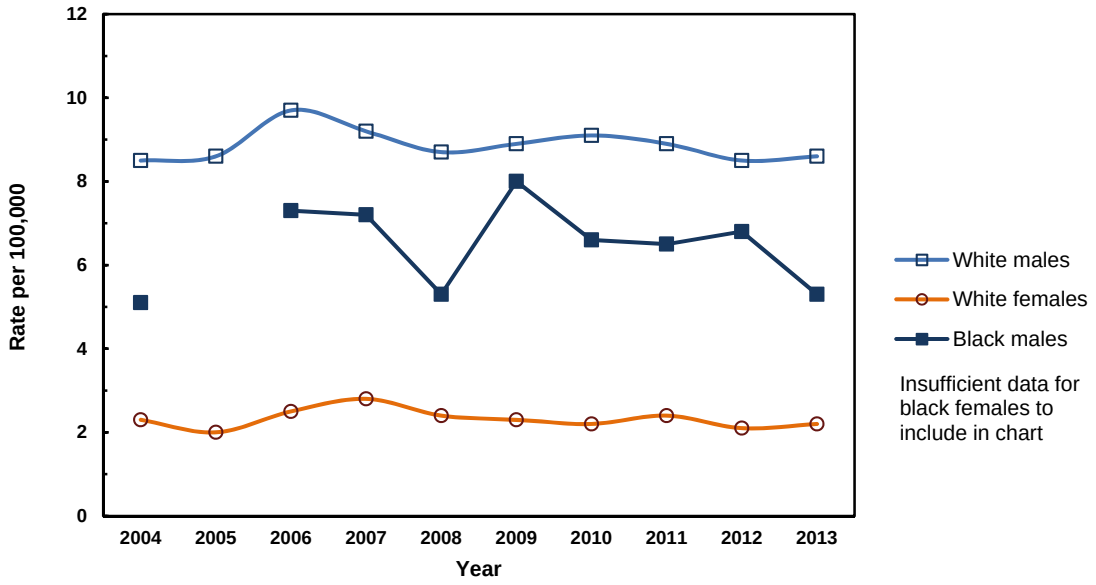
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	821	4.7 (4.4-5.0)	580	8.3 (7.6-9.0)	552	8.6 (7.9-9.3)	25	5.3 (3.2-7.4)	241	2.3 (2.0-2.6)	213	2.2 (1.9-2.5)	25	3.1 (1.9-4.3)
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)

* 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, 2004-2013



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, 2009-2013

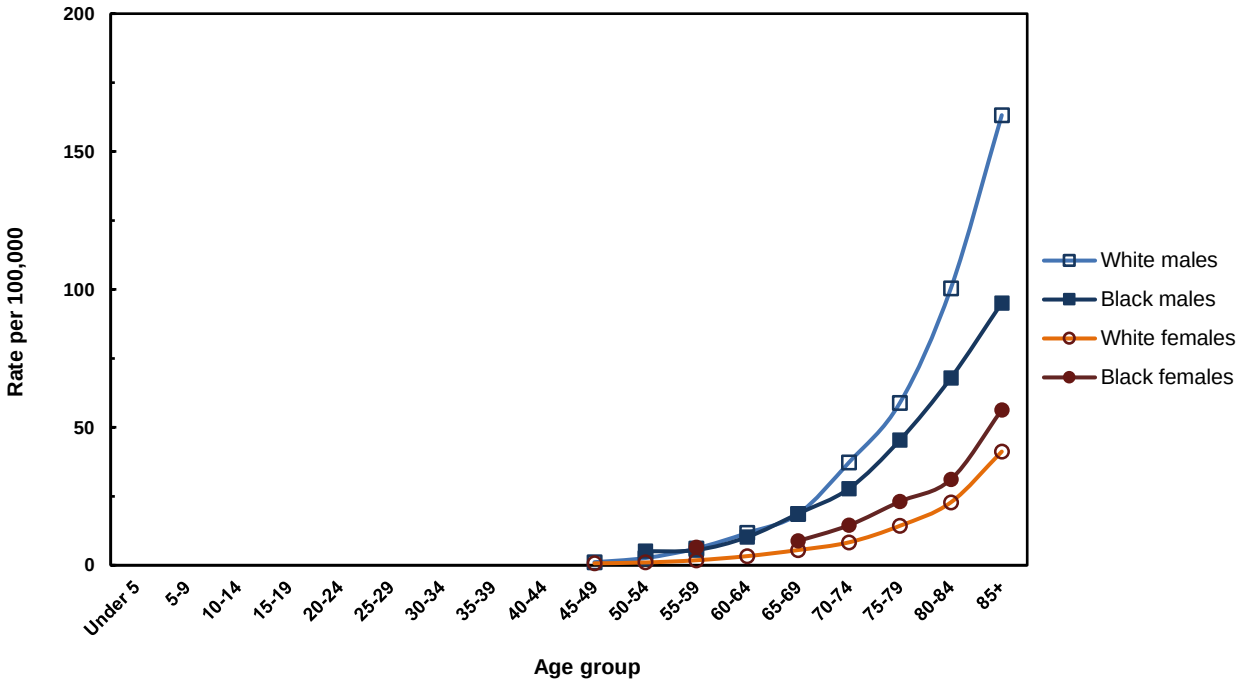
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**4,046**	**6.4**	**2,871**	**9.3**	**2,712**	**10.4**	**144**	**4.2**	**1,175**	**3.6**	**1,040**	**3.8**	**125**	**3.4**
Under 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	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	3	ND	3	ND	3	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	15	0.4	11	0.5	9	ND	2	ND	4	ND	2	ND	1	ND
45-49	40	0.9	27	1.2	21	1.1	5	ND	13	0.6	13	0.7	0	ND
50-54	89	1.8	66	2.8	54	2.6	11	5.1	23	0.9	21	1.0	2	ND
55-59	181	4.0	130	6.0	119	6.1	10	5.5	51	2.2	36	1.8	14	6.5
60-64	274	7.2	209	11.4	193	11.7	14	10.2	65	3.3	58	3.3	7	ND
65-69	334	11.5	247	18.2	230	18.6	17	18.7	87	5.6	76	5.5	11	8.8
70-74	466	20.9	361	36.0	341	37.3	18	27.8	105	8.6	91	8.3	14	14.5
75-79	589	32.8	436	57.2	413	58.9	21	45.4	153	14.8	134	14.3	18	23.1
80-84	781	52.3	568	97.4	546	100.4	21	67.9	213	23.4	191	22.8	19	31.1
85+	1,269	79.2	810	158.6	780	163.2	25	95.1	459	42.1	418	41.2	37	56.3

* 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 17-E

Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	20,077	15,044	43.7	(43.0-44.4)	5,032	11.0	(10.7-11.3)
Adams	154	117	39.0	(31.9-46.1)	37	10.5	(7.1-13.9)
Allegheny	2,133	1,545	44.7	(42.5-46.9)	588	12.2	(11.2-13.2)
Armstrong	114	93	41.0	(32.7-49.3)	21	7.3	(4.2-10.4)
Beaver	363	279	52.0	(45.9-58.1)	84	11.7	(9.2-14.2)
Bedford	107	74	45.7	(35.3-56.1)	33	17.5	(11.5-23.5)
Berks	631	482	44.6	(40.6-48.6)	149	10.5	(8.8-12.2)
Blair	223	175	46.7	(39.8-53.6)	48	9.2	(6.6-11.8)
Bradford	115	84	42.4	(33.3-51.5)	31	13.0	(8.4-17.6)
Bucks	1,051	798	47.0	(43.7-50.3)	253	11.6	(10.2-13.0)
Butler	301	233	44.9	(39.1-50.7)	68	10.4	(7.9-12.9)
Cambria	320	241	52.7	(46.0-59.4)	79	13.2	(10.3-16.1)
Cameron	12	8	ND		4	ND	
Carbon	140	108	53.3	(43.2-63.4)	32	12.6	(8.2-17.0)
Centre	146	117	37.2	(30.5-43.9)	29	7.6	(4.8-10.4)
Chester	689	534	44.8	(41.0-48.6)	155	9.8	(8.3-11.3)
Clarion	77	58	49.8	(37.0-62.6)	19	ND	
Clearfield	108	82	32.1	(25.2-39.0)	26	8.4	(5.2-11.6)
Clinton	75	58	51.7	(38.4-65.0)	17	ND	
Columbia	108	77	40.8	(31.7-49.9)	31	12.3	(8.0-16.6)
Crawford	124	97	36.7	(29.4-44.0)	27	8.5	(5.3-11.7)
Cumberland	357	254	38.4	(33.7-43.1)	103	12.3	(9.9-14.7)
Dauphin	301	247	37.8	(33.1-42.5)	54	5.9	(4.3-7.5)
Delaware	824	594	43.1	(39.6-46.6)	230	11.7	(10.2-13.2)
Elk	64	45	42.0	(29.7-54.3)	19	ND	
Erie	403	311	42.1	(37.4-46.8)	92	9.9	(7.9-11.9)
Fayette	278	221	51.5	(44.7-58.3)	57	10.8	(8.0-13.6)
Forest	11	9	ND		2	ND	
Franklin	222	166	37.8	(32.0-43.6)	56	10.2	(7.5-12.9)
Fulton	32	22	44.2	(25.7-62.7)	10	ND	
Greene	55	39	36.1	(24.8-47.4)	16	ND	
Huntingdon	69	49	37.0	(26.6-47.4)	20	12.1	(6.8-17.4)
Indiana	156	124	48.9	(40.3-57.5)	32	10.8	(7.1-14.5)
Jefferson	87	65	44.8	(33.9-55.7)	22	12.9	(7.5-18.3)
Juniata	39	30	40.5	(26.0-55.0)	9	ND	
Lackawanna	399	297	48.0	(42.5-53.5)	102	11.7	(9.4-14.0)
Lancaster	700	533	38.3	(35.0-41.6)	167	8.9	(7.6-10.2)
Lawrence	164	128	44.1	(36.5-51.7)	36	9.5	(6.4-12.6)
Lebanon	241	174	43.3	(36.9-49.7)	67	12.7	(9.7-15.7)
Lehigh	562	420	46.0	(41.6-50.4)	142	11.3	(9.4-13.2)
Luzerne	576	413	43.7	(39.5-47.9)	163	12.6	(10.7-14.5)
Lycoming	196	149	44.4	(37.3-51.5)	47	10.5	(7.5-13.5)
McKean	72	53	41.2	(30.1-52.3)	19	ND	
Mercer	212	163	44.6	(37.8-51.4)	49	9.6	(6.9-12.3)
Mifflin	91	70	48.8	(37.4-60.2)	21	12.2	(7.0-17.4)
Monroe	241	182	42.9	(36.7-49.1)	59	11.4	(8.5-14.3)
Montgomery	1,276	979	45.5	(42.6-48.4)	297	10.3	(9.1-11.5)
Montour	23	21	39.7	(22.7-56.7)	2	ND	
Northampton	593	449	54.4	(49.4-59.4)	144	13.2	(11.0-15.4)
Northumberland	169	137	46.0	(38.3-53.7)	32	8.2	(5.4-11.0)
Perry	63	47	36.8	(26.3-47.3)	16	ND	
Philadelphia	1,685	1,185	38.5	(36.3-40.7)	499	10.6	(9.7-11.5)
Pike	102	83	42.7	(33.5-51.9)	19	ND	
Potter	25	19	ND		6	ND	
Schuylkill	302	208	44.8	(38.7-50.9)	94	15.8	(12.6-19.0)
Snyder	49	40	38.8	(26.8-50.8)	9	ND	
Somerset	144	112	43.5	(35.4-51.6)	32	10.6	(6.9-14.3)
Sullivan	16	12	ND		4	ND	
Susquehanna	78	60	41.9	(31.3-52.5)	18	ND	
Tioga	66	54	37.1	(27.2-47.0)	12	ND	
Union	40	30	26.7	(17.1-36.3)	10	ND	
Venango	117	96	51.8	(41.4-62.2)	21	10.1	(5.8-14.4)
Warren	86	70	50.5	(38.7-62.3)	16	ND	
Washington	394	296	46.8	(41.5-52.1)	98	11.9	(9.5-14.3)
Wayne	99	77	42.9	(33.3-52.5)	22	10.7	(6.2-15.2)
Westmoreland	742	539	45.7	(41.8-49.6)	203	13.4	(11.6-15.2)
Wyoming	40	28	37.6	(23.7-51.5)	12	ND	
York	625	484	43.0	(39.2-46.8)	141	9.9	(8.3-11.5)

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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	4,046	2,871	8.6	(8.3-8.9)	1,175	2.3	(2.2-2.4)
Adams	33	26	9.5	(5.8-13.2)	7	ND	
Allegheny	478	322	9.2	(8.2-10.2)	156	2.7	(2.3-3.1)
Armstrong	24	17	ND		7	ND	
Beaver	80	57	10.5	`	23	2.8	(1.7-3.9)
Bedford	13	9	ND		4	ND	
Berks	114	77	7.2	(5.6-8.8)	37	2.1	(1.4-2.8)
Blair	48	33	8.9	(5.9-11.9)	15	ND	
Bradford	23	15	ND		8	ND	
Bucks	182	137	8.7	(7.2-10.2)	45	1.9	(1.3-2.5)
Butler	49	36	7.3	(4.9-9.7)	13	ND	
Cambria	59	43	9.2	(6.5-11.9)	16	ND	
Cameron	4	2	ND		2	ND	
Carbon	24	20	10.6	(6.0-15.2)	4	ND	
Centre	37	30	10.1	(6.5-13.7)	7	ND	
Chester	128	93	8.3	(6.6-10.0)	35	2.2	(1.5-2.9)
Clarion	18	14	ND		4	ND	
Clearfield	33	29	12.2	(7.8-16.6)	4	ND	
Clinton	19	15	ND		4	ND	
Columbia	22	14	ND		8	ND	
Crawford	34	30	12.3	(7.9-16.7)	4	ND	
Cumberland	51	33	5.2	(3.4-7.0)	18	ND	
Dauphin	73	55	9.0	(6.6-11.4)	18	ND	
Delaware	153	101	7.5	(6.0-9.0)	52	2.5	(1.8-3.2)
Elk	22	16	ND		6	ND	
Erie	90	71	9.8	(7.5-12.1)	19	ND	
Fayette	36	25	6.2	(3.8-8.6)	11	ND	
Forest	4	2	ND		2	ND	
Franklin	41	29	6.9	(4.4-9.4)	12	ND	
Fulton	4	1	ND		3	ND	
Greene	12	7	ND		5	ND	
Huntingdon	10	9	ND		1	ND	
Indiana	25	22	9.3	(5.4-13.2)	3	ND	
Jefferson	23	16	ND		7	ND	
Juniata	11	9	ND		2	ND	
Lackawanna	75	50	8.2	(5.9-10.5)	25	2.3	(1.4-3.2)
Lancaster	154	107	7.5	(6.1-8.9)	47	2.2	(1.6-2.8)
Lawrence	34	31	10.6	(6.9-14.3)	3	ND	
Lebanon	43	33	8.5	(5.6-11.4)	10	ND	
Lehigh	112	79	8.7	(6.8-10.6)	33	2.4	(1.6-3.2)
Luzerne	110	78	8.7	(6.8-10.6)	32	2.1	(1.4-2.8)
Lycoming	49	30	9.0	(5.8-12.2)	19	ND	
McKean	11	8	ND		3	ND	
Mercer	45	37	9.6	(6.5-12.7)	8	ND	
Mifflin	17	8	ND		9	ND	
Monroe	46	37	9.6	(6.5-12.7)	9	ND	
Montgomery	235	163	7.7	(6.5-8.9)	72	2.1	(1.6-2.6)
Montour	5	4	ND		1	ND	
Northampton	96	68	8.3	(6.3-10.3)	28	2.2	(1.4-3.0)
Northumberland	38	29	9.7	(6.2-13.2)	9	ND	
Perry	15	11	ND		4	ND	
Philadelphia	381	238	8.0	(7.0-9.0)	143	2.9	(2.4-3.4)
Pike	10	8	ND		2	ND	
Potter	12	8	ND		4	ND	
Schuylkill	66	43	9.4	(6.6-12.2)	23	3.3	(2.0-4.6)
Snyder	16	16	ND		0	ND	
Somerset	25	17	ND		8	ND	
Sullivan	3	1	ND		2	ND	
Susquehanna	17	12	ND		5	ND	
Tioga	16	10	ND		6	ND	
Union	12	12	ND		0	ND	
Venango	25	22	12.9	(7.5-18.3)	3	ND	
Warren	15	13	ND		2	ND	
Washington	86	65	10.7	(8.1-13.3)	21	2.1	(1.2-3.0)
Wayne	25	19	ND		6	ND	
Westmoreland	136	90	7.7	(6.1-9.3)	46	2.7	(1.9-3.5)
Wyoming	3	2	ND		1	ND	
York	136	107	10.0	(8.1-11.9)	29	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 Insitute's SEER program.

Cancer of the Kidney and Renal Pelvis

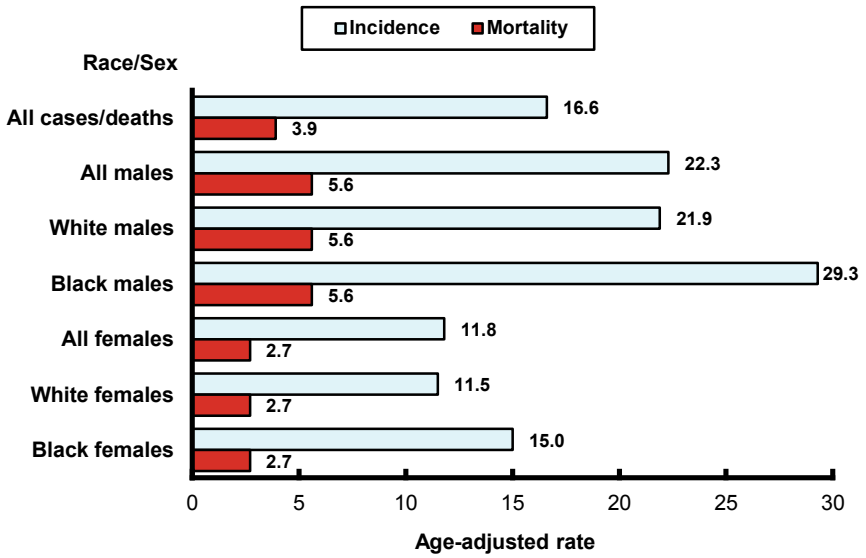
Data Highlights

In 2013, there were 2,729 cases of invasive cancer of the kidney and renal pelvis diagnosed among residents of Pennsylvania — an increase from the 2012 figure of 2,587. Males had an average annual (2009-2013) age-adjusted incidence rate (22.3 per 100,000) of almost twice the female rate (11.8). For the years 2004 through 2013, 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 24.6 in 2004 to a low of 21.8 in 2006. However, the rate began to increase again until 2010, when it dropped by 38 percent to it's lowest annual rate of 20.0 per 100,000 during this 10-year period. The rate dramatically increased in 2011 to 33.1, dropped to 28.1 in 2012, and then again increased in 2013 to 33.0.

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 2013 were diagnosed at early stages (in situ or local) of the disease, and about 29 percent were diagnosed at late stages (regional or distant). During the five-year period of 2009-2013, 86 percent of the invasive cases of kidney and renal pelvis cancers were diagnosed among residents 50 years of age or older.

In 2013, there were 629 resident deaths due to cancer of the kidney and renal pelvis. The average annual (2009-2013) age-adjusted death rate (3.9 per 100,000) was about 77 percent lower than the average annual incidence rate (16.6). Among whites, the annual death rates for kidney/renal pelvis cancer remained fairly stable for the period of 2004-2013. Among black males, the annual age-adjusted death rates had a downward trend over the nine-year period 2004-2010, falling from 6.6 in 2004 to 4.3 in 2010. The death rates have been higher in recent years. Annual age-adjusted death rates for black females were insufficient for trend analysis due to the small number of deaths.

FIGURE 18
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

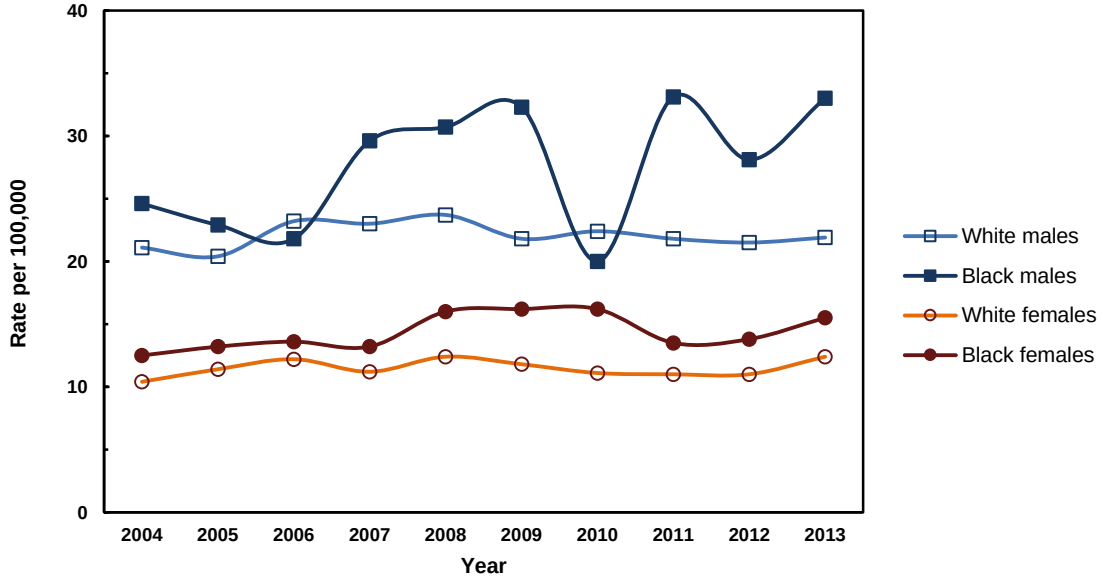
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**2,729**	**17.3** (16.7-17.9)	**1,663**	**22.8** (21.7-23.9)	**1,421**	**21.9** (20.8-23.0)	**204**	**33.0** (28.5-37.5)	**1,066**	**12.6** (11.8-13.4)	**924**	**12.4** (11.6-13.2)	**120**	**15.5** (12.7-18.3)
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)

* Includes unknown/other race and sex.

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, 2004-2013



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

TABLE 18-B

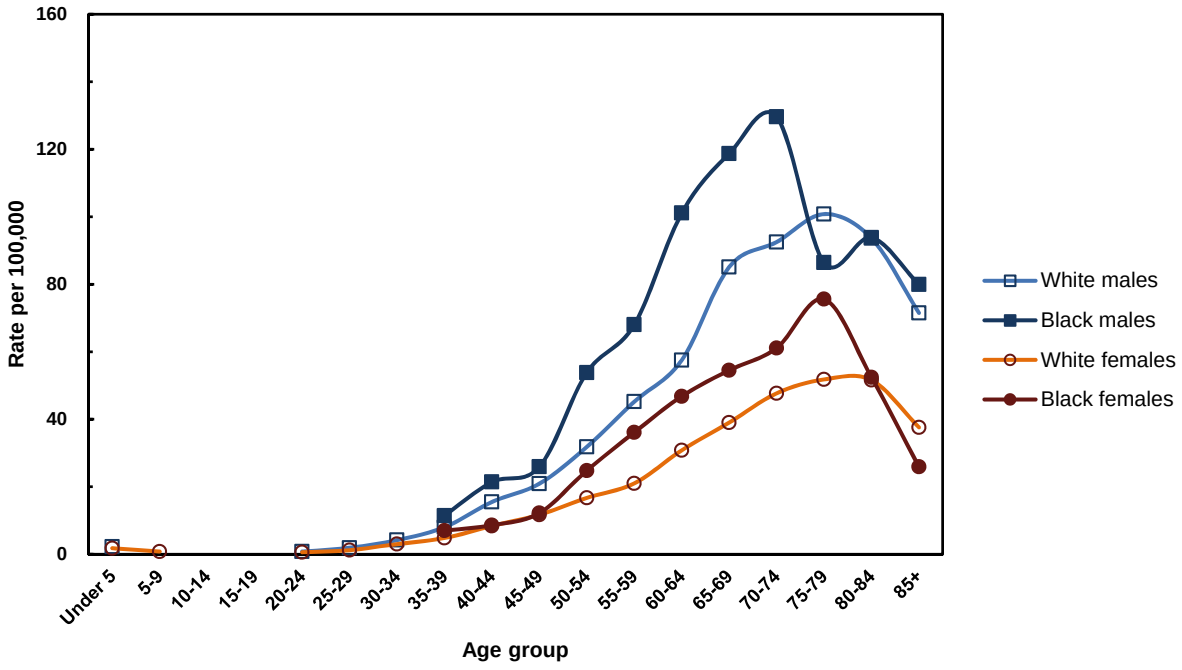
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**20.1**	**25.4**	**26.5**	**24.2**	**15.1**	**15.6**	**14.8**
Under 5	2.1	2.2	2.2	ND	2.1	1.8	ND
5-9	0.6	ND	ND	ND	0.8	0.8	ND
10-14	ND	ND	ND	ND	ND	ND	ND
15-19	ND	ND	ND	ND	ND	ND	ND
20-24	0.8	0.8	0.8	ND	0.7	0.6	ND
25-29	1.7	1.9	1.9	ND	1.4	1.2	ND
30-34	3.5	4.2	4.2	ND	2.8	3.0	ND
35-39	6.7	8.3	8.0	11.4	5.0	4.8	7.0
40-44	11.9	15.6	15.5	21.4	8.2	8.4	8.6
45-49	16.2	21.0	20.9	25.9	11.5	11.7	12.2
50-54	25.2	33.2	31.8	53.8	17.5	16.7	24.8
55-59	34.2	46.7	45.2	68.0	22.3	21.0	36.1
60-64	46.1	61.0	57.5	101.1	32.2	30.8	46.8
65-69	62.0	87.0	85.1	118.7	39.9	39.0	54.5
70-74	69.2	94.3	92.5	129.6	48.7	47.7	61.1
75-79	72.8	99.0	100.8	86.4	53.5	51.8	75.6
80-84	68.6	94.5	93.6	93.8	52.1	51.6	52.4
85+	49.3	73.0	71.5	79.9	38.2	37.6	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, 2009-2013



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

TABLE 18-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

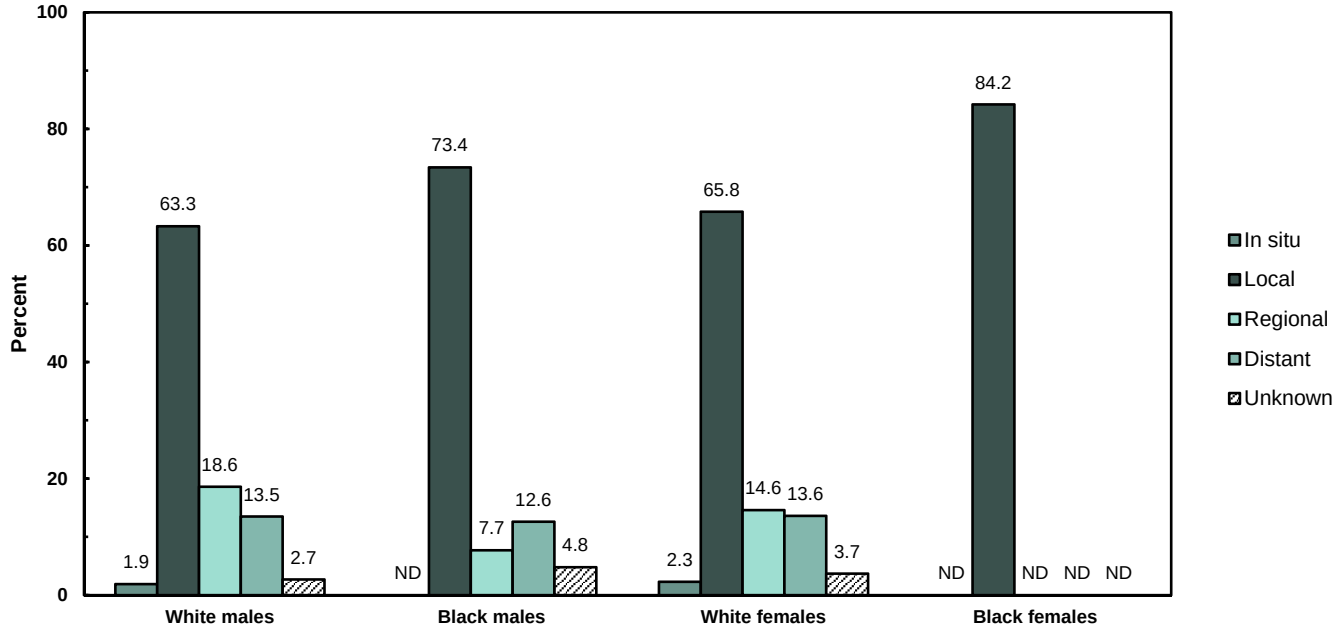
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**12,795**	**7,876**	**6,885**	**822**	**4,919**	**4,238**	**548**
Under 5	77	40	31	7	37	24	6
5-9	22	7	6	1	15	12	1
10-14	1	1	1	0	0	0	0
15-19	9	3	3	0	6	5	0
20-24	35	19	14	5	16	11	5
25-29	66	39	31	7	27	19	5
30-34	131	79	65	9	52	45	6
35-39	248	154	122	24	94	73	16
40-44	500	326	272	48	174	148	21
45-49	741	474	405	59	267	230	31
50-54	1,213	785	656	117	428	353	62
55-59	1,530	1,020	875	124	510	420	78
60-64	1,759	1,121	949	139	638	539	82
65-69	1,799	1,183	1,051	108	616	537	68
70-74	1,542	946	846	84	596	524	59
75-79	1,307	755	707	40	552	485	59
80-84	1,025	551	509	29	474	432	32
85+	790	373	342	21	417	381	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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 2,432 - 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, 2004-2013

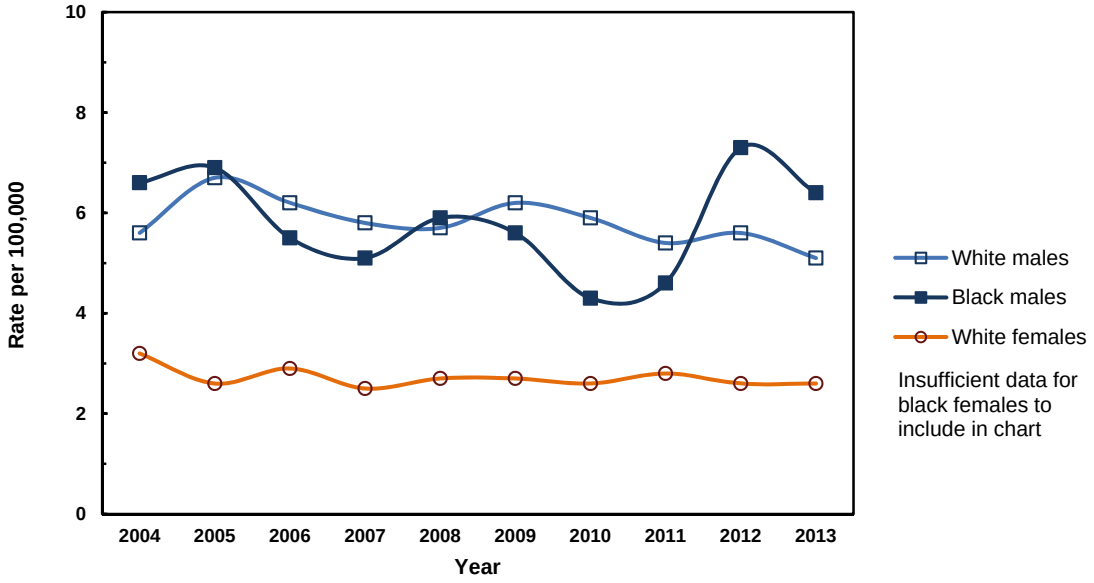
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**629**	**3.8** (3.5-4.1)	**375**	**5.2** (4.7-5.7)	**330**	**5.1** (4.5-5.7)	**35**	**6.4** (4.3-8.5)	**254**	**2.6** (2.3-2.9)	**224**	**2.6** (2.3-2.9)	**23**	**3.0** (1.8-4.2)
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**

* 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, 2004-2013



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, 2009-2013

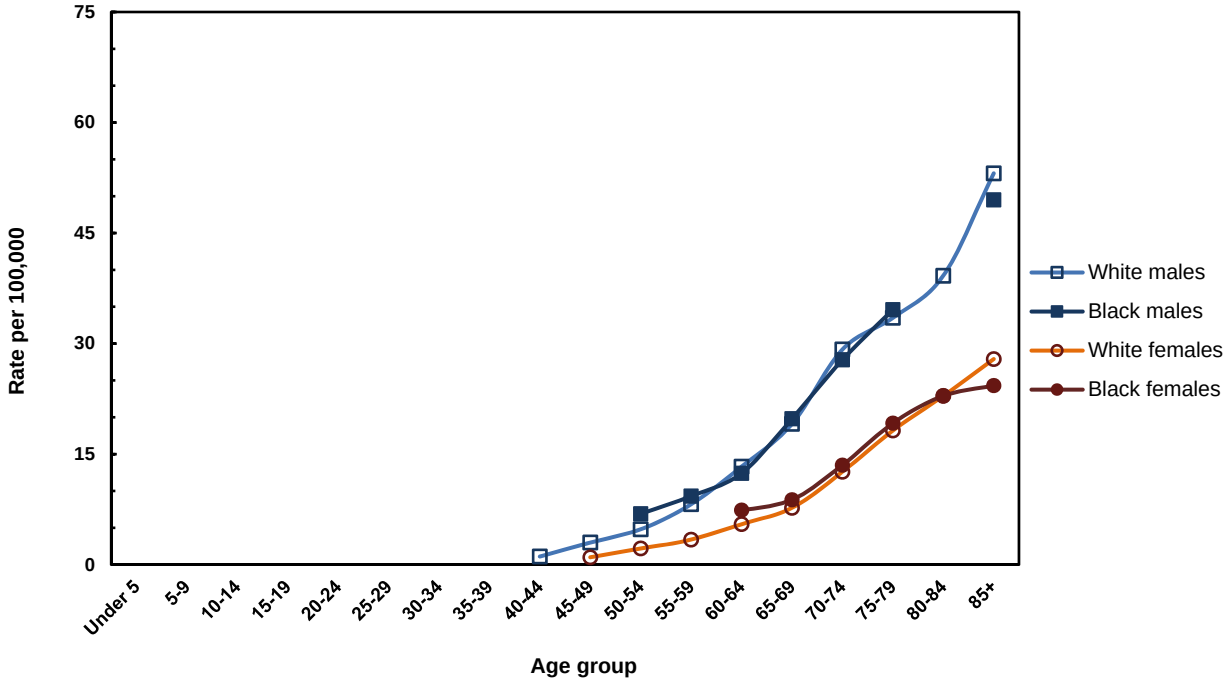
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**3,192**	**5.0**	**1,939**	**6.3**	**1,776**	**6.8**	**140**	**4.1**	**1,253**	**3.8**	**1,139**	**4.2**	**97**	**2.6**
Under 5	1	ND	0	ND	0	ND	0	ND	1	ND	1	ND	0	ND
5-9	3	ND	2	ND	1	ND	1	ND	1	ND	1	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	3	ND	2	ND	0	ND	2	ND	1	ND	0	ND	1	ND
25-29	2	ND	2	ND	1	ND	1	ND	0	ND	0	ND	0	ND
30-34	12	0.3	7	ND	6	ND	1	ND	5	ND	4	ND	0	ND
35-39	12	0.3	8	ND	5	ND	2	ND	4	ND	3	ND	1	ND
40-44	36	0.9	26	1.2	20	1.1	6	ND	10	0.5	9	ND	0	ND
45-49	87	1.9	65	2.9	59	3.0	6	ND	22	0.9	19	1.0	3	ND
50-54	174	3.6	120	5.1	100	4.8	15	6.9	54	2.2	47	2.2	6	ND
55-59	251	5.6	177	8.1	159	8.2	17	9.3	74	3.2	69	3.4	4	ND
60-64	348	9.1	237	12.9	219	13.3	17	12.4	111	5.6	96	5.5	13	7.4
65-69	374	12.9	256	18.8	236	19.1	18	19.8	118	7.6	106	7.7	11	8.8
70-74	446	20.0	292	29.1	267	29.2	18	27.8	154	12.6	138	12.6	13	13.5
75-79	439	24.5	253	33.2	235	33.5	16	34.6	186	18.0	170	18.2	15	19.2
80-84	432	28.9	223	38.2	213	39.2	7	ND	209	23.0	192	22.9	14	22.9
85+	570	35.6	268	52.5	254	53.1	13	49.5	302	27.7	283	27.9	16	24.3

* 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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	12,795	7,876	22.3	(21.8-22.8)	4,919	11.8	(11.5-12.1)
Adams	99	58	20.8	(15.4-26.2)	41	12.4	(8.6-16.2)
Allegheny	1,235	718	21.2	(19.6-22.8)	517	11.9	(10.9-12.9)
Armstrong	75	37	16.8	(11.4-22.2)	38	14.3	(9.8-18.8)
Beaver	194	130	24.4	(20.2-28.6)	64	10.0	(7.6-12.5)
Bedford	51	34	20.7	(13.7-27.7)	17	ND	
Berks	410	250	22.4	(19.6-25.2)	160	12.5	(10.6-14.4)
Blair	139	79	21.7	(16.9-26.5)	60	12.4	(9.3-15.5)
Bradford	78	48	24.5	(17.6-31.4)	30	15.1	(9.7-20.5)
Bucks	626	404	22.3	(20.1-24.5)	222	10.6	(9.2-12.0)
Butler	169	110	20.7	(16.8-24.6)	59	9.5	(7.1-11.9)
Cambria	149	80	18.7	(14.6-22.8)	69	11.9	(9.1-14.7)
Cameron	8	4	ND		4	ND	
Carbon	80	54	25.4	(18.6-32.2)	26	11.5	(7.1-15.9)
Centre	93	56	16.4	(12.1-20.7)	37	10.3	(7.0-13.6)
Chester	421	286	21.9	(19.4-24.4)	135	9.1	(7.6-10.6)
Clarion	43	29	24.8	(15.8-33.8)	14	ND	
Clearfield	105	70	27.2	(20.8-33.6)	35	12.7	(8.5-16.9)
Clinton	36	17	ND		19	ND	
Columbia	69	42	22.0	(15.3-28.7)	27	12.5	(7.8-17.2)
Crawford	94	55	19.9	(14.6-25.2)	39	12.1	(8.3-15.9)
Cumberland	240	143	21.9	(18.3-25.5)	97	12.0	(9.6-14.4)
Dauphin	259	153	21.0	(17.7-24.3)	106	12.4	(10.0-14.8)
Delaware	577	367	25.4	(22.8-28.0)	210	12.0	(10.4-13.6)
Elk	26	15	ND		11	ND	
Erie	247	140	18.4	(15.4-21.4)	107	12.2	(9.9-14.5)
Fayette	180	113	26.4	(21.5-31.3)	67	13.8	(10.5-17.1)
Forest	6	3	ND		3	ND	
Franklin	176	104	24.1	(19.5-28.7)	72	14.9	(11.5-18.3)
Fulton	18	13	ND		5	ND	
Greene	57	29	27.4	(17.4-37.4)	28	25.2	(15.9-34.5)
Huntingdon	41	25	16.3	(9.9-22.7)	16	ND	
Indiana	79	49	19.0	(13.7-24.3)	30	10.0	(6.4-13.6)
Jefferson	58	38	27.1	(18.5-35.7)	20	14.4	(8.1-20.7)
Juniata	31	18	ND		13	ND	
Lackawanna	213	128	20.4	(16.9-23.9)	85	11.0	(8.7-13.3)
Lancaster	422	281	19.8	(17.5-22.1)	141	8.8	(7.3-10.3)
Lawrence	105	73	26.0	(20.0-32.0)	32	10.7	(7.0-14.4)
Lebanon	146	81	21.5	(16.8-26.2)	65	15.1	(11.4-18.8)
Lehigh	380	235	25.0	(21.8-28.2)	145	13.2	(11.1-15.3)
Luzerne	331	193	20.2	(17.4-23.0)	138	12.2	(10.2-14.2)
Lycoming	120	78	24.3	(18.9-29.7)	42	10.6	(7.4-13.8)
McKean	37	25	19.8	(12.0-27.6)	12	ND	
Mercer	118	69	19.7	(15.1-24.3)	49	11.8	(8.5-15.1)
Mifflin	41	25	19.2	(11.7-26.7)	16	ND	
Monroe	124	83	18.0	(14.1-21.9)	41	7.9	(5.5-10.3)
Montgomery	767	502	22.4	(20.4-24.4)	265	9.8	(8.6-11.0)
Montour	22	14	ND		8	ND	
Northampton	350	218	26.3	(22.8-29.8)	132	12.7	(10.5-14.9)
Northumberland	109	69	22.0	(16.8-27.2)	40	12.1	(8.4-15.8)
Perry	39	25	19.1	(11.6-26.6)	14	ND	
Philadelphia	1,556	913	27.4	(25.6-29.2)	643	14.7	(13.6-15.8)
Pike	59	37	19.2	(13.0-25.4)	22	11.0	(6.4-15.6)
Potter	19	13	ND		6	ND	
Schuylkill	172	100	21.6	(17.4-25.8)	72	12.7	(9.8-15.6)
Snyder	31	21	18.9	(10.8-27.0)	10	ND	
Somerset	76	45	17.6	(12.5-22.7)	31	11.9	(7.7-16.1)
Sullivan	9	4	ND		5	ND	
Susquehanna	44	29	20.6	(13.1-28.1)	15	ND	
Tioga	54	33	26.8	(17.7-35.9)	21	14.0	(8.0-20.0)
Union	38	24	19.8	(11.9-27.7)	14	ND	
Venango	64	40	23.8	(16.4-31.2)	24	11.1	(6.7-15.5)
Warren	42	29	19.2	(12.2-26.2)	13	ND	
Washington	217	134	21.6	(17.9-25.3)	83	11.1	(8.7-13.5)
Wayne	54	40	22.7	(15.7-29.7)	14	ND	
Westmoreland	434	265	22.7	(20.0-25.4)	169	12.3	(10.4-14.2)
Wyoming	26	17	ND		9	ND	
York	407	262	21.7	(19.1-24.3)	145	10.7	(9.0-12.4)

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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,192	1,939	5.6	(5.4-5.8)	1,253	2.7	(2.6-2.8)
Adams	32	16	ND		16	ND	
Allegheny	354	194	5.6	(4.8-6.4)	160	3.3	(2.8-3.8)
Armstrong	27	15	ND		12	ND	
Beaver	61	40	7.3	(5.0-9.6)	21	3.0	(1.7-4.3)
Bedford	15	10	ND		5	ND	
Berks	94	56	5.2	(3.8-6.6)	38	2.8	(1.9-3.7)
Blair	32	22	5.8	(3.4-8.2)	10	ND	
Bradford	22	12	ND		10	ND	
Bucks	131	82	4.7	(3.7-5.7)	49	2.2	(1.6-2.8)
Butler	43	26	4.8	(3.0-6.6)	17	ND	
Cambria	48	25	5.5	(3.3-7.7)	23	3.5	(2.1-4.9)
Cameron	0	0	ND		0	ND	
Carbon	19	12	ND		7	ND	
Centre	32	20	6.0	(3.4-8.6)	12	ND	
Chester	86	58	4.7	(3.5-5.9)	28	1.9	(1.2-2.6)
Clarion	10	4	ND		6	ND	
Clearfield	28	22	8.9	(5.2-12.6)	6	ND	
Clinton	13	7	ND		6	ND	
Columbia	22	15	ND		7	ND	
Crawford	20	15	ND		5	ND	
Cumberland	50	38	5.8	(4.0-7.6)	12	ND	
Dauphin	58	39	5.6	(3.8-7.4)	19	ND	
Delaware	126	63	4.6	(3.5-5.7)	63	3.0	(2.3-3.7)
Elk	5	3	ND		2	ND	
Erie	81	45	6.0	(4.2-7.8)	36	3.8	(2.6-5.0)
Fayette	35	30	7.2	(4.6-9.8)	5	ND	
Forest	3	2	ND		1	ND	
Franklin	44	26	5.7	(3.5-7.9)	18	ND	
Fulton	7	3	ND		4	ND	
Greene	8	2	ND		6	ND	
Huntingdon	18	12	ND		6	ND	
Indiana	19	13	ND		6	ND	
Jefferson	17	7	ND		10	ND	
Juniata	4	2	ND		2	ND	
Lackawanna	57	33	5.2	(3.4-7.0)	24	2.7	(1.6-3.8)
Lancaster	119	76	5.3	(4.1-6.5)	43	2.3	(1.6-3.0)
Lawrence	30	21	7.1	(4.1-10.1)	9	ND	
Lebanon	33	16	ND		17	ND	
Lehigh	84	53	6.0	(4.4-7.6)	31	2.5	(1.6-3.4)
Luzerne	77	42	4.4	(3.1-5.7)	35	2.7	(1.8-3.6)
Lycoming	32	16	ND		16	ND	
McKean	9	4	ND		5	ND	
Mercer	29	17	ND		12	ND	
Mifflin	9	5	ND		4	ND	
Monroe	32	23	5.8	(3.4-8.2)	9	ND	
Montgomery	178	113	5.1	(4.2-6.0)	65	2.0	(1.5-2.5)
Montour	12	8	ND		4	ND	
Northampton	82	46	5.4	(3.8-7.0)	36	3.1	(2.1-4.1)
Northumberland	29	16	ND		13	ND	
Perry	6	2	ND		4	ND	
Philadelphia	315	201	6.5	(5.6-7.4)	114	2.4	(2.0-2.8)
Pike	12	7	ND		5	ND	
Potter	13	8	ND		5	ND	
Schuylkill	43	26	5.2	(3.2-7.2)	17	ND	
Snyder	11	7	ND		4	ND	
Somerset	16	3	ND		13	ND	
Sullivan	2	1	ND		1	ND	
Susquehanna	11	8	ND		3	ND	
Tioga	14	8	ND		6	ND	
Union	14	8	ND		6	ND	
Venango	21	14	ND		7	ND	
Warren	18	15	ND		3	ND	
Washington	72	45	7.0	(5.0-9.0)	27	3.0	(1.9-4.1)
Wayne	18	13	ND		5	ND	
Westmoreland	103	61	5.1	(3.8-6.4)	42	2.6	(1.8-3.4)
Wyoming	7	6	ND		1	ND	
York	120	81	6.9	(5.4-8.4)	39	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 Insitute's SEER program.

Cancer of the Brain and Other Nervous System

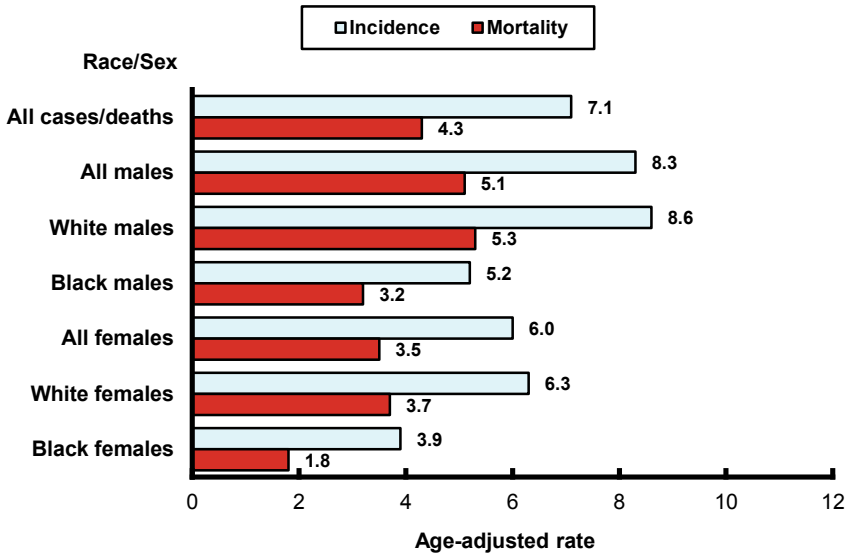
Data Highlights

During 2013, there were 1,065 invasive cases of brain and other central nervous system cancers reported to the Pennsylvania Cancer Registry – a slight increase from the previous year, 2012, when there were 1,033 cases. The average annual (2009-2013) 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 65 percent higher than the rate for black males (5.2), and the rate for white females (6.3) was about 62 percent higher than the rate for black females (3.9). Between 2004 and 2013, 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 2009-2013. Average annual (2009-2013) 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 2009-2013 period. Among blacks, the age specific rates were unstable and too difficult to interpret due to the small number of cases. In 2013, approximately 78 percent of brain/other nervous system cancers were diagnosed at early stages (in situ or local) of the disease, and 14 percent were diagnosed at late stages (regional or distant).

The average annual (2009-2013) age-adjusted death rates by sex and race were highest among white males (5.3 per 100,000) and lowest among black females (1.8). Among most age groups, white males had higher age-specific death rates than white females for the five-year time period 2009-2013. There were 693 resident deaths due to cancer of the brain/other nervous system in 2013, resulting in an annual age-adjusted rate of 4.4. The annual age-adjusted death rates by race for the period of 2004-2013 were relatively stable among whites of both sexes but were too difficult to interpret among blacks due to the small number of deaths.

FIGURE 19
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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 and immune system disorders can increase the risk of developing brain cancers.

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, 2004-2013

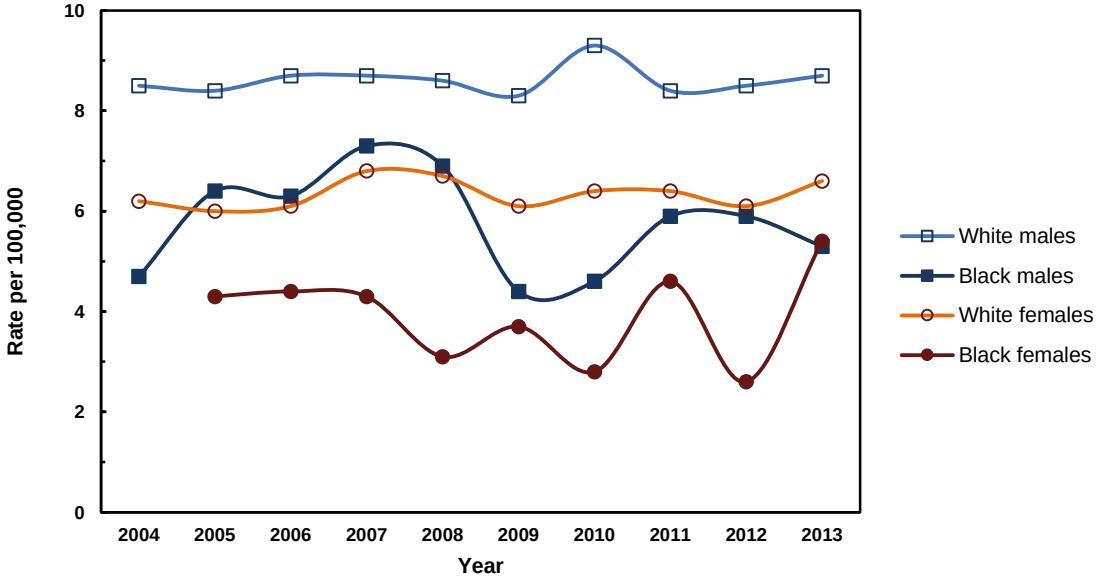
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,065**	**7.3** (6.9-7.7)	**566**	**8.3** (7.6-9.0)	**510**	**8.7** (7.9-9.5)	**33**	**5.3** (3.5-7.1)	**499**	**6.4** (5.8-7.0)	**450**	**6.6** (6.0-7.2)	**41**	**5.4** (3.7-7.1)
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**

* Includes unknown/other race and sex.

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, 2004-2013



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

TABLE 19-B

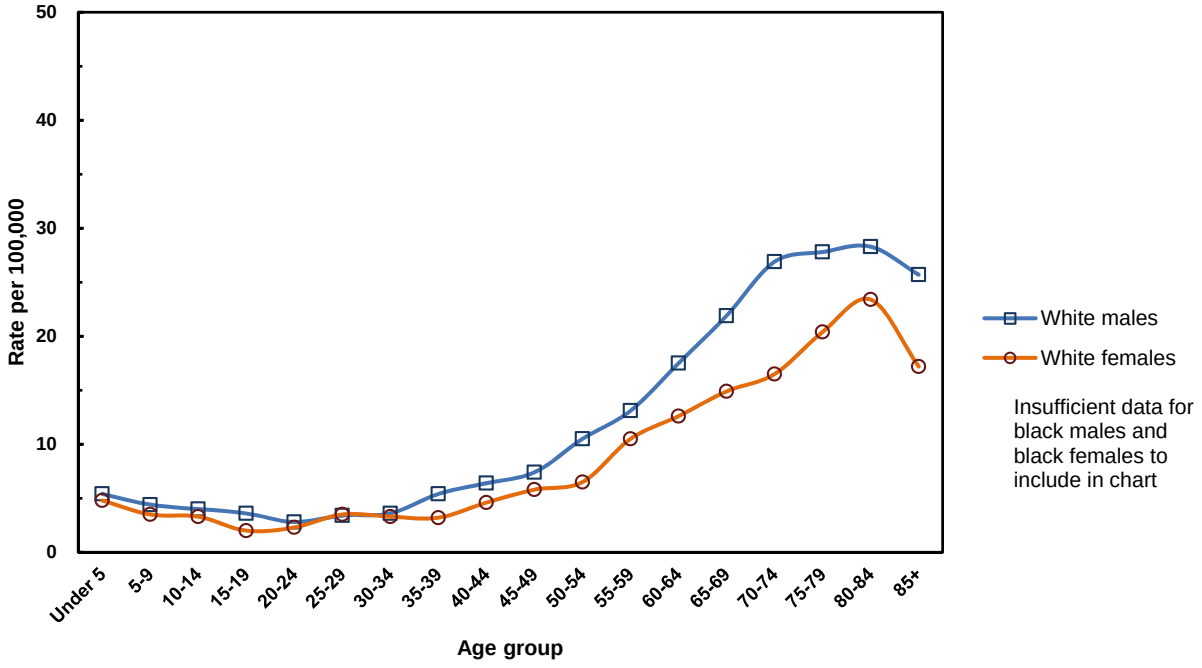
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**8.0**	**9.0**	**9.7**	**4.6**	**7.1**	**7.7**	**3.8**
Under 5	4.9	5.1	5.4	ND	4.7	4.8	4.5
5-9	4.0	4.3	4.4	ND	3.7	3.5	6.2
10-14	3.4	3.8	4.0	ND	2.9	3.3	ND
15-19	2.7	3.5	3.6	3.4	1.7	2.0	ND
20-24	2.4	2.9	2.8	ND	2.0	2.3	ND
25-29	3.1	3.2	3.4	ND	3.1	3.5	ND
30-34	3.3	3.4	3.6	ND	3.1	3.3	ND
35-39	4.0	5.1	5.4	ND	2.9	3.2	ND
40-44	5.0	5.8	6.4	ND	4.2	4.6	ND
45-49	6.1	7.0	7.4	4.8	5.3	5.8	ND
50-54	8.0	9.9	10.5	6.4	6.2	6.5	4.0
55-59	11.4	12.8	13.1	9.9	10.0	10.5	6.0
60-64	14.3	16.8	17.5	10.9	12.0	12.6	7.4
65-69	17.5	21.2	21.9	ND	14.3	14.9	ND
70-74	20.4	26.0	26.9	ND	15.8	16.5	ND
75-79	22.8	27.0	27.8	ND	19.8	20.4	ND
80-84	25.2	28.3	28.3	ND	23.3	23.4	16.4
85+	20.2	25.6	25.7	ND	17.7	17.2	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, 2009-2013



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, 2009-2013

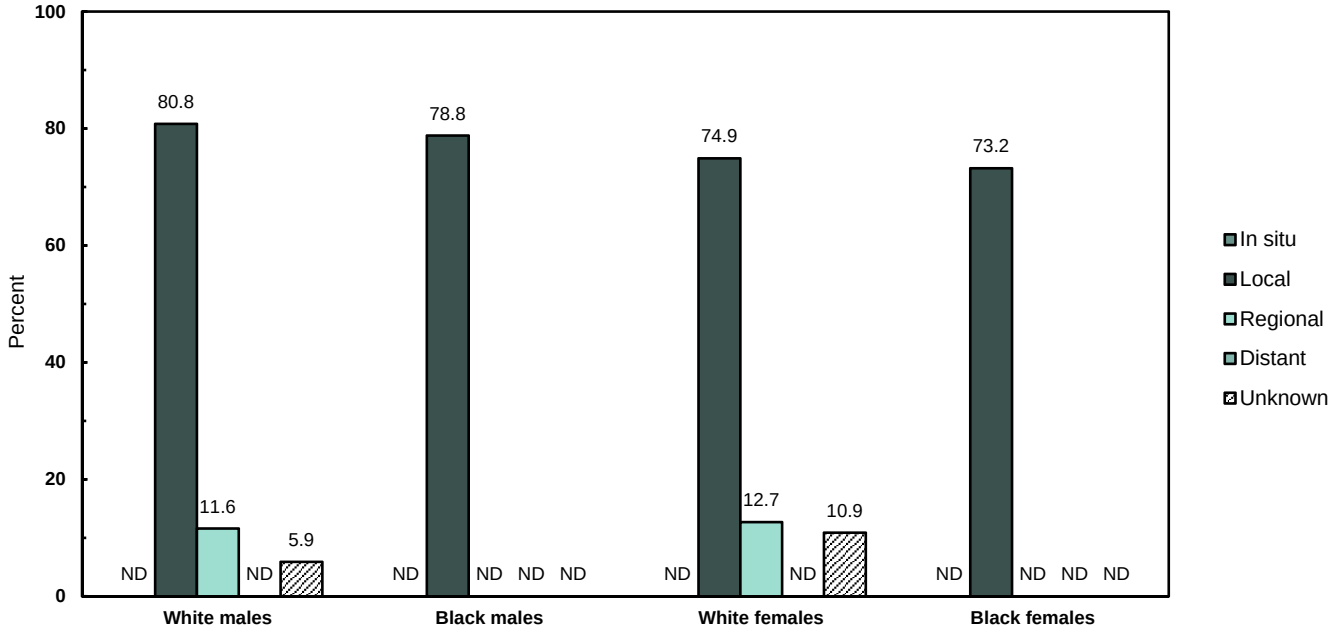
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**5,093**	**2,776**	**2,517**	**158**	**2,316**	**2,100**	**141**
Under 5	179	95	76	8	84	64	12
5-9	150	82	66	9	68	49	16
10-14	132	76	64	7	56	49	6
15-19	118	80	64	11	38	34	4
20-24	107	64	50	9	43	39	3
25-29	125	65	56	4	60	55	3
30-34	124	65	55	3	59	50	7
35-39	149	95	82	8	54	48	4
40-44	212	122	112	8	90	81	5
45-49	281	157	144	11	124	114	7
50-54	386	235	217	14	151	137	10
55-59	510	279	254	18	230	211	13
60-64	546	309	289	15	237	221	13
65-69	509	289	270	8	220	206	9
70-74	454	261	246	6	193	181	7
75-79	410	206	195	9	204	191	9
80-84	377	165	154	6	212	196	10
85+	324	131	123	4	193	174	3

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 890 - 83.6%

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, 2004-2013

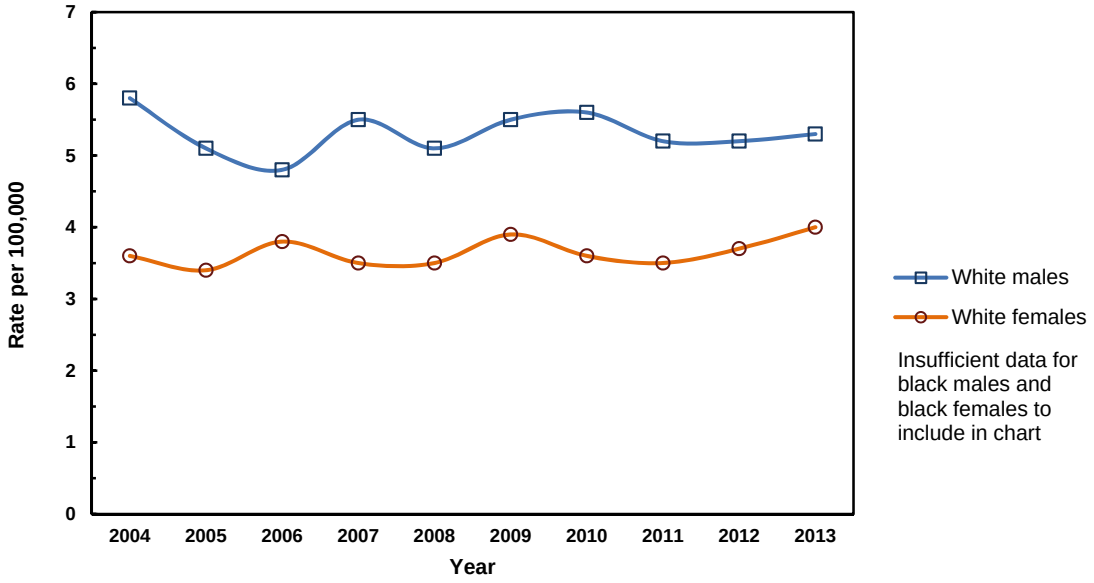
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	693	4.4 (4.1-4.7)	369	5.2 (4.7-5.7)	333	5.3 (4.7-5.9)	24	3.9 (2.3-5.5)	324	3.8 (3.4-4.2)	299	4.0 (3.5-4.5)	16	ND
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

* 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, 2004-2013



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, 2009-2013

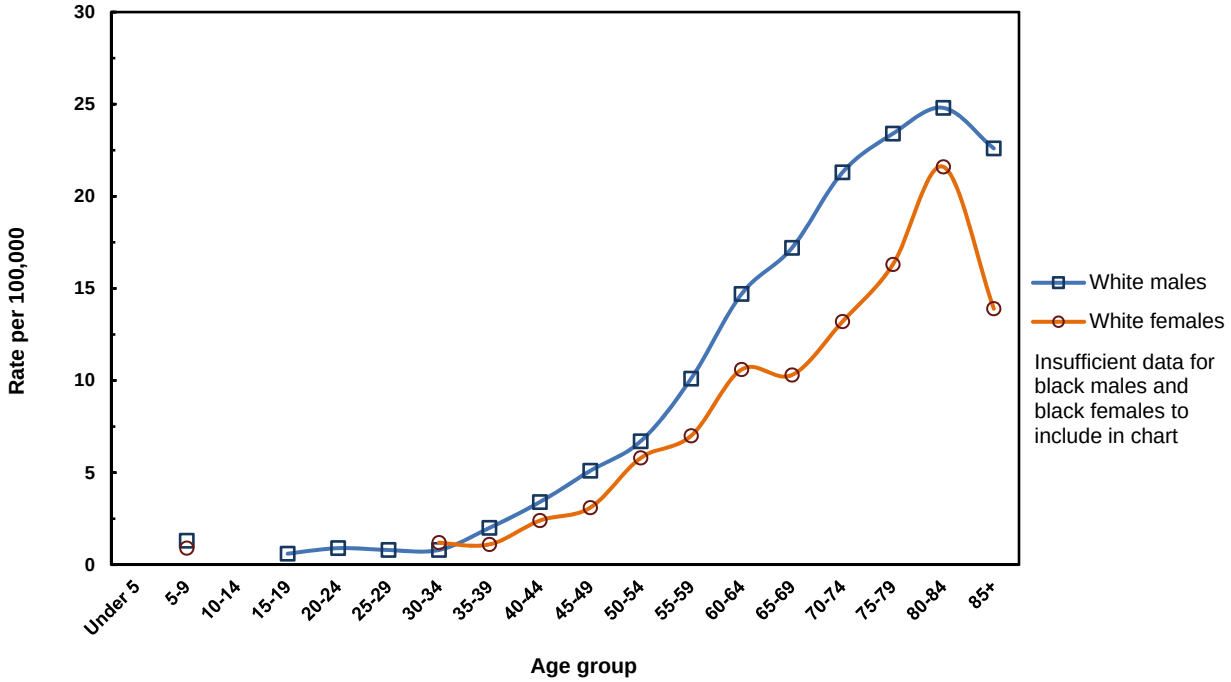
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**3,275**	**5.2**	**1,789**	**5.8**	**1,663**	**6.4**	**90**	**2.6**	**1,486**	**4.6**	**1,399**	**5.1**	**65**	**1.8**
Under 5	17	0.5	10	0.5	5	ND	3	ND	7	ND	6	ND	1	ND
5-9	42	1.1	23	1.2	20	1.3	1	ND	19	1.0	13	0.9	4	ND
10-14	19	0.5	11	0.5	7	ND	3	ND	8	ND	5	ND	0	ND
15-19	26	0.6	14	0.6	11	0.6	1	ND	12	0.6	9	ND	3	ND
20-24	25	0.6	18	0.8	16	0.9	1	ND	7	ND	7	ND	0	ND
25-29	23	0.6	14	0.7	13	0.8	1	ND	9	ND	9	ND	0	ND
30-34	35	0.9	15	0.8	12	0.8	2	ND	20	1.1	18	1.2	1	ND
35-39	54	1.4	35	1.9	30	2.0	4	ND	19	1.0	16	1.1	3	ND
40-44	111	2.6	64	3.1	59	3.4	4	ND	47	2.2	42	2.4	4	ND
45-49	181	4.0	109	4.8	98	5.1	9	ND	72	3.1	62	3.1	8	ND
50-54	274	5.7	146	6.2	138	6.7	6	ND	128	5.2	123	5.8	5	ND
55-59	362	8.1	215	9.9	196	10.1	15	8.2	147	6.4	141	7.0	5	ND
60-64	464	12.1	266	14.5	243	14.7	15	10.9	198	10.0	186	10.6	8	ND
65-69	370	12.7	222	16.3	213	17.2	7	ND	148	9.6	142	10.3	4	ND
70-74	355	15.9	204	20.3	195	21.3	5	ND	151	12.3	145	13.2	4	ND
75-79	329	18.3	171	22.4	164	23.4	5	ND	158	15.3	153	16.3	3	ND
80-84	330	22.1	140	24.0	135	24.8	5	ND	190	20.9	181	21.6	8	ND
85+	258	16.1	112	21.9	108	22.6	3	ND	146	13.4	141	13.9	4	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,093	2,776	8.3	(8.0-8.6)	2,316	6.0	(5.8-6.2)
Adams	41	22	7.8	(4.5-11.1)	19	ND	
Allegheny	488	260	8.2	(7.2-9.2)	227	5.8	(5.0-6.6)
Armstrong	28	16	ND		12	ND	
Beaver	69	39	7.6	(5.2-10.0)	30	5.5	(3.5-7.5)
Bedford	25	14	ND		11	ND	
Berks	182	93	8.7	(6.9-10.5)	89	7.2	(5.7-8.7)
Blair	61	30	8.1	(5.2-11.0)	31	7.3	(4.7-9.9)
Bradford	19	8	ND		11	ND	
Bucks	268	153	9.3	(7.8-10.8)	115	5.9	(4.8-7.0)
Butler	94	50	10.1	(7.3-12.9)	44	8.0	(5.6-10.4)
Cambria	68	41	10.4	(7.2-13.6)	27	5.4	(3.4-7.4)
Cameron	4	1	ND		3	ND	
Carbon	29	15	ND		14	ND	
Centre	46	30	8.1	(5.2-11.0)	16	ND	
Chester	220	121	9.3	(7.6-11.0)	99	7.0	(5.6-8.4)
Clarion	14	8	ND		6	ND	
Clearfield	34	19	ND		15	ND	
Clinton	13	7	ND		6	ND	
Columbia	22	9	ND		13	ND	
Crawford	41	23	8.7	(5.1-12.3)	18	ND	
Cumberland	90	50	8.1	(5.9-10.3)	40	5.2	(3.6-6.8)
Dauphin	100	65	9.3	(7.0-11.6)	35	4.4	(2.9-5.9)
Delaware	228	130	9.2	(7.6-10.8)	98	5.7	(4.6-6.8)
Elk	19	10	ND		9	ND	
Erie	100	57	8.4	(6.2-10.6)	43	5.5	(3.9-7.1)
Fayette	47	26	6.2	(3.8-8.6)	21	4.8	(2.7-6.9)
Forest	2	1	ND		1	ND	
Franklin	54	32	8.1	(5.3-10.9)	22	4.7	(2.7-6.7)
Fulton	2	0	ND		2	ND	
Greene	16	11	ND		5	ND	
Huntingdon	15	4	ND		11	ND	
Indiana	41	26	10.7	(6.6-14.8)	15	ND	
Jefferson	12	9	ND		3	ND	
Juniata	8	4	ND		4	ND	
Lackawanna	112	59	10.4	(7.7-13.1)	53	7.5	(5.5-9.5)
Lancaster	225	125	9.2	(7.6-10.8)	100	6.4	(5.1-7.7)
Lawrence	36	20	7.7	(4.3-11.1)	16	ND	
Lebanon	61	29	8.1	(5.2-11.0)	32	7.5	(4.9-10.1)
Lehigh	146	81	8.8	(6.9-10.7)	65	6.4	(4.8-8.0)
Luzerne	123	67	7.9	(6.0-9.8)	56	5.1	(3.8-6.4)
Lycoming	50	26	7.7	(4.7-10.7)	24	7.2	(4.3-10.1)
McKean	10	5	ND		5	ND	
Mercer	43	22	6.7	(3.9-9.5)	21	5.9	(3.4-8.4)
Mifflin	28	13	ND		15	ND	
Monroe	62	38	8.3	(5.7-10.9)	24	5.2	(3.1-7.3)
Montgomery	322	160	7.6	(6.4-8.8)	162	6.8	(5.8-7.8)
Montour	6	3	ND		3	ND	
Northampton	109	60	7.8	(5.8-9.8)	49	5.4	(3.9-6.9)
Northumberland	40	24	8.6	(5.2-12.0)	16	ND	
Perry	25	14	ND		11	ND	
Philadelphia	486	266	7.8	(6.9-8.7)	220	5.0	(4.3-5.7)
Pike	21	15	ND		6	ND	
Potter	12	5	ND		7	ND	
Schuylkill	69	34	7.7	(5.1-10.3)	35	7.9	(5.3-10.5)
Snyder	22	10	ND		12	ND	
Somerset	27	19	ND		8	ND	
Sullivan	4	2	ND		2	ND	
Susquehanna	24	11	ND		13	ND	
Tioga	17	13	ND		4	ND	
Union	15	6	ND		9	ND	
Venango	26	11	ND		15	ND	
Warren	22	12	ND		10	ND	
Washington	93	52	8.6	(6.3-10.9)	41	5.9	(4.1-7.7)
Wayne	21	12	ND		9	ND	
Westmoreland	160	86	8.3	(6.5-10.1)	74	6.1	(4.7-7.5)
Wyoming	17	8	ND		9	ND	
York	159	84	7.3	(5.7-8.9)	75	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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	3,275	1,789	5.1	(4.9-5.3)	1,486	3.5	(3.3-3.7)
Adams	31	16	ND		15	ND	
Allegheny	349	180	5.3	(4.5-6.1)	169	3.8	(3.2-4.4)
Armstrong	15	6	ND		9	ND	
Beaver	59	37	6.9	(4.7-9.1)	22	3.6	(2.1-5.1)
Bedford	12	5	ND		7	ND	
Berks	92	48	4.4	(3.2-5.6)	44	3.3	(2.3-4.3)
Blair	48	26	6.3	(3.9-8.7)	22	4.5	(2.6-6.4)
Bradford	7	3	ND		4	ND	
Bucks	184	113	6.5	(5.3-7.7)	71	3.3	(2.5-4.1)
Butler	69	44	8.3	(5.8-10.8)	25	4.3	(2.6-6.0)
Cambria	43	26	5.8	(3.6-8.0)	17	ND	
Cameron	3	1	ND		2	ND	
Carbon	19	5	ND		14	ND	
Centre	32	22	6.0	(3.5-8.5)	10	ND	
Chester	136	64	4.7	(3.5-5.9)	72	4.7	(3.6-5.8)
Clarion	12	5	ND		7	ND	
Clearfield	20	14	ND		6	ND	
Clinton	10	4	ND		6	ND	
Columbia	12	6	ND		6	ND	
Crawford	31	18	ND		13	ND	
Cumberland	60	36	5.6	(3.8-7.4)	24	3.1	(1.9-4.3)
Dauphin	60	36	5.1	(3.4-6.8)	24	2.9	(1.7-4.1)
Delaware	138	80	5.7	(4.5-6.9)	58	3.2	(2.4-4.0)
Elk	9	6	ND		3	ND	
Erie	53	28	3.9	(2.5-5.3)	25	2.9	(1.8-4.0)
Fayette	34	16	ND		18	ND	
Forest	2	1	ND		1	ND	
Franklin	47	26	6.1	(3.8-8.4)	21	4.2	(2.4-6.0)
Fulton	0	0	ND		0	ND	
Greene	5	5	ND		0	ND	
Huntingdon	17	4	ND		13	ND	
Indiana	19	9	ND		10	ND	
Jefferson	12	8	ND		4	ND	
Juniata	8	4	ND		4	ND	
Lackawanna	73	37	6.2	(4.2-8.2)	36	4.5	(3.0-6.0)
Lancaster	171	97	6.7	(5.4-8.0)	74	4.5	(3.5-5.5)
Lawrence	21	11	ND		10	ND	
Lebanon	33	18	ND		15	ND	
Lehigh	90	49	5.2	(3.7-6.7)	41	3.7	(2.6-4.8)
Luzerne	81	41	4.4	(3.1-5.7)	40	3.3	(2.3-4.3)
Lycoming	25	12	ND		13	ND	
McKean	12	9	ND		3	ND	
Mercer	31	21	5.5	(3.1-7.9)	10	ND	
Mifflin	19	11	ND		8	ND	
Monroe	38	17	ND		21	4.0	(2.3-5.7)
Montgomery	193	98	4.5	(3.6-5.4)	95	3.6	(2.9-4.3)
Montour	6	5	ND		1	ND	
Northampton	75	39	4.6	(3.2-6.0)	36	3.7	(2.5-4.9)
Northumberland	22	12	ND		10	ND	
Perry	15	11	ND		4	ND	
Philadelphia	237	138	4.2	(3.5-4.9)	99	2.2	(1.8-2.6)
Pike	13	8	ND		5	ND	
Potter	8	2	ND		6	ND	
Schuylkill	46	19	ND		27	5.0	(3.1-6.9)
Snyder	13	4	ND		9	ND	
Somerset	27	21	8.3	(4.8-11.8)	6	ND	
Sullivan	3	2	ND		1	ND	
Susquehanna	19	11	ND		8	ND	
Tioga	11	8	ND		3	ND	
Union	6	1	ND		5	ND	
Venango	17	8	ND		9	ND	
Warren	15	8	ND		7	ND	
Washington	64	35	5.4	(3.6-7.2)	29	3.8	(2.4-5.2)
Wayne	8	4	ND		4	ND	
Westmoreland	118	68	6.0	(4.6-7.4)	50	3.5	(2.5-4.5)
Wyoming	9	4	ND		5	ND	
York	108	58	5.1	(3.8-6.4)	50	3.7	(2.7-4.7)

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 Insitute's SEER program.

Cancer of the Thyroid

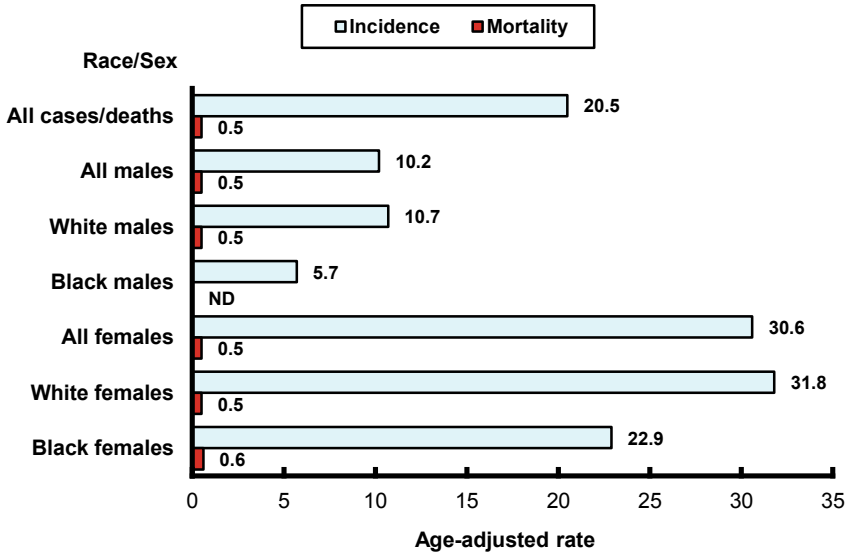
Data Highlights

In Pennsylvania, the average annual (2009-2013) age-adjusted incidence rate for thyroid cancer among females (30.6 per 100,000) was three times the rate for males (10.2). 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 (31.8) was 39 percent higher than the rate for black females (22.9).

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 2013, there were 2,853 cases of invasive thyroid cancer – the highest number ever reported to the Pennsylvania Cancer Registry. The 2013 age-adjusted incidence rate (20.8) was about 56 percent higher than the 2004 rate (13.3); however, the rate has become more stable in recent years, increasing less than 1 percent between 2011 and 2013. 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 2009 and 2013 occurred among residents under 40 years of age. In 2013, 73 percent of the thyroid cancers were diagnosed at early stages (in situ or local) of the disease, and 26 percent were diagnosed at late stages (regional or distant).

Unlike the incidence rates, the average annual (2009-2013) 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 2013, there were 84 thyroid cancer deaths among all Pennsylvania residents – one less death than was recorded the previous year, 2012. Females accounted for 50 deaths (60 percent) during 2013. The age-adjusted death rates among white males and white females showed no discernible trend for the period of 2004-2013. 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.

FIGURE 20
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



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

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

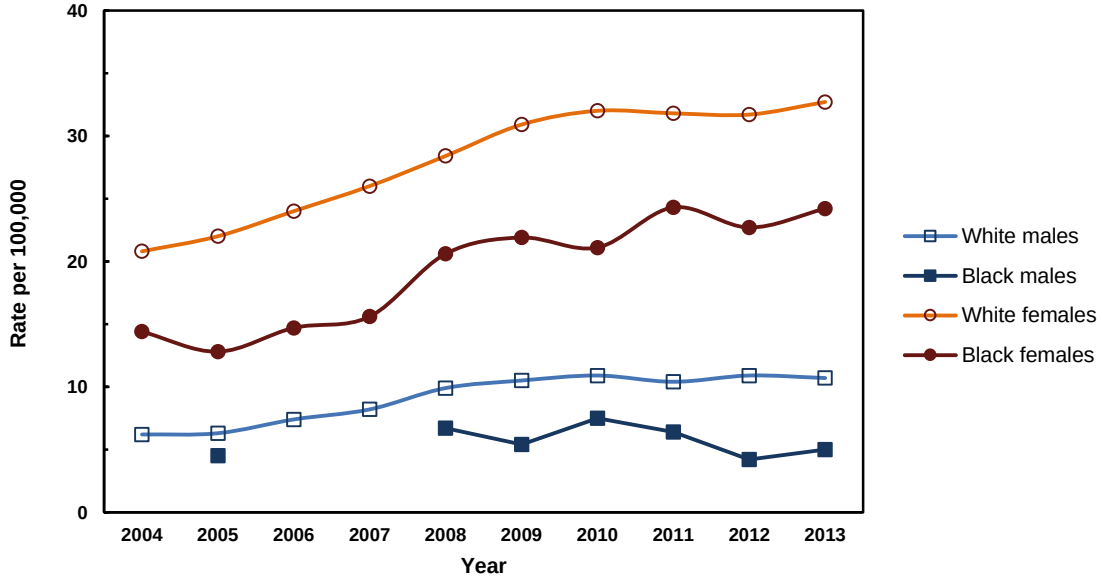
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

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)
2013	**2,853**	**20.8** (20.0-21.6)	**700**	**10.2** (9.4-11.0)	**638**	**10.7** (9.9-11.5)	**32**	**5.0** (3.3-6.7)	**2,153**	**31.2** (29.9-32.5)	**1,895**	**32.7** (31.2-34.2)	**183**	**24.2** (20.7-27.7)
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** (30.3-33.1)	**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)

* Includes unknown/other race and sex.
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, 2004-2013



Cancer of the Thyroid: INCIDENCE (Invasive)

TABLE 20-B

Average Annual Age-Specific Incidence Rates by Sex and Race

Pennsylvania Residents, 2009-2013

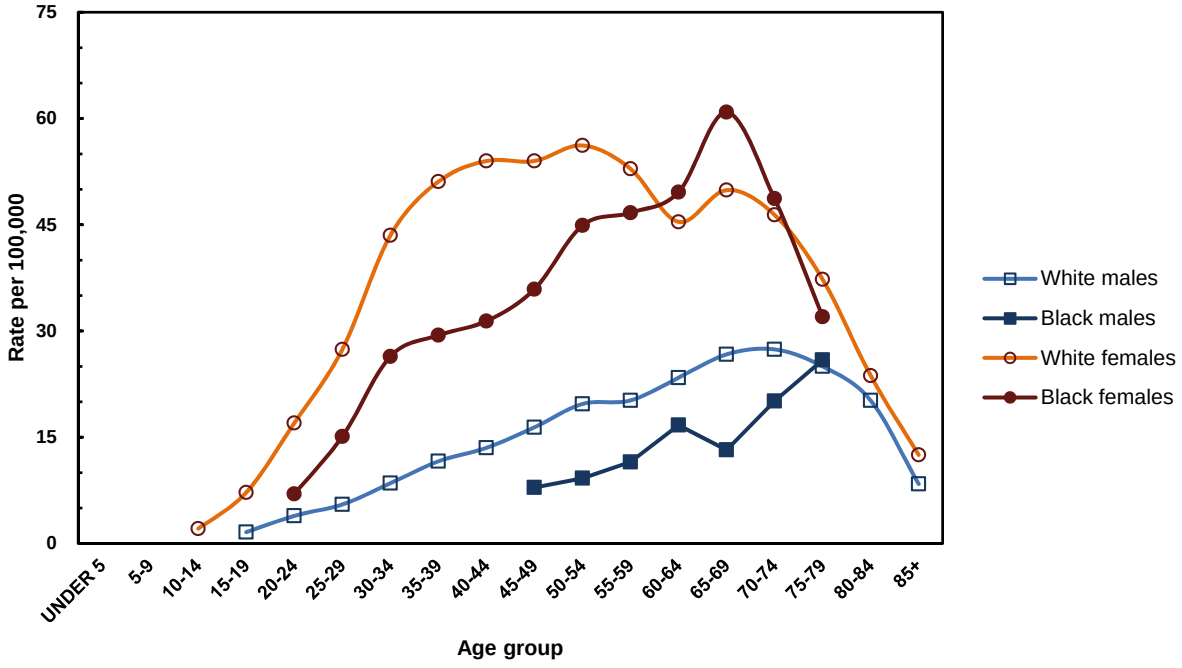
Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**21.9**	**11.1**	**12.1**	**4.6**	**32.2**	**34.0**	**22.3**
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	ND	ND	ND	ND	ND	ND	ND
10-14	1.1	0.5	ND	ND	1.8	2.1	ND
15-19	3.9	1.4	1.6	ND	6.4	7.2	ND
20-24	9.2	3.3	3.9	ND	15.2	17.0	7.0
25-29	15.7	5.2	5.5	ND	26.5	27.4	15.1
30-34	23.9	7.5	8.5	ND	40.4	43.5	26.4
35-39	29.2	10.6	11.6	ND	47.7	51.1	29.4
40-44	31.9	12.6	13.5	ND	50.9	54.0	31.4
45-49	34.2	15.9	16.4	7.9	52.1	54.0	35.9
50-54	37.1	18.4	19.7	9.2	55.0	56.2	44.9
55-59	36.1	19.5	20.2	11.5	52.0	52.9	46.7
60-64	34.9	23.2	23.4	16.7	45.7	45.4	49.6
65-69	39.1	25.5	26.7	13.2	51.0	49.9	60.9
70-74	37.6	27.1	27.4	20.1	46.3	46.4	48.7
75-79	31.8	24.9	25.0	25.9	36.9	37.3	32.0
80-84	21.7	20.1	20.2	ND	22.7	23.7	ND
85+	11.5	8.6	8.4	ND	12.8	12.5	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, 2009-2013



Cancer of the Thyroid: INCIDENCE (Invasive)

TABLE 20-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

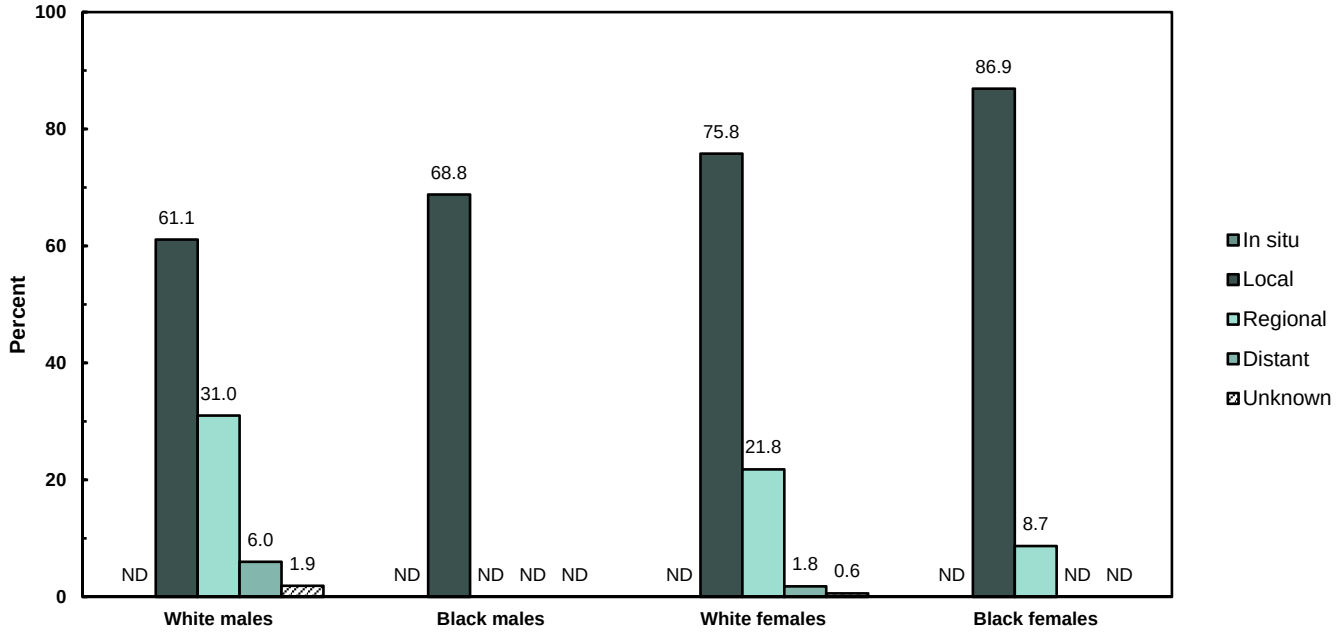
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**13,943**	**3,438**	**3,150**	**158**	**10,505**	**9,245**	**828**
Under 5	4	0	0	0	4	3	0
5-9	6	2	2	0	4	4	0
10-14	45	10	7	1	35	31	2
15-19	172	32	29	2	140	125	6
20-24	406	73	70	1	333	293	22
25-29	625	105	90	6	520	428	39
30-34	903	143	131	4	760	654	64
35-39	1,088	196	177	7	892	775	67
40-44	1,344	263	237	8	1,081	953	77
45-49	1,568	358	317	18	1,210	1,064	91
50-54	1,783	435	407	20	1,348	1,189	112
55-59	1,615	425	391	21	1,190	1,059	101
60-64	1,332	426	386	23	906	794	87
65-69	1,134	347	330	12	787	688	76
70-74	838	272	251	13	566	510	47
75-79	571	190	175	12	381	349	25
80-84	324	117	110	6	207	198	6
85+	184	44	40	4	140	127	6

* 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, 2013



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

Number and Percent of Invasive Cases Microscopically Confirmed: 2,844 - 99.7%

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, 2004-2013

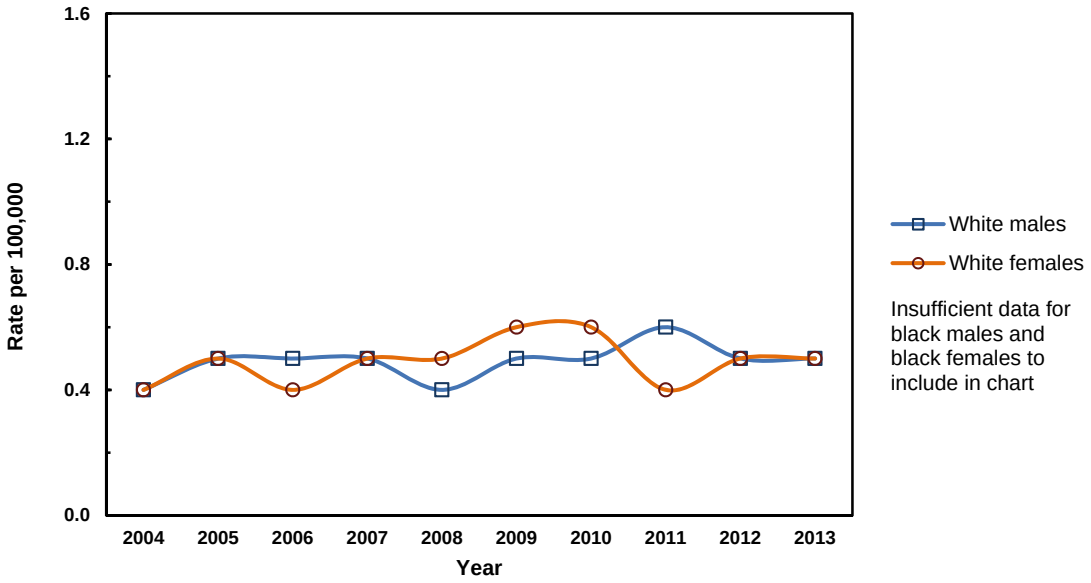
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	84	0.5 (0.4-0.6)	34	0.5 (0.3-0.7)	33	0.5 (0.3-0.7)	1	ND	50	0.5 (0.4-0.6)	44	0.5 (0.4-0.6)	4	ND
2012	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

* 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, 2004-2013



Cancer of the Thyroid: MORTALITY

TABLE 20-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

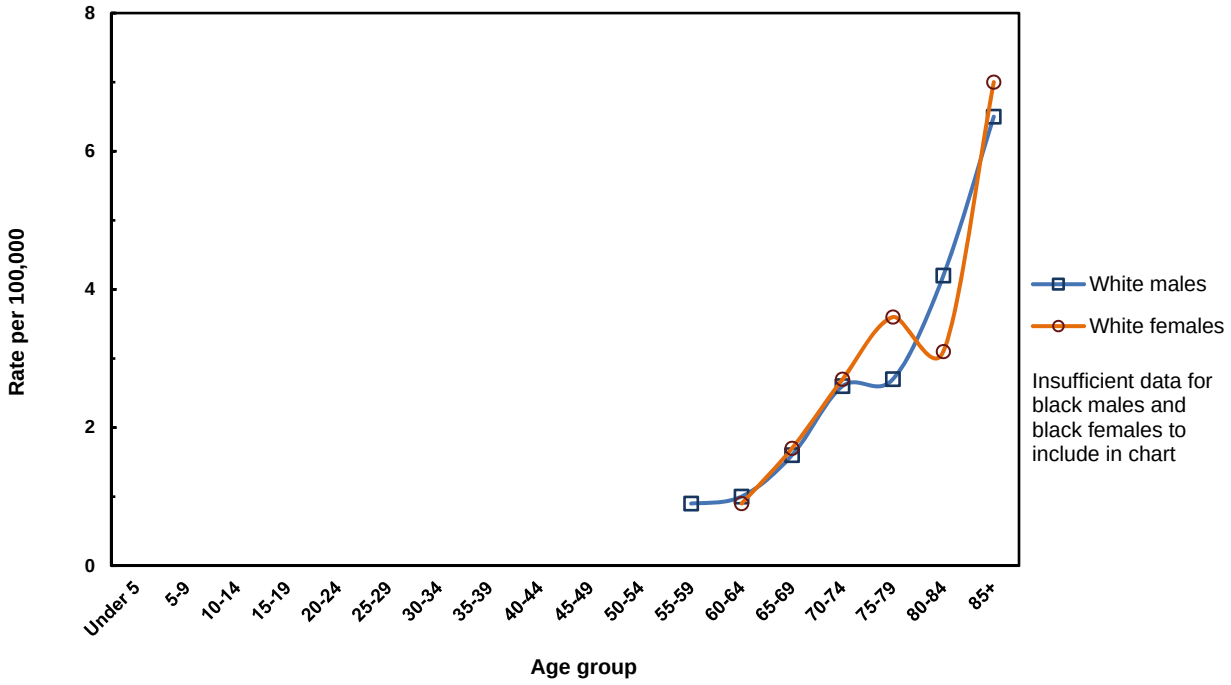
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**420**	**0.7**	**172**	**0.6**	**163**	**0.6**	**9**	**ND**	**248**	**0.8**	**220**	**0.8**	**21**	**0.6**
Under 5	0	ND	0	ND	0	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	6	ND	2	ND	1	ND	1	ND	4	ND	3	ND	0	ND
50-54	16	0.3	7	ND	7	ND	0	ND	9	ND	6	ND	2	ND
55-59	25	0.6	18	0.8	18	0.9	0	ND	7	ND	6	ND	1	ND
60-64	40	1.0	18	1.0	16	1.0	2	ND	22	1.1	16	0.9	6	ND
65-69	48	1.7	22	1.6	20	1.6	2	ND	26	1.7	23	1.7	2	ND
70-74	60	2.7	24	2.4	24	2.6	0	ND	36	2.9	30	2.7	5	ND
75-79	57	3.2	21	2.8	19	2.7	2	ND	36	3.5	34	3.6	2	ND
80-84	53	3.5	23	3.9	23	4.2	0	ND	30	3.3	26	3.1	3	ND
85+	105	6.6	32	6.3	31	6.5	1	ND	73	6.7	71	7.0	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	13,943	3,438	10.2	(9.9-10.5)	10,505	30.6	(30.0-31.2)
Adams	124	36	12.1	(8.1-16.1)	88	32.6	(25.8-39.4)
Allegheny	1,733	383	12.0	(10.8-13.2)	1,350	39.1	(37.0-41.2)
Armstrong	83	21	10.1	(5.8-14.4)	62	31.9	(24.0-39.8)
Beaver	181	44	9.4	(6.6-12.2)	137	30.2	(25.1-35.3)
Bedford	72	17	ND		55	40.8	(30.0-51.6)
Berks	382	96	8.6	(6.9-10.3)	286	26.4	(23.3-29.5)
Blair	108	24	6.4	(3.8-9.0)	84	24.9	(19.6-30.2)
Bradford	45	11	ND		34	19.9	(13.2-26.6)
Bucks	723	197	11.5	(9.9-13.1)	526	29.7	(27.2-32.2)
Butler	307	85	16.5	(13.0-20.0)	222	43.4	(37.7-49.1)
Cambria	147	32	8.2	(5.4-11.0)	115	31.1	(25.4-36.8)
Cameron	4	1	ND		3	ND	
Carbon	87	25	13.0	(7.9-18.1)	62	36.2	(27.2-45.2)
Centre	103	26	7.4	(4.6-10.2)	77	23.3	(18.1-28.5)
Chester	672	183	13.9	(11.9-15.9)	489	36.9	(33.6-40.2)
Clarion	34	6	ND		28	29.0	(18.3-39.7)
Clearfield	61	17	ND		44	20.7	(14.6-26.8)
Clinton	47	14	ND		33	37.2	(24.5-49.9)
Columbia	72	17	ND		55	32.4	(23.8-41.0)
Crawford	91	22	8.9	(5.2-12.6)	69	30.2	(23.1-37.3)
Cumberland	221	56	8.9	(6.6-11.2)	165	26.0	(22.0-30.0)
Dauphin	245	52	7.4	(5.4-9.4)	193	25.7	(22.1-29.3)
Delaware	570	149	10.5	(8.8-12.2)	421	27.6	(25.0-30.2)
Elk	40	11	ND		29	34.0	(21.6-46.4)
Erie	323	66	9.4	(7.1-11.7)	257	35.1	(30.8-39.4)
Fayette	185	51	13.6	(9.9-17.3)	134	34.3	(28.5-40.1)
Forest	13	7	ND		6	ND	
Franklin	117	33	8.3	(5.5-11.1)	84	21.4	(16.8-26.0)
Fulton	10	3	ND		7	ND	
Greene	52	13	ND		39	36.6	(25.1-48.1)
Huntingdon	35	13	ND		22	22.2	(12.9-31.5)
Indiana	95	22	9.9	(5.8-14.0)	73	34.3	(26.4-42.2)
Jefferson	35	10	ND		25	18.8	(11.4-26.2)
Juniata	22	4	ND		18	ND	
Lackawanna	269	56	9.4	(6.9-11.9)	213	36.8	(31.9-41.7)
Lancaster	469	116	8.9	(7.3-10.5)	353	25.8	(23.1-28.5)
Lawrence	150	42	16.4	(11.4-21.4)	108	44.7	(36.3-53.1)
Lebanon	150	34	9.5	(6.3-12.7)	116	33.5	(27.4-39.6)
Lehigh	370	93	10.1	(8.0-12.2)	277	29.2	(25.8-32.6)
Luzerne	385	75	8.6	(6.7-10.5)	310	36.8	(32.7-40.9)
Lycoming	162	43	13.4	(9.4-17.4)	119	38.1	(31.3-44.9)
McKean	42	12	ND		30	26.0	(16.7-35.3)
Mercer	148	45	13.8	(9.8-17.8)	103	33.1	(26.7-39.5)
Mifflin	56	11	ND		45	38.3	(27.1-49.5)
Monroe	119	31	7.2	(4.7-9.7)	88	18.4	(14.6-22.2)
Montgomery	837	226	10.6	(9.2-12.0)	611	28.1	(25.9-30.3)
Montour	24	5	ND		19	ND	
Northampton	408	103	12.8	(10.3-15.3)	305	38.0	(33.7-42.3)
Northumberland	91	32	11.6	(7.6-15.6)	59	25.8	(19.2-32.4)
Perry	45	11	ND		34	28.0	(18.6-37.4)
Philadelphia	1,268	273	7.9	(7.0-8.8)	995	24.0	(22.5-25.5)
Pike	52	13	ND		39	26.2	(18.0-34.4)
Potter	19	4	ND		15	ND	
Schuylkill	122	34	7.9	(5.2-10.6)	88	22.8	(18.0-27.6)
Snyder	52	15	ND		37	37.3	(25.3-49.3)
Somerset	96	21	9.5	(5.4-13.6)	75	40.5	(31.3-49.7)
Sullivan	8	3	ND		5	ND	
Susquehanna	33	6	ND		27	23.7	(14.8-32.6)
Tioga	31	6	ND		25	23.1	(14.0-32.2)
Union	46	11	ND		35	37.4	(25.0-49.8)
Venango	68	13	ND		55	34.3	(25.2-43.4)
Warren	37	8	ND		29	28.3	(18.0-38.6)
Washington	241	68	11.5	(8.8-14.2)	173	30.3	(25.8-34.8)
Wayne	59	21	12.6	(7.2-18.0)	38	27.6	(18.8-36.4)
Westmoreland	479	124	11.9	(9.8-14.0)	355	35.0	(31.4-38.6)
Wyoming	40	13	ND		27	39.1	(24.4-53.8)
York	528	123	10.3	(8.5-12.1)	405	34.7	(31.3-38.1)

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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	420	172	0.5	(0.4-0.6)	248	0.5	(0.4-0.6)
Adams	3	1	ND		2	ND	
Allegheny	41	19	ND		22	0.4	(0.2-0.6)
Armstrong	4	2	ND		2	ND	
Beaver	9	4	ND		5	ND	
Bedford	9	3	ND		6	ND	
Berks	9	3	ND		6	ND	
Blair	8	0	ND		8	ND	
Bradford	3	3	ND		0	ND	
Bucks	21	13	ND		8	ND	
Butler	3	1	ND		2	ND	
Cambria	2	1	ND		1	ND	
Cameron	1	1	ND		0	ND	
Carbon	1	1	ND		0	ND	
Centre	4	2	ND		2	ND	
Chester	14	6	ND		8	ND	
Clarion	1	0	ND		1	ND	
Clearfield	2	0	ND		2	ND	
Clinton	3	1	ND		2	ND	
Columbia	4	2	ND		2	ND	
Crawford	3	2	ND		1	ND	
Cumberland	5	1	ND		4	ND	
Dauphin	12	4	ND		8	ND	
Delaware	11	2	ND		9	ND	
Elk	2	0	ND		2	ND	
Erie	7	5	ND		2	ND	
Fayette	5	3	ND		2	ND	
Forest	0	0	ND		0	ND	
Franklin	3	1	ND		2	ND	
Fulton	0	0	ND		0	ND	
Greene	3	2	ND		1	ND	
Huntingdon	0	0	ND		0	ND	
Indiana	4	2	ND		2	ND	
Jefferson	1	0	ND		1	ND	
Juniata	3	1	ND		2	ND	
Lackawanna	3	2	ND		1	ND	
Lancaster	13	0	ND		13	ND	
Lawrence	8	3	ND		5	ND	
Lebanon	1	1	ND		0	ND	
Lehigh	9	2	ND		7	ND	
Luzerne	10	4	ND		6	ND	
Lycoming	2	1	ND		1	ND	
McKean	2	1	ND		1	ND	
Mercer	5	2	ND		3	ND	
Mifflin	0	0	ND		0	ND	
Monroe	2	2	ND		0	ND	
Montgomery	36	17	ND		19	ND	
Montour	1	0	ND		1	ND	
Northampton	16	8	ND		8	ND	
Northumberland	3	2	ND		1	ND	
Perry	3	2	ND		1	ND	
Philadelphia	43	19	ND		24	0.5	(0.3-0.7)
Pike	1	0	ND		1	ND	
Potter	1	0	ND		1	ND	
Schuylkill	3	1	ND		2	ND	
Snyder	2	1	ND		1	ND	
Somerset	3	1	ND		2	ND	
Sullivan	1	0	ND		1	ND	
Susquehanna	1	0	ND		1	ND	
Tioga	4	0	ND		4	ND	
Union	0	0	ND		0	ND	
Venango	1	0	ND		1	ND	
Warren	1	1	ND		0	ND	
Washington	10	4	ND		6	ND	
Wayne	4	0	ND		4	ND	
Westmoreland	20	10	ND		10	ND	
Wyoming	0	0	ND		0	ND	
York	10	2	ND		8	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 Insitute's SEER program.

Non-Hodgkin Lymphoma

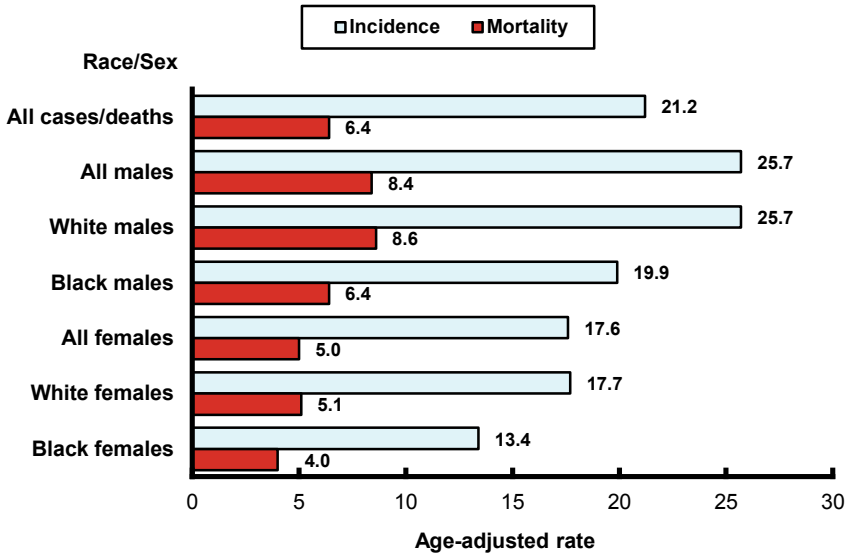
Data Highlights

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 2009-2013 average annual age-adjusted incidence rate was 46 percent higher for males (25.7 per 100,000) than females (17.6). The rate for white males (25.7) was about 29 percent higher than the rate for black males (19.9).

There were 3,328 new cases of non-Hodgkin lymphoma diagnosed among Pennsylvania residents in 2013 – a decrease from the previous year, 2012, when there were 3,365 new cases. The annual age-adjusted incidence rates by sex and race for 2004 through 2013 have not changed much among white males and white females. Annual rates among black males varied with a low of 16.6 in 2004 to a high of 21.0 in 2011. The rate among black females have increased in recent years and reached a new high in 2013 (15.2). The age-specific incidence curve, based on 2009-2013 data, began rising sharply around age 50. White males had the highest age-specific incidence rates of the four sex/race groups beginning at age 60. During the period 2009-2013, about 88 percent of the cases were diagnosed among residents 50 years of age or older. In 2013, 50 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 2013, there were 997 deaths among Pennsylvania residents, resulting in an age-adjusted rate of 5.9 per 100,000 – the lowest rate recorded for the 10-year period of 2004-2013. As seen with incidence rates, the 2009-2013 average annual age-adjusted death rates by sex and race were highest among white males (8.6). The average annual (2009-2013) age-specific death rates were highest among white males 70 years of age or older. During the 10-year period of 2004 through 2013, 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.

FIGURE 21
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, being overweight or obese, and having breast implants 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, 2004-2013

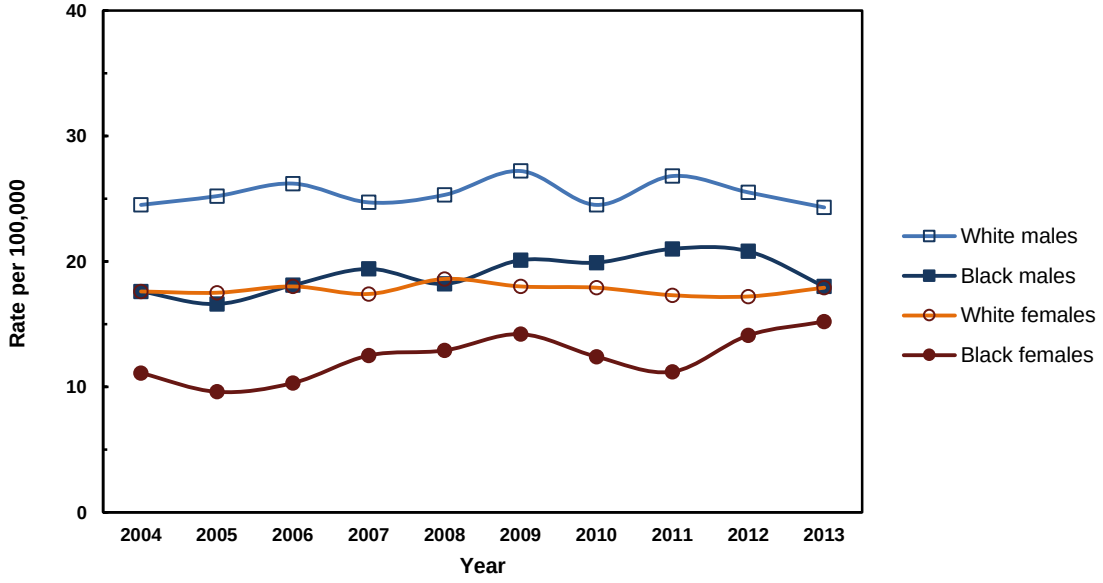
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**3,328**	**20.8** (20.1-21.5)	**1,744**	**24.3** (23.2-25.4)	**1,567**	**24.3** (23.1-25.5)	**108**	**18.0** (14.6-21.4)	**1,584**	**17.9** (17.0-18.8)	**1,419**	**17.9** (17.0-18.8)	**118**	**15.2** (12.5-17.9)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Non-Hodgkin Lymphoma: INCIDENCE

TABLE 21-B

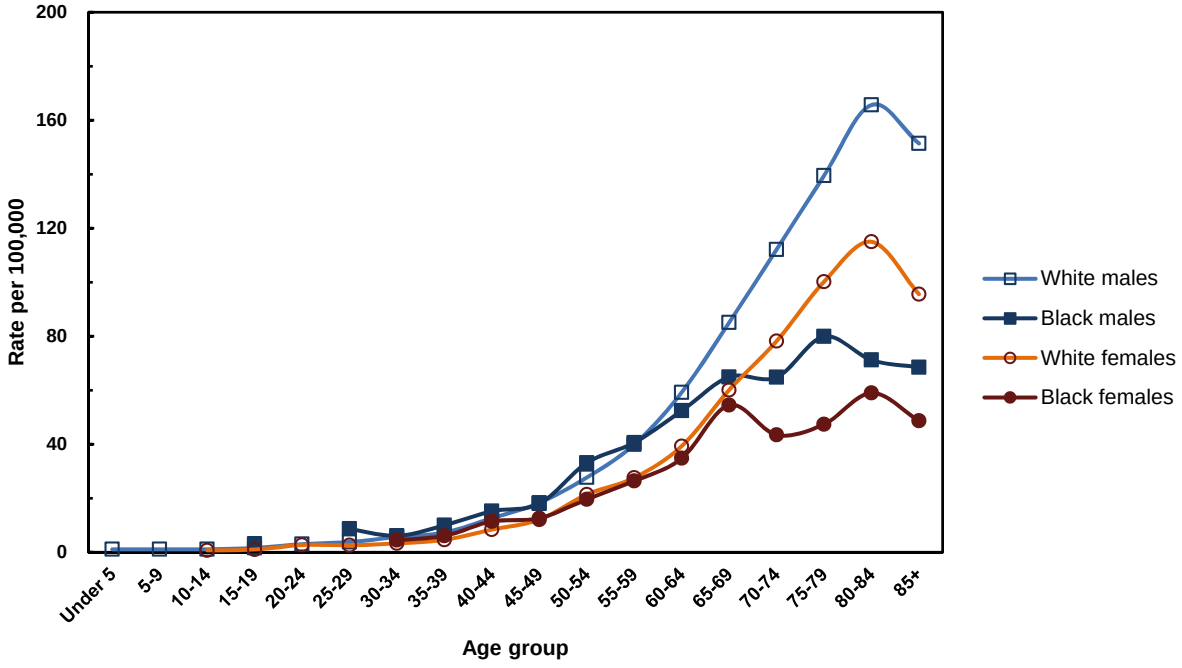
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**26.0**	**28.7**	**30.7**	**16.4**	**23.5**	**25.3**	**13.2**
Under 5	0.7	1.0	1.1	ND	ND	ND	ND
5-9	0.7	1.1	1.1	ND	ND	ND	ND
10-14	1.2	1.4	1.1	ND	0.9	0.7	ND
15-19	1.5	1.9	1.6	3.1	1.0	1.0	ND
20-24	2.8	3.0	3.0	ND	2.5	2.7	ND
25-29	3.5	4.4	3.8	8.7	2.6	2.6	ND
30-34	4.6	5.6	5.6	6.1	3.6	3.3	4.5
35-39	6.3	7.7	7.3	10.0	5.0	4.6	6.1
40-44	11.1	13.3	12.6	15.2	9.0	8.4	11.4
45-49	15.3	18.2	18.3	18.0	12.4	12.1	12.6
50-54	25.2	29.0	27.7	33.1	21.6	21.4	19.6
55-59	34.2	40.7	39.9	40.6	28.1	27.6	26.4
60-64	48.8	58.7	59.2	52.4	39.5	39.3	34.8
65-69	71.9	85.3	85.1	64.9	60.0	60.1	54.5
70-74	91.4	110.2	112.1	64.8	76.0	78.2	43.5
75-79	114.3	137.4	139.5	79.9	97.1	100.2	47.4
80-84	131.9	163.9	165.7	71.2	111.4	115.0	59.0
85+	111.9	149.6	151.4	68.5	94.3	95.6	48.7

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 21-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Non-Hodgkin Lymphoma: INCIDENCE

TABLE 21-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

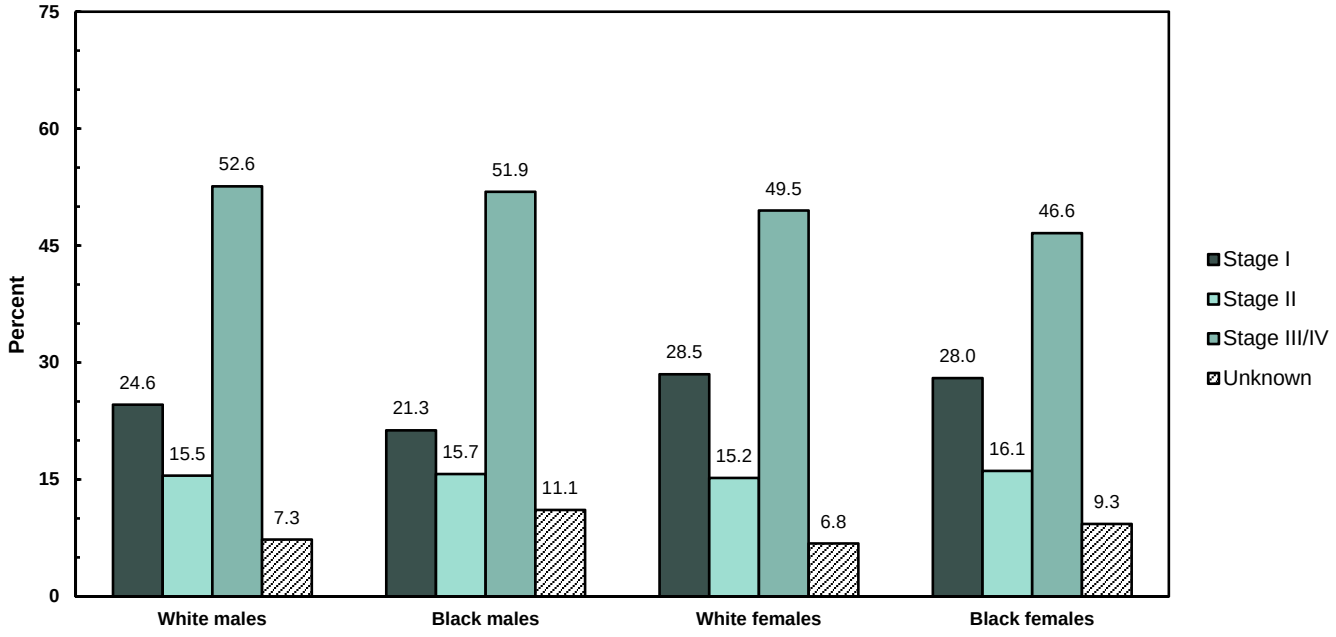
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**16,551**	**8,895**	**7,970**	**558**	**7,656**	**6,879**	**490**
Under 5	25	18	16	1	7	7	0
5-9	26	21	16	3	5	2	2
10-14	46	28	18	7	18	11	4
15-19	65	44	29	10	21	17	2
20-24	123	68	54	9	55	46	8
25-29	140	89	62	22	51	40	7
30-34	174	106	87	14	68	49	11
35-39	236	143	111	21	93	70	14
40-44	469	277	221	34	192	149	28
45-49	701	412	354	41	289	238	32
50-54	1,213	684	572	72	529	453	49
55-59	1,531	888	773	74	643	552	57
60-64	1,862	1,079	977	72	783	687	61
65-69	2,087	1,161	1,051	59	926	828	68
70-74	2,036	1,106	1,025	42	930	860	42
75-79	2,051	1,048	978	37	1,003	938	37
80-84	1,970	956	901	22	1,014	962	36
85+	1,793	764	724	18	1,029	970	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, 2013



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

Number and Percent of Cases Microscopically Confirmed: 3,236 - 97.2%

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, 2004-2013

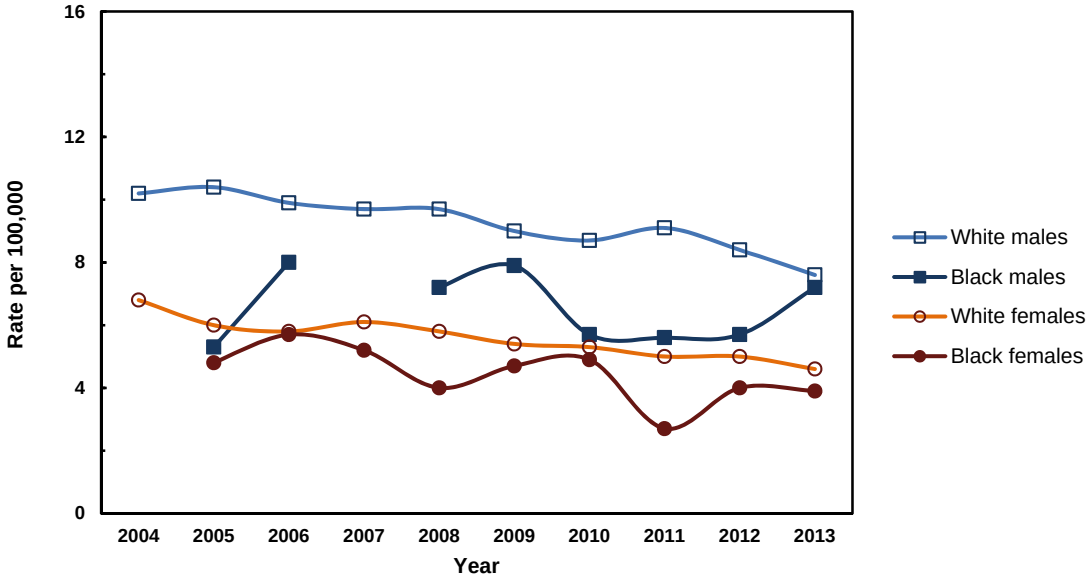
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	997	5.9 (5.5-6.3)	539	7.6 (7.0-8.2)	492	7.6 (6.9-8.3)	38	7.1 (4.8-9.4)	458	4.7 (4.3-5.1)	415	4.6 (4.2-5.0)	29	3.9 (2.5-5.3)
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

* 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, 2004-2013



Non-Hodgkin Lymphoma: MORTALITY

TABLE 21-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

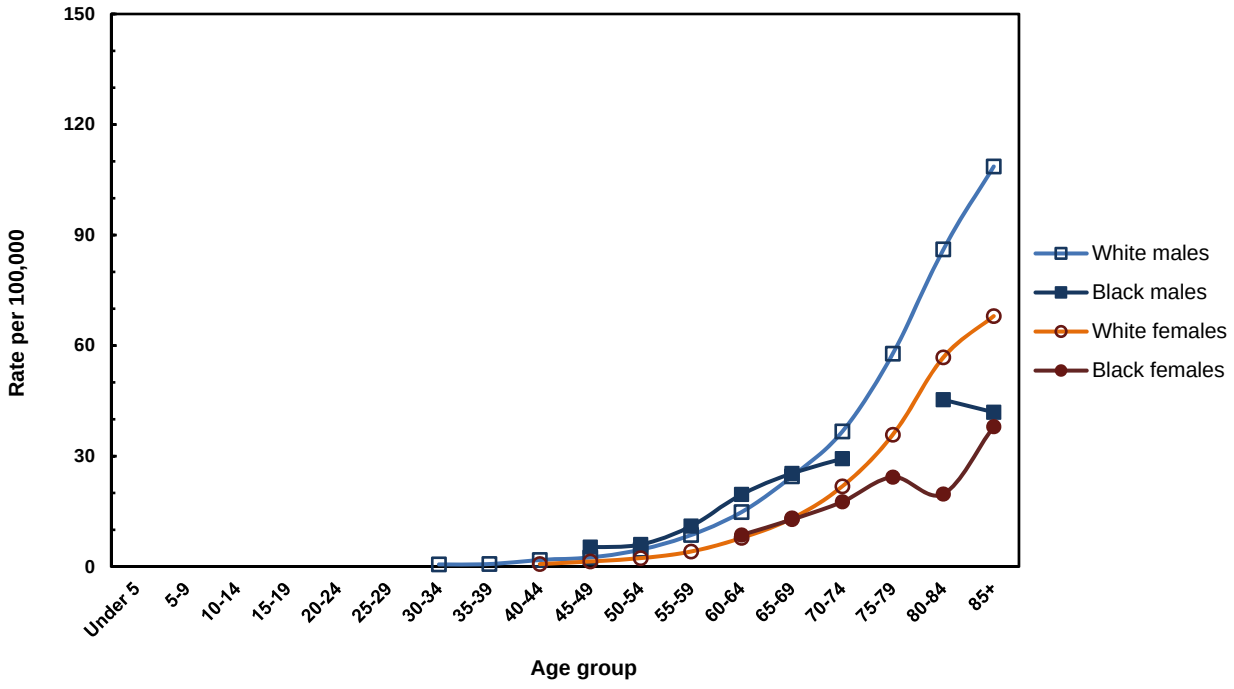
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**5,282**	**8.3**	**2,860**	**9.2**	**2,651**	**10.2**	**166**	**4.9**	**2,422**	**7.4**	**2,245**	**8.3**	**143**	**3.9**
Under 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	3	ND	3	ND	0	ND	0	ND	0	ND	0	ND
15-19	8	ND	4	ND	4	ND	0	ND	4	ND	3	ND	1	ND
20-24	8	ND	3	ND	2	ND	1	ND	5	ND	4	ND	0	ND
25-29	12	0.3	8	ND	3	ND	5	ND	4	ND	3	ND	1	ND
30-34	17	0.4	13	0.7	10	0.6	2	ND	4	ND	2	ND	2	ND
35-39	25	0.7	15	0.8	11	0.7	4	ND	10	0.5	5	ND	5	ND
40-44	57	1.4	37	1.8	31	1.8	6	ND	20	0.9	13	0.7	7	ND
45-49	99	2.2	62	2.7	49	2.5	12	5.3	37	1.6	28	1.4	9	ND
50-54	170	3.5	113	4.8	95	4.6	13	6.0	57	2.3	48	2.3	7	ND
55-59	280	6.3	190	8.7	167	8.6	20	11.0	90	3.9	82	4.1	7	ND
60-64	432	11.3	276	15.0	244	14.8	27	19.6	156	7.9	137	7.8	15	8.6
65-69	530	18.3	329	24.2	302	24.5	23	25.3	201	13.0	180	13.1	16	12.8
70-74	627	28.2	365	36.4	336	36.7	19	29.3	262	21.4	240	21.8	17	17.6
75-79	782	43.6	420	55.1	405	57.8	9	ND	362	35.1	335	35.8	19	24.3
80-84	977	65.4	485	83.1	468	86.1	14	45.3	492	54.0	475	56.8	12	19.7
85+	1,253	78.2	535	104.7	519	108.6	11	41.9	718	65.8	690	68.0	25	38.0

* 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 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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	**16,551**	**8,895**	**25.7**	(25.2-26.2)	**7,656**	**17.6**	(17.2-18.0)
Adams	**127**	**70**	**23.9**	(18.3-29.5)	**57**	**17.6**	(13.0-22.2)
Allegheny	**1,649**	**833**	**24.4**	(22.7-26.1)	**816**	**17.9**	(16.7-19.1)
Armstrong	**107**	**65**	**30.2**	(22.9-37.5)	**42**	**14.5**	(10.1-18.9)
Beaver	**275**	**146**	**27.9**	(23.4-32.4)	**129**	**17.4**	(14.4-20.4)
Bedford	**72**	**36**	**21.6**	(14.5-28.7)	**36**	**19.6**	(13.2-26.0)
Berks	**552**	**292**	**27.1**	(24.0-30.2)	**260**	**19.5**	(17.1-21.9)
Blair	**200**	**102**	**27.2**	(21.9-32.5)	**98**	**19.7**	(15.8-23.6)
Bradford	**94**	**58**	**30.9**	(22.9-38.9)	**36**	**17.0**	(11.4-22.6)
Bucks	**908**	**513**	**29.6**	(27.0-32.2)	**395**	**18.7**	(16.9-20.5)
Butler	**271**	**150**	**28.4**	(23.9-32.9)	**121**	**19.5**	(16.0-23.0)
Cambria	**223**	**109**	**24.2**	(19.7-28.7)	**114**	**20.5**	(16.7-24.3)
Cameron	**9**	**5**	**ND**		**4**	**ND**	
Carbon	**108**	**52**	**26.1**	(19.0-33.2)	**56**	**22.6**	(16.7-28.5)
Centre	**150**	**89**	**26.8**	(21.2-32.4)	**61**	**16.3**	(12.2-20.4)
Chester	**593**	**344**	**26.7**	(23.9-29.5)	**249**	**16.5**	(14.5-18.5)
Clarion	**58**	**34**	**29.6**	(19.7-39.5)	**24**	**18.6**	(11.2-26.0)
Clearfield	**107**	**60**	**24.5**	(18.3-30.7)	**47**	**16.5**	(11.8-21.2)
Clinton	**59**	**33**	**28.4**	(18.7-38.1)	**26**	**20.0**	(12.3-27.7)
Columbia	**105**	**45**	**24.7**	(17.5-31.9)	**60**	**25.5**	(19.0-32.0)
Crawford	**119**	**70**	**27.5**	(21.1-33.9)	**49**	**16.3**	(11.7-20.9)
Cumberland	**328**	**180**	**27.7**	(23.7-31.7)	**148**	**17.6**	(14.8-20.4)
Dauphin	**298**	**161**	**24.0**	(20.3-27.7)	**137**	**15.5**	(12.9-18.1)
Delaware	**657**	**357**	**25.8**	(23.1-28.5)	**300**	**16.1**	(14.3-17.9)
Elk	**39**	**24**	**24.7**	(14.8-34.6)	**15**	**ND**	
Erie	**338**	**164**	**22.0**	(18.6-25.4)	**174**	**19.2**	(16.3-22.1)
Fayette	**194**	**95**	**21.9**	(17.5-26.3)	**99**	**18.7**	(15.0-22.4)
Forest	**8**	**6**	**ND**		**2**	**ND**	
Franklin	**208**	**122**	**28.1**	(23.1-33.1)	**86**	**16.2**	(12.8-19.6)
Fulton	**26**	**12**	**ND**		**14**	**ND**	
Greene	**46**	**21**	**18.3**	(10.5-26.1)	**25**	**18.8**	(11.4-26.2)
Huntingdon	**68**	**31**	**21.6**	(14.0-29.2)	**37**	**24.2**	(16.4-32.0)
Indiana	**90**	**51**	**21.1**	(15.3-26.9)	**39**	**12.5**	(8.6-16.4)
Jefferson	**55**	**38**	**26.7**	(18.2-35.2)	**17**	**ND**	
Juniata	**36**	**20**	**27.3**	(15.3-39.3)	**16**	**ND**	
Lackawanna	**250**	**137**	**22.4**	(18.6-26.2)	**113**	**14.0**	(11.4-16.6)
Lancaster	**650**	**360**	**26.2**	(23.5-28.9)	**290**	**17.5**	(15.5-19.5)
Lawrence	**118**	**66**	**23.7**	(18.0-29.4)	**52**	**13.9**	(10.1-17.7)
Lebanon	**172**	**91**	**22.9**	(18.2-27.6)	**81**	**17.3**	(13.5-21.1)
Lehigh	**467**	**248**	**26.6**	(23.3-29.9)	**219**	**19.0**	(16.5-21.5)
Luzerne	**495**	**261**	**27.3**	(24.0-30.6)	**234**	**18.9**	(16.5-21.3)
Lycoming	**171**	**91**	**26.8**	(21.3-32.3)	**80**	**20.2**	(15.8-24.6)
McKean	**53**	**29**	**22.8**	(14.5-31.1)	**24**	**15.7**	(9.4-22.0)
Mercer	**153**	**80**	**21.8**	(17.0-26.6)	**73**	**16.1**	(12.4-19.8)
Mifflin	**58**	**28**	**20.1**	(12.7-27.5)	**30**	**18.5**	(11.9-25.1)
Monroe	**174**	**106**	**23.8**	(19.3-28.3)	**68**	**13.9**	(10.6-17.2)
Montgomery	**1,127**	**611**	**28.3**	(26.1-30.5)	**516**	**18.9**	(17.3-20.5)
Montour	**32**	**21**	**36.1**	(20.7-51.5)	**11**	**ND**	
Northampton	**431**	**229**	**27.2**	(23.7-30.7)	**202**	**19.6**	(16.9-22.3)
Northumberland	**132**	**72**	**24.9**	(19.1-30.7)	**60**	**16.1**	(12.0-20.2)
Perry	**70**	**42**	**35.1**	(24.5-45.7)	**28**	**20.9**	(13.2-28.6)
Philadelphia	**1,525**	**791**	**24.0**	(22.3-25.7)	**734**	**16.2**	(15.0-17.4)
Pike	**63**	**39**	**21.7**	(14.9-28.5)	**24**	**12.6**	(7.6-17.6)
Potter	**20**	**13**	**ND**		**7**	**ND**	
Schuylkill	**208**	**112**	**24.5**	(20.0-29.0)	**96**	**17.0**	(13.6-20.4)
Snyder	**64**	**33**	**31.6**	(20.8-42.4)	**31**	**24.4**	(15.8-33.0)
Somerset	**122**	**61**	**24.3**	(18.2-30.4)	**61**	**20.4**	(15.3-25.5)
Sullivan	**16**	**10**	**ND**		**6**	**ND**	
Susquehanna	**50**	**26**	**18.4**	(11.3-25.5)	**24**	**15.0**	(9.0-21.0)
Tioga	**49**	**29**	**21.0**	(13.4-28.6)	**20**	**11.7**	(6.6-16.8)
Union	**70**	**47**	**39.3**	(28.1-50.5)	**23**	**15.7**	(9.3-22.1)
Venango	**70**	**35**	**20.0**	(13.4-26.6)	**35**	**16.5**	(11.0-22.0)
Warren	**60**	**34**	**24.5**	(16.3-32.7)	**26**	**16.4**	(10.1-22.7)
Washington	**280**	**155**	**25.3**	(21.3-29.3)	**125**	**16.0**	(13.2-18.8)
Wayne	**83**	**47**	**28.3**	(20.2-36.4)	**36**	**17.3**	(11.6-23.0)
Westmoreland	**567**	**305**	**26.1**	(23.2-29.0)	**262**	**18.2**	(16.0-20.4)
Wyoming	**41**	**20**	**22.0**	(12.4-31.6)	**21**	**22.6**	(12.9-32.3)
York	**533**	**278**	**24.3**	(21.4-27.2)	**255**	**18.2**	(16.0-20.4)

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 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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,282	2,860	8.4	(8.1-8.7)	2,422	5.0	(4.8-5.2)
Adams	35	18	ND		17	ND	
Allegheny	569	294	8.4	(7.4-9.4)	275	5.3	(4.7-5.9)
Armstrong	45	23	10.5	(6.2-14.8)	22	6.9	(4.0-9.8)
Beaver	94	53	9.7	(7.1-12.3)	41	4.9	(3.4-6.4)
Bedford	28	13	ND		15	ND	
Berks	143	80	7.5	(5.9-9.1)	63	4.1	(3.1-5.1)
Blair	75	46	12.3	(8.7-15.9)	29	4.7	(3.0-6.4)
Bradford	40	24	11.4	(6.8-16.0)	16	ND	
Bucks	251	141	8.7	(7.3-10.1)	110	4.8	(3.9-5.7)
Butler	73	40	7.8	(5.4-10.2)	33	5.0	(3.3-6.7)
Cambria	65	35	8.1	(5.4-10.8)	30	4.6	(3.0-6.2)
Cameron	2	1	ND		1	ND	
Carbon	28	20	10.2	(5.7-14.7)	8	ND	
Centre	55	33	11.1	(7.3-14.9)	22	5.0	(2.9-7.1)
Chester	180	116	9.9	(8.1-11.7)	64	4.0	(3.0-5.0)
Clarion	13	9	ND		4	ND	
Clearfield	47	28	11.5	(7.2-15.8)	19	ND	
Clinton	23	14	ND		9	ND	
Columbia	24	6	ND		18	ND	
Crawford	47	30	11.9	(7.6-16.2)	17	ND	
Cumberland	100	49	7.6	(5.5-9.7)	51	5.4	(3.9-6.9)
Dauphin	95	55	8.8	(6.5-11.1)	40	4.3	(3.0-5.6)
Delaware	211	112	8.1	(6.6-9.6)	99	4.8	(3.9-5.7)
Elk	16	11	ND		5	ND	
Erie	110	54	7.5	(5.5-9.5)	56	5.2	(3.8-6.6)
Fayette	67	39	8.7	(6.0-11.4)	28	4.3	(2.7-5.9)
Forest	5	3	ND		2	ND	
Franklin	61	35	8.3	(5.6-11.0)	26	4.2	(2.6-5.8)
Fulton	5	2	ND		3	ND	
Greene	20	11	ND		9	ND	
Huntingdon	23	13	ND		10	ND	
Indiana	45	26	11.0	(6.8-15.2)	19	ND	
Jefferson	35	19	ND		16	ND	
Juniata	13	8	ND		5	ND	
Lackawanna	101	56	8.9	(6.6-11.2)	45	4.5	(3.2-5.8)
Lancaster	198	110	7.9	(6.4-9.4)	88	4.6	(3.6-5.6)
Lawrence	44	20	7.3	(4.1-10.5)	24	6.2	(3.7-8.7)
Lebanon	45	26	6.3	(3.9-8.7)	19	ND	
Lehigh	140	79	8.8	(6.9-10.7)	61	4.7	(3.5-5.9)
Luzerne	153	85	9.1	(7.2-11.0)	68	4.7	(3.6-5.8)
Lycoming	44	26	8.0	(4.9-11.1)	18	ND	
McKean	12	8	ND		4	ND	
Mercer	63	27	7.5	(4.7-10.3)	36	7.3	(4.9-9.7)
Mifflin	20	12	ND		8	ND	
Monroe	59	34	8.0	(5.3-10.7)	25	5.4	(3.3-7.5)
Montgomery	327	168	7.7	(6.5-8.9)	159	5.2	(4.4-6.0)
Montour	12	9	ND		3	ND	
Northampton	118	65	7.9	(6.0-9.8)	53	4.7	(3.4-6.0)
Northumberland	43	22	7.6	(4.4-10.8)	21	5.0	(2.9-7.1)
Perry	22	16	ND		6	ND	
Philadelphia	460	238	7.6	(6.6-8.6)	222	4.7	(4.1-5.3)
Pike	13	6	ND		7	ND	
Potter	4	2	ND		2	ND	
Schuylkill	68	37	8.1	(5.5-10.7)	31	4.9	(3.2-6.6)
Snyder	19	13	ND		6	ND	
Somerset	45	25	10.0	(6.1-13.9)	20	6.0	(3.4-8.6)
Sullivan	3	0	ND		3	ND	
Susquehanna	24	15	ND		9	ND	
Tioga	21	11	ND		10	ND	
Union	19	11	ND		8	ND	
Venango	36	16	ND		20	8.6	(4.8-12.4)
Warren	23	13	ND		10	ND	
Washington	105	50	8.0	(5.8-10.2)	55	6.1	(4.5-7.7)
Wayne	26	12	ND		14	ND	
Westmoreland	196	99	8.4	(6.7-10.1)	97	6.0	(4.8-7.2)
Wyoming	20	16	ND		4	ND	
York	156	72	6.4	(4.9-7.9)	84	5.7	(4.5-6.9)

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 Insitute's SEER program.

Hodgkin Lymphoma

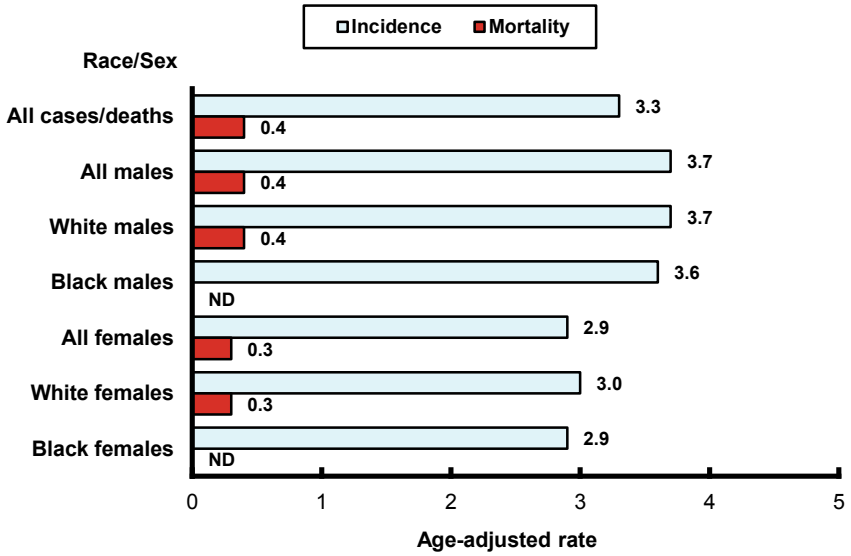
Data Highlights

Hodgkin lymphoma is a group of similar cancers that originate in the immune system's lymphocytes (white blood cells). The 2009-2013 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 2009-2013 was among white males (3.7 per 100,000) and lowest among black females (2.9). In 2013, there were 402 cases of Hodgkin lymphoma diagnosed among Pennsylvania residents and reported to the Pennsylvania Cancer Registry, resulting in an age-adjusted rate of 3.1.

In Pennsylvania, approximately 48 percent of Hodgkin lymphoma cases diagnosed during the 2009-2013 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 55-59 age group before peaking again in the 80-84 age range. In 2013, about 52 percent of the Hodgkin lymphoma cases were diagnosed at stage III/IV of the disease, and less than 3 percent of the cases were unstaged.

The 2009-2013 average annual age-adjusted death rate for Hodgkin lymphoma was higher among males (0.4 per 100,000) than females (0.3). In 2013, there were 46 Hodgkin lymphoma deaths among residents, which resulted in an age-adjusted death rate of 0.3 — the lowest number of deaths and age-adjusted death rate reported during the 10-year period, 2004-2013. 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 2013.

FIGURE 22
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the 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

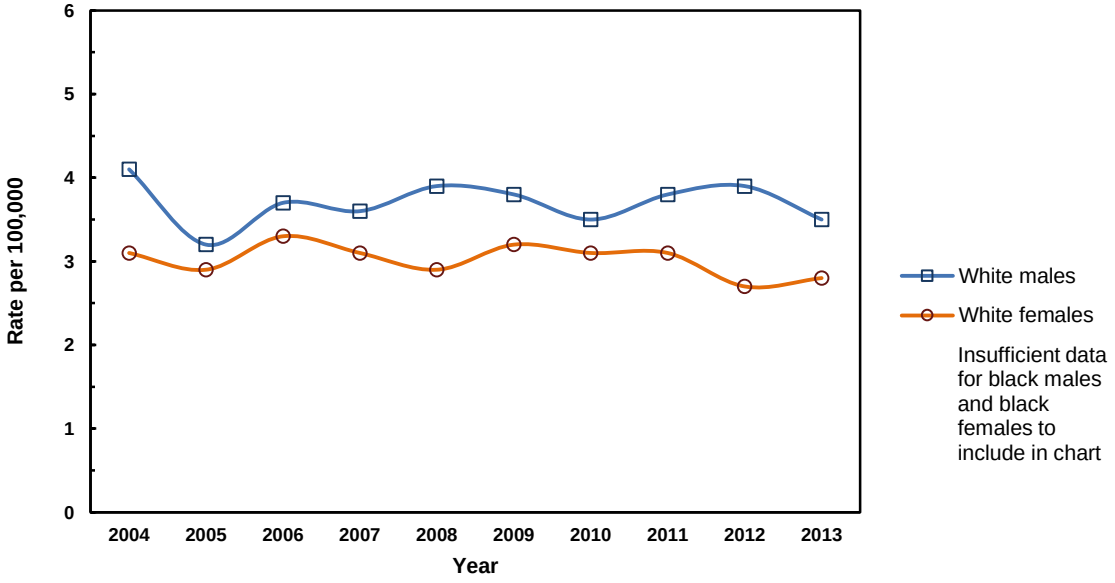
Number of Cancer Cases, Age-Adjusted Incidence Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

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)
2013	**402**	**3.1** (2.8-3.4)	**224**	**3.6** (3.1-4.1)	**184**	**3.5** (3.0-4.0)	**30**	**4.6** (3.0-6.2)	**178**	**2.7** (2.3-3.1)	**156**	**2.8** (2.4-3.2)	**16**	**ND**
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**

* Includes unknown/other race and sex.
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, 2004-2013



Hodgkin Lymphoma: INCIDENCE

TABLE 22-B

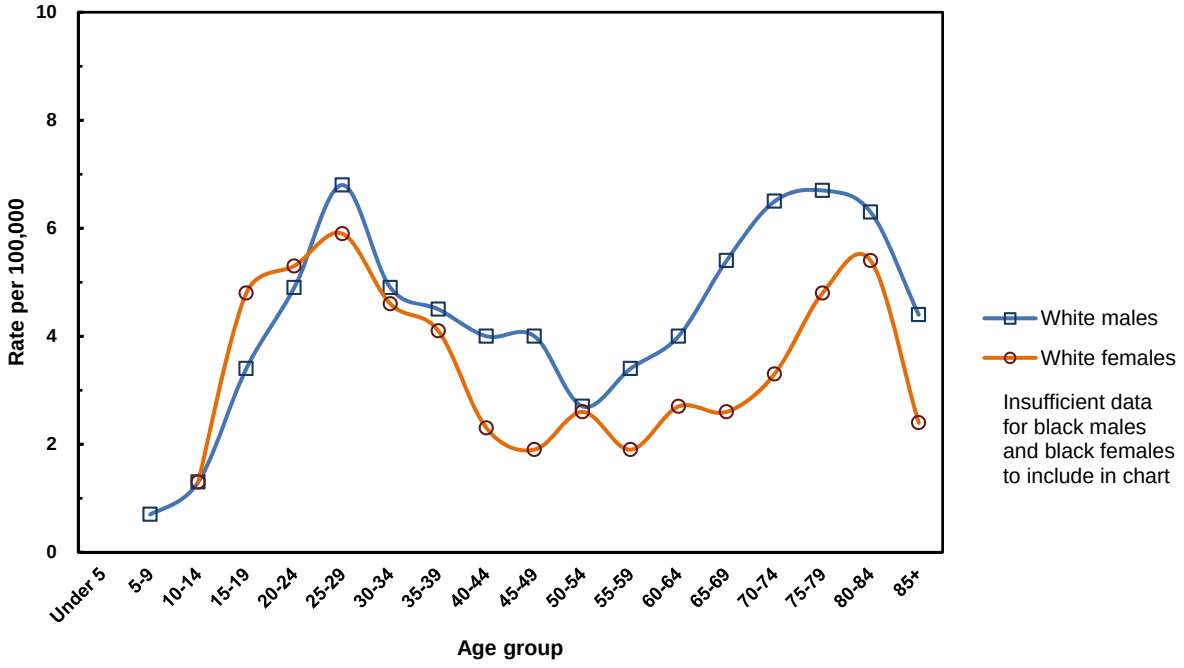
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**3.3**	**3.7**	**3.8**	**3.5**	**2.9**	**3.0**	**2.8**
Under 5	ND	ND	ND	ND	ND	ND	ND
5-9	0.5	0.8	0.7	ND	ND	ND	ND
10-14	1.2	1.1	1.3	ND	1.4	1.3	ND
15-19	4.0	3.4	3.4	4.3	4.7	4.8	4.5
20-24	4.5	4.4	4.9	ND	4.6	5.3	ND
25-29	6.1	6.6	6.8	6.7	5.5	5.9	4.6
30-34	4.5	4.7	4.9	ND	4.4	4.6	4.5
35-39	4.4	4.7	4.5	7.6	4.1	4.1	4.8
40-44	3.2	4.0	4.0	ND	2.5	2.3	ND
45-49	3.1	4.3	4.0	6.6	2.0	1.9	ND
50-54	2.7	2.8	2.7	5.1	2.6	2.6	ND
55-59	2.6	3.3	3.4	ND	1.9	1.9	ND
60-64	3.3	4.0	4.0	ND	2.7	2.7	ND
65-69	3.9	5.2	5.4	ND	2.7	2.6	ND
70-74	4.5	6.3	6.5	ND	3.1	3.3	ND
75-79	5.5	6.6	6.7	ND	4.6	4.8	ND
80-84	5.6	6.0	6.3	ND	5.3	5.4	ND
85+	2.9	4.1	4.4	ND	2.3	2.4	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 22-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Hodgkin Lymphoma: INCIDENCE

TABLE 22-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

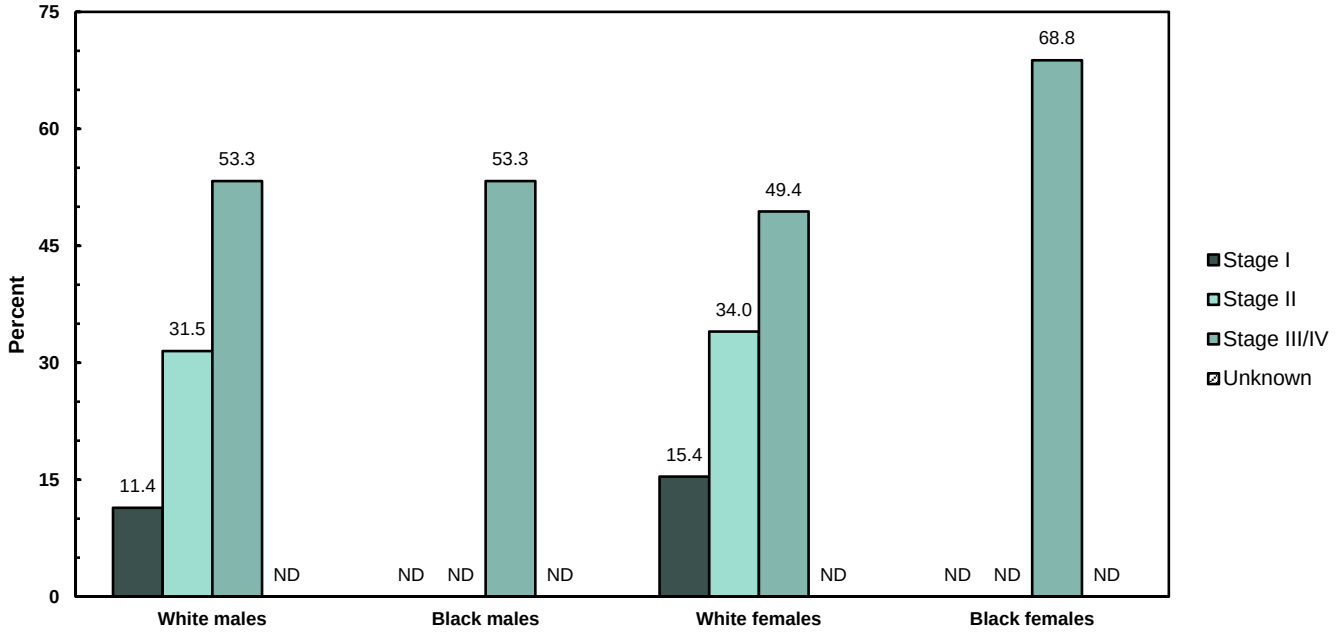
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**2,116**	**1,154**	**996**	**119**	**961**	**825**	**104**
Under 5	1	0	0	0	1	0	0
5-9	19	15	10	3	4	3	1
10-14	49	23	21	2	26	20	6
15-19	179	77	61	14	102	83	14
20-24	200	99	87	8	101	91	7
25-29	241	132	110	17	108	93	12
30-34	172	89	76	9	83	69	11
35-39	163	87	68	16	76	62	11
40-44	136	83	71	9	53	41	9
45-49	142	96	78	15	46	38	7
50-54	131	67	55	11	64	54	8
55-59	116	73	65	3	43	38	3
60-64	127	73	66	5	54	47	6
65-69	112	71	67	2	41	36	5
70-74	101	63	59	2	38	36	2
75-79	98	50	47	2	48	45	2
80-84	83	35	34	1	48	45	0
85+	46	21	21	0	25	24	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, 2013



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

Number and Percent of Cases Microscopically Confirmed: 396 - 98.5%

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, 2004-2013

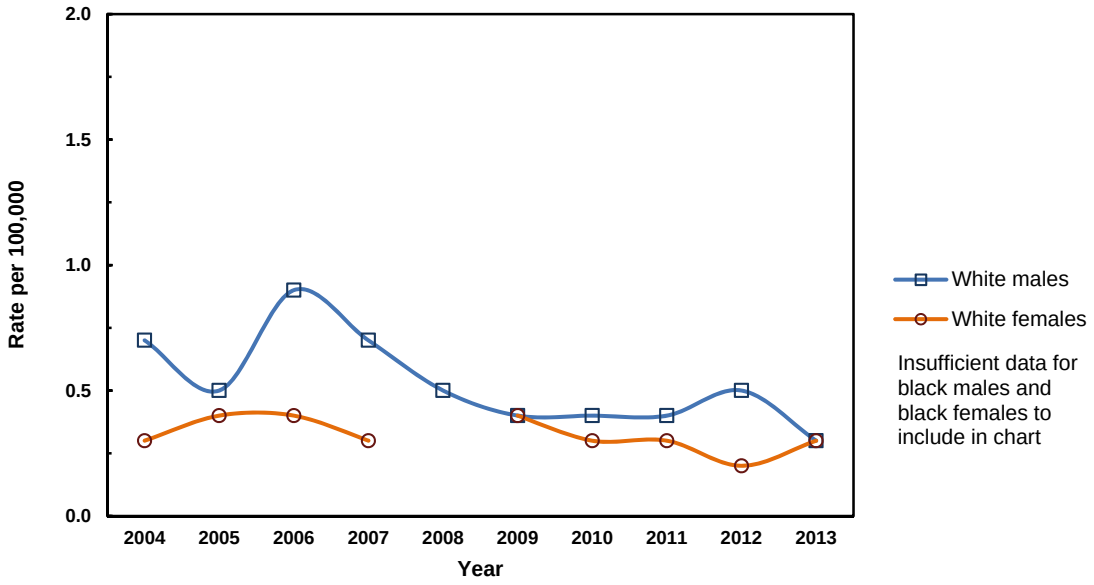
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	46	0.3 (0.2-0.4)	22	0.3 (0.2-0.4)	20	0.3 (0.2-0.4)	0	ND	24	0.3 (0.2-0.4)	23	0.3 (0.2-0.4)	1	ND
2012	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

* 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, 2004-2013



Hodgkin Lymphoma: MORTALITY

TABLE 22-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

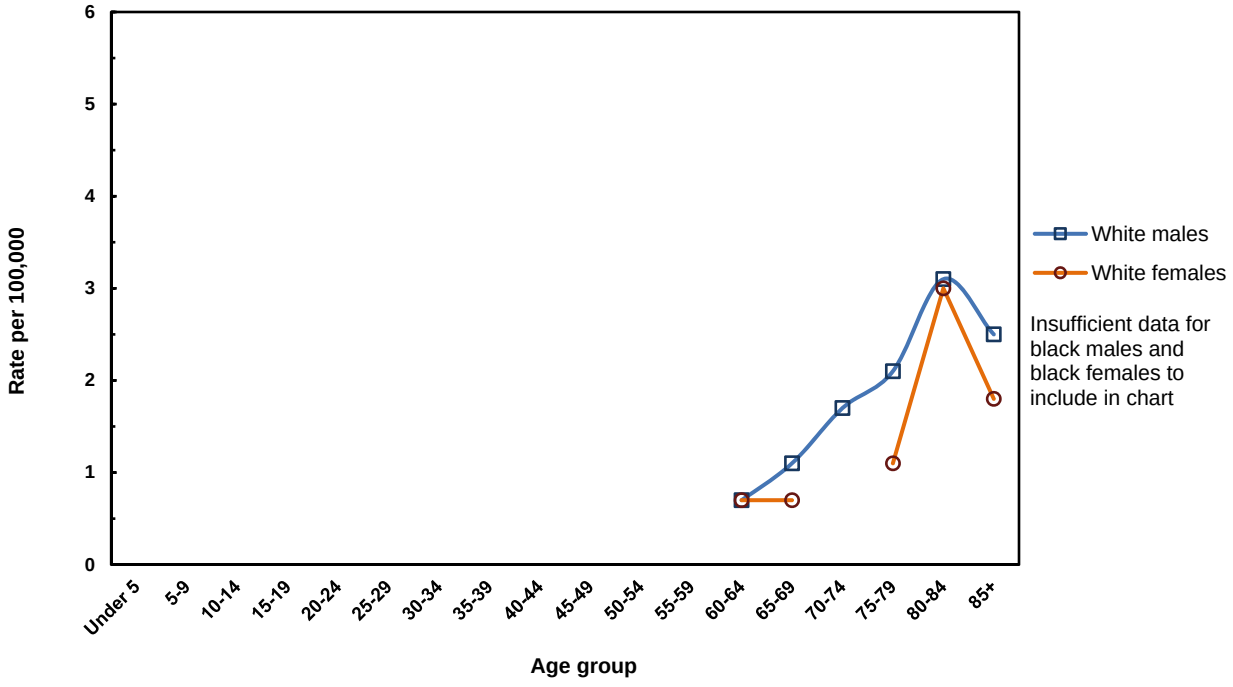
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**274**	**0.4**	**137**	**0.4**	**127**	**0.5**	**7**	**ND**	**137**	**0.4**	**121**	**0.4**	**13**	**0.4**
Under 5	0	ND	0	ND	0	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	5	ND	2	ND	1	ND	1	ND	3	ND	3	ND	0	ND
20-24	13	0.3	6	ND	5	ND	0	ND	7	ND	6	ND	1	ND
25-29	4	ND	4	ND	3	ND	1	ND	0	ND	0	ND	0	ND
30-34	13	0.3	9	ND	6	ND	2	ND	4	ND	2	ND	2	ND
35-39	7	ND	2	ND	2	ND	0	ND	5	ND	5	ND	0	ND
40-44	11	0.3	6	ND	6	ND	0	ND	5	ND	4	ND	1	ND
45-49	15	0.3	8	ND	8	ND	0	ND	7	ND	6	ND	1	ND
50-54	16	0.3	8	ND	7	ND	1	ND	8	ND	8	ND	0	ND
55-59	13	0.3	5	ND	3	ND	1	ND	8	ND	5	ND	2	ND
60-64	26	0.7	12	0.7	12	0.7	0	ND	14	0.7	13	0.7	1	ND
65-69	25	0.9	15	1.1	14	1.1	1	ND	10	0.6	10	0.7	0	ND
70-74	24	1.1	16	1.6	16	1.7	0	ND	8	ND	6	ND	2	ND
75-79	27	1.5	15	2.0	15	2.1	0	ND	12	1.2	10	1.1	1	ND
80-84	43	2.9	17	2.9	17	3.1	0	ND	26	2.9	25	3.0	0	ND
85+	32	2.0	12	2.3	12	2.5	0	ND	20	1.8	18	1.8	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, 2009-2013



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, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,116	1,154	3.7	(3.5-3.9)	961	2.9	(2.7-3.1)
Adams	13	8	ND		5	ND	
Allegheny	184	102	3.4	(2.7-4.1)	81	2.5	(2.0-3.0)
Armstrong	9	4	ND		5	ND	
Beaver	36	23	5.5	(3.3-7.7)	13	ND	
Bedford	6	4	ND		2	ND	
Berks	83	41	4.0	(2.8-5.2)	42	3.9	(2.7-5.1)
Blair	18	11	ND		7	ND	
Bradford	11	3	ND		8	ND	
Bucks	103	53	3.4	(2.5-4.3)	50	3.3	(2.4-4.2)
Butler	28	13	ND		15	ND	
Cambria	19	12	ND		7	ND	
Cameron	2	1	ND		1	ND	
Carbon	15	9	ND		6	ND	
Centre	24	14	ND		10	ND	
Chester	65	32	2.5	(1.6-3.4)	33	2.5	(1.6-3.4)
Clarion	2	2	ND		0	ND	
Clearfield	10	4	ND		6	ND	
Clinton	7	3	ND		4	ND	
Columbia	15	8	ND		7	ND	
Crawford	12	9	ND		3	ND	
Cumberland	38	18	ND		20	3.3	(1.9-4.7)
Dauphin	54	25	3.6	(2.2-5.0)	29	4.3	(2.7-5.9)
Delaware	87	52	3.9	(2.8-5.0)	35	2.6	(1.7-3.5)
Elk	6	4	ND		2	ND	
Erie	31	15	ND		16	ND	
Fayette	35	21	5.8	(3.3-8.3)	14	ND	
Forest	0	0	ND		0	ND	
Franklin	22	13	ND		9	ND	
Fulton	5	4	ND		1	ND	
Greene	5	0	ND		5	ND	
Huntingdon	6	3	ND		3	ND	
Indiana	17	6	ND		11	ND	
Jefferson	10	8	ND		2	ND	
Juniata	2	0	ND		2	ND	
Lackawanna	36	20	3.3	(1.9-4.7)	16	ND	
Lancaster	72	42	3.3	(2.3-4.3)	30	2.2	(1.4-3.0)
Lawrence	16	8	ND		8	ND	
Lebanon	17	14	ND		3	ND	
Lehigh	75	39	4.5	(3.1-5.9)	36	4.2	(2.8-5.6)
Luzerne	63	33	4.0	(2.6-5.4)	30	3.4	(2.2-4.6)
Lycoming	21	13	ND		8	ND	
McKean	7	7	ND		0	ND	
Mercer	18	12	ND		6	ND	
Mifflin	5	3	ND		2	ND	
Monroe	30	16	ND		14	ND	
Montgomery	153	71	3.6	(2.8-4.4)	82	4.1	(3.2-5.0)
Montour	1	1	ND		0	ND	
Northampton	48	30	4.1	(2.6-5.6)	18	ND	
Northumberland	17	10	ND		7	ND	
Perry	5	3	ND		2	ND	
Philadelphia	252	150	4.3	(3.6-5.0)	102	2.4	(1.9-2.9)
Pike	10	4	ND		6	ND	
Potter	7	4	ND		3	ND	
Schuylkill	30	18	ND		12	ND	
Snyder	5	4	ND		1	ND	
Somerset	23	13	ND		10	ND	
Sullivan	5	3	ND		2	ND	
Susquehanna	0	0	ND		0	ND	
Tioga	5	3	ND		2	ND	
Union	6	1	ND		5	ND	
Venango	7	3	ND		4	ND	
Warren	8	4	ND		4	ND	
Washington	43	23	4.7	(2.8-6.6)	20	3.8	(2.1-5.5)
Wayne	11	5	ND		6	ND	
Westmoreland	63	34	3.9	(2.6-5.2)	29	3.2	(2.0-4.4)
Wyoming	4	1	ND		3	ND	
York	73	37	3.7	(2.5-4.9)	36	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.

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, 2009-2013

County	Total Deaths	Males			Females			County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)			No.	Rate	(CI)	No.	Rate	(CI)
All counties	274	137	0.4	(0.3-0.5)	137	0.3	(0.2-0.4)								
Adams	0	0	ND		0	ND		Juniata	1	1	ND		0	ND	
Allegheny	23	16	ND		7	ND		Lackawanna	7	3	ND		4	ND	
Armstrong	4	1	ND		3	ND		Lancaster	4	0	ND		4	ND	
Beaver	4	2	ND		2	ND		Lawrence	2	0	ND		2	ND	
Bedford	1	1	ND		0	ND		Lebanon	4	4	ND		0	ND	
Berks	14	7	ND		7	ND		Lehigh	10	8	ND		2	ND	
Blair	3	3	ND		0	ND		Luzerne	10	6	ND		4	ND	
Bradford	3	1	ND		2	ND		Lycoming	3	2	ND		1	ND	
Bucks	14	7	ND		7	ND		McKean	0	0	ND		0	ND	
Butler	3	0	ND		3	ND		Mercer	4	4	ND		0	ND	
Cambria	2	0	ND		2	ND		Mifflin	1	0	ND		1	ND	
Cameron	0	0	ND		0	ND		Monroe	5	1	ND		4	ND	
Carbon	1	0	ND		1	ND		Montgomery	17	7	ND		10	ND	
Centre	2	0	ND		2	ND		Montour	0	0	ND		0	ND	
Chester	5	3	ND		2	ND		Northampton	4	3	ND		1	ND	
Clarion	0	0	ND		0	ND		Northumberland	1	1	ND		0	ND	
Clearfield	1	1	ND		0	ND		Perry	1	1	ND		0	ND	
Clinton	2	1	ND		1	ND		Philadelphia	36	15	ND		21	0.5	(0.3-0.7)
Columbia	0	0	ND		0	ND		Pike	0	0	ND		0	ND	
Crawford	0	0	ND		0	ND		Potter	2	1	ND		1	ND	
Cumberland	7	2	ND		5	ND		Schuylkill	6	3	ND		3	ND	
Dauphin	5	2	ND		3	ND		Snyder	0	0	ND		0	ND	
Delaware	8	4	ND		4	ND		Somerset	1	0	ND		1	ND	
Elk	2	2	ND		0	ND		Sullivan	0	0	ND		0	ND	
Erie	9	4	ND		5	ND		Susquehanna	0	0	ND		0	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	6	4	ND		2	ND	
Huntingdon	2	1	ND		1	ND		Wayne	2	0	ND		2	ND	
Indiana	3	1	ND		2	ND		Westmoreland	4	1	ND		3	ND	
Jefferson	3	2	ND		1	ND		Wyoming	1	0	ND		1	ND	
								York	9	4	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 Insitute's SEER program.

Myeloma

Data Highlights

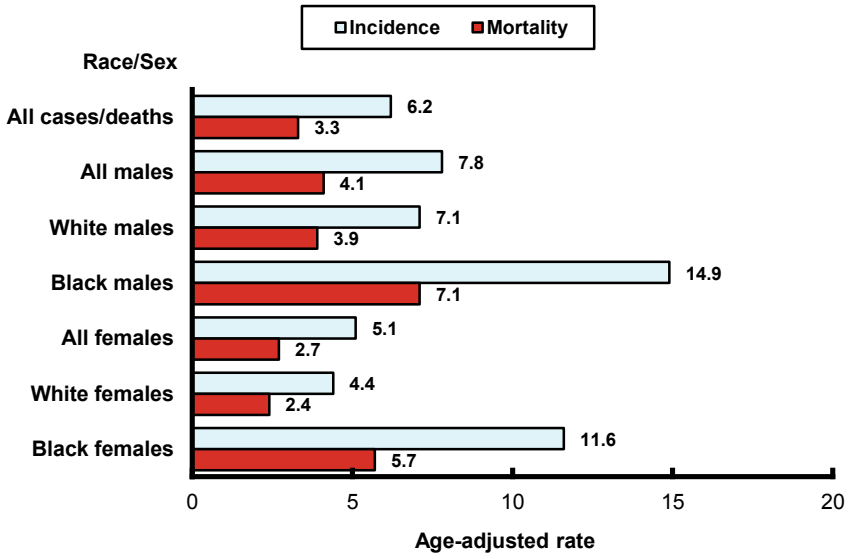
Myeloma is a group of cancers that affect the immune system's plasma cells, often resulting in the formation of tumors in the bone marrow. The 2009-2013 average annual age-adjusted incidence rates for Pennsylvania showed that blacks had higher risk for myeloma compared to whites. The average annual rates for black male and black female residents were 14.9 per 100,000 and 11.6, respectively, compared to 7.1 for white males and 4.4 for white females. The 2009-2013 average annual age-adjusted incidence rate for males (7.8) was about 53 percent higher than the rate for females (5.1).

Myeloma accounted for 1,045 cancer cases diagnosed among Pennsylvania residents in 2013, resulting in an age-adjusted rate of 6.4 – the highest annual rate during the period 2004 to 2013. Annual age-adjusted incidence rates between 2004 and 2013 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 2009-2013 were for Pennsylvania residents 60 years of age or older. The average annual (2009-2013) 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-four percent of myelomas were diagnosed at the distant stage in 2013. In 2013, there were 557 deaths among Pennsylvania residents due to myeloma — an increase from the 2012 figure of 517. This resulted in an age-adjusted rate of 3.3 per 100,000, up slightly from 3.1 in 2012. During the 10-year period, 2004-2013, myeloma death rates among the four sex/race groups displayed no evident trends. The average annual (2009-2013) 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.

FIGURE 23
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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 and 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, 2004-2013

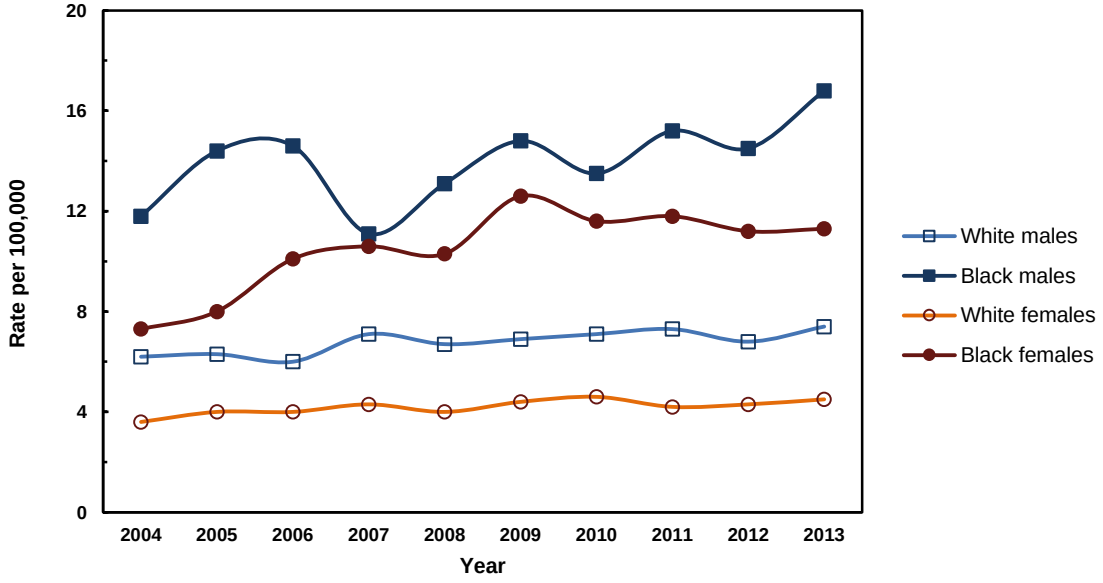
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,045**	**6.4** (6.0-6.8)	**586**	**8.1** (7.4-8.8)	**480**	**7.4** (6.7-8.1)	**90**	**16.8** (13.3-20.3)	**459**	**5.1** (4.6-5.6)	**367**	**4.5** (4.0-5.0)	**83**	**11.3** (8.9-13.7)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Myeloma: INCIDENCE

TABLE 23-B

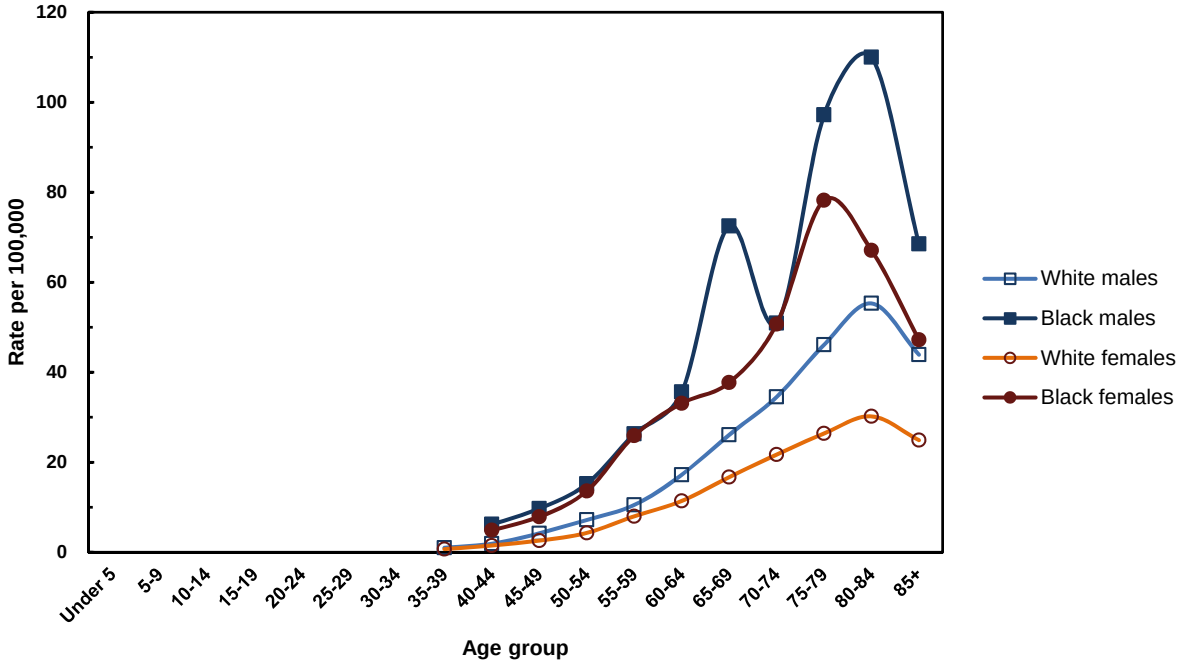
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**7.8**	**8.8**	**8.6**	**10.9**	**6.9**	**6.5**	**11.3**
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	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	0.9	0.7	ND
40-44	2.2	2.4	1.9	6.2	1.9	1.5	4.9
45-49	3.9	4.7	4.2	9.7	3.1	2.6	7.9
50-54	6.6	8.0	7.2	15.2	5.2	4.3	13.6
55-59	10.7	11.8	10.5	26.3	9.6	8.0	25.9
60-64	15.9	18.6	17.2	35.6	13.4	11.4	33.1
65-69	23.7	29.7	26.1	72.5	18.5	16.7	37.7
70-74	29.7	36.1	34.5	50.9	24.4	21.7	50.7
75-79	39.1	50.5	46.1	97.2	30.7	26.4	78.2
80-84	44.0	60.7	55.3	110.0	33.4	30.2	67.1
85+	33.2	46.4	43.9	68.5	27.0	24.9	47.2

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 23-B

Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013



Myeloma: INCIDENCE

TABLE 23-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

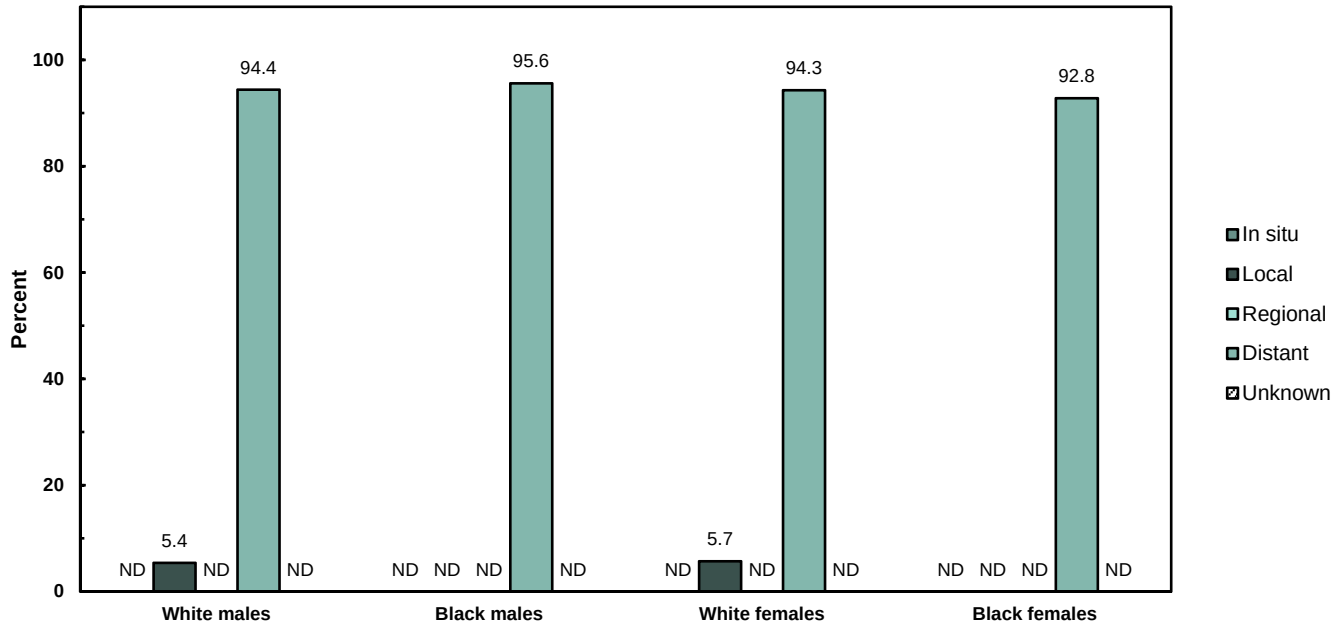
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**4,967**	**2,716**	**2,242**	**372**	**2,251**	**1,765**	**419**
Under 5	1	0	0	0	1	1	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	1	1	0	1	0	0	0
20-24	2	2	2	0	0	0	0
25-29	2	1	0	1	1	1	0
30-34	14	7	3	4	7	2	4
35-39	35	19	15	4	16	10	6
40-44	91	50	33	14	41	27	12
45-49	178	105	81	22	73	51	20
50-54	316	189	149	33	127	90	34
55-59	477	257	203	48	220	161	56
60-64	606	341	284	49	265	200	58
65-69	689	404	322	66	285	230	47
70-74	661	362	316	33	299	239	49
75-79	702	385	323	45	317	247	61
80-84	658	354	301	34	304	253	41
85+	532	237	210	18	295	253	31

* 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, 2013



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

Number and Percent of Cases Microscopically Confirmed: 947 - 90.6%

Myeloma: MORTALITY

TABLE 23-D

Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

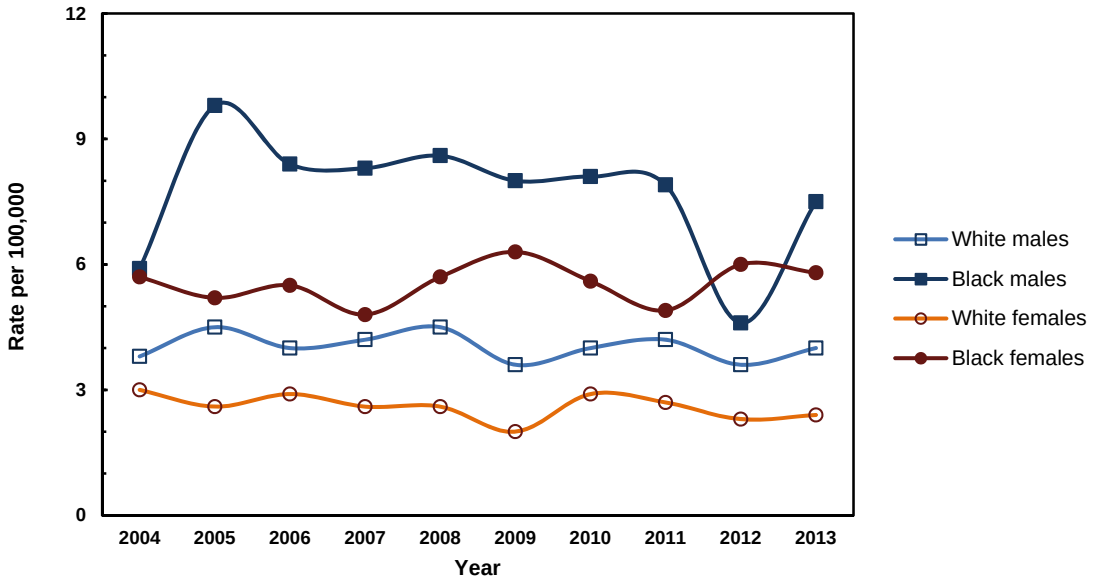
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**557**	**3.3** (3.0-3.6)	**294**	**4.2** (3.7-4.7)	**252**	**4.0** (3.5-4.5)	**33**	**7.5** (4.9-10.1)	**263**	**2.7** (2.4-3.0)	**216**	**2.4** (2.1-2.7)	**41**	**5.8** (4.0-7.6)
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)

* 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, 2004-2013



Myeloma: MORTALITY

TABLE 23-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

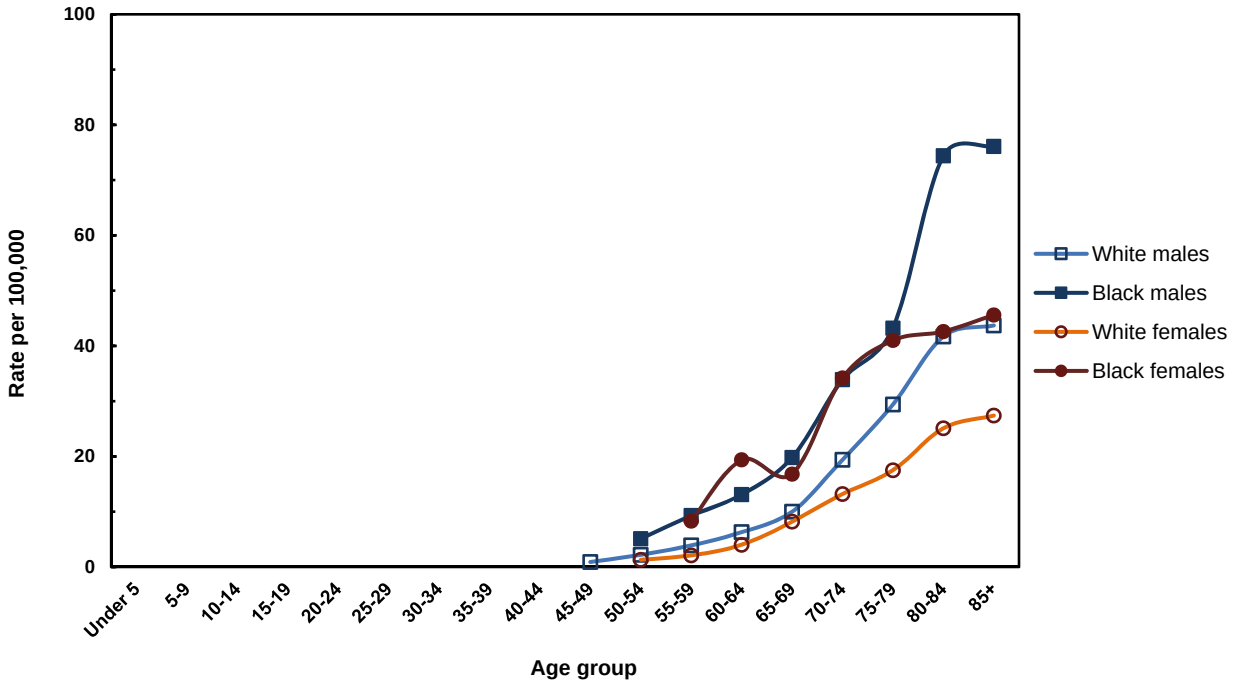
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**2,672**	**4.2**	**1,385**	**4.5**	**1,197**	**4.6**	**161**	**4.7**	**1,287**	**3.9**	**1,064**	**3.9**	**206**	**5.6**
Under 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	8	ND	5	ND	5	ND	0	ND	3	ND	2	ND	1	ND
40-44	17	0.4	10	0.5	6	ND	3	ND	7	ND	7	ND	0	ND
45-49	38	0.8	28	1.2	18	0.9	8	ND	10	0.4	6	ND	2	ND
50-54	96	2.0	59	2.5	45	2.2	11	5.1	37	1.5	27	1.3	9	ND
55-59	154	3.4	93	4.3	75	3.9	17	9.3	61	2.7	42	2.1	18	8.3
60-64	228	6.0	123	6.7	104	6.3	18	13.1	105	5.3	70	4.0	34	19.4
65-69	282	9.7	143	10.5	123	10.0	18	19.8	139	9.0	113	8.2	21	16.8
70-74	379	17.0	199	19.8	177	19.4	22	33.9	180	14.7	145	13.2	33	34.2
75-79	430	24.0	232	30.4	206	29.4	20	43.2	198	19.2	164	17.5	32	41.0
80-84	491	32.9	255	43.7	227	41.7	23	74.4	236	25.9	210	25.1	26	42.6
85+	546	34.1	235	46.0	209	43.7	20	76.1	311	28.5	278	27.4	30	45.6

* 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 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. 2009-2013



Myeloma: INCIDENCE

TABLE 23-F

Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals by County and Sex, Pennsylvania Residents, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	4,967	2,716	7.8	(7.5-8.1)	2,251	5.1	(4.9-5.3)
Adams	40	23	7.9	(4.7-11.1)	17	ND	
Allegheny	525	286	8.3	(7.3-9.3)	239	5.0	(4.4-5.6)
Armstrong	34	19	ND		15	ND	
Beaver	77	38	7.1	(4.8-9.4)	39	5.8	(4.0-7.6)
Bedford	19	13	ND		6	ND	
Berks	160	91	8.4	(6.7-10.1)	69	5.4	(4.1-6.7)
Blair	51	30	7.5	(4.8-10.2)	21	3.8	(2.2-5.4)
Bradford	26	13	ND		13	ND	
Bucks	229	130	7.4	(6.1-8.7)	99	4.7	(3.8-5.6)
Butler	63	33	6.4	(4.2-8.6)	30	4.5	(2.9-6.1)
Cambria	65	28	6.1	(3.8-8.4)	37	6.3	(4.3-8.3)
Cameron	2	2	ND		0	ND	
Carbon	30	15	ND		15	ND	
Centre	28	16	ND		12	ND	
Chester	191	109	8.9	(7.2-10.6)	82	5.3	(4.2-6.4)
Clarion	16	10	ND		6	ND	
Clearfield	34	16	ND		18	ND	
Clinton	10	6	ND		4	ND	
Columbia	27	13	ND		14	ND	
Crawford	38	19	ND		19	ND	
Cumberland	84	50	7.7	(5.6-9.8)	34	4.0	(2.7-5.3)
Dauphin	70	39	5.8	(4.0-7.6)	31	3.8	(2.5-5.1)
Delaware	214	110	7.7	(6.3-9.1)	104	5.5	(4.4-6.6)
Elk	15	11	ND		4	ND	
Erie	77	36	5.0	(3.4-6.6)	41	4.5	(3.1-5.9)
Fayette	49	24	5.0	(3.0-7.0)	25	4.5	(2.7-6.3)
Forest	2	1	ND		1	ND	
Franklin	71	40	9.2	(6.3-12.1)	31	5.7	(3.7-7.7)
Fulton	5	2	ND		3	ND	
Greene	13	7	ND		6	ND	
Huntingdon	16	8	ND		8	ND	
Indiana	34	21	8.3	(4.8-11.8)	13	ND	
Jefferson	22	9	ND		13	ND	
Juniata	9	5	ND		4	ND	
Lackawanna	81	50	7.9	(5.7-10.1)	31	3.5	(2.3-4.7)
Lancaster	172	100	7.2	(5.8-8.6)	72	4.0	(3.1-4.9)
Lawrence	42	20	6.8	(3.8-9.8)	22	5.7	(3.3-8.1)
Lebanon	49	30	7.6	(4.9-10.3)	19	ND	
Lehigh	143	85	9.3	(7.3-11.3)	58	5.1	(3.8-6.4)
Luzerne	142	87	8.9	(7.0-10.8)	55	4.3	(3.2-5.4)
Lycoming	65	36	11.0	(7.4-14.6)	29	6.4	(4.1-8.7)
McKean	14	9	ND		5	ND	
Mercer	36	18	ND		18	ND	
Mifflin	21	10	ND		11	ND	
Monroe	61	35	7.8	(5.2-10.4)	26	5.1	(3.1-7.1)
Montgomery	280	160	7.1	(6.0-8.2)	120	4.4	(3.6-5.2)
Montour	7	2	ND		5	ND	
Northampton	138	71	9.0	(6.9-11.1)	67	6.3	(4.8-7.8)
Northumberland	31	18	ND		13	ND	
Perry	24	14	ND		10	ND	
Philadelphia	656	333	10.4	(9.3-11.5)	323	7.2	(6.4-8.0)
Pike	32	21	11.1	(6.4-15.8)	11	ND	
Potter	8	6	ND		2	ND	
Schuylkill	58	35	7.4	(4.9-9.9)	23	3.9	(2.3-5.5)
Snyder	12	6	ND		6	ND	
Somerset	48	20	8.0	(4.5-11.5)	28	9.1	(5.7-12.5)
Sullivan	4	3	ND		1	ND	
Susquehanna	16	7	ND		9	ND	
Tioga	15	8	ND		7	ND	
Union	17	10	ND		7	ND	
Venango	21	9	ND		12	ND	
Warren	17	11	ND		6	ND	
Washington	62	37	5.7	(3.9-7.5)	25	3.0	(1.8-4.2)
Wayne	18	11	ND		7	ND	
Westmoreland	169	89	7.5	(5.9-9.1)	80	5.1	(4.0-6.2)
Wyoming	17	12	ND		5	ND	
York	145	80	6.8	(5.3-8.3)	65	4.6	(3.5-5.7)

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.

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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	2,672	1,385	4.1	(3.9-4.3)	1,287	2.7	(2.6-2.8)
Adams	16	8	ND		8	ND	
Allegheny	294	150	4.3	(3.6-5.0)	144	2.9	(2.4-3.4)
Armstrong	18	11	ND		7	ND	
Beaver	37	17	ND		20	2.8	(1.6-4.0)
Bedford	10	5	ND		5	ND	
Berks	71	37	3.5	(2.4-4.6)	34	2.5	(1.7-3.3)
Blair	21	10	ND		11	ND	
Bradford	17	8	ND		9	ND	
Bucks	114	69	4.2	(3.2-5.2)	45	1.9	(1.3-2.5)
Butler	41	18	ND		23	3.3	(2.0-4.6)
Cambria	29	15	ND		14	ND	
Cameron	1	1	ND		0	ND	
Carbon	14	8	ND		6	ND	
Centre	15	8	ND		7	ND	
Chester	93	55	4.7	(3.5-5.9)	38	2.4	(1.6-3.2)
Clarion	9	6	ND		3	ND	
Clearfield	23	11	ND		12	ND	
Clinton	10	4	ND		6	ND	
Columbia	15	10	ND		5	ND	
Crawford	23	10	ND		13	ND	
Cumberland	51	21	3.2	(1.8-4.6)	30	3.2	(2.1-4.3)
Dauphin	56	34	5.5	(3.7-7.3)	22	2.5	(1.5-3.5)
Delaware	125	62	4.5	(3.4-5.6)	63	3.1	(2.3-3.9)
Elk	9	7	ND		2	ND	
Erie	57	26	3.6	(2.2-5.0)	31	3.2	(2.1-4.3)
Fayette	40	18	ND		22	3.7	(2.2-5.2)
Forest	1	1	ND		0	ND	
Franklin	31	15	ND		16	ND	
Fulton	3	2	ND		1	ND	
Greene	5	1	ND		4	ND	
Huntingdon	8	1	ND		7	ND	
Indiana	24	15	ND		9	ND	
Jefferson	14	5	ND		9	ND	
Juniata	7	5	ND		2	ND	
Lackawanna	55	24	3.8	(2.3-5.3)	31	3.4	(2.2-4.6)
Lancaster	96	52	3.9	(2.8-5.0)	44	2.4	(1.7-3.1)
Lawrence	31	18	ND		13	ND	
Lebanon	31	17	ND		14	ND	
Lehigh	74	42	4.5	(3.1-5.9)	32	2.6	(1.7-3.5)
Luzerne	55	25	2.7	(1.6-3.8)	30	2.1	(1.3-2.9)
Lycoming	25	14	ND		11	ND	
McKean	6	2	ND		4	ND	
Mercer	25	12	ND		13	ND	
Mifflin	8	6	ND		2	ND	
Monroe	23	13	ND		10	ND	
Montgomery	152	82	3.7	(2.9-4.5)	70	2.3	(1.8-2.8)
Montour	1	0	ND		1	ND	
Northampton	71	40	5.0	(3.5-6.5)	31	2.7	(1.7-3.7)
Northumberland	21	11	ND		10	ND	
Perry	14	7	ND		7	ND	
Philadelphia	326	162	5.3	(4.5-6.1)	164	3.4	(2.9-3.9)
Pike	12	9	ND		3	ND	
Potter	2	1	ND		1	ND	
Schuylkill	25	15	ND		10	ND	
Snyder	7	2	ND		5	ND	
Somerset	21	10	ND		11	ND	
Sullivan	1	0	ND		1	ND	
Susquehanna	8	4	ND		4	ND	
Tioga	10	9	ND		1	ND	
Union	11	4	ND		7	ND	
Venango	17	10	ND		7	ND	
Warren	8	5	ND		3	ND	
Washington	33	18	ND		15	ND	
Wayne	11	4	ND		7	ND	
Westmoreland	107	53	4.4	(3.2-5.6)	54	3.2	(2.3-4.1)
Wyoming	8	3	ND		5	ND	
York	75	37	3.4	(2.3-4.5)	38	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 Insitute's SEER program.

Leukemia

Data Highlights

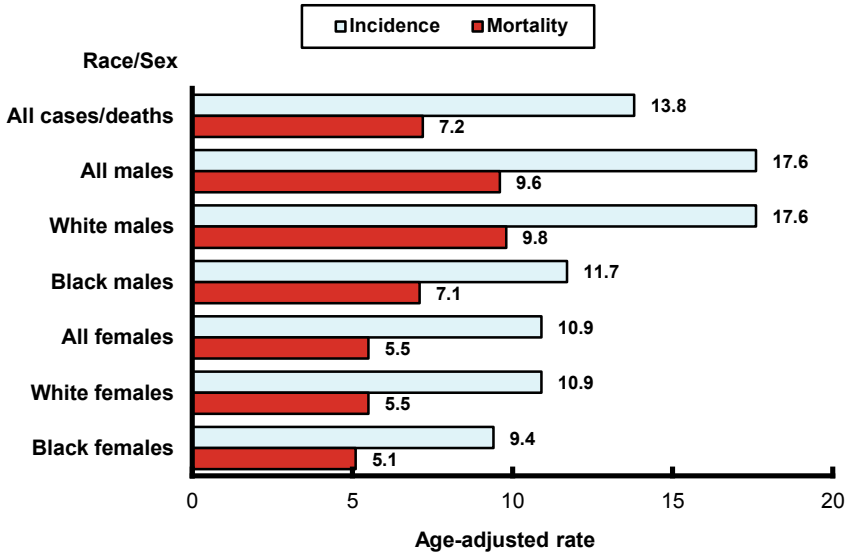
Leukemia is a diverse group of blood and/or bone marrow cancers that usually affect leukocytes (a type of white blood cell). The 2009-2013 average annual age-adjusted incidence rate for leukemia was much higher for males (17.6 per 100,000) than for females (10.9). The 2,128 cases of leukemia diagnosed in 2013 among residents resulted in an age-adjusted rate of 13.7 – a decrease from 2012, when there were 2,149 cases, yielding an age-adjusted rate of 13.9. Annual age-adjusted incidence rates for the period of 2004-2013 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 2009-2013. 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 2009-2013 decreased from infancy through 24 years of age and then began to rise, especially for ages over 55.

There were 1,114 deaths due to leukemia among Pennsylvania residents in 2013, resulting in an age-adjusted rate of 6.8 per 100,000 — the lowest age-adjusted rate observed during the 10-year period 2004-2013. As observed with leukemia incidence rates, the 2009-2013 average annual age-adjusted death rates were higher for males (9.6) than for females (5.5). Annual age-adjusted death rates from 2004 to 2013 demonstrated no evident trends among white males, white females and black females. Rates among black males were lower in recent years. White males generally had the highest age-specific death rates. Average annual (2009-2013) 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.

FIGURE 24
Average Annual Age-Adjusted Incidence and Death Rates*
by Sex and Race, Pennsylvania Residents, 2009-2013



* rate per 100,000 using the U.S. standard million population

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, 2004-2013

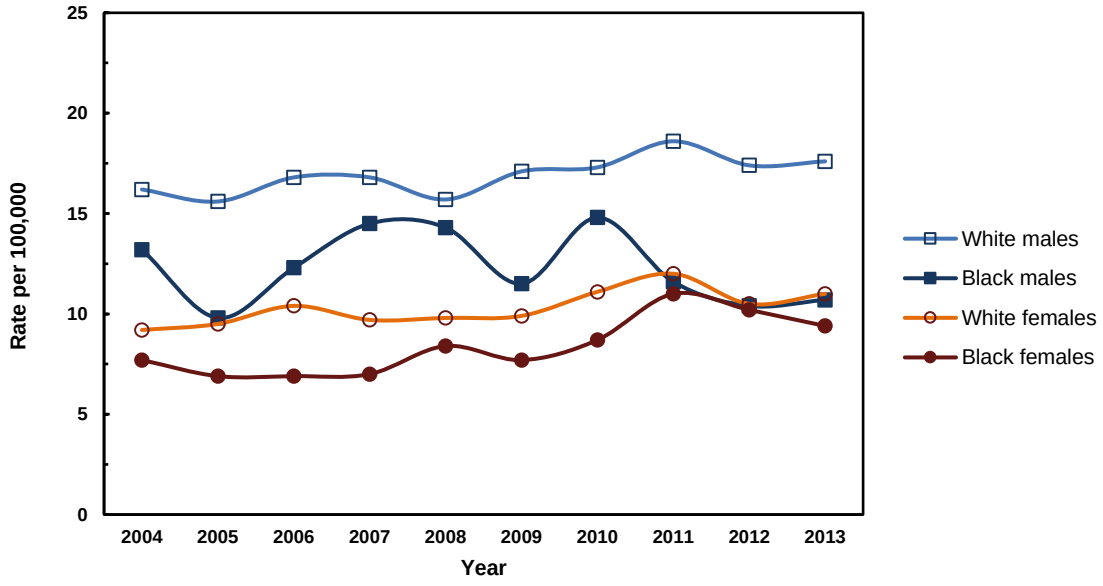
Year	All Cases*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**2,128**	**13.7** (13.1-14.3)	**1,215**	**17.3** (16.3-18.3)	**1,103**	**17.6** (16.6-18.6)	**65**	**10.7** (8.1-13.3)	**913**	**11.0** (10.3-11.7)	**804**	**11.0** (10.2-11.8)	**71**	**9.4** (7.2-11.6)
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)

* Includes unknown/other race and sex.

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, 2004-2013



Leukemia: INCIDENCE

TABLE 24-B

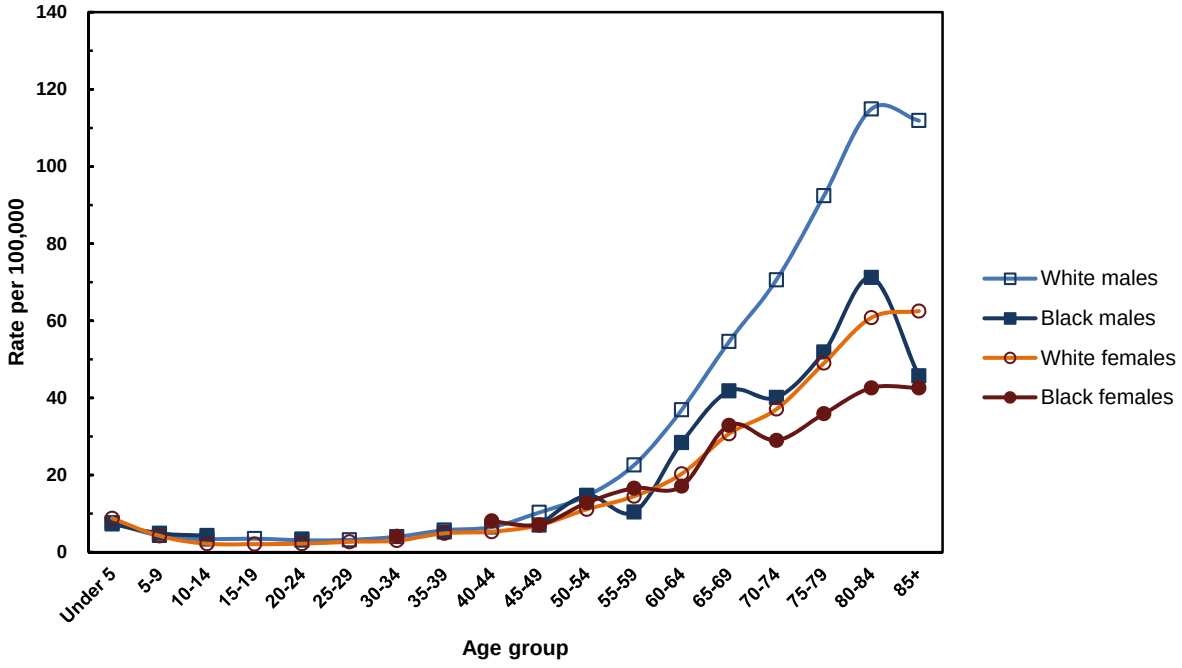
Average Annual Age-Specific Incidence Rates by Sex and Race
Pennsylvania Residents, 2009-2013

Age Group	All Cases	Males			Females		
		All Races	White	Black	All Races	White	Black
Total	**16.6**	**19.2**	**20.5**	**9.5**	**14.0**	**14.7**	**9.3**
Under 5	7.8	7.7	7.6	7.3	7.8	8.8	ND
5-9	4.0	4.3	4.3	4.9	3.8	4.2	ND
10-14	3.0	3.6	3.4	4.3	2.4	2.2	ND
15-19	2.8	3.2	3.5	ND	2.3	2.1	ND
20-24	2.8	3.2	3.1	3.4	2.3	2.2	ND
25-29	3.0	3.3	3.2	ND	2.7	2.7	ND
30-34	3.6	4.0	4.0	ND	3.3	3.0	4.1
35-39	5.1	5.8	5.7	5.2	4.5	4.9	ND
40-44	5.8	6.2	6.5	ND	5.5	5.3	8.1
45-49	8.5	10.0	10.3	7.0	7.0	7.0	7.1
50-54	13.0	14.6	14.6	14.7	11.4	11.1	12.8
55-59	18.3	22.1	22.6	10.4	14.7	14.5	16.6
60-64	28.4	37.3	36.9	28.4	20.2	20.3	17.1
65-69	42.4	54.8	54.6	41.8	31.4	30.7	32.9
70-74	51.8	69.9	70.6	40.1	36.9	37.1	29.0
75-79	67.3	91.9	92.4	51.9	49.2	49.0	35.9
80-84	82.6	114.7	114.9	71.2	62.1	60.8	42.6
85+	80.4	114.5	111.9	45.7	64.4	62.5	42.6

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, 2009-2013



Leukemia: INCIDENCE

TABLE 24-C

Total Number of Cancer Cases by Age, Sex and Race
Pennsylvania Residents, 2009-2013

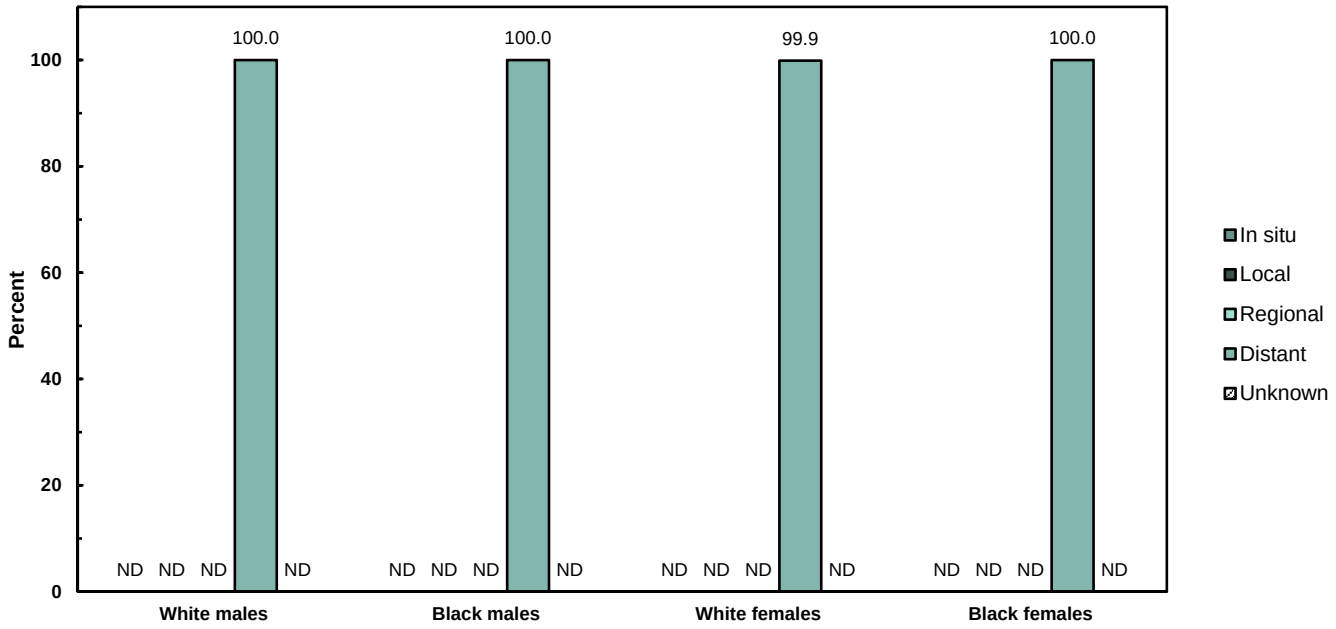
Age Group	All Cases*	Males			Females		
		All Races*	White	Black	All Races*	White	Black
Total	**10,532**	**5,966**	**5,334**	**322**	**4,566**	**3,991**	**345**
Under 5	283	144	107	20	139	119	7
5-9	152	82	64	13	70	59	6
10-14	119	72	54	12	47	33	8
15-19	124	73	63	6	51	36	8
20-24	122	72	55	11	50	38	9
25-29	118	66	52	7	52	42	7
30-34	137	75	62	7	62	45	10
35-39	191	107	87	11	84	74	3
40-44	246	130	114	7	116	93	20
45-49	387	225	200	16	162	137	18
50-54	626	346	301	32	280	235	32
55-59	820	483	438	19	337	291	36
60-64	1,086	685	608	39	401	355	30
65-69	1,231	746	674	38	485	423	41
70-74	1,153	701	646	26	452	408	28
75-79	1,209	701	648	24	508	459	28
80-84	1,234	669	625	22	565	509	26
85+	1,288	585	535	12	703	634	28

* 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, 2013



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

Number and Percent of Cases Microscopically Confirmed: 1,977 - 92.9%

Leukemia: MORTALITY

TABLE 24-D

Number of Cancer Deaths, Age-Adjusted Death Rates and 95% Confidence Intervals by Sex, Race and Year, Pennsylvania Residents, 2004-2013

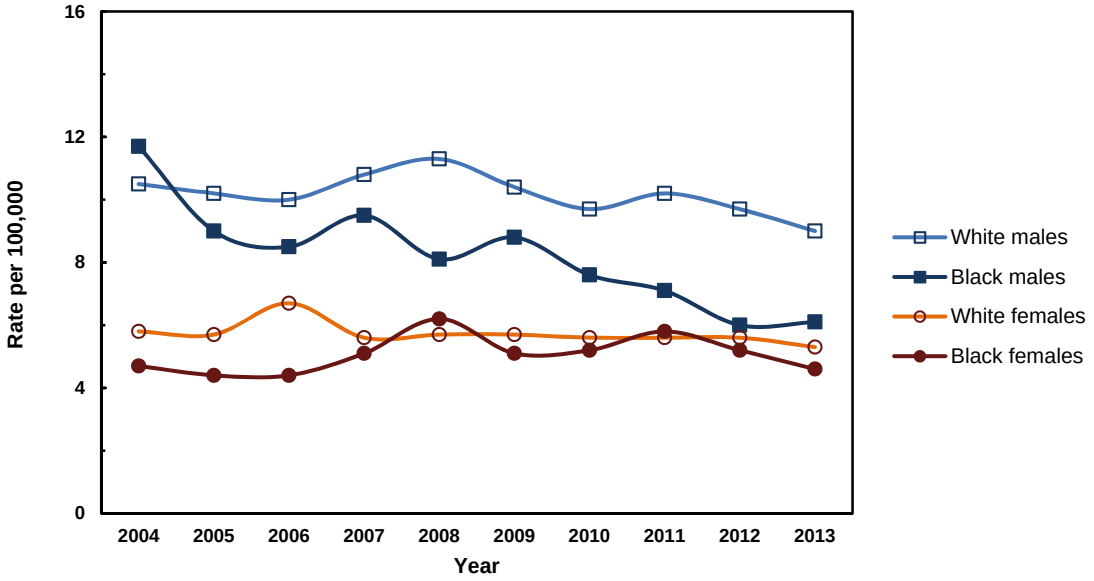
Year	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)	No.	Rate (CI)
2013	**1,114**	**6.8** (6.4-7.2)	**620**	**8.8** (8.1-9.5)	**577**	**9.0** (8.3-9.7)	**31**	**6.1** (4.0-8.2)	**494**	**5.3** (4.8-5.8)	**446**	**5.3** (4.8-5.8)	**34**	**4.6** (3.1-6.1)
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)

* 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, 2004-2013



Leukemia: MORTALITY

TABLE 24-E

Number of Deaths and Average Annual Age-Specific Death Rates by Sex and Race
Pennsylvania Residents, 2009-2013

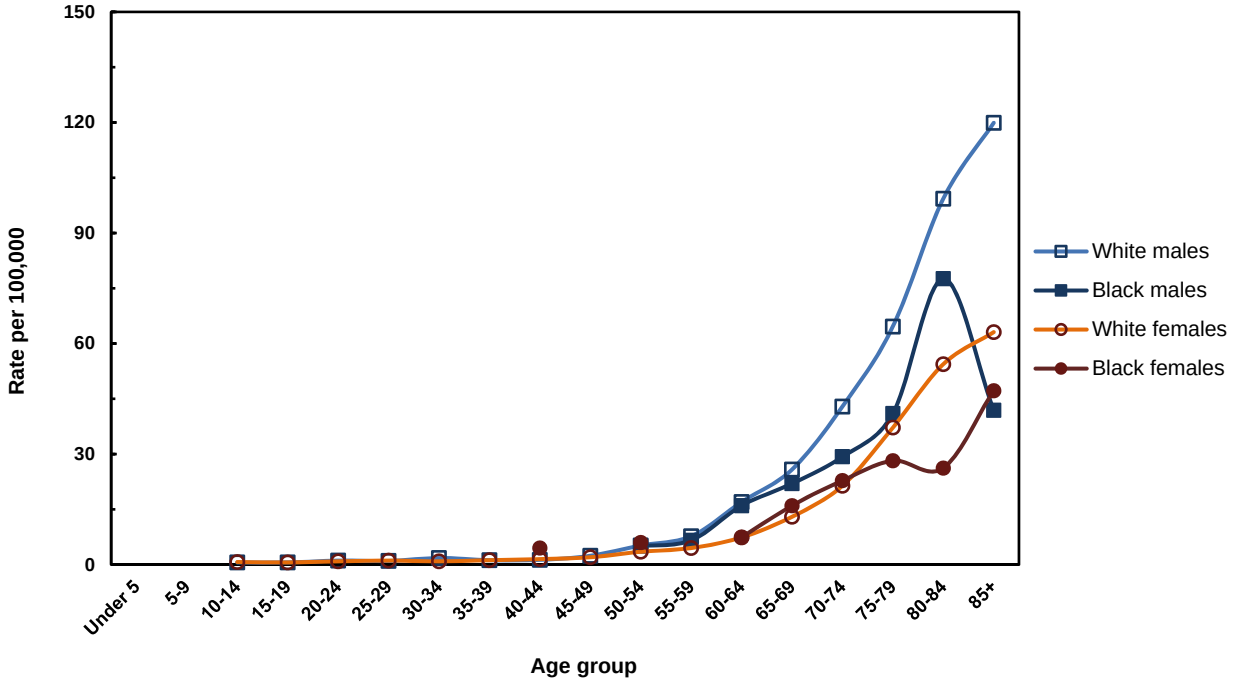
Age Group	All Deaths*		Males						Females					
			All Races*		White		Black		All Races*		White		Black	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total*	**5,762**	**9.1**	**3,221**	**10.4**	**3,001**	**11.6**	**174**	**5.1**	**2,541**	**7.8**	**2,315**	**8.5**	**184**	**5.0**
Under 5	20	0.6	10	0.5	8	ND	2	ND	10	0.6	7	ND	1	ND
5-9	16	0.4	8	ND	7	ND	1	ND	8	ND	7	ND	1	ND
10-14	23	0.6	11	0.5	10	0.6	1	ND	12	0.6	10	0.7	2	ND
15-19	32	0.7	20	0.9	10	0.6	5	ND	12	0.6	11	0.6	1	ND
20-24	47	1.1	24	1.1	20	1.1	4	ND	23	1.1	16	0.9	7	ND
25-29	42	1.1	21	1.0	17	1.0	3	ND	21	1.1	17	1.1	3	ND
30-34	48	1.3	32	1.7	28	1.8	2	ND	16	0.8	14	0.9	1	ND
35-39	49	1.3	25	1.3	18	1.2	4	ND	24	1.3	18	1.2	2	ND
40-44	70	1.7	31	1.5	23	1.3	6	ND	39	1.8	26	1.5	11	4.5
45-49	105	2.3	57	2.5	46	2.4	8	ND	48	2.1	40	2.0	7	ND
50-54	211	4.4	120	5.1	108	5.2	11	5.1	91	3.7	73	3.5	15	6.0
55-59	267	6.0	165	7.6	149	7.7	12	6.6	102	4.5	90	4.5	9	ND
60-64	453	11.9	308	16.8	280	17.0	22	16.0	145	7.3	129	7.4	13	7.4
65-69	545	18.8	343	25.2	319	25.8	20	22.0	202	13.1	179	13.0	20	16.0
70-74	675	30.3	416	41.5	392	42.9	19	29.3	259	21.2	235	21.4	22	22.8
75-79	851	47.4	475	62.3	453	64.6	19	41.0	376	36.4	348	37.2	22	28.2
80-84	1,043	69.8	566	97.0	540	99.3	24	77.6	477	52.4	455	54.4	16	26.2
85+	1,265	79.0	589	115.3	573	119.9	11	41.9	676	61.9	640	63.1	31	47.2

* 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, 2009-2013



Leukemia: INCIDENCE

TABLE 24-F

Number of Cases, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals by County and Sex, Pennsylvania Residents, 2009-2013

County	Total Cases	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	10,532	5,966	17.6	(17.2-18.0)	4,566	10.9	(10.6-11.2)
Adams	90	51	18.6	(13.5-23.7)	39	12.2	(8.4-16.0)
Allegheny	1,114	604	18.1	(16.7-19.5)	510	12.1	(11.0-13.2)
Armstrong	60	37	17.2	(11.7-22.7)	23	8.5	(5.0-12.0)
Beaver	162	96	18.6	(14.9-22.3)	66	9.8	(7.4-12.2)
Bedford	47	25	15.5	(9.4-21.6)	22	11.5	(6.7-16.3)
Berks	344	208	19.5	(16.8-22.2)	136	10.4	(8.7-12.1)
Blair	140	76	20.2	(15.7-24.7)	64	13.5	(10.2-16.8)
Bradford	75	46	24.7	(17.6-31.8)	29	12.4	(7.9-16.9)
Bucks	458	251	15.1	(13.2-17.0)	207	10.5	(9.1-11.9)
Butler	169	83	16.2	(12.7-19.7)	86	13.5	(10.6-16.4)
Cambria	179	104	23.8	(19.2-28.4)	75	14.3	(11.1-17.5)
Cameron	6	3	ND		3	ND	
Carbon	68	42	23.1	(16.1-30.1)	26	12.1	(7.4-16.8)
Centre	93	57	18.0	(13.3-22.7)	36	10.8	(7.3-14.3)
Chester	460	280	21.8	(19.2-24.4)	180	12.3	(10.5-14.1)
Clarion	41	23	20.0	(11.8-28.2)	18	ND	
Clearfield	85	52	22.0	(16.0-28.0)	33	11.6	(7.6-15.6)
Clinton	37	21	17.5	(10.0-25.0)	16	ND	
Columbia	69	40	23.8	(16.4-31.2)	29	14.2	(9.0-19.4)
Crawford	66	39	15.5	(10.6-20.4)	27	8.4	(5.2-11.6)
Cumberland	163	97	15.1	(12.1-18.1)	66	8.1	(6.1-10.1)
Dauphin	165	92	13.6	(10.8-16.4)	73	8.7	(6.7-10.7)
Delaware	380	213	14.8	(12.8-16.8)	167	9.6	(8.1-11.1)
Elk	39	22	20.0	(11.6-28.4)	17	ND	
Erie	241	144	20.0	(16.7-23.3)	97	11.3	(9.1-13.5)
Fayette	80	48	11.9	(8.5-15.3)	32	6.5	(4.2-8.8)
Forest	4	4	ND		0	ND	
Franklin	124	67	15.9	(12.1-19.7)	57	11.3	(8.4-14.2)
Fulton	13	8	ND		5	ND	
Greene	29	19	ND		10	ND	
Huntingdon	46	20	14.8	(8.3-21.3)	26	19.8	(12.2-27.4)
Indiana	78	43	18.5	(13.0-24.0)	35	12.5	(8.4-16.6)
Jefferson	41	25	17.4	(10.6-24.2)	16	ND	
Juniata	22	12	ND		10	ND	
Lackawanna	159	86	14.3	(11.3-17.3)	73	9.2	(7.1-11.3)
Lancaster	467	253	18.2	(16.0-20.4)	214	12.9	(11.2-14.6)
Lawrence	79	51	19.9	(14.4-25.4)	28	8.9	(5.6-12.2)
Lebanon	111	63	16.9	(12.7-21.1)	48	11.4	(8.2-14.6)
Lehigh	333	206	23.3	(20.1-26.5)	127	10.9	(9.0-12.8)
Luzerne	335	186	20.0	(17.1-22.9)	149	12.9	(10.8-15.0)
Lycoming	115	72	21.4	(16.5-26.3)	43	10.7	(7.5-13.9)
McKean	35	17	ND		18	ND	
Mercer	88	50	14.3	(10.3-18.3)	38	9.9	(6.8-13.0)
Mifflin	43	21	14.1	(8.1-20.1)	22	12.4	(7.2-17.6)
Monroe	120	71	16.6	(12.7-20.5)	49	10.1	(7.3-12.9)
Montgomery	609	335	16.1	(14.4-17.8)	274	10.1	(8.9-11.3)
Montour	23	13	ND		10	ND	
Northampton	296	178	22.0	(18.8-25.2)	118	12.4	(10.2-14.6)
Northumberland	88	51	17.6	(12.8-22.4)	37	11.9	(8.1-15.7)
Perry	44	30	26.1	(16.8-35.4)	14	ND	
Philadelphia	911	491	14.8	(13.5-16.1)	420	9.4	(8.5-10.3)
Pike	66	35	18.9	(12.6-25.2)	31	17.5	(11.3-23.7)
Potter	12	7	ND		5	ND	
Schuylkill	161	95	20.8	(16.6-25.0)	66	12.3	(9.3-15.3)
Snyder	37	19	ND		18	ND	
Somerset	83	51	20.4	(14.8-26.0)	32	11.5	(7.5-15.5)
Sullivan	12	7	ND		5	ND	
Susquehanna	22	8	ND		14	ND	
Tioga	43	22	16.9	(9.8-24.0)	21	14.4	(8.2-20.6)
Union	36	28	23.1	(14.5-31.7)	8	ND	
Venango	46	32	20.0	(13.1-26.9)	14	ND	
Warren	47	29	21.2	(13.5-28.9)	18	ND	
Washington	165	94	15.5	(12.4-18.6)	71	9.4	(7.2-11.6)
Wayne	43	26	15.0	(9.2-20.8)	17	ND	
Westmoreland	324	177	16.4	(14.0-18.8)	147	10.3	(8.6-12.0)
Wyoming	30	12	ND		18	ND	
York	361	198	17.5	(15.1-19.9)	163	12.4	(10.5-14.3)

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.

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, 2009-2013

County	Total Deaths	Males			Females		
		No.	Rate	(CI)	No.	Rate	(CI)
All counties	5,762	3,221	9.6	(9.3-9.9)	2,541	5.5	(5.3-5.7)
Adams	52	33	11.5	(7.6-15.4)	19	ND	
Allegheny	608	336	9.9	(8.8-11.0)	272	5.4	(4.8-6.0)
Armstrong	36	15	ND		21	7.4	(4.2-10.6)
Beaver	97	55	10.3	(7.6-13.0)	42	5.8	(4.0-7.6)
Bedford	15	9	ND		6	ND	
Berks	177	113	10.6	(8.6-12.6)	64	4.7	(3.5-5.9)
Blair	78	44	11.9	(8.4-15.4)	34	6.3	(4.2-8.4)
Bradford	28	13	ND		15	ND	
Bucks	275	160	9.7	(8.2-11.2)	115	5.2	(4.2-6.2)
Butler	93	54	10.3	(7.6-13.0)	39	5.9	(4.0-7.8)
Cambria	70	40	9.0	(6.2-11.8)	30	5.1	(3.3-6.9)
Cameron	5	3	ND		2	ND	
Carbon	42	25	12.5	(7.6-17.4)	17	ND	
Centre	38	28	9.1	(5.7-12.5)	10	ND	
Chester	172	101	8.6	(6.9-10.3)	71	4.7	(3.6-5.8)
Clarion	19	12	ND		7	ND	
Clearfield	58	30	12.7	(8.2-17.2)	28	8.6	(5.4-11.8)
Clinton	21	11	ND		10	ND	
Columbia	30	20	11.3	(6.3-16.3)	10	ND	
Crawford	32	20	8.1	(4.6-11.6)	12	ND	
Cumberland	115	63	10.3	(7.8-12.8)	52	6.0	(4.4-7.6)
Dauphin	91	51	7.8	(5.7-9.9)	40	4.3	(3.0-5.6)
Delaware	229	124	8.9	(7.3-10.5)	105	5.4	(4.4-6.4)
Elk	22	12	ND		10	ND	
Erie	122	67	9.4	(7.1-11.7)	55	6.3	(4.6-8.0)
Fayette	60	36	9.2	(6.2-12.2)	24	4.0	(2.4-5.6)
Forest	6	4	ND		2	ND	
Franklin	74	39	9.1	(6.2-12.0)	35	6.4	(4.3-8.5)
Fulton	5	3	ND		2	ND	
Greene	16	6	ND		10	ND	
Huntingdon	20	12	ND		8	ND	
Indiana	37	16	ND		21	6.4	(3.7-9.1)
Jefferson	22	11	ND		11	ND	
Juniata	9	3	ND		6	ND	
Lackawanna	137	80	13.2	(10.3-16.1)	57	6.7	(5.0-8.4)
Lancaster	219	124	9.0	(7.4-10.6)	95	5.1	(4.1-6.1)
Lawrence	51	33	12.0	(7.9-16.1)	18	ND	
Lebanon	77	41	10.3	(7.1-13.5)	36	7.0	(4.7-9.3)
Lehigh	181	109	12.1	(9.8-14.4)	72	5.8	(4.5-7.1)
Luzerne	167	88	9.5	(7.5-11.5)	79	5.3	(4.1-6.5)
Lycoming	63	37	10.5	(7.1-13.9)	26	5.9	(3.6-8.2)
McKean	21	13	ND		8	ND	
Mercer	58	34	9.4	(6.2-12.6)	24	5.6	(3.4-7.8)
Mifflin	24	9	ND		15	ND	
Monroe	64	42	11.6	(8.1-15.1)	22	4.6	(2.7-6.5)
Montgomery	345	176	8.4	(7.2-9.6)	169	5.6	(4.8-6.4)
Montour	5	3	ND		2	ND	
Northampton	156	87	10.7	(8.5-12.9)	69	6.2	(4.7-7.7)
Northumberland	56	30	10.2	(6.5-13.9)	26	6.4	(3.9-8.9)
Perry	20	10	ND		10	ND	
Philadelphia	532	286	9.0	(8.0-10.0)	246	5.2	(4.6-5.8)
Pike	17	6	ND		11	ND	
Potter	3	1	ND		2	ND	
Schuylkill	83	39	8.2	(5.6-10.8)	44	6.9	(4.9-8.9)
Snyder	20	11	ND		9	ND	
Somerset	42	28	11.4	(7.2-15.6)	14	ND	
Sullivan	4	3	ND		1	ND	
Susquehanna	14	9	ND		5	ND	
Tioga	29	14	ND		15	ND	
Union	15	11	ND		4	ND	
Venango	27	16	ND		11	ND	
Warren	24	14	ND		10	ND	
Washington	116	58	9.4	(7.0-11.8)	58	7.1	(5.3-8.9)
Wayne	24	12	ND		12	ND	
Westmoreland	194	113	10.1	(8.2-12.0)	81	5.4	(4.2-6.6)
Wyoming	10	5	ND		5	ND	
York	190	110	10.0	(8.1-11.9)	80	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 Insitute'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. One hundred percent of cases are transmitted electronically by hospitals and approximately 79 percent of cases from all sources are transmitted electronically. 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. Every 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 cancer tumors 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 Jan. 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 2013 death certificates was March 1, 2014. Any data pertaining to a 2013 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 2013." 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 2011-2013 (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 cen-

sus 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. Beginning with 2013 data, population estimates were calculated as single-race categories. In other words, multiple race populations were not included in the estimates of white and black populations. The 2013 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, Arkansas, Colorado, Delaware, District of Columbia, Florida, Idaho, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oregon, Puerto Rico, South Carolina, Virginia, West Virginia and Wisconsin for exchange of data on Pennsylvania resident cases that were diagnosed and/or treated 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 Diseases 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 Jan. 1, 2007, the PCR requires the use of The 2007 Multiple Primary and Histology Coding Rules. If diagnosed prior to Jan. 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 Primaries 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 subcategorized 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 measurements 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 2013 age-adjusted incidence rate for all cancer sites of 483.0 per 100,000 in the calculation of this estimated S.E. and 95% C.I. The rate was based on 77,565 invasive cancers. The square root of 77,565 is about 278.5. By dividing the rate of 483.0 by the square root of 77,565, one obtains the estimated S.E. of about 1.73.

This formula produces an equation of 483.0 ± (1.96 x 1.73). Then, by subtracting and adding 3.4 against the original rate of 483.0, a range can be calculated and considered the estimated 95% confidence interval for the rate, i.e., 479.6 - 486.4. One could then state, with 95 percent certainty, that the actual 2013 age-adjusted cancer incidence rate for the state was between 479.6 and 486.4.

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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 Jan. 1, 2004.

The International Classification of Diseases for Oncology (ICD-O) is used to determine reportability of solid tumors; the 2012 "Hematopopietic 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 Jan. 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 Jan. 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 **Jan. 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

2013 Estimated Pennsylvania Population by Age, Sex and Race

	Total	Male	Female	White Male	White Female	Black Male	Black Female
All Ages	12,773,801	6,242,340	6,531,461	5,209,138	5,420,510	706,339	764,123
Under 5	715,904	365,919	349,985	274,749	261,414	56,549	54,586
5-9	746,445	381,677	364,768	293,716	278,352	54,919	53,642
10-14	771,662	394,453	377,209	310,233	294,811	55,690	53,245
15-19	847,160	432,225	414,935	341,555	327,404	62,592	59,288
20-24	879,038	445,889	433,149	348,985	337,900	68,793	66,629
25-29	829,300	420,113	409,187	338,852	324,723	54,174	55,349
30-34	782,533	393,112	389,421	319,825	310,945	47,809	50,339
35-39	717,180	357,654	359,526	292,929	289,061	42,284	45,496
40-44	812,221	403,901	408,320	337,036	336,300	45,168	48,941
45-49	878,784	434,357	444,427	370,315	374,558	46,164	50,386
50-54	961,395	471,769	489,626	410,247	420,592	45,635	51,609
55-59	940,501	459,754	480,747	405,796	418,555	40,462	46,959
60-64	800,348	386,651	413,697	345,634	363,120	30,196	38,006
65-69	636,735	300,980	335,755	272,536	298,999	20,763	27,827
70-74	473,766	215,699	258,067	196,330	231,331	14,043	20,631
75-79	357,908	154,409	203,499	141,435	183,724	9,522	15,738
80-84	293,526	116,924	176,602	108,704	161,693	6,319	12,250
85+	329,395	106,854	222,541	100,261	207,028	5,257	13,202

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

PRIMARY SITE	ICD-O-2	ICD-O-3	ICD-9	ICD-10
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 Division of Health Informatics 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 division. All of the 1985 through 2013 annual tabulations and multiple-year tabulations are available in .PDF file format (requires free Adobe Acrobat Reader software) and text (.TXT) file formats. The division 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 division 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 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 Enterprise Data Dissemination Informatics Exchange (EDDIE) and contains historical data back to 1990 for most datasets. EDDIE can be accessed from the Health Statistics Web pages at **www.statistics.health.pa.gov/**(select EDDIE under Statistical Resources).

ANNUAL TABULATIONS

Mortality

Resident Cancer Deaths by Age, Sex and Race, by County, 23 Primary Sites, Pa., 1960-2013

Resident Cancer Deaths by Minor Civil Division, 23 Primary Sites, Pa., 1961-2013

Resident Cancer Deaths by 4-digit ICD Cause of Death Code, by Age, Sex and Race, by County, Pa., 1960-2013

Resident Cancer Deaths by Age, Sex, Race and Hispanic Origin, 23 Primary Sites, Pa., 1989-2013

Incidence

Number of Cancer Cases by Age, Sex and Race, by County, 75 Primary Sites, Pa. Residents, 1985-2013

Number of Cancer Cases by Minor Civil Division, 23 Primary Sites, Pa. Residents, 1985-2013

Number of Cancer Cases by Stage of Disease, by Sex and Race, by County, Selected Primary Sites, Pa. Residents, 1985-2013

Number of Cancer Cases by Stage of Disease, by Age, by County, Selected Primary Sites, Pa. Residents, 1985-2013

MULTIPLE-YEAR TABULATIONS

Mortality (1985-2013)

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 (1985-2013)

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.

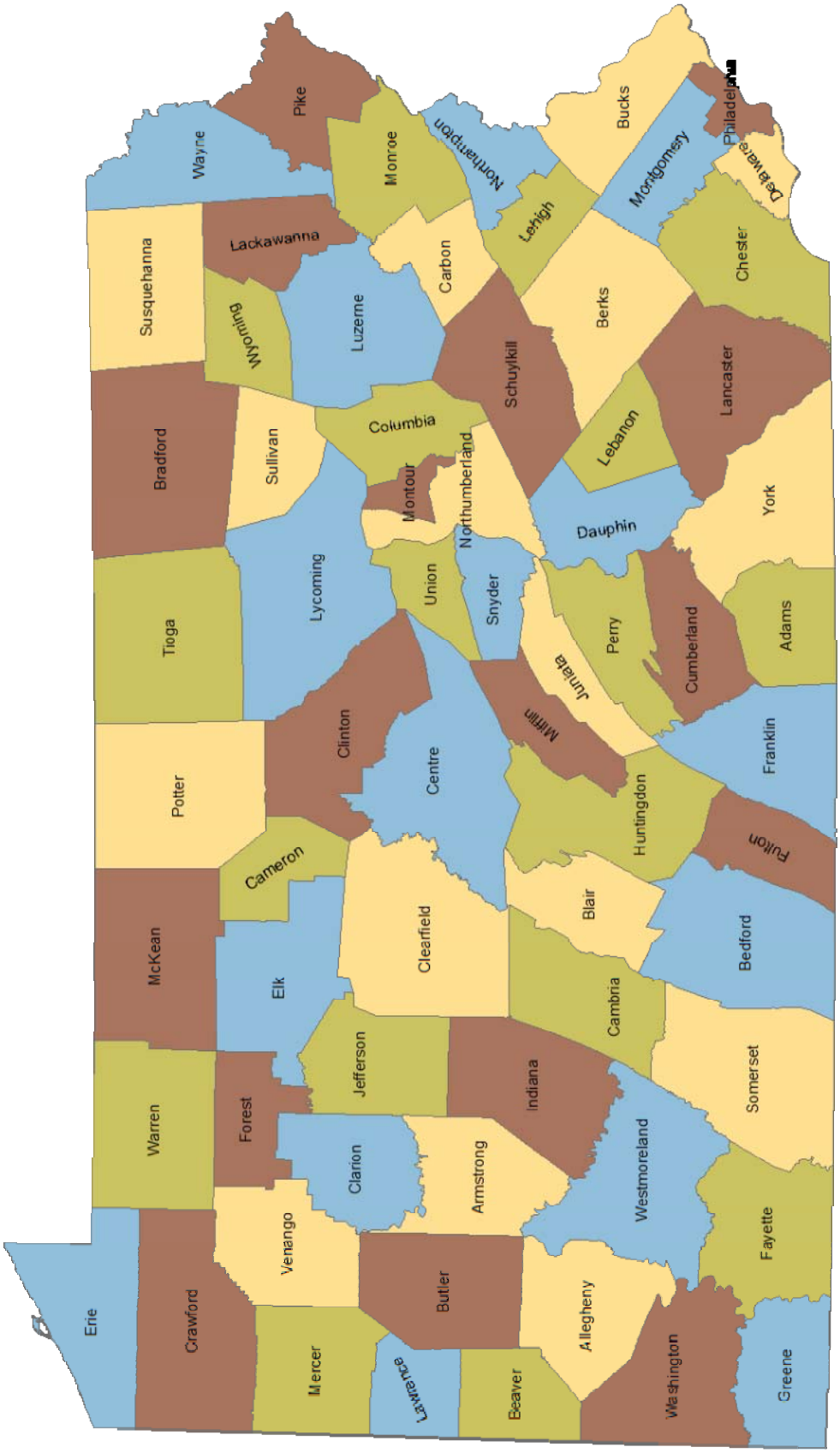
APPENDIX E

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
Sequence Number -- Central
Tumor Record Number
Name -- Alias
Name -- Last
Name -- First
Name -- Middle
Name -- Suffix
Name -- Maiden
Address at Diagnosis -- No. & Street
Address at Diagnosis -- City
Address at Diagnosis -- State
Address at Diagnosis -- Postal Zip
County at Diagnosis
Geocoded Items
-- Municipality
-- Census Tract
-- Census Tract Block Group
-- Census Tract Certainty
-- Latitude
-- Longitude
Age at Diagnosis
Date of Birth
Birth Place
Social Security Number
Sex
Spanish/Hispanic Origin
Race (single designation race)
Race (multiple race designation)
Usual Occupation (only text collected)
Usual Industry (only text collected)
Date of Diagnosis
Type of Reporting Source
Physician -- Follow-up
Primary Site*
Laterality
Histology Type*
(1992-2000 ICD-O-2, 2001+ ICD-O-3)
Behavior Code*
(1992-2000 ICD-O-2, 2001+ ICD-O-3)
ICD-O-3 Conversion Flag
Grade*
Diagnostic Confirmation
Primary Payer at Diagnosis
Collaborative Staging (2004+)
-- Derived SEER Summary Stage 1977
-- Derived SEER Summary Stage 2000
-- Derived AJCC Stage Group
Treatment Provided/Planned
Date of First Course of Treatment
Date of Last Contact
Vital Status
Follow-Up Source Central
Cause of Death Place of
Death County of Death
Date Case Last Changed
Unusual Follow-Up Method
Date Patient Updated
Date Tumor Record Updated
Date Tumor Record Available

* Reported from registry hospitals only. These data items are coded by the PCR when reported from other (non-registry) facilities.

FIGURE I

PENNSYLVANIA COUNTY OUTLINE MAP