

# A Report on Body Mass Index of Ohio's Third Graders • 2004 – 2005

Ohio Department of Health Division of Family and Community Health Services

School and Adolescent Health Section



Healthy Youth • Healthy Weights • Healthy Ohioans



# HEALTHY OHIOANS

## Body Mass Index of Ohio's Third Graders

### 2004 - 2005

#### Introduction

##### Overview

The percentage of overweight children in the United States tripled between 1980 and 2002. Each year more U.S. children are identified as overweight or obese.

This epidemic is concerning because being overweight impacts a child's current and future health. Overweight children are more likely to have increased blood pressure, cholesterol, lipid and insulin levels. They are also more likely to be obese as adults.

In Ohio, local and state entities have become increasingly concerned with the problem of childhood obesity and have searched for how best to address the problem. Addressing the problem requires knowing how big the problem is and where and among whom it exists. However, Ohio has had no mechanism to provide data on the prevalence of overweight among elementary school-aged children. Some elementary schools have started measuring students' heights and weights. Of concern; however, is that local data collection does not uniformly employ appropriate equipment, techniques and body mass index (BMI) calculation. Furthermore, confidentiality and appropriate communication to families has been questioned. To address these concerns and meet the need for accurate state and local BMI data on young children, Ohio established surveillance of third graders in the 2004–2005 school year.

This executive summary provides the first data available on the extent of overweight among elementary school-aged children in Ohio. It provides overweight percentages for each county and by

sex, race, Hispanic ethnicity and eligibility in the free and reduced-price meal program. This summary report will be followed by a more comprehensive report on the process, analysis and findings from the survey. The Ohio Department of Health plans to collect and report this information every five years, so the epidemic of childhood overweight in Ohio may be tracked over time. State and local groups are encouraged to use these data to develop, target, fund and evaluate policies and programs to impact the health of children.

## School and Student Participation

In the 2004–2005 school year, public elementary schools within each Ohio county were randomly chosen to participate in a BMI and oral health assessment. From 387 participating schools, 14,543 children whose parents provided written permission were weighed and measured by trained volunteer local health professionals, resulting in valid BMI estimates for 14,451 students. This summary report provides statewide estimates as well as estimates for 87 of Ohio's 88 counties.

## Significant Findings

The BMI assessment demonstrated that 20.6 percent of Ohio's third grade public school students were overweight. An additional 17.0 percent of students were found at risk for overweight. Counties varied from having about 25 percent of students overweight to 50.5 percent overweight. Boys and girls had similar risks of being overweight. However, children who were eligible for the free and reduced-price meal program were more likely to be overweight than other children and children in rural counties were more likely to be overweight than children living in metropolitan or suburban counties.

Childhood overweight is a growing problem in our state and nationwide. These data help us to understand the extent and distribution of the problem. Repeating this survey in several years will allow the problem and its solutions to be tracked. This report ends with recommendations for action by families, schools, communities and governments. The causes of childhood overweight are complex and when all sectors of society are part of the solution, we can make a difference in health of Ohio's children.

## Terms used in this report

**Obesity**—an excess of body fat compared to lean body tissue (muscle).

**BMI**—is used to screen for obesity, but in a particular child, follow-up diagnosis is needed to be certain that the child does have an excess of body fat. BMI is a measure that compares weight to height. For children, BMI is compared to other children of the same age and sex to give a “BMI-for-age” percentile. (Note-BMI is interpreted differently for adults.)

**Underweight**—BMI-for-age <5th percentile.

**Normal**—BMI-for-age 5th percentile to <85th percentile.

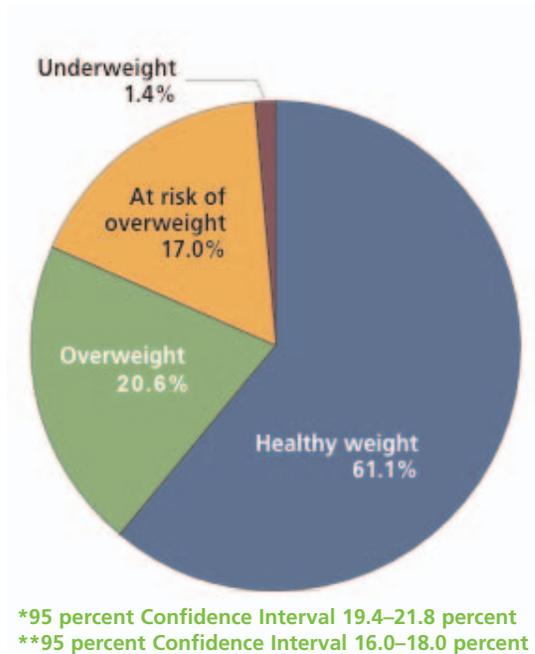
**At risk of overweight**—BMI-for-age 85th percentile to <95th percentile.

**Overweight**—BMI-for-age ≥ 95th percentile.

For more information, go to <http://www.cdc.gov/growthcharts/>

## Results

### Ohio 3rd Graders by Weight Status, 2004–5



During the 2004–5 school year, 20.6 percent of Ohio third graders were overweight and 17.0 percent were at risk of overweight.

## What are Prevalences of Overweight among Other Age Groups in Ohio?

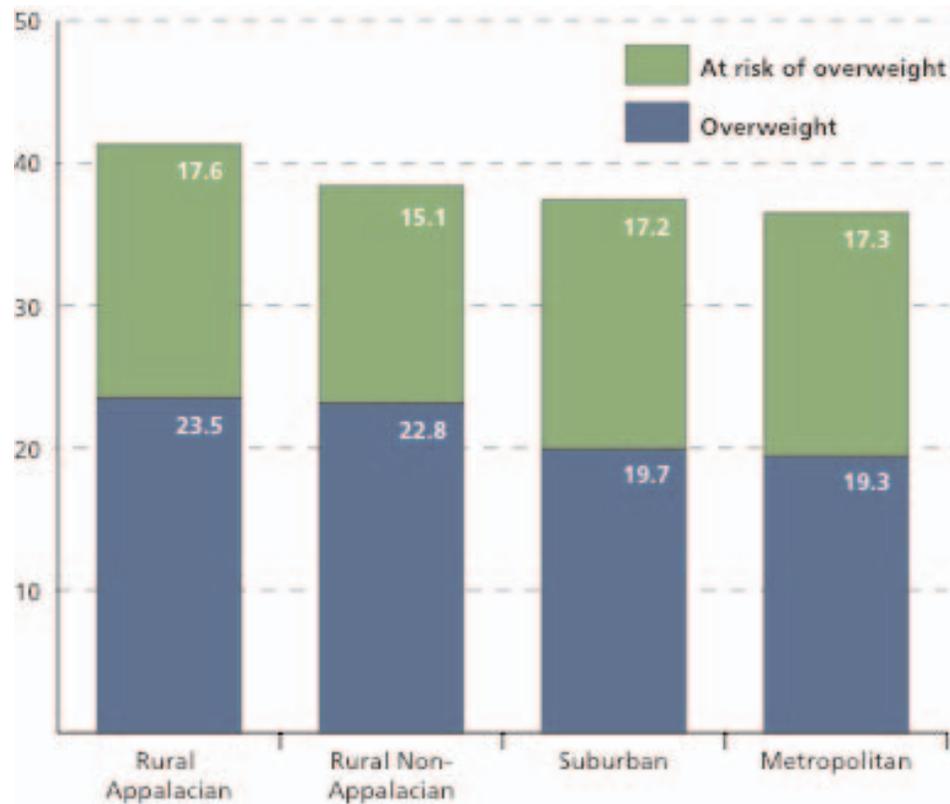
In 2003–2004, the prevalence of overweight among all U.S. children aged 6–11 years was 18.8 percent and the prevalence of at risk for overweight was 18.4 percent (source: National Health and Nutrition Examination Survey (NHANES)).

Among low-income 2-5-year-olds who participated in Ohio's Special Supplemental Nutrition Program for Women, Infants and Children (WIC), 12.0 percent were overweight in 2004 and 15.0 percent were at risk for overweight in 2004 (source: Ohio Pediatric Nutrition Surveillance System (PedNSS)).

Among Ohio high school students, 12.7 percent were overweight and 14.7 percent were at risk of becoming overweight in 2005 (source: self reported heights and weights in the Youth Risk Factor Behavior Surveillance System (YRBSS)).

Among Ohio adults, 25.2 percent were obese and 35.8 percent were overweight in 2004 (source: Behavioral Risk Factor Surveillance Survey (BRFSS)).

## Overweight among Ohio 3rd Graders by County Type, 2004–5



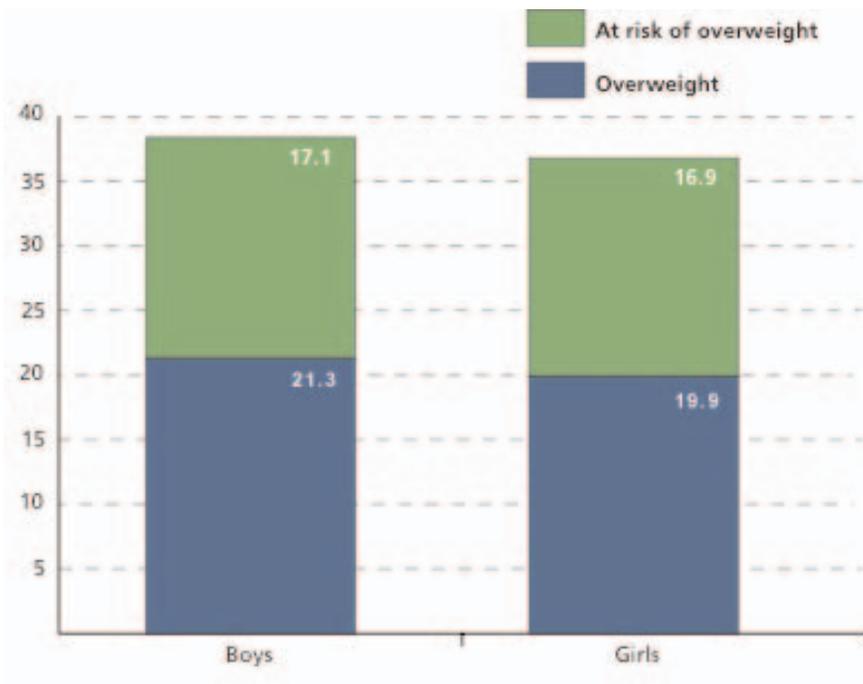
Overweight prevalence differed by the type of county in which a third grader attended school. Third graders living in rural Appalachian counties were significantly more likely to be overweight than children living in any other county type.

## Prevalence of Overweight or at Risk of Overweight among Ohio Third Graders by County, 2004–5

County prevalences of third graders who were overweight or at risk for overweight varied across Ohio. In the map on the next page, counties with the lightest shade had the lowest prevalence of students classified as overweight or at risk for overweight while counties with the darkest shade had highest prevalence.

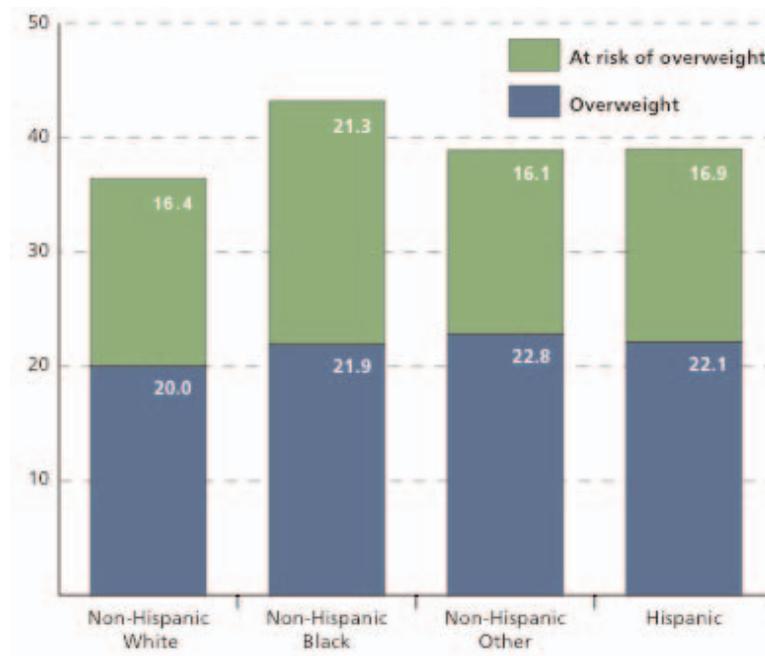


Overweight among Ohio 3rd Graders by Sex, 2004-5



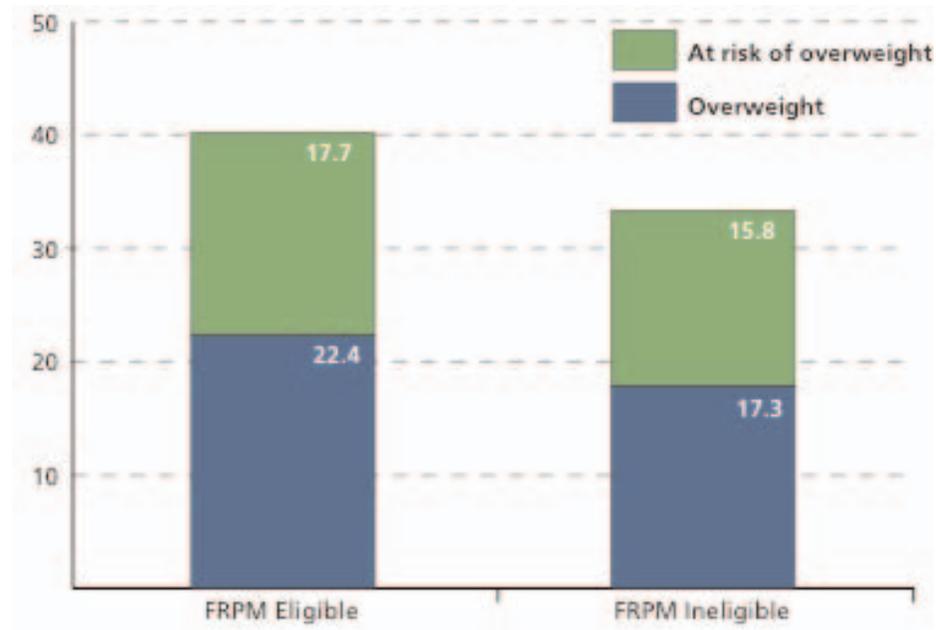
Third grade boys and girls had similar prevalences of being overweight and at risk of overweight.

Overweight among Ohio 3rd Graders by Race & Ethnicity, 2004-5



Prevalence of overweight did not differ significantly by race.

### Overweight Among Ohio 3rd Graders by Free and Reduced-price Meal (FRPM) Eligibility, 2004-5



**Eligibility for the free and reduced-price meal program is an indicator of economic status.**

Ohio third graders who were eligible for the free and reduced-price meal program were significantly more likely to be overweight or at risk of overweight than children who were not eligible.

## The High Cost of Obesity on Our Children's Health

Childhood obesity is a public health epidemic. Overweight is associated with both physical and psychological consequences. The health problems caused by the extra weight may be seen in childhood or may not be seen until adulthood. Listed here are many of the health problems that affect overweight children.

- 1. Asthma**—Overweight children are at higher risk for asthma and for having more severe symptoms of asthma. Overweight children's symptoms are also more likely to persist through adolescence into adulthood.
- 2. Bone and Joint Problems**—Damage to bones and joints may result from carrying extra weight on developing skeletons. This may increase the risk for joint pain, injury and for the need for surgery.
- 3. Sleep Problems**—Sleep apnea is a breathing problem that occurs when breathing stops for periods of 10 seconds or longer. Symptoms of sleep apnea include loud snoring, frequent waking and mouth breathing. About 17 percent of overweight children have sleep apnea. Overweight children and teens sleep fewer hours than normal-weight children and often experience fatigue. Sleep apnea and too little sleep can lead to trouble concentrating, behavior problems and problems doing well in school.
- 4. High Blood Pressure**—Overweight is linked to higher blood pressure. Over time, high blood pressure damages the heart, kidneys and blood vessels and can lead to heart disease and stroke.

5. **Type 2 Diabetes**—Until recently Type 2 diabetes was rarely seen in children. The rate of children diagnosed with Type 2 diabetes has steadily increased along with the national increase in overweight. When not controlled, diabetes increases the risk for heart disease, stroke, blindness, kidney damage and/or failure and other life-threatening health problems.
6. **High Cholesterol**—Increased body fat is linked to higher levels of cholesterol and triglycerides in the blood. Over time, they can increase the risk of a heart attack or stroke.
7. **Early Growth and Puberty**—Overweight children are often taller and more sexually mature than their peers. These children may be expected to act as old as they look and not as old as they are.
8. **Psychological Problems**—These may be the most common results of being overweight. Children who are overweight are often stigmatized by their peers and bullied. This can lead to sadness, depression, loneliness and low self-esteem.



## Ohio is Working to Combat Childhood Obesity

Ohio is working statewide and locally to improve children's health, including childhood overweight. Numerous agencies have mobilized to coordinate efforts that focus on education, policy change and community involvement. Some examples of current state efforts are the following:

- The **Ohio School Fitness and Wellness Advisory Committee** chaired by the Ohio Department of Education was established by the 206th Ohio General Assembly (AM.SUB. H.B. 66 Section 206.10.12.) The committee was charged with developing guidelines, best practices and evaluation strategies regarding nutrition education and physical activity for students and for developing school-based activities and school-based business partnerships to promote student wellness. The guidelines will be disseminated to all Ohio school districts prior to the 2006-2007 school year.
- **The ODH Cardiovascular Health Grants** provides fiscal and technical assistance to 24 of Ohio's 88 counties to provide heart-healthy interventions in schools, worksites, communities and health care settings.
- **The ODH Healthy Ohioans** initiative is increasing awareness of the importance of healthy lifestyles in order to decrease Ohio's chronic disease rates related to lifestyles. Through collaborations with private partners such as the American Cancer Society, Ohio Parks and Recreation Association, American Heart Association and Ohio on the Move, experts from throughout the state assist in organizing communities, schools and businesses to improve and expand opportunities for all Ohioans to adopt healthier behaviors.

- **The ODH School and Adolescent Health** program staff developed a training module “Guidelines for Measuring Heights and Weights and Calculation of Body Mass Index–for-Age in Ohio’s Schools” to support school nurses and local health department staff in their efforts to assess childhood overweight accurately. The training module was disseminated widely in 2004.
- **Ohio’s Action for Healthy Kids** is part of a nationwide initiative to improve the health and educational performance of children through better nutrition and physical activity in schools. Local and regional zones work at the grassroots or school - building level to implement healthy school environments.
- **Ounce of Prevention** provides tools and training to physicians for the prevention of childhood obesity through proactive efforts in nutrition and physical activity. The program is a collaboration of ODH, Columbus Children’s Hospital, the Ohio Chapter of the American Academy of Pediatrics, Ohio Dietetic Association and the Dairy council Mid-East. Tools include anticipatory guidance sheets, posters and handouts for use in the physicians’ offices during well-child visits.
- **WIC Healthy Heroes** initiative serves as both an outreach campaign and a creative method for providing nutrition education and health information to children. Healthy Heroes targets outreach and nutrition/health messages at the 1- to 5-year-old child population.

## Healthy Ohioans Governor's Buckeye Best Healthy School Awards Program.



Governor's Buckeye Best Healthy School Awards program recognizes Ohio schools that have placed a high priority on programs and policies which improve the health outcomes of children. Schools apply by completing a self assessment, based upon Healthy People 2010 objectives, that evaluates their programs and policies related to school nutrition, physical activity and tobacco prevention education. Resource materials and technical assistance are provided to Buckeye Best schools to improve the school health environment. Approximately 40 percent of Ohio's schools participate in this program.

# Call to Action

## Families

**Provide** healthy food choices. Inventory the type of foods and beverages available at home. Limit the amount of sugary snacks and drinks and increase offerings of fruits, vegetables and grains. If you pack your child's lunch, include a fruit and a vegetable.

**Offer** water, milk and limited amounts of 100 percent juice instead of sweet beverages.

**Choose** to feed your infant only breast-milk for the first 6 months and continue breast-feeding until at least 1 year of age.

**Help** your children understand the importance of being physically active. Be a role model to them. Turn off the TV, computer and video games and go for a bike ride, throw a ball, go swimming or take a family walk. Many area parks and recreation areas are free and accessible to families. Physical activity is important at every age.

**Restrict** your child's screen time, including computer/video games, to no more than two hours a day. If turning off video games is a challenge in your home, try one of the new interactive games where the player must move around and be active.

**Ask** your local school if there are family nights that involve physical activity or see if the school lets families use the gym or playground after the school day. If not, form or join the school health team to work with the school on ways to increase opportunities for children and families to become more active.

**Talk** to your child's doctor about their health and nutrition. Questions regarding their height, weight and age (BMI) can impact their overall health and well-being.

## Schools

**Assess** school policies and practices related to nutrition and physical activity. Use the Healthy Ohioans Buckeye Best Healthy Schools Award application and/or the Centers for Disease Control and Prevention's (CDC) School Health Index to help identify strengths and barriers to improving school health.

**Develop** a school wellness policy that requires all foods offered in the school building whether in the cafeteria, vending machines or for classroom parties be nutritious and meet nutritional standards set by the United States Department of Agriculture (USDA).

**Increase** physical activity during the school day to allow children at least 30 minutes of daily activity. If the school schedule does not allow for physical education daily, then look at creative ways to increase opportunities for students to be physically active. Organize a walking club before or after school.

**Provide** teachers with exercises that can be done in the classrooms for short periods of time.

**Collaborate** with local parks and recreation agencies to provide physical activity/intramural programming during recess or other free time.

**Create** school and parent teams that participate in philanthropic events such as community walks and/or runs.

**Educate** families about the benefits of improved nutrition and increased physical activity.

**Facilitate** referrals to community health care providers for families seeking treatment programs for overweight youth.

# Call to Action

## Communities

**Assess** the physical environment of neighborhoods including the accessibility of healthy food, recreational centers, bike paths, playgrounds, sidewalks and routes for walking.

**Create** a safe and pedestrian-friendly community through police patrols, crosswalks, traffic lights, bike lanes and well-lit streets to enable more people to be active outside without fear or hesitation.

**Build** private/public partnerships. Involve private developers and businesses that have a financial interest in building safer and healthier communities. Communities that offer attractive outdoor environments with easy access to outdoor activities are often sought by home buyers as priority neighborhood

## Health Care Providers

**Incorporate** body mass index (BMI) assessment of children and youth into regular health visits.

**Educate** and offer guidance to families regarding their children's BMI.

**Refer** families to community resources that can help address overweight issues.

## Local governments

**Facilitate** partnerships with community agencies and stakeholders that expand programs to improve nutrition and increase physical activity.

**Expand** opportunities for physical activity in your community by changing ordinances, through capital improvement and by considering access to healthy food and physical activity in planning activities.

**Implement** policies and incentives that encourage all Ohioans to improve their health behaviors while decreasing health care costs.

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**Bureau of Nutrition Services**

**Bureau of Child and Family Health Services**

**This project would not have been possible without the help  
of many health professionals in each of the Ohio counties.  
A special thank you to each and every one of them.**

## Additional Resources

<http://www.cdc.gov>

Centers for Disease Control and Prevention

<http://www.kidsnutrition.org>

USDA Agricultural Research Services-Children's  
Nutrition Resource Center at  
Baylor College of Medicine

<http://www.eatright.org>

The American Dietetic Association

<http://www.healthyohioans.org>

Ohio Department of Health-Healthy  
Ohioans Program

<http://www.actionforhealthykids.org>

Action For Healthy Kids Program

<http://www.mypyramid.gov>

USDA new food guide pyramid information

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## Appendix

### Prevalence Of Overweight and At Risk Of Overweight Among Ohio Third Graders, By County – 2004–5

County	Percent overweight and at risk of overweight (95 percent CI*)		Percent overweight (95 percent CI*)		County	Percent overweight and at risk of overweight (95 percent CI*)		Percent overweight (95 percent CI*)	
Adams	30.8	(25.3–37.0)	21.8	(18.3–25.8)	Fairfield	31.0	(24.7–38.1)	14.9	(13.2–16.7)
Allen	35.1	(32.0–38.2)	22.8	(18.7–27.5)	Fayette	39.5	(24.7–56.5)	25.2	(21.6–29.1)
Ashland	44.0	(37.8–50.5)	24.7	(20.1–30.0)	Franklin	37.6	(33.7–41.7)	19.4	(15.1–24.6)
Ashtabula	40.0	(36.6–43.5)	22.3	(19.5–25.4)	Fulton	33.4	(25.7–42.0)	15.1	(9.3–23.6)
Athens	35.7	(28.7–43.4)	23.2	(18.0–29.4)	Gallia	43.1	(39.9–46.2)	21.5	(18.2–25.1)
Auglaize	46.0	(40.8–51.3)	31.2	(23.0–40.9)	Geauga	26.3	(14.1–43.7)	17.9	(9.3–31.5)
Belmont	39.0	(34.3–44.0)	23.4	(21.9–24.9)	Greene	38.7	(31.8–46.1)	26.5	(19.7–34.8)
Brown	36.8	(34.6–39.0)	15.1	(8.1–26.5)	Guernsey	41.3	(33.1–49.9)	24.6	(20.9–28.7)
Butler	25.1	(15.9–37.2)	9.1	(7.2–11.5)	Hamilton	38.0	(27.9–49.2)	22.6	(14.6–33.4)
Carroll	37.4	(29.4–46.0)	16.6	(9.5–27.4)	Hancock	43.2	(35.7–51.0)	25.0	(17.9–33.8)
Champaign	27.0	(21.5–33.5)	18.5	(13.3–25.2)	Hardin	38.7	(22.0–58.5)	26.2	(13.5–44.8)
Clark	32.3	(29.8–34.9)	19.2	(16.2–22.6)	Harrison	40.9	(40.3–41.5)	26.6	(13.5–40.3)
Clermont	40.6	(39.2–42.0)	24.5	(20.9–28.6)	Henry	33.2	(32.1–34.3)	16.4	(11.6–22.8)
Clinton	45.4	(43.7–47.2)	25.5	(24.7–26.4)	Highland	45.1	(42.1–48.1)	31.8	(28.5–35.3)
Columbiana	37.5	(25.0–51.9)	25.0	(14.1–40.5)	Hocking	36.0	(31.3–40.9)	17.6	(15.9–19.5)
Coshocton	52.1	(43.9–60.1)	27.3	(19.7–36.4)	Holmes	30.8	(17.1–49.0)	16.5	(10.0–26.0)
Crawford	31.7	(24.0–40.4)	16.0	(12.0–20.9)	Huron	37.3	(30.0–45.2)	24.8	(20.1–30.0)
Cuyahoga	32.6	(28.7–36.8)	19.8	(15.4–24.9)	Jackson	50.5	(41.2–59.7)	30.0	(24.3–36.5)
Darke	28.5	(24.5–32.9)	22.4	(16.6–29.6)	Jefferson	46.4	(41.0–51.9)	25.9	(19.2–34.1)
Defiance	45.2	(27.9–63.7)	42.8	(25.9–61.6)	Knox	37.6	(24.0–53.5)	23.1	(15.1–33.6)
Delaware	35.9	(26.7–46.3)	12.0	(8.0–17.6)	Lake	31.3	(23.4–40.4)	10.9	(2.9–33.1)
Erie	43.0	(38.8–47.2)	21.2	(19.0–23.6)	Lawrence	42.7	(37.2–48.3)	26.7	(23.6–29.9)

## Appendix (Continued)

### Prevalence Of Overweight and At Risk Of Overweight Among Ohio Third Graders, By County – 2004–5

County	Percent overweight and at risk of overweight (95 percent CI*)		Percent overweight (95 percent CI*)		County	Percent overweight and at risk of overweight (95 percent CI*)		Percent overweight (95 percent CI*)	
Licking	36.5	(28.8–45.0)	20.0	(11.5–32.5)	Portage	43.7	(38.2–49.4)	26.5	(22.0–31.5)
Logan	51.3	(45.3–57.4)	37.0	(32.7–41.6)	Preble	41.8	(36.1–47.7)	24.3	(21.4–27.5)
Lorain	41.8	(35.1–48.9)	22.4	(17.7–27.9)	Putnam	50.1	(39.3–60.9)	29.7	(15.9–48.6)
Lucas	27.0	(25.4–28.7)	17.2	(9.9–28.3)	Richland	35.4	(27.5–44.3)	23.7	(16.3–33.1)
Madison	35.9	(20.8–56.3)	21.2	(11.3–36.4)	Ross	47.5	(42.2–52.9)	27.1	(21.5–33.5)
Mahoning	43.9	(30.2–58.7)	26.2	(17.2–37.8)	Sandusky	44.5	(37.2–52.1)	22.6	(14.1–34.2)
Marion	39.9	(34.8–45.2)	19.8	(16.6–23.6)	Scioto	50.2	(35.5–64.8)	28.9	(21.7–37.3)
Medina	43.1	(33.9–52.8)	27.4	(22.2–33.2)	Seneca	37.7	(32.4–43.4)	30.5	(18.6–45.8)
Meigs	50.2	(42.3–59.6)	30.1	(24.7–36.0)	Shelby	39.2	(23.7–57.3)	26.9	(9.3–57.1)
Mercer	36.6	(33.0–40.2)	14.2	(11.0–18.2)	Stark	35.2	(27.5–43.6)	16.4	(10.5–24.8)
Miami	42.1	(36.0–48.4)	22.0	(17.3–27.5)	Summit	42.7	(29.8–56.5)	14.5	(12.0–17.4)
Monroe	44.3	(40.2–48.4)	14.6	(10.8–19.4)	Trumbull	40.06	(37.2–43.0)	20.6	(17.4–24.4)
Montgomery	41.5	(33.8–49.7)	24.9	(20.2–30.4)	Tuscarawas	39.4	(34.5–44.6)	15.2	(10.7–21.2)
Morgan	42.9	(32.3–54.2)	22.7	(21.8–23.5)	Union	no data		no data	
Morrow	33.8	(30.3–37.4)	16.0	(13.0–19.5)	Van Wert	30.8	(24.7–37.8)	20.2	(12.7–30.5)
Muskingum	37.1	(19.7–58.5)	23.2	(11.3–41.7)	Vinton	38.5	(38.0–39.0)	14.8	(11.9–18.3)
Noble	33.0	(31.9–35.6)	19.3	(18.5–20.0)	Warren	32.8	(23.0–44.2)	27.2	(20.4–35.3)
Ottawa	41.7	(32.8–51.3)	17.4	(13.2–22.6)	Washington	38.5	(24.2–55.0)	24.7	(14.0–39.8)
Paulding	30.5	(24.8–36.7)	20.6	(19.5–21.6)	Wayne	31.4	(26.9–36.3)	14.3	(10.0–20.1)
Perry	39.9	(28.1–53.0)	20.2	(15.0–26.6)	Williams	44.7	(34.1–55.8)	27.8	(13.7–48.5)
Pickaway	41.2	(36.9–45.6)	25.0	(20.1–30.7)	Wood	33.2	(22.8–45.6)	17.5	(11.6–25.7)
Pike	43.1	(37.1–49.3)	27.6	(20.6–35.8)	Wyandot	42.6	(35.5–50.1)	23.5	(21.0–26.2)

\* The width of the confidence interval gives us some idea about how certain we are about the true percent of children who are overweight or at risk of overweight in each county. In counties with wide intervals, we are less certain about the true percentage, while in counties with small intervals we are more certain. In technical terms, the 95 percent confidence interval means that if we were to repeat this survey 100 times, 95 of the intervals we found will contain the true estimate for that county.



