



Indiana Cancer Facts & Figures **2012**

A sourcebook
for planning and
implementing
programs for
cancer prevention
and control

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Introduction

Dear Hoosiers,

The Indiana Cancer Consortium (ICC) is pleased to present its third edition of the *Indiana Cancer Facts and Figures 2012* — the state's only comprehensive report on the burden of cancer.

The ICC is a statewide network of public and private partnerships whose mission is to reduce the cancer burden in Indiana through the development, implementation, and evaluation of a comprehensive plan that addresses cancer across the continuum from prevention through palliation.

A major milestone for the ICC occurred in January 2010 with its launch of the *Indiana Cancer Control Plan 2010-2014*. The plan provides a roadmap for comprehensive cancer control in Indiana by providing guidance and encouraging collaboration in six focus areas including primary prevention, early detection, treatment, quality of life, data access, and advocacy. Currently, the ICC's over 150 members use the plan to guide their efforts throughout Indiana.

The *Indiana Cancer Facts and Figures 2012* includes the most up-to-date cancer information available and identifies current cancer trends and their potential impact on Indiana residents. Additionally, this report helps the ICC measure Indiana's progress toward meeting the goals and objectives outlined in the plan.

The collaboration that defines both the ICC and the publication of the *Indiana Cancer Facts and Figures 2012* is an exemplary application of public health practice. The sharing of knowledge, resources, and expertise among the many participating organizations is truly a landmark achievement that will have lasting impact on the health of all Hoosiers.

Effectively tackling the burden of cancer is a task no one organization can accomplish alone. We thank all of the individuals and organizations that have made a commitment to the ICC. To those with an interest in the ICC's mission who have not yet joined this partnership, we invite you to become members of the ICC. Finally, to the 6.4 million people who work and live in Indiana, the ICC promises the continued implementation and evaluation of the plan to improve the health of Hoosiers for decades to come.

Sincerely,



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Indiana Cancer Consortium's Mission and Goals

Mission

The ICC is a statewide network of public and private partnerships whose mission is to reduce the cancer burden in Indiana through the development, implementation, and evaluation of a comprehensive plan that addresses cancer across the continuum from prevention through palliation.

Who We Are

Born from a vision of the Indiana State Department of Health, the Indiana University Melvin and Bren Simon Cancer Center, the Indiana University School of Medicine Department of Public Health, and the American Cancer Society, Great Lakes Division, Inc., the ICC was launched in 2001 when key stakeholders came together, united by a common mission.

The ICC now has over 150 members deeply committed to making a difference in cancer through a collaborative process. Cancer control efforts in Indiana are funded in part by the Centers for Disease Control and Prevention (CDC) as part of the CDC's National Comprehensive Cancer Control Program.

Public Health Policy

Health policy at the local, state, or federal level can have a large impact on the community, guiding the public to healthier behaviors and making healthier options more accessible. Cancer-related policies are essential to reducing the cancer burden as policies can address major risk factors, such as tobacco use, physical inactivity, poor nutrition, inadequate access to recommended cancer screenings and treatment options. The cancer community must advocate for public health policies to positively impact the health of the community.

ICC Advocacy Goal

Advocate for cancer-related policy initiatives, including the:

1. Passage of a statewide comprehensive smokefree air law;
2. Increase of the state cigarette tax;
3. Passage of Complete Streets policies at the Metropolitan Planning Organization or local level; and
4. Improvement of existing laws that support elementary school students receiving at least 30 minutes of the recommended 60 minutes of physical activity during the school day.

Be an Advocate!

Policymakers are in the position to affect programs and services to reduce the cancer burden through proposing and enacting policy changes. By informing and educating the public and policymakers, cancer control advocates can positively influence the laws, regulations, and rules that impact the experience of cancer from prevention through palliation.

To be a part of the ICC's advocacy efforts, please visit www.indianacancer.org for more information.

Understanding Cancer Data

Cancer data can sometimes be difficult to interpret. Here is some information about common terms and methods used to better understand cancer data so that it can be effectively used to guide interventions and policy decisions.

Incidence (New cases)

Incidence refers to annual or average annual incidence. Annual incidence is the number of new cases of cancer diagnosed during a calendar year. Average annual incidence is the number of new cases diagnosed during a specified number of years. Indiana resident incidence data in this report, unless otherwise noted, were obtained from the Indiana State Cancer Registry (ISCR) as of September 2011. Because there are delays in health care providers reporting cancer cases to the ISCR and the ISCR has to make sure data are complete and accurate before publishing them, the most current data available for this report were from 2008. Visit www.in.gov/isdh/24360.htm to see if more up-to-date data are available.

Mortality (Deaths)

Mortality refers to annual or average annual mortality. Annual mortality is the number of deaths from cancer during a calendar year (Note: the cancer was not necessarily diagnosed in the same year). Average annual mortality is the average number of deaths during a specified number of years. Mortality data reflect the underlying cause of death as recorded on the death certificate. Indiana resident mortality data in this report, unless otherwise noted, are from the ISCR who obtains annual death certificate record information from the Indiana State Department of Health Vital Records Department. Data from 2008 were the most current mortality data available for this report. Visit www.in.gov/isdh/24360.htm to see if more up-to-date data are available.

Cancer Rates

Cancer rates in this document represent the number of new cases of cancer per 100,000 people (incidence) or the number of cancer deaths per 100,000 people (mortality) during a specific period [see example below]. Typically, incidence rates are calculated based only on the number of invasive cancer cases that occurred during a period and do not include in situ cases. Invasive cancer is cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues. See Page 8 for additional information about in situ cancer.

Example. If a county's lung cancer incidence rate is 40.0 cases per 100,000 people that means 40 new cases of invasive lung cancer were diagnosed for every 100,000 people. If the county's population is 25,000, then an incidence rate of 40.0 means 10 new cases of invasive lung cancer were diagnosed in that county during that year.

Rates provide a useful way to compare cancer burden irrespective of the actual population size. Rates can be used to compare demographic groups (males have higher lung cancer rates than females), race/ethnic groups (African American males have higher prostate cancer rates than white males), or geographic areas (Indiana has higher lung cancer incidence rates than California). Population data to calculate the rates were obtained from seer.cancer.gov/popdata.

Age-Adjusted Rates

Older age groups generally have higher cancer rates than younger age groups. For example, in Indiana, more than 60% of new lung cancer cases occur in those ages 60 and older. As a result, if one county's lung cancer incidence rate is higher than another, the first question asked is whether the county with a higher rate has an older population.

Understanding Cancer Data

To address this issue, all mortality and incidence rates presented in this report, unless otherwise noted, have been age-adjusted. This removes the impact of different age distributions between populations and allows for direct comparisons of those populations. Additionally, age-adjustment allows for a comparison of rates within a single population over time. An age-adjusted rate is not a real measure of the burden of the disease on a population, but rather an artificial measure that is used for comparison purposes.

All mortality and incidence rates in this publication were age-adjusted using the direct method. This method weights the age-specific rates (i.e., rates calculated for each age group) for a given sex, race, or geographic area by the age distribution of the standard population. The 2000 United States standard million population and five-year age group population numbers were used to calculate all of the age-adjusted rates in this report.

Confidence Intervals and Statistical Significance

Because the ISCR collects information on all reportable cancer cases that occur in Indiana, the incidence and mortality rates in this report are not subject to sampling error (i.e., error in estimating rates because one is working with sample rather than population data). However, cancer rates are often impacted by random variation, especially when looking at rates for rare types of cancer or among small geographic areas. Because of this random variation, confidence intervals (CIs) are used to describe the range of that variation. Most typically, 95% CIs are calculated, which provide a range of values in which one is 95% confident that the true rate exists, or, more technically, a 95% CI is such that if one repeated a study 100 times, 95 of the intervals would include the true rate.

For this report, CIs for the age-adjusted rates were calculated with a method based on the gamma distribution.¹ This method produces valid CIs even when the number of cases is very small. When the number of cases is large, the CIs produced with the gamma method are equivalent to those produced with the more traditional methods. The formulas for computing CIs can be found at www.in.gov/isdh/24360.htm (Click “Help” then “Index”).

Generally, when the 95% CI for the area of interest does not overlap with the 95% CI for the comparison area, we say that the two areas are statistically significantly different at the $P < .05$ level (i.e., the difference between the two rates is more than that expected by random variation). The limitation of this method, though, is that if two rates have overlapping CIs, they are probably not significantly different, but there is a chance that they still could be. Therefore, some of the rates in this report (e.g., county rates) not designated as being significantly above or below the comparison rate (e.g., Indiana rate) could still be significantly different.

Other Common Terms Used and Groups Referenced in this Report

Adults. Used in this report to refer to people ages 18 and older.

Age-specific Rate. The total number of new cases or deaths among residents in a specific age group divided by the population of that age group and multiplied by 100,000.

American Cancer Society (ACS). A nationwide, community-based voluntary health organization dedicated to eliminating cancer as a major health problem. Headquartered in Atlanta, Georgia, the ACS has 12 chartered Divisions, more than 900 local offices nationwide, and a presence in more than 5,100 communities. Additional information is available at www.cancer.org.

Burden. Number of new cases or deaths from cancer or overall impact of cancer in a community.

Carcinogen. Any chemical, physical, or viral agent that is known to cause cancer.

Centers for Disease Control and Prevention (CDC). The CDC’s mission is the following: “Collaborating to create the expertise, information, and tools that people and communities need to protect their health—through health promotion, prevention of disease, injury and disability, and preparedness for new health threats.” Additional information is available at www.cdc.gov.

Understanding Cancer Data

Five-year Survival. The percentage of people who are alive five years after their cancer is diagnosed. While statistically valid, these percentages are based on historical data and might not reflect current advances in treatment. Therefore, five-year survival rates should not be seen as a predictor in an individual case.

Lifetime Risk. The probability that an individual, over the course of a lifetime, will develop or die from cancer.

Malignant. Cancer that has spread beyond the location in which it started.

Metastasis. Movement of cancer from part of the body to a separate area of the body.

Morbidity. The number of people who have a disease.

National Center for Health Statistics (NCHS). Contained within the CDC, the NCHS is the Nation's principal health statistics agency. They compile statistical information to guide actions and policies to improve health. Additional information is available at www.cdc.gov/nchs.

Prevalence. A calculation of the proportion of people with a certain disease at a given time.

Risk Factor. Anything that increases a person's probability of getting a disease. Risk factors can be lifestyle-related, environmental, or genetic (inherited).

Surveillance, Epidemiology, and End Results (SEER) Program. Contained within the National Cancer Institute, SEER works to provide information on cancer statistics in an effort to reduce the burden of cancer among the U.S. population. Additional information is available at seer.cancer.gov.

Staging. The process of finding out whether cancer has spread and, if so, how far. There is more than one system for staging (See Page 8 for additional information).

References are provided throughout this report to provide readers with additional information. Web addresses are provided for online information.

References

¹ Fay MP, Feuer EJ. Confidence intervals for directly standardized rates: a method based on the gamma distribution. *Statistics in Medicine*. 1997; 16: 791–801.

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Common Questions about Cancer

What is cancer?

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. The cancer cells form tumors that destroy normal tissue. If cancer cells break away from a tumor, they can travel through the blood stream or the lymph system to other areas of the body, where they might form new tumors (metastases). If this growth is not controlled, cancer might be fatal.

Are all growths and tumors cancerous?

Not all irregular growths of abnormal cells lead to cancer. A tumor can be either benign (non-cancerous) or malignant (cancerous). Benign tumors do not metastasize and, with very rare exceptions, are not life threatening. Benign tumors usually grow slowly, remain localized, and do not destroy surrounding normal tissue.

What causes cancer?

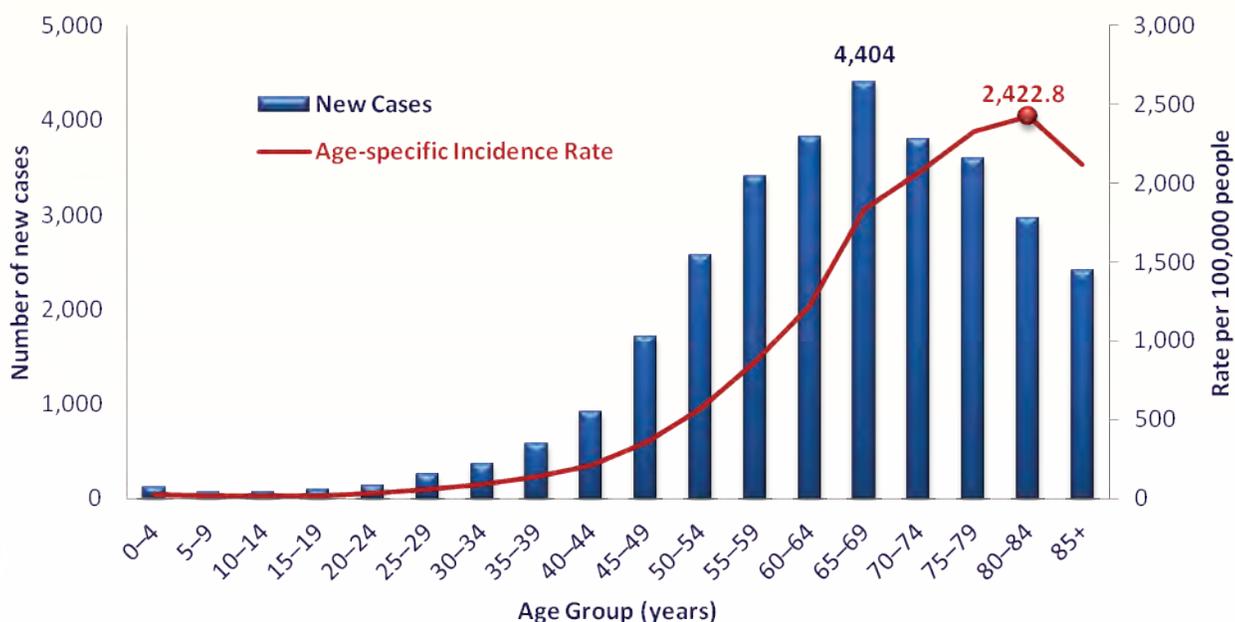
All cancers develop because of damage to or mutation of genes that control cell growth and division. These genetic changes can be caused by exposure to external factors (e.g., tobacco, poor diet, alcohol, chemicals, sunlight, radiation, infectious organisms) or internal factors (e.g., inherited mutations, hormones, immune conditions, mutations that occur from metabolism). Approximately 5% to 10% of cancers are caused by various inherited gene mutations that predispose people to developing certain cancers.¹

External and internal factors often act together or in sequence to initiate or promote cancer development. Many years often pass between exposures or mutations and detectable cancer. Because of this, it is often difficult to directly identify causes of specific cancer cases.

Who gets cancer?

Anyone can get cancer at any age; however, middle and older aged people are most likely to develop cancer. In Indiana, during 2008, 70% of all cancers cases occurred among people ages 55–84, including 23% among people ages 55–64, 26% among people ages 65–74, and 21% among people ages 75–84 [Figure 1].

Figure 1. Number and Rate of New Cancer Diagnosis among Residents—Indiana, 2008



Data are provided for the age groups with the largest number of cases and highest rate.
Source: Indiana State Cancer Registry

Common Questions about Cancer

Additionally, individuals who have been exposed to certain external and internal risk factors have an increased risk of developing cancer. For example, male smokers are about 23 times more likely to develop lung cancer than nonsmokers.² Also, females who have a first degree relative (i.e., mother, sister, or daughter) with a history of breast cancer have about twice the risk of developing breast cancer, compared to females who do not have this family history.²

How is cancer staged?

A cancer's stage is based on the primary tumor's size and location in the body and whether it has spread from the site of origin to other areas of the body. There are two main staging systems used to classify tumors.

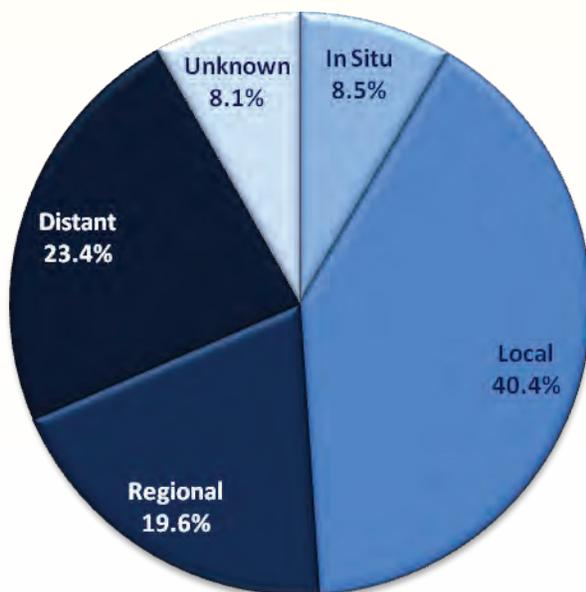
The **TNM staging system** assesses tumors in three ways: extent of the primary tumor (T), absence or presence of regional lymph node involvement (N), and absence or presence of distant metastases (M). Once the T, N and M are determined, a stage of I, II, III, or IV is assigned, with stage I being early stage and IV being advanced.

Summary staging is useful for descriptive and statistical analyses of cancer data and is used throughout this report. An *in situ* tumor is at the earliest stage when it has not invaded surrounding tissue; it can only be diagnosed by microscopic examination. A *localized* tumor has not spread beyond the primary organ. A *regional or distant* tumor has spread to other parts of the body (i.e., metastasized), either through the blood or lymph systems. With an *unstaged/unknown* tumor, there is insufficient information available to determine the stage of the disease.

What is the impact of stage at diagnosis on survival?

Staging is essential in determining the choice of therapy and assessing prognosis. It is a strong predictor of survival; generally, the earlier the stage, the better the prognosis. Locally and nationally, about half of newly diagnosed cases are either in situ or localized [Figure 2].

Figure 2. Percent of Cancer Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 165,865 Indiana residents who received an in situ or invasive cancer diagnosis, 81,177 (48.9%) were diagnosed in the in situ or local stage, 71,190 (42.9%) were diagnosed in the regional or distant stage, and 13,498 (8.1%) had unknown staging.

* Includes all in situ and invasive cancers except for basal and squamous cell skin cancers and in situ bladder, cervical, and prostate cancers, which are not reportable

Source: Indiana State Cancer Registry

Common Questions about Cancer

How is cancer treated?

Treatment depends on the cancer type and stage, specific diagnosis, and overall health of the individual. Cancer is treated by one or more of the following therapies:

- **Surgery** removes the tumor by cutting out the cancerous mass; it is mostly used for localized tumors.
- **Chemotherapy** uses either intravenous or oral drugs to destroy cancer cells. It is used with the intention of curing or inducing remission in cancers in early stages.
- **Hormone therapy** might be given to block the body's natural hormones and to slow or stop the growth of certain cancers.
- **Immunotherapy or biologic therapy** are used to stimulate and strengthen a person's own immune system to destroy the cancer cells.
- **Radiation or radiotherapy** uses high-energy rays to destroy or slow the growth of cancer cells. It can be done with the intention of curing some cancers that have not spread too far from their site of origin or to relieve symptoms.

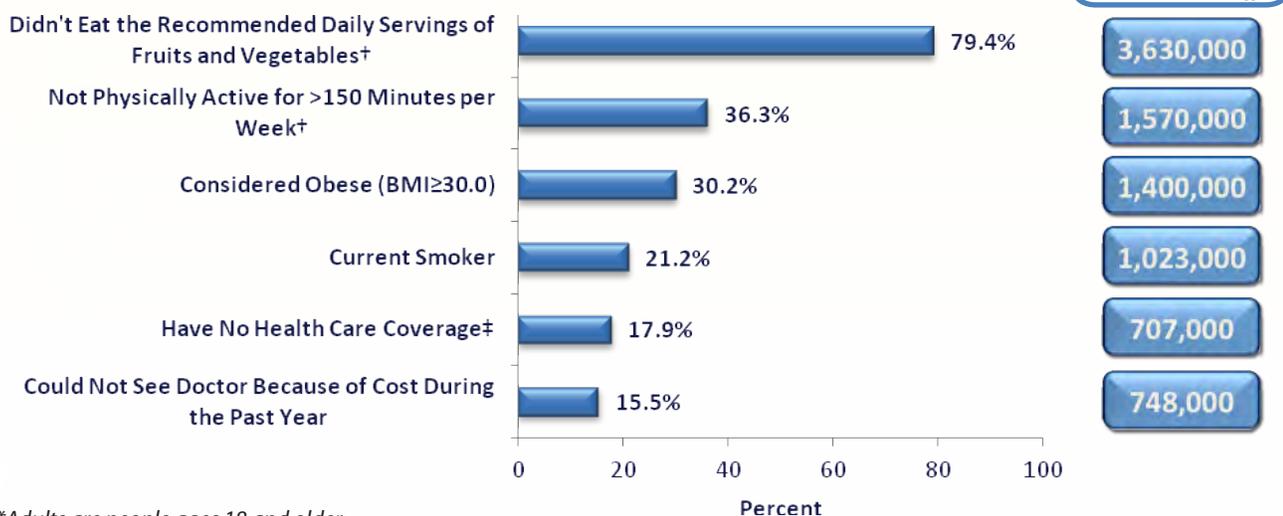
Can cancer be cured?

Many cancers can be cured if detected and promptly treated. For most types of cancer, if a person's cancer has been in remission (all signs and symptoms of the disease are absent) for five years, the cancer is considered cured. However, the length of remission at which a person is considered cured differs by cancer type. Certain skin cancers, such as a basal cell carcinoma, are considered cured as soon as the lesion is removed. For other cancers (e.g., pancreatic), 8 to 10 years must pass before the person is considered cured.

Can cancer be prevented?

Many cancers can be prevented by modifying external risk factors and making lifestyle changes, such as eliminating tobacco use, improving dietary habits, increasing physical activity, losing weight, and avoiding excessive sun and infectious disease exposures. Additionally, many cancers can be prevented or identified at an early stage if people receive regular medical care and obtain early detection cancer screenings. Figure 3 describes the burden of some lifestyle and external factors among Indiana adults and Figure 4 describes cancer screening rates among Indiana adults.

Figure 3. Preventative Cancer Behaviors and Access to Medical Care among Adults*—Indiana, 2010



*Adults are people ages 18 and older

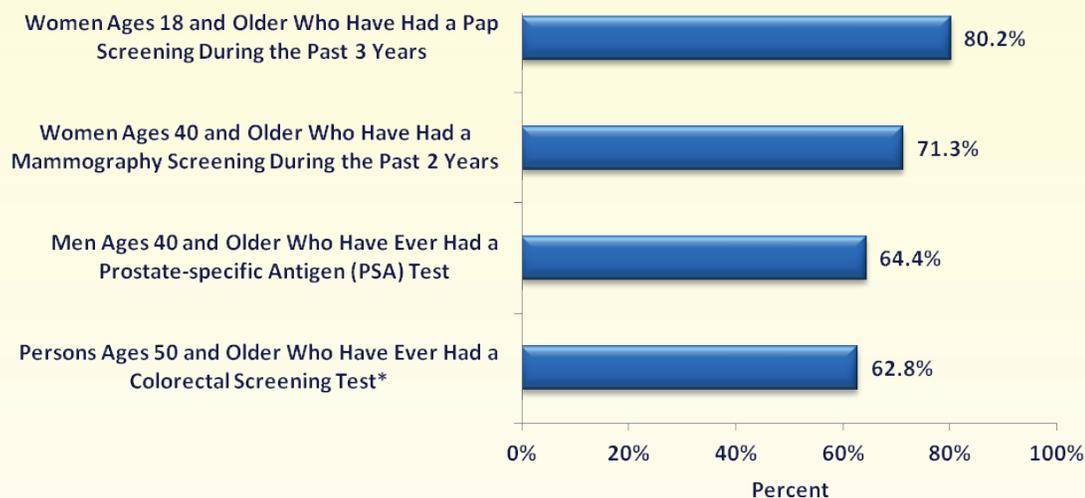
†Data from 2009

‡Adults ages 18–64

Source: Indiana Behavioral Risk Factor Surveillance System

Common Questions about Cancer

Figure 4. Cancer Screening Rates—Indiana, 2010



*Sigmoidoscopy or colonoscopy

Source: Indiana Behavioral Risk Factor Surveillance System

Additional information about cancer risk factors include:

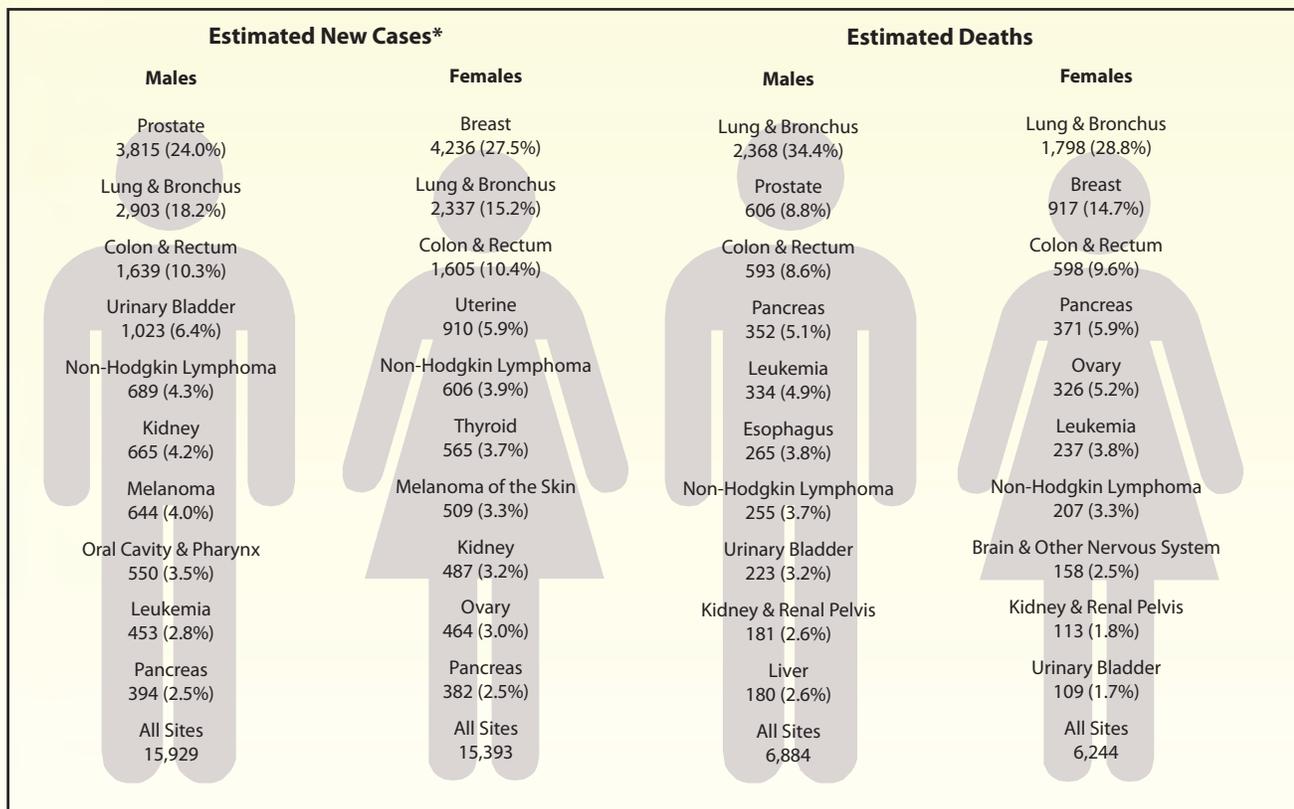
- **Body Weight, Diet, and Physical Activity.** Scientific evidence suggests that nationally about one-third of the 571,950 cancer deaths expected to have occurred in 2011 were related to overweight or obesity, physical inactivity, and poor nutrition and thus could have been prevented.² In 2010, approximately 30% of Indiana adults, or almost 1.8 million people, were considered obese. Additionally, in 2009, almost 40% of Indiana adults did not get the recommended 150 minutes of exercise per week (recommendations available at www.cdc.gov/physicalactivity/everyone/guidelines/index.html) and 80% failed to eat the recommended daily servings of fruits and vegetables (i.e., 2 cups of fruit and 2½ cups of vegetables per day).³ Diets low in animal fat and high in fruits and vegetables could help prevent certain cancers.
- **Tobacco.** All cancers caused by the use of tobacco products could be prevented. The Harvard Report on Cancer Prevention estimated that around 30% of cancer deaths are caused by tobacco use.⁴ In 2010, 21.2% of Indiana adults were current smokers.³
- **Sun Exposure.** The majority of the more than two million skin cancers that are diagnosed annually in the United States could have been prevented by protection from the sun's rays.⁴
- **Infectious Diseases.** About 5% of cancers are related to infectious exposures, such as hepatitis B virus (HBV), human papillomavirus (HPV), human immunodeficiency virus (HIV), *Helicobacter* bacteria, and others. These infections could be prevented through behavioral changes or the use of vaccines or antibiotics.⁵
- **Health Care Coverage.** Uninsured and underinsured patients are substantially more likely to be diagnosed with cancer at a later stage, when treatment can be more extensive and costly.² According to the U.S. Census Bureau, almost 50 million Americans were uninsured in 2010; almost one-third of Hispanics and 1 in 10 children (17 years and younger) had no health insurance coverage during the same time period.⁷ In 2010, approximately 16% of Indiana adults reported not seeing a doctor during the year because of cost and 18% of people, ages 18–64, had no health care coverage.³
- **Screening.** Early diagnosis through regular screening examinations saves lives by identifying cancers when they are most curable and treatment is more successful. Cancers that can be detected by screening account for about half of all new cancer cases and include breast, colon, rectum, cervix, prostate, testis, oral cavity, and skin cancers.

Common Questions about Cancer

What are the most common cancers?

The most commonly occurring cancers for both the state and the nation are the same. Excluding skin cancers, breast and prostate are the most prevalent cancers among females and males, respectively. Lung, including bronchus, and colon cancers are the next most common cancers among both sexes [Figure 5]. Annually, lung cancer is responsible for the most cancer-related deaths among both sexes [Figure 5].

Figure 5. Leading Sites of New Cancer Cases and Deaths among Indiana Residents by Sex, 2008



*Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder

Source: Indiana State Cancer Registry

How many people alive today will get cancer?

About 2.4 million Hoosiers, or 2 in 5 people now living in Indiana, will eventually develop cancer. Nationally, males have almost a 1 in 2 chance of developing cancer in their lifetime; females' lifetime risk of developing cancer is slightly more than 1 in 3.⁸

How many people alive today have ever had cancer?

The National Cancer Institute estimated that approximately 11.7 million Americans with a history of cancer were alive in January 2007.² Some of these individuals were cancer free, while others still had evidence of cancer and might have been undergoing treatment.

How many new cases of cancer are expected to occur this year?

The American Cancer Society estimated that approximately 34,050 Indiana residents were diagnosed with cancer in 2011, amounting to almost four new cases of cancer diagnosed every hour of every day.² This estimate did not include cases of non-melanoma skin cancer and carcinoma in situ (except for in situ urinary bladder cancer cases).

Common Questions about Cancer

How many people are expected to die from cancer this year?

In 2011, about 12,960 Indiana residents were expected to have died of cancer, which translates to approximately 36 people every day or almost two people every hour.² Cancer is the second leading cause of death in Indiana following heart disease. Among children ages 5 to 14, cancer is the second leading cause of death following deaths from accidents.

How does cancer incidence and mortality in Indiana compare with the rest of the United States?

Indiana's age-adjusted cancer incidence rate during 2004–2008 was 475.6 per 100,000 people. This was statistically higher than, but very similar to, the national rate of 471.8 per 100,000 people (<1% difference) [Table 1; Figure 6].

However, during the same period, Indiana's age-adjusted mortality rate was 8% higher than the national rate (195.8 versus 181.3 deaths per 100,000 people). This included being over 10% higher among Indiana males (245.8 versus 223.1 deaths per 100,000 males) and almost 7% higher among Indiana females (163.6 versus 153.3 deaths per 100,000 females) [Table 1; Figure 7].

Lung cancer had the largest differences between the Indiana and U.S. incidence and mortality rates, as the incidence rate among Indiana residents was over 15% higher and the mortality rate was over 16% higher. This increase in risk is mostly attributable to Indiana having a high prevalence of smokers compared to the rest of the United States. In 2010, Indiana had the 10th highest adult smoking rate in the country.⁹

Table 1. Incidence and Mortality (Death) Rate Comparisons between Indiana and the United States, by Sex and Race, 2004–2008*

	Incidence rate per 100,000 people (2004–2008)			Mortality rate per 100,000 people (2004–2008)		
	Indiana	United States	Difference (%)	Indiana	United States	Difference (%)
Total	475.6 [†]	471.8	+0.8	195.8 [†]	181.3	+8.0
Males	556.2	552.1	+0.7	245.8 [†]	223.1	+10.2
Females	422.4 [†]	415.9	+1.6	163.6 [†]	153.3	+6.7
Whites	470.0	470.9	-0.2	194.1 [†]	180.0	+7.8
African Americans	490.7	483.1	+1.6	236.3 [†]	220.9	+7.0

*Age-adjusted

[†]Indiana rate is significantly higher ($P < .05$) than the U.S. rate

Sources: Indiana State Cancer Registry (Indiana data); U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2008 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at wonder.cdc.gov on Dec 21, 2011 (U.S. data).

Common Questions about Cancer

Figure 6. How Do Indiana Cancer Incidence Rates Compare to U.S. Rates?* (2004–2008)

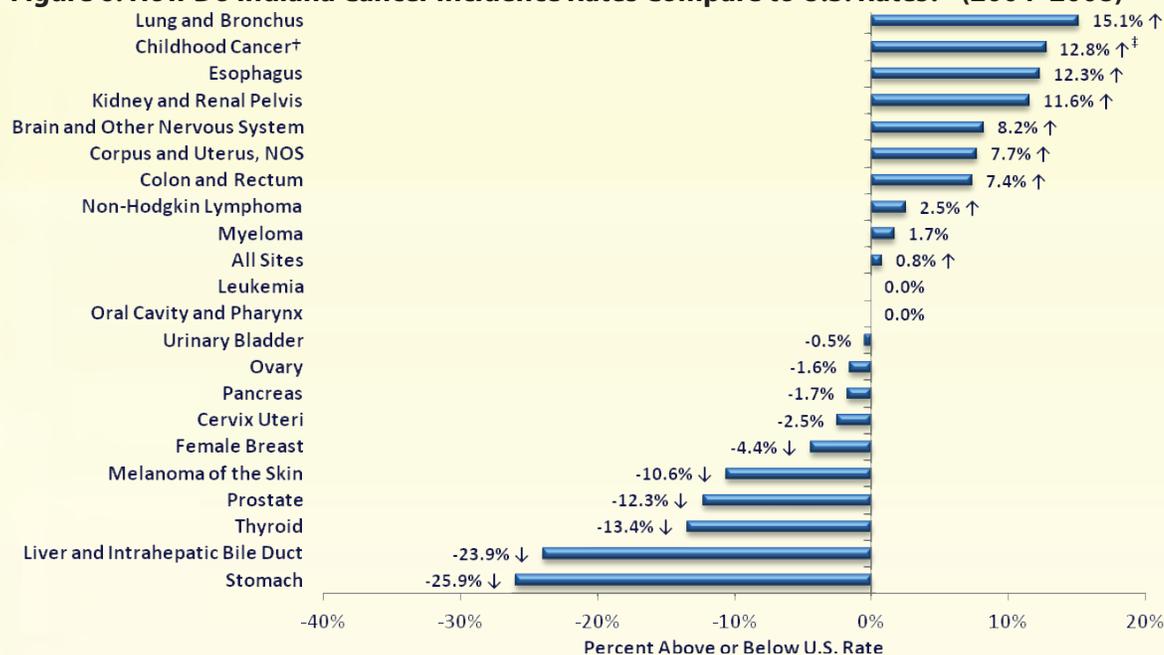
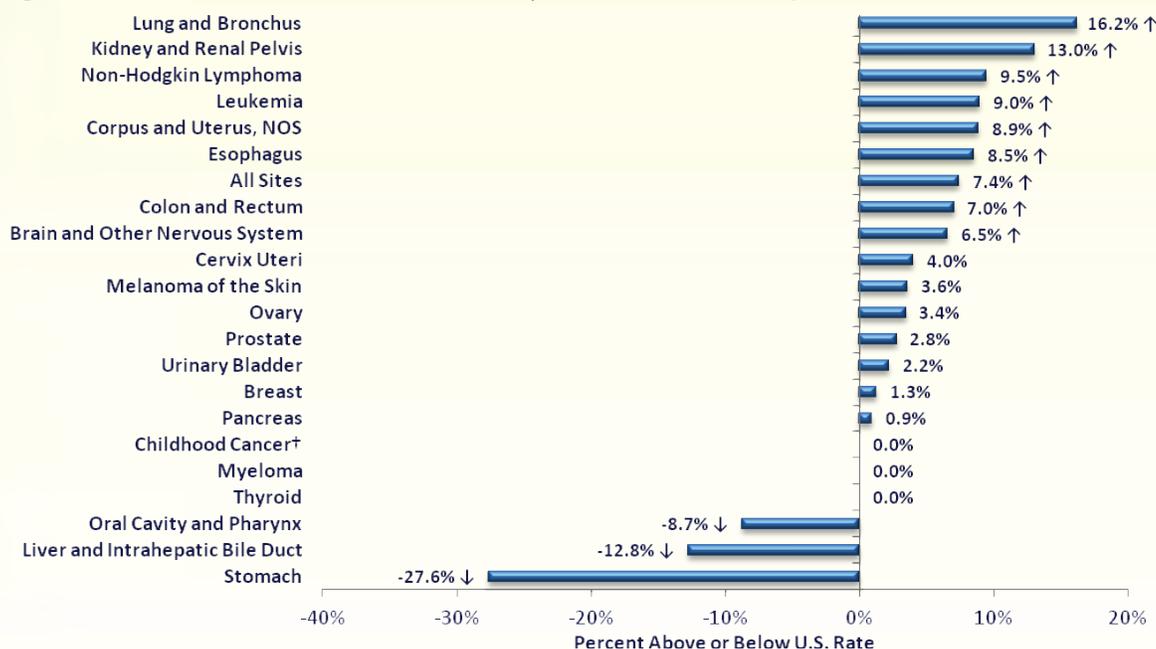


Figure 7. How Do Indiana Cancer Mortality (Death) Rates Compare to U.S. Rates?* (2004–2008)



*Age-adjusted

†Based on age-specific rates for children ages 0–19

‡The incidence of cancer among Indiana children ages 0–19 during 2004–2008 (19.6 cases per 100,000 children) was slightly higher than the reported national rate of 17.1 cases per 100,000 children. However, there appears to be some underreporting of the U.S. data, as the source used to obtain the U.S. rate listed the Indiana rate as 17.5, not 19.6, cases per 100,000 children. Based on this other source of data, the Indiana rate is only 2.3% higher than the national rate.

Note: ↑↓ symbols denote whether Indiana's rate is significantly different than the U.S. rate based on the 95% confidence interval overlap method (see Page 4 for description). ↑ = significantly higher; ↓ = significantly lower.

Sources: Indiana State Cancer Registry (Indiana data); U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2008 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at wonder.cdc.gov on Dec 21, 2011. (U.S. data)

Common Questions about Cancer

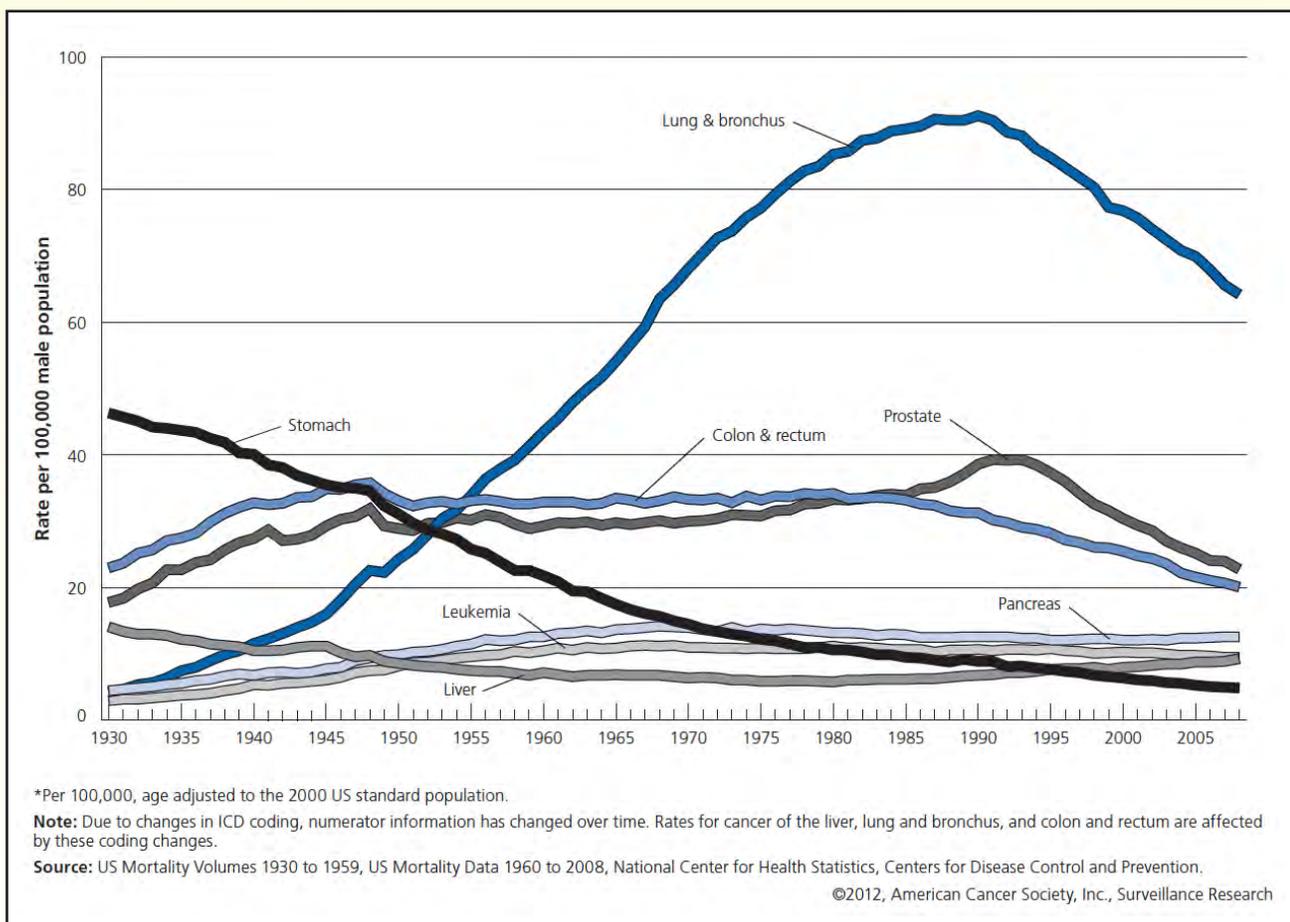
Is the cancer burden in the United States and Indiana lessening?

The burden of specific cancer types among U.S. residents has changed over the years [Figures 8 and 9]. For example, with the gradual decrease in smoking rates among Americans over the past several decades, lung cancer mortality rates have begun to decrease, especially among U.S. males.

In Indiana, from 1999 to 2008, the age-adjusted incidence rates for all cancers combined decreased 0.5% from 466.5 to 464.1 cases per 100,000 people. Likewise, the age-adjusted mortality rates decreased 10.6% from 215.4 to 194.8 deaths per 100,000 people. However, trends varied among the different cancer types.

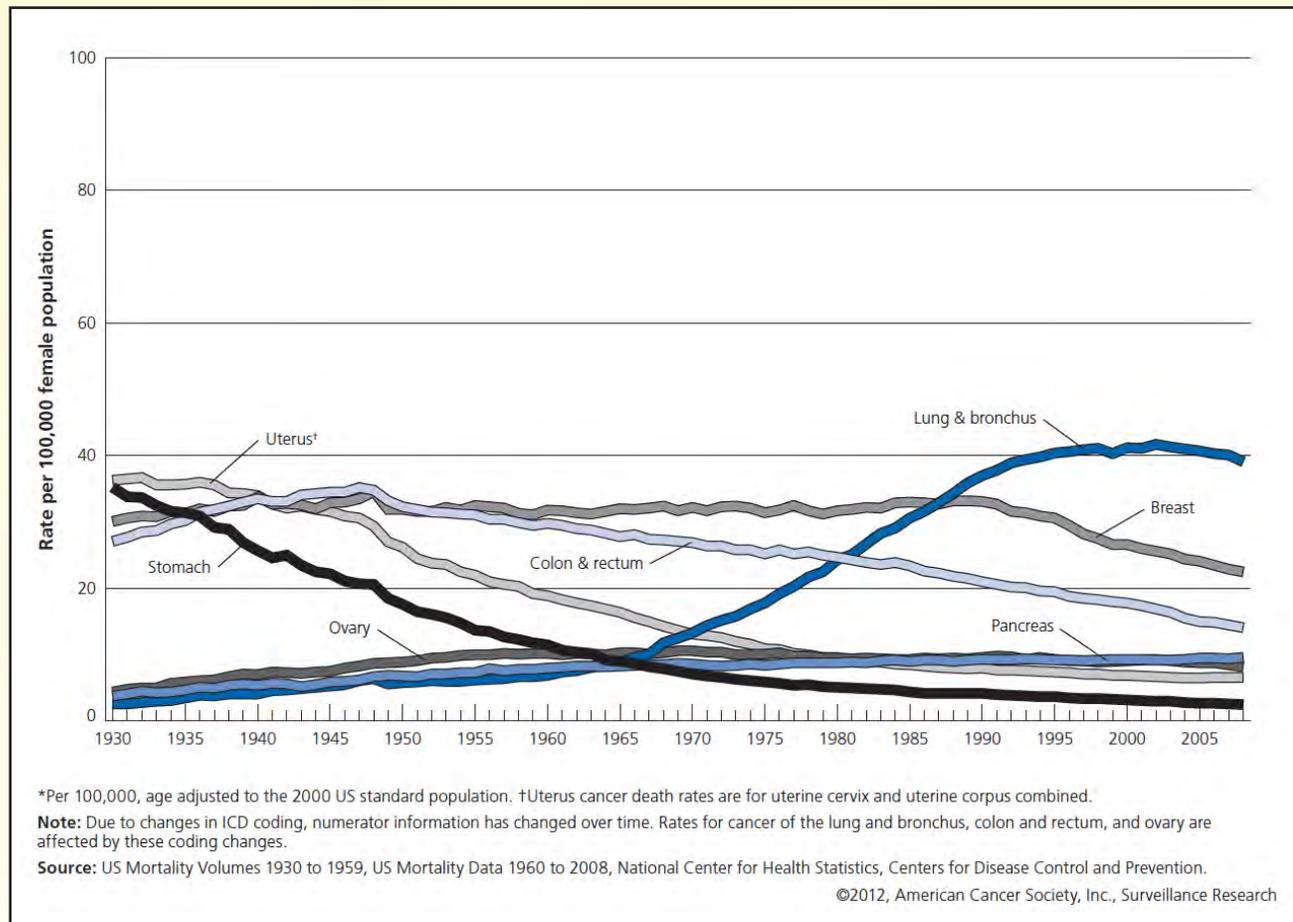
These statistics indicate that progress continues to be made in the early detection and treatment of certain cancers, and that the incidence and mortality of some cancers is declining. However, a significant cancer burden still exists among Indiana residents that requires continued and more targeted cancer control efforts.

Figure 8. Cancer Mortality (Death) Rates among Males by Site*—United States, 1930–2008



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Figure 9. Cancer Mortality (Death) Rates among Females by Site*—United States, 1930–2008



How many people today survive cancer?

Using data from the Surveillance Epidemiology and End Results (SEER) registry, the five-year survival rate for 2001–2007 from the nine SEER geographic areas was 67.4%.⁵ Factors such as early stage of disease at diagnosis can greatly improve the probability of survival after five years.

What are the costs of cancer?

The National Institutes of Health estimated overall costs for cancer in the United States during 2010 at \$263.8 billion: \$102.8 billion for direct medical costs (total of all health expenditures); \$20.9 billion for indirect morbidity costs (cost of lost productivity due to illness); and \$140.1 billion for indirect mortality costs (cost of lost productivity due to premature death).¹⁰ The Milken Institute reported that, during 2003, Indiana residents spent \$1.01 billion on the direct costs of treating cancer. Additionally, they estimated that should current trends continue, Hoosiers would spend \$2.76 billion on direct costs for cancer care in 2023.¹¹

How does Indiana track changes in cancer risk and risk behavior data?

The Indiana State Cancer Registry was established in 1987 to compile information on cancer cases and other related data necessary to conduct epidemiological studies of cancer and develop appropriate preventive and control programs. The data in this registry allows for the evaluation of cancer prevention efforts and the measurement of progress toward reaching the state goal of reducing cancer incidence and mortality among Indiana residents.

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Additionally, several data sources are used to describe the burden of risk factors (e.g., obesity) and cancer screening rates among Indiana residents. The Behavioral Risk Factor Surveillance System (BRFSS) is the main source utilized to do this because it provides yearly data that can be used to generate Indiana-specific estimates for a large number of cancer risk and preventative factors. These findings can then be tracked over time and compared to other states to evaluate how Indiana is progressing in those areas.

Additional local, state, and national data resources can be found in the Indiana Community Health Information Resource Guide (www.indianactsi.org/chep/resourceguide).

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Common Questions about Cancer

↑↓ DENOTE IF COUNTY RATE IS SIGNIFICANTLY DIFFERENT THAN STATE RATE[†]
 ↑ = higher ↓ = lower "blank" = no difference

Table 2. Indiana Cancer Incidence Rates by County, 2004–2008*

County	All Cancers		Prostate (Male-only disease)		Female Breast		Lung		Colon and Rectum	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Indiana	154,990	475.6	19,770	136.0	20,511	116.0	25,914	80.0	16,739	51.4
Adams	762	430.2 ↓	95	121.5	106	113.4	103	54.9 ↓	104	57.5
Allen	8,050	477.4	1,115	153.8 ↑	1,163	124.5	1,149	69.3 ↓	846	50.6
Bartholomew	1,865	458.7	220	119.1	227	102.4	311	75.2	188	47.1
Benton	258	503.8	41	180.6	20	69.3	46	89.9	34	63.9
Blackford	419	495.0	57	153.1	34	73.9 ↓	72	85.7	57	66.3
Boone	1,114	422.1 ↓	143	120.7	175	116.8	168	66.3 ↓	121	46.9
Brown	368	397.1 ↓	57	121.9	53	103.5	58	63.4	27	31.3 ↓
Carroll	563	496.6	83	154.7	57	94.9	88	76.7	60	51.9
Cass	1,012	455.9	117	116.1	140	117.7	173	76.8	121	54.4
Clark	2,937	532.7 ↑	268	103.5 ↓	395	128.6	576	105.5 ↑	335	61.4 ↑
Clay	816	533.1 ↑	98	141.6	90	111.2	161	103.5 ↑	81	53.3
Clinton	860	461.2	110	135.2	92	94.8	137	73.3	101	50.9
Crawford	298	484.9	33	112.4	35	109.3	67	107.1 ↑	28	46.1
Daviess	753	454.3	109	146.7	92	105.2	109	65.5	93	54.9
Dearborn	1,446	562.6 ↑	200	160.4 ↑	193	138.6 ↑	248	99.0 ↑	172	67.8 ↑
Decatur	651	475.9	87	138.9	71	96.0	117	84.8	58	42.4
DeKalb	1,056	497.5	124	132.3	149	129.9	159	77.0	137	64.3 ↑
Delaware	3,090	491.7	425	148.6	391	118.1	547	84.9	346	54.5
Dubois	940	419.4 ↓	124	127.2	138	115.4	123	55.2 ↓	93	40.5 ↓
Elkhart	4,175	455.3 ↓	501	123.8	584	118.1	616	68.2 ↓	440	48.7
Fayette	685	457.6	69	99.4 ↓	63	80.2 ↓	141	91.8	75	49.5
Floyd	1,722	452.9	222	130.4	221	104.8	338	90.5 ↑	211	55.6
Fountain	539	500.8	76	151.1	85	153.5 ↑	94	85.8	63	57.1
Franklin	435	353.9 ↓	57	100.6 ↓	37	56.1 ↓	84	67.7	53	42.9
Fulton	645	528.9 ↑	81	143.5	92	144.7	110	89.4	83	67.1 ↑
Gibson	759	395.9 ↓	87	99.6 ↓	127	125.3	110	56.5 ↓	124	63.8 ↑
Grant	2,242	531.3 ↑	302	161.7 ↑	260	115.4	368	85.5	231	54.0
Greene	868	435.8 ↓	112	121.4	107	101.3	145	71.9	76	36.9 ↓
Hamilton	4,150	408.2 ↓	535	111.8 ↓	707	118.7	501	56.3 ↓	368	37.8 ↓
Hancock	1,611	477.1	162	98.3 ↓	238	128.7	276	83.6	147	44.8
Harrison	862	439.7 ↓	77	80.3 ↓	105	97.0	150	75.7	98	51.2
Hendricks	2,690	451.2 ↓	324	115.2 ↓	393	120.3	396	69.7 ↓	295	50.3
Henry	1,492	512.0 ↑	179	136.5	170	110.1	257	86.7	204	68.2 ↑
Howard	2,418	499.8 ↑	289	129.9	370	139.7 ↑	435	88.6	278	57.8
Huntington	1,036	470.4	125	129.1	145	121.9	121	53.9 ↓	144	64.1 ↑
Jackson	1,205	522.8 ↑	161	156.5	142	114.5	202	87.1	138	59.4
Jasper	948	548.4 ↑	160	200.5 ↑	95	104.7	173	98.5 ↑	93	52.9
Jay	653	519.9 ↑	65	113.0	88	124.7	112	86.7	71	54.4
Jefferson	923	502.0	133	151.5	112	114.5	183	96.4 ↑	88	47.9
Jennings	646	462.8	83	133.1	67	87.3 ↓	134	95.7	48	35.2 ↓
Johnson	3,124	473.4	394	132.5	380	103.6	503	78.8	297	45.3
Knox	1,098	483.5	150	150.8	153	122.1	165	71.6	134	57.7
Kosciusko	1,739	439.1 ↓	220	118.3	224	107.5	291	73.4	200	50.7
LaGrange	622	373.2 ↓	68	93.1 ↓	87	100.4	86	51.6 ↓	82	49.3
Lake	13,036	502.5 ↑	2,008	175.8 ↑	1,653	115.4	2,037	78.2	1,531	59.0 ↑
LaPorte	2,982	483.0	436	155.8 ↑	359	110.7	488	79.0	331	53.6
Lawrence	1,320	469.3	146	113.9	152	100.0	235	82.3	144	49.8

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↑↓ DENOTE IF COUNTY RATE IS SIGNIFICANTLY DIFFERENT THAN STATE RATE[†]
 ↑ = higher ↓ = lower "blank" = no difference

Table 2. Indiana Cancer Incidence Rates by County, 2004–2008*

County	All Cancers		Prostate (Male-only disease)		Female Breast		Lung		Colon and Rectum	
	Count	Rate*	Count	Rate*	Count	Rate*	Count	Rate*	Count	Rate*
Madison	3,611	463.2	469	131.7	469	111.0	651	81.7	346	43.2 ↓
Marion	19,833	490.8 ↑	2,275	131.8	2,647	116.8	3,619	92.0 ↑	2,007	50.0
Marshall	1,204	482.7	162	145.3	153	112.5	165	66.2 ↓	145	57.4
Martin	291	473.3	34	111.5	34	113.0	53	85.3	42	65.4
Miami	882	444.8	115	122.7	133	132.9	154	77.9	96	48.5
Monroe	2,477	476.4	356	156.0 ↑	355	126.9	322	62.8 ↓	225	43.7 ↓
Montgomery	954	439.8 ↓	130	127.7	128	113.5	172	79.0	108	48.5
Morgan	1,697	475.8	231	135.7	236	120.2	314	89.5	155	45.4
Newton	366	459.2	37	99.2	42	97.3	69	86.1	40	51.0
Noble	1,071	470.2	110	111.5	140	112.6	166	74.3	126	56.8
Ohio	167	485.3	19	x x	17	x x	33	90.5	20	61.8
Orange	504	436.7	59	108.1	59	95.9	108	92.2	56	47.5
Owen	588	468.7	75	119.4	70	107.9	112	88.9	58	47.6
Parke	460	445.7	55	109.9	66	117.2	95	89.7	35	35.4 ↓
Perry	502	458.5	38	78.9 ↓	57	98.7	93	84.9	67	59.3
Pike	314	395.2 ↓	28	78.4 ↓	47	117.6	53	64.1	37	45.5
Porter	3,835	479.1	544	146.4	554	127.1	602	75.4	414	52.2
Posey	592	404.5 ↓	65	96.6 ↓	74	93.8	109	75.8	70	47.2
Pulaski	419	507.9	48	120.9	42	96.8	65	77.7	56	65.9
Putnam	971	501.4	122	131.8	127	125.0	199	102.8 ↑	90	46.9
Randolph	810	493.0	102	136.5	98	112.4	145	87.1	97	57.5
Ripley	789	517.5 ↑	102	145.8	95	117.3	127	82.2	93	59.8
Rush	482	465.4	58	123.1	51	93.1	94	88.4	54	51.4
Scott	537	442.6	40	76.1 ↓	69	103.5	111	92.1	80	68.0 ↑
Shelby	1,095	464.3	146	133.4	135	107.0	183	78.3	110	46.5
Spencer	493	425.3 ↓	59	104.1	62	104.0	84	71.2	69	60.2
St. Joseph	7,025	503.6 ↑	954	158.2 ↑	931	122.7	1,096	78.5	753	53.8
Starke	636	465.5	76	118.5	96	132.0	130	91.8	67	48.4
Steuben	883	485.5	122	144.5	122	121.5	123	65.3 ↓	96	55.3
Sullivan	556	465.6	59	114.8	70	113.4	89	73.1	68	56.3
Switzerland	294	562.4 ↑	45	179.2	17	x x	48	87.9	42	83.7 ↑
Tippecanoe	3,066	484.2	465	167.3 ↑	399	117.4	513	83.7	273	43.2 ↓
Tipton	428	438.8	57	127.2	38	73.1 ↓	70	72.1	51	50.1
Union	118	283.5 ↓	18	x x	15	x x	21	49.0 ↓	12	x x
Vanderburgh	4,295	435.9 ↓	400	96.0 ↓	605	114.1	882	88.5 ↑	476	47.2
Vermillion	498	500.4	72	169.3	57	104.2	83	82.1	53	53.8
Vigo	2,950	525.7 ↑	379	159.7 ↑	396	132.1 ↑	492	88.8 ↑	293	50.0
Wabash	947	450.5	129	135.4	115	104.8	135	63.9 ↓	107	49.1
Warren	195	384.9 ↓	24	108.2	24	92.6	41	80.0	22	46.2
Warrick	1,219	406.6 ↓	148	99.2 ↓	192	116.2	207	70.2	142	48.2
Washington	643	439.8	54	78.7 ↓	77	100.3	111	75.9	71	49.1
Wayne	2,076	492.9	233	125.4	233	101.0	425	99.7 ↑	199	45.1
Wells	685	433.1 ↓	79	112.2	101	121.3	96	59.6 ↓	77	48.7
White	759	507.4	116	173.0 ↑	102	126.5	153	100.3 ↑	86	56.6
Whitley	843	479.3	124	157.4	118	125.8	132	76.3	105	60.0

*Rates are per 100,000 people and age-adjusted to the 2000 U.S. Standard Population

[†]“↑” symbols denote whether the county’s rate is significantly different than the Indiana rate based on the 95% confidence interval overlap method (see Page 4 for description). Because of limitations of this method, some of the counties without ↑↓ symbols could still have significantly different rates than the state.

“x” Rate and comparison to state rate is suppressed if fewer than 20 cases occurred because rate is considered unstable.

Source: Indiana State Cancer Registry

Common Questions about Cancer

Table 3. Indiana Cancer Mortality (Death) Rates by County, 2004–2008*

↑↓ DENOTE IF COUNTY RATE IS SIGNIFICANTLY DIFFERENT THAN STATE RATE[†]
 ↑ = higher ↓ = lower "blank" = no difference

County	All Cancers		Prostate (Male-only disease)		Female Breast			Lung		Colon and Rectum	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	
Indiana	63,731	195.8	3,008	25.1	4,418	23.8	19,929	61.6	6,058	18.5	
Adams	314	166.6 ↓	21	28.3	19	x x	83	43.3 ↓	26	14.0	
Allen	3,121	186.2 ↓	145	23.6	251	26.1	866	52.5 ↓	290	17.0	
Bartholomew	792	194.6	40	27.7	62	26.7	242	58.6	73	18.2	
Benton	108	199.7	8	x x	x	x x	40	77.6	9	x x	
Blackford	180	207.7	7	x x	12	x x	59	70.1	23	25.6	
Boone	467	178.8	32	32.2	40	25.5	142	56.0	38	14.5	
Brown	159	178.3	9	x x	7	x x	50	57.6	13	x x	
Carroll	243	212.7	9	x x	16	x x	75	67.3	23	19.5	
Cass	433	189.9	15	x x	23	17.6	141	61.5	36	15.6	
Clark	1,092	202.2	44	22.7	67	21.9	411	76.0 ↑	96	17.9	
Clay	339	214.6	17	x x	24	27.7	90	57.2	33	20.7	
Clinton	354	178.7	19	x x	19	x x	102	53.7	43	20.2	
Crawford	121	198.1	x	x x	7	x x	52	83.3	8	x x	
Daviess	297	176.3	19	x x	25	26.0	78	46.6 ↓	29	16.9	
Dearborn	456	185.3	19	x x	34	24.4	162	65.4	46	19.3	
Decatur	284	205.9	12	x x	22	28.1	104	75.4	23	16.5	
DeKalb	403	192.3	23	29.6	26	22.1	106	51.0	39	18.8	
Delaware	1,328	207.3	48	20.6	95	27.0	429	66.3	128	19.6	
Dubois	382	170.3 ↓	25	30.5	28	22.2	95	43.1 ↓	43	18.6	
Elkhart	1,608	177.7 ↓	81	24.6	102	19.5	459	51.3 ↓	164	18.2	
Fayette	329	215.0	15	x x	13	x x	117	76.0 ↑	25	16.3	
Floyd	752	196.9	16	x x	57	25.3	258	68.0	83	21.7	
Fountain	219	195.5	13	x x	18	x x	73	66.2	29	26.4	
Franklin	238	192.9	11	x x	8	x x	65	52.8	28	22.5	
Fulton	279	225.1 ↑	18	x x	26	38.7 ↑	81	65.6	21	17.0	
Gibson	380	193.9	16	x x	30	26.7	109	55.9	44	22.0	
Grant	839	193.2	23	14.3 ↓	56	22.4	278	63.6	78	17.7	
Greene	379	187.5	19	x x	25	22.6	122	60.6	38	19.2	
Hamilton	1,367	153.2 ↓	69	23.0	118	21.4	365	41.8 ↓	111	12.5 ↓	
Hancock	612	188.7	23	19.1	46	25.0	193	59.5	47	14.3	
Harrison	355	188.5	16	x x	22	21.1	120	62.6	35	19.2	
Hendricks	1,002	176.9 ↓	39	18.2	77	23.9	298	52.9 ↓	104	18.7	
Henry	619	208.4	20	18.1	52	33.2 ↑	206	69.2	54	17.8	
Howard	927	191.2	40	23.4	70	24.8	321	65.2	72	14.8	
Huntington	410	175.8 ↓	27	29.9	26	20.6	109	48.8 ↓	40	16.3	
Jackson	458	196.9	17	x x	29	22.1	151	65.4	38	16.3	
Jasper	344	197.7	23	36.3	28	29.5	120	69.0	23	13.2	
Jay	278	214.2	12	x x	19	x x	98	75.8	29	22.6	
Jefferson	365	198.7	18	x x	16	x x	140	74.3	27	14.6	
Jennings	284	210.7	16	x x	10	x x	109	78.8 ↑	22	15.8	
Johnson	1,183	182.5 ↓	46	19.8	85	22.3	396	62.5	95	14.7 ↓	
Knox	432	183.0	24	25.5	44	32.6	130	55.2	45	19.5	
Kosciusko	727	183.9	39	25.3	47	20.4	227	57.3	84	21.9	
LaGrange	237	144.9 ↓	14	x x	14	x x	66	38.7 ↓	24	15.2	
Lake	5,435	209.4 ↑	256	26.5	434	29.0 ↑	1,527	58.7	549	21.3 ↑	
LaPorte	1,263	204.5	61	26.7	78	22.3	365	58.9	136	21.8	
Lawrence	539	186.9	16	x x	33	19.4	190	65.9	67	23.1	

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Table 3. Indiana Cancer Mortality (Death) Rates by County, 2004–2008*

↑↓ DENOTE IF COUNTY RATE IS SIGNIFICANTLY DIFFERENT THAN STATE RATE[†]
 ↑ = higher ↓ = lower "blank" = no difference

County	All Cancers		Prostate (Male-only disease)		Female Breast		Lung		Colon and Rectum	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Madison	1,580	198.1	67	22.0	92	20.4	515	64.2	134	16.5
Marion	8,382	210.9	412	29.3	573	24.7	2,784	70.9	754	18.8
Marshall	442	173.9	24	27.3	40	26.4	121	48.5	52	20.2
Martin	114	184.6	x	x	9	x	41	66.0	11	x
Miami	406	205.0	18	x	27	24.7	136	68.8	44	21.4
Monroe	925	177.6	58	30.6	76	25.7	270	52.7	70	13.4
Montgomery	418	190.6	25	28.1	22	18.9	133	60.7	39	18.1
Morgan	684	204.6	23	19.6	50	27.1	235	69.3	62	19.3
Newton	183	227.4	13	x	8	x	58	72.7	20	24.5
Noble	471	210.7	31	42.9	25	20.1	138	61.7	47	21.0
Ohio	69	200.4	x	x	5	x	23	64.4	5	x
Orange	256	217.0	19	x	17	x	88	74.4	19	x
Owen	276	222.9	5	x	16	x	112	87.8	27	23.3
Parke	225	221.3	10	x	11	x	80	75.0	26	25.1
Perry	227	202.0	11	x	14	x	74	66.2	25	22.3
Pike	151	189.4	7	x	6	x	46	55.9	17	x
Porter	1,507	192.5	68	25.7	107	24.0	432	55.0	151	19.2
Posey	271	192.1	20	38.1	14	x	81	56.8	24	17.4
Pulaski	187	218.5	11	x	20	42.0	49	58.3	28	32.8
Putnam	392	205.9	16	x	34	32.2	141	73.7	40	21.3
Randolph	352	211.0	18	x	24	28.1	110	65.8	31	18.5
Ripley	326	210.1	12	x	23	25.5	104	67.0	39	24.8
Rush	219	205.4	9	x	13	x	79	73.1	18	x
Scott	308	265.7	15	x	18	x	107	89.4	32	28.1
Shelby	460	197.2	19	x	29	22.6	139	59.9	43	18.9
Spencer	216	187.2	11	x	14	x	71	60.6	24	19.9
St. Joseph	2,730	189.0	159	28.1	179	21.3	785	55.2	256	17.7
Starke	325	234.2	16	x	29	39.2	119	84.7	29	20.9
Steuben	361	201.8	19	x	21	20.7	93	50.2	30	16.7
Sullivan	273	229.4	8	x	23	32.7	82	68.7	27	23.2
Switzerland	104	204.6	x	x	x	x	34	64.9	15	x
Tippecanoe	1,174	188.6	49	21.1	69	19.3	379	62.5	93	14.9
Tipton	180	184.3	12	x	12	x	55	58.4	18	x
Union	90	217.8	5	x	x	x	27	65.0	14	x
Vanderburgh	2,103	206.0	79	20.8	128	21.9	684	67.5	186	17.9
Vermillion	200	194.1	9	x	12	x	65	65.5	28	25.3
Vigo	1,204	207.6	44	21.4	92	26.8	394	69.9	127	21.0
Wabash	376	166.3	17	x	19	x	109	50.5	32	13.6
Warren	75	150.3	x	x	5	x	27	53.4	9	x
Warrick	547	188.2	31	31.8	36	21.0	170	57.2	57	20.0
Washington	292	205.4	22	40.8	12	x	97	68.5	28	18.8
Wayne	964	220.7	52	29.4	65	27.3	328	76.0	96	21.0
Wells	283	173.9	15	x	19	x	72	44.4	30	18.4
White	326	211.4	16	x	19	x	118	76.6	31	20.1
Whitley	344	196.4	20	28.7	23	21.8	104	59.5	39	23.1

*Rates are per 100,000 people and age-adjusted to the 2000 U.S. Standard Population

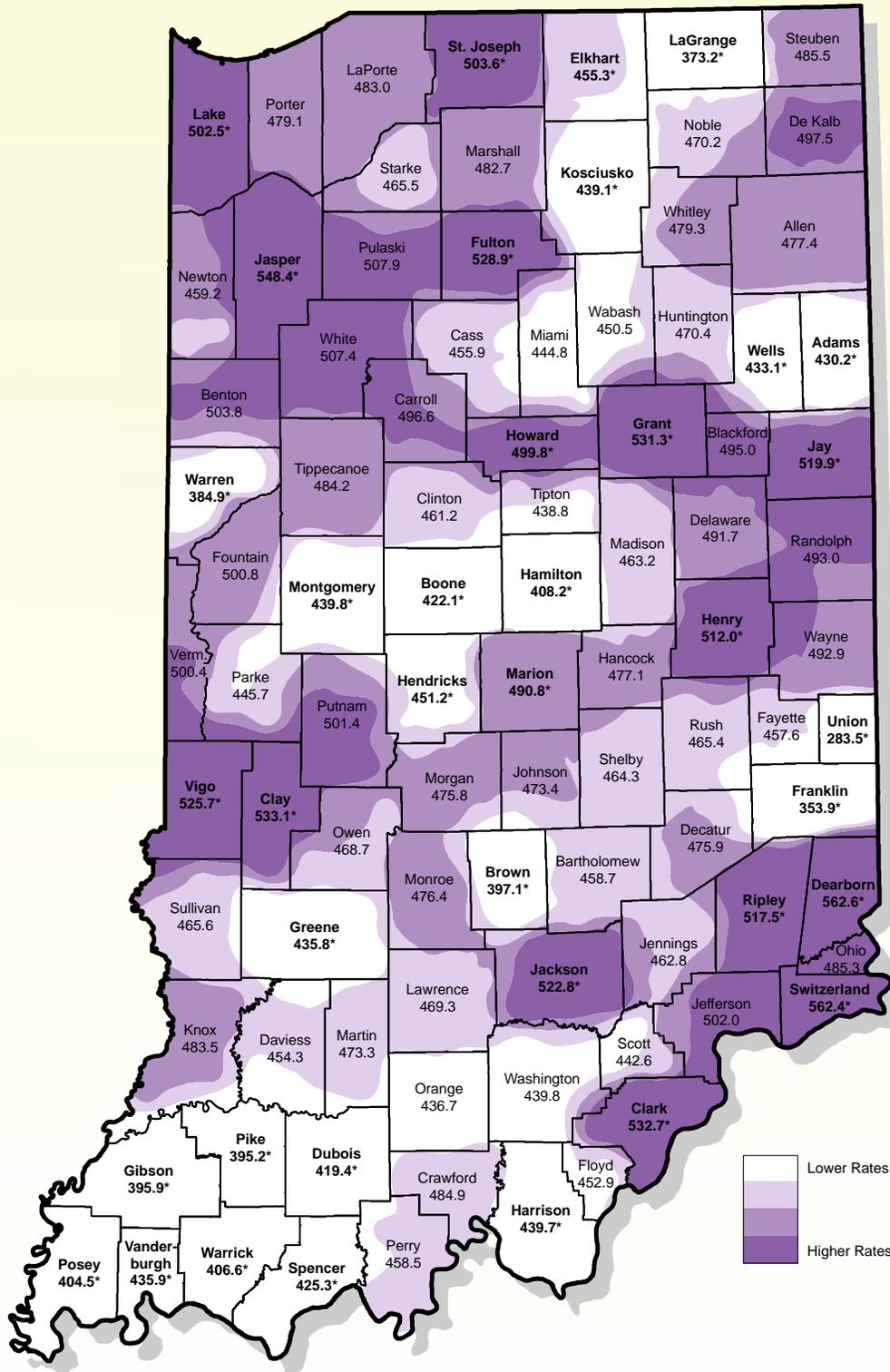
[†]“↑↓” symbols denote whether the county’s rate is significantly different than the Indiana rate based on the 95% confidence interval overlap method (see Page 4 for description). Because of limitations of this method, some of the counties without ↑↓ symbols could still have significantly different rates than the state.

“x” Rate and comparison to state rate is suppressed if fewer than 20 deaths occurred because rate is considered unstable; counts <5 are suppressed to maintain confidentiality.

Source: Indiana State Cancer Registry

Common Questions about Cancer

Map 1. Incidence Rates for All Cancers Combined by County—Indiana, 2004–2008



*Significantly different (higher or lower) than state rate ($P < .05$)

Technical note: This map presents age-adjusted county incidence rates using a smoothed interpolated surface and is intended to provide a generalized depiction of rate variability throughout the state.

Source: Indiana State Cancer Registry

Breast Cancer



What is the Impact on Hoosiers?

Table 4. Burden of Invasive Female* Breast Cancer—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 females [†] (2004–2008)	Number of cases (2008)	Rate per 100,000 females [†] (2008)
Indiana Incidence	4,102	116.0	4,236	116.6
Indiana Deaths	884	23.8	917	23.9

*Fewer than 40 cases of breast cancer occur among Indiana males each year. The annual incidence rate (typically around 1.0 case per 100,000 males) remained stable during 1999–2008. †Age-adjusted
Source: Indiana State Cancer Registry

Breast Cancer

Bottom Line

Breast cancer is the second leading cause of cancer death and, excluding skin cancers, the most frequently diagnosed cancer among U.S. females, affecting 1 in 8.¹ An estimated 230,480 new cases of invasive breast cancer and 39,520 breast cancer-related deaths occurred among U.S. females in 2011.¹ African American females are at increased risk for poor outcomes relating to breast cancer, in part, because they are more often diagnosed at a younger age, at a later stage of disease, and with more aggressive forms of breast cancer.² Beginning at the age of 40, screening mammograms are recommended yearly for females and are shown to significantly increase survival rates. Breast cancer is rare among males, as approximately 2,000 cases occurred among U.S. males in 2011.² However, because males are prone to ignoring warning signs, they are often diagnosed at later stages and have poorer prognoses.

Who Gets Breast Cancer?

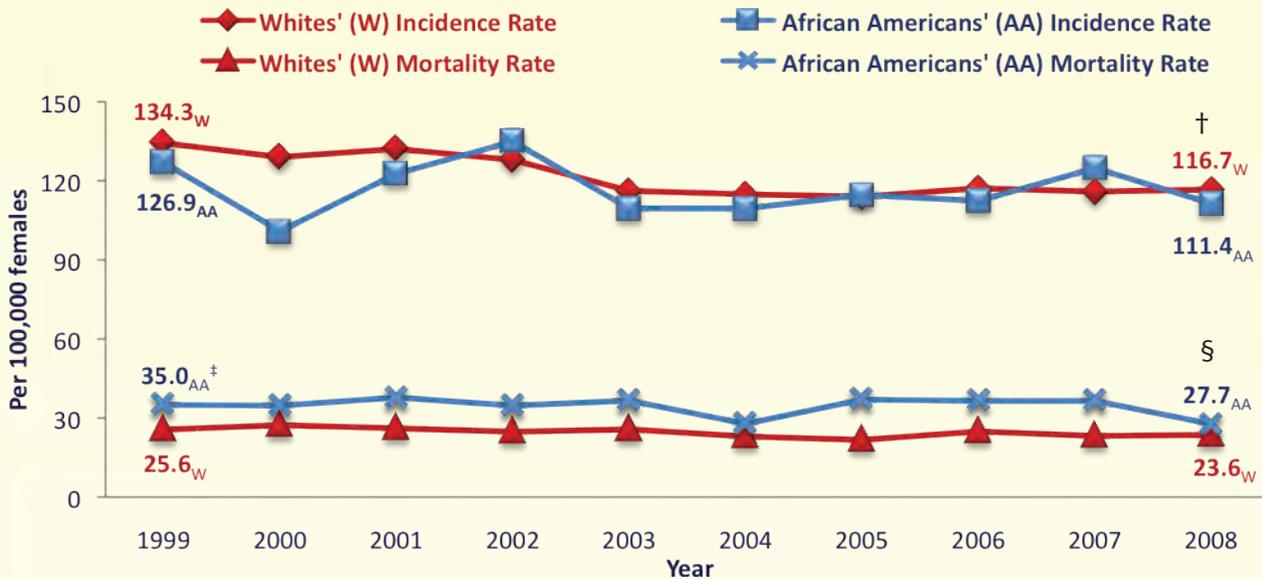
Sex and age are the two greatest risk factors for developing breast cancer. Females have a much greater risk of developing breast cancer than do males (>99% of Indiana cases occur among females) and that risk increases with age. Overall, in Indiana, the breast cancer incidence and mortality rates have decreased from 1999 to 2008 [Figure 10].

Some additional risk factors include:

- **Genetics.** Females who have two or more first degree relatives who have been diagnosed with breast cancer before the onset of menopause have increased risk. Additionally, breast cancer risk increases if a female has a family member who carries the BRCA 1 or 2 genes, which account for 5–10% of breast cancer cases.¹
- **Race.** In Indiana, during 2004–2008, the breast cancer incidence rates for African American and white females was similar (114.6 versus 115.7 cases per 100,000 females, respectively), but the mortality rate for African American females was 48% higher than for whites (33.1 versus 23.3 deaths per 100,000 females). This increased risk can partially be attributed to African American females being diagnosed with more aggressive forms of breast cancer or at later stages [Figure 11].²
- **Estrogen.** Females who started menstruation before age 12 or menopause after age 55 might be at increased risk as a result of a higher lifetime exposure to estrogen.²
- **Pregnancy and breast feeding history.** There are studies that show that females who have not had children, had their first child after age 30, or have not breastfed might have an increased risk of developing breast cancer.¹
- **History of hormone replacement therapy (HRT).** Using HRT can increase a female's risk of developing and dying from breast cancer. This risk can be increased after just two years of using HRT.² Females should talk with their doctor about the risks and benefits of using HRT.
- **Certain medical findings.** High breast tissue density, high bone mineral density, and biopsy-confirmed hyperplasia increase females' risk for developing breast cancer.¹
- **Alcohol intake.** Having two or more alcoholic drinks a day increases female breast cancer risk by 21%.³
- **Weight and exercise.** Gaining weight after age 18 and being overweight, especially post menopause, can increase your risk of developing breast cancer. The more body fat a woman has the higher her estrogen levels typically are, increasing her risk of developing breast cancer.² According to the *2008 Physical Activity Guidelines for Americans* (www.cdc.gov/physicalactivity/everyone/guidelines/index.html), adults should perform 150 minutes of moderate-intensity aerobic activity (i.e., brisk walking) every week and muscle-strengthening activities on two or more days a week that work all major muscle groups (i.e., legs, hips, back, abdomen, chest, shoulders, and arms).

Breast Cancer

Figure 10. Female Breast Cancer Incidence and Mortality (Death) Rates Trends by Race*—Indiana, 1999–2008



*Age-adjusted

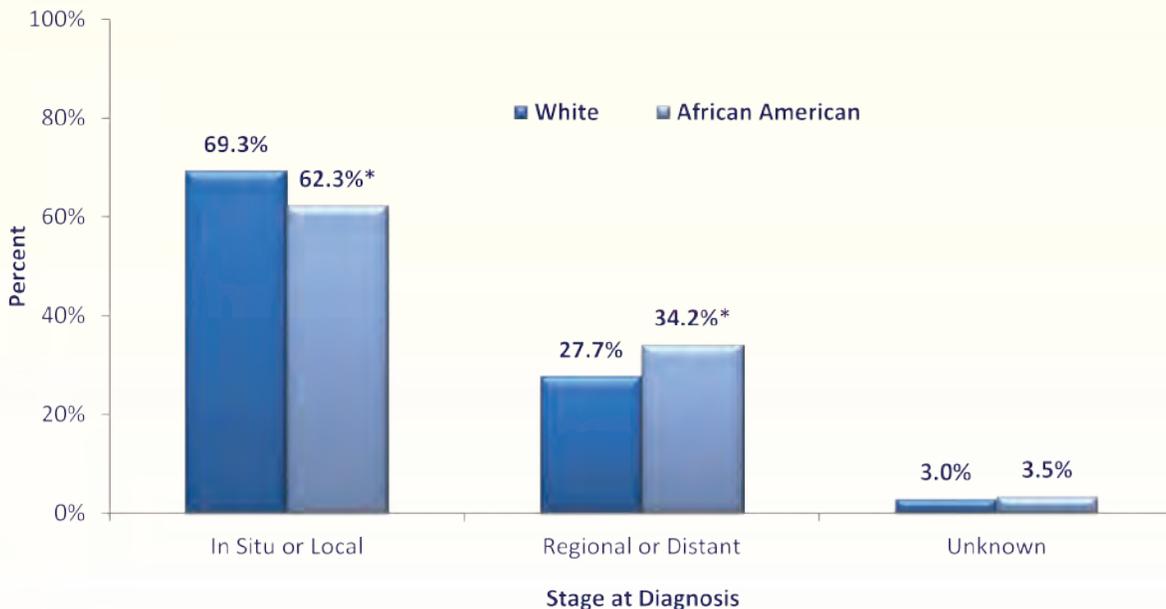
†Overall, the breast cancer incidence rate among all Indiana females was significantly lower ($P < .05$) in 2008 compared to 1999. However, statistical significance was not found when looking at the changes among each race between those years.

#Rate among African Americans was significantly higher than rate among whites ($P < .05$)

§Breast cancer mortality rate decreased significantly ($P < .05$) for both white and African American females and both races combined when comparing 1999 to 2008

Source: Indiana State Cancer Registry

Figure 11. Percent of Female Breast Cancer Cases by Stage of Diagnosis and Race—Indiana, 1999–2008



*Proportion of cases diagnosed in the regional or distant stage compared to the local stage was significantly higher ($P < .05$) among African American females than among white females

Source: Indiana State Cancer Registry

Breast Cancer

Can Breast Cancer Be Detected Early?—See the “Be Aware” box for additional information.

Yes! Females should have frequent conversations with their health care provider about their risks for breast cancer and how often they should be screened. In general, females should follow these recommendations:

- **Breast Self Awareness & Breast Self Exams.** Women in their 20s should be aware of the normal look and feel of their breasts, so that they can identify potentially dangerous changes.
- **Clinical Breast Exams.** Women in their 20s and 30s should have a clinical breast exam by a health care professional every three years. Women in their 40s should have yearly clinical breast exams.
- **Annual Screening Mammograms.** Women, beginning at the age of 40, should have yearly screening mammograms, which help detect cancers before a lump can be felt.

What Factors Influence Breast Cancer Survival?

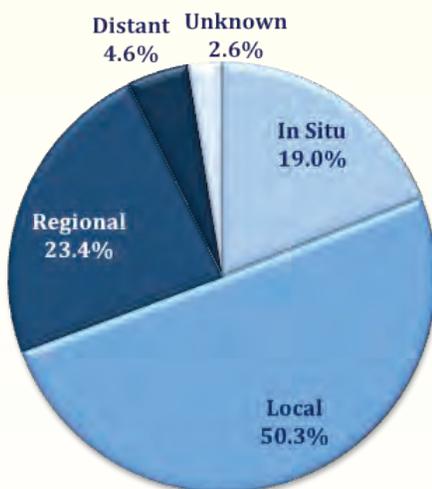
Staging of breast cancer takes into account the number of lymph nodes involved and whether the cancer has moved to a secondary location [Figure 12]. When breast cancer is detected early before it is able to be felt, the five-year survival rate is 98%.²

There are multiple treatment options available for breast cancer patients. *Mastectomies* are the complete surgical removal of the breast, while *lumpectomies* are the removal of only the cancerous area of the breast. *Local radiation* can be used to treat the tumor without affecting the rest of the body, or *systemic drugs*, which include chemotherapy, hormone therapy and targeted therapy, can be given orally or intravenously that reach cancer cells anywhere in the body.

Be Aware!—Common Signs and Symptoms of Breast Cancer

- Lumps, hard knots, or thickening
- Swelling, warmth, redness, or darkening
- Pulling in of the nipple or other parts of the breast
- Change in size or shape
- Nipple discharge that starts suddenly
- Dimpling or puckering of the skin
- Itchy, scaly sore, or rash on the nipple
- New pain in one spot that doesn't go away

Figure 12. Percent of Female Breast Cancer Cases Diagnosed During Each Stage*—Indiana, 2004–2008



*Includes all in situ and invasive cases

During 2004–2008, of the 25,320 female Indiana residents who received a diagnosis of in situ or invasive breast cancer, 17,555 (69.3%) were diagnosed in the in situ or local stage, 7,108 (28.1%) were diagnosed in the regional or distant stage, and 657 (2.6%) had unknown staging.

Source: Indiana State Cancer Registry

References

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Cervical Cancer



What is the Impact on Hoosiers?

Table 5. Burden of Invasive Cervical Cancer—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 females* (2004–2008)	Number of cases (2008)	Rate per 100,000 females* (2008)
Indiana Incidence	258	7.9	242	7.2
Indiana Deaths	85	2.5	71	2.0

*Age-adjusted

Source: Indiana State Cancer Registry

Cervical Cancer

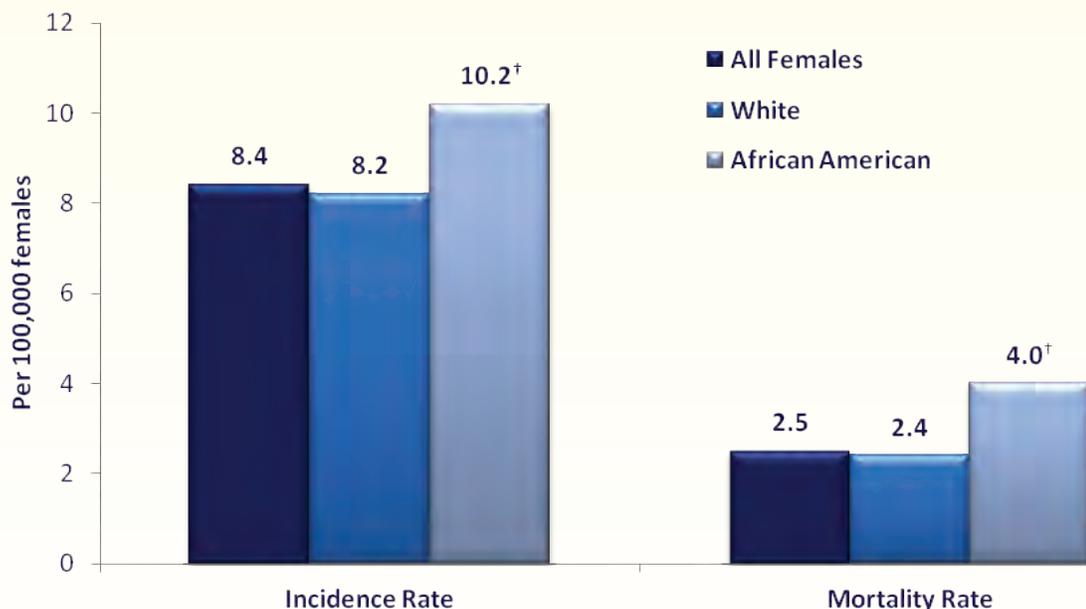
Bottom Line

Cervical cancer is almost 100% preventable through regular routine screening, avoidance of controllable risk factors, and vaccination against the human papillomavirus (HPV). In the United States, an estimated 12,710 cases of invasive cervical cancer cases were diagnosed in 2011 and 4,290 deaths occurred.¹ Mainly because of improved screening, incidence rates have decreased over most of the past several decades among both white and African American females.¹ In Indiana, approximately 250 new cases of cervical cancer and 85 cervical cancer-related deaths occur annually among females.

Who Gets Cervical Cancer?

- Infection with HPV is the single greatest risk factor for cervical cancer. HPV is passed person-to-person through sexual contact. Delaying first sexual activity, limiting sexual partners, using condoms during sex, and being vaccinated can reduce the risk of contracting HPV. The CDC recommends that all girls and young women ages 11 through 26 should get all three doses of either brand of the HPV vaccine (Cervarix or Gardasil) to protect against cervical cancer. Gardasil is also licensed, safe, and effective for males ages 9 through 26.²
- Indiana females are most often diagnosed with cervical cancer during their middle adult years. During 2008, 83% of cervical cancer cases occurred among Indiana females less than age 65, including 34% of cases occurring among women ages 25 to 44 and 47% among women ages 45 to 64.
- During 1999–2008, in Indiana, African American females, compared to white females, had a 24% higher cervical cancer incidence rate (10.2 versus 8.2 cases per 100,000 females) and a 67% higher mortality rate (4.0 versus 2.4 deaths per 100,000 females) [Figure 13]. While many factors are probably impacting this disparity, one apparent issue is that African American females tend to be diagnosed more often after the cervical cancer is no longer localized [Figure 14].

Figure 13. Cervical Cancer Incidence and Mortality Rates by Race*—Indiana, 1999–2008



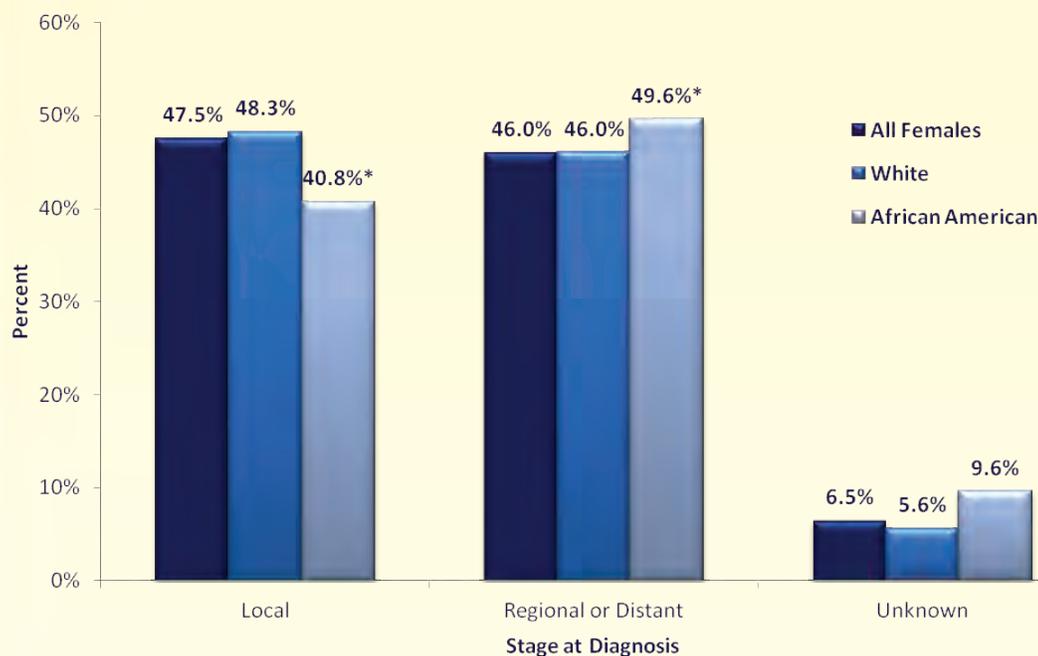
*Age-adjusted

[†]Rate among African American females is significantly higher ($P < .05$) than the rate among white females

Source: Indiana State Cancer Registry

Cervical Cancer

Figure 14. Percent of Cervical Cancer Cases by Stage of Diagnosis and Race—Indiana, 1999–2008



*Proportion of cases diagnosed in the regional or distant stage compared to the local stage is significantly higher ($P < .05$) among African American females than among white females

Source: Indiana State Cancer Registry

Can Cervical Cancer Be Detected Early?

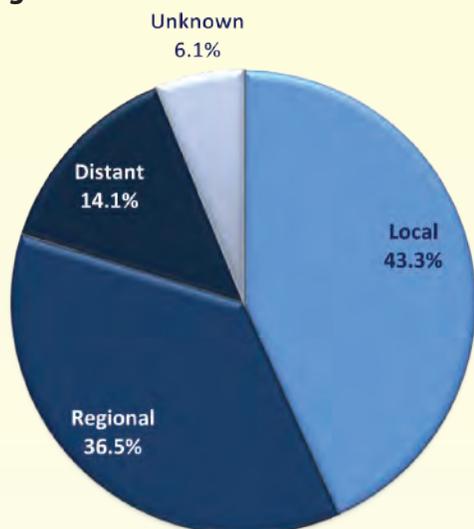
- In the United States, the cervical cancer death rate declined by almost 70% between 1955 and 1992, mainly because of the effectiveness of Pap smear screening.³ Pap screenings allow for early identification and treatment of abnormal cervical cells before they become cancerous. This is important, because, typically, the pre-cancerous conditions do not cause pain or other symptoms and are only detected through Pap screenings.
- According to the American Cancer Society, all females should begin cervical cancer screening about **three years after they begin having vaginal intercourse, but no later than age 21**. Screening should be done every year with the regular Pap test or every two years using the newer liquid-based Pap test. Women, ages 30 or older, who have had three normal test results in a row may switch to being screened every two or three years.³
- In 2010, 80.2% of Indiana women age 18 and older reported having had a Pap screen during the past three years. This rate was similar for all racial and ethnic groups.

What Factors Influence Cervical Cancer Survival?

- Figure 15 provides the percent of Indiana females diagnosed during each stage of cervical cancer during 2004–2008.
- During 1999–2006, in the United States, 49% of cervical cancer cases were diagnosed during the local stage and those females' five-year survival rate was 91%. In comparison, the five-year survival rate for all stages combined was 71%.¹
- During 1999–2008, in Indiana, the incidence of cervical cancer has decreased, but the mortality rate has remained constant [Figure 16]. There is no clear reason for this finding; however, it might be because, while routine screening is catching most cases of cervical cancer prior to it becoming invasive, there still remains a consistent group of females who are not being screened and are diagnosed after the cancer has spread. These females are at increased risk for poor health outcomes.

Cervical Cancer

Figure 15. Percent of Cervical Cancer Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 1,291 Indiana residents who received a diagnosis of invasive cervical cancer, 559 (43.3%) were diagnosed in the local stage, 653 (50.6%) were diagnosed in the regional or distant stage, and 79 (6.1%) had unknown staging.

*Only includes invasive cases; *in situ* cases are not reportable
Source: Indiana State Cancer Registry

Figure 16. Changes in Cervical Cancer Incidence and Mortality (Death) Rates among Indiana Females between the Five-year Periods of 1999–2003 and 2004–2008*



*Age-adjusted
[†]Incidence rate during 2004–2008 was significantly lower ($P < .05$) than the rate during 1999–2003
Source: Indiana State Cancer Registry

Take Charge!—What You Can Do to Help Prevent Cervical Cancer

- Get vaccinated—Protecting yourself from HPV decreases your risk for cervical and other cancers
- Practice safe sex
- Be smoke-free—Visit: www.in.gov/quitline for free smoking cessation assistance
- Have routine Pap screenings
- Ask for an HPV test with your Pap smear if you are 30 or older
- Watch for abnormal vaginal discharge and bleeding

References

- ¹ American Cancer Society. *Cancer Facts & Figures 2011*. Atlanta, GA. 2011. Accessed at www.cancer.org/Research/CancerFactsFigures/index on Nov 23, 2011.
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- ⁴ Indiana Behavioral Risk Factor Surveillance System. Accessed at www.in.gov/isdh/25194.htm on Nov 23, 2011.

Childhood Cancer



What is the Impact on Hoosiers?

Table 6. Burden of Cancer among Children Ages 0–19 Years—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 children* (2004–2008)	Number of cases (2008)	Rate per 100,000 children* (2008)
Indiana Incidence	344	19.6	378	21.2
Indiana Deaths	47	2.6	42	2.4

*Age-specific

Source: Indiana State Cancer Registry

Childhood Cancer

Bottom Line

The occurrence of cancer during childhood is very rare, representing less than 1% of all new cancer diagnoses.¹ Although uncommon, cancer is the second leading cause of death among children, exceeded only by accidents.² Annually, approximately 350 cases of cancer and 50 cancer-related deaths occur among Indiana children ages 0–19. In general, childhood cancer trends in Indiana are similar to what is seen throughout the United States. However, the Indiana childhood cancer incidence rate during 2004–2008 appears to be slightly higher than the U.S. rate. For most cases of childhood cancer the cause is unknown.

The incidence of cancer among Indiana children ages 0–19 during 2004–2008 (19.6 cases per 100,000 children) was slightly higher than the national rate of 17.1 cases per 100,000 children.³ However, there appears to be some underreporting of the U.S. data, as the source used to obtain the U.S. rate listed the Indiana rate as 17.5, not 19.6, cases per 100,000 children. During the same period, the Indiana and U.S. childhood cancer mortality rates were both 2.6 deaths per 100,000 children.³

Using the International Classification of Childhood Cancer system, the most common cancer types diagnosed among Indiana children ages 0–14 were leukemias and brain tumors. In children ages 15–19, the most common cancer types were lymphomas and a group of cancers that include epithelial cancers and melanoma.

Who Most Often Gets Childhood Cancer?

- **White children.** During 2004–2008, in Indiana, white children had a significantly higher incidence rate than African American children (19.9 versus 14.0 cases per 100,000 children) [Figure 17]. Among white children, boys had a slightly higher rate than girls (20.3 versus 19.5 cases per 100,000 children). These differences in rates between races and sexes are also seen nationally. The reasons for the differences are not known.⁴
- **Children born with certain genetic diseases.** Children with Down Syndrome, neurofibromatosis, Beckwith Wiedemann Syndrome, Li-Fraumeni Syndrome, Bloom's Syndrome, ataxia-telangiectasia, monosomy 7, tuberous sclerosis, congenital immunodeficiency disorders, hemihypertrophy, Gardner's Syndrome, and familial adenomatous polyposis are at greater risk for developing various types of childhood cancer.²
- **Boys born with undescended testes.** They are at greater risk for testicular cancer.²
- **Additional risk factors include:**
 - Radiation exposure, especially prenatally (includes x-rays)
 - Tanning bed or sun exposure increases the risk of melanoma, one of the more common cancers among teenagers
 - Prior chemotherapy with an alkylating agent or epipodophyllotoxin
 - Infection with the Epstein-Barr virus is associated with certain types of lymphoma
 - Insecticide exposure, especially prenatally, is associated with leukemia

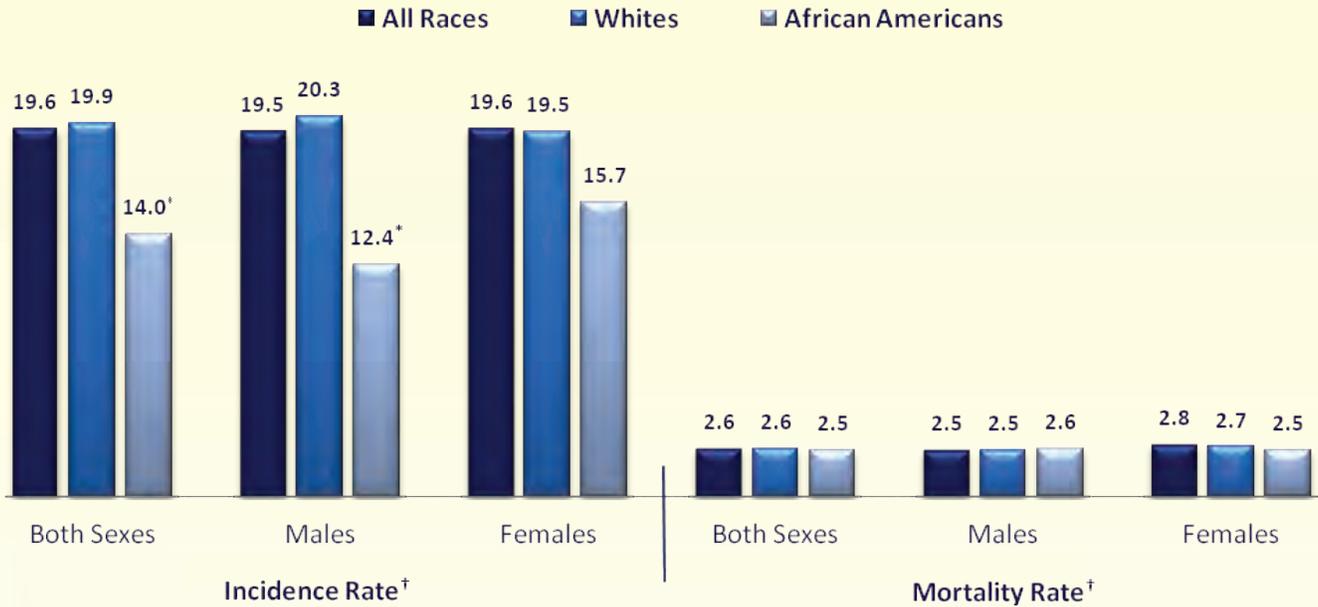
Be Aware!—Common Signs and Symptoms of Childhood Cancer

Childhood cancer is rare, but your child should be examined by a health care provider if you notice any of these potential cancer-related signs and symptoms:⁵

- Unusual mass or swelling
- Unexplained paleness or loss of energy
- Sudden tendency to bruise
- Persistent, localized pain
- Prolonged, unexplained fever or illness
- Frequent headaches, often with vomiting
- Sudden eye or vision changes
- Excessive, rapid weight loss

Childhood Cancer

Figure 17. Incidence and Mortality (Death) Rates among Children Ages 0–19 Years by Sex and Race — Indiana, 2004–2008



*Rate is significantly lower ($P < .05$) among African Americans than among whites

†Age-specific rate per 100,000 children

Source: Indiana State Cancer Registry

Can Childhood Cancer Be Detected Early?—see “Be Aware” box for additional information

Early symptoms are usually nonspecific. Parents should ensure that children have regular medical checkups and should be aware of any unusual symptoms that persist.

What Factors Influence Childhood Cancer Survival?

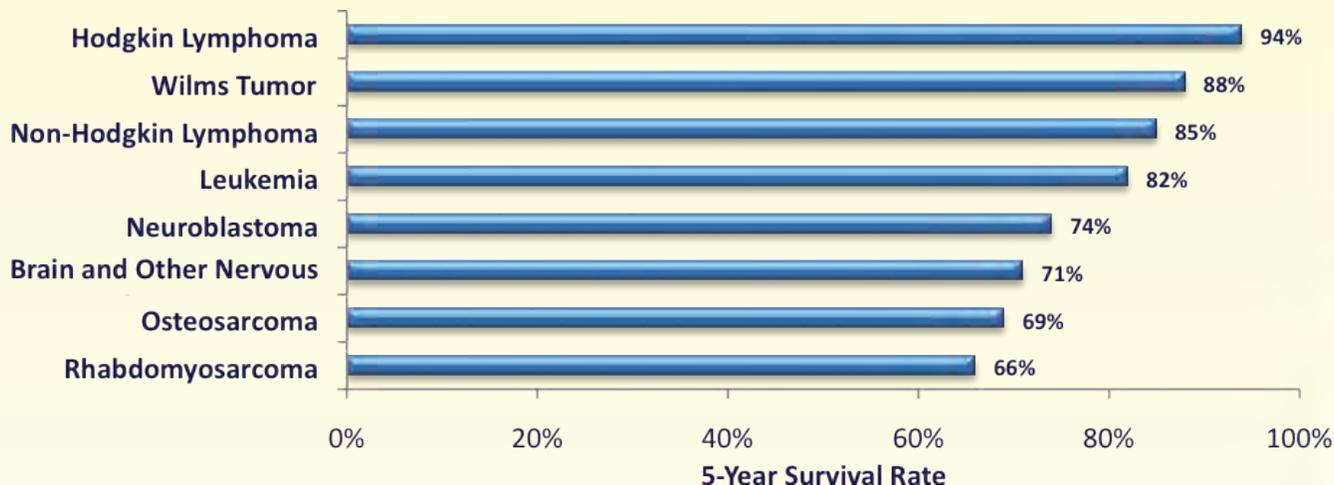
Overall, the U.S. childhood cancer mortality rate has dropped 55% since 1975 because of improved treatment options.³ The sooner a cancer is diagnosed and treated, the better. Childhood cancers can be treated by a combination of therapies (surgery, radiation, and chemotherapy) chosen based on the type and stage of cancer. Treatment is coordinated by a team of experts, including pediatric oncologists, pediatric nurses, social workers, psychologists, and others. Because these cancers are uncommon, outcomes are more successful when treatment is managed by a children’s cancer center.¹

For all childhood cancers combined, the five-year relative survival has improved markedly over the past 30 years because of improved treatment options, from less than 50% before the 1970s to 80% today. However, rates vary considerably depending on cancer type; moreover, within the major categories, cancer subtypes might vary in response to treatment or survival characteristics [Figure 18].¹

Survivors of childhood cancer might experience treatment-related side effects. Information for survivors of childhood cancer is available at www.survivorshipguidelines.org and www.ccss.stjude.org.

Childhood Cancer

Figure 18. Five-year Survival Rates for the Most Common Childhood Cancers—United States, 1999–2005



Source: American Cancer Society. *Childhood Cancer*. Atlanta, GA. 2011. Accessed at www.cancer.org/acs/groups/cid/documents/webcontent/002287-pdf.pdf on Dec 16, 2011.

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- 5 American Cancer Society. *Childhood Cancer*. Atlanta, GA. 2011. Accessed at www.cancer.org/acs/groups/cid/documents/webcontent/002287-pdf.pdf on Dec 16, 2011.

Colon & Rectum



What is the Impact on Hoosiers?

Table 7. Burden of Invasive Colon and Rectum Cancer—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 people* (2004–2008)	Number of cases (2008)	Rate per 100,000 people* (2008)
Indiana Incidence	3,348	51.4	3,244	47.9
Indiana Deaths	1,212	18.5	1,190	17.6

*Age-adjusted

Source: Indiana State Cancer Registry

Colon & Rectum

Bottom Line

Colorectal cancer is the third most commonly diagnosed cancer and cause of cancer-related death among both males and females in the United States and Indiana. In 2011, the American Cancer Society estimated that 3,290 Hoosiers were diagnosed with colorectal cancer and 1,090 died because of the disease.¹ The chances of developing colorectal cancer at some point in one's life are 1 in 19 for females and 1 in 20 for males.¹ In Indiana, African Americans have higher colorectal cancer incidence and mortality than whites and males have higher rates than females.

Who Gets Colon and Rectum Cancer?

Sex and age are the two greatest risk factors for developing colorectal cancer. During 2004–2008, colorectal cancer incidence rates were 36% higher among Indiana males than females (60.5 versus 44.5 cases per 100,000 people) [Figure 19]. Additionally, during 2008, 92% of cases were diagnosed among Indiana residents ages 50 and older.

Some additional risk factors for colorectal cancer include:

- **Personal or family history.** Risk is increased by having certain inherited genetic conditions (e.g., Lynch syndrome, also known as hereditary nonpolyposis colorectal cancer, and familial adenomatous polyposis [FAP]), a personal or family history of colorectal cancer or polyps, or a personal history of chronic inflammatory bowel disease.²
- **Race.** In Indiana, during 2004–2008, African Americans, compared to whites, had a 21% higher incidence rate (60.8 versus 50.2 cases per 100,000 people) and a 37% higher mortality rate (25.0 versus 18.2 deaths per 100,000 people).
- **Diabetes.** Studies have also found that individuals with type 2 diabetes are at higher risk.²
- **Modifiable risk factors.** Obesity, physical inactivity, a diet high in red or processed meat, alcohol consumption, long-term smoking, and possibly inadequate intake of fruits and vegetables increases a person's risk.²

Additionally, there are some factors that help prevent colorectal cancer. Consumption of milk and calcium and higher blood levels of vitamin D appear to decrease risk.² Moreover, studies suggest that regular use of non-steroidal anti-inflammatory drugs, such as aspirin, and menopausal hormone therapy also reduce colorectal cancer risk. However, these drugs and therapies are not recommended for the prevention of colorectal cancer because they can have serious adverse health effects.²

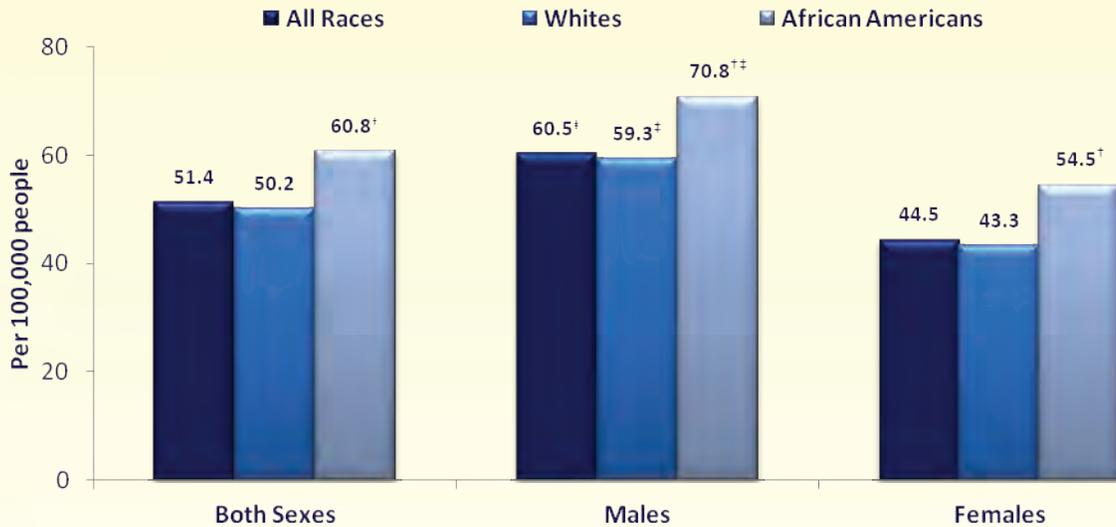
Be Aware! Common Signs and Symptoms of Colorectal Cancer

- **Early Stage: No symptoms**
- **Late Stage:**
 - Rectal bleeding
 - Blood in stool
 - Change in bowel habits
 - Cramping pain in lower abdomen
 - Weakness
 - Extreme fatigue

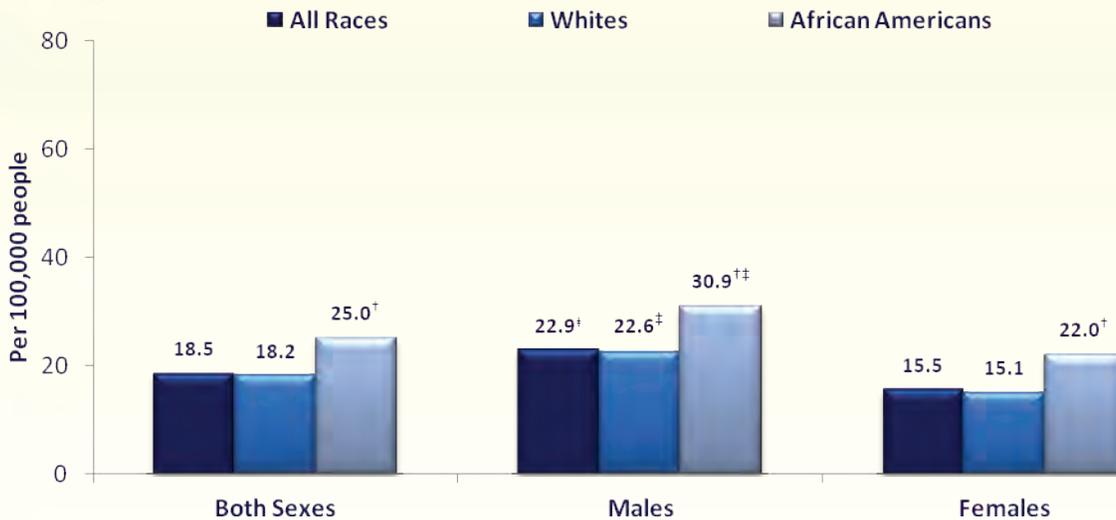
Colon & Rectum

Figure 19. Colorectal Cancer Incidence (a) and Mortality (Death) (b) Rates by Sex and Race*—Indiana, 2004–2008

a. Incidence



b. Mortality



*Age-adjusted

[†]Rate among African Americans is significantly higher ($P < .05$) than rate among whites

[‡]Rate among males is significantly higher ($P < .05$) than rate among females

Source: Indiana State Cancer Registry

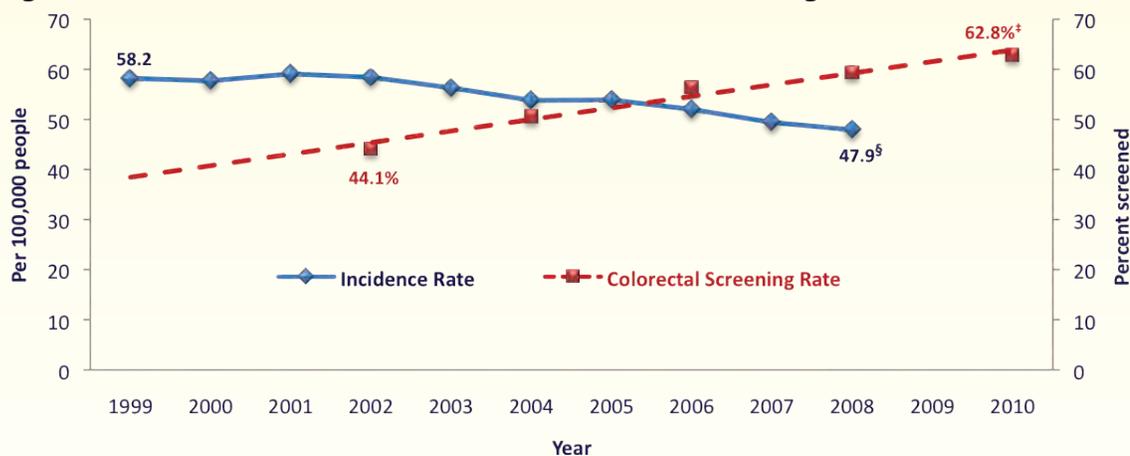
Can Colon and Rectum Cancer Be Detected Early?—see the “Be Aware” box for additional information

- Colorectal cancer incidence rates have been decreasing for most of the past two decades in the United States (from 66.3 cases per 100,000 people in 1985 to 45.3 in 2007).² The decline accelerated from 1998 to 2007 (2.9% per year among males and 2.2% per year among females), which has largely been attributed to increases in the use of colorectal cancer screening tests that allow the detection and removal of symptomless colorectal polyps before they progress to cancer.² A similar trend has been seen in Indiana [Figure 20].

Colon & Rectum

- Advanced disease might cause rectal bleeding, blood in the stool, a change in bowel habits, and cramping pain in the lower abdomen. In some cases, blood loss from the cancer leads to anemia (low red blood cells), causing symptoms such as weakness and excessive fatigue.
- Beginning at age 50, both men and women with average risk for colorectal cancer should follow one of these testing schedules:
 - **Tests that find polyps and cancer**
 - Colonoscopy every ten years; or a
 - Flexible sigmoidoscopy, double-contrast barium enema, or CT colonography every five years. If any of these three tests are positive a colonoscopy should be done.
 - **Tests that primarily find cancer**
 - Yearly fecal occult blood test or fecal immunochemical test (FIT) or a stool DNA test (undetermined interval). If any of these three tests are positive a colonoscopy should be done.
 - Individuals who have an increased risk of developing the disease should talk to their health care provider about whether earlier or more intensive screening is needed.
- In recent years, an increase in colorectal cancer incidence among younger adults has been identified in the United States. Therefore, timely evaluation of symptoms consistent with colorectal cancer in adults under age 50 is especially important.

Figure 20. Trends in Colorectal Cancer Incidence* and Screening Rates[†]—Indiana, 1999–2010



*Incidence rates are age-adjusted. Data are available through 2008

†Persons ages 50 and older who have ever had a sigmoidoscopy or colonoscopy. Starting in 2002, these data have been collected every two years; a trend line is provided.

‡Screening rate in 2010 is significantly higher ($P < .05$) than the rate in 2002

§Incidence rate in 2008 is significantly lower ($P < .05$) than the rate in 1999

Sources: Indiana State Cancer Registry (Incidence data); Indiana Behavioral Risk Factor Surveillance System (Screening data)

What Factors Influence Colorectal Cancer Survival?

- Nationally, mortality rates for colorectal cancer have declined in both males and females over the past two decades.² In Indiana, mortality rates decreased 24% from 1999 to 2008 (from 23.3 to 17.5 deaths per 100,000 people). This included a 24% decrease among males (from 27.7 to 21 deaths per 100,000 males) and a 26% decrease among females (from 20.5 to 15.2 deaths per 100,000 females).
- In the United States, the one- and five-year relative survival rates for persons with colorectal cancer are 83% and 65%, respectively.² When colorectal cancers are detected at the local stage the five-year survival rate is 90%. In Indiana, during 2004–2008, 39% of colorectal cancers were identified in the local stage [Figure 21]. If the cancer has spread regionally, the five-year survival rate drops to 70%. If distantly, the five-year survival rate is 12%.

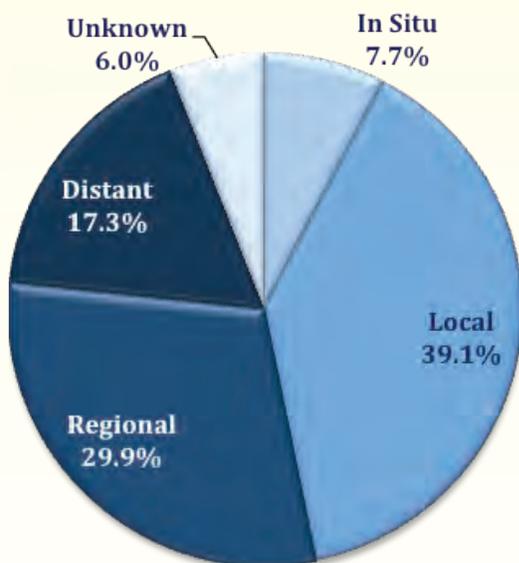
Colon & Rectum

- Surgery is the most common treatment for colorectal cancer. For cancers that have not spread, surgical removal might be curative. Chemotherapy alone, or in combination with radiation, is given before or after surgery to most patients whose cancer has deeply penetrated the bowel wall or spread to lymph nodes. Adjuvant chemotherapy (anticancer drugs in addition to surgery or radiation) for colon cancer in otherwise healthy patients ages 70 and older is equally effective as in younger patients; toxicity in older patients can be limited if certain drugs (e.g., oxaliplatin) are avoided. Three targeted monoclonal antibody therapies are approved to treat metastatic colorectal cancer. They block growth of blood vessels to the tumor or the effects of hormone-like factors that promote cancer cell growth.

Take Charge! What You Can Do to Help Prevent Colorectal Cancer

- Get screened regularly
- Maintain a healthy weight throughout life
- Adopt a physically active lifestyle
- Limit consumption of alcohol
- Consume a healthy diet that:
 - Emphasizes plant sources
 - Supports a healthy weight
 - Includes five or more servings of a variety of vegetables and fruit each day
 - Includes whole grains in preference to processed (refined) grains
 - Has minimal processed and red meats

Figure 21. Percent of Colon and Rectum Cancer Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 18,127 Indiana residents who received a diagnosis of in situ or invasive colorectal cancer, 8,480 (46.8%) were diagnosed in the in situ or local stage, 8,558 (47.2%) were diagnosed in the regional or distant stage, and 1,089 (6.0%) had unknown staging.

*Includes all in situ and invasive cases
Source: Indiana State Cancer Registry

References

- ¹ American Cancer Society. *Cancer Facts & Figures 2011*. Atlanta, GA. 2011. Accessed at www.cancer.org/Research/CancerFactsFigures/index on Nov 23, 2011.
- ² American Cancer Society. *Colorectal Cancer Facts & Figures 2011–2013*. Atlanta, GA. 2011. Accessed at www.cancer.org/Research/CancerFactsFigures/index on Dec 19, 2011.

Lung Cancer

What is the Impact on Hoosiers?

Table 8. Burden of Invasive Lung Cancer*—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 people [†] (2004–2008)	Number of cases (2008)	Rate per 100,000 people [†] (2008)
Indiana Incidence	5,183	80.0	5,240	78.0
Indiana Deaths	3,986	61.6	4,166	62.1

*Includes lung and bronchus cancers combined; †Age-adjusted

Source: Indiana State Cancer Registry

Lung Cancer

Bottom Line

Lung cancer is the leading cause of cancer deaths in the United States and Indiana, killing over 150,000 Americans and approximately 4,000 Indiana residents every year. If all tobacco smoking was stopped, the occurrence of lung cancer would decrease by an estimated 90%;¹ however, in Indiana, 21% of adults continue to smoke tobacco, placing them at great risk for developing lung and other types of cancer.²

Who Most Often Gets Lung Cancer?

- **Smokers.** Smoking accounts for 87% of lung cancer deaths and at least 30% of all cancer deaths. Lung cancer mortality rates are about 23 times higher for current male smokers and 13 times higher for current female smokers compared to people who have never smoked.³ Adult smoking rates among Hoosiers decreased from 26.9% in 2000 to 21.2% in 2010, leading to approximately 200,000 fewer smokers [Figure 22].² However, despite this historically low rate, just over 1 million adults in Indiana still smoke and Indiana's adult smoking rate remains among the highest in the nation (median adult smoking rate in the United States: 17.2% in 2010).⁴
- **Those exposed to secondhand smoke.** Each year, an estimated 50,000 American and 1,240 Hoosier nonsmokers die from exposure to secondhand smoke (smoke breathed in involuntarily by someone who is not smoking).³
- **Those exposed to other cancer-causing agents.** Exposure to asbestos, radon, arsenic, talc, vinyl chloride, coal products, and radioactive ores like uranium can increase people's risk for developing lung cancer, especially if they also smoke tobacco.
- **Males, especially African American males.** During 2004–2008, Indiana males, compared to females, had a 60% greater lung cancer incidence rate (102.3 versus 64.1 cases per 100,000 people) and a 75% greater mortality rate (82.4 versus 47 deaths per 100,000 people). This is mainly because a higher percentage of males have been smokers compared to females. In 2010, 23.3% of adult males and 19.3% of adult females reported being current smokers.² African American males, in Indiana, have approximately 17% greater incidence and 20% greater lung cancer mortality rates than do white males [Figure 23].

Be Aware! Common Signs and Symptoms of Lung Cancer

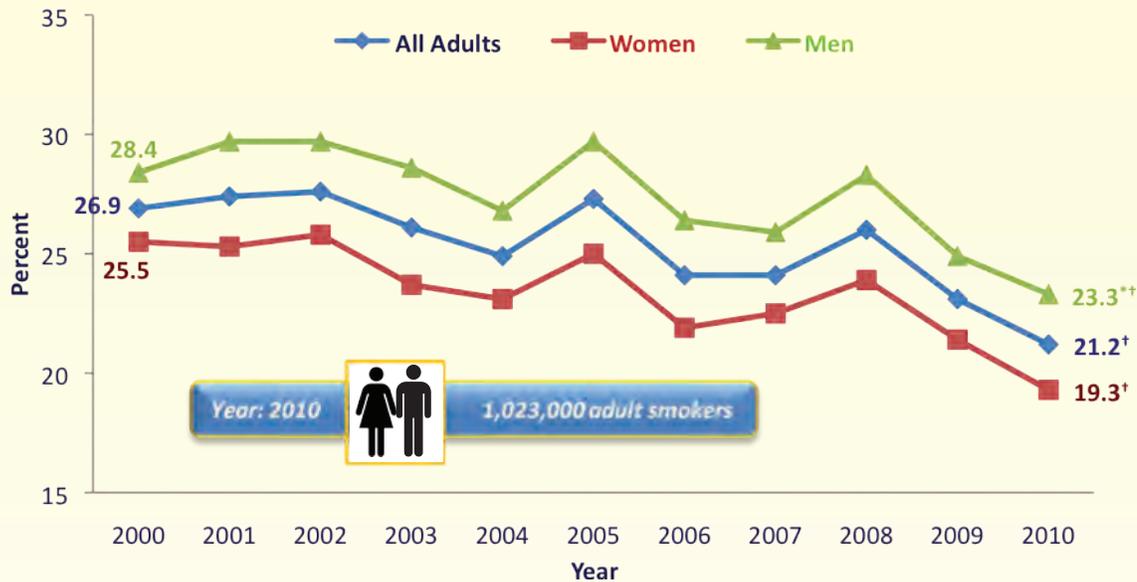
- Persistent cough
- Sputum streaked with blood
- Chest pain
- Voice changes
- Recurrent pneumonia or bronchitis

Take Charge!—What You Can Do to Help Prevent Lung Cancer

- Be smoke-free
 - Quitting tobacco smoking substantially decreases your risk of developing cancer and cardiovascular disease. Smokers who quit smoking, regardless of age, live longer than people who continue to smoke.³
 - Visit www.in.gov/quitline for free, evidence-based smoking cessation assistance
- Avoid all secondhand smoke exposure

Lung Cancer

Figure 22. Percent of Indiana Residents, Age 18 Years and Older, who Reported Being Current Smokers—Indiana, 2000–2010

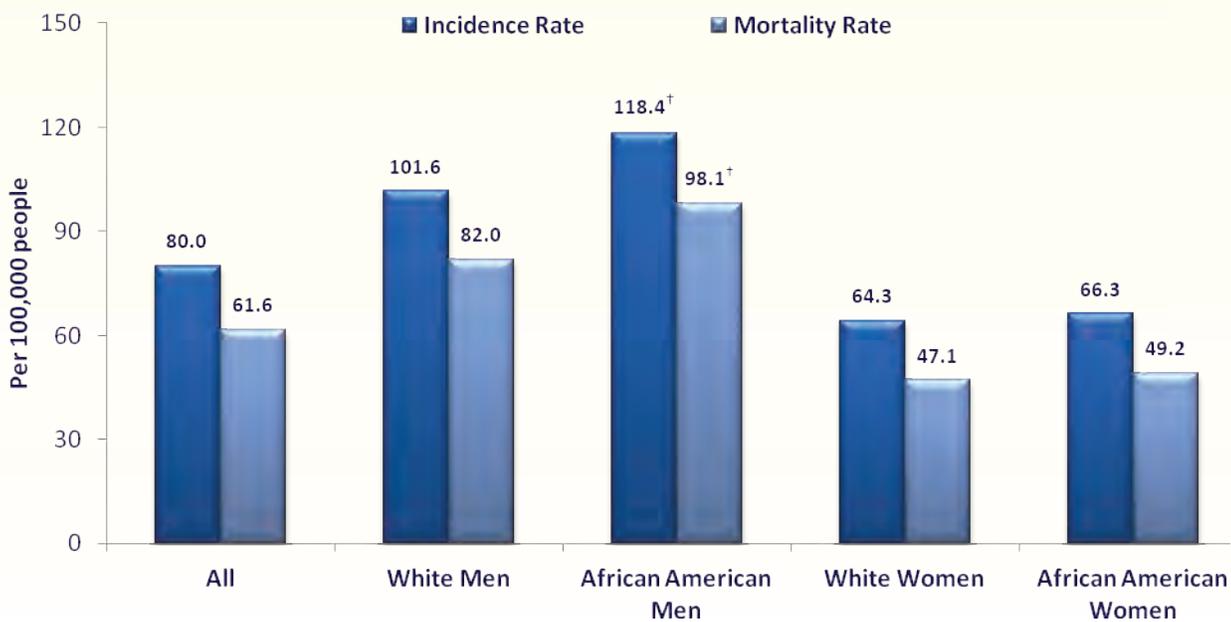


*Significantly higher ($P < .05$) compared to women in 2010

[†]Significantly lower ($P < .05$) compared to 2000

Source: Behavior Risk Factor Surveillance System

Figure 23. Lung Cancer Incidence and Mortality (Death) Rates by Race and Sex*—Indiana, 2004–2008



*Age-adjusted rates for lung and bronchus cancers combined

[†]Significantly elevated ($P < .05$) compared to white males and all females

Source: Indiana State Cancer Registry

Lung Cancer

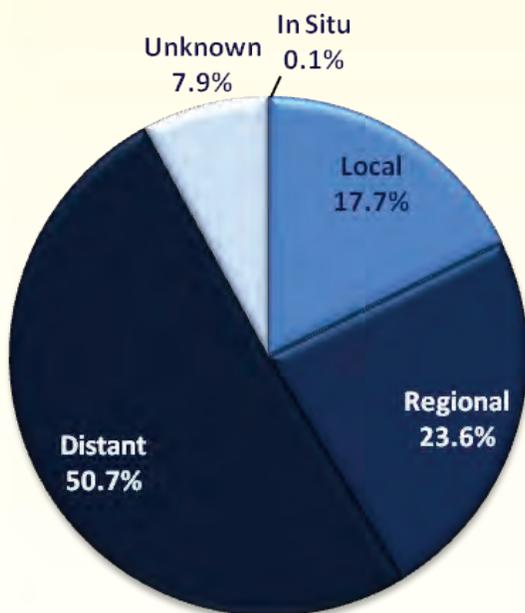
Can Lung Cancer Be Detected Early?—see the “Be Aware” box for additional information

- Early detection has not been shown to be effective in reducing mortality from lung cancer. Although recent advancements in diagnostic testing, such as low dose spiral computed tomography (spinal CT) scans and molecular markers in sputum, have shown more promising outcomes and are being evaluated further for possible risks and their effectiveness.

What Factors Influence Lung Cancer Survival?

- Lung cancer is often diagnosed at a later stage, which negatively impacts a person’s odds of survival. The five-year survival rate is highest (52%) if the lung cancer is diagnosed when it is confined entirely within the lung (i.e., localized);⁵ however, in Indiana, during 2004–2008, only 18% of lung cancers were diagnosed during this stage [Figure 24].
- The one-year relative survival for lung cancer increased from 35% during 1975–1979 to 42% during 2002–2005, largely because of improvements in surgical techniques and combined therapies. However, the five-year survival rate for all stages combined is currently only 16%. The five-year survival for small cell lung cancer (6%) is lower than that for non-small cell lung cancer (17%).⁶
- Treatment options are determined by the type (small cell or non-small cell) and stage of cancer and include surgery, radiation therapy, chemotherapy, and targeted therapies such as bevacizumab (Avastin) and erlotinib (Tarceva). For localized cancers, surgery is usually the treatment of choice. Because the disease has usually spread by the time it is discovered, radiation therapy and chemotherapy are often used, sometimes in combination with surgery.

Figure 24. Percent of Lung Cancer Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 25,928 Indiana residents who received a diagnosis of in situ or invasive lung cancer, 4,607 (17.8%) were diagnosed in the in situ or local stage, 19,267 (74.3%) were diagnosed in the regional or distant stage, and 2,054 (7.9%) had unknown staging.

*Includes invasive and in situ cases of lung and bronchus cancers combined
Source: Indiana State Cancer Registry

Take Charge!—What the Community Can Do to Help Prevent Lung Cancer

- Implement smoke-free air policies and higher taxes on tobacco products
- Sustain tobacco control program funding to help reduce smoking rates and lessen the burden of tobacco use on Indiana—annually, tobacco use costs Indiana over \$2 billion in health care costs, including approximately \$487 million in Medicaid payments alone
- Support the continued adoption of smoke-free workplaces—the United States Surgeon General has concluded that smoke-free workplace policies are the only effective way to eliminate exposure to secondhand smoke in the workplace and lead to less smoking among workers⁷
- Support health care provider outreach efforts that help decrease tobacco consumption and increase quit attempts

References

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- ² Indiana Behavioral Risk Factor Surveillance System. Accessed at www.in.gov/isdh/25194.htm on Nov 23, 2011
- ³ Centers for Disease Control and Prevention. Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses—United States, 2000–2004. *Morbidity and Mortality Weekly Report*. 2008;57(45):1226–8. Access at www.cdc.gov/mmwr/preview/mmwrhtml/mm5745a3.htm on Dec 18, 2011.
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- ⁵ National Cancer Institute. Surveillance, Epidemiology and End Results (SEER) Program. Accessed at seer.cancer.gov on Oct 24, 2011.
- ⁶ American Cancer Society. *Cancer Facts & Figures 2011*. Atlanta, GA. 2011. Accessed at www.cancer.org/Research/CancerFactsFigures/index on Nov 23, 2011.
- ⁷ Centers for Disease Risk Control and Prevention. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta: U.S. Department of Health and Human Services, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006. Access at www.surgeongeneral.gov/library/secondhandsmoke/ on Dec 21, 2011.

Melanoma/Skin Cancer



What is the Impact on Hoosiers?

Table 9. Burden of Melanoma—Indiana, 2004—2008

	Average number of cases per year (2004–2008)	Rate per 100,000 people* (2004–2008)	Number of cases (2008)	Rate per 100,000 people* (2008)
Indiana Incidence	1,099	17.0	1,153	17.3
Indiana Deaths	186	2.8	191	2.8

Melanoma/Skin Cancer

Bottom Line

Skin cancer is highly preventable, yet more than two million cases are diagnosed annually in the United States. Excessive exposure to ultraviolet (UV) radiation from the sun or other sources, like tanning beds, is the greatest risk factor for developing skin cancer. Overall, skin cancers affect more people than lung, breast, colon and prostate cancers combined. The two most common forms are basal cell and squamous cell carcinoma. Melanoma accounts for less than 5% of skin cancer cases, but causes the most skin cancer deaths, killing one American every hour.¹ Overall, the lifetime risk of getting melanoma is about 1 in 50 for whites, 1 in 1,000 for African Americans, and 1 in 200 for Hispanics.¹

The number of basal cell and squamous cell skin cancers (i.e., nonmelanoma skin cancers, or NMSC) is difficult to estimate because these cases are not required to be reported to the Indiana State Cancer Registry. According to one report, in 2006 an estimated 3.5 million cases of NMSC occurred among U.S. residents.² Because of the limitations of the NMSC data, most of the data reported in this section are only for melanoma.

Who Gets Skin Cancer?

People of all ages, races, and ethnicities are subject to developing skin cancer. Some risk factors for developing skin cancer include:

- **Age.** During 2004–2008, over 70% of melanoma cases occurred among Indiana residents ages 50 and older. However, nationally, melanoma is on the rise among younger people.
- **Sex.** Overall, during 2004–2008, the incidence rate for melanoma among Indiana males was almost 50% higher than among females (21.3 versus 14.3 cases per 100,000 people) [Figure 25]. However, before the age of 50, the incidence rate among females was 60% higher than among males. Then, among people ages 55 and older, males had more than twice the risk that females did.
- **Race.** During 1999–2008, the risk of melanoma was more than 15 times higher for Indiana whites than for African Americans; however, anyone can develop the disease.
- **Fair to light skinned complexion.** Freckles are an indicator of sun sensitivity and sun damage.
- **Hair and eye color.** People with natural blonde or red hair or blue or green eyes are more susceptible to developing skin cancer.
- **Multiple or atypical nevi (moles).** People who have a large number of moles (more than 50) often have a higher risk of developing melanoma.
- **Family history.** The risk for developing melanoma is greater for someone who has had one or more close relatives diagnosed with the disease.
- **Excessive exposure to UV radiation from the sun and tanning beds.** The U.S. Department of Health and Human Services and the International Agency of Research on Cancer panel has declared UV radiation from the sun and artificial sources, such as tanning beds and sun lamps, a known carcinogen (cancer-causing substance) as dangerous as tobacco.³
- **History of sunburns.** A sunburn at an early age can increase a person's risk for developing melanoma and other skin cancers as they age.
- **Disease that suppress the immune system.**
- **Past history of basal cell or squamous cell skin cancers.**
- **Occupational exposure to coal tar, pitch, creosote, arsenic compounds, radium or some pesticides.**

Be Aware!—Common Signs and Symptoms of Melanoma

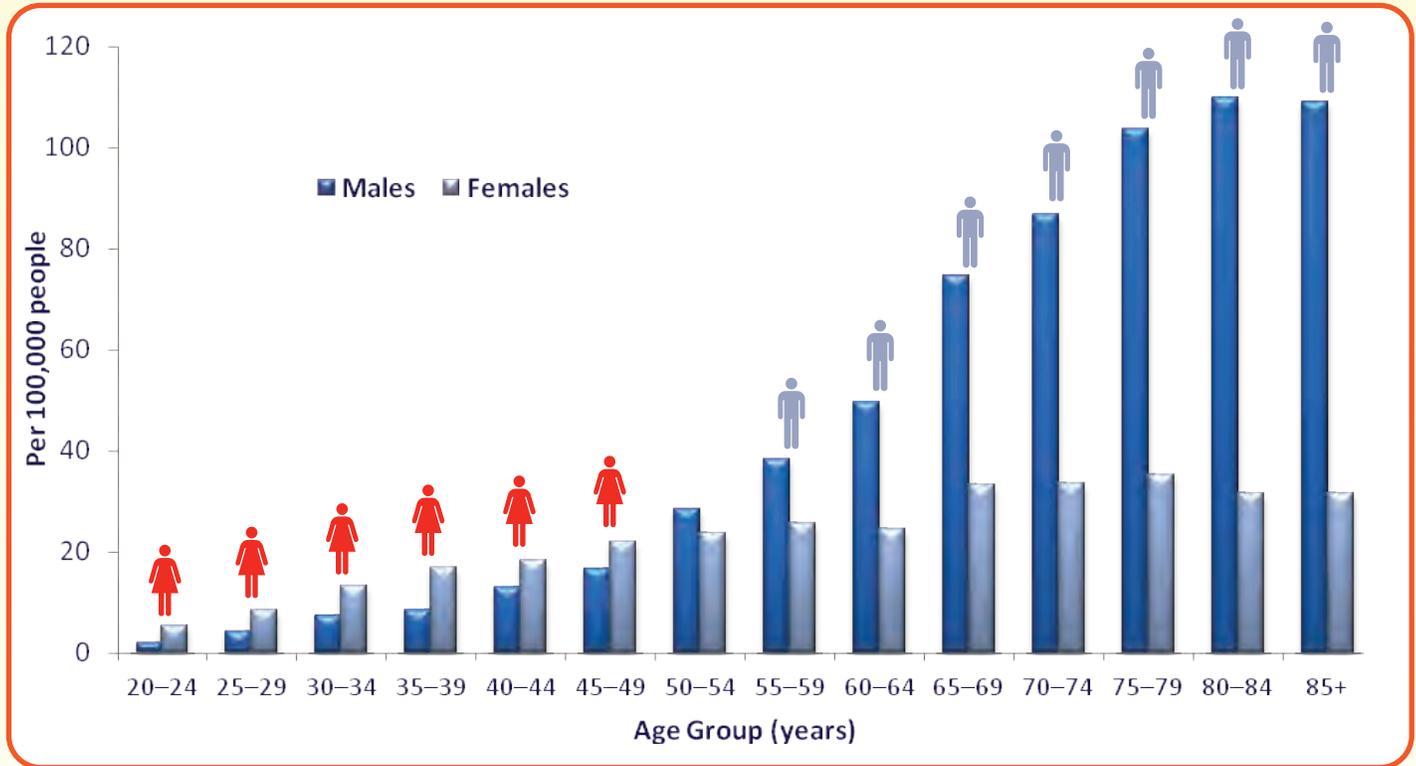
A simple ABCDE rule outlines some warning signs of melanoma:

- A = Asymmetry: One half of the mole (or lesion) does not match the other half
- B = Border: Border irregularity; the edges are ragged, notched or blurred
- C = Color: The pigmentation is not uniform, with variable degrees of tan, brown, or black
- D = Diameter: The diameter of a mole or skin lesion is greater than 6 millimeters (or the size of a pencil eraser). Any sudden increase in size of an existing mole should be checked.
- E = Evolution: Existing moles changing shape, size or color

Melanoma might appear differently than what is described in the ABCDE rule, so discuss any changes to existing moles or new growths on the skin with your health care provider

Melanoma/Skin Cancer

Figure 25. Incidence of Melanoma Skin Cancer by Age Group and Sex—Indiana, 2004–2008



♀ = Significantly elevated ($P < .05$) among females compared to males
 ♂ = Significantly elevated ($P < .05$) among males compared to females

Source: Indiana State Cancer Registry

Can Skin Cancer Be Detected Early?—see the “Be Aware” box for additional information

Yes! The best way to detect skin cancer early is to recognize changes in skin growths or the appearance of new growths. Adults should thoroughly examine their skin regularly, preferably once a month. New or unusual lesions or a progressive change in a lesion’s appearance (size, shape, or color, etc.) should be evaluated promptly by a health care provider.

Melanomas often start as small, mole-like growths that increase in size and might change color. Basal cell carcinomas might appear as growths that are flat, or as small, raised, pink or red, translucent, shiny areas that might bleed following minor injury. Squamous cell cancer might appear as growing lumps, often with a rough surface, or as flat, reddish patches that grow slowly.

Melanoma/Skin Cancer

What Factors Influence Survival?

Most basal and squamous cell cancers can be cured, especially if the cancer is detected and treated early. Early stage basal and squamous cell cancers can be removed in most cases by one of several methods: surgical excision, electrodesiccation and curettage (tissue destruction by electric current and removal by scraping with a curette), or cryosurgery (tissue destruction by freezing). Radiation therapy and certain topical medications may be used in some cases.

Melanoma is also highly curable if detected in its earliest stages and treated properly. Treatment involves removing the primary growth and surrounding normal tissue and sometimes a sentinel lymph node is biopsied to determine stage. More extensive lymph node surgery may be needed if lymph node metastases are present. Melanomas with deep invasion or that have spread to lymph nodes may be treated with surgery, immunotherapy, chemotherapy, or radiation therapy. Advanced cases of melanoma are treated with palliative surgery, immunotherapy, or chemotherapy, and sometimes radiation therapy.

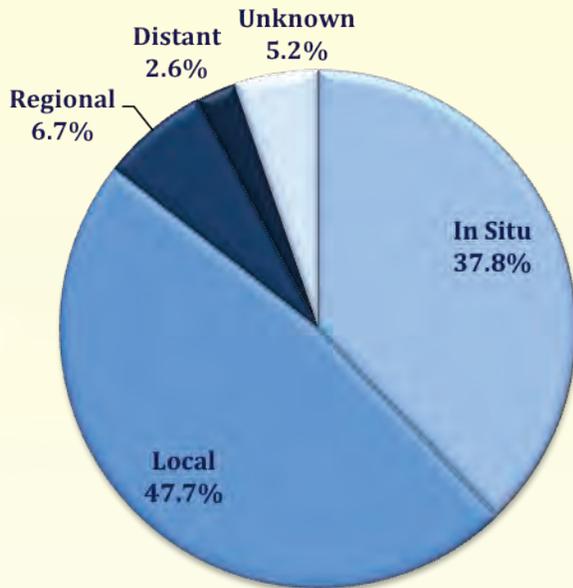
Melanoma is more likely than other skin tumors to spread to other parts of the body (e.g., lungs, pelvis, spine, bones, liver and brain). Figure 26 shows the percent of melanoma cases diagnosed during each stage. The five-year relative survival rate for persons with melanoma is 91%. For localized melanoma, the five-year survival rate is 98%; five-year survival rates for regional and distant stage diseases are 62% and 16%, respectively.²

Take Charge! What You Can Do to Help Prevent Skin Cancer

- Limit or avoid exposure to the sun during peak hours (10 a.m. to 4 p.m.)
- Wear sunscreen with a Sun Protection Factor (SPF) of 15 or more that protects you from both UVA and UVB rays
- Wear clothing that has built-in SPF in the fabric or wear protective clothing such as long sleeves and long pants (tightly woven dark fabrics protect your skin better than lightly colored, loosely woven fabrics.)
- Wear a hat that protects your scalp and shades your face, neck, and ears
- Avoid use of tanning beds and sun lamps
- Wear sunglasses to protect your eyes from ocular melanoma (melanoma of the eye)
- ALWAYS protect your skin—Your skin is still exposed to UV rays even on cloudy days and during the winter months. Use extra caution around water, snow, and sand as they reflect the sun's ultraviolet rays

Melanoma/Skin Cancer

Figure 26. Percent of Melanoma Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 8,836 Indiana residents who received a diagnosis of in situ or invasive melanoma, 7,563 (85.6%) were diagnosed in the in situ or local stage, 814 (9.2%) were diagnosed in the regional or distant stage, and 461 (5.2%) had unknown staging.

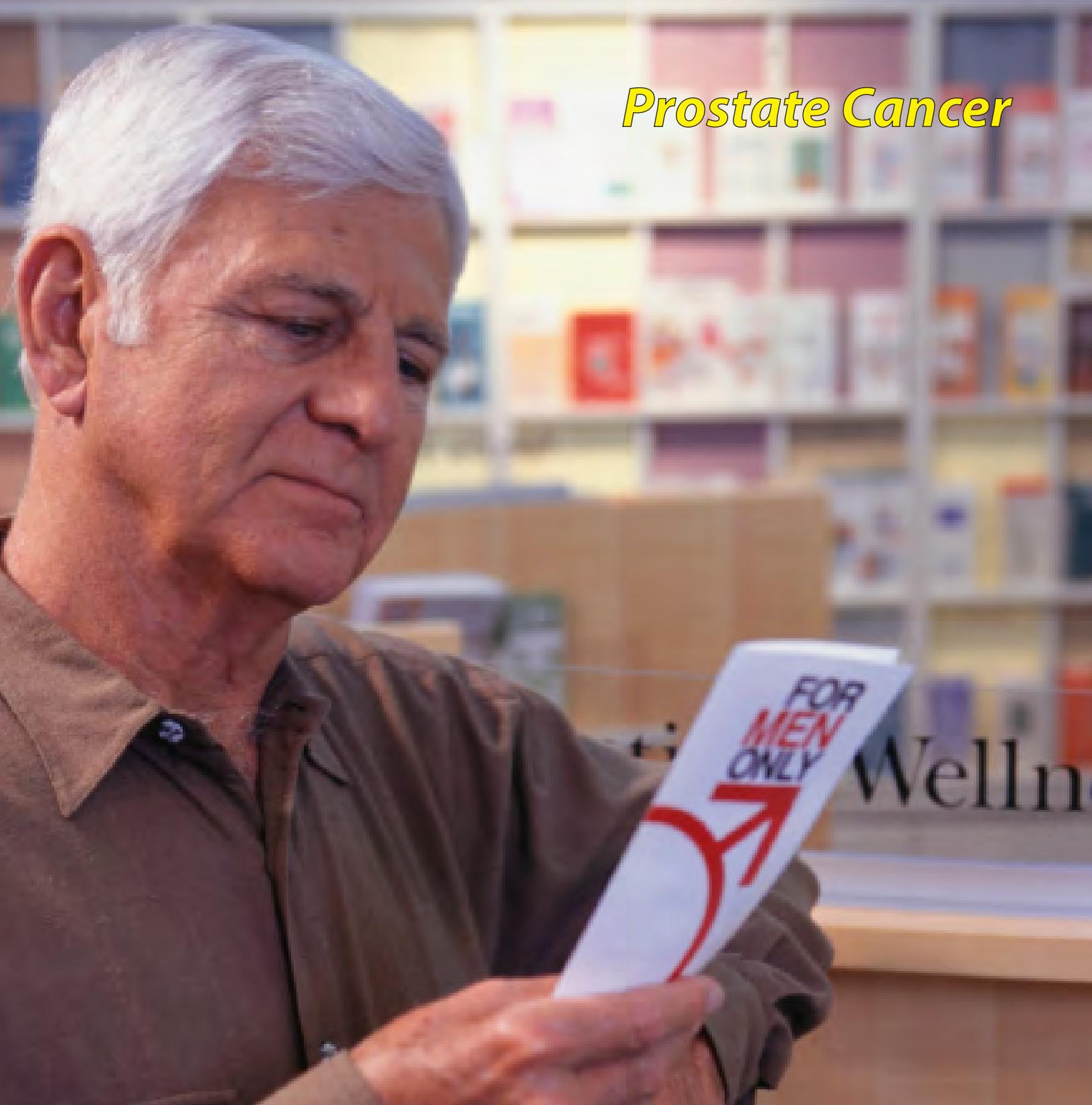
*Includes invasive and in situ cases
Source: Indiana State Cancer Registry

Always Remember: Protect Your Skin. Protect Yourself. Protect Your Life. Learn more through Outrun the Sun, Inc. (www.outrunthesun.org), Indiana’s only nonprofit organization dedicated to supporting skin cancer education and melanoma research.

References

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Prostate Cancer



What is the Impact on Hoosiers?

Table 10. Burden of Invasive Prostate Cancer—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 males* (2004–2008)	Number of cases (2008)	Rate per 100,000 males* (2008)
Indiana Incidence	3,954	136.0	3,815	124.0
Indiana Deaths	602	25.1	606	23.9

*Age-adjusted

Source: Indiana State Cancer Registry

Prostate Cancer

Bottom Line

The prostate is an exocrine gland in the male reproductive system. Excluding all types of skin cancer, prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death among men in the United States and Indiana.¹ Approximately 1 in 6 men in the United States will be diagnosed with prostate cancer and 1 in 36 will die from it during their lifetime.¹

Who Gets Prostate Cancer Most Often?

- **Older men.** The chance of developing prostate cancer rises rapidly after age 50, with 2 out of 3 new diagnoses occurring among men over age 65.¹ Prostate cancer incidence rates increase among men until about age 70 and decline thereafter.²
- **African American men.** African American men are more likely to develop prostate cancer (1 in 5 lifetime incidence) [Table 11] than any other racial or ethnic group and they are more than twice as likely to die (1 in 22 lifetime incidence) from the disease as white men.³ However, in Indiana, this disparity between African American and white men appears to be decreasing [Figure 27].
- **Men with a family history of prostate cancer.** Men with one first-degree relative (a father or brother) with a history of prostate cancer are 2–3 times more likely to develop the disease; those with more than one affected first-degree relative are 3–5 times more likely to be diagnosed with prostate cancer.¹

Table 11. Probability of Developing Prostate Cancer Over Selected Age Intervals by Race—United States, 2004–2006*

Age	White	African American
30 to 39	0.01 (1 in 12,288)	0.02 (1 in 4,379)
40 to 49	0.27 (1 in 375)	0.6 (1 in 168)
50 to 59	2.14 (1 in 47)	3.78 (1 in 26)
60 to 69	6.23 (1 in 16)	9.75 (1 in 10)
70 to 79	8.02 (1 in 12)	11.17 (1 in 9)
Lifetime risk	15.39 (1 in 6)	18.32 (1 in 5)

*For people free of cancer at beginning of age interval. Percentages and “1 in” numbers might not be equivalent because of rounding.

Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.4.1. Statistical Research and Applications Branch, National Cancer Institute, 2009. srab.cancer.gov/devcan (Adapted: ACS’s Facts and Figures 2010)

Be Aware!—Common Signs and Symptoms of Prostate Cancer

Some men have no symptoms at all. Symptoms* of prostate cancer can include:

- Difficulty starting urination
- Weak or interrupted flow of urine
- Frequent urination, especially at night
- Difficulty emptying the bladder completely
- Pain or burning during urination
- Blood in the urine or semen
- Painful ejaculation
- Pain in the back, hips, or pelvis that doesn't go away

*These symptoms also occur frequently as a result of non-cancerous conditions, such as prostate enlargement or infection and none are specific for prostate cancer

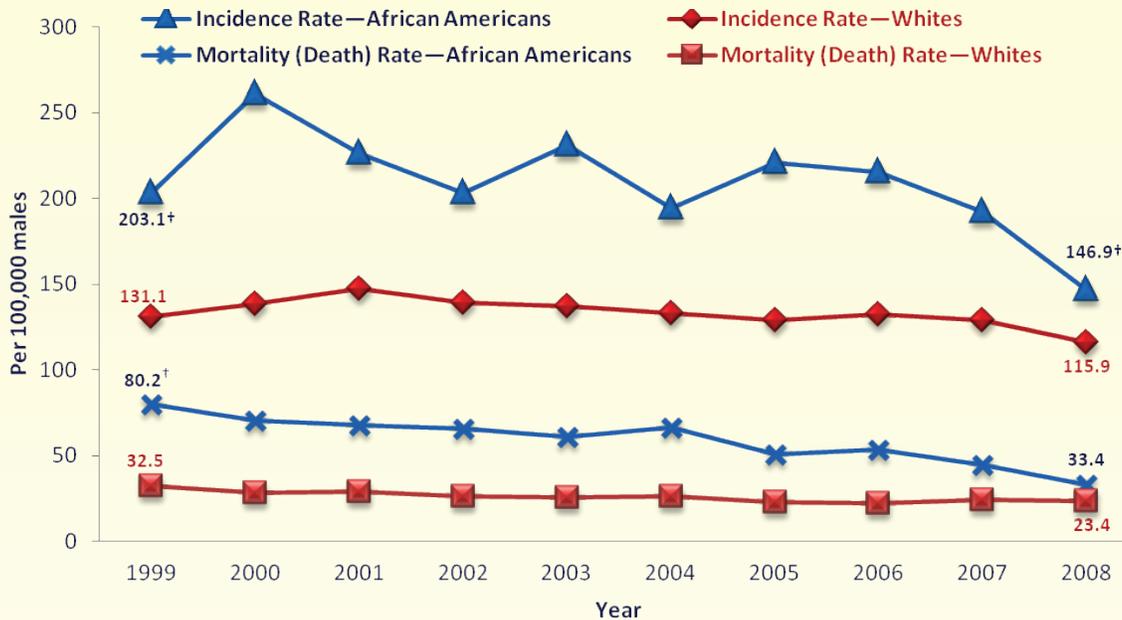
Take Charge!—What You Can Do to Help Prevent Prostate Cancer

Stay active, eat well, and maintain a healthy body weight. In particular:

- Eat at least five servings of fruits and vegetables each day
- Limit intake of red meats (especially processed meats such as hot dogs, bologna, and lunch meat)
- Avoid excessive consumption of dairy products (>3 servings/day) and calcium (>1,500 mg/day)
- Include recommended levels of lycopene (antioxidants that help prevent damage to DNA which are found in tomatoes, pink grapefruit, and watermelon) and vitamin E in your diet
- Meet recommended levels of physical activity (www.cdc.gov/physicalactivity/everyone/guidelines/index.html)

Prostate Cancer

Figure 27. Prostate Cancer Incidence and Mortality (Death) Rates by Race*—Indiana, 1999–2008



*Age-adjusted

[†]Significantly elevated ($P < .05$) compared to white males

Source: Indiana State Cancer Registry

Can Prostate Cancer Be Detected Early?—see the “Be Aware” box for additional information

- Not all medical experts agree that screening for prostate cancer will save lives. The controversy focuses on cost of screening, the age groups to be screened, and treatments after diagnosis. Not all forms of prostate cancer need treatment.
- Potential benefits of prostate cancer screening include:
 - Can detect cancers early
 - Treatment for prostate cancer might be more effective when it is found early
- Potential risks of prostate cancer screening include:
 - False-positive test results (indicating that you have prostate cancer when you do not), which might lead to unneeded testing and can cause anxiety
 - Treatment of some prostate cancers that might have never affected a man's health even if left untreated
 - Treatment might lead to serious side effects such as impotence (inability to keep an erection) and incontinence (inability to control the flow of urine, resulting in leakage)
- Given the potential risks linked to prostate cancer screening, it is vital for men to talk with their health care provider to become informed decision makers. Each man should:
 - Understand his risk of prostate cancer
 - Understand the risks, benefits, and alternatives to screening
 - Participate in the decision to be screened or not at a level he desires
 - Makes a decision consistent with his preferences and values
- Tests commonly used to screen for prostate cancer:
 - **Digital rectal exam (DRE).** A doctor or nurse inserts a gloved, lubricated finger into the rectum to feel the prostate. This allows the examiner to estimate the size of the prostate and feel for any lumps or other abnormalities.

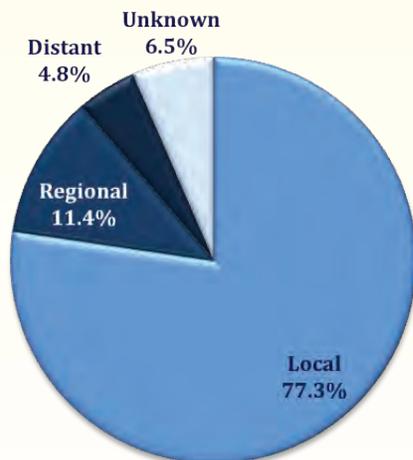
Prostate Cancer

- o **Prostate specific antigen (PSA) test.** This is a blood test that measures levels of PSA, a substance made by the prostate. While high PSA levels can indicate the presence of prostate cancer, it can also indicate other noncancerous conditions.
- o If the PSA or DRE tests are abnormal, doctors may perform additional tests to find or diagnose prostate cancer, including use of transrectal ultrasounds and by taking biopsies.

What Factors Influence Prostate Cancer Survival?

- **Stages of diagnosis.** After prostate cancer has been diagnosed, tests are performed to determine whether the cancer cells remain within the prostate or have spread to other parts of the body [Figure 28].
- **Treatment options**
 - o **Active surveillance (watchful waiting).** The patient's prostate cancer is closely monitored by performing the PSA and DRE tests regularly. Treatment occurs only if and when the prostate cancer causes symptoms or shows signs of growing.
 - o **Surgery (radical prostatectomy).** Prostatectomy is surgery to remove the prostate completely. Radical prostatectomy removes the prostate as well as the surrounding tissue.
 - o **Radiation therapy.** Radiation destroys cancer cells, or prevents them from growing, by directing high-energy X-rays (radiation) at the prostate. There are two types of radiation therapy:
 - **External radiation therapy.** A machine outside the body directs radiation at the cancer cells.
 - **Internal radiation therapy (brachytherapy).** Radioactive seeds or pellets are surgically placed into or near the cancer to destroy the cancer cells.
- **Hormone therapy.** This treatment called, androgen deprivation therapy (ADT), alters the effects of male hormones on the prostate through medical or surgical castration (elimination of testicular function) or administration of antiandrogen medications.
- **Overall survival.** In the United States, the five-year relative survival rate for prostate cancer among African Americans is 96% and nearly 100% among whites.³

Figure 28. Percent of Prostate Cases Diagnosed During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 19,770 Indiana residents who received an invasive prostate cancer diagnosis, 15,286 (77.3%) were diagnosed in the local stage, 3,197 (16.2%) were diagnosed in the regional or distant stage, and 1,287 (6.5%) had unknown staging.

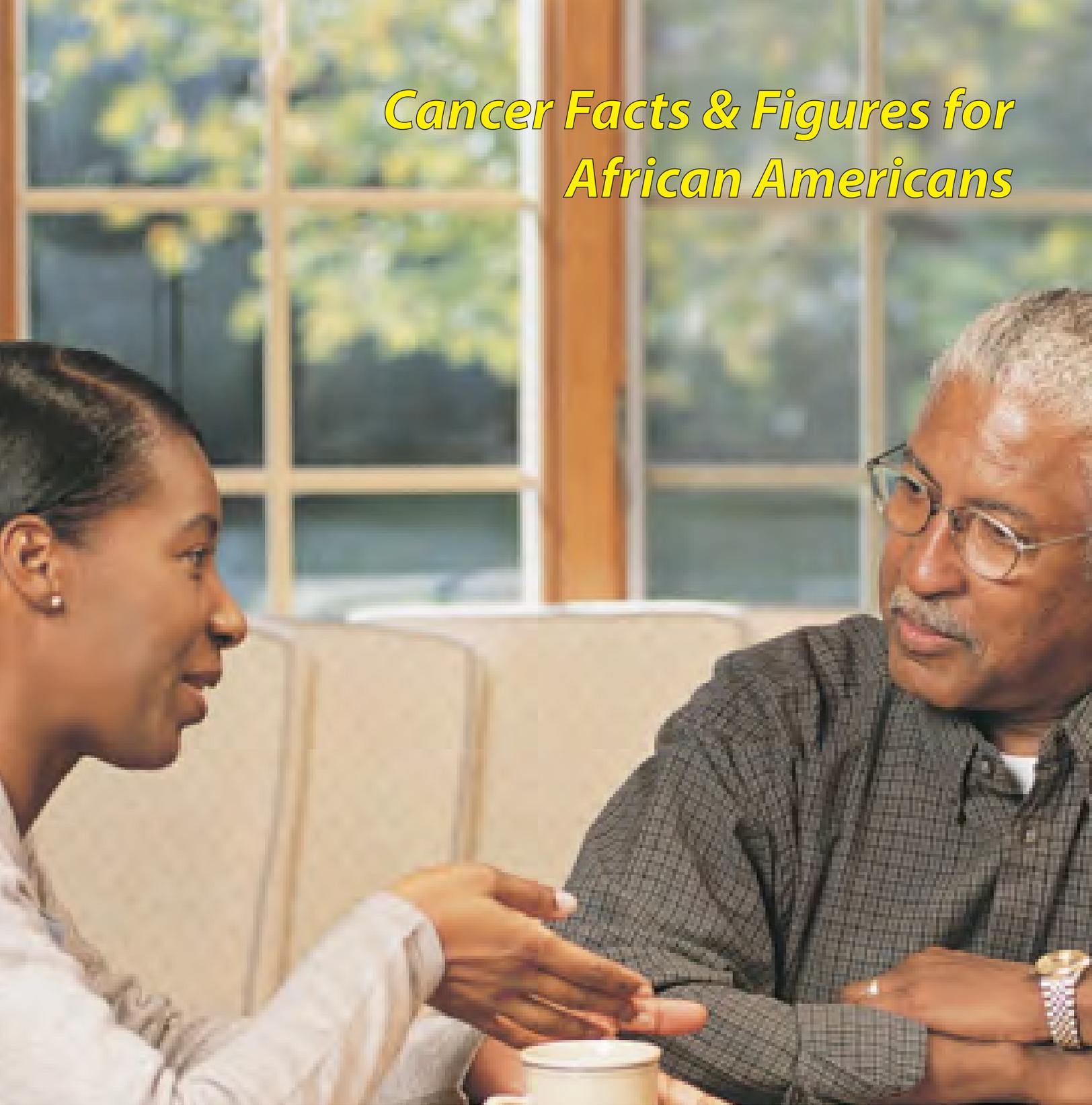
*Only includes invasive cases; *in situ* cases are not reportable

Source: Indiana State Cancer Registry

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Cancer Facts & Figures for African Americans



What is the Impact of Cancer on African Americans in Indiana?

Table 12. Burden of Cancer among African Americans—Indiana, 2004–2008

	Average number of cases per year (2004–2008)	Rate per 100,000 people* (2004–2008)	Number of cases (2008)	Rate per 100,000 people* (2008)
Indiana Incidence	2,115	490.7	2,076	458.5
Indiana Deaths	961	236.3	944	221.1

*Age-adjusted

Source: Indiana State Cancer Registry

Cancer Facts & Figures for African Americans

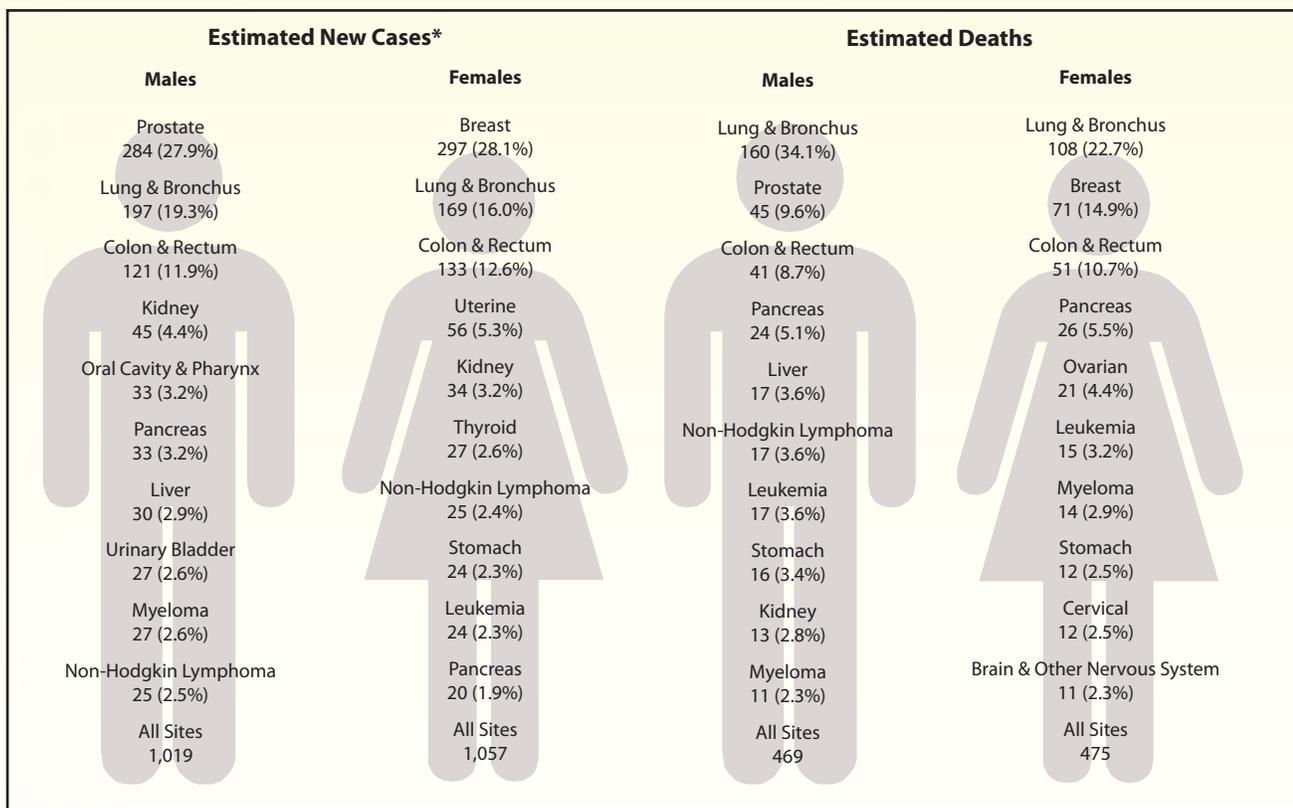
Bottom Line

African Americans have the highest mortality rate and shortest survival of any racial and ethnic group in the United States for most cancers.¹ The causes of these inequalities are complex and are thought to reflect social and economic disparities more than biologic differences associated with race. These include inequities in work, wealth, income, education, housing and overall standard of living, as well as barriers to high-quality cancer prevention, early detection, and treatment services. In Indiana, while the overall racial disparities in cancer incidence and mortality rates have been gradually decreasing, during 2004–2008 African Americans still had almost a 5% greater incidence of cancer than whites and over a 21% higher mortality rate.

What Types of Cancer Impact the African American Community the Most?

Figure 29 provides an overview of the leading types of cancer that impacted African Americans in Indiana during 2008. Lung and bronchus cancer was the most common cause of cancer-related death among all African Americans. The second leading cause of cancer death among males was prostate cancer and among females was breast cancer. Colorectal cancer was the third leading cause of cancer deaths among both sexes.

Figure 29. Leading Sites of New Cancer Cases and Deaths among African Americans by Sex—Indiana, 2008



*Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder
Source: Indiana State Cancer Registry

Cancer Facts & Figures for African Americans

What are the Cancer Disparities in Indiana Relating to Race?

While African Americans, compared to whites, continue to be unequally burdened by cancer in Indiana [Figure 30], the disparities between the two groups have been gradually decreasing [Figure 31]. For example, when comparing 1999–2003 to 2004–2008, the disparity in incidence rates was cut almost in half from 8.5% to 4.4% and the disparity in mortality rates decreased by almost a third from 30.4% to 21.7%. Despite these gains, continued work needs to be done to address the differences among the races, especially the difference in cancer mortality rates. Some additional information about the impact of specific cancer types among African Americans during 2004–2008 is provided below.

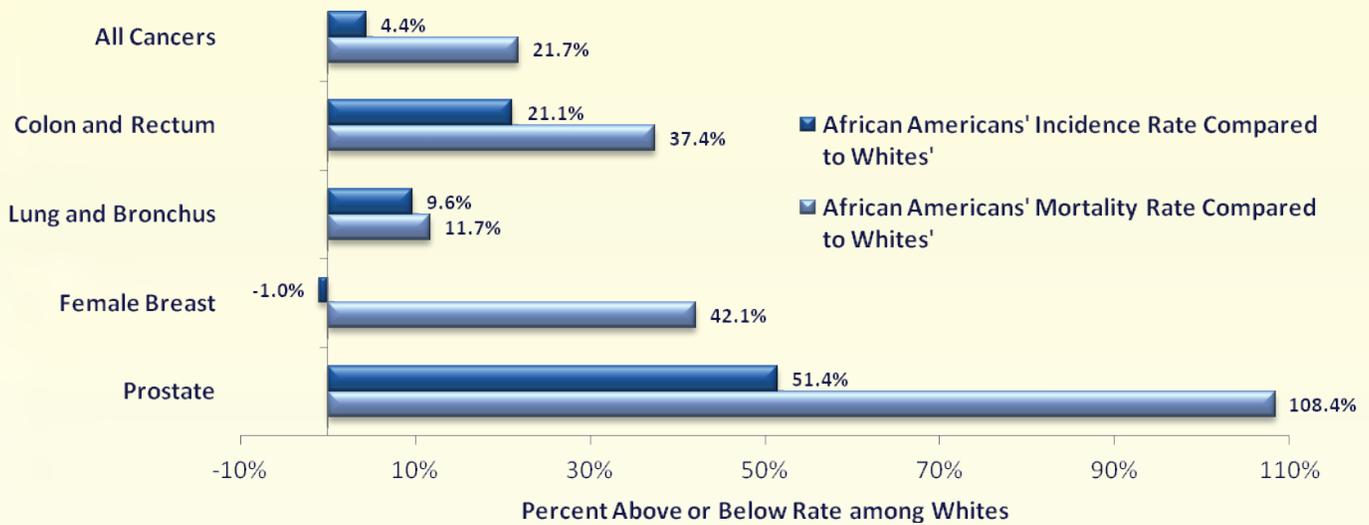
- **Colon and Rectum Cancer.** In comparison to whites, African Americans had a 21% higher incidence rate (60.8 versus 50.2 cases per 100,000 people) and a 37% higher mortality rate for colon and rectum cancer (25.0 versus 18.2 deaths per 100,000 people). African American males, in particular, were at great risk, as their age-adjusted incidence rate was 20% greater than white males (70.8 versus 59.3 cases per 100,000 males) and their mortality rate was 37% higher (30.9 versus 22.6 deaths per 100,000 males). African American females had similar rates to white males, but, compared to white females, they had a 26% greater incidence rate (54.4 versus 43.3 cases per 100,000 females) and a 46% greater mortality rate (22 versus 15.1 deaths per 100,000 females).
- **Lung Cancer.** In comparison to whites, African Americans had a 10% higher incidence rate (87.5 versus 79.8 cases per 100,000 people) and a 12% higher mortality rate (68.7 versus 61.5 deaths per 100,000 persons). Additionally, the age-adjusted death rate for lung cancer was nearly two times greater for African American males compared to African American females (98.1 versus 49.2 deaths per 100,000 persons).
- **Prostate Cancer.** The age-adjusted incidence rate for prostate cancer was 52% higher among African American males compared to white males (194.4 versus 127.7 cases per 100,000 males). More over, the death rate for prostate cancer was more than two times greater (49.6 versus 23.8 deaths per 100,000 males).
- **Breast Cancer.** African American females were as likely as white females to be diagnosed with breast cancer (115.7 versus 114.6 cases per 100,000 females, respectively). However, African American females were 42% more likely to die from breast cancer than white females (33.1 versus 23.3 deaths per 100,000 females).

Take Charge! What You Can Do To Help Prevent Cancer and Improve Care among African Americans

- Maintain a healthy body weight
- Increase physical activity levels
- Eat the recommended daily servings of fruits and vegetables
- Be smoke-free—
Visit www.in.gov/quitline for free smoking cessation assistance
- Talk to your primary health care provider regularly about your cancer screening options
- Seek treatment early and avoid delaying follow-up care if you are diagnosed with cancer
- Support the development of culturally relevant resources and support programs for African Americans that focus on early detection and treatment of cancer, as well as, improved access to services

Cancer Facts & Figures for African Americans

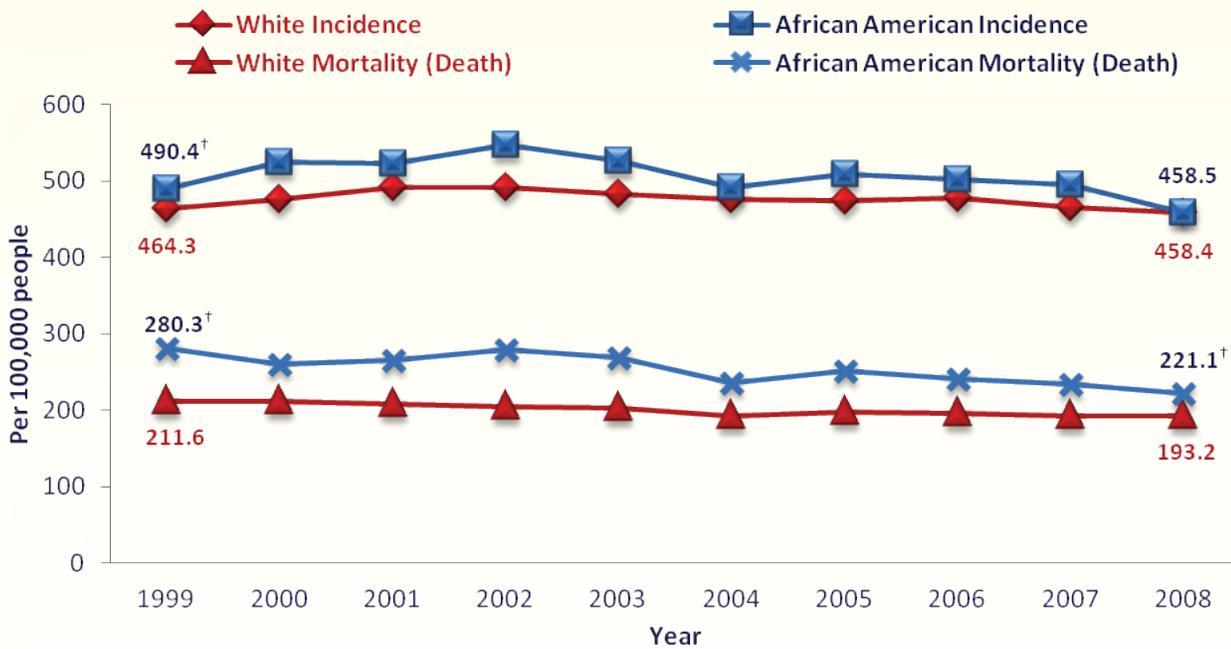
Figure 30. Comparison of Cancer Incidence and Mortality (Death) Rates among African American to those among Whites—Indiana, 2004–2008*



*Age-adjusted incidence and mortality rates are significantly elevated ($P < .05$) among African Americans compared to whites for all cancer types except for female breast cancer incidence

Source: Indiana State Cancer Registry

Figure 31. Cancer Incidence and Mortality (Death) Rates by Race*—Indiana, 1999–2008



*Age-adjusted

[†]African American rate is significantly higher ($P < .05$) than the white rate

Source: Indiana State Cancer Registry

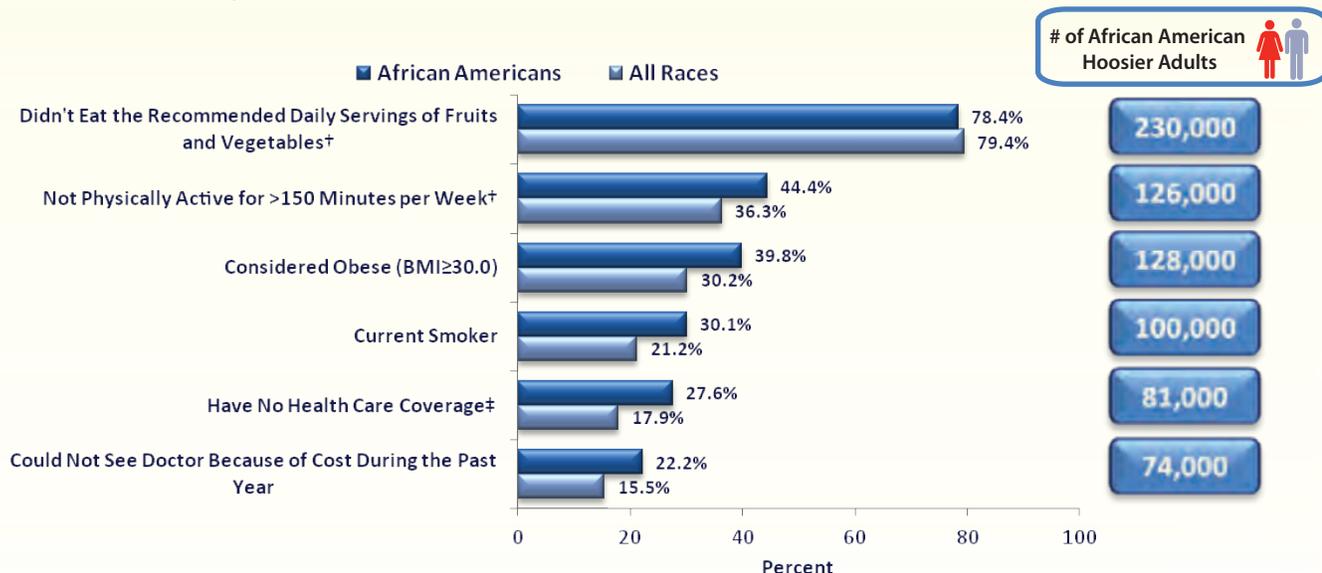
Cancer Facts & Figures for African Americans

Can Cancer Be Prevented?—see the “Take Charge” box for additional information

Figure 32 describes the burden of some lifestyle and external factors among African American adults in Indiana. Additional information about the impact of cancer risk factors on African Americans in Indiana is provided below.

- Body Weight, Diet, and Physical Activity.** Scientific evidence suggests that nationally about one-third of cancer deaths are related to overweight or obesity, physical inactivity, and poor nutrition and thus could be prevented.² In particular, being obese has been linked with increased risk for developing cancers of the breast (in postmenopausal women), colon, endometrium, kidney, and esophagus. During 2010, in Indiana, African American adults were over 30% more likely than white adults to be considered obese based on body mass index (BMI) (39.8% versus 30.2%).³ Additionally, in 2009, almost 45 percent of African American adults did not get their recommended 150 minutes of exercise per week and almost 80% failed to eat the recommended daily servings of fruits and vegetables (i.e., 2 cups of fruit and 2½ cups of vegetables per day).³
- Tobacco.** Smoking is the most preventable cause of premature death in the United States and is responsible for about 30% of all cancer deaths.⁴ For the combined years of 2008 and 2009, African American males had the highest prevalence of current smokers (35.2%) among adults in Indiana.³
- Health Care Coverage.** Uninsured and underinsured patients are substantially more likely to be diagnosed with cancer at a later stage, when treatment can be more extensive and more costly.¹ During 2010, in Indiana, African American adults were approximately 60% more likely than white adults to not see a doctor during the year because of cost (22.2% versus 13.9%) and African Americans, ages 18–64, were almost 90% more likely to not have health insurance (27.6% versus 14.6%).³

Figure 32. Preventative Cancer Behaviors and Access to Medical Care among African American Adults*—Indiana, 2010



*Adults are people ages 18 and older

†Data from 2009

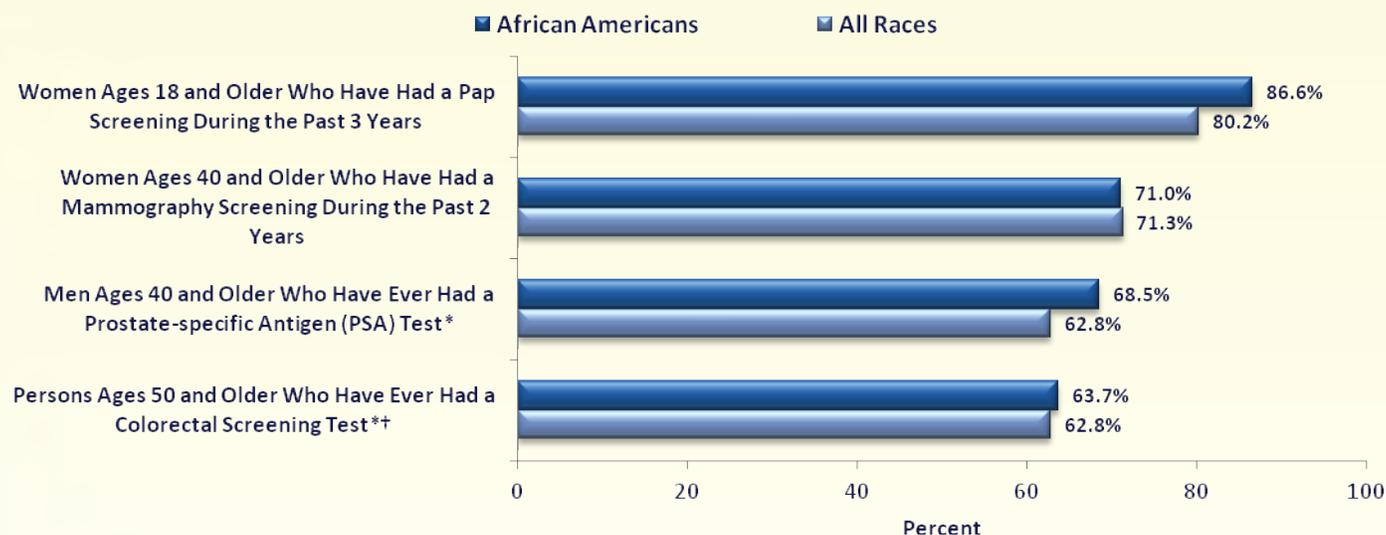
Source: Indiana Behavioral Risk Factor Surveillance System

Cancer Facts & Figures for African Americans

Can Cancer Be Detected Early?

Early detection tests can lead to the prevention of cancer through the identification and removal of precancerous lesions, particularly for cancers of the cervix and colon and rectum. Screening can detect cancer at an earlier stage, which can reduce the extent of treatment, improve the chances of cure, extend life, and thereby improve the quality of life for cancer survivors. In general, race did not play a role in cancer screening rates among Indiana adults during 2010 [Figure 33].

Figure 33. Cancer Screening Rates Among African Americans—Indiana, 2010



*Combined years of 2006, 2008, and 2010

†Sigmoidoscopy or colonoscopy

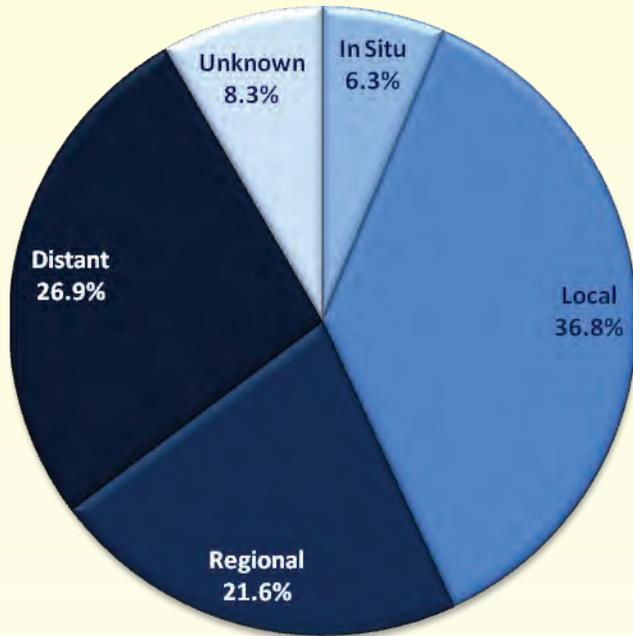
Source: Indiana Behavioral Risk Factor Surveillance System

What Factors Influence Cancer Survival?

Despite having similar screening rates, African Americans are less likely than whites to survive five years at each stage of diagnosis [Figure 34] for most cancer types.² Based on data from the Surveillance, Epidemiology, and End Results (SEER) Program's nine population-based cancer registries the five-year survival rate among whites was 68.6% compared to 59.4% among African Americans during 2001–2007.⁵ Much of the difference in survival is believed to be because of barriers that prevent timely and high-quality medical care, including delayed diagnoses after screenings, greater frequency of having later stage diagnoses, and disparities in treatment.

Cancer Facts & Figures for African Americans

Figure 34. Percent of Cancer Cases Diagnosed among African Americans During Each Stage*—Indiana, 2004–2008



During 2004–2008, of the 11,192 African American Indiana residents who received a diagnosis of in situ or invasive cancer, 4,825 (43.1%) were diagnosed in the in situ or local stage, 5,433 (48.5%) were diagnosed in the regional or distant stage, and 934 (8.3%) had unknown staging. Compared with Figure 2 (page 8) that depicts the stage of diagnosis for all Indiana residents, African Americans tended to be diagnosed more frequently after the cancer had spread to other areas of the body (48.5% versus 43.5%).

*Includes all in situ and invasive cancers except for basal and squamous cell skin cancers and in situ bladder, cervical, and prostate cancers, which are not reportable

Source: Indiana State Cancer Registry

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Cancer Facts & Figures for Hispanics



What is the Impact of Cancer on Hispanics in Indiana?

Table 13. Burden of Cancer among Hispanics—Indiana

	Average number of cases per year (2004–2008)	Rate per 100,000 people* (2004–2008)	Number of cases (2008)	Rate per 100,000 people* (2008)
Indiana Incidence[†]	472	341.4	543	338.6
Indiana Deaths[‡]	87	88.7	85	74.7

*Age-adjusted; †2004–2008; ‡2002–2006

Source: U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2008 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at wonder.cdc.gov on Dec 21, 2011.

Cancer Facts & Figures for Hispanics

Bottom Line

Hispanics are the largest, fastest-growing, and youngest minority group in the United States and the second largest minority group in Indiana. In 2010, 390,000 Indiana residents, or 6.0% of the population, identified themselves as Hispanic or Latino; up from 3.5% in 2000.¹ Hispanics' median age was 24.3 years compared to 36.9 years among all Indiana residents. Nationally, about 1 in 2 Hispanic males and 1 in 3 Hispanic females will be diagnosed with cancer during their lifetime.² Additionally, cancer is the second leading cause of death among Hispanics in the United States, accounting for 20% of deaths overall and 13% of deaths among children.²

Cancer Data for Hispanics in Indiana

The Indiana State Cancer Registry (ISCR) collects data on all cancer cases in Indiana to study trends of disease and assist in the prevention of cancer and the care of patients impacted by it. There are some unique characteristics of the Hispanic population and limitations in data collection that impact the ability to describe the burden of cancer on this group. First, while the ISCR does collect data on the ethnicity (Hispanic versus non-Hispanic) of patients, there is probably some underreporting of this variable. Additionally, the rapidly changing and increasing Hispanic population tends to be younger and more mobile, thus making them less at risk for developing cancer (age-related) and more difficult to assign to a specific geographic area (mobility-related). Finally, most cancer data in Indiana and the United States are reported for Hispanics as an aggregate group, which masks important differences that exist among Hispanic subpopulations according to country of origin. Because of these factors, the rates and numbers reported for Hispanics in Indiana can vary considerably year-to-year and the burden of cancer might be slightly higher than is reported.

This section uses national and Indiana-specific results reported by the National Program of Cancer Registries, who develops them based on data supplied annually by the ISCR and other state cancer registries.

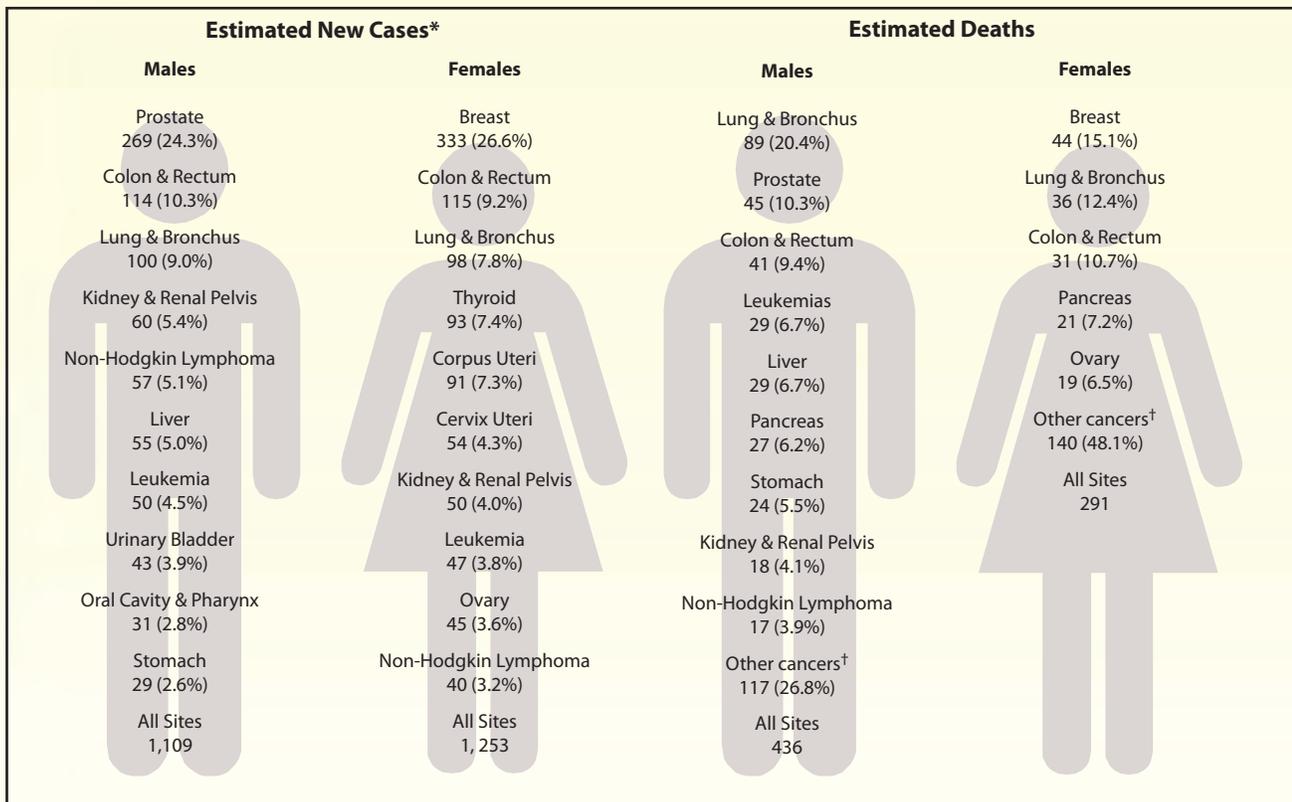
What Types of Cancer Impact the Hispanic Community the Most?

The cancer burden among Hispanics living in the United States is similar to that seen in their countries of origin.² Compared to rates in the United States, incidence of breast, colorectal, lung, and prostate cancers are lower in Puerto Rico, Cuba, and Central and South America, whereas incidence rates of cervical, liver, and stomach cancers are higher.³ There is some evidence that descendants of Hispanic migrants have cancer rates that approach those of non-Hispanic whites because of acculturation.⁴⁻⁶ "Acculturation" refers to the process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of their new culture. Among Hispanic immigrants to the United States, these changes might include increases in smoking, obesity, and alcohol intake and decreases in dietary quality and physical activity.⁷ One study found that overall cancer death rates among Hispanics were 22% higher among those who were U.S.-born compared to those who were foreign-born.⁸

Cancer Facts & Figures for Hispanics

Figure 35 provides an overview of the leading types of cancer that have impacted Hispanics in Indiana. Overall, cancer was the leading cause of death among Indiana Hispanics in 2008.⁹ Lung and bronchus cancer was the most common cause of cancer-related death among Hispanic males and breast cancer among Hispanic females¹⁰ The second leading cause of cancer death among males was prostate cancer and among females was lung cancer. Colorectal cancer was the third leading cause of cancer deaths among both sexes.

Figure 35. Leading Sites of New Cancer Cases and Deaths among Hispanics by Sex—Indiana, 2004–2008



*Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder

†Cancer types are collapsed into the "Other" category because of small number sizes.

Source: U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2008 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at wonder.cdc.gov on Dec 21, 2011.

What are the Cancer Disparities Relating to Ethnicity?

In Indiana and the United States, for all cancers combined, and for the most common cancers (prostate, female breast, colorectal, and lung), incidence and death rates are lower among Hispanics than among non-Hispanic whites.¹¹ Cancers for which U.S. rates are higher among Hispanics include stomach, cervix, liver, acute lymphocytic leukemia, and gallbladder.²

Cancer Facts & Figures for Hispanics

According to the ISCR, during 2004–2008, the age-adjusted cancer incidence rate among all Indiana residents was 475.6 cases per 100,000 people. In contrast, the CDC reported the rate among Hispanic Indiana residents was 28% lower at 341.4 cases per 100,000 people.¹¹ Moreover, during 2002–2006, the cancer mortality rate among all Indiana residents was 201.1 deaths per 100,000 people, while it was 56% lower among Hispanic Indiana residents at 88.7 deaths per 100,000 people.¹² Additional information about the impact of specific cancer types among Hispanics in the United States and Indiana is provided below.

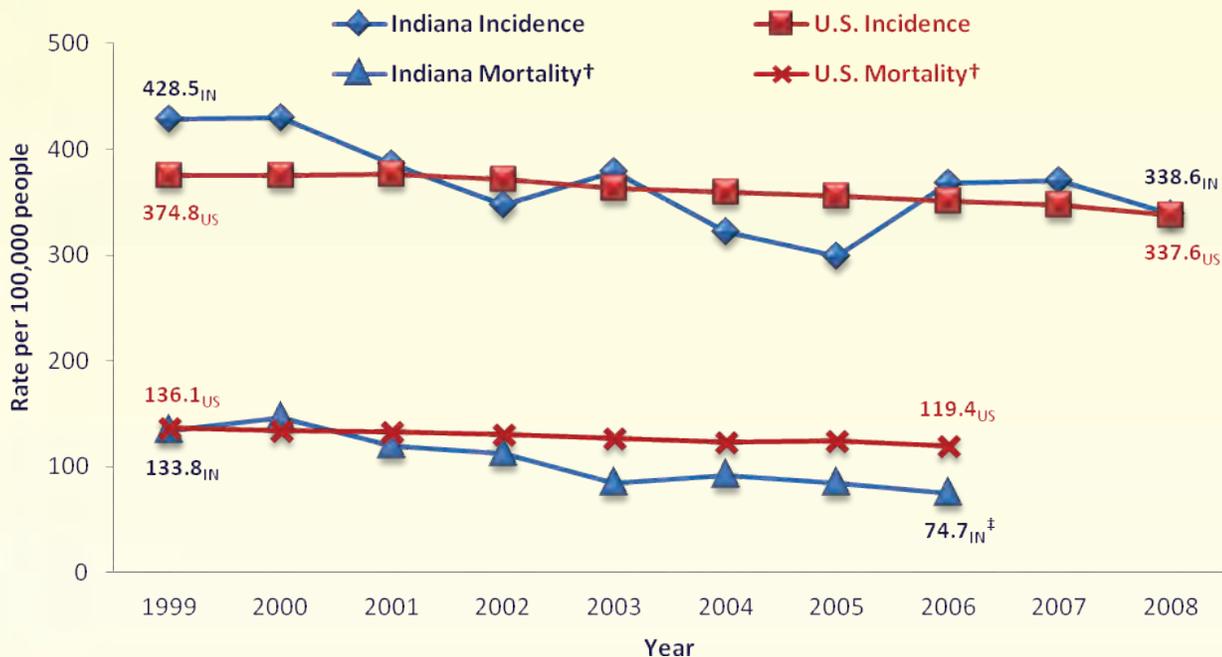
- **Prostate Cancer.** During 2002–2006, the prostate cancer rate among Hispanics in the United States was about 12% lower than the rate among non-Hispanic whites.² In Indiana, during 2004–2008, the incidence rate among Hispanics was similar to the national rate among Hispanics (103.5 versus 117.1 cases per 100,000 males, respectively).¹¹ However, during 2002–2006, the mortality rate in Indiana was significantly lower than the national rate (12.6 versus 19.6 deaths per 100,000 males).
- **Breast Cancer.** The U.S. breast cancer incidence rate among Hispanic females is 27% lower than that among non-Hispanic white females.²¹ It has been estimated that about 7% of this difference might be explained by more protective reproductive patterns (lower age at first birth and larger number of children) among Hispanic females.^{12,13} It might also reflect less use of hormone replacement therapy and under-diagnosis because of lower utilization of mammography.^{14,15} Recent studies suggest that ethnic variation in genetic factors that influence breast cancer development might also contribute to some of the difference.¹⁶⁻¹⁸ However, Hispanic females are about 20% more likely to die of breast cancer than non-Hispanic white females diagnosed at a similar age and stage.¹⁹ Differences in access to care and treatment likely contribute to this disparity.²⁰ In Indiana, during 2004–2008, the incidence rate among Hispanics was similar to the national rate among Hispanics (92.0 versus 85.8 cases per 100,000 females, respectively). Additionally, during 2002–2006, the mortality rates were statistically similar (11.5 versus 15.5 deaths per 100,000 females, respectively).
- **Colon and Rectum Cancer.** In the United States, colorectal cancer incidence rates among Hispanic males and females are 15% and 19% lower, respectively, than those among non-Hispanic whites.² However, the rates among Hispanics in the United States are higher than those among residents of Puerto Rico and Spanish-speaking countries in South and Central America.^{3,21} Colorectal cancer is rare in developing countries but common in affluent countries, where diets tend to be higher in fat, refined carbohydrates, and animal protein and levels of physical activity are low. In Indiana, during 2004–2008, the incidence rate among Hispanics was similar to the national rate among Hispanics (38.4 versus 38.2 cases per 100,000 people, respectively). Additionally, during 2002–2006, the mortality rates were statistically similar (9.4 versus 13.0 deaths per 100,000 people, respectively).
- **Lung Cancer.** In the United States, the lung cancer rates among Hispanics are about half those among non-Hispanic whites, because of traditionally lower rates of cigarette smoking and because Hispanics who do smoke are less likely to be daily smokers.² In Indiana, during 2004–2008, the incidence rate among Hispanics was similar to the national rate among Hispanics (35.7 versus 34.6 cases per 100,000 people, respectively). However, during 2002–2006, the mortality rate in Indiana was significantly lower than the national rate (16.6 versus 22.6 deaths per 100,000 people).

What are the Indiana and U.S. Trends in Cancer Rates among Hispanics?

Figure 36 shows how cancer incidence and mortality rates among Hispanics in Indiana and the United States have gradually decreased over time. From 1999 to 2008, the incidence rate decreased 21% in Indiana and 10% in the United States.¹¹ From 1999 to 2006, the mortality rate decreased 44% in Indiana and 12% in the United States. There is no clear explanation for why these rates have decreased so dramatically. Although, it is important to note that the demographic characteristics of this population changed considerably during those periods.

Cancer Facts & Figures for Hispanics

Figure 36. Cancer Incidence and Mortality (Death) Rates among Hispanics*—Indiana and United States, 1999–2008



*Age-adjusted

†Data only complete through 2006.

‡Indiana rate is significantly lower ($P < .05$) than the U.S. rate.

Source: U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2008 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2011. Accessed at wonder.cdc.gov on Dec 21, 2011.

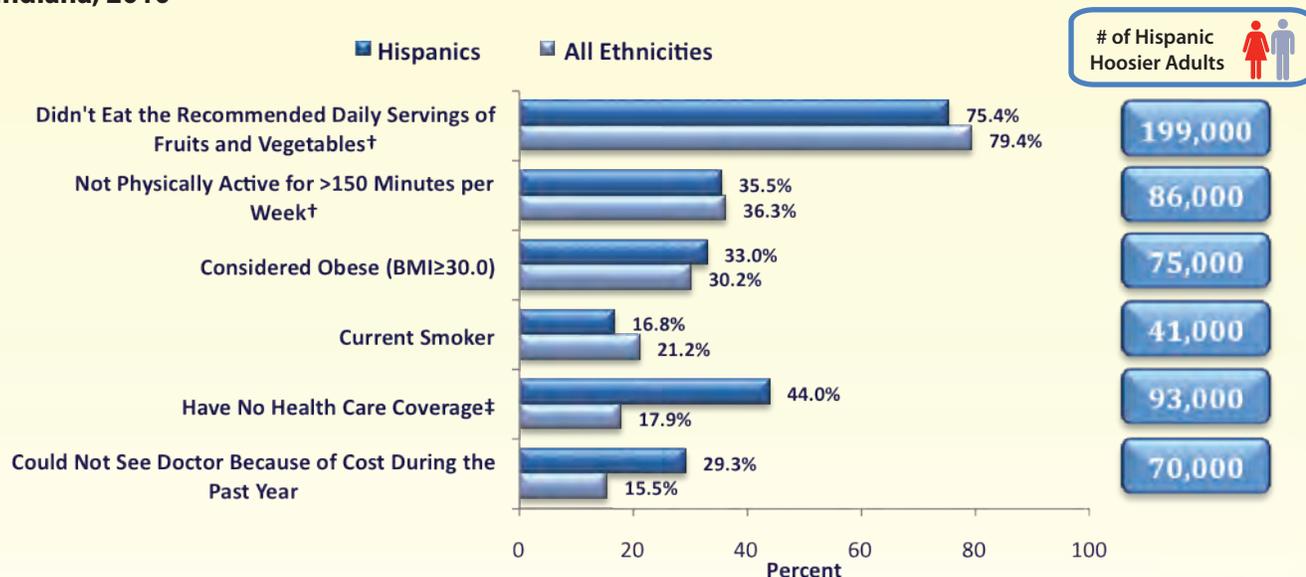
Can Cancer Be Prevented?—see the “Take Charge” box for additional information

Figure 37 describes the burden of some lifestyle and external factors among Hispanic adults in Indiana. Additional information about the impact of cancer risk factors on Hispanics in Indiana, include:

- Body Weight, Diet, and Physical Activity.** Scientific evidence suggests that nationally about one-third of cancer deaths are related to overweight or obesity, physical inactivity, and poor nutrition and thus could be prevented.²² During 2010, in Indiana, 33% of Hispanic adults were considered obese based on body mass index (BMI).²³ Additionally, in 2009, almost 36% of Hispanic adults did not get their recommended 150 minutes of exercise per week and over 75% failed to eat the recommended daily servings of fruits and vegetables (i.e., 2 cups of fruit and 2½ cups of vegetables per day).²³
- Tobacco.** Cigarette smoking is the major risk factor for lung cancer, accounting for about 87% and 70% of the cases among males and females, respectively.²⁴ Hispanics traditionally have a lower smoking rate than other groups. While not significantly different, during 2010, 16.8% of adult Hispanics reported being current smokers, compared to a rate of 21.2% among all Indiana adults.²³
- Health Care Coverage.** Hispanics are less likely to have health insurance than any other racial or ethnic group, partially because they are much more likely than whites to work in agriculture, construction, domestic and food services, and other low-wage occupations, which are less likely to offer employer-based health insurance benefits.^{20,25} If health coverage is available, it might not be widely affordable. During 2009 and 2010, in Indiana, Hispanic adults were approximately 90% more likely than all adults combined to not see a doctor during the year because of cost (29.3% versus 15.5%).²³ During 2010, Hispanics, ages 18–64, were almost 2.5 times more likely to not have health insurance (44.0% versus 17.9%).²³

Cancer Facts & Figures for Hispanics

Figure 37. Preventative Cancer Behaviors and Access to Medical Care among Hispanic Adults*—Indiana, 2010



*Adults are people ages 18 and older

†Data from 2009

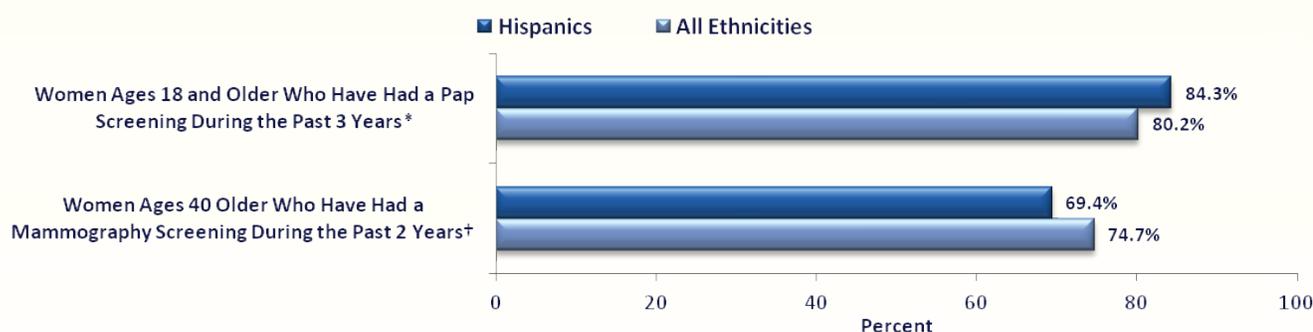
‡Data from 2009 and 2010 combined; adults ages 18–64

Source: Indiana Behavioral Risk Factor Surveillance System

Can Cancer Be Detected Early?

Early detection tests can lead to the prevention of cancer through the identification and removal of precancerous lesions. Screening can detect cancer at an earlier stage, which can reduce the extent of treatment, improve the chances of cure, extend life, and thereby improve the quality of life for cancer survivors. There is limited Indiana-specific data regarding cancer screening rates among Hispanics, although cervical cancer (Pap tests) and breast cancer (mammography) screening rates are somewhat similar to what is seen among all Indiana adults [Figure 38].²³

Figure 38. Cancer Screening Rates Among Hispanics—Indiana



*2010 data

†2006, 2008, and 2010 combined data

Source: Indiana Behavioral Risk Factor Surveillance System

Cancer Facts & Figures for Hispanics

Take Charge!—What You Can Do to Help Prevent Cancer and Improve Care among Hispanics

- Maintain a healthy body weight
- Increase physical activity levels
- Eat the recommended daily servings of fruits and vegetables
- Be smoke-free—Visit www.in.gov/quitline for free smoking cessation assistance
- Identify a primary health care provider and regularly talk about your cancer screening options
- Seek treatment early and avoid delaying follow-up care if you are diagnosed with cancer
- Encourage health care providers to identify ways to be able to clearly communicate health information for people with limited English proficiency in their primary language and to be culturally competent (i.e., respectful and responsive to cultural beliefs that influence the health practices of racial and ethnic minority patients)
- Work to decrease the disparities in socioeconomic factors such as employment, income, and insurance status, which influence health behaviors and outcomes

What Factors Influence Cancer Survival?

In general, the further a cancer has spread, the less likely that treatment will be effective. Although Hispanics have lower incidence and death rates than non-Hispanic whites for the most common cancers, they are more likely to be diagnosed with a more advanced stage of disease. Overall, the lifetime probability of dying from cancer among Hispanics is 1 in 5 for males and about 1 in 6 for females.²

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Table 14. Summary Information for the Most Frequently Occurring Cancer Types

CANCER TYPE	CANCER RISK FACTORS	RISK REDUCTION	EARLY DETECTION
CERVICAL	HPV infections; early age at first intercourse; multiple sexual partners; smoking; low socioeconomic status; poor compliance to screening programs or never having had screening.	Avoid early onset of sexual activity; practice safe sex; avoid numerous lifetime sexual partners; have regular Pap exams to detect pre-cancers; avoid use of tobacco products; complete the HPV vaccination series.	Pap smear; pelvic examination.
COLON & RECTUM	Personal or family history of colorectal cancer; colorectal polyps; diets high in fat and low in fiber; inflammatory bowel disease.	Removal of polyps; follow the ACS nutrition guidelines for diets high in fiber and low in fats; recent studies suggest that drugs like aspirin might reduce risk (risks are often associated with the prolonged use of these drugs, however).	Men and women at average risk begin regular screening for colorectal cancer at age 50 (flexible sigmoidoscopy, stool blood test, colonoscopy, or double-contrast barium enema).
UTERINE	Some forms of infertility; obesity; use of unopposed post-menopausal estrogens; diabetes.	When considering estrogen replacement therapy, benefits and risks must be considered by the woman and her physician.	Pelvic exam; endometrial tissue sampling at menopause if high risk.
FEMALE BREAST	Age; family history in mother or sisters; precancerous condition on breast biopsy; first child born after age 30; never breastfed; obesity; obesity in post-menopausal women never having children; hormone replacement therapy; cancer genes have been identified; increased breast tissue or bone density.	Follow the American Cancer Society's (ACS) nutrition guidelines; maintain normal weight; 150 minutes or more of moderate-intensity aerobic exercise per week and muscle-strengthening activities on 2 or more days a week that work all major muscle groups.	Mammography; breast self-examinations; clinical breast examinations.
LEUKEMIA	Persons with genetic abnormalities such as Down Syndrome; ionizing radiation; exposure to certain chemicals or cytotoxic drugs; certain forms are related to retrovirus (HTLV-1).	Reduce exposure to radiation and hazardous chemicals.	Health-related checkups might identify early signs and symptoms.
LUNG & BRONCHUS	Tobacco use; voluntary and involuntary smoking; occupational exposure to hazardous substances such as asbestos; radon exposure.	Avoid tobacco products in all forms; stop smoking; avoid secondhand smoke; follow workplace safety practices; check home for radon.	Health-related checkups might identify early signs and symptoms.
MELANOMA (SKIN)	Fair skin; sun exposure; severe sunburn during childhood; familial conditions such as dysplastic nervous syndrome; large congenital moles.	Protect against sun exposure, especially in childhood; use protective clothing and sunscreens with SPF 15 or greater when exposed to the sun.	Annual skin examinations by an experienced health care provider; monthly self-exams.
NON-HODGKIN LYMPHOMA	HIV in some cases; transplantation and immune-suppression therapy; viral causes have been suggested in some types; increased risk is associated with certain genetic diseases.	None known at this time; for now, the best way to reduce risk is to try to prevent immune system deficiencies.	Health-related checkups might identify early signs and symptoms.
OVARIAN	Increases with age; possible dietary factors; older women who have never had children; history of breast, endometrial, or colon cancer; family history; genes have been identified.	Pregnancy; breast feeding; using birth control pills for at least five years; eating a low-fat, high fiber diet; for females with a family history of ovarian cancer, having the ovaries or uterus removed or the fallopian tubes tied.	Health-related checkups might identify early signs and symptoms.
PROSTATE	Age is the most important risk factor—80% of all prostate cancer occurs among men over age 65; dietary fat might play a role; higher risk in African Americans; family history.	High-fat diets have been linked to prostate cancer, therefore, ACS nutrition guidelines recommend eating a diet low in fat and high in vegetables, fruits, and grains.	Health-related checkups and screenings might identify early signs and symptoms.

Table 14. Summary Information for the Most Frequently Occurring Cancer Types (continued)

WARNING SIGNS	TREATMENT	CANCER DETECTION GUIDELINES (AMERICAN CANCER SOCIETY)
Abnormal vaginal bleeding.	Precursor lesions —cryotherapy (kills cells by cold); electro-coagulation (kills cells by heat from an electrical current); surgery. Later stage —combination chemotherapy or hormones and radiation therapy for selected clinical problems.	All females should begin cervical cancer screening about three years after they begin having vaginal intercourse, but no later than age 21; screening should be done every year with the regular Pap test or every two years using the newer liquid-based Pap test; women, ages 30 or older, who have had three normal test results in a row may switch to being screened every two or three years.
Rectal bleeding; change in bowel habits; blood in the stools.	Localized —surgery or radiation therapy. Invasive —surgery or radiation therapy. Metastatic —chemotherapy/radiation therapy. Surgery at times combined with radiation therapy or chemotherapy. Chemotherapy in advanced cases is under study.	Beginning at age 50, both men and women with average risk should have a colonoscopy every ten years; or they should have a flexible sigmoidoscopy, double-contrast barium enema, or CT colonography every five years and a follow-up colonoscopy if any of these tests are positive; individuals who have an increased risk of developing the disease should talk to their health care provider about whether earlier or more intensive screening is needed.
Vaginal bleeding after menopause.	For uterine hyperplasia, progestins may be used; surgery sometimes with radiation therapy. Advanced metastases —progestins/chemotherapy.	At menopause, all women should be informed about the risks and symptoms of endometrial cancer; women should report any unexpected bleeding or spotting to their doctors; some women—because of their history—may need to consider having a yearly endometrial biopsy; talk with your health care provider about your history.
Lumps or thickening of tissue; swelling; skin irritation or distortion; nipple symptoms—erosion, inversion, or tenderness.	Early stage —mastectomy or local removal with radiation therapy. Adjuvant therapy —hormones or combination chemotherapy. Later Stage —combination chemotherapy or hormones and radiation therapy for selected clinical problems.	Breast self examination is an option for women starting in their 20s; clinical breast examinations every three years for women ages 20–39, and every year for women ages 40 and older; yearly mammogram for women ages 40 and older; women at increased risk should talk with their doctors about the benefits and limitations of earlier mammogram.
Fatigue; pallor; repeated infection; easy bruising; nose bleeds.	Combination chemotherapy; bone-marrow transplantation may be used in some cases.	Annual physician examination for people ages 40 and older and every three years for people ages 20–40.
Nagging cough; change in breathing habits; coughing up blood; chest pain; hoarseness; shortness of breath; weight loss; appetite loss; anemia; unresolved pneumonia.	Early Stage —surgery Late Stage —surgery; radiation therapy; chemotherapy; immunotherapy.	Annual physician examination for people ages 40 and older and every three years for people ages 20–40.
Change in the size, shape, or color of a mole or signs that its border is becoming irregular; a sore that does not heal.	Surgery; radiation therapy; chemotherapy.	Annual physician examination for people ages 40 and older and every three years for people ages 20–40.
Lymph node enlargement; fever; swollen abdomen (belly); feeling full after only a small amount of food; chest pain or pressure; shortness of breath or cough; weight loss; night sweats; fatigue.	Usually disseminated at time of diagnosis; chemotherapy is used; at times, autologous bone marrow transplantation may be used.	Annual physician examination for people ages 40 and older and every three years for people ages 20–40.
Symptoms are often “silent”; enlarged abdomen; digestive problems such as gas and bloating that persist and cannot be tied to another cause; abnormal vaginal bleeding; pelvic or leg pain.	Surgery; radiation therapy; chemotherapy.	Health-related checkups might identify early signs and symptoms.
Difficulty passing urine; blood in urine or semen; frequent urination; difficulty emptying the bladder completely; pain or burning during urination; painful ejaculation; pain in the back, hips, or pelvis that does not go away.	Early Stage —surgery; radiation therapy. Advanced stages —radiation therapy; hormone treatment; anticancer drugs.	Beginning at age 50, men who have at least a 10-year life expectancy should be offered an annual digital rectal exam and prostate-specific antigen test (with counseling about benefits and limitations); Men in high risk groups—African Americans and men with two or more affected first degree relatives—should begin screenings at age 45. Men at even higher risk (several close relatives diagnosed with prostate cancer at an early age) should discuss screening options with their health care provider at age 40.



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