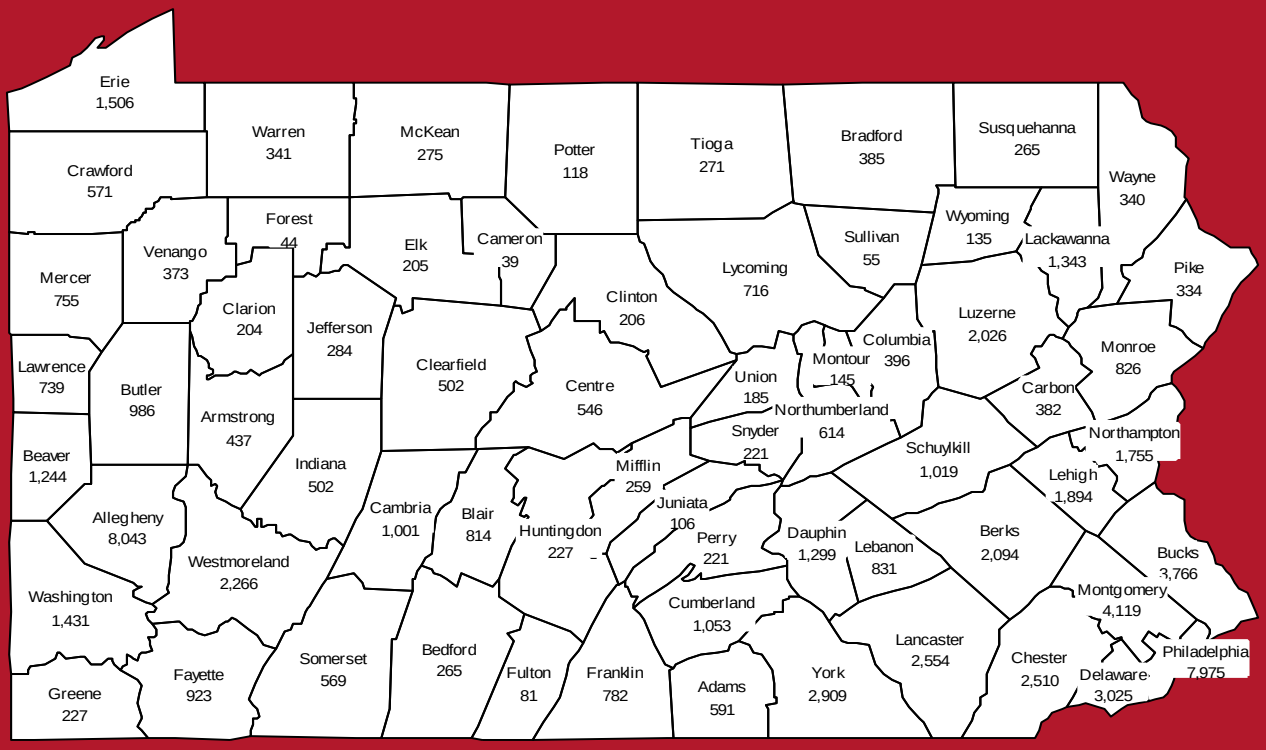
CANCER FACTS and FIGURES

Pennsylvania, 2015

Estimated Number of New Cancer Cases For 2015 By County



State Total: 76,827

pennsylvania
DEPARTMENT OF HEALTH

Division of Health Informatics

INTRODUCTION

This publication presents observed and projected cancer incidence and mortality statistics for the Commonwealth of Pennsylvania. By utilizing the data collected by the Pennsylvania Cancer Registry, the Department of Health can develop programs to better address Pennsylvania's Cancer Program needs. Registry data are used to plan and evaluate cancer control measures in areas of risk assessment, prevention, early detection, patient care, public and professional education, and clinical research. Detailed incidence data for Pennsylvania are available to government agencies, as well as educational, planning and research organizations, and concerned private citizens.

A Technical Notes section appears at the beginning of this report to emphasize the importance of understanding and appropriately using the data shown. This section explains all steps used in the presentation of the data for this report. If you use any of the statistics presented in this report, we highly recommend that you read the Technical Notes section carefully and thoroughly.

The Division of Health Informatics specifically acknowledges the American Cancer Society (ACS). ACS granted permission to use their annual publication “Cancer Facts and Figures” as a direct reference in the development of this publication. We appreciate their cooperation.

The division 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:

Division of Health Informatics
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Harrisburg, PA 17103
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Cancer incidence data were collected by the Pennsylvania Cancer Registry (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 and other cancer and health statistics are on the Health Statistics Web pages at **www.statistics.health.pa.gov**.

January 2016

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

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CONTENTS

TECHNICAL NOTES

Incidence data:
Cancer abstracts collected by the Pennsylvania Cancer Registry are the source for Pennsylvania cancer incidence data shown here. Data from the PCR were used to project the expected number of cancer cases listed in this report. Primary cancer sites follow the definitions used by the National Cancer Institute's SEER Program and are therefore comparable. Unless noted, in situ cases for sites other than urinary bladder cancer are not included in any calculation or projection contained in this report. Cancer cases were coded using International Classification of Diseases for Oncology – Third Edition (ICD-O-3) and staged according to the "SEER Summary Staging Manual" categories. As of the writing of this report, 2012 is the latest year of available incidence data for the commonwealth.

Mortality data:
Pennsylvania's Certificate of Death is the source document for Pennsylvania cancer mortality data. The actual numbers of Pennsylvania cancer deaths reported were used to forecast the expected number of cancer deaths listed in this report. Currently, 2013 is the latest year of available mortality data for the commonwealth.

Incidence and mortality projections:
The projections of new cancer cases in this report were obtained by fitting an autoregressive integrated moving average model (ARIMA) to the annual incidence counts from 2000 through 2012. The parameters of the model were selected by a stepwise algorithm to minimize the corrected Akaike information criterion (AICc). Because certain events, such as new screening recommendations, can impact the incidence in a year, the models for certain primary sites included this information in their projections. In this report, the primary sites that included such predictors were female breast and prostate cancers. The projections for all sites were in turn used to determine the projection for total cancer cases in the state. This same method was applied to projecting the number of cancer deaths. However, since the cancer mortality file is more current, the annual death counts from 2001 through 2013 were used in the projections.

Precision of projections:
The projected figures should be used cautiously. Considerable variation may occur, particularly with estimates of small numbers. The percentage changes between the most recent data and projections are meant for simple comparisons. To accurately judge trends, the projection should be considered along with multiple observed data years.

Age-adjusted rates (direct method):
Age-specific rates for a selected population are applied to a standard population (in this report, the 2000 U.S. standard million population for 18 age groups) 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. 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 are estimates produced jointly by the U.S. Census Bureau and the Pennsylvania State Data Center of Penn State at Harrisburg.

Data use and limitations:
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. Of primary concern when using forecasted values is the high probability of variation due to unknown (or uncontrollable) factors. This includes the concern of chance variation associated with the small number of events that can occur when using county statistics.

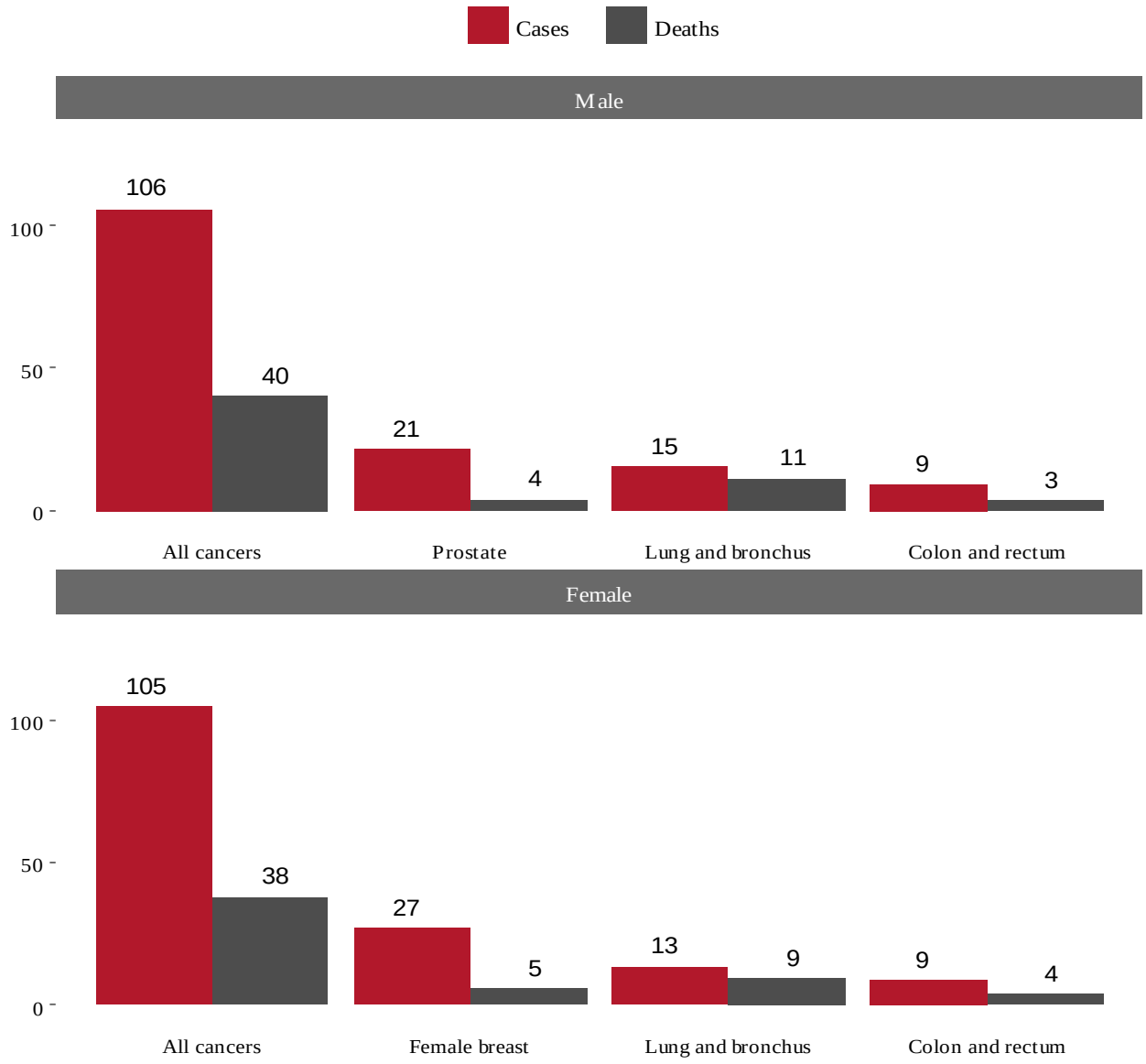
An Average Day of Projected Cancer Cases and Deaths For Major Primary Sites by Sex, Pennsylvania, 2015

The Pennsylvania Department of Health uses a standard model to project the estimated number of invasive cancer diagnoses and deaths in future years. The predictions for 2015 have 76,827 new cancer diagnoses and 28,442 cancer deaths among Pennsylvania residents.

Males – On average, a projected 106 male Pennsylvanians will receive a new invasive cancer diagnosis each day. A projected 40 will die of cancer each day. Prostate cancer is expected to have been the most commonly diagnosed cancer among males, with 21 average diagnoses a day. However, cancer of the lung and bronchus should be the most common cause of cancer death among males, averaging 11 deaths a day. The predictions call for 38,641 new cases of and 14,680 deaths from cancer among Pennsylvania males in 2015.

Females – The projected number of new cancers diagnosed and cancer deaths in 2015 among female Pennsylvanians is similar to those among their male counterparts: 38,186 cases and 13,762 deaths. More than for any other cancer type, an average of 27 females are predicted to be diagnosed with breast cancer each day. Similarly to males, lung and bronchus cancers will likely claim the most lives: an estimated 3,444 total, which averages to 9 per day.

Projections of Daily Averages in 2015 by Sex



BASIC FACTS ABOUT CANCER IN PENNSYLVANIA

What is cancer?

- Cancer is a group of diseases related to the uncontrolled growth and spread of abnormal cells.
- Death can occur if growth of abnormal cells spreads.
- If detected early and treated promptly, many cancers can be cured.

What causes cancer?

- Tobacco, diet and obesity are believed to be major contributors of cancer.
- Other contributors are believed to include sedentary lifestyle, occupation, family history, viruses/biologic agents, prenatal factors/growth, reproductive factors, alcohol, socioeconomic status, environmental pollution, ionizing/ultraviolet radiation and some drugs/prescription medicines.

How is cancer prevented?

- Primary prevention includes avoiding oncogenic exposures (tobacco, sun exposure, excess dietary fat).
- Secondary prevention includes early detection and treatment of benign precursor lesions.

How is cancer treated?

- Surgery, radiation, chemotherapy, hormones and immunotherapy

Who gets cancer?

- Cancer strikes all segments of the state's population.
- Occurrence of cancer rises with age and exposure to risk factors.

What are the most common cancers?

Invasive incidence in 2012:

1. Female breast: 10,652
2. Lung and bronchus: 10,419
3. Prostate: 7,841
4. Colon and rectum: 6,851
5. Urinary bladder: 3,993*

How many new cancer cases and deaths will there be this year?

- About 76,827* Pennsylvanians are projected to be diagnosed with invasive cancer in 2015.
- There were 75,587* Pennsylvanians diagnosed with invasive cancer in 2012.
- About 28,442 Pennsylvanians are projected to die from cancer in 2015.
- There were 28,418 Pennsylvanians who died of cancer in 2013.

* Includes in situ stage for urinary bladder cancer

Are cancer incidence rates increasing in Pennsylvania?

- Overall, annual age-adjusted cancer rates have increased from 443.2 per 100,000 in 1990 to 476.1 in 2012.

Are cancer death rates declining in Pennsylvania?

- In 2013, the age-adjusted cancer death rate of 169.4 per 100,000 was the lowest recorded during 1990-2013.
- Similarly, cancer death rates among men and women have declined since 1990, and both had their lowest rates in 2013.

What is a cancer cluster?

- A cancer cluster is a larger than expected number of cancer cases during a limited time period in a specific geographic area.

How are cancer clusters investigated?

- By examining data from cancer registries
- By comparing the observed number of cancers in a specific geographic area to the expected number

Where can additional information on cancer be obtained?

- National statistics and information
  - Centers for Disease Control and Prevention www.cdc.gov/cancer
  - National Cancer Institute www.cancer.gov
  - American Cancer Society www.cancer.org
  - Cancer Care www.cancercare.org
  - BreastCancer.org
  - Prostate Cancer Foundation www.pcf.org
  - Lung Cancer Alliance www.LungCancerAlliance.org
  - Colon Cancer Alliance www.CCAlliance.org
  - Skin Cancer Foundation www.skincancer.org
  - National Ovarian Cancer Coalition www.ovarian.org
  - American College of Obstetricians and Gynecologists www.acog.org/patients/faqs/cervical-cancer
  - American Bladder Cancer Society BladderCancerSupport.com
- State and local statistics and information
  - Pennsylvania Department of Health:
    - Health Statistics www.statistics.health.pa.gov
    - Cancer Prevention/Control Section www.health.state.pa.us/cancer 717-787-5251
  - Your local American Cancer Society
  - Your local department of health
  - Your local American Lung Association

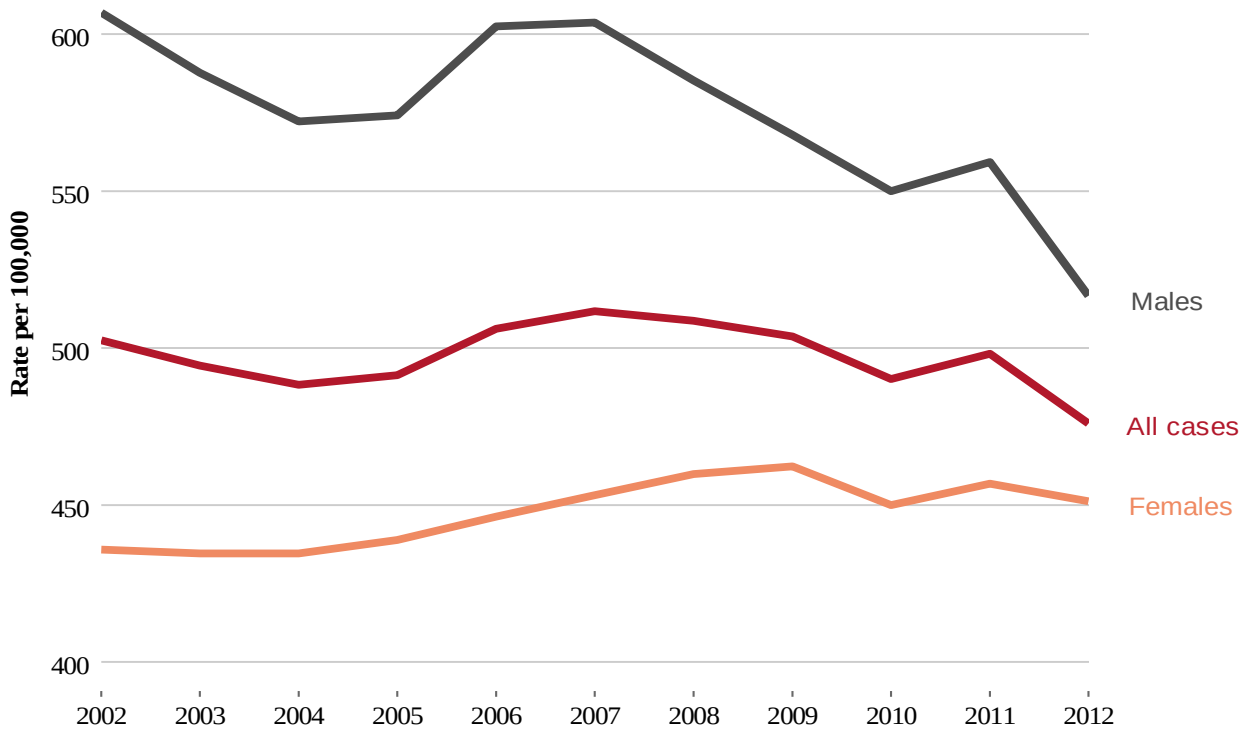
INCIDENCE TRENDS: All Cancers by Sex

All cancer cases – The age-adjusted invasive cancer incidence rate in 2012 (476.1 per 100,000) was lower than it had been in any of the previous 10 years. This period began with a downward trend in age-adjusted incidence from 502.6 in 2002 to a relative low of 488.6 in 2004. The rate then increased until 2007, when it hit a period high of 511.7. Since 2007, the rate has been decreasing, with the exception of an upward spike in 2011.

Males – The age-adjusted incidence rate among male Pennsylvanians was 516.5 per 100,000 in 2012. This is lower than it has been in any other year since 1990. Ten years previously, the rate saw a 6 percent dip over two years from 606.8 in 2002 to 572.5 in 2004. Soon afterward, it jumped 5 percent over one year from 2005 to 2006 (574.3 and 602.1, respectively). After reaching the period high of 603.8 in 2007, the rate steadily decreased to 550.0 in 2010. A small 2 percent increase in 2011 was followed by a large 7.6 percent decrease to the 2012 rate. This was caused in large part by a 23.4 percent decrease in the number of invasive prostate cancer diagnoses, which is suspected to be directly related to the observed decrease in prostate-specific antigen (PSA) testing.

Females – The 2012 age-adjusted incidence rate among female Pennsylvanians was 451.2 per 100,000. While not the highest it had been in the 11-year period from 2002 to 2012, it was not the lowest. The rate started at 435.6 in 2002, held relatively steady until 2004, then began climbing until it reached a period high of 462.2 in 2009. Over the next three years, the rate decreased by only 2 percent. Even though females have seen increases in rates since 2002 while males have seen decreases, the 2012 rate among females was still 13 percent lower than among males.

Age-Adjusted Invasive Cancer Incidence Rates by sex, 2002-2012



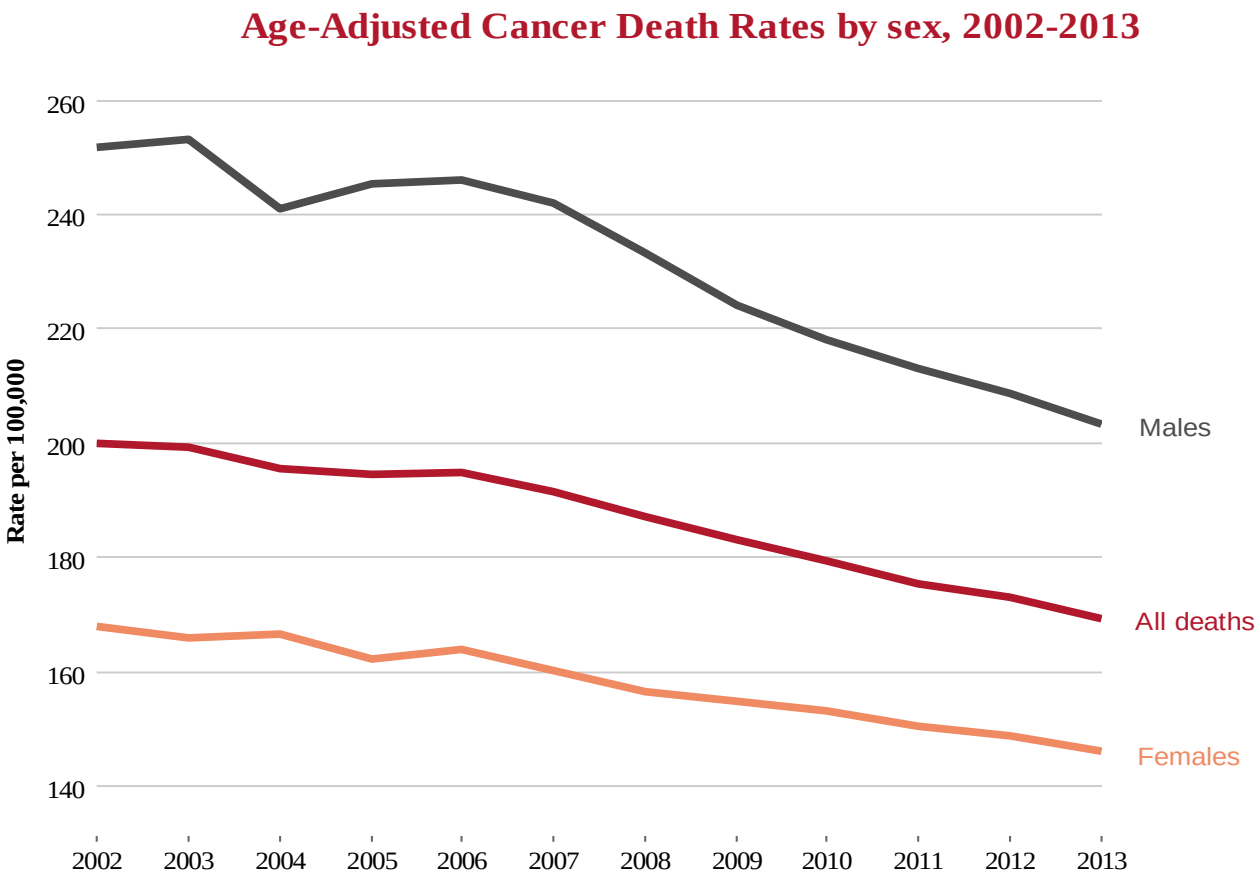
NOTE: Age-adjusted rates are computed by the direct method using 2000 U.S. standard million population.

MORTALITY TRENDS: All Cancers by Sex

All cancer deaths – Among Pennsylvania residents, the age-adjusted cancer mortality rate was 169.4 per 100,000 in 2013. This was lower than in any of the previous 11 years. This rate slowly decreased from 199.9 in 2002 to 194.8 in 2006, then decreased more rapidly but steadily through 2013. Over the entire 12-period, the mortality rate for all cancers dropped 15.2 percent. Looking at percentage differences between 2002 and 2013 for individual primary sites, Hodgkin lymphoma's mortality rate decreased the most (37.6 percent). The death rate for liver and intrahepatic bile duct cancer increased the most (38.3 percent).

Males – The 2013 age-adjusted cancer mortality rate among Pennsylvania males was 203.4 per 100,000; a 19.3 percent decrease compared to 2002. While the rate increased in 2005 and 2006, it has since been on a steady decline. For men, Hodgkin lymphoma saw the greatest relative decrease (48.1 percent) between 2002 and 2013 among the 23 major cancer types. Conversely, thyroid cancer increased by 37.3 percent over these 12 years, more than any other primary site.

Females – The age-adjusted cancer mortality rate among female Pennsylvanians went down 13.2 percent from 168.1 per 100,000 in 2002 to 146.0 in 2013. The female rate was an average of 31.6 percent lower than the male rate during this period. Aside from a few statistically insignificant increases between 2004 and 2006, the annual rate has been continuously decreasing. For women, the stomach cancer mortality rate dropped the most in percentage points (34.1) from 2002 to 2013 of any primary site. The liver and intrahepatic bile duct cancer rate had the greatest percentage increase, ending as 43.5 percent higher in 2013 than in 2002.



NOTE: Age-adjusted rates are computed by the direct method using 2000 U.S. standard million population.

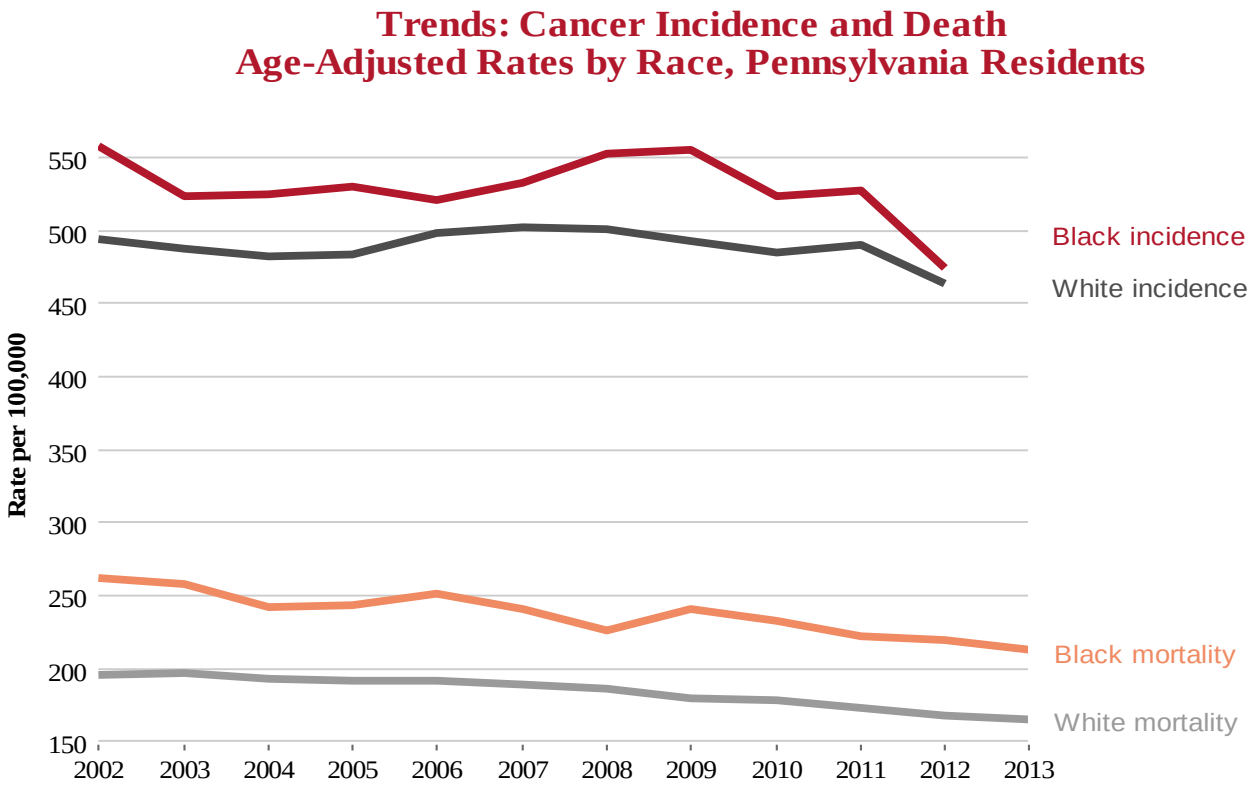
INCIDENCE AND MORTALITY TRENDS by Race

White incidence rates – During the 11-year period of 2002 to 2012, the annual age-adjusted incidence rate among white Pennsylvanians has not shown any apparent trend. It started at the period's high of 494.1 per 100,000 in 2002, slipped down to the period's low 482.3 in 2004, stepped back up to 502.0 in 2007, and retreated to 485.1 in 2010. In 2011, the rate increased to 489.8, then decreased to 463.8 in 2012. In 2012, white Pennsylvanians had statistically significantly higher rates than black Pennsylvanians for melanoma of the skin, urinary bladder cancer and thyroid cancer.

Black incidence rates – For most of the period from 2002 to 2012, the age-adjusted incidence rate among black Pennsylvanians showed no consistent trend. After reaching 555.7 per 100,000 in 2009, which was nearly the rate in 2002, the rate dropped to 474.8 in 2012. This rate was only 2.4 percent higher than the incidence rate among white Pennsylvanians, which was the lowest ratio between the races during the period. Most of this sudden change is explained by decreases in the incidence rates of prostate and lung and bronchus cancers. Among Pennsylvanian residents in 2012, blacks had statistically significantly higher rates than whites for liver and intrahepatic bile duct cancer and myeloma.

White death rates – The age-adjusted cancer mortality rate among white Pennsylvanians has experienced a steady downwards trend, starting at 196.3 per 100,000 in 2002 and ending 16.0 percent lower at 164.9 in 2013. During this period, their mortality rates for prostate cancer, stomach cancer and Hodgkin lymphoma decreased by over 30 percent. However, the mortality rate for liver and intrahepatic bile duct cancers increased by 33.3 percent.

Black death rates – Black Pennsylvanians saw a 19.0 percent decrease in their age-adjusted mortality rate between 2002 and 2013, from 262.4 to 212.6 per 100,000. Despite this percentage decrease being higher than among white Pennsylvanians, the black rate was on average 29.1 percent higher. During this period, the decrease in the lung and bronchus cancer death rate made up nearly a third of the total cancer death rate decrease. But as it did among whites, the rate of liver and intrahepatic bile duct cancer mortality rose: 31.8 percent between 2002 to 2013.



NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population. Incidence rates are based on invasive (and in situ urinary bladder) cancers. Incidence data is only available up to 2012; see technical notes.

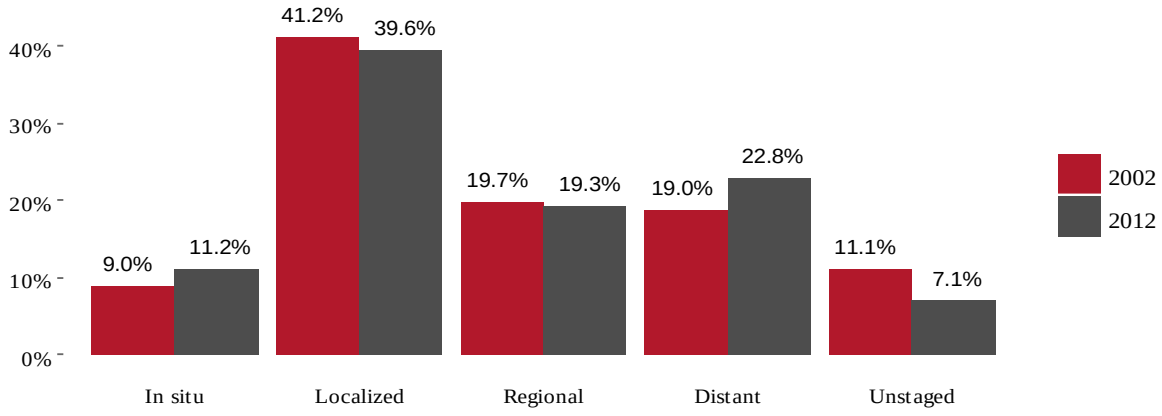
Percent of Cancer Cases by Stage of Disease at Diagnosis
All Cancers by Sex, Pennsylvania Residents, 2002 and 2012

When cancers are diagnosed during an early (in situ or local) stage, treatment can be effective, and survival rates are higher than for cancers diagnosed during a late (regional or distant) stage. According to the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program, late stage cancer diagnoses are more difficult to treat successfully and have lower survival rates than early stage diagnoses. 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.

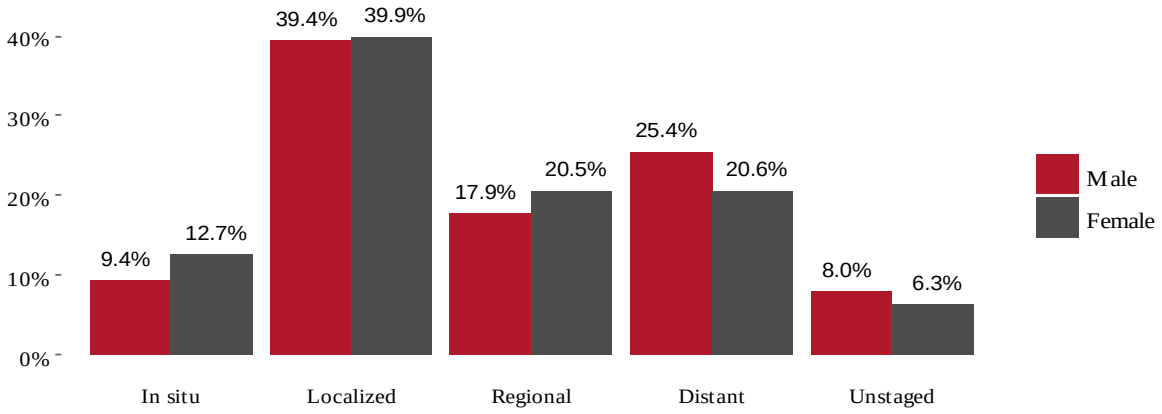
2002 and 2012 – In 2012, 50.8 percent of cancers were diagnosed at an early stage. This was very close to the early stage diagnosis percentage of 50.2 in 2002. Within these early-staged cancers, a larger portion were caught at an in situ stage in 2012. The percentage of distant-staged diagnoses increased, but the difference can largely be found in the lower rate of unknown stage at diagnosis.

Males and females – In examining the distributions of stage at diagnosis for males and females in Pennsylvania, males have poorer results. Only 48.8 percent of cancer are diagnosed at an early stage among males, compared to 52.6 among females. While the rates of male and female late-stage diagnoses are not as different (43.2 and 41.1 percent, respectively), men have a higher rate of distant-staged diagnoses: 25.4 percent, as opposed to the female rate of 20.6 percent.

2002 and 2012: Percentage of Cancer Cases by Stage



Males and Females: Percentage of Cancer Cases by Stage, 2012



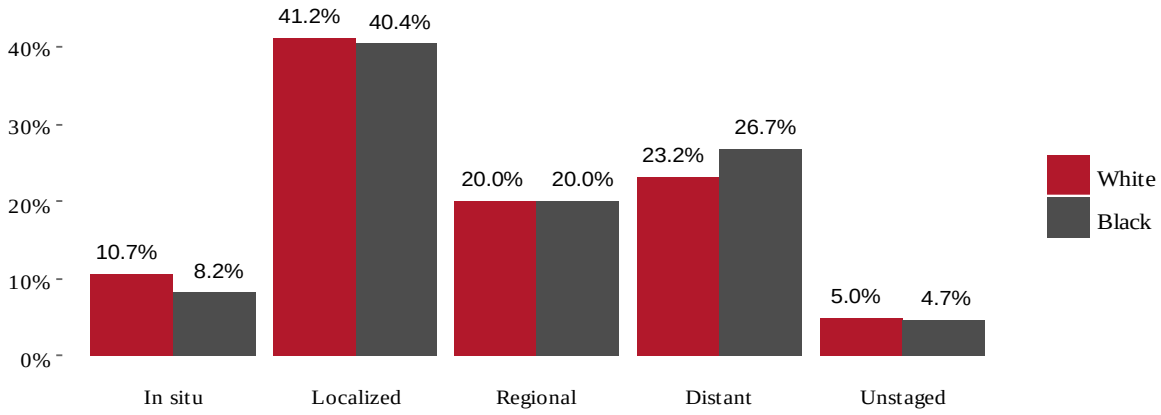
Percentages may not sum to 100 due to rounding.

Percent of Cancer Cases by Stage of Disease at Diagnosis
All Cancers by Race, Pennsylvania Residents, 2002 and 2012

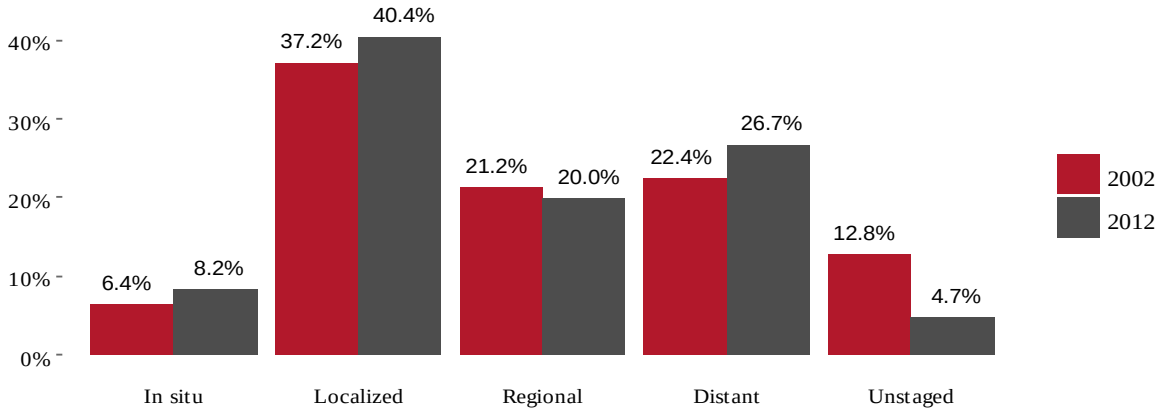
Whites and blacks – In 2012, the percentage of early-staged diagnoses among Pennsylvanians was higher for white than for black residents: 51.9 and 48.6 percent, respectively. Notably, the percentage of in situ cancer incidence among blacks was just over three fourths the percentage among whites. The percentages of regional-staged diagnoses was nearly equal for the two races, but the rate of distant-staged diagnoses among blacks was 3.6 percentage points higher than among whites.

Blacks: 2002 vs. 2012 – In comparing the distribution of 2012 to that of 2002 among black Pennsylvanians, the rate of early- and late-staged diagnoses increased by 5.0 and 3.1 percentage points, respectively. The reason both increased was because the percentage of unknown stages at diagnosis dropped by 8.1 points over these 11 years. Because the likelihood of an unknown stage being early or late in actuality is not known, it cannot be said whether the 2002 and 2012 percentages of early-staged incidence among blacks are statistically significantly different.

Whites and Blacks: Percentage of Cancer Cases by Stage, 2012



Blacks: Percentage of Cancer Cases by Stage, 2002 and 2012

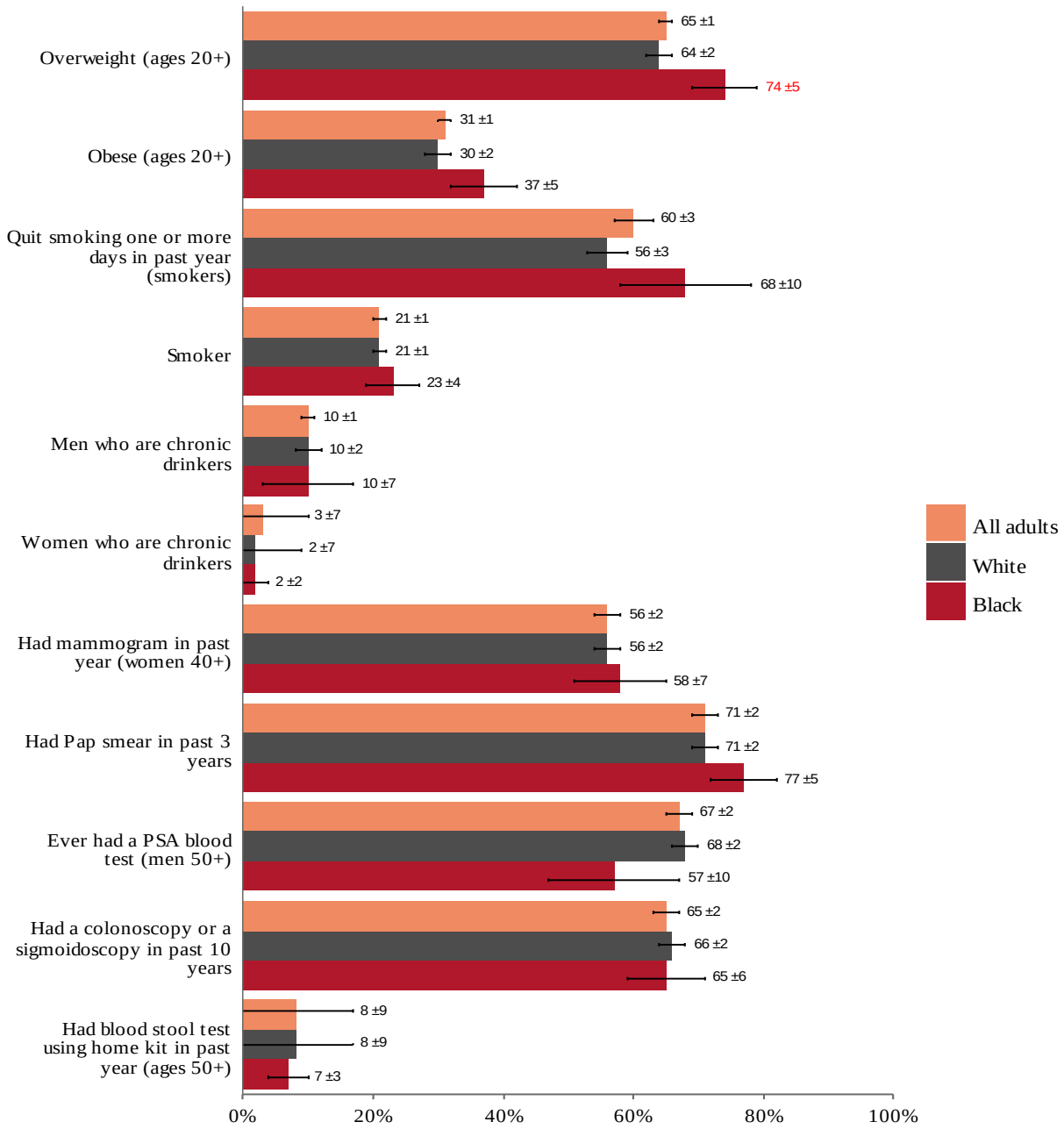


Percentages may not sum to 100 due to rounding.

Behavioral Risk Factors

The Pennsylvania Department of Health conducts an annual telephone survey of adult residents (ages 18+) as part of its Behavioral Risk Factor Surveillance System (BRFSS). The chart below shows select age-adjusted prevalence rates from the 2014 Pennsylvania survey concerning behaviors that affect the chance of developing cancer for all adults, white (non-Hispanic) and black (non-Hispanic) adults. In Pennsylvania, the percentage of blacks who were overweight was 10 points higher than whites. For all other risk factors shown below, the rates among blacks and white were not statistically significantly different at the 95% confidence level.

Selected Behavioral Risk Factors by Race, Pennsylvania Adults, 2014



NOTES: Data include 95% confidence intervals (±). Data for whites and blacks exclude Hispanics. Rates highlighted in red indicate a statistically significant race disparity at the 95% confidence level.

PENNSYLVANIA and UNITED STATES: Comparison of Selected Age-Adjusted Invasive Cancer Incidence Rates

All cancers* – The age-adjusted cancer incidence rates for Pennsylvania (Pa.) and the United States (U.S.) both decreased between 2002 and 2012. The annual Pa. rate was 5.6 percent higher than the U.S. rate on average during this period.

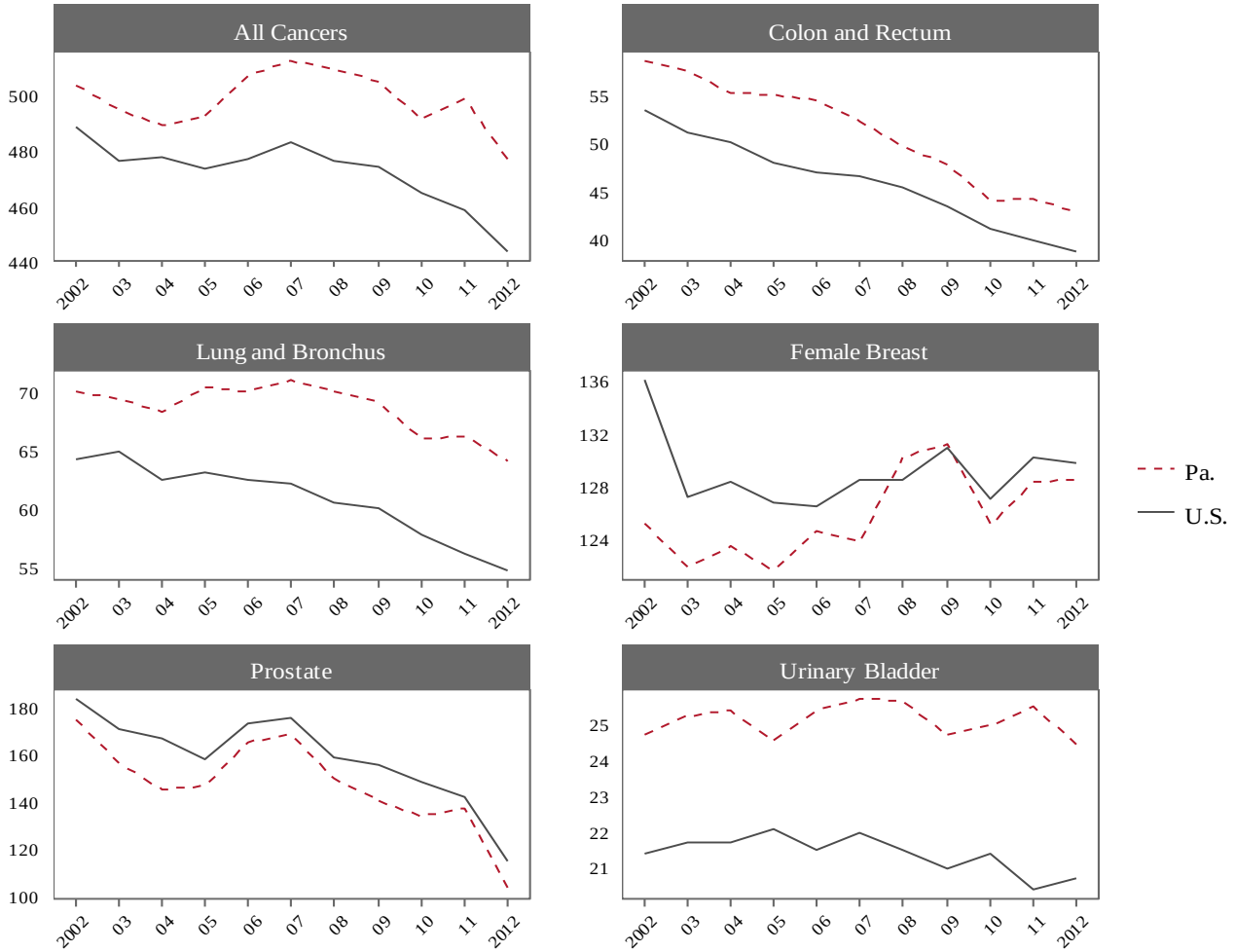
Lung and bronchus – The U.S. lung and bronchus cancer incidence rate decreased for most of the 11-year period, ending at a 14.8 percent lower rate in 2012 than it was in 2002. The Pa. rate showed no trend for most of the period, but was still 8.5 percent lower in 2012 than 2002.

Prostate cancer – Between 2002 and 2012, the Pa. rate of prostate cancer was consistently lower than the U.S. rate. Annual changes in this rate were very similar for Pa. and the US, including the large dip from 2011 to 2012.

Colon and rectum cancer – The U.S. incidence rate of colorectal cancer decreased every year from 2002 to 2012, while the Pa. rate decreased all but one year. On average, the annual Pa. rate was 11.2 percent higher than the U.S. rate.

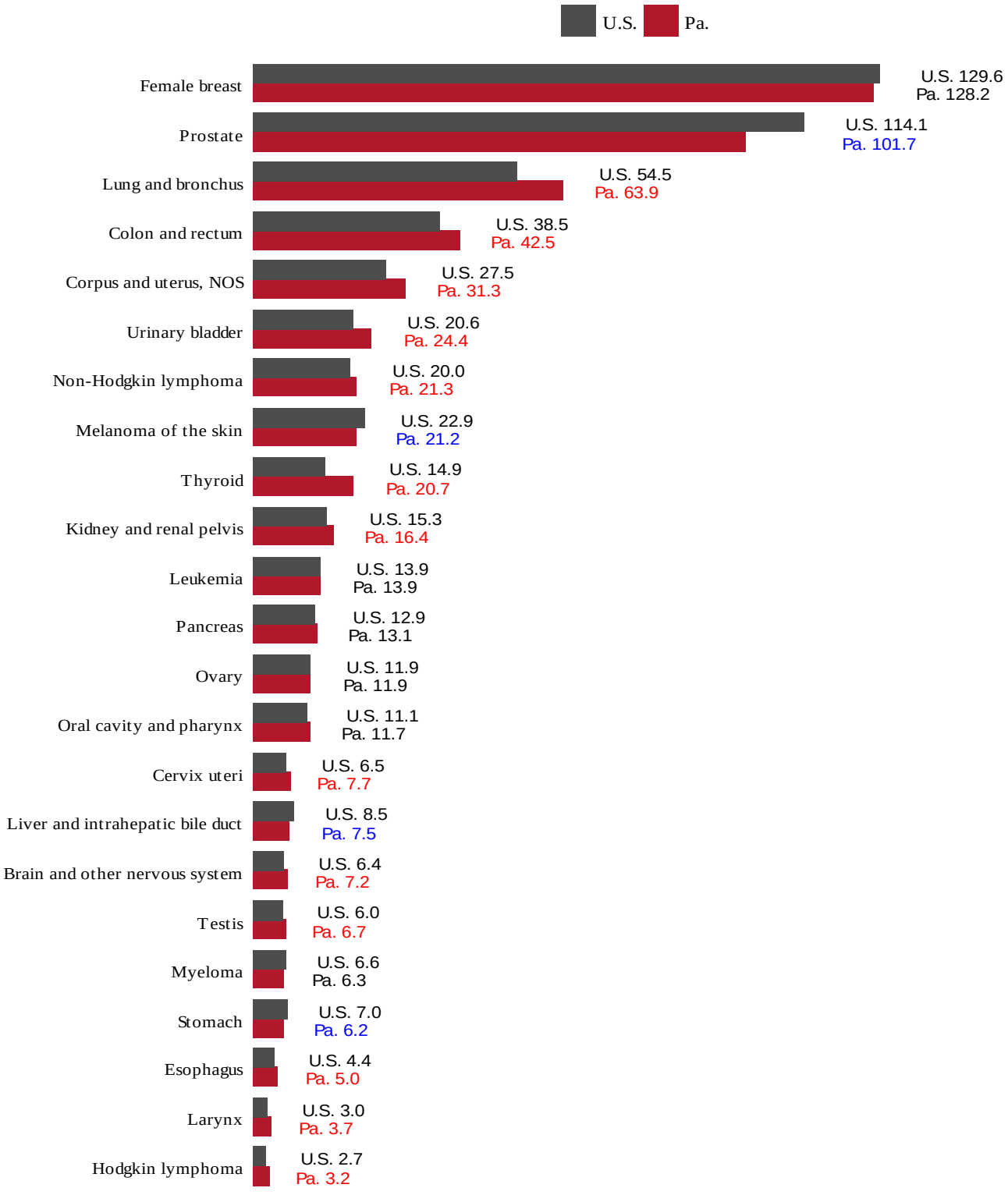
Female breast cancer – Aside from a sharp drop from 2002 to 2003, the U.S. female breast cancer incidence rate showed no clear trend. The Pa. rate showed a slight upwards trend between 2002 and 2012, closing the gap between it and the U.S. rate.

Urinary bladder cancer* – The age-adjusted rate for urinary bladder cancer incidence in Pa. held relatively steady from 2002 to 2012, varying insignificantly. The U.S. rate, however, experienced a slight downwards trend. On average, the annual Pa. rate was 17.5 percent higher than the U.S. rate.



NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population. U.S. age-adjusted rates were calculated from the National Cancer Institute's SEER program (based on nine registries).
"All cancers" and "urinary bladder cancer" include in situ urinary bladder cancers.

Comparison of Age-Adjusted Cancer Incidence Rates, by 23 Sites for Pennsylvania and United States, 2012



NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population and are per 100,000. Incidence rates are based on invasive (and in situ urinary bladder) cancers. Pennsylvania rates highlighted in red indicate they are significantly higher than the corresponding U.S. rates. Pennsylvania rates highlighted in blue indicate they are significantly lower than the corresponding U.S. rates. U.S. age-adjusted rates were based on the National Cancer Institute's SEER program (nine registries).

PENNSYLVANIA and UNITED STATES: Comparison of Selected Age-Adjusted Cancer Mortality Rates

All cancers – While the age-adjusted cancer mortality rate has been decreasing for both Pennsylvania (Pa.) and the United States (U.S.), the Pa. rate has always been between 2.8 and 7.0 percent higher.

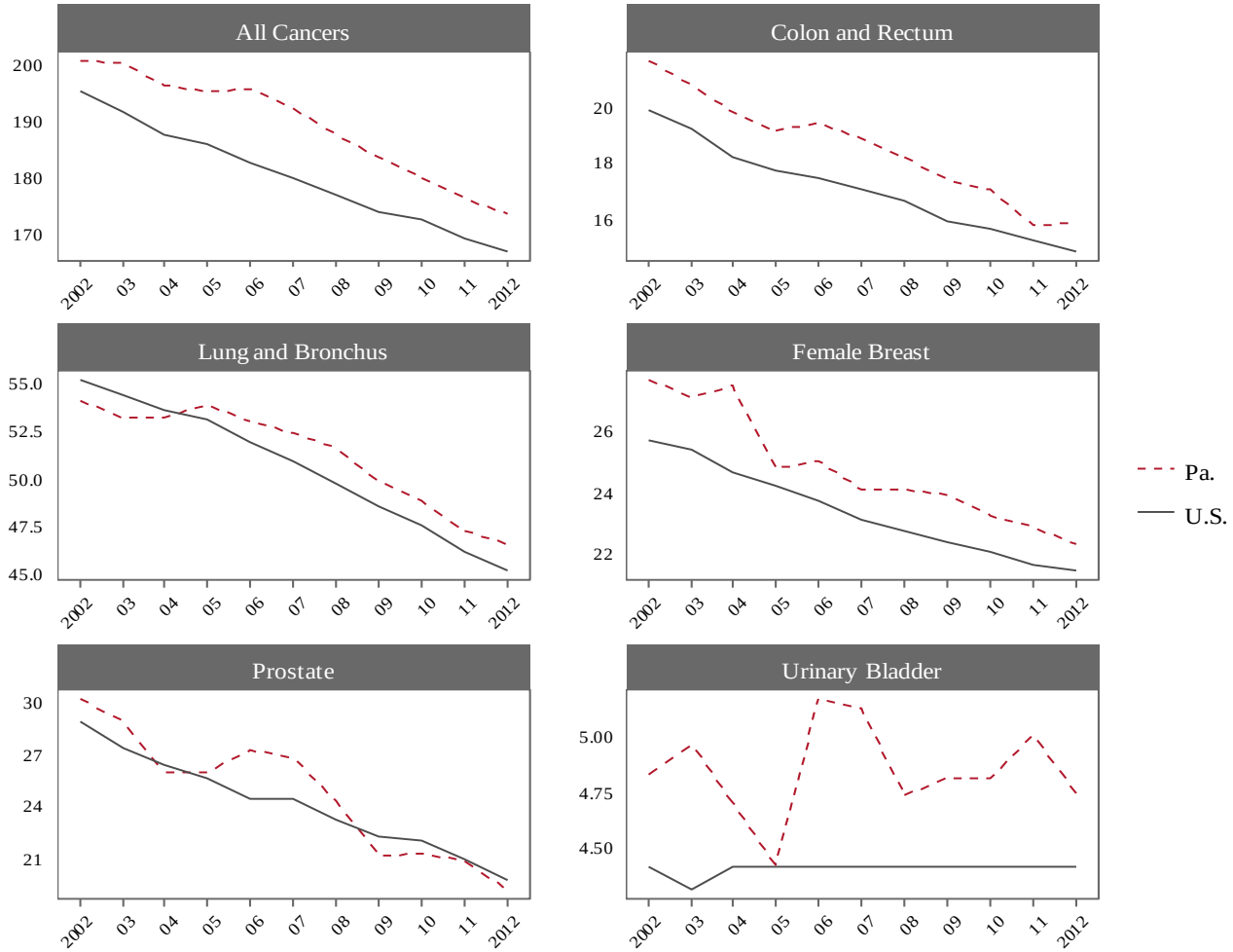
Lung and bronchus cancer – The rate of lung and bronchus cancer deaths fell for both the U.S. and Pa. Between 2002 and 2012, the U.S. and Pa. rates dropped by 18.2 and 14.1 percent, respectively. The Pa. rate was 1.9 percent lower than the U.S. rate in 2002 but 3 percent higher in 2012.

Prostate cancer – Both the U.S. and Pa. saw similar downward trends in the mortality rates of prostate cancer. Between 2002 and 2012, the annual Pa. rate rose above and fell below the U.S. rate multiple times, ending as 3.1 percent lower in 2012.

Colon and rectum cancer – The U.S. and Pa. mortality rates of colorectal cancer have been in decline since 2002. The Pa. rate in 2002 was statistically significantly higher than the U.S. rate; however, the gap narrowed over the next ten years, and the 2012 rates were not significantly different.

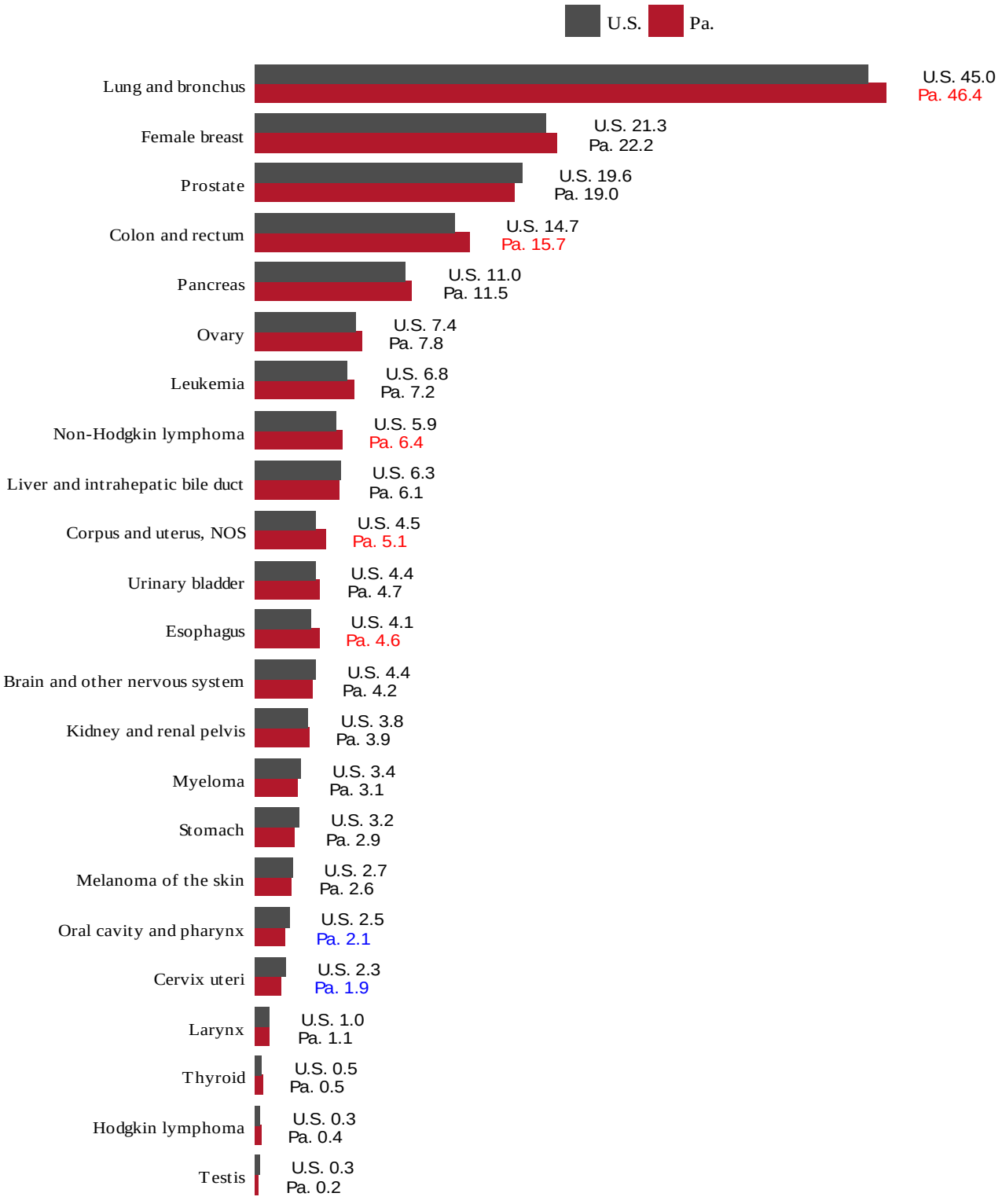
Female breast cancer – The U.S. female breast cancer mortality rate steadily declined between 2002 and 2012. Overall, the Pa. trended downward, despite the spike in 2004. In 2012, the Pa. rate was 4.1 percent higher than the U.S. rate.

Urinary bladder cancer – The age-adjusted mortality rates for urinary bladder cancer showed no trend for either the U.S. or Pa. The 2012 Pa. rate was 7.5 percent higher than the U.S. rate, but this difference was statistically insignificant.



NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population. U.S. age-adjusted rates were calculated from the National Cancer Institute's SEER program. 2012 is the latest data available for U.S. mortality rates.

Comparison of Age-Adjusted Cancer Death Rates, by 23 Sites for Pennsylvania and United States, 2012

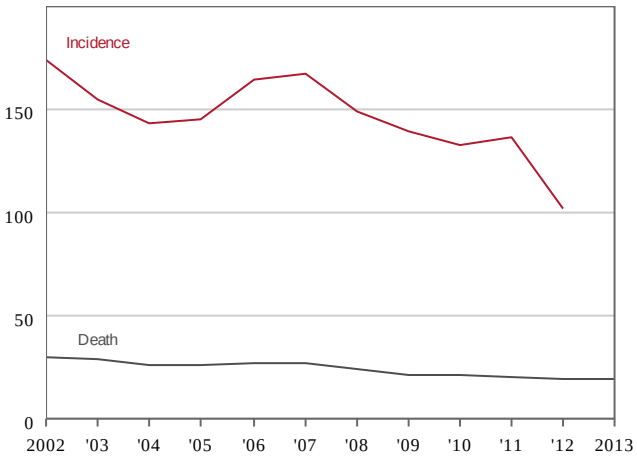


NOTES: Age-adjusted rates are computed by the direct method using the 2000 U.S. standard million population and are per 100,000. Pennsylvania rates highlighted in red indicate they are statistically significantly higher than the corresponding U.S. rates. Pennsylvania rates highlighted in blue indicate they are statistically significantly lower than the corresponding U.S. rates. U.S. age-adjusted rates were based on the National Cancer Institute's SEER Program. 2012 is the latest data available for U.S. mortality rates.

Prostate Cancer

Trends:

During the period from 2002 to 2012, the state's annual age-adjusted incidence has seen an overall decrease from 173.8 per 100,000 to 101.7. The largest difference in a single year came between 2011 and 2012, when the rate dipped over 25 percent. The age-adjusted rate of prostate cancer deaths has also been decreasing overall, from 30.0 in 2002 to 19.6 in 2013.



Signs and symptoms:

According to the American Cancer Society, things to look for include a weak or slow urine flow; the need to urinate frequently, especially at night; blood in urine; and erectile dysfunction. If the tumor presses against the spinal cord, it can cause numbness in the legs or feet, as well as loss of bladder control. If the cancer spreads to the bones, it can cause pain in the hips, spine, ribs and other areas.

Risk factors:

Age is major factor in prostate cancer risk; the cancer is rare among men below 40 but far more common after 50. Men of African descent have the highest incidence and mortality rates. There may be some familial tendency. Diets high in red meats and low in fruits and vegetables can increase risk.

Early detection:

See page 22.

Treatment:

Depending on a patient's age, tumor grade and cancer stage, options include surgery, radiation, cryosurgery, chemotherapy, hormone treatment and vaccine treatment. "Watchful waiting" may be appropriate, especially for older men and/or less aggressive tumors.

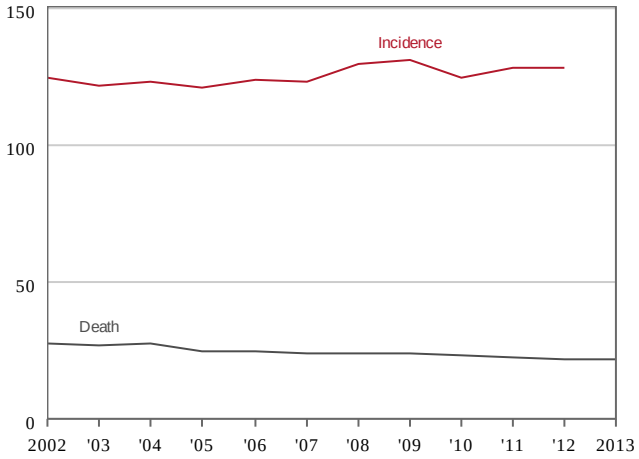
Survival (United States):

Recent (2005-2011) data show that men diagnosed with invasive prostate cancer at the local or regional stage have a five-year relative survival rate of nearly 100 percent. Distant-staged diagnoses only have a five-year relative survival rate of 28.2 percent.

Breast Cancer

Trends:

The age-adjusted incidence rate of invasive female breast cancer has shown no distinct trend, starting at 124.9 per 100,000 in 2002 and ending at 128.2 in 2012; this difference is not statistically significant. The mortality rate for female breast cancer, however, has seen a statistically significant difference between the ends of the recent 12-year period, from the high of 27.6 in 2002 to the low of 21.6 in 2013.



Signs and symptoms:

The earliest sign is an abnormality appearing on a mammogram before it can be felt by touch. Physically detectable symptoms include a swollen area of the breast; breast or nipple pain; irritation, dimpling, scaliness, or thickening of the breast or nipple skin; and nipple retraction or discharge other than breast milk. If the cancer has begun to spread, a lump under the arms could be a swollen lymph node.

Risk factors:

Risk increases with age and family history of breast cancer, personal history of breast cancer in the other breast, early menstruation or late menopause, dense breast tissue, obesity after menopause, recent use of oral contraceptives, postmenopausal combined hormone therapy, alcohol/tobacco use, physical inactivity, and never having children before age 30.

Early detection:

See page 22.

Treatment:

Local treatment options, including surgery and radiation, remove the cancer in the breast. Systemic treatments, including chemotherapy and hormone therapy, destroy cancer cells anywhere in the body. In early stages, lumpectomy combined with radiation therapy has survival rates similar to mastectomy.

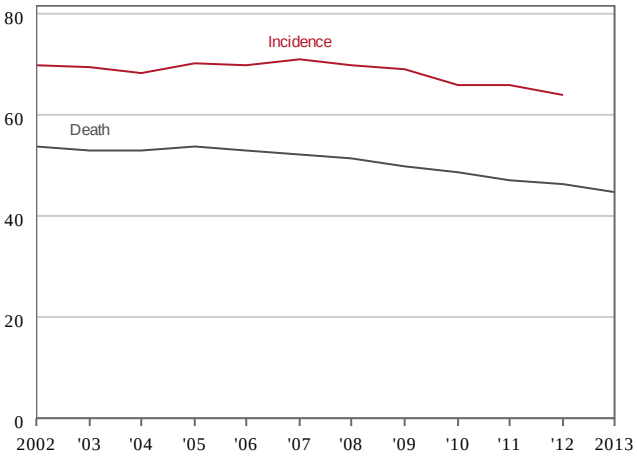
Survival (United States):

The five-year relative survival rate for localized breast cancer diagnosed between 2005 and 2011 is 98.6 percent. This rate is slightly lower for regional diagnoses at 84.9 percent but much lower for distant diagnoses at 25.9 percent.

Lung/Bronchus Cancer

Trends:

The Pennsylvanian age-adjusted rate of invasive lung and bronchus cancer incidence has fallen slightly since 2002. In 2002, it was 69.9 per 100,000, and in 2012, it was 63.9: an 8.5 percent decrease. The age-adjusted mortality rate has seen a more pronounced decrease of 16.8 percent, from 53.9 in 2002 to 44.9 in 2013.



Signs and symptoms:

These may include a persistent cough, hoarseness, rust-colored sputum, chest pain, loss of appetite and weight, fatigue, shortness of breath, and recurring pneumonia or bronchitis.

Risk factors:

Tobacco smoking is by far the most important risk factor in the development of lung cancer, followed by exposure to radon gas. Other factors include inhalation of certain metals (e.g., chromium, cadmium and arsenic), asbestos, radiation, air pollution, diesel exhaust and second-hand tobacco smoke.

Early detection:

See page 22.

Treatment:

Options include surgery, radiation therapy and chemotherapy determined by type and stage of the disease. For later stage diagnoses, treatment regimens commonly combine radiation therapy and chemotherapy with surgery. Chemotherapy alone or combined with radiation is the usual treatment for small cell lung cancer.

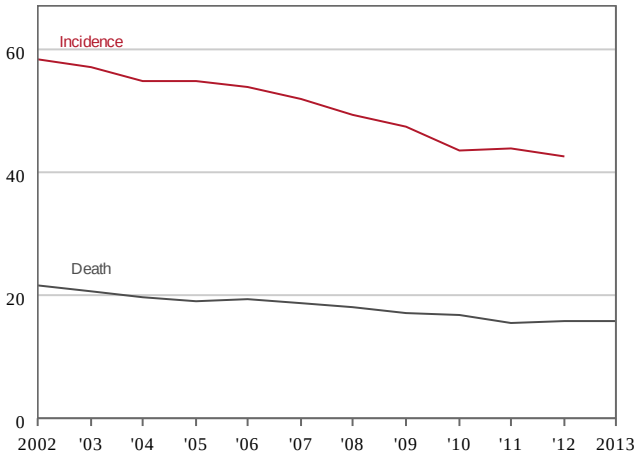
Survival (United States):

Lung and bronchus cancers have always had poor survival rates, especially when diagnosed at later stages. The five-year relative survival rates (2005-2011) are 54.8 percent for localized stage, 27.4 percent for regional stage, and only 4.2 percent for distant. Between 2002 and 2012, 50.9 percent of lung and bronchus cancer diagnoses in Pennsylvania were at the distant stage.

Colon/Rectum Cancer

Trends:

The age-adjusted incidence rate of invasive colorectal cancer among Pennsylvanians saw a continued period of decline from 2002, when it was 58.4 per 100,000, to 43.7 in 2010. Since then, the annual changes have not been statistically significant, ending as 42.5 in 2012. The age-adjusted mortality rates have also seen a general decrease until a few years ago: starting at 21.5 in 2002, reaching 15.6 in 2011, then staying nearly level until reaching 15.8 in 2013.



Signs and symptoms:

Possible symptoms include rectal bleeding, blood in the stool, anemia, changes in bowel habits lasting longer than a few days, cramping or abdominal pain, weakness and fatigue, and weight loss.

Risk factors:

Behavioral factors strongly linked with an increased risk of colorectal cancer are physical inactivity, obesity, smoking tobacco, heavy alcohol use and diets high in red meats. Being over age 50 and/or having familial history of colon cancer or polyps and inflammatory bowel disease (not irritable bowel syndrome) have been associated with increased risk.

Early detection:

See page 22.

Treatment:

Surgery is the main form of treatment and frequently results in a cure for cancers that have not spread. Chemotherapy, possibly paired with radiation therapy, before or after surgery is recommended for patients whose cancer has significantly penetrated the bowel wall or spread to the lymph nodes. Colostomy is seldom needed for colon cancer patients.

Survival (United States):

The five-year relative survival rates (2005-2011) for colorectal cancer depend on when the cancer is caught: diagnosis at the localized stage means a 90.1 percent relative survival rate. This decreases somewhat to 70.8 percent if regionally staged but falls to 13.1 percent if distant-staged.

2015 PROJECTED CANCER CASES by SITE and SEX

All cases – The number of invasive cancer cases among Pennsylvania residents is projected to increase by 1.6 percent between 2012 and 2015, from 75,587 to 76,827. The strong rise of thyroid cancer incidence is expected to continue, gaining another 21.9 percent over the three years. In total, all but nine of the 23 major primary sites will likely see more cases in 2015 than 2012.

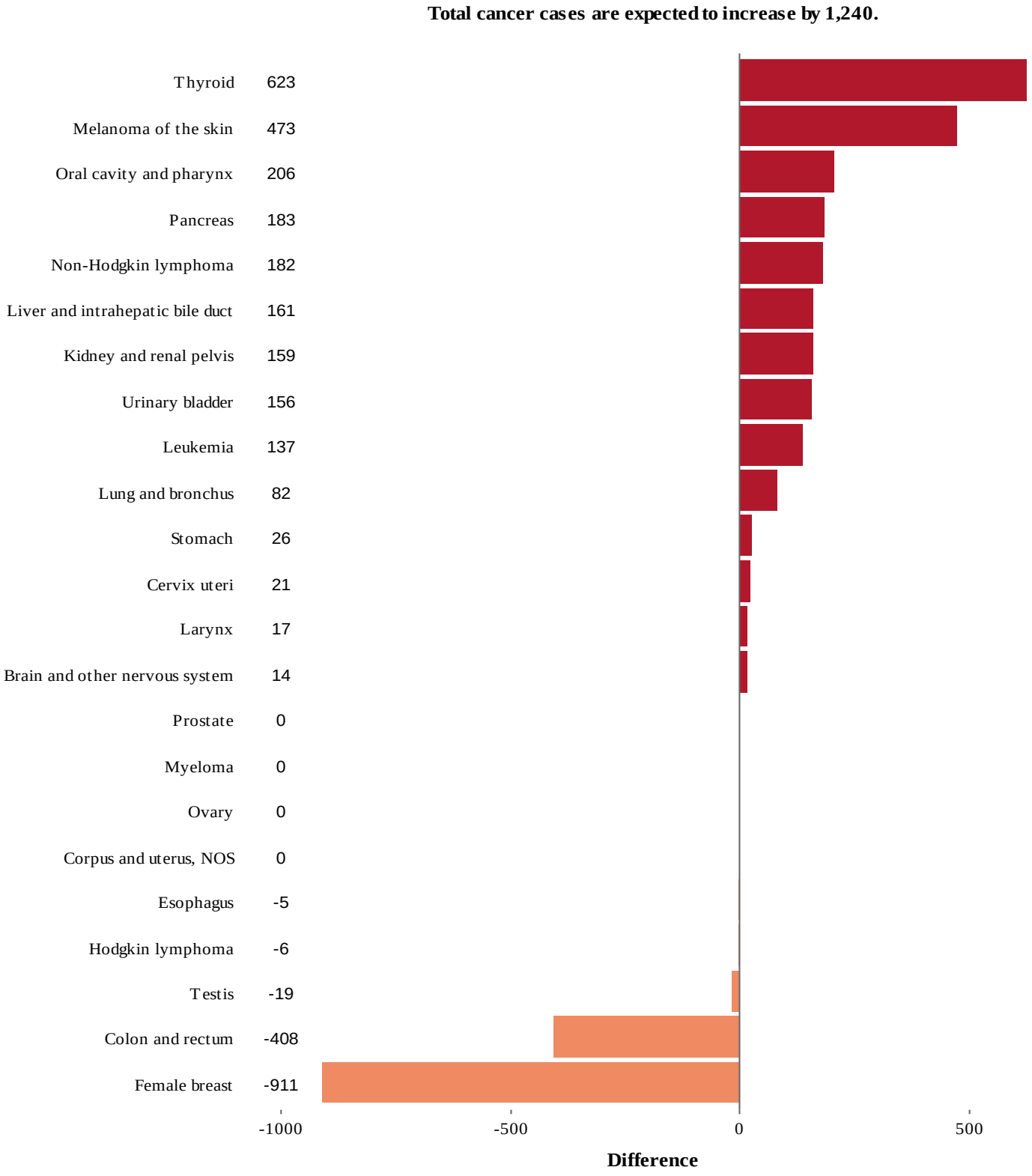
Males – In 2012, there were 37,265 invasive cancer diagnoses among male Pennsylvanians. In 2015, predictions call for a 3.7 percent rise to 38,641. The largest increase is expected to be melanoma cases, which are projected to rise by 300. Conversely, the number of colorectal cancer diagnoses is projected to decrease by around 200. Despite the sudden drop of prostate cancer diagnoses in 2012, the forecast for 2015 does not expect this to have become a trend.

Females – Projections show 132 fewer cancer diagnoses among female Pennsylvanians in 2015 when compared to 2012, a 0.3 percent decrease. The largest percentage increase in cases for females is expected to be thyroid cancer, with 21.7 percent more cases. Colorectal cancers are projected to decrease the most, with around 200 fewer cases, and female breast cancer will likely also decline by around 900 cases.

	All Cases			Males			Females		
Cancer site	2015 projected	2012 observed	Percent change	2015 projected	2012 observed	Percent change	2015 projected	2012 observed	Percent change
All cancers	76,827	75,587	1.6	38,641	37,265	3.7	38,186	38,318	-0.3
Brain and other nervous system	1,047	1,033	1.4	592	577	2.6	455	455	0
Cervix uteri	542	521	4	–	–	–	542	521	4
Colon and rectum	6,443	6,851	-6	3,288	3,490	-5.8	3,155	3,361	-6.1
Corpus and uterus, NOS	2,748	2,748	0	–	–	–	2,748	2,748	0
Esophagus	824	829	-0.6	643	643	0	181	186	-2.8
Female breast	9,741	10,652	-8.6	–	–	–	9,741	10,652	-8.6
Hodgkin lymphoma	422	428	-1.4	225	242	-6.8	196	185	6.2
Kidney and renal pelvis	2,746	2,587	6.1	1,768	1,609	9.9	978	978	0
Larynx	617	600	2.8	486	484	0.5	131	116	12.7
Leukemia	2,286	2,149	6.4	1,353	1,216	11.2	933	933	0
Liver and intrahepatic bile duct	1,419	1,258	12.8	1,095	934	17.3	324	324	0
Lung and bronchus	10,501	10,419	0.8	5,591	5,509	1.5	4,910	4,910	0
Melanoma of the skin	3,693	3,220	14.7	2,212	1,912	15.7	1,480	1,308	13.2
Myeloma	1,000	1,000	0	553	553	0	447	447	0
Non-Hodgkin lymphoma	3,547	3,365	5.4	2,000	1,818	10	1,547	1,547	0
Oral cavity and pharynx	2,093	1,887	10.9	1,422	1,275	11.5	671	612	9.6
Ovary	1,013	1,013	0	–	–	–	1,013	1,013	0
Pancreas	2,347	2,164	8.4	1,203	1,102	9.1	1,144	1,062	7.7
Prostate	7,841	7,841	0	7,841	7,841	0	–	–	–
Stomach	1,027	1,001	2.6	658	632	4.1	369	369	0
Testis	371	390	-4.9	371	390	-4.9	–	–	–
Thyroid	3,466	2,843	21.9	855	698	22.5	2,611	2,145	21.7
Urinary bladder	4,149	3,993	3.9	3,165	3,020	4.8	984	972	1.3

NOTES: Pennsylvania cancer primary site groupings match the primary site definitions used by the National Cancer Institute's SEER program.
[1]Includes in situ for urinary bladder cancers

Expected Change in Number of Invasive Cancer Cases, 2012 vs. 2015



NOTE: Pennsylvania cancer primary site groupings match the primary site definitions used by the National Cancer Institute's SEER program. Total cases and urinary bladder cancer include in situ urinary bladder cancers.

2015 PROJECTED CANCER DEATHS by SITE and SEX

All deaths – The projected number of cancer deaths among Pennsylvanians in 2015 is 28,442, only 0.1 percent more than the observed number in 2013. Deaths from liver cancer are projected to increase by 75, more than any other primary site. The largest expected decrease is for colorectal cancer with around 100 fewer deaths.

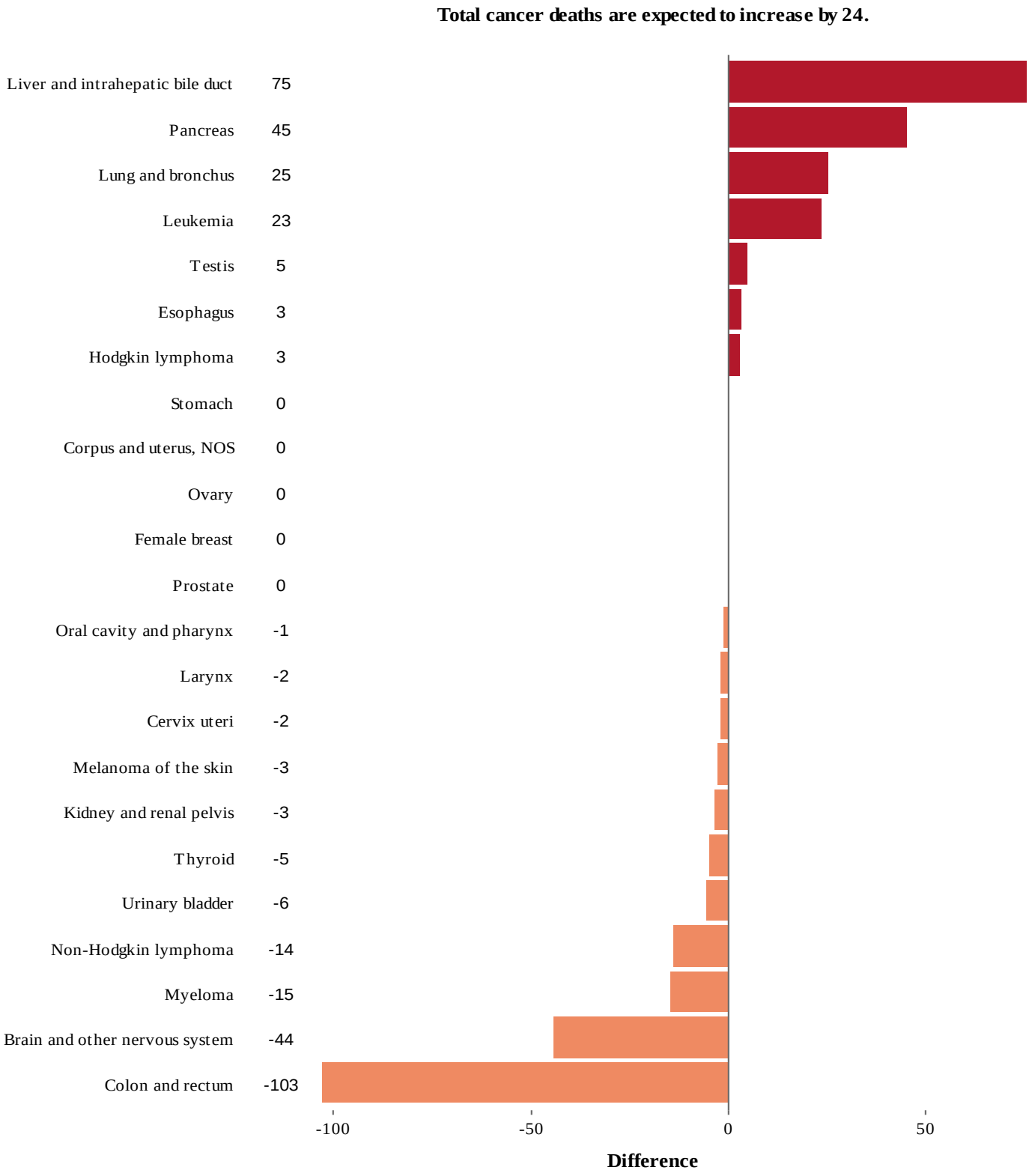
Males – The 0.3 percent increase in cancer deaths among Pennsylvanian males from 2013 to 2015, despite being higher than the increase in the total population, is still small. Males are expected to account for the entirety of the increase in liver cancer deaths. Colorectal cancer deaths among men are expected to decrease by 3.5 percent between 2013 and 2015.

Females – Projections show that the number of cancer deaths among Pennsylvanian females will likely decrease very slightly between 2013 and 2015. Despite the incidence projections showing a large increase in thyroid cancer cases, the number of deaths caused by them are expected to decrease.

	All Cases			Males			Females		
Cancer site	2015 projected	2013 observed	Percent change	2015 projected	2013 observed	Percent change	2015 projected	2013 observed	Percent change
All cancers	28,442	28,418	0.1	14,680	14,631	0.3	13,762	13,787	-0.2
Brain and other nervous system	649	693	-6.4	369	369	0	280	324	-13.7
Cervix uteri	168	170	-1.20	–	–	–	168	170	-1.2
Colon and rectum	2,550	2,653	-3.9	1,267	1,312	-3.5	1,283	1,341	-4.3
Corpus and uterus, NOS	508	508	0	–	–	–	508	508	0
Esophagus	797	794	0.4	636	637	-0.1	161	157	2.4
Female breast	1,994	1,994	0	–	–	–	1,994	1,994	0
Hodgkin lymphoma	49	46	5.7	22	22	0	27	24	10.9
Kidney and renal pelvis	626	629	-0.6	376	375	0.2	250	254	-1.7
Larynx	192	194	-1	149	148	1	43	46	-7.5
Leukemia	1,137	1,114	2.1	631	620	1.8	506	494	2.5
Liver and intrahepatic bile duct	1,089	1,014	7.4	755	680	11.1	334	334	0
Lung and bronchus	7,532	7,507	0.3	4,088	4,150	-1.5	3,444	3,357	2.6
Melanoma of the skin	443	446	-0.6	282	282	0	161	164	-1.7
Myeloma	542	557	-2.60	277	294	-5.80	265	263	0.90
Non-Hodgkin lymphoma	983	997	-1.4	539	539	0	444	458	-3.1
Oral cavity and pharynx	343	344	-0.3	235	243	-3.3	108	101	6.8
Ovary	713	713	0	–	–	–	713	713	0
Pancreas	1,908	1,863	2.4	991	946	4.8	917	917	0
Prostate	1,359	1,359	0	1,359	1,359	0	–	–	–
Stomach	441	441	0	271	271	0	170	170	0
Testis	16	11	44.30	16	11	44.30	–	–	–
Thyroid	79	84	-5.9	34	34	0	45	50	-9.8
Urinary bladder	815	821	-0.7	580	580	0	235	241	-2.3

NOTES: Pennsylvania cancer primary site groupings match the primary site definitions used by the National Cancer Institute's SEER program.

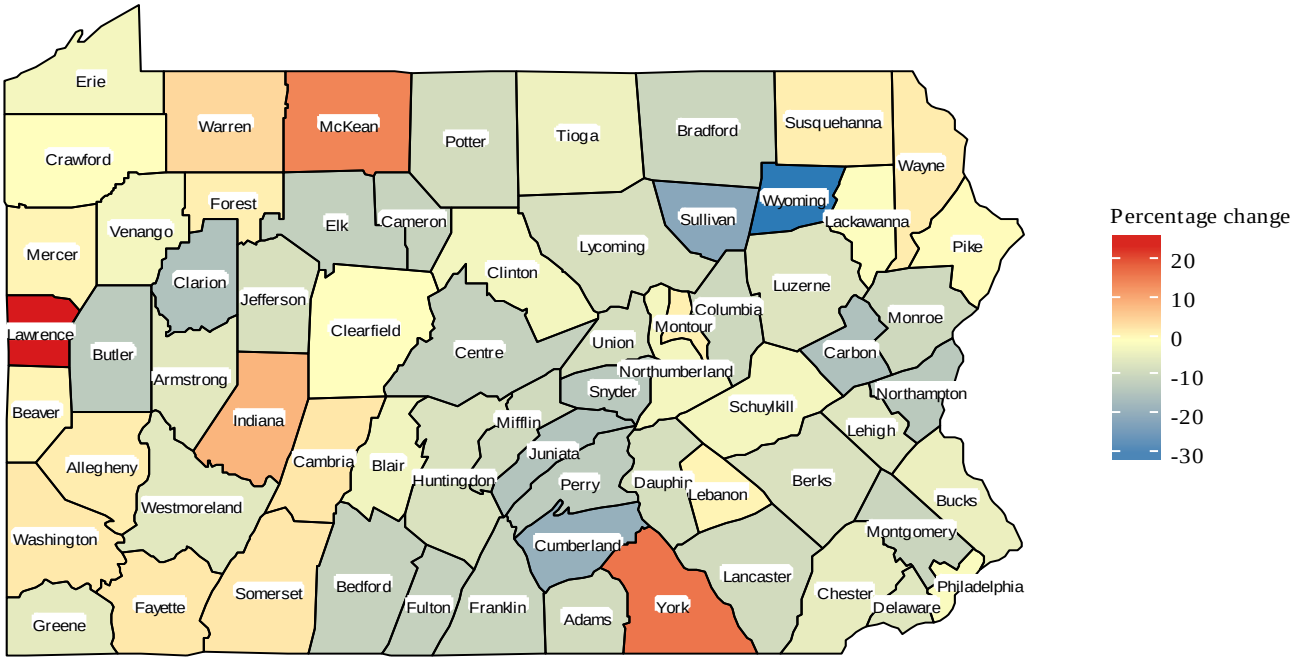
Expected Change in Number of Cancer Deaths, 2013 vs. 2015



NOTE: Pennsylvania cancer primary site groupings match the primary site definitions used by the National Cancer Institute's SEER program.

2015 Projected and 2012 Observed Invasive Cancer Cases[1] Percent Change 2012 vs. 2015 by Pennsylvania County of Residence

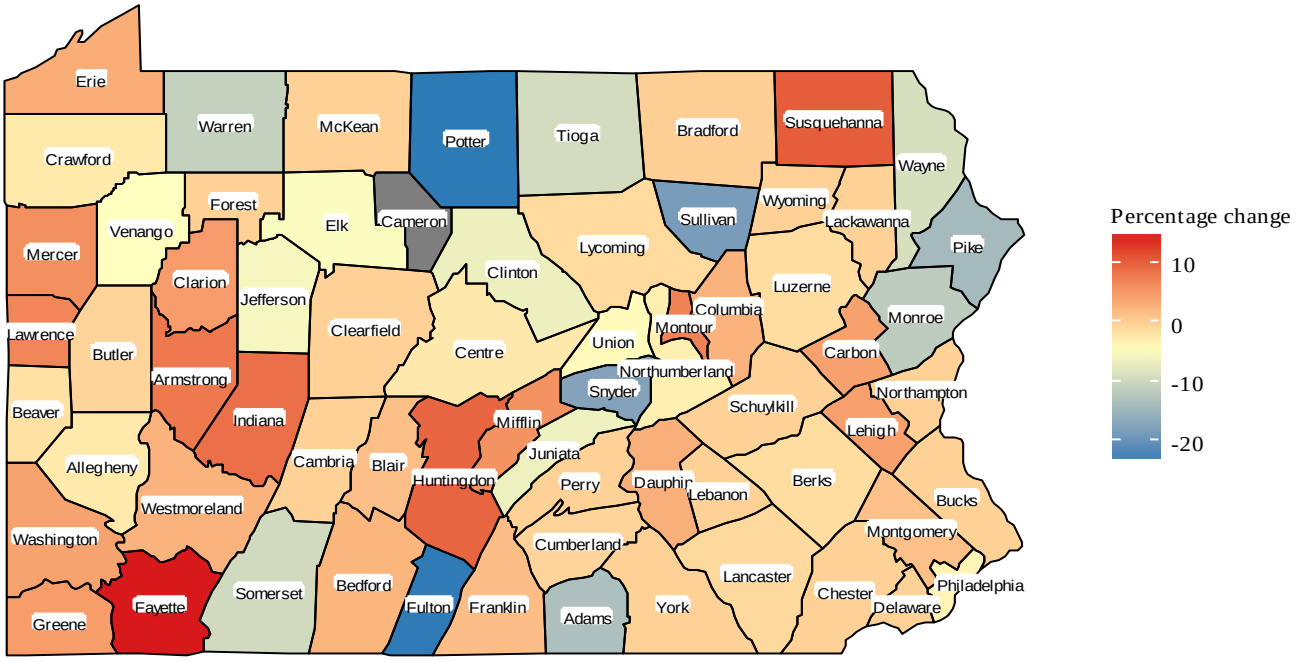
County	2015 Projected	2012 Observed	Percent Change	County	2015 Projected	2012 Observed	Percent Change
All counties[2]	76,827	75,587	1.6	Juniata	106	123	-13.8
Adams	591	646	-8.5	Lackawanna	1,343	1,348	-0.4
Allegheny	8,043	7,862	2.3	Lancaster	2,554	2,787	-8.4
Armstrong	437	462	-5.4	Lawrence	739	588	25.7
Beaver	1,244	1,226	1.5	Lebanon	831	819	1.5
Bedford	265	296	-10.5	Lehigh	1,894	2,014	-6.0
Berks	2,094	2,252	-7.0	Luzerne	2,026	2,162	-6.3
Blair	814	836	-2.6	Lycoming	716	773	-7.4
Bradford	385	427	-9.8	McKean	275	238	15.5
Bucks	3,766	3,908	-3.6	Mercer	755	745	1.3
Butler	986	1,125	-12.4	Mifflin	259	284	-8.8
Cambria	1,001	970	3.2	Monroe	826	908	-9.0
Cameron	39	44	-11.4	Montgomery	4,119	4,568	-9.8
Carbon	382	448	-14.7	Montour	145	142	2.1
Centre	546	613	-10.9	Northampton	1,755	2,012	-12.8
Chester	2,510	2,625	-4.4	Northumberland	614	627	-2.1
Clarion	204	239	-14.6	Perry	221	251	-12.0
Clearfield	502	501	0.2	Philadelphia	7,975	8,054	-1.0
Clinton	206	211	-2.4	Pike	334	332	0.6
Columbia	396	436	-9.2	Potter	118	128	-7.8
Crawford	571	570	0.2	Schuylkill	1,019	1,040	-2.0
Cumberland	1,053	1,301	-19.1	Snyder	221	253	-12.6
Dauphin	1,299	1,406	-7.6	Somerset	569	552	3.1
Delaware	3,025	3,209	-5.7	Sullivan	55	70	-21.4
Elk	205	231	-11.3	Susquehanna	265	259	2.3
Erie	1,506	1,539	-2.1	Tioga	271	280	-3.2
Fayette	923	896	3.0	Union	185	201	-8.0
Forest	44	43	2.3	Venango	373	381	-2.1
Franklin	782	869	-10.0	Warren	341	324	5.2
Fulton	81	91	-11.0	Washington	1,431	1,391	2.9
Greene	227	239	-5.0	Wayne	340	332	2.4
Huntingdon	227	244	-7.0	Westmoreland	2,266	2,398	-5.5
Indiana	502	458	9.6	Wyoming	135	201	-32.8
Jefferson	284	306	-7.2	York	2,909	2,473	17.6



[1]All cancer cases staged as in situ, except for urinary bladder cancers, are excluded.
[2]Total projected count for all counties is the sum of projections by primary site and sex. See Technical Notes.

2015 Projected and 2013 Observed Cancer Deaths
Percent Change 2013 vs. 2015 by Pennsylvania County of Residence

County	2015 Projected	2013 Observed	Percent Change	County	2015 Projected	2013 Observed	Percent Change
All counties[1]	28,442	28,418	0.1	Juniata	51	54	-5.6
Adams	207	238	-13.0	Lackawanna	558	558	0.0
Allegheny	2,914	2,978	-2.1	Lancaster	1,027	1,034	-0.7
Armstrong	184	170	8.2	Lawrence	258	241	7.1
Beaver	472	479	-1.5	Lebanon	304	304	0.0
Bedford	115	112	2.7	Lehigh	729	696	4.7
Berks	818	826	-1.0	Luzerne	867	875	-0.9
Blair	337	331	1.8	Lycoming	275	277	-0.7
Bradford	157	157	0.0	McKean	100	100	0.0
Bucks	1,384	1,384	0.0	Mercer	304	286	6.3
Butler	397	398	-0.3	Mifflin	114	108	5.6
Cambria	352	352	0.0	Monroe	311	351	-11.4
Cameron[2]	14	4	250.0	Montgomery	1,661	1,633	1.7
Carbon	175	167	4.8	Montour	44	41	7.3
Centre	205	209	-1.9	Northampton	687	687	0.0
Chester	880	880	0.0	Northumberland	254	261	-2.7
Clarion	94	89	5.6	Perry	91	91	0.0
Clearfield	226	226	0.0	Philadelphia	3,042	3,142	-3.2
Clinton	97	104	-6.7	Pike	98	114	-14.0
Columbia	150	146	2.7	Potter	51	66	-22.7
Crawford	224	229	-2.2	Schuylkill	411	411	0.0
Cumberland	457	458	-0.2	Snyder	76	92	-17.4
Dauphin	546	528	3.4	Somerset	192	212	-9.4
Delaware	1,275	1,275	0.0	Sullivan	19	23	-17.4
Elk	90	94	-4.3	Susquehanna	102	92	10.9
Erie	634	612	3.6	Tioga	99	109	-9.2
Fayette	398	347	14.7	Union	87	90	-3.3
Forest	19	19	0.0	Venango	149	156	-4.5
Franklin	310	304	2.0	Warren	108	121	-10.7
Fulton	30	39	-23.1	Washington	565	540	4.6
Greene	92	88	4.5	Wayne	141	154	-8.4
Huntingdon	101	92	9.8	Westmoreland	975	947	3.0
Indiana	178	163	9.2	Wyoming	82	82	0.0
Jefferson	115	121	-5.0	York	851	851	0.0



[1]Total projected count for all counties is the sum of projections by primary site and sex. See Technical Notes.
[2]Cameron county had an unusually low number of deaths in 2013, so the percentage change is not indicative of any actual trend. For the same reason, the county is shaded gray in the map.

Cancer Prevention and Control Initiatives
of the Pennsylvania Department of Health

The Pennsylvania Department of Health **wants you to know … what we know about cancer.**

77,544 → This many Pennsylvanians are expected to be diagnosed with cancer in 2015.

28,469 → This many Pennsylvanians are expected to die of cancer in 2015.

2 in 5 → Chance that men in the United States are expected to get cancer in their lifetime[1]

1 in 3 → Chance that women in the United States are expected to get cancer in their lifetime[1]

Lung Cancer:
- More people died from lung cancer between 2008 and 2012 than prostate, breast and colorectal cancer combined,[1] making it the leading cancer killer in America.
- Quitting smoking remains the best way to reduce your risk of developing or dying from lung cancer, followed by testing your home for radon and fixing high levels.

Breast Cancer:
- Breast cancer is treatable if caught early.
- Remember to have your mammogram every year if you are 40 or older.

Cervical Cancer:
- No woman should die of cervical cancer.
- Regular Pap tests are the best way to find cancer early.
- We know that human papillomavirus (HPV) causes most cases of cervical cancer.
- HPV vaccination is the best defense in stopping HPV-related cancers, including cervical cancer.

Colorectal Cancer:
- Colorectal cancer is treatable if caught early.
- If you are 50 or older, talk to your health care provider about getting tested for colon cancer.

Prostate Cancer:
- One in seven men gets prostate cancer in his lifetime.
- Black men have the highest rates of prostate cancer incidence in the United States.[1]
- Know the facts about prostate cancer screening, and talk to your health care provider about the risks and benefits of prostate cancer screening.

Melanoma:
- About 9,940 people in the United States will die of melanoma in 2015[2].
- Melanoma is the deadliest form of skin cancer.
- Skin cancer is preventable.

[1] SEER Cancer Statistics Review, 1975-2012
[2] Cancer Facts and Figures 2015

Continued on page 23

Cancer Prevention and Control Initiatives (continued)

We offer **free breast and cervical cancer screening** to women ages 40 to 64. Call **1-800-215-7494** or visit our website at **www.health.pa.gov/My%20Health/Womens%20Health** to see if you are eligible.

We can bring our **free breast cancer photo exhibit, "**67 Women, 67 Counties: Facing Breast Cancer in Pennsylvania," to your community. Call **1-800-377-8828** to schedule a photo exhibit opening in your home town or visit **www.pbccexhibit.org**.

Additional information on cancer screening guidelines and diagnostic tests can be found on the American Cancer Society's website at **http://www.cancer.org/healthy/findcancerearly** or the U.S. Preventive Service Task Force's website at **www.USPreventiveServicesTaskForce.org.** Please note that the Pennsylvania Department of Health does not explicitly endorse one set of guidelines over another.

Now you know what we know about cancer.

Visit www.health.state.pa.us/cancer for **more information about cancer control programs in Pennsylvania.**

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