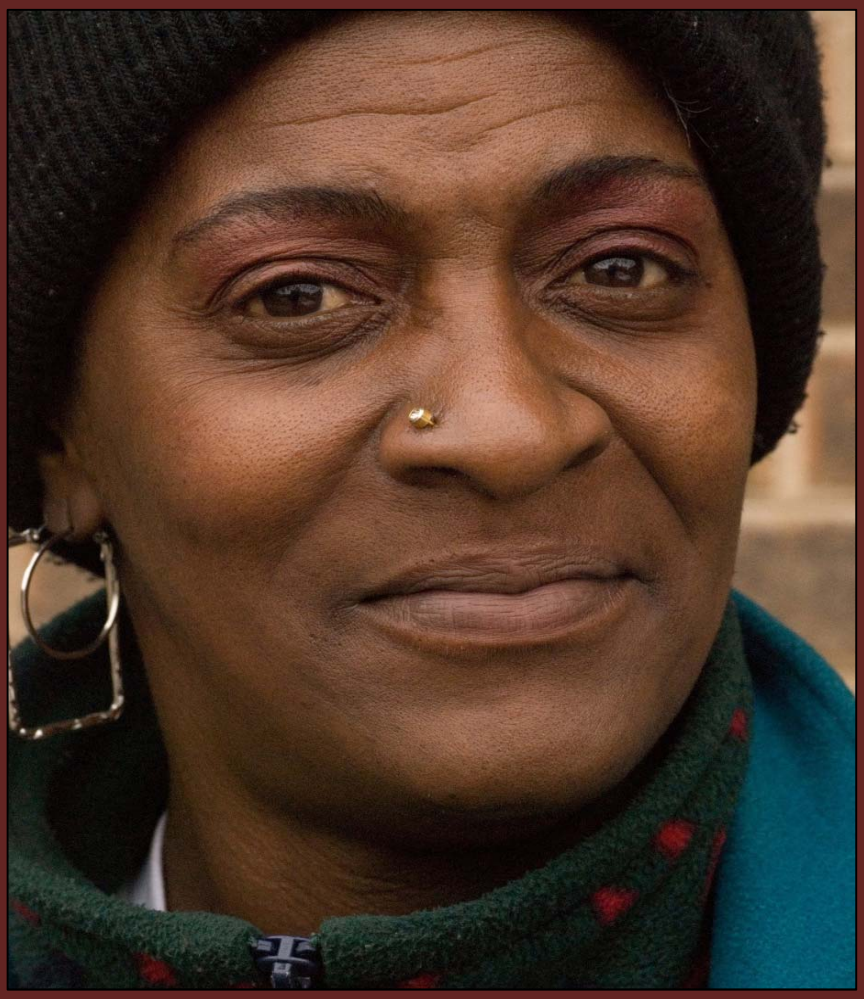
CANCER FACTS and FIGURES for African-Americans

Pennsylvania, 2014



Pennsylvania Cancer Registry
Bureau of Health Statistics and Research

pennsylvania
DEPARTMENT OF HEALTH

Contents

Data Highlights 1
Cancer Rates for African-Americans and Whites 2-3
Cancer Incidence and Mortality Trends 2
Disparities for Stage at Diagnosis 4
Pennsylvania and U.S. Comparison 5
2014 Projected Cases and Deaths 6
Behavioral Risk Factors 7
Technical Notes and References 8

Introduction

In an effort to improve risk assessment needs of cancer prevention programs, the Pennsylvania Department of Health has highlighted racial disparities among African-American and white residents. The focus of this report includes a detailed comparison of cancer and behavioral risk statistics among African-Americans and whites, projected cancer cases and deaths, and analysis of age-adjusted cancer rates for Pennsylvania as compared to the United States. The overall findings are summarized in the Data Highlights section. A Technical Notes section appears at the end of this report and includes information on the data sources, statistical methods and data limitations.

The Bureau of Health Statistics and Research was inspired to generate this report by the American Cancer Society's publication "Cancer Facts and Figures for African-Americans." Although the basic concepts were similar, this report focuses on Pennsylvania's cancer statistics in more detail. In particular, race disparities were identified by type of cancer, stage at the time of diagnosis and behavioral risk factors. According to the American Cancer Society, race disparities among cancer statistics may actually represent socioeconomic disparities and unequal access to timely and quality health care services.

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

Bureau of Health Statistics and Research
Pennsylvania Department of Health
555 Walnut Street, Sixth Floor
Harrisburg, PA 17101-1914
Telephone: 717-783-2548
Fax: 717-772-3258

This report and many other cancer and health statistics can be downloaded from the department's health statistics Web pages at **www.health.state.pa.us/stats**

December 2014

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

Data were collected by the Pennsylvania Cancer Registry (PCR) located in the Bureau of Health Statistics and Research. The PCR is a full participant in the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC).

Data Highlights

• How many African-Americans were diagnosed with cancer?

In 2011, there were 6,789 cases of invasive cancer diagnosed among African-Americans in Pennsylvania, for an age-adjusted incidence rate of 527.2 per 100,000. Among African-American men, there were 3,356 cases for an age-adjusted rate of 625.7; among African-American women, there were 3,433 cases, for a rate of 465.4.

• How many African-Americans died of cancer?

In 2012, there were 2,735 deaths due to cancer among African-Americans in Pennsylvania, for an age-adjusted mortality rate of 219.6 per 100,000. Among African-American men, there were 1,272 deaths due to cancer, for an age-adjusted mortality rate of 265.2; among African-American women there were 1,463 deaths due to cancer, for an age-adjusted rate of 195.6.

• What were the most common cancers diagnosed among African-Americans?

The four most common invasive cancer diagnoses for African-American Pennsylvanians in 2011 were prostate (1,081 new cases), lung/bronchus (1,039), female breast (938) and colon/rectum (629). Combined, these four sites represent 54 percent of all invasive cancers diagnosed among African-Americans that year.

• How do cancer rates of African-Americans compare to whites?

In Pennsylvania, the annual age-adjusted incidence and mortality rates of invasive cancer among African-Americans was significantly higher than the rates for whites during the 11-year period 2001-2011. The 2011 incidence rate among African-Americans (527.2) was 7.6 percent higher than the rate for whites (489.8). For liver/intrahepatic bile duct cancer and myeloma, the incidence rates among African-Americans were over twice those among whites. In 2012, the age-adjusted mortality rates among African-American residents for cancers of the prostate; cervix uteri; corpus/uterus, NOS; stomach; and liver/intrahepatic bile duct were each more than twice as high as the corresponding rates among white residents.

• How do cancer rates among Pennsylvanians compare to the United States?

In 2011, the age-adjusted cancer incidence rate for African-Americans in Pennsylvania (527.2 per 100,000) was 10.8 percent higher than the national rate for African-Americans (476.0) as recorded by the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) Program. Pennsylvania's rates among African-Americans were higher for lung/bronchus and colorectal cancers but 9.7 percent lower among men with prostate cancer. In the same year, the age-adjusted cancer mortality rate for African-Americans in Pennsylvania (222.5) was 11.7 percent higher than the national rate (199.2).

• How many cancer cases and deaths are projected for 2014?

The number of cancer cases among African-Americans in Pennsylvania is expected to increase by 7.4 percent from the 6,789 cases reported in 2011 to 7,290 cases in 2014. In addition, the number of cancer deaths among African-American residents is expected to increase by 130 deaths from the 2,735 observed in 2012 to 2,865 in 2014 ─ a difference of 4.8 percent.

• At what stage of the disease are cancers diagnosed?

During the three-year period of 2009-2011, cancers among African-Americans in Pennsylvania were most commonly diagnosed at the local stage (39.3 percent). Compared to whites, African-Americans had a lower percentage of cancers diagnosed at early stages (47.1 vs. 51.4) and a higher percentage of cancers diagnosed at late stages (45.4 vs. 41.5). When comparing African-American males to females, females had a higher percentage of cancers diagnosed at the in situ stage (11.0 vs. 3.9) and a lower percentage diagnosed at the distant stage (24.0 vs. 26.5).

• What are the disparities for behavioral risk factors?

Comparisons between African-American and white Pennsylvania residents, using data from the Behavioral Risk Factor Surveillance System surveys conducted in 2012 and 2013, show African-Americans as significantly more likely to be overweight, obese or smokers. However, African-American females were more likely than white females to have screened using a Pap smear in the previous three years.

Cancer Rates for African-Americans vs. Whites

Cancer incidence – The tables on page 3 show comparisons between age-adjusted invasive cancer rates for African-American and white residents of Pennsylvania during the five-year period 2007-2011. Overall, African-Americans had a higher rate of incidence than whites. Specifically, the rate of liver and intrahepatic bile duct cancer among either sex of African-Americans was double the rate among their white counterparts. African-American females also experienced rates of multiple myeloma and stomach cancer twice as high as white females.

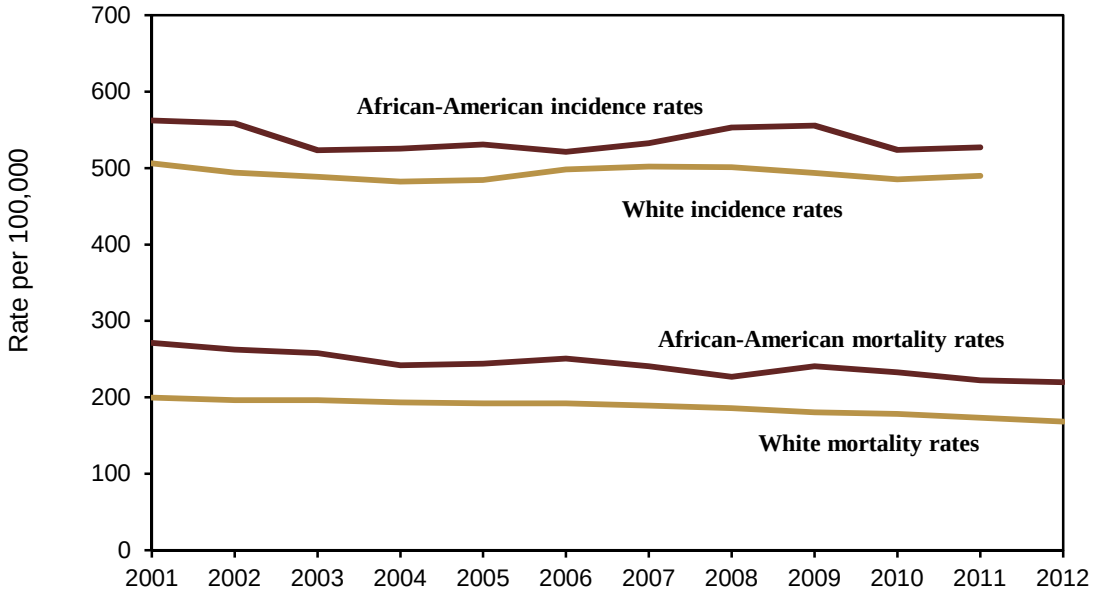
Cancer mortality – For the five-year period 2008-2012, the age-adjusted cancer death rate was higher among African-American residents of Pennsylvania than among whites. The African-American mortality rate of stomach cancer was over twice as high as the white rate. Similar racial disparities occurred among males in the rates of prostate and liver/intrahepatic bile duct cancers. For females, the largest mortality rate ratios occurred for multiple myeloma, stomach and cervix uteri cancers; each of these rates among black females was at least double the white female rate.

Incidence and Mortality Trends by Race

Cancer incidence – From 2001 to 2011, the annual age-adjusted cancer incidence rate has remained higher among African-American residents of Pennsylvania than among whites. On average, the African-American rate was 9.0 percent higher. The rates for both races decreased over this period: from 562.4 per 100,000 to 527.2 among African-Americans, and from 506.3 to 489.8 among whites.

Cancer mortality – The annual age-adjusted cancer mortality rate decreased over the period of 2001 to 2012 among both African-American and white Pennsylvania residents. The black rate went from 271.3 per 100,000 to 219.6, while the white rate went from 199.8 to 168.3. On average, the rate among blacks was 29.6 percent higher than the rate among whites.

Trends: Cancer Incidence and Mortality
Age-Adjusted Rates by Race, Pennsylvania Residents



NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population. Incidence rates are based on all invasive and in situ urinary bladder cancers.

Cancer Rates for African-Americans and Whites

INCIDENCE - MALES 2007-2011	RATES*		African-American/
Cancer	African-American	White	white ratio
Liver and intrahepatic bile duct	26.3	9.4	2.8
Myeloma	13.5	7.0	1.9
Prostate	209.6	130.0	1.6
Stomach	15.5	9.8	1.6
Larynx	10.5	6.7	1.6
Lung and bronchus	111.3	82.4	1.4
Kidney and renal pelvis	29.0	22.5	1.3
Pancreas	17.7	14.6	1.2
Colon and rectum	62.8	54.2	1.2
Oral cavity and pharynx	17.8	16.8	1.1
Hodgkin lymphoma	3.3	3.7	0.9
Esophagus	8.0	9.7	0.8
Leukemia	13.3	17.1	0.8
Non-Hodgkin lymphoma	19.6	25.7	0.8
Brain and other nervous system	5.7	8.6	0.7
Thyroid	6.0	10.0	0.6
Urinary bladder	23.5	46.2	0.5
Testis	1.4	7.4	0.2
Melanoma	1.4	24.6	0.1
All cancers	644.0	555.0	1.2

MORTALITY - MALES 2008-2012	RATES*		African-American/
Cancer	African-American	White	white ratio
Prostate	50.4	19.4	2.6
Stomach	9.6	4.0	2.4
Liver and intrahepatic bile duct	17.2	7.5	2.3
Larynx	4.3	2.0	2.2
Myeloma	7.4	4.0	1.9
Colon and rectum	29.8	19.7	1.5
All cancers	287.4	216.1	1.3
Oral cavity and pharynx	4.7	3.3	1.4
Lung and bronchus	81.4	62.0	1.3
Pancreas	15.8	13.3	1.2
Kidney and renal pelvis	5.5	5.7	1.0
Urinary bladder	6.6	8.8	0.8
Leukemia	7.5	10.2	0.7
Non-Hodgkin lymphoma	6.4	9.0	0.7
Esophagus	6.5	9.2	0.7
Brain and other nervous system	3.2	5.3	0.6
Melanoma	0.4	4.7	0.1
Thyroid	-	0.5	-
Hodgkin lymphoma	-	0.5	-
All cancers	287.4	216.1	1.3

INCIDENCE - FEMALES 2007-2011	RATES*		African-American/
Cancer	African-American	White	white ratio
Myeloma	11.4	4.3	2.7
Stomach	8.6	3.9	2.2
Liver and intrahepatic bile duct	6.5	3.0	2.2
Esophagus	3.6	1.9	1.9
Larynx	2.7	1.5	1.8
Cervix uteri	11.6	7.5	1.5
Pancreas	17.0	11.1	1.5
Lung and bronchus	74.5	56.3	1.3
Kidney and renal pelvis	15.0	11.5	1.3
Colon and rectum	44.7	40.8	1.1
Female breast	134.1	127.1	1.1
Oral cavity and pharynx	6.4	6.4	1.0
Hodgkin lymphoma	2.8	3.1	0.9
Leukemia	8.6	10.5	0.8
Corpus and uterus, NOS	25.8	32.5	0.8
Ovary	10.6	13.5	0.8
Urinary bladder	8.8	11.3	0.8
Non-Hodgkin lymphoma	12.6	17.8	0.7
Thyroid	20.7	29.8	0.7
Brain and other nervous system	3.7	6.5	0.6
Melanoma	0.7	17.3	0.0
All cancers	469.7	454.5	1.0

MORTALITY - FEMALES 2008-2012	RATES*		African-American/
Cancer	African-American	White	white ratio
Myeloma	5.7	2.5	2.3
Stomach	4.2	1.9	2.2
Cervix uteri	4.0	2.0	2.0
Corpus and uterus, NOS	8.3	4.7	1.8
Esophagus	2.8	1.6	1.8
Larynx	0.7	0.4	1.8
Liver and intrahepatic bile duct	4.9	3.0	1.6
Female breast	33.3	22.4	1.5
Pancreas	14.1	9.7	1.5
Urinary bladder	3.3	2.3	1.4
Colon and rectum	18.0	13.8	1.3
Lung and bronchus	49.3	38.0	1.3
Thyroid	0.6	0.5	1.2
Oral cavity and pharynx	1.3	1.2	1.1
Leukemia	5.4	5.6	1.0
Ovary	7.9	8.4	0.9
Kidney and renal pelvis	2.5	2.7	0.9
Non-Hodgkin lymphoma	4.0	5.3	0.8
Brain and other nervous system	1.7	3.7	0.5
Melanoma	-	2.1	-
Hodgkin lymphoma	-	0.3	-
All cancers	193.7	150.2	1.3

*Incidence and mortality rates are per 100,000 and age-adjusted to the 2000 US standard million population using 18 five-year age groups.

NOTES: In situ cancers were excluded for all cancer sites with the exception of urinary bladder. Ratios and age-adjusted rates were not calculated for cancer sites with less than 20 events due to unreliability of rates based on small numbers.
Sources: Cancer incidence data were obtained from the Pennsylvania Cancer Registry. Cancer death data were obtained from Pennsylvania's Certificate of Death.

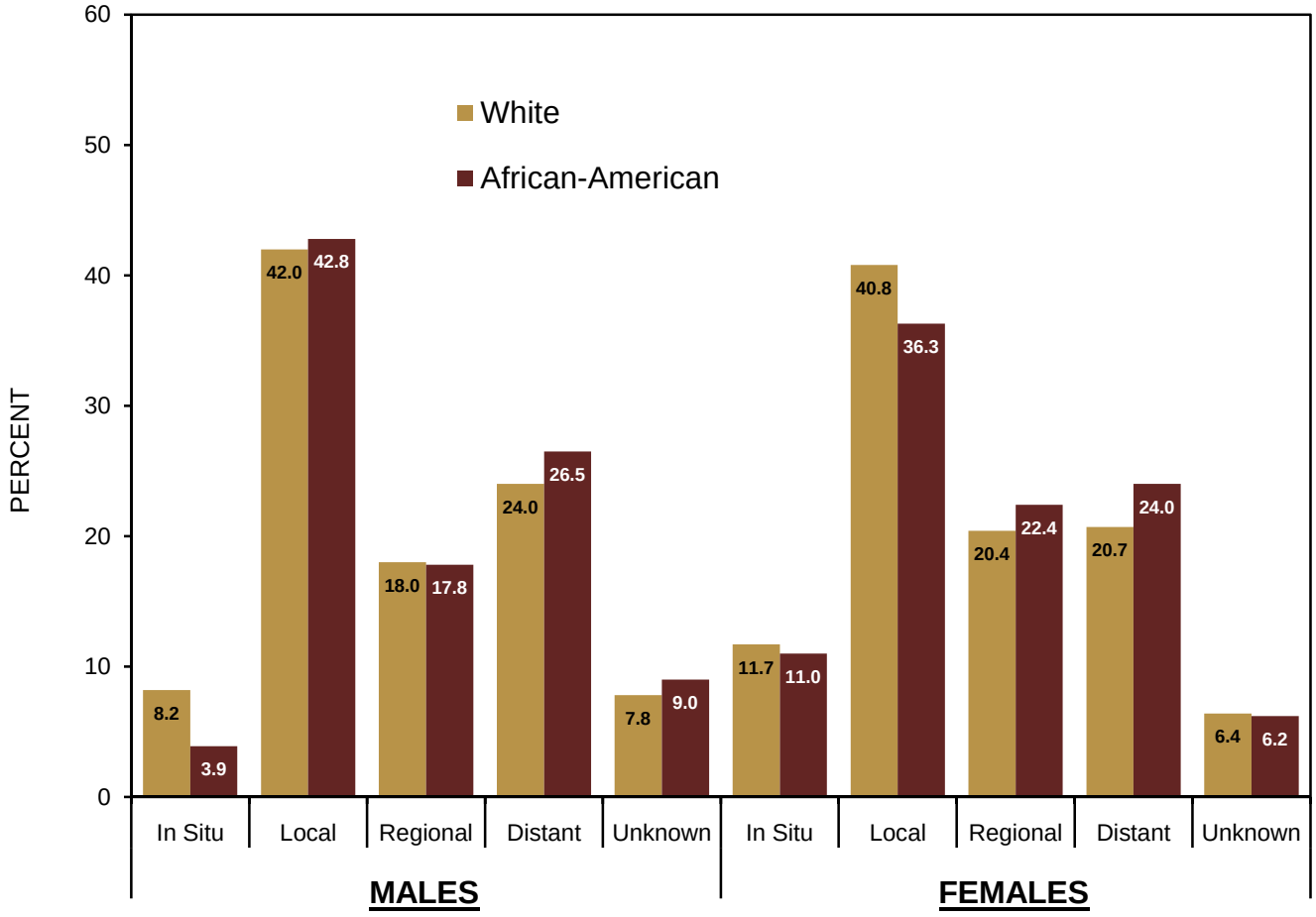
Racial Disparities for Stage at Diagnosis

Stage of disease – An early diagnosis of cancer increases the effectiveness of treatment and improves the chances of survival. Unfortunately, many cancers go undetected until they metastasize to secondary sites. The chart below shows how the proportions of cancer diagnoses by stage differ by race and sex. A lower rate of diagnoses at an early stage (in situ and local) among a group might imply less access to or use of screening methods or health care services in general. Note that these stage statistics exclude cervix uteri cancers in situ, which are not collected by the registry, and all lymphomas, which use the Ann Arbor staging system.

Males – For non-lymphoma cancers diagnosed among Pennsylvania residents from 2009 to 2011, African-American males were only half as likely as whites to be diagnosed at the in situ stage. They had similar rates of local and regional but higher rates of distant and unknown stages in comparison to whites. Distant- and unknown-staged diagnoses made up a larger percentage of male cases than female cases.

Females – In the years from 2009 to 2011, African-American and white females had nearly similar percentages of non-lymphoma cancers diagnosed at the in situ stage. Both races' had in situ percentages higher than for either white or black males. However, black females had a lower percentage of local stage and greater percentage of late stage (regional and distant) diagnoses than white females.

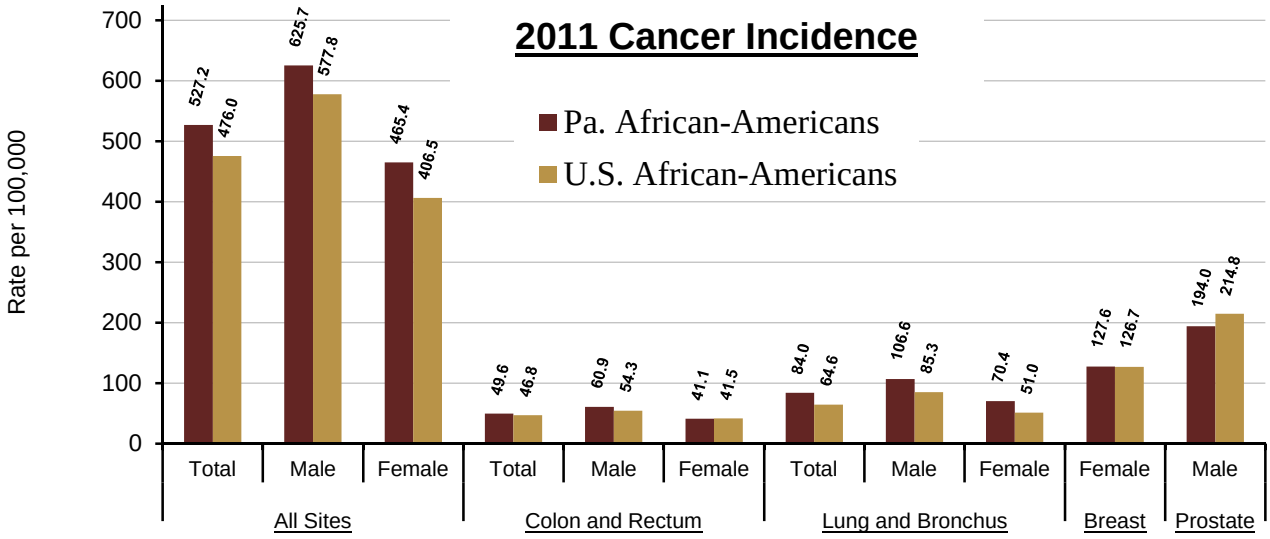
Percent of Cancer Cases by Stage of Disease at Diagnosis All Cancers by Race, Pennsylvania Residents, 2009-2011

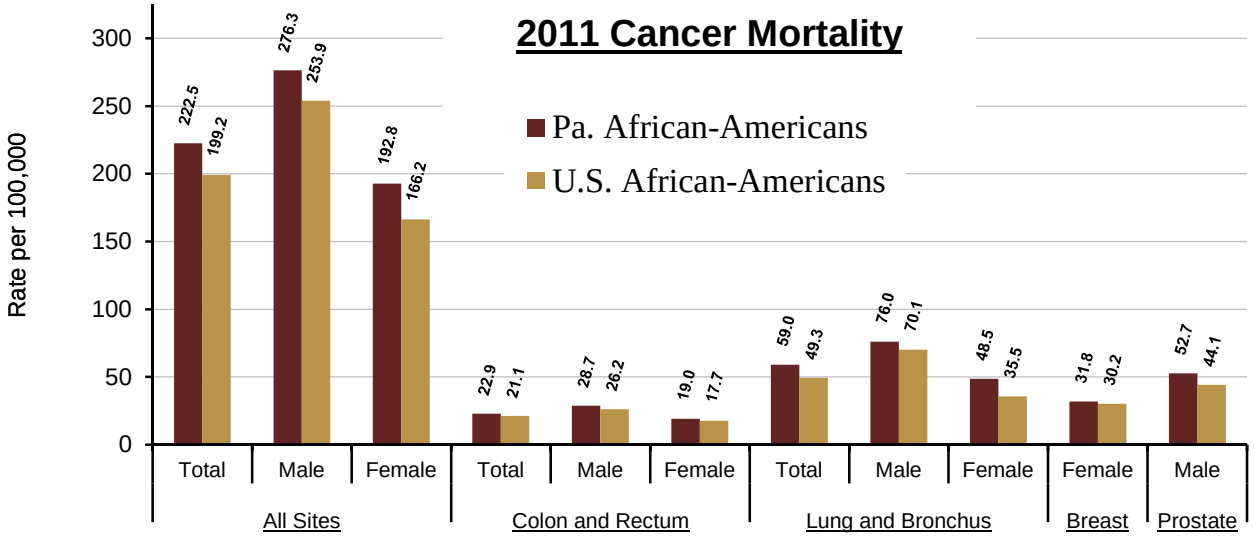


PENNSYLVANIA and the UNITED STATES: Comparison of Age-Adjusted Cancer Rates Among African Americans

Cancer incidence – In 2011, the age-adjusted cancer incidence rate among African-Americans was 10.8 percent higher in Pennsylvania (527.2 per 100,000) than in the United States (476.0). The chart below also contains rate comparisons by sex for four cancer sites; colon and rectum, lung and bronchus, female breast, and prostate. These sites account for over half of all invasive cancer cases among black Pennsylvanians. Black males in both Pennsylvania and the U.S. experienced higher rates than black females for cancers of the colon/rectum and lung/bronchus. Pennsylvania did have a lower rate of prostate cancer among blacks (194.0) than the U.S. (214.8),

Cancer mortality – In 2011, Pennsylvania had an age-adjusted cancer mortality rate among African-Americans 11.7 percent higher than the United States (222.5 and 199.2 per 100,000, respectively). The four specific cancer sites included in the chart below also accounted for over half the cancer deaths among Pennsylvanian African-Americans. Because of the small number of deaths for each site, only lung and bronchus cancer has significantly different rates between black residents of Pennsylvania (59.0) and the U.S. (49.3). The rate of lung and bronchus cancer death was also higher among black males than black females for both Pennsylvania and the U.S.





NOTES: Age-adjusted rates are per 100,000 and were computed by the direct method using 2000 U.S. standard million population. Incidence rates were based on invasive (and in situ urinary bladder) cancers. The U.S. incidence figures are based on data reported by the National Cancer Institute's SEER program for nine SEER areas. The U.S. mortality figures are based on data provided by the U.S. National Center for Health Statistics and reported by SEER.

2014 Projected Cancer Cases and Deaths

Projected figures – The tables below present projections of cancer incidence and mortality among African-American residents of Pennsylvania for the year 2014. Projections were calculated for all cancers and the top four cancer sites: colon/rectum, female breast, lung/bronchus and prostate. These projections used the five most recent years of data available from the Pennsylvania Cancer Registry and death certificates. Cancer incidence projections were calculated using 2007 through 2011 data, while cancer mortality projections were calculated using 2008 through 2012 data. However, the projections were based on relatively few observations with potentially high variability, which thereby make accurate and reliable projections difficult.

Cancer incidence – An expected 7,290 new invasive cancers will be diagnosed among African-American Pennsylvanians in 2014: a 7.4 percent increase from the 6,789 in 2011. The projections show the biggest increase occurring for black females, with an approximate 13.3 percent increase of 450 cases. Black male incidence is also expected to rise, albeit only slightly, from 3,356 cases in 2011 to 3,400 in 2014.

Cancer mortality – The number of African-American residents of Pennsylvania projected to die from cancer in 2014 is 2,865. This is a 4.8 percent increase from the 2,735 deaths in 2012. The projection estimates there will be around an additional 100 cancer deaths among black females and an additional 30 among black males. Prostate cancer deaths are expected to increase 10.8 percent among black men. According to the projections, each of the specific sites in the table below will see an increase in cancer deaths.

Pennsylvania Cancer Incidence Among African-Americans

	Total			Male			Female		
	Actual 2011	Projected 2014	Percent change	Actual 2011	Projected 2014	Percent change	Actual 2011	Projected 2014	Percent change
All cancers	6,789	7,290	7.4%	3,356	3,400	1.3%	3,433	3,890	13.3%
Colon and rectum	629	605*	-3.8%	324	295*	-9.0%	305	310*	1.6%
Female breast	938	1,040	10.9%	-	-	-	938	1,040	10.9%
Lung and bronchus	1,039	1,085	4.4%	525	505*	-3.8%	514	555	8.0%
Prostate	1,081	1,045*	-3.3%	1,081	1,045*	-3.3%	-	-	-

Pennsylvania Cancer Mortality Among African-Americans

	Total			Male			Female		
	Actual 2012	Projected 2014	Percent change	Actual 2012	Projected 2014	Percent change	Actual 2012	Projected 2014	Percent change
All cancers	2,735	2,865	4.8%	1,272	1305*	2.6%	1,463	1,560	6.6%
Colon and rectum	249	260*	4.4%	127	135*	6.3%	122	125*	2.5%
Female breast	236	240*	1.7%	-	-	-	236	240*	1.7%
Lung and bronchus	727	745	2.5%	365	370*	1.4%	362	365	0.8%
Prostate	194	215	10.8%	194	215	10.8%	-	-	-

NOTES: Males and females may not sum to the total due to independent analaysis by sex and by total. Projections were rounded to the nearest whole five and the percent change was rounded to the nearest tenth of a percentage. Pennsylvania cancer primary site groupings match the primary site definitions used by the National Cancer Institute's SEER program. Incidence counts are based on all invasive and in situ urinary bladder cancers.
* The arithmetic mean for the five-year period was used to estimate the number of cases or deaths.

Behavioral Risk Factors

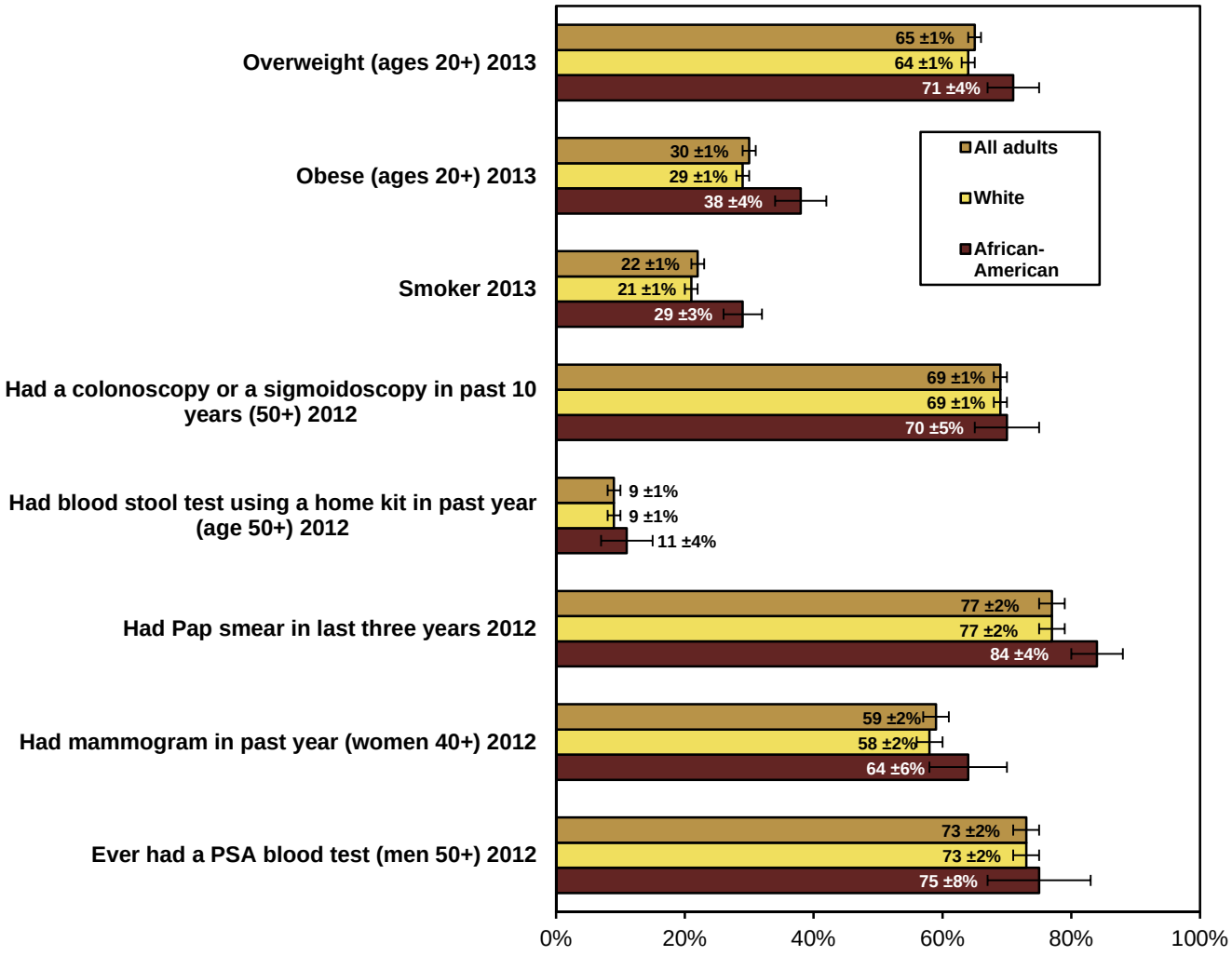
The Pennsylvania Department of Health conducts an annual telephone sample survey of adult residents as part of its Behavioral Risk Factor Surveillance System (BRFSS). The graph below shows results from the 2012 and 2013 surveys for selected risk factors that influence cancer incidence for all adults, (non-Hispanic) whites, and (non-Hispanic) African-Americans. Unless specified otherwise, adults include those aged 18 or older.

According to the survey, a significantly higher proportion of black adults (ages 20+) in Pennsylvania suffered from being overweight or obese in 2013 when compared to white adults. In fact, blacks were 31.0 percent more likely to be obese than whites. Being overweight or obese increases one's risk of some types of cancer, including breast, colorectal, esophageal, kidney and pancreatic.

African-American adults were also 38.1 percent more likely to be current smokers than white adults in Pennsylvania. While most people know that smoking increases one's risk of cancer in respiratory organs, it also increases the risk of pancreatic, uterine, cervical, renal, urinary bladder and other cancers.

Although blacks fared worse than whites in unhealthy behavior prevalence, they had statistically similar rates of most cancer screening behaviors and a statistically higher rate of having had a Pap smear in the last three years.

Selected Behavioral Risk Factors by Race, Pennsylvania Adults, 2012 & 2013



NOTES: The 2011 survey marks the first year in which the Pennsylvania BRFSS collected data from both landline and cell phone respondents. To allow for the incorporation of cell phone data, a new weighting methodology called iterative proportional fitting, or raking, was implemented in 2011. Data include 95% confidence intervals (±). Data for whites and blacks exclude Hispanics.

TECHNICAL NOTES

Important: It is highly recommended that any user of the data presented in this report read the information provided in this Technical Notes section carefully and review as many of the cited references as possible.

Cancer incidence data were obtained from the Pennsylvania Cancer Registry and the National Cancer Institute's (NCI) SEER program. Cancer mortality data were obtained from the Pennsylvania Certificate of Death and NCI's SEER data as compiled by the National Center for Health Statistics. African-American as defined for this report includes those whose race was reported as "black" on the PCR Report Form and the Pennsylvania Certificate of Death.

The projections of new cancer cases in this report were obtained by producing a regression line using the method of least squares. This approach utilized the actual number of cases reported to the PCR with a diagnosis year of 2007 through 2011. This method constructs the regression line that minimizes the sum of the squared residuals, where a residual is the difference between each data point (actual or observed event) and the regression line (predicted event). Once a regression line has been computed, an estimate of the population standard error of the estimate is computed. This estimate measures the variability of the line. Also computed is the estimate of the population standard deviation of the dependent variable (year of diagnosis). This is a measure of the variability of projected cancer cases based on the arithmetic mean of cancer cases for the five years of 2007 through 2011. The estimate of the population standard error of the estimates was then compared to the estimate of the population standard deviation of the mean to identify which method had less variability. If the population standard deviation was lower, then the arithmetic mean for the five-year period was instead used as the projected number of cancer cases. This same method was applied to projecting the number of cancer deaths. However, since the cancer mortality file is more current, the five-year period of 2008 through 2012 was used to project the number of cancer deaths. The projected numbers of new cancer cases and new cancer deaths have been rounded to the nearest whole five. The projected figures should be used cautiously. Considerable variation may occur, particularly with estimates of small numbers. Of primary concern when using forecasted values is the high probability of chance variation due to unknown (or uncontrollable) factors.

Age-adjusted rates were calculated using the direct method. This was done by applying a selected population's age-specific rates to a standard population (in this report, the 2000 U.S. standard million 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 (1,000,000) 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. Age-adjusted rates should never be compared with any other type of rate or be used as absolute measurements of vital events. All state population figures used for calculating rates were either enumerated population figures produced by the U.S. Census Bureau (2000, 2010) or estimates produced jointly by the U.S. Census Bureau and the State Data Center of Penn State at Harrisburg (2001-2009, 2011 and 2012).

REFERENCES

American Cancer Society. "Cancer Facts & Figures for African Americans 2013-2014," Atlanta, Ga.: 2013.

Pennsylvania Department of Health. "An Analysis of Cancer Incidence in Pennsylvania Counties 2007-2011," Harrisburg, Pa.: 2014.

Pennsylvania Department of Health. "Cancer Facts and Figures Pennsylvania, 2014," Harrisburg, Pa.: 2014.

Pennsylvania Department of Health. "Pennsylvania Cancer Incidence and Mortality 2011," Harrisburg, Pa.: 2014.

Samuel B. Richmond. "Statistical Analysis," Second Edition. Graduate School of Business, Columbia University: John Wiley and Sons, 1964.

World Health Organization. "ICD-O International Classification of Diseases for Oncology Second Edition," Geneva. ISBN 92 4 1544147: 1990.

World Health Organization. "ICD-O International Classification of Diseases for Oncology Third Edition," Geneva, Switzerland: 2000.

World Health Organization. "Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death." Geneva: Ninth Revision. ISBN 92 4 154005 2: 1977.

World Health Organization, "International Statistical Classification of Diseases and Related Health Problems: Tenth Revision." Geneva: 1992.

NOTES

Pennsylvania Department of Health
Bureau of Health Statistics and Research

HD0499P