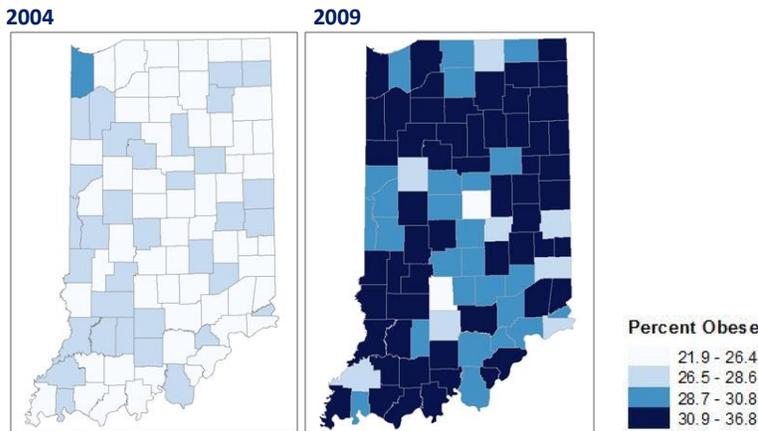




**OBESITY** is a common and serious public health concern. Obesity is considered a national epidemic with rates that have more than doubled in adults and children and tripled in adolescents during the past 30 years.<sup>1,2</sup> During 2012, roughly three million Indiana adults, or 65.5 percent, were overweight or obese.<sup>3</sup> Figure 1 illustrates how much obesity has increased in Indiana from 2004 to 2009.

**Figure 1. Percent Obese Adults (Age 20+), by County of Residence in Indiana, 2004 and 2009\***



\*Centers for Disease Control and Prevention: National Diabetes Surveillance System. Available online at: <http://www.cdc.gov/diabetes/statistics>. Retrieved 06/27/2013.

**MANY CANCERS** are associated with excess weight, according to the National Cancer Institute. These cancers, and possibly others, include postmenopausal breast, colon and rectum, endometrial, esophagus, gallbladder, thyroid, kidney and pancreatic. In Indiana, the overall age-adjusted incidence rates for four of these cancers have significantly increased from 1997 to 2010 [Table 1].

**Table 1. Obesity related cancers with increasing incidence rates, Indiana 1997-2010**

| Type of Cancer          | Significant Increase from 1997-2010 |
|-------------------------|-------------------------------------|
| <b>Esophageal</b>       | 4.0 to 5.1 per 100,000 persons      |
| <b>Pancreatic</b>       | 8.6 to 11.9 per 100,000 persons     |
| <b>Kidney and Renal</b> | 12.1 to 18.1 per 100,000 persons    |
| <b>Thyroid</b>          | 4.9 to 11.4 per 100,000 persons     |

Source: Indiana State Cancer Registry.

## Obesity and Cancer in Indiana

Cancer is the second leading cause of death in Indiana. Approximately 2.4 million Hoosiers, or two in five people, will eventually develop cancer.<sup>4</sup> While the incidence rates for many cancers are declining, the incidence rates for cancers associated with obesity are increasing in the United States.<sup>5</sup> Estimates demonstrate that one-quarter to one-third of new cancer cases during 2013 will be related to overweight or obesity, physical inactivity and poor nutrition.<sup>6</sup>

- ❑ Obesity is not only a risk factor for cancer, but also for many other preventable chronic conditions such as cardiovascular disease, hypertension and diabetes.
- ❑ Over the past 30 years, the adult obesity rate has doubled. During 2012, almost two-thirds of Indiana adults were considered overweight or obese.<sup>3</sup>
- ❑ Among Indiana youth (10-17 years) 31.5 percent were considered overweight or obese during 2011-2012.<sup>7</sup> Research suggests obese children are likely to become obese adults.<sup>8</sup>

## Obesity and Cancer: What is the Link?

Several possible mechanisms have been suggested to explain the association of obesity with increased risk of certain cancers.

- ❑ Fat tissues, which produce excess estrogen, have been linked with the risk of breast, endometrial and other cancers.
- ❑ Fat cells, which produce hormones that may stimulate or inhibit cell growth, have effects on other tumor growth regulators.
- ❑ Increased levels of insulin, which may promote the development of certain tumors.
- ❑ Evidence suggests that intentional weight loss of at least 20 pounds or more can reduce risk of obesity related cancers.<sup>9</sup>



## STRATEGIES TO PROMOTE PHYSICAL ACTIVITY

While it is important to prevent overweight and obesity, making lifestyle changes show promise in reducing cancer risk. Leading a physically active lifestyle can help achieve or maintain a healthy weight.

Policy, systems and environmental change interventions that encourage physical activity and healthy eating have shown meaningful changes across all groups, regardless of age, race, ethnicity and gender.

[The Guide to Community Preventive Services](#), also known as The Community Guide, lists intervention key findings to direct state and local public health efforts. Policy and environmental approaches are designed to provide opportunities, support and cues to help people be physically active. They 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.

The Institute of Medicine has provided recommendations for improving programs and policies for physical activity and education in the school environment – including before, during and after school – based on guiding principles in [Educating the Student Body: Taking Physical Activity and Physical Education to School](#). Schools have direct contact with children for much of the day and play a significant role in supporting physical activity by allowing time for it.

## PHYSICAL ACTIVITY

- ❑ The Centers for Disease Control and Prevention (CDC) recommend adults get at least 150 minutes of aerobic exercise every week and complete muscle-strengthening activities on two or more days of the week.
  - ❑ Only 17.3 percent of Indiana adults meet these requirements. Many adults, about 29 percent, do not get any physical activity outside of their normal work day.<sup>3</sup>
- ❑ The CDC recommends children get 60 minutes or more of physical activity each day.
  - ❑ Approximately 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 per week.<sup>10</sup>

## GET INVOLVED: Join the Indiana Cancer Consortium (ICC)

- ❑ The ICC is a statewide network of over 100 agencies including the Indiana State Department of Health.
- ❑ The mission of the ICC 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.
- ❑ Become a member at [www.indianacancer.org](http://www.indianacancer.org).

## Resources

- ❑ To learn more about the link between cancer and obesity, visit [www.in.gov/isdh/files/Obesity\\_Report\\_2014\\_\(2\).pdf](http://www.in.gov/isdh/files/Obesity_Report_2014_(2).pdf) to view *The Burden of Obesity Related Cancers and the Promotion of Physical Activity in Indiana*.
- ❑ To learn more about cancer and what you can do to reduce Indiana's cancer burden, visit [www.indianacancer.org](http://www.indianacancer.org).
- ❑ To view *State Indicator Report on Physical Activity, 2010 Action Guide*, visit [www.inhealthyweight.org/files/PA\\_State\\_Action\\_Guide\\_Indiana\\_4\\_28\\_10.pdf](http://www.inhealthyweight.org/files/PA_State_Action_Guide_Indiana_4_28_10.pdf).

## Reference:

1. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2000. *Journal of the American Medical Association* 2012, 307(5), 483-490.
2. National Center for Health Statistics. Health, United States: With special features on socioeconomic status and health. Hyattsville, MD; US Department of Health and Human Services. 2012. Report No.: 2012-1232.
3. Indiana State Department of Health. *Behavioral Risk Factor Surveillance System*.
4. Indiana Cancer Consortium, Indiana State Department of Health and the American Cancer Society Great Lakes Division; *Indiana Cancer Facts and Figures 2012*. March, 2012. Available at <http://indianacancer.org/resources-for-indiana-cancer-consortium-members/indianacancerfactsandfigures2012/>
5. Ehemam, C. et al. (2012). Annual report to the National on the status of cancer, 1972-2008, featuring cancers associated with excess weight and lack of sufficient physical activity. *Cancer*, 118(9), 2338-66.
6. World Cancer Research Fund. Accessed from [www.wcrf.org/cancer\\_statistics/preventability\\_estimates/preventability\\_estimates\\_food.php](http://www.wcrf.org/cancer_statistics/preventability_estimates/preventability_estimates_food.php).
7. Child and Adolescent Health Measurement Initiative (CAHMI). 2003-2007 National Survey of Children's Health. Retrieved July 17, 2012, from: [www.nschedata.org](http://www.nschedata.org).
8. Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. *American Journal of Clinical Nutrition* 1999; 70:S145-148.
9. Parker, E, and Folsom, A. (2003). Intentional weight loss and incidence of obesity-related cancers: the Iowa women's health study. *International Journal of Obesity*, 27, 1447-1452.
10. Indiana State Department of Health. (2012). *Youth Risk Behavior Surveillance System – United States, 2011*.