



**2014**

**The Burden of Obesity Related Cancers  
and the promotion of Physical Activity  
in Indiana**



Indiana State  
Department of Health

## **Preface**

Over the past several years, Indiana has made great strides in reducing the burden of cancer. While cancer incidence continues to decline, cancer is still the second leading cause of death, affecting every individual, family and community. Healthy lifestyle behaviors are the most effective in preventing cancers. These include avoiding tobacco products, maintaining a healthy weight and meeting national guidelines for healthy eating and recommended physical activity.

The *“Burden of Obesity Related Cancers and the Promotion of Physical Activity in Indiana”* describes the burden of cancers associated with obesity and the extent that obesity-related cancers are affecting Hoosiers. In addition, the report outlines policy, systems and environmental change strategies that can be adopted at the state, community and school district level to provide opportunities for increased physical activity in adults and children by making the healthy choice the easy choice.

The Cancer Control Section and the Indiana Cancer Consortium (the state’s only comprehensive cancer control coalition) use the [Indiana Cancer Control Plan 2010-2014](#) to guide cancer control efforts and promote collaborations between organizations and the residents of Indiana. The *“Burden of Obesity Related Cancers and the Promotion of Physical Activity in Indiana”* furthers that effort. This report can be used to:

- Educate communities, organizations, school districts, employers and decision makers about the burden of obesity related cancers, the current state of physical activity and overweight and obesity trends in Indiana
- Educate key stakeholders about evidence-based physical activity strategies aimed at improving levels of physical activity
- Inform decision makers how policy, systems and environmental change strategies in schools and communities can encourage physical activity by making the healthy choice the easy choice
- Select populations at risk for obesity related cancers as recipients for health promotion efforts

Raising awareness about the impact people and evidence-based interventions can have on health is a step towards cancer prevention. Progress towards cancer control cannot be made without every Hoosier working together to fight this disease.

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## Introduction

Cancer is the second leading cause of death in Indiana, impacting every individual, family and community. About 2.4 million Hoosiers or two in five people will eventually develop cancer.<sup>1</sup> Tellingly, while the incidence rates for many cancers are declining, the incidence rates for cancers associated with obesity are increasing in the United States.<sup>2</sup> The World Cancer Research Fund estimates about one-quarter to one-third of new cancer cases expected to occur in the United States during 2013 will be related to overweight or obesity, physical inactivity and poor nutrition.<sup>3</sup>

Over the past three decades, the adult obesity rate has doubled and almost two-thirds of Indiana adults are considered overweight or obese. Many factors influence overweight and obesity; however, unhealthy lifestyle choices play a large role. For example, sedentary lifestyles and decreased opportunities for physical activity make it extremely difficult to be active on a regular basis. As a result, most Americans consume more calories than they burn, contributing to weight gain and obesity.

Obesity is not only a risk factor for cancer, but also for many other chronic conditions such as cardiovascular disease, hypertension and diabetes; thus, many of America's disease burdens associated with overweight and obesity can be prevented. The Centers for Disease Control and Prevention (CDC) have studied several methods to reduce and prevent this national epidemic. The CDC provides tools and resources for individuals, communities and organizations to use a framework for reducing obesity. Policy, systems and environmental change strategies can evoke sustainable, far reaching impact to reduce obesity. In Indiana, changes to built environments and increased opportunities for physical activity are being explored within community and school settings.

### **What is the burden of overweight and obesity in the United States and Indiana?**

Obesity is a common and serious public health concern. Obesity is considered a national epidemic with rates that have more than doubled in adults and children, and tripled in adolescents during the past 30 years.<sup>4,5</sup> In 2011-2012, more than one-third, or 34.9 percent, of adults aged 20 and over in the United States were obese.<sup>6</sup> Childhood obesity rates are also concerning and have been increasing during the past several decades. In the United States 17 percent, or 12.5 million, children and adolescents ages two through 19 were considered obese in 2009-2010.<sup>7</sup>

Adults, children and adolescents of all races and backgrounds greatly suffer from overweight and obesity in Indiana. In 2010, roughly three million Indiana adults or 65.4 percent were overweight or obese which is an increase of 10 percentage points since 1995.<sup>8</sup> The Indiana adult obesity prevalence has consistently risen, mirroring increases seen across the United States. Appendix A displays the progressive increase of obesity rates throughout all 92 counties in Indiana from 2004-2009. While each county saw an increase in obesity prevalence, the northern and southwest regions of the state have a noticeably higher concentration. Among Indiana youth (10-17 years) 31.5 percent were considered overweight or obese in 2011-2012, and in 2011, 30.2 percent of high school students were also considered either overweight or obese.<sup>9</sup> A large body of evidence suggests obese children are likely to become obese adults<sup>10,11,12,13</sup>. When obese, adults especially are at an increased risk for several types of cancer.



*Estimates suggest overweight and obesity contribute to 14 to 20 percent of all cancer-related mortality.*

## Obesity and cancer: What is the link?

The National Cancer Institute has investigated and found many cancers that are associated with excess weight. These cancers, and possibly others, include postmenopausal breast, colon and rectum, endometrial, esophagus, gallbladder, thyroid, kidney and pancreatic.<sup>14</sup> In Indiana, the overall age-adjusted (see Technical Notes, Appendix B) incidence rates for four of these cancers have significantly increased from 1997 to 2010. Appendix B demonstrates how incidence rates for esophageal cancer have increased from 4.0 to 5.1 per 100,000 persons; pancreatic cancer from 8.6 to 11.9 per 100,000 persons; kidney and renal cancer from 12.1 to 18.1 per 100,000 persons; and thyroid cancer from 4.9 to 11.4 per 100,000 persons. For the same years, mortality rates significantly decreased for colon and rectum cancer (23.3 to 15.7 per 100,000 persons) but increased for esophageal cancer (3.7 to 5.2 per 100,000 persons). Appendix B also displays incidence and mortality rates from 1997 to 2010 for the seven cancers related to obesity. In addition, significant findings of the differences found between genders and races for these cancers in Indiana are listed.

Several possible mechanisms have been suggested to explain the association of obesity with increased risk of certain cancers. Some include fat tissues, which produce excess amounts of estrogen, have been linked with the risk of breast, endometrial and some other cancers. Additionally, some suggest that fat cells, which produce hormones that may stimulate or inhibit cell growth, have effects on other tumor growth regulators. Other associations are obese people often have increased levels of insulin, which may promote the development of certain tumors.

Estimates suggest overweight and obesity contribute to 14 to 20 percent of all cancer-related mortality.<sup>15</sup> Increasing evidence suggests being overweight increases the risk for cancer recurrence and decreases the likelihood of survival for several cancers. Evidence also suggests that intentional weight loss of at least 20 pounds or more can reduce risk of obesity related cancers.<sup>16</sup> While it is important to prevent overweight and obesity, making lifestyles changes show promise in reducing the risk of cancers associated with overweight and obesity.

*Evidence also suggests that intentional weight loss of at least 20 pounds or more can reduce risk of obesity-related cancers*



*Policy, systems and environmental change interventions encouraging physical activity and healthy eating for adults and children demonstrate meaningful effects across all groups, regardless of age, race, ethnicity and gender.*

## Physical activity as a risk factor for overweight and obesity

Making healthy lifestyle choices can greatly impact the risk of becoming overweight or obese. Leading a physically active lifestyle is a recommended strategy to maintain a healthy weight. The CDC recommends adults get at least 150 minutes of aerobic exercise every week and complete muscle-strengthening activities on two more days of the week.<sup>17</sup> However, nationally, less than half of all adults meet those guidelines.<sup>18</sup> Indiana, sadly, falls short of these low national statistics. Currently, only 17.3 percent of Indiana adults participated in 150 minutes or more of aerobic activity and at least two days of muscle strengthening exercise per week.<sup>8</sup> Many adults, about 29 percent, do not get any physical activity outside of their normal work days, either.<sup>8</sup>

Children are also at risk of failing to meet requirements for physical activity. The CDC recommends children get 60 minutes or more of physical activity each day. However, nationally, less than three in 10 high school students get at least 60 minutes of physical activity per day.<sup>18</sup> Similar results exist in Indiana. For instance, over half, about 56.5 percent, of Indiana high school students are not physically active five days a week, and only 24 percent are physically active seven days a week.<sup>9</sup> Many hours each day are often consumed by television watching, playing video games or using computers for personal use outside of school.<sup>9</sup> Therefore it is increasingly important that adolescents establish healthy lifestyle behaviors and prevent unhealthy habits, as it is easier and more effective than trying to reverse unhealthy lifestyle behaviors and habits into adulthood.<sup>19</sup>

## Strategies to promote physical activity

Several organizations like the CDC and Institute of Medicine (IOM) have conducted research aimed at guiding and directing public health organizations to implement evidence-based strategies to improve population health. Policy, systems and environmental change interventions encouraging physical activity and healthy eating for adults and children demonstrate meaningful effects across all groups, regardless of age, race, ethnicity and gender.

*The Guide to Community Preventive Services*<sup>20</sup>, also known as The Community Guide, lists intervention key findings to direct states and communities' public health efforts. Policy and environmental approaches designed to provide opportunities, support, and cues to help people be physically active involve the physical environment, social networks and norms, laws, and a broad network of partnerships including public health professionals, legislators, park departments, transportation and the media.<sup>21</sup> The Community Guide describes four recommended environmental and policy approaches to increase physical activity. The four strategies are:

- Community-scale urban design and land use policies
- Enhanced access to places for physical activity
- Street-scale urban design and land use policies
- Point-of-decision prompts to encourage use of stairs



These strategies are made to be implemented within community settings, workplaces, and organizations aimed at making the healthy choice, the easy choice.

The IOM reviewed the current status of physical activity and physical education and provided recommendations for strengthening and improving programs and policies for physical activity and education in the school environment, encompassing before, during and after school, based on guiding principles in [\*Educating the Student Body: Taking Physical Activity and Physical Education to School\*](#).<sup>22</sup> Schools have direct contact with children for multiple hours a day, and play a significant role in supporting youth to be physically active by allowing time for physical activity. The IOM recognizes the benefits associated with instilling strong values that encourage children to adopt lifelong physical activity habits. Systems and policy changes are far reaching. Their impact is realized across different population groups to achieve health equity among the younger generation. In *Educating the Student Body: Taking Physical Activity and Physical Education to School*, recommendations were made using the best available scientific evidence and promising approaches. The report took into account all types of school environments and the diversity of students. A summary of recommendations are below:

### **Taking a Whole-of-School Approach**

- School and district administrators, parents and teachers should create a whole-of-school approach that fosters and provides access to, and opportunities for, physical activity in the school environment. This can be achieved by adopting or strengthening school wellness policies to align with national recommendations for both number of weekly physical activity minutes and physical education to increase the opportunity and availability of time and places for children to be physically active.

### **Considering Physical Activity in All School-Related Policy Decisions**

- Schools should consider access to, and provision of, physical activity in all decisions related to the school environment as a factor contributing to improved academic achievement and development. Multi-component system interventions are promising strategies aimed at increasing physical activity in schools. Potential actions for states, school districts, schools and wellness committees include designating key individuals for physical activity related opportunities and programs and specifying objectives for physical activity during all parts of the day such as physical education, recess, classroom and transportation from and to school.

### **Designing Physical Education as a Core Subject**

- Physical education is a foundation for lifelong health and learning and should be designated as a core subject. All school-aged children should have access to health-enhancing subject areas to develop knowledge, skills and motivation to engage in lifelong positive health behaviors like physical activity. Federal and state agencies should consider finding innovative application of physical education in sample states or districts to measure and

highlight outcomes. Non-governmental agencies have a unique opportunity develop materials to educate key stakeholders.

### **Monitoring Physical Education and Opportunities for Physical Activity in School**

- Educators should develop and systemically collect school wellness policy content and health behaviors to assist in policy and program planning, implementation and evaluation. Little information is available on physical activity behaviors of students during schools hours.

### **Provide Pre-service training and Professional Development for Teachers**

- School administrators should continuously engage and educate K-12 physical education teachers in professional development opportunities to enable them to embrace and promote physical activity across the curriculum. Physical education and activity competency should be established and highlight exemplary programs as best practices.

### **Ensuring Equity in Access to Physical Activity and Physical Educations**

- Ensure programs and policies address existing disparities in physical activity and all students at all schools have equal access to and opportunities for physical activity and quality physical education. Children of all backgrounds should engage in physical education meet the recommended 60 minutes per day of physical activity.

*The CDC recommends children get 60 minutes or more of physical activity each day. However, nationally, less than three in 10 high school students get at least 60 minutes of physical activity per day.*



*Indianapolis boasts the strongest complete streets policy in the nation and is looked to as a leader in built environment strategies.*

## What is Indiana doing?

The impact of cancer and overwhelmingly high rates of overweight and obesity in Indiana is clear. State comprehensive cancer control programs are responding to these issues by implementing evidence-based policy, systems and environmental change strategies to reduce the burden of cancer in Indiana. The Cancer Control Section (CAS) at the Indiana State Department of Health (ISDH) provides technical assistance to the Indiana Cancer Consortium (ICC), the state's comprehensive cancer control coalition. Together, the CAS and ICC plans, implements and evaluates the [Indiana Cancer Control Plan 2010-2014](#) to reduce the burden of cancer. The CAS and ICC share a policy agenda that addresses the alarmingly low rates of physical activity among children, adolescents and adults. Specifically, the policy agenda addresses built environment strategies like increasing the number of complete streets and promoting school-based policy and systems changes allowing children to accumulate 150 minutes of physical activity a week in school.

Complete streets are roadways designed to safely and comfortably provide for the needs of all users, like motorists, cyclists, pedestrians, transit and school bus riders, movers of commercial goods, persons with disabilities, seniors and emergency users. Complete streets provide opportunities for increased physical activity by incorporating features that promote regular walking, cycling and transit use into almost every street. Interventions targeting built environment changes, such as complete streets, are associated with increased levels of physical activity. Research shows people living in walkable neighborhoods complete 35-45 more minutes of physical activity weekly and are substantially less likely to be overweight or obese compared to people living in neighborhoods where walking is not as safe or easy.<sup>23</sup> Complete streets can decrease the dependence of automotive transportation. Evidence suggests each additional hour spent in a car per day was associated with a 6 percent increase in the likelihood of obesity.<sup>24</sup> Ongoing collaborations between the CAS and ICC and internal and external partners, such as the Division of Nutrition and Physical Activity (DNPA) at ISDH and Indiana Complete Streets Coalition, has resulted in an increase in the percentage of Indiana residents covered by a complete streets policy. Currently, approximately 40 percent of Indiana residents live in communities covered by a complete streets policy.<sup>25</sup> Indianapolis boasts the strongest complete streets policy in the nation and is looked to as a leader in built environment strategies.<sup>26</sup> As more Hoosiers gain access to complete streets, opportunities for living a physically active life increases, thus benefits states' comprehensive cancer control efforts.

The CAS and the ICC support increased time for physical activity in elementary schools. In Indiana, most school corporations are required to have a school wellness policy; however, time requirements for physical activity are not mandated. Schools have the option to enhance their wellness policy by incorporating increased time for physical activity. To increase school districts knowledge base, the ICC educates its membership on the [Indiana Model School Wellness Policy on Physical Activity and Nutrition](#) and [Indiana Healthy Schools Toolkit](#). Created by partners from the DNPA, Indiana Healthy Weight Initiative and InShape Indiana, the intent of the *Indiana Model School Wellness Policy* is to provide language for physical activity and nutrition for a school corporation that aligns with best practice recommendations. The *Indiana Healthy Schools Toolkit* provides a framework for action for schools to

follow that will allow for increased opportunities for students and staff to be physically active and also eat healthy. Currently, there are [14 Indiana school corporations](#) that have a wellness policy specifying elementary children will receive 30 minutes a day of physical activity every day. The CAS and ICC continue leveraging statewide partnerships to advance school wellness improvements in order to prevent and control cancer in Indiana.

*In Indiana, most school corporations are required to have a school wellness policy; however, time requirements for physical activity are not mandated. Schools have the option to enhance their wellness policy by incorporating increased time for physical activity.*

## **Conclusion**

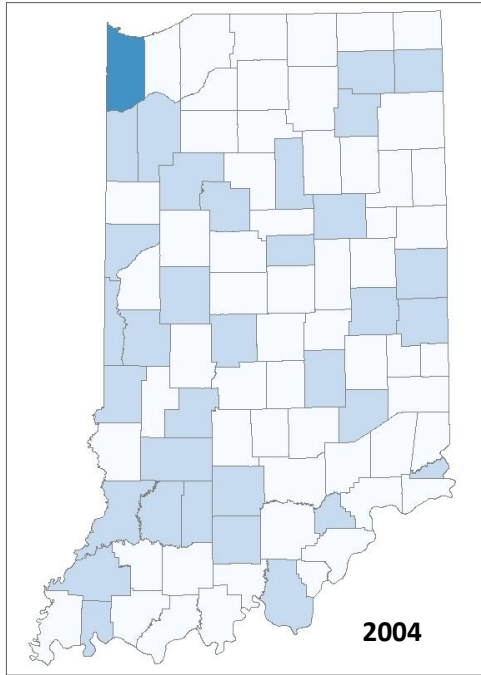
Promoting physical activity is a critical component to reducing and preventing obesity. The CAS provides technical assistance to the ICC to better address cancer policy, systems and environmental change strategies to decrease cancer risk through lifestyle behavioral interventions. ISDH supports evidence-based strategies to prevent and control cancer. While advancements have been made to reduce cancer incidence, many cancers associated with overweight and obesity are on the rise.<sup>2</sup>

The ICC's mission is to reduce the cancer burden in Indiana by bringing together Indiana's cancer community; identifying disease challenges facing our state and local communities; and implementing evidence-based solutions that make a difference.

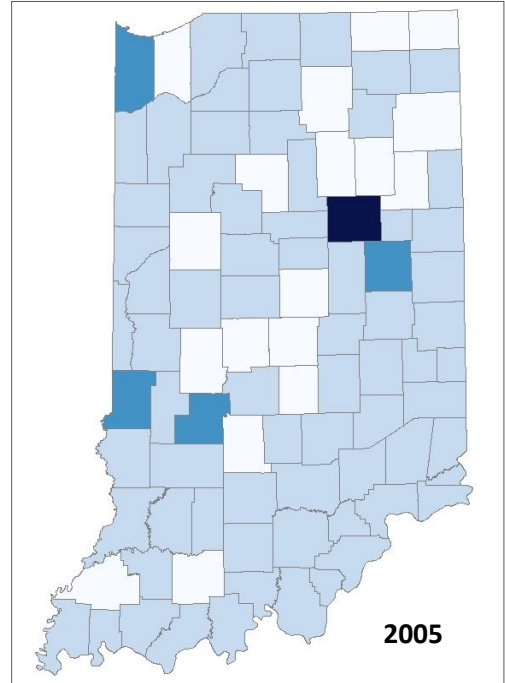
**Appendix A**

**Figures 1-6: Percent Obese Adults (Age 20+), by Year and County of Residence in Indiana, 2004-2009**

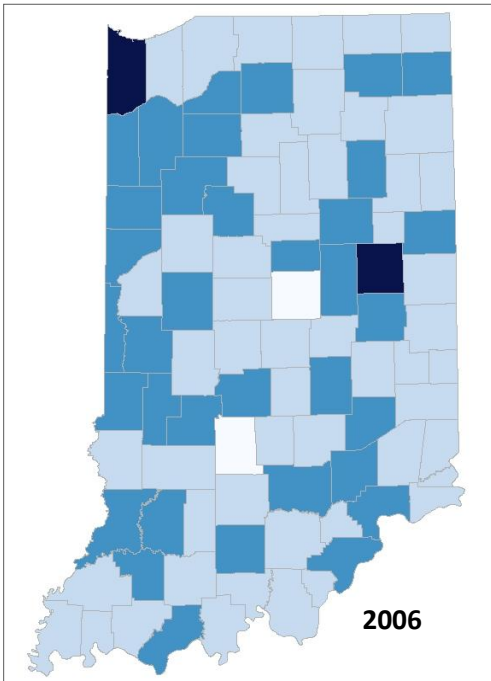
**Figure 1.**



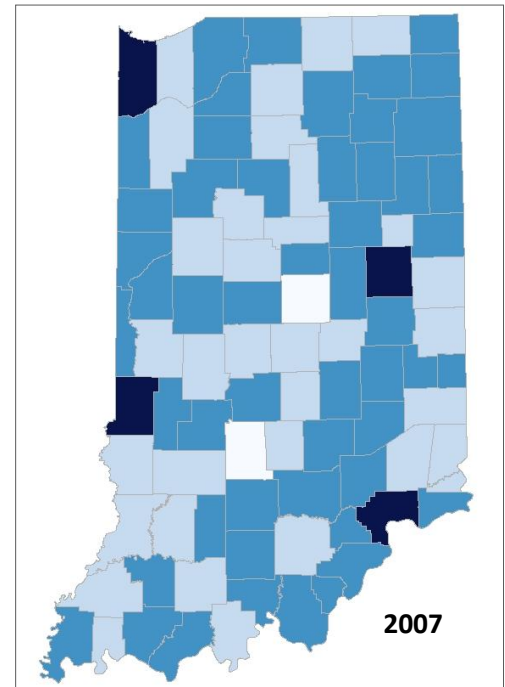
**Figure 2.**



**Figure 3.**

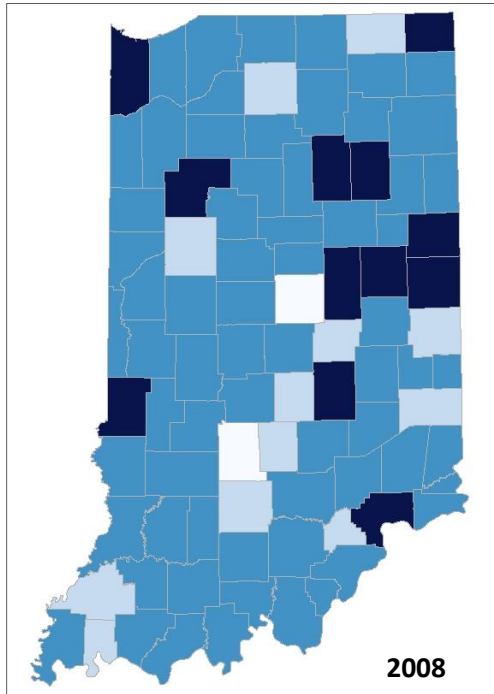


**Figure 4.**

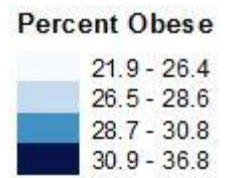
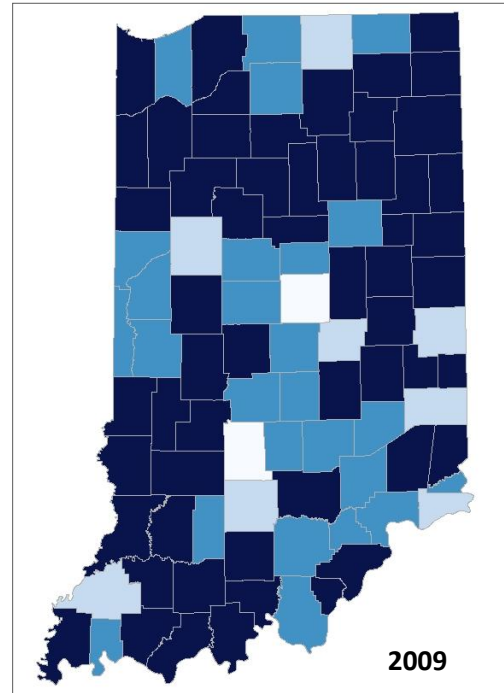


**Figures 1-6: Percent Obese Adults (Age 20+), by Year and County of Residence in Indiana, 2004-2009 (continued)**

**Figure 5.**



**Figure 6.**



## **Appendix B**

### **Technical Notes**

#### **Age-Adjusted Rates**

Older age groups generally have higher cancer rates than younger age groups. For example, in Indiana, more than 60 percent 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. 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.



## **Trends in Incidence and Mortality Rates of Overweight and Obesity Related Cancers**

Below are charts for age-adjusted incidence and mortality rates for those cancers related to overweight and obesity in adults. Changes in rates for gender within race (white and black), between races and genders for 1997-2010 were examined for statistical significance. Rates with counts consistently less than 20 were not included as they are statistically unstable. Only findings that are statistically significant with stable rates are mentioned here.

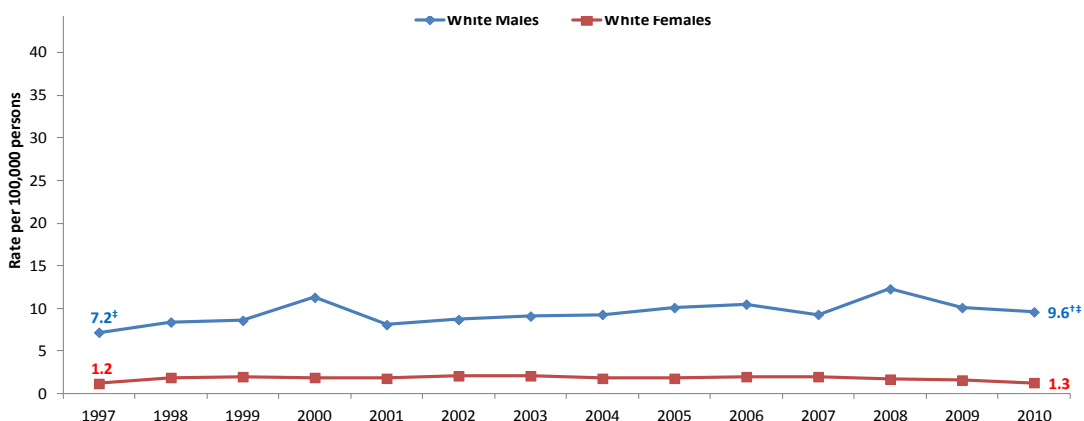
### **Incidence Rates**

- The rate for esophageal cancer incidence increased significantly for white males from 1997 to 2010.
- The rate for colon and rectum cancer incidence decreased significantly for white males and white females from 1997 to 2010.
- The rate for pancreatic cancer incidence increased significantly for white males and white females from 1997 to 2010.
- The rate for kidney and renal pelvis cancer incidence increased significantly for white males and white females from 1997 to 2010.
- The rate for thyroid cancer incidence increased significantly for white males and white females from 1997 to 2010.
- The rate for post-menopausal breast cancer incidence decreased for white females from 1997 to 2010.
- The colon and rectum cancer incidence rate was not significantly different between black and white females in 1997, however, by 2010, black females had a significantly higher rate than white females did.
- The incidence rate for white males in 1997 and 2010 was significantly higher than white females for colon and rectum, kidney and renal pelvis, esophageal and pancreatic cancers.
- The post-menopausal breast cancer incidence rate for white females was significantly higher than for black females in 1997; however, this difference disappeared by 2010.
- The endometrial cancer incidence rate for white females was significantly higher than for black females in 1997; however, this difference disappeared by 2010.

### **Mortality Rates**

- The colon and rectum cancer mortality rate was significantly higher for black females when compared to white women in 1997. By 2010, the rates were not significantly higher for black females.
- The colon and rectum cancer mortality rate decreased significantly for white males, white females and black females from 1997 to 2010.
- The pancreatic cancer mortality rate was significantly higher for black males when compared to white males in 1997. By 2010, the rates were not significantly different between the two races.
- The mortality rate for white males in 1997 and 2010 was significantly higher than white females for colon and rectum, kidney and renal pelvis, esophageal and pancreatic cancers.
- The endometrial cancer mortality rate for black females was significantly higher than for white females in 1997 and 2010.

**Figure 1. Esophageal Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



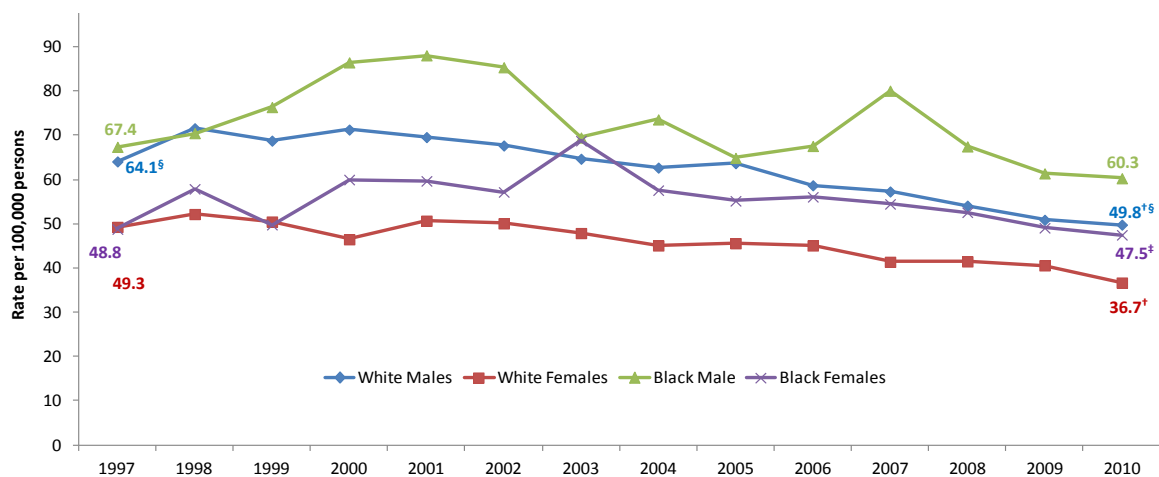
\*Age-adjusted for all esophageal cancers. Rates for races and genders not represented were too small to be stable.

† The rate increased significantly for white males from 1997 to 2010.

‡ The rate was significantly higher for white males compared to white females in 1997 and 2010.

Source Indiana State Cancer Registry

**Figure 2. Colorectal Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



\*Age-adjusted

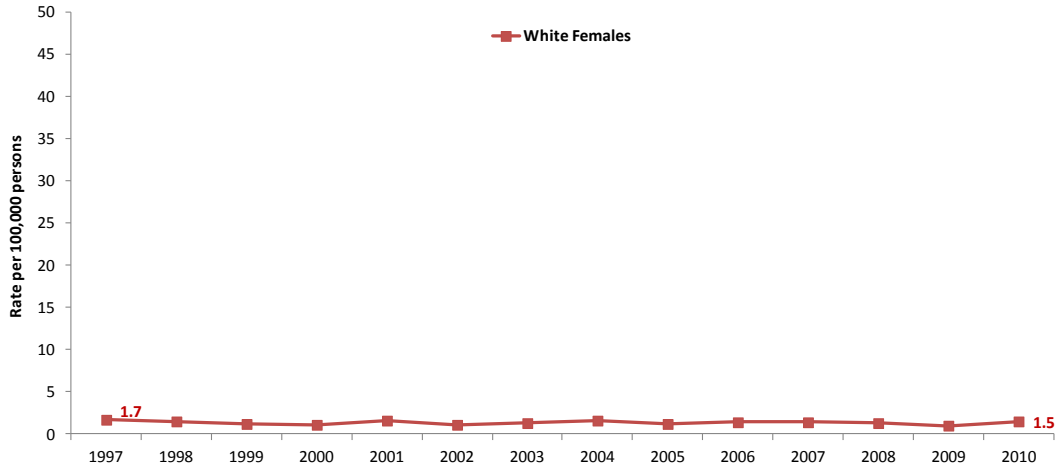
† The rate decreased significantly for white males and white females from 1997 to 2010.

‡ The rate was significantly higher for black females compared to white females in 2010.

§ The rate was significantly higher for white males compared to white females in 1997 and 2010.

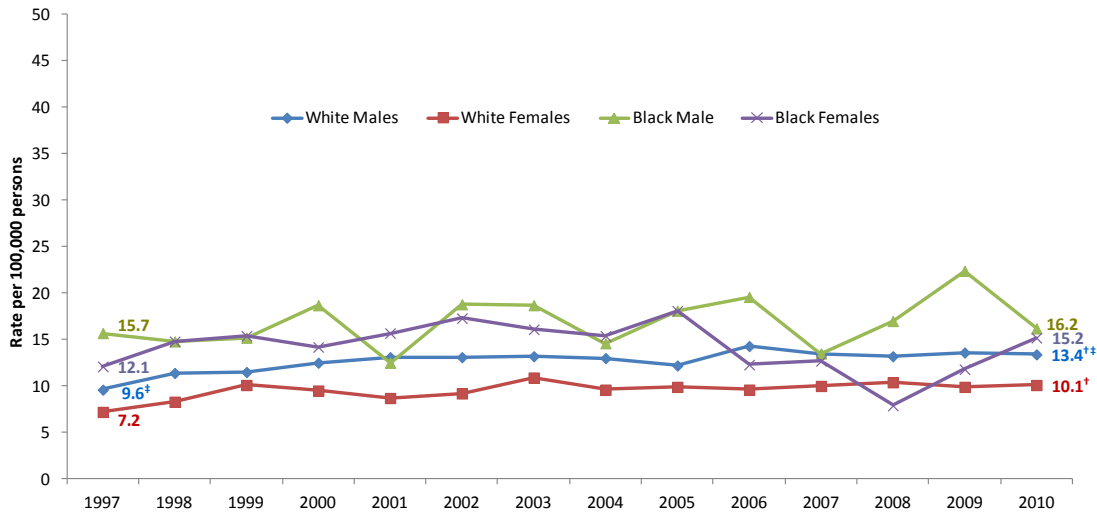
Source Indiana State Cancer Registry

**Figure 3. Gallbladder Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



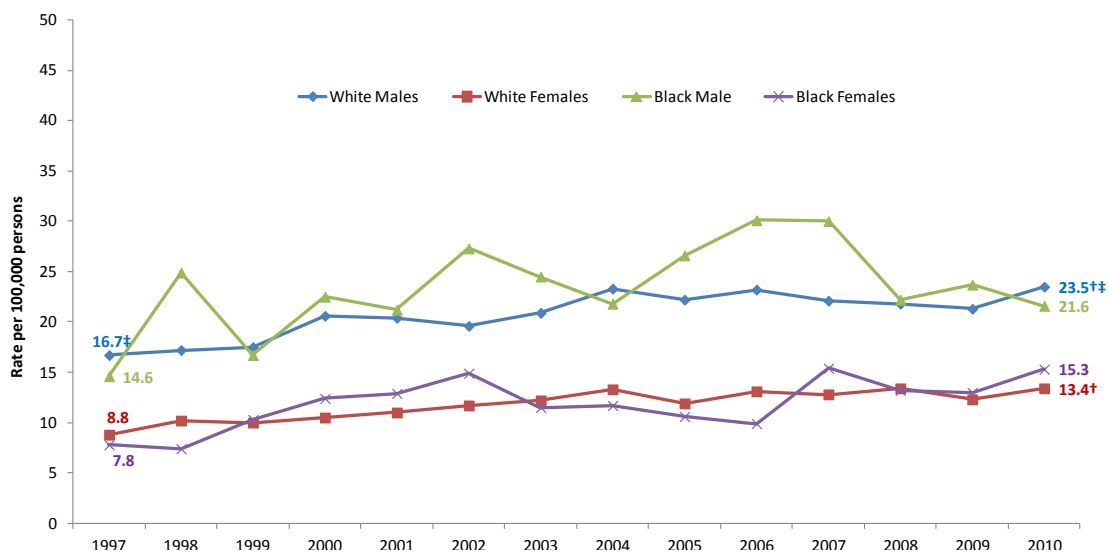
\*Age-adjusted. Rates for races and genders not represented were too small to be stable.  
Source Indiana State Cancer Registry

**Figure 4. Pancreatic Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



\*Age-adjusted.  
† The rate increased significantly for white males and white females from 1997 to 2010.  
‡ The rate was significantly higher for white males compared to white females in 1997 and 2010.  
Source Indiana State Cancer Registry

**Figure 5. Kidney and Renal Pelvis Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



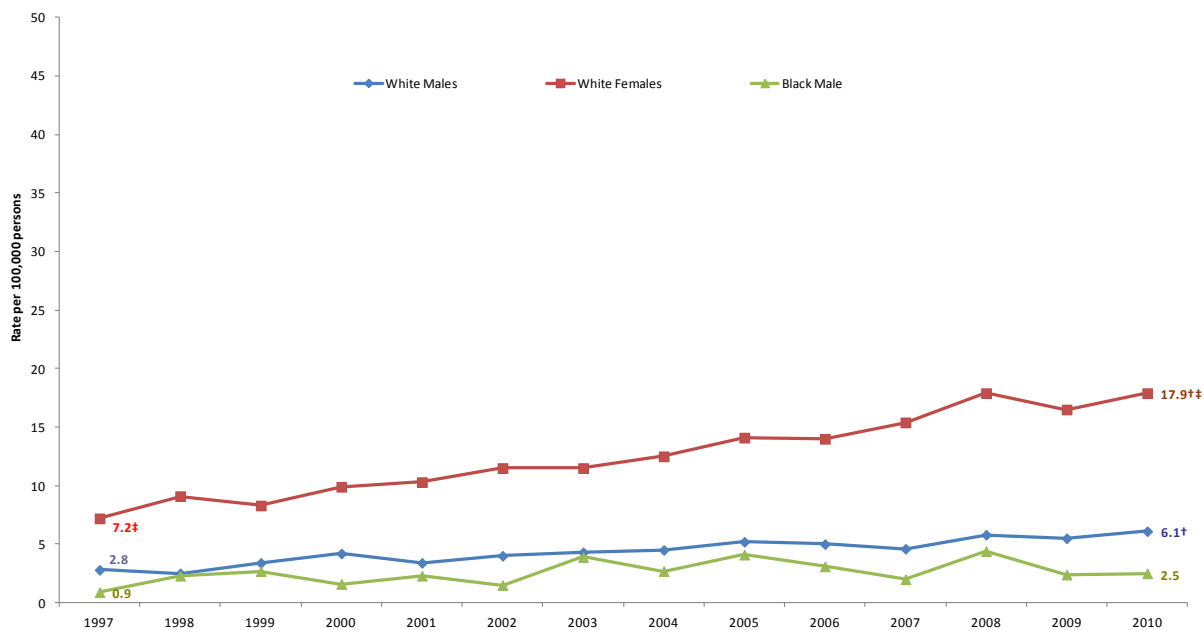
\*Age-adjusted

† The rate increased significantly for white males and white females from 1997 to 2010.

‡ The rate was significantly higher for white males compared to white females in 1997 and 2010.

Source Indiana State Cancer Registry

**Figure 6. Thyroid Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



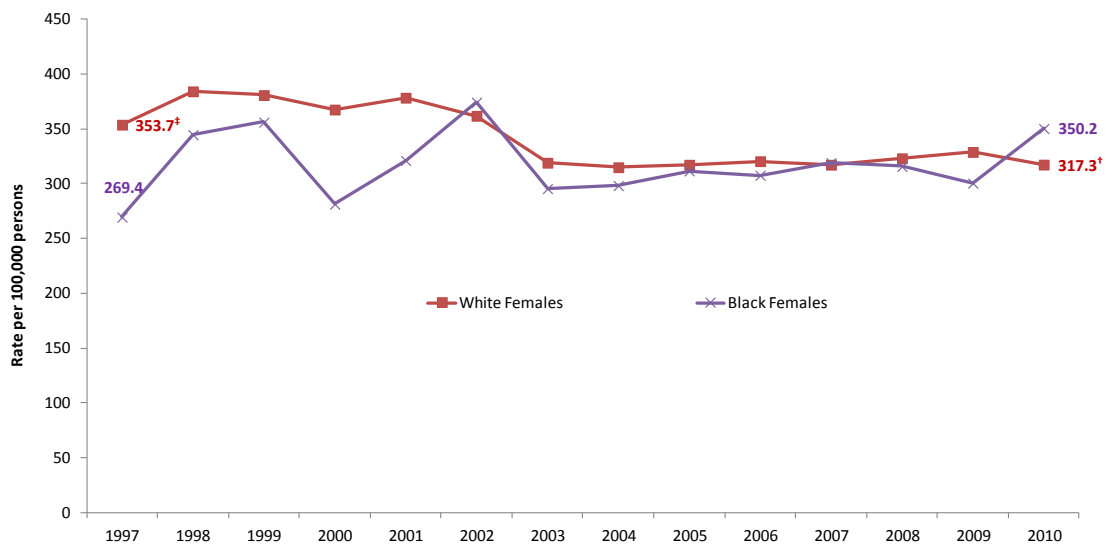
\*Age-adjusted. Black females had counts too small to produce stable rates.

† The rate increased significantly for white males and white females from 1997 to 2010.

‡ The rate was significantly higher for white females compared to white males in 1997 and 2010.

Source Indiana State Cancer Registry

**Figure 7. Female Post-Menopausal Breast Cancer Incidence Rates by Race\*—Indiana, 1997-2010**



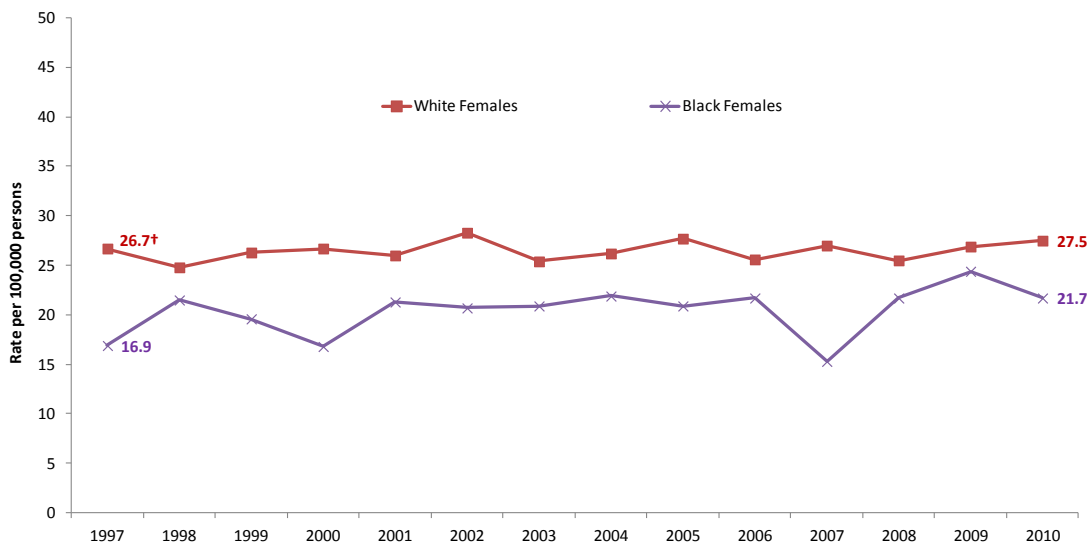
\*Crude rates for women 50 years of age and over.

† The rate decreased significantly for white females from 1997 to 2010.

‡ The rate was significantly higher for white females compared to black females in 1997.

Source Indiana State Cancer Registry

**Figure 8. Endometrial (Corpus Uterus) Cancer Incidence Rates by Race\*—Indiana, 1997-2010**

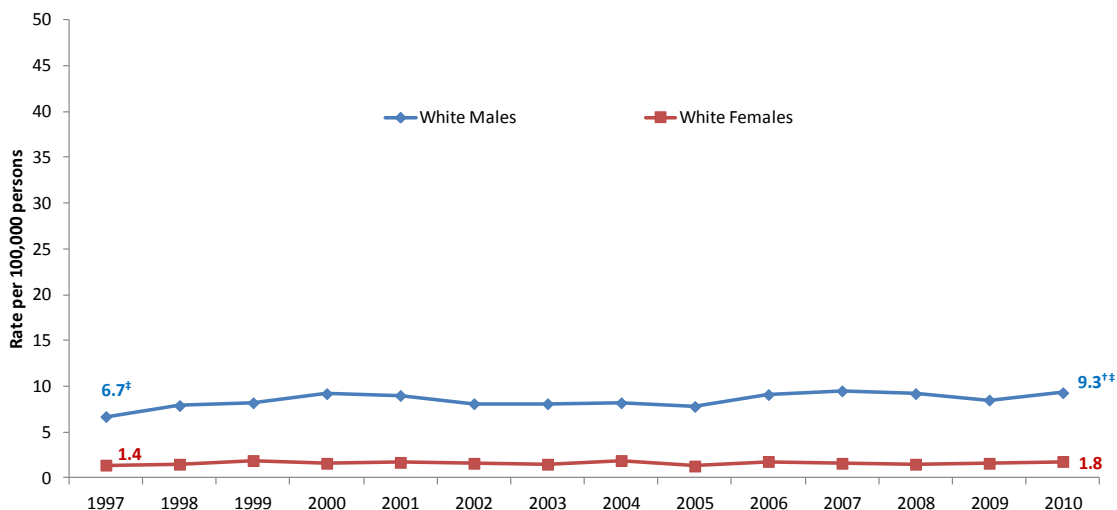


\* Age-adjusted

† The rate was significantly higher for white females compared to black females in 1997.

Source Indiana State Cancer Registry

**Figure 9. Esophageal Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



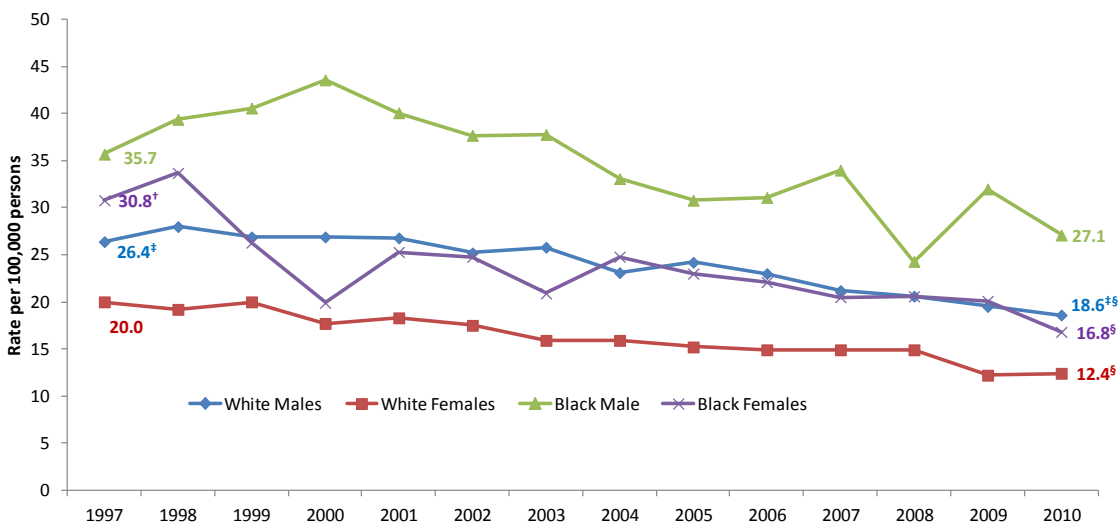
\*Age-adjusted for all esophageal cancer. Races and genders not represented had counts too small to produce stable rates.

† The rate for white males significantly increased from 1997 to 2010.

‡The rate was significantly higher for white males compared to white females in 1997 and 2010.

Source Indiana State Cancer Registry

**Figure 10. Colon and Rectum Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



\*Age-adjusted

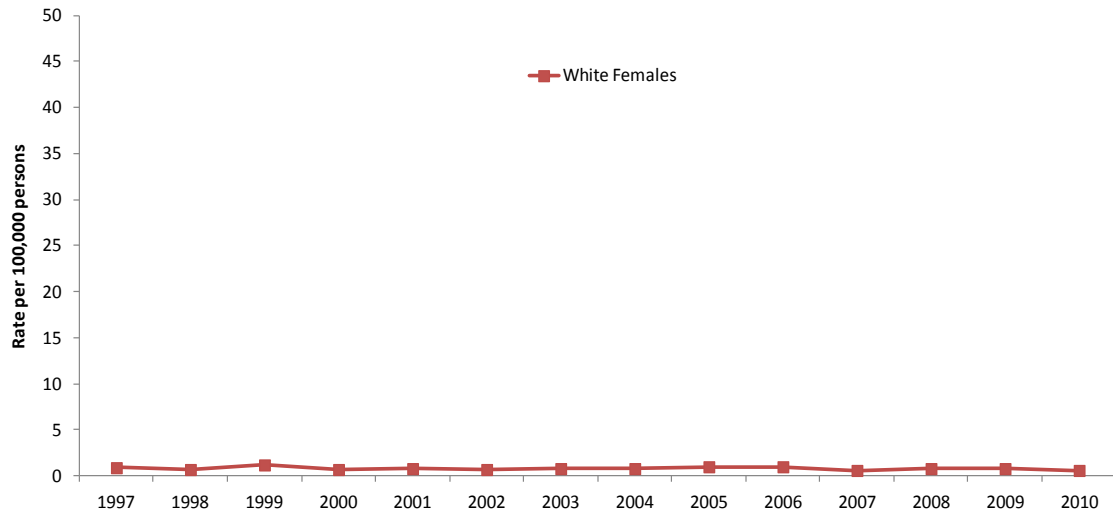
† The rate was significantly higher for black females compared to white females in 1997 .

‡ The rate was significantly higher for white males compared to white females in 1997 and 2010.

§The rate significantly decreased for white males, white females and black females from 1997 to 2010.

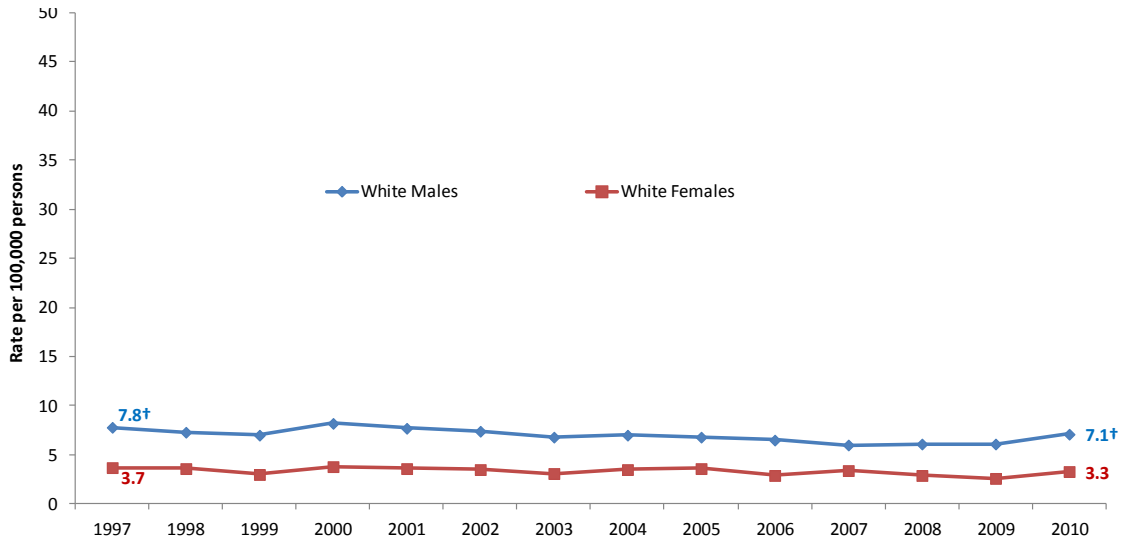
Source Indiana State Cancer Registry

**Figure 11. Gallbladder Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



\*Age-adjusted. Races and genders not represented had counts too small to produce stable rates.  
Source Indiana State Cancer Registry

**Figure 12. Pancreatic Cancer Mortality Rates by Race\*—Indiana, 1997-2010**

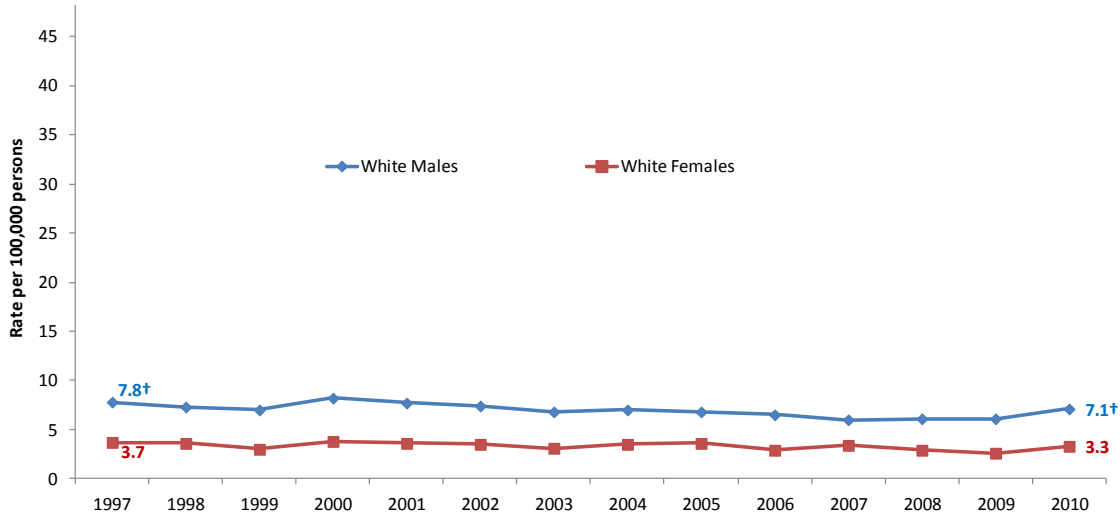


\*Age-adjusted. Races and genders not represented had counts too small to produce stable rates.  
Source Indiana State Cancer Registry

**Figure 13. Thyroid Cancer Mortality Rates by Race—Indiana, 1997-2010**



**Figure 14. Kidney and Renal Pelvis Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



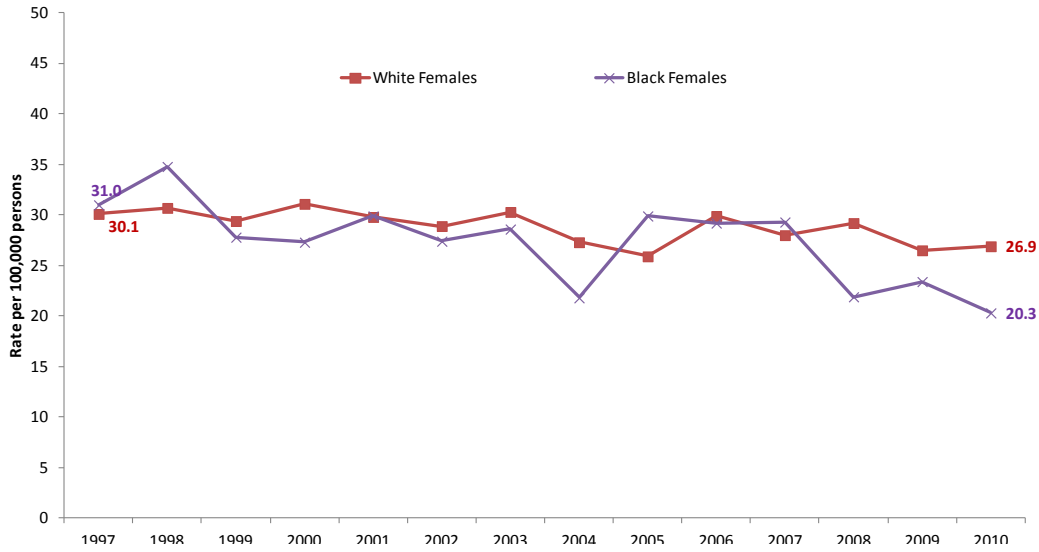
\*Age-adjusted. Races and genders not represented had counts too small to produce stable rates.

†The rate was significantly higher for white males compared to white females in 1997 and 2010.

Source Indiana State Cancer Registry

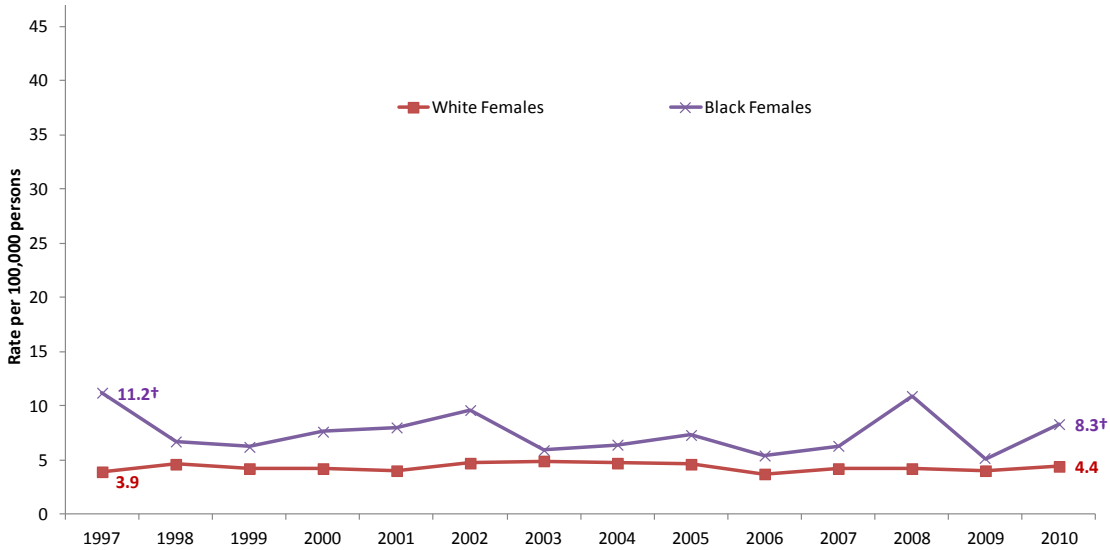


**Figure 15. Breast Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



\*Crude rates for women 50 years of age and over.  
Source Indiana State Cancer Registry

**Figure 16. Endometrial (Corpus and Uterus) Cancer Mortality Rates by Race\*—Indiana, 1997-2010**



\*Age-adjusted. The rates for black females for the years 1998,1999,2000,2001,2003,2004,2005, 2006, 2007, 2009 are based on <20 cases and are unstable.

†The rate was significantly higher for black females compared to white females in 1997 and 2010.

Source Indiana State Cancer Registry

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