The Burden of Overweight and Obesity in Arkansas 2007-2008

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Preliminary Draft

Table of Contents

Executive Summary…….. 1

What do the Terms Overweight and Obesity Mean?…… 4

Standard BMI Chart for Adults……. 5

Technical Notes…….. 6

Risks Associated with Overweight and Obesity…… 7

Prevalence of Overweight and Obesity

Among Adults…..……..…….. 8

Overweight and Obesity by County……..…… 12
Overweight by County…… 13
Obesity by County……..……... 14

Nutrition……... 15

Physical Activity…….…. 19

Adults with a Disability…….…… 24

Among Public School Students……..……. 25

Overweight and Obesity by County ……..……... 29
Overweight by County…… 30
Obesity by County……..….. 31

Nutrition……... 32

Physical Activity……. 35

Among Children Two through Five Years Old……...……. 38

Chronic Disease Burden Associated with Overweight and Obesity…….. 40

Economic Burden Associated with Overweight and Obesity…….. 44

References…….. 45

Appendix……. 46

Executive Summary

Across the nation there has been a rapid increase in the number of persons who are overweight or obese. This report is intended to describe the impact of overweight and obesity in Arkansas in terms of the extent of the problem as well as the long term consequences to the overall health and economic burden for Arkansans. Information on the burden of overweight and obesity in Arkansas is compiled and published every four years for use by program managers, Obesity Task Force members, policy makers, researchers, and other interested parties. The purpose of this information is to provide data to assist in determining what and where interventions are needed. The Center for Health Advancement of the Arkansas Department of Health is funded by the Centers for Disease Control and Prevention to produce this report and support efforts to reduce the burden of overweight and obesity in Arkansas.

Adults

Overweight and Obesity

- According to the Behavioral Risk Factor Surveillance System (BRFSS) data, the percentage of Arkansans who were either overweight or obese has been at or above the national average from 1997 through 2008. In Arkansas the percentage of persons who were either overweight or obese rose from 52.6% in 1997 to 65.7% in 2008, a 24.9% increase. Data from national, state, and county surveys show that the trend is still moving in an upward direction.

- An estimated 65.7% of adult Arkansans were either overweight or obese in 2008. This equates to an estimated 1,400,000 Arkansans who were overweight or obese.

- In 2008, 73.9% of Arkansas' men were either overweight or obese as opposed to 57.4% of women in Arkansas.

Nutrition

- In the 2008 BRFSS survey, 78.2% of adult Arkansans reported that they did not consume the minimum recommended number of five servings of fruits and vegetables per day. This was higher than the national average of 75.6% in 2008.

Physical Activity

- In 2007, 54.1% of adult Arkansans reported in the BRFSS survey that they did not participate in the recommended physical activity in the last month. This was higher than the national average of 50.5%.

- Women are less likely than men to participate in any physical activity both in Arkansas and in the United States. The percent of women in Arkansas who ***did not*** participate in any physical activity was 59.2% compared to 52.5% of women in the United States. In Arkansas 48.7% of men ***did not*** participate in physical activity compared to 48.5% of men in the United States.

High School Students

Overweight and Obesity

- As a result of Act 201 of 2007, Body Mass Index (BMI) measurements of Arkansas public school students in Grades K, 2, 4, 6, 8, and 10, were collected. These data reported by the Arkansas Center for Health Improvement (ACHI) indicated that in Arkansas during the 2007-2008 school year, 60.2% of the students were in the healthy weight range, 1.9% were underweight, 17.4% were overweight and 20.5% were obese.

- During the 2007-2008 school year 37.9% of public school students in Arkansas in Grades K, 2, 4, 6, 8, and 10, were either overweight or obese.

- Higher proportions of Black and Hispanic children were either overweight or obese when compared to other racial/ethnic groups.

Nutrition

- According to the 2007 Youth Risk Factor Behavior Surveillance System (YRBSS) data, 86.7% of public high school students in Arkansas ***did not*** eat a minimum of five servings of fruits and vegetables per day in comparison to 78.6% of public high school students in the United States.

Physical Activity

- According to the 2007 YRBSS, 58.0% of public high school students in Arkansas ***did not*** participate in any physical activity that made them sweat or breathe hard some of the time in the seven days prior to the date of data collection. In the United States, 65.3% ***did not*** participate in any physical activity that made them sweat or breathe hard in the seven days prior to the date of data collection.

Children

Children Two through Five Years Old

- The Pediatric Nutrition Surveillance System (PedNSS) data for children since 1999 show that children between two and five years of age were following a modest but consistently increasing trend mirroring the adult and youth populations in being overweight or obese. Overall, the percent of ***overweight*** children in 1999 between two and five years old was 15.0% and in 2008 it was 16.5%, a 10.0% increase. Also the percent of ***obese*** children increased from 12.7% in 1999 to 14.8% in 2008, a 16.5% increase.

Economic Burden Due to Overweight and Obesity

- Chronic diseases are steadily increasing the amount of heath care dollars spent for diseases that are largely preventable. It has been estimated by the Milken Institute (an independent economic think tank) that if the obesity trend continues to rise, up to one fifth of health care expenditures will be required to take care of the consequences of obesity. It is estimated that if nothing is done to reverse this trend, by 2023 over $42 billion will be spent in Arkansas on chronic diseases and other consequences of being overweight or obese.

- Many **Chronic Diseases** are associated with overweight and obesity

    - Heart Disease
    - Diabetes
    - High Blood Pressure
    - Stroke
    - Arthritis
    - Gallstones
    - Sleep apnea
    - Depression
    - Some Types of Cancer
        a. Endometrial
        b. Esophageal
        c. Pancreatic
        d. Kidney
        e. Gall Bladder
        f. Breast
        g. Colorectal

What Do the Terms Overweight and Obesity Mean?

Maintaining weight above what is considered within a normal range puts undue stress on all body systems. It stresses the heart. It puts pressure on the arteries. It requires the skeleton to carry more weight than it is designed to, thus stressing the bones and joints. It can increase the likelihood of developing diabetes, high blood pressure, high cholesterol, heart disease, stroke, and other conditions that can be life threatening.

BMI Categories for Adults 18 years of Age and Above

Body Mass Index (BMI) is a common method of classifying persons as overweight or obese. The BMI for adults is determined by the relationship between a person's height and weight, and expressing it as a ratio, as shown in the following equation:

$$\textbf{Adult BMI} = \frac{\textbf{(Weight in Pounds)}}{\textbf{(Height in Inches) x (Height in Inches)}} \times 703$$

The resulting calculation is compared to a standard acceptable weight range.

Overweight is defined as having a body weight greater than what is considered a normal weight range as established for a person's height and bone structure with a BMI of 25.0-29.9.

Obesity is defined as having a body weight greater than what is considered a normal weight range as established for a person's height and bone structure with a BMI of 30 or higher.

BMI Categories for Children 2 to 18 Years of Age

The BMI for children is calculated differently since it takes into account the child's height, weight, age and gender. For children and adolescents, the BMI value is plotted on the CDC growth charts to determine the corresponding BMI-for-age percentile.[1]

As of June 6, 2007 the Expert Committee on Recommendations on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity has recommended the following BMI classification:

- Individuals from the ages of 2 to 18 years, with a BMI ≥ 95th percentile for age and sex, or a BMI exceeding 30 (whichever is smaller) should be considered obese. This replaces the term "overweight".

- Individuals with a BMI ≥ 85th percentile, but < 95th percentile for age and sex, should be considered overweight. This term replaces "at risk for overweight."[2]

Although there are some who have reservations about using BMI as a measure for obesity, it is one of the most reliable methods of screening for overweight and obesity that we have at present. As with any other measure of health, experts recommend that this measure be used in conjunction with other health indicators, such as waist to hip ratio, blood pressure, cholesterol level, and blood sugar level to assess an individual's weight status.[2]

Standard BMI Chart for Adults

		Weight in Pounds													
Height in Feet and Inches		120	130	140	150	160	170	180	190	200	210	220	230	240	250
	4'6"	29	31	34	36	39	41	43	46	48	51	53	56	58	60
	4'8"	27	29	31	34	36	38	40	43	45	47	49	52	54	56
	4'10"	25	27	29	31	34	36	38	40	42	44	46	48	50	52
	5'0"	23	25	27	29	31	33	35	37	39	41	43	45	47	49
	5'2"	22	24	26	27	29	31	33	35	37	38	40	42	44	46
	5'4"	21	22	24	26	28	29	31	33	34	36	38	40	41	43
	5'6"	19	21	23	24	26	27	29	31	32	34	36	37	39	40
	5'8"	18	20	21	23	24	26	27	29	30	32	34	35	37	38
	5'10"	17	19	20	22	23	24	26	27	29	30	32	33	35	36
	6'0'	16	18	19	20	22	23	24	26	27	28	30	31	33	34
	6'2"	15	17	18	19	21	22	23	24	26	27	28	30	31	32
	6'4"	15	16	17	18	20	21	22	23	24	26	27	28	29	30
	6'6"	14	15	16	17	19	20	21	22	23	24	25	27	28	29
	6'8"	13	14	15	17	18	19	20	21	22	23	24	25	26	28

	Underweight		Healthy Weight		Overweight		Obese

BMI Categories for Adults:

Underweight = a BMI of less than 18.5

Healthy Weight = a BMI of 18.5-24.9

Overweight = a BMI of 25.0-29.9

Obese = a BMI of 30 or Higher

Technical Notes

- The Behavioral Risk Factor Surveillance System (BRFSS) was established in 1984 by the Centers for Disease Control and Prevention (CDC). Currently data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. More than 350,000 adults are interviewed each year, making the BRFSS the largest telephone health survey in the world. In 2008, 5,695 of the approximately 2 million adults in Arkansas were surveyed. States use BRFSS data to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs. Many states also use BRFSS data to support health-related legislative efforts.

  The fixed core of BRFSS is a standard set of questions asked by all states. It includes queries about current behaviors that affect health (e.g., tobacco use, women's health) and questions on demographic characteristics. The rotating core of questions are made up of two distinct sets of questions, each asked in alternating years by all states, addressing different topics. In the years, the rotating topics are not used in the core, they are supported as optional modules. The emerging core is a set of up to five questions that are added to the fixed and rotating cores. Emerging core questions typically focus on issues of a "late breaking" nature and do not necessarily receive the same scrutiny that other questions receive before being added to the instrument. These questions are part of the core for one year and are evaluated during or soon after the year concludes to determine their potential value in future surveys.

  Optional CDC modules are sets of questions on specific topics that states can elect to use on their questionnaires. Although the modules are optional, CDC standards require that, if they are used, they must be used without modification. Module topics have included survey items on smokeless tobacco, oral health, cardiovascular disease, and firearms.

- Data in this report are the most recent data available for each parameter. For example, adult obesity data are current through 2008, while adult nutrition data are current only through 2007.
- Median values are used to calculate the data percentage values for the United States. They may not always add up to 100%.
- The Category “Neither Overweight nor Obese” includes people who are underweight and healthy weight.
- Statistical significance was indicated in the text when the 95% Confidence Intervals of the compared values did not overlap.

For more information on BRFSS see: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, **[2007,2008]**., http://www.cdc.gov/healthyweight/calories/index.html

Risks Associated with Overweight and Obesity

Overweight and Obesity are among the most pressing issues in health care not only in Arkansas and in the United States but also globally.

Obesity is the second leading cause of preventable deaths in the United States, tobacco is the first. People who are obese are at increased risk for many serious health problems compared to non-obese people. The most devastating of these health problems include the following:

- Heart disease
- Diabetes
- High blood pressure
- Stroke
- Arthritis
- Gallstones
- Sleep apnea
- Depression
- Some types of cancer

Overweight and Obesity are risk factors in the development of many chronic illnesses. The percentage of Arkansans who were either overweight or obese increased from 52.6% in 1997 to 65.7% in 2008, a 24.9% increase over twelve years. This increase should call attention to the number of additional adult Arkansans who were either overweight or obese and who are at risk of developing life-threatening conditions and illnesses, many of which are preventable by maintaining a healthy weight.[1]

Chronic diseases are a major contributor to the rise in per capita health care dollars spent. Between 2001 and 2006 the national annual average expenditure for the obese population increased from $3,458 to $5,148, a 48.9% increase. For the overweight population these costs increased from $2792 to 3,636, a 30.2% increase. For the healthy weight population the increase was from $2,607 to $3,315, a 27.2% increase. The obese population reported the greatest percent of people with of chronic conditions in both 2001 and 2006 (57.1%, 59.7% respectively).[3]

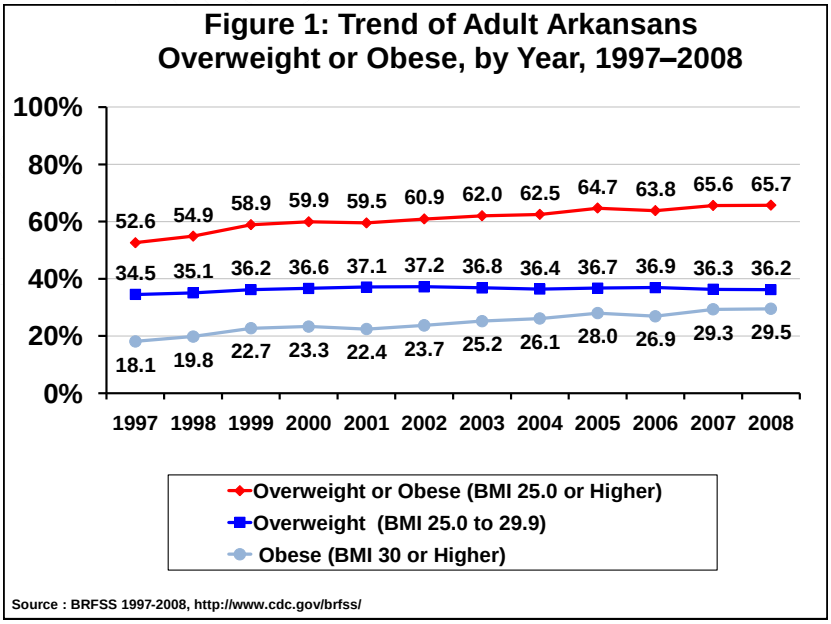
The cost of obesity and its related illnesses is not only borne by people who are overweight or obese. The economic burden is shared by all in the form of higher insurance premiums, increased co-pays, and higher taxes.[4]

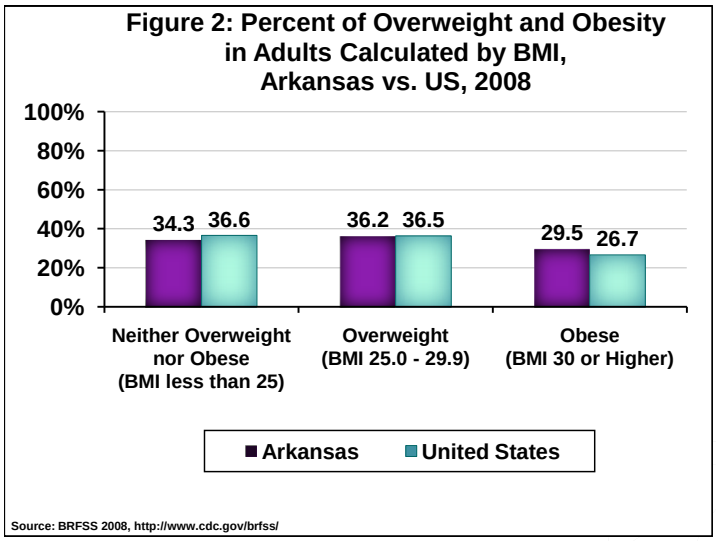
Prevalence of Overweight and Obesity

Overweight and Obesity Among Adults

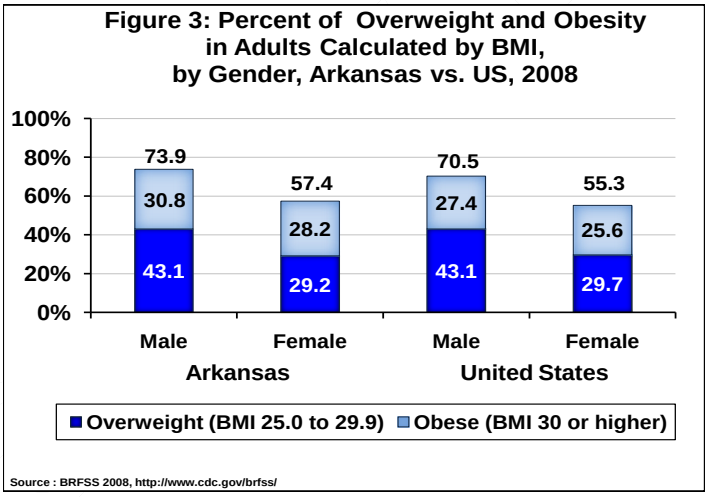
Arkansas ranks 10th in the nation in prevalence of adults who are obese.[1]

Figure 1. The percentage of Arkansans being overweight or obese has been increasing steadily in Arkansas over the past decade. According to BRFSS data, nearly two thirds (65.7%) of adult Arkansans were either overweight (BMI 25.0-29.9) or obese (BMI 30.0 or higher) in 2008. This compares to half of all Arkansans in 1997 who were overweight or obese. This overall increase was driven by a statistically significant upward trend in the percentage of Arkansans who were obese from 1997 through 2008. The percentage of Arkansans classified as overweight only was essentially unchanged over the same time period.



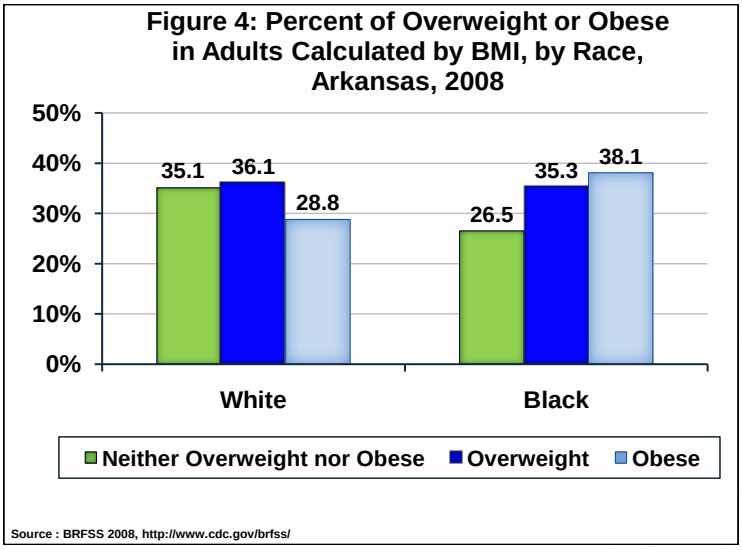


- **Figure 2.** When comparing Arkansas to the United States, the percentages of people classified as overweight were equivalent (36.2% vs. 36.5%) while those classified as obese in Arkansas were higher than the United States (29.5% vs. 26.7%). The latter difference was statistically significant.



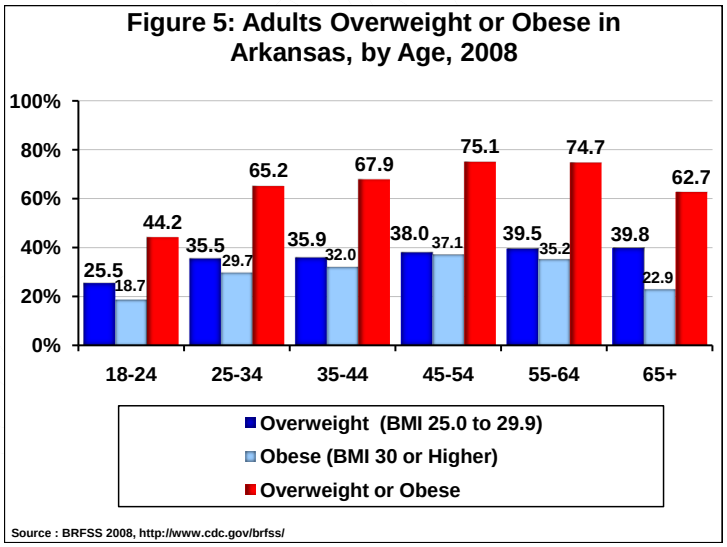
- **Figure 3.** In both Arkansas and the US, higher percentages of men were either overweight or obese when compared to women. In Arkansas, 73.9 % of males were either overweight or obese as opposed to 57.4% of females. For US males 70.5% were either overweight or obese compared to 55.3 % of US females. These gender differences for both Arkansas and the US were statistically significant.

- In Arkansas, a significantly higher proportion of males (43.1%) were overweight compared to females (29.2%). The proportion of Arkansas males classified as obese (30.8%) was not statistically different than Arkansas females (28.2%). This equivalent pattern was seen for US males and females.

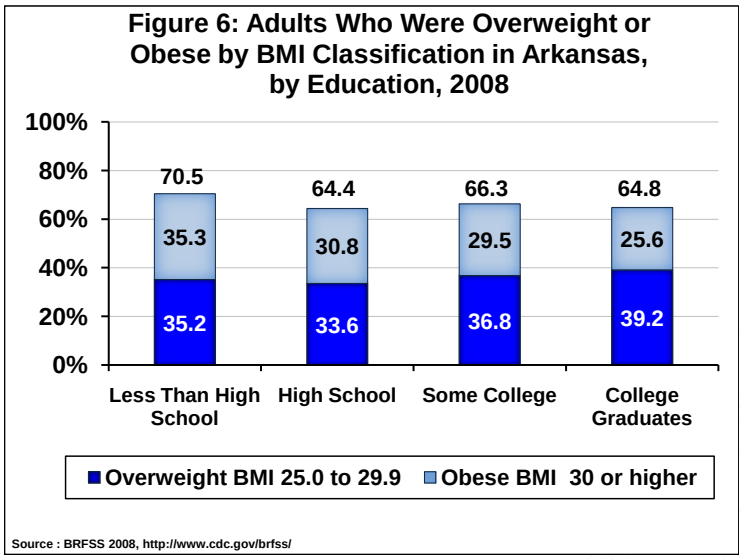


- **Figure 4.** In 2008, 38.1% of Blacks were obese in comparison to 28.8% of Whites. This difference was statistically significant. However 36.1% of Whites were overweight in comparison to 35.3% of Blacks. This difference was not statistically significant.

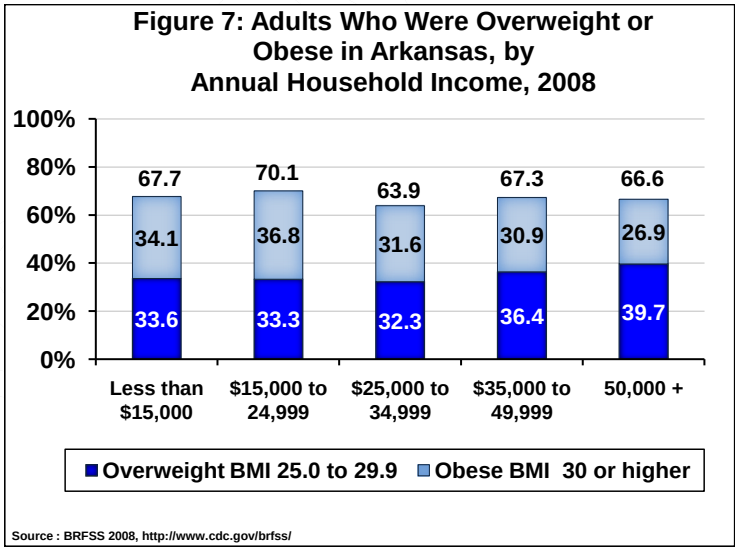
- Presently there is only data available for overweight White and Black populations in Arkansas.



- **Figure 5.** Figure 5 shows the percent of Arkansans in every age group who were overweight or obese. Adults age 45-54 and 55-64 had the highest percentages of being overweight or obese combined. In the overweight groups the differences between the 18-24 and all age groups greater than 45 years were statistically significant. The differences in obesity between the 18-24 year age group and all age groups greater than 35+ years were statistically significant except for the 65+ years age group.



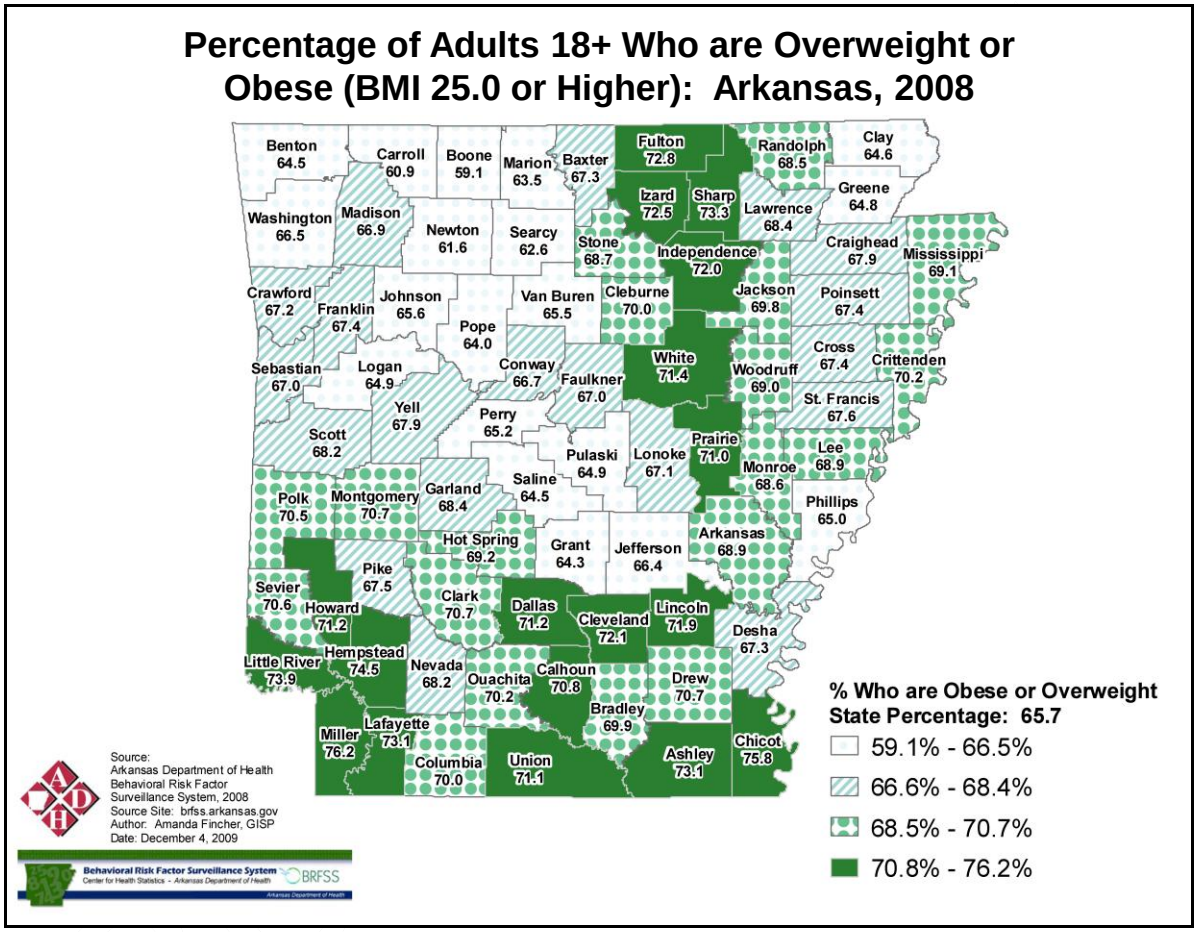
- **Figure 6.** The proportion of people who were either overweight or obese varied by educational status. Those with less than a high school education had the highest percentage of people who were either overweight or obese. The difference in the proportion of people classified as obese between those with less than high school and those with a college degree was statistically significant.



- **Figure 7.** The proportion of people who were overweight or obese varied in relation to annual household income. These differences were generally not statistically significant, except for the proportion classified as obese in the $15,000-24,999 group as compared to the $50,000+ group.

Overweight and Obesity by County, Arkansas 2008

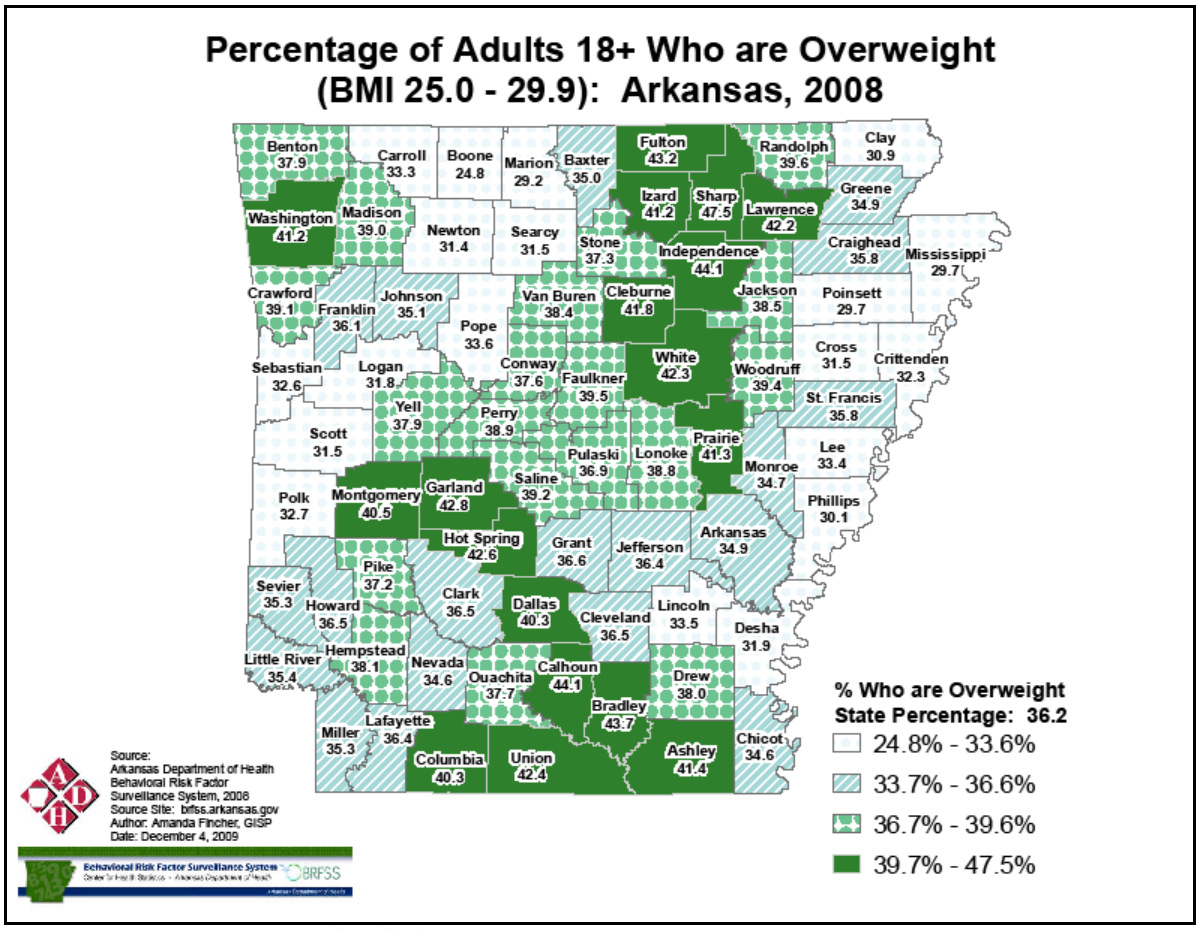
Overweight and Obesity Combined



In 2008, 65.7% or approximately two thirds of adult Arkansans were overweight or obese.

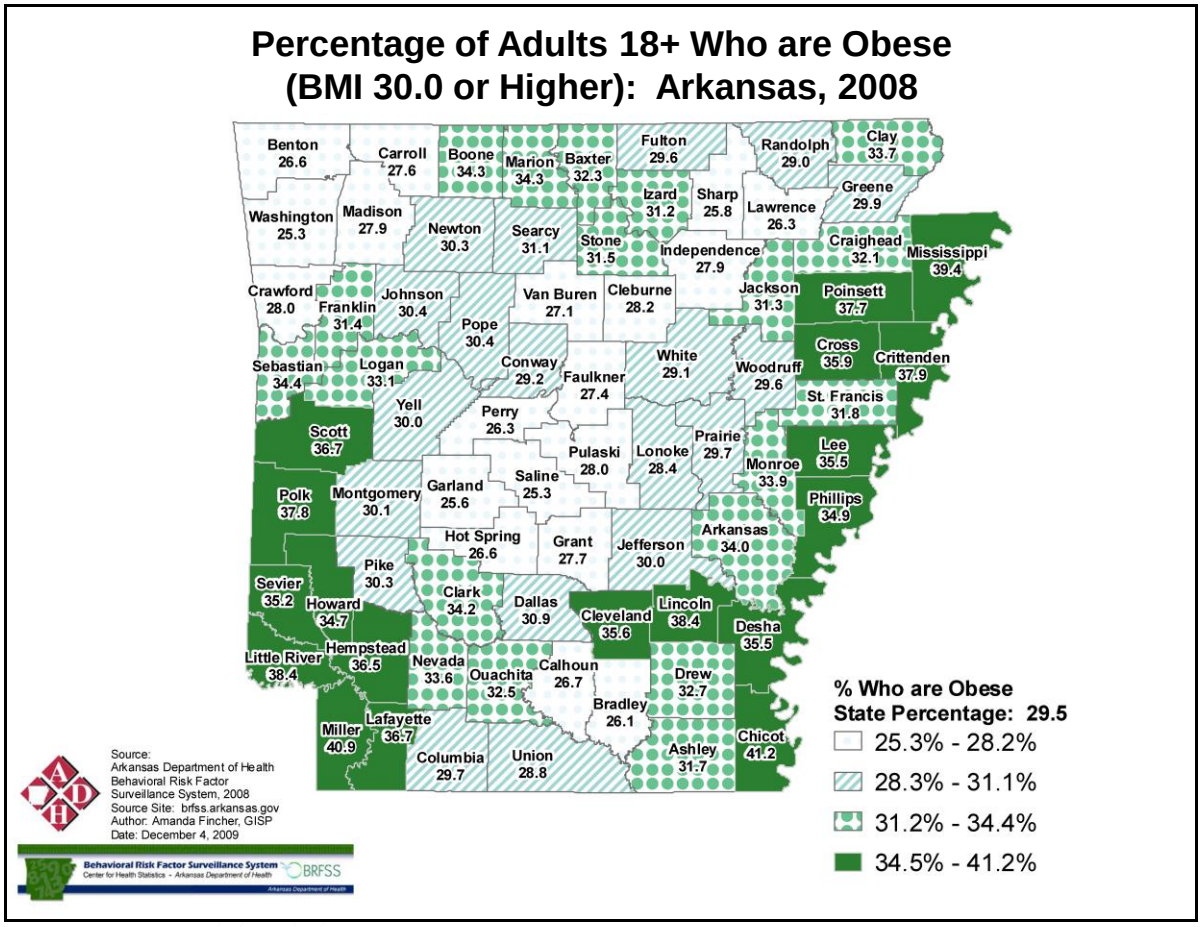
NOTE: Maps from CDC show the trends of increasing obesity among adults in the United States from 1985 through 2008. See Appendix. http://aps.nccd.cdc.gov/brfss)

Overweight Only



In 2008, 36.2% of adult Arkansans were overweight.

Obesity Only

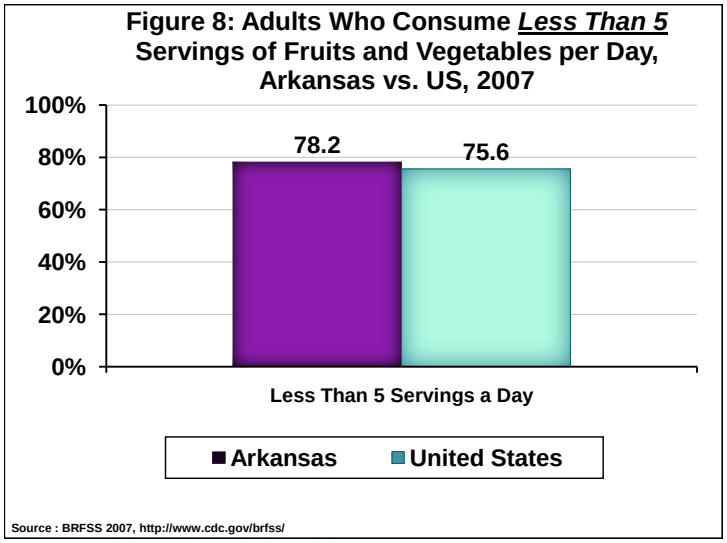


In 2008, 29.5% of adult Arkansans were obese.

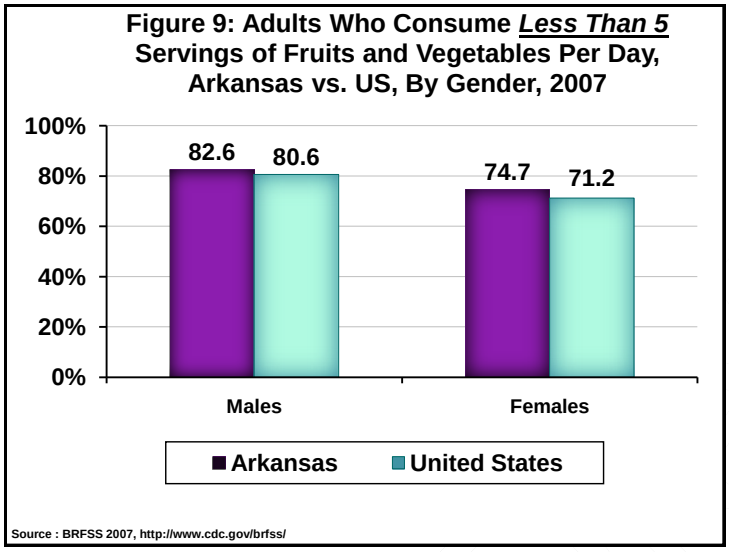
Nutrition

Nutrition is one of the most important factors to ensure good health and well-being.

Studies have shown that eating more fruits and vegetables can help reduce some types of cancer, cardiovascular disease, hypertension, osteoporosis, and arthritis as well as helping to maintain a healthy weight. The current recommendation is to eat at least five servings of fruits and vegetables per day.[1]



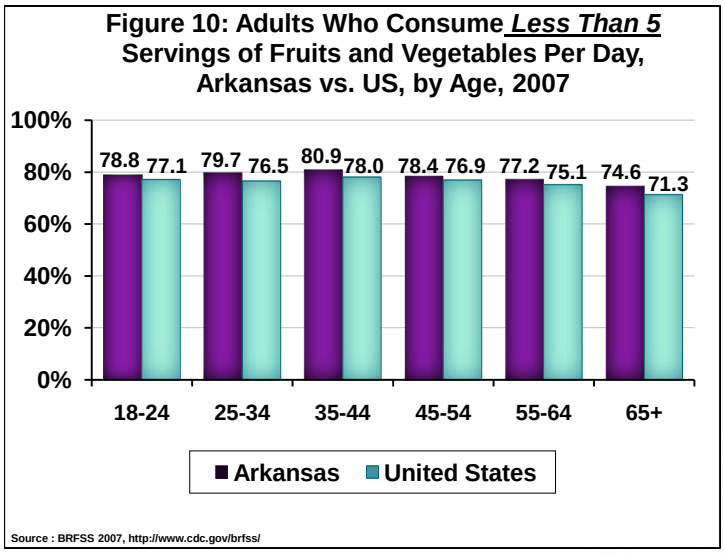
- **Figure 8.** Figure 8 shows that in 2007, 78.2% of adult Arkansans as compared to 75.6% of adults in the United States ***did not*** eat the minimum recommended requirement of five servings of fruits and vegetables per day. This difference between Arkansas and the United States was statistically significant.



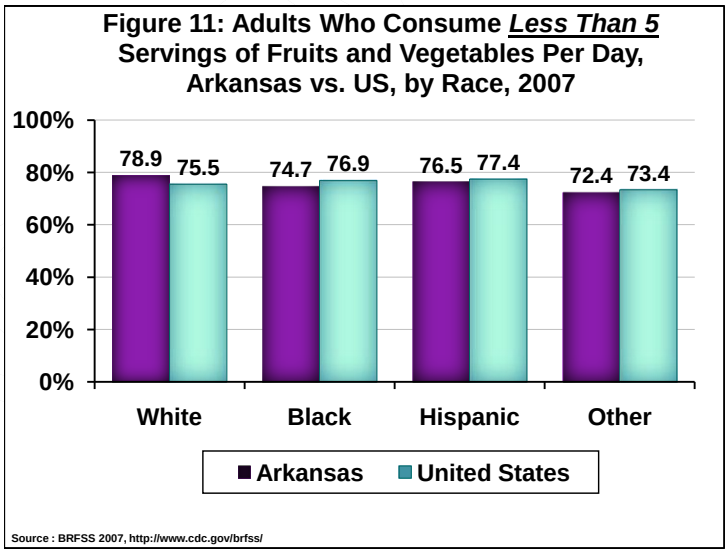
- **Figure 9.** The vast majority of men (82.6%) and women (74.7%) in Arkansas ***did not*** eat the recommended five servings of fruits and vegetables per day. These percentages were slightly higher than those reported nationally.

- Higher proportions of men ***did not*** eat the recommended number of servings of fruits and vegetables than women in both Arkansas and the United States.

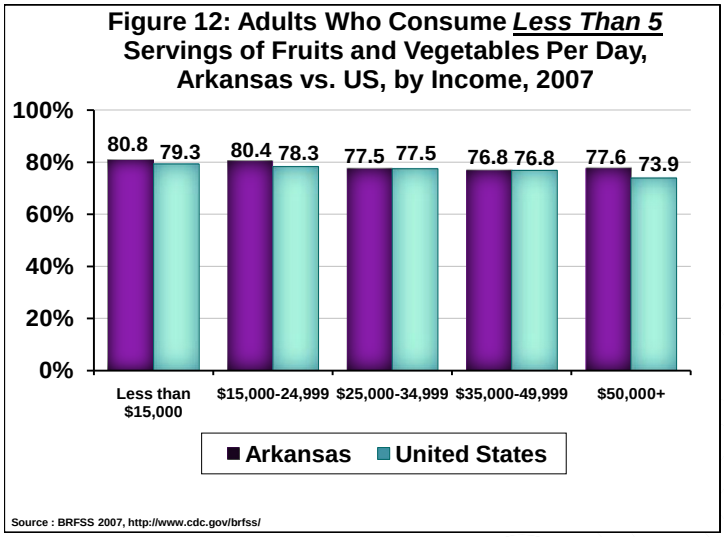
- For Arkansas and the United States, the percentages of males consuming less than the recommended servings of fruits and vegetables were equivalent. The difference in consumption between females in Arkansas and in the United States was statistically significant. In Arkansas and in the United States, the differences in consumption between males and females were statistically significant.



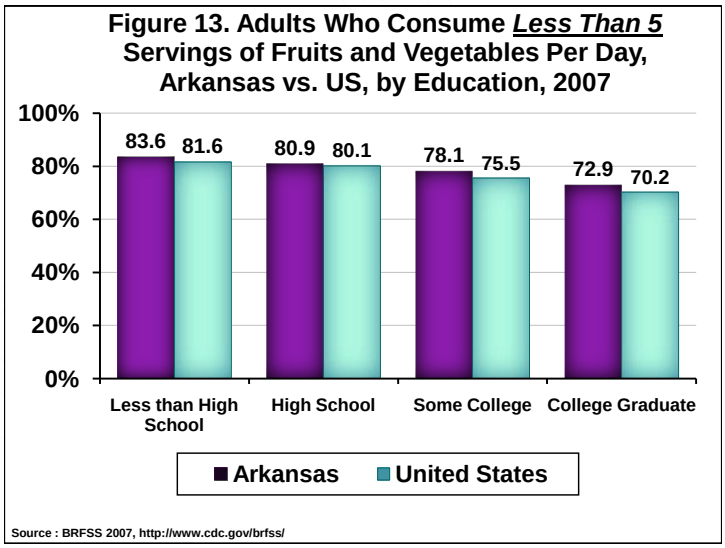
- **Figure 10.** Higher proportions of younger age groups ***did not*** eat the recommended five servings of fruits and vegetables compared to older age groups in both Arkansas and the United States. However, Arkansans had a higher percentage who did not consume the recommended amounts than the national average in every age group. The difference between the 65+ age group in Arkansas and the 65+ age group in the United States was statistically significant.



- **Figure 11.** White Arkansans had a slightly higher percent of persons who ***did not*** eat the recommended five servings of fruits and vegetables when compared to other racial/ethnic groups in Arkansas. They were also higher than US Whites, Blacks, Hispanics and Others and these differences were statistically significant.



- **Figure 12.** Income level did not significantly influence fruit and vegetable consumption in Arkansas or the United States. Only the difference in consumption in the $50,000+ income group between the United States and Arkansas was statistically significant.



- **Figure 13.** Inadequate levels of fruit and vegetable consumption decreased as educational levels increased. This pattern was seen for both Arkansas and the United States. In Arkansas the difference in the amount of servings of fruit and vegetable consumption between persons with less than a high school education and college graduates was statistically significant. The difference in consumption among college graduates in Arkansas and college graduates in the United States was statistically significant.

Physical Activity

According to the National Institutes of Health, “In addition to the benefits of reducing the risk for chronic disease, physical activity is important in preventing and treating overweight and obesity and is extremely helpful in maintaining weight loss, especially combined with healthy eating.” [5]

There is strong evidence that physical activity can lower the risk of heart disease, stroke, type 2 diabetes, high blood pressure, adverse blood lipid profiles, weight gain, metabolic syndrome, and colon and breast cancers. Exercise improves cardio respiratory and muscular fitness, it helps prevent falls, reduces depression and can increase cognitive function. CDC currently recommends certain minimum levels of exercise for all age groups. Typically the types of exercise recommended for adults are both aerobic and muscle strengthening exercises. The following guidelines are those for minimum recommended levels of physical activity.

Adults (aged 18–64)

- Adults should do 2 hours and 30 minutes a week of moderate-intensity, or 1 hour and 15 minutes (75 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity. Aerobic activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week.
- Additional health benefits are provided by increasing to 5 hours (300 minutes) a week of moderate-intensity aerobic physical activity, or 2 hours and 30 minutes a week of vigorous-intensity physical activity, or an equivalent combination of both.
- Adults should also do muscle-strengthening activities that involve all major muscle groups performed on 2 or more days per week.

Intensity is the level of activity required to do an activity or a measure of how hard your body is working

- A person doing moderate-intensity aerobic activity can talk but not sing, during the activity.
- A person doing vigorous-intensity activity cannot say more than a few words without pausing for a breath.

Older Adults (aged 65 and older)

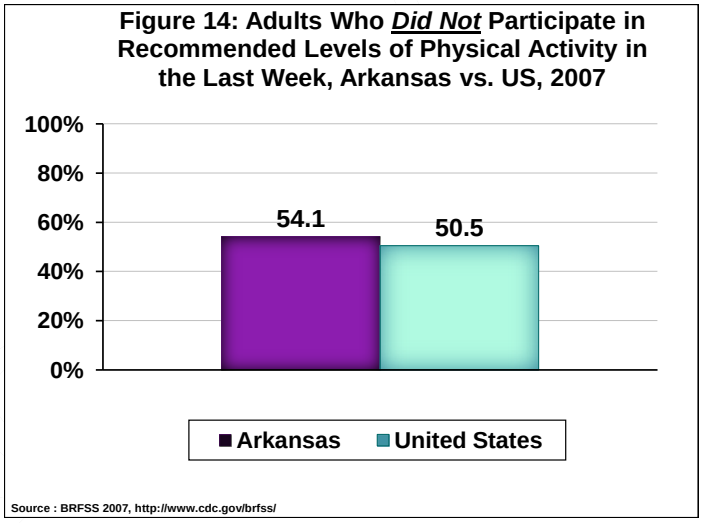
- Older adults should follow the adult guidelines. If this is not possible due to limiting chronic conditions, older adults should be as physically active as their abilities allow. They should avoid inactivity. Older adults should do exercises that maintain or improve balance if they are at risk of falling.

- For all individuals, some activity is better than none. Physical activity is safe for almost everyone, and the health benefits of physical activity far outweigh the risks. People without diagnosed chronic conditions (such as diabetes, heart disease, or osteoarthritis) and who do not have symptoms (e.g., chest pain or pressure, dizziness, or joint pain) do not need to consult with a health care provider about physical activity.[1]

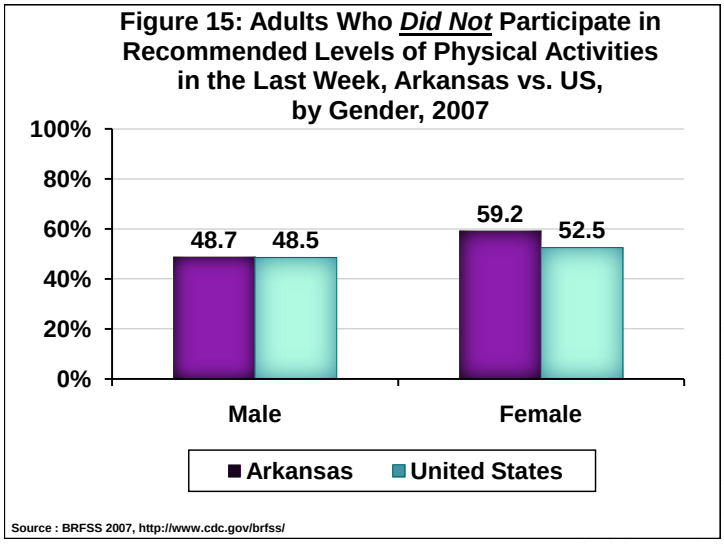
- People who do not have a regular pattern of physical activity consisting of at least 30 minutes of moderate activity on five to seven days of the week are considered physically inactive.[1]

These are minimum guidelines. Each person needs to find what works for them to maintain themselves in a healthy weight range.

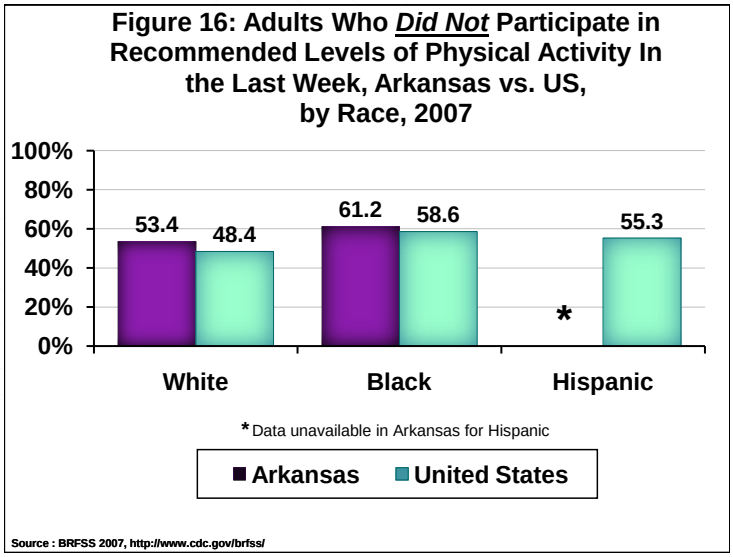
Adults were asked as part of the BRFSS survey if they had participated in the recommended levels of physical activity consisting of 30+ minutes of moderate physical activity five or more days per week, or vigorous activity for 20+ minutes three or more days per week. Their responses are illustrated in the next six figures.



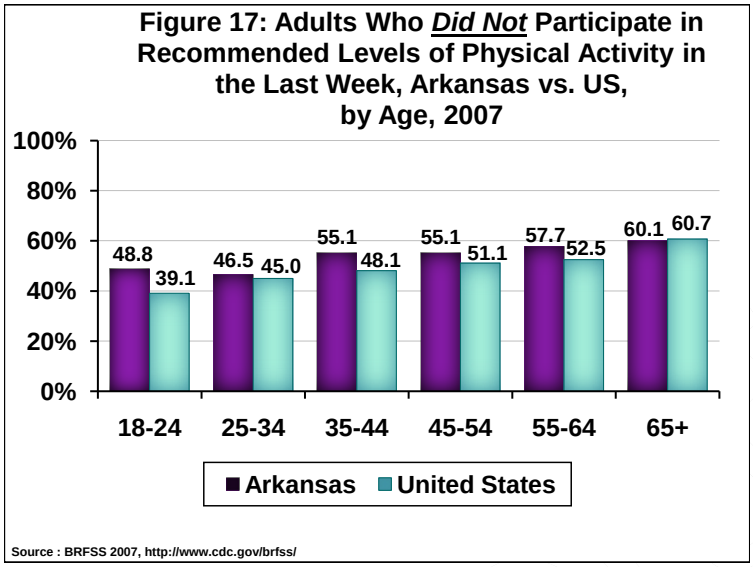
- **Figure 14.** Compared to 50.5% of adults in the United States, 54.1% of adults in Arkansas ***did not*** participate in recommended levels of physical activity. The difference between Arkansas and the United States was statistically significant.



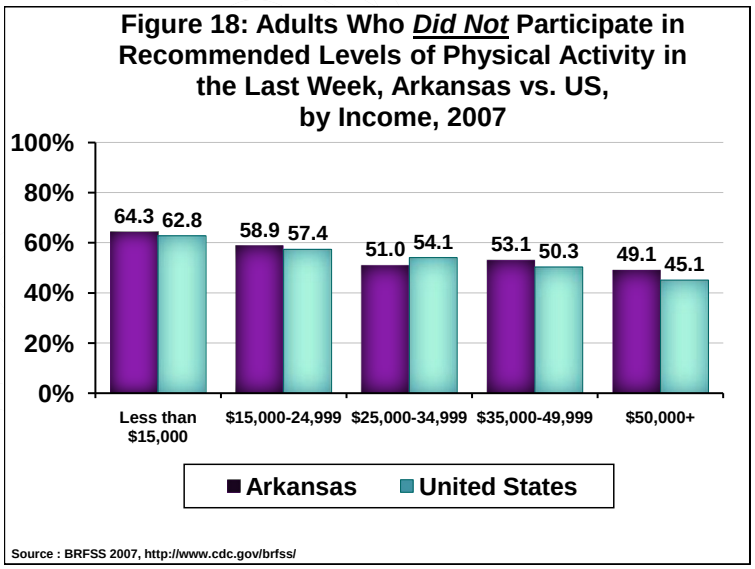
- **Figure 15.** Higher proportions of women than men ***did not*** participate in recommended levels of physical activity both in Arkansas and in the United States. The difference between adult males and females in Arkansas who did not participate in recommended levels of physical activity was statistically significant. Also the difference between women in Arkansas and women in the United States who ***did not*** participate was statistically significant.



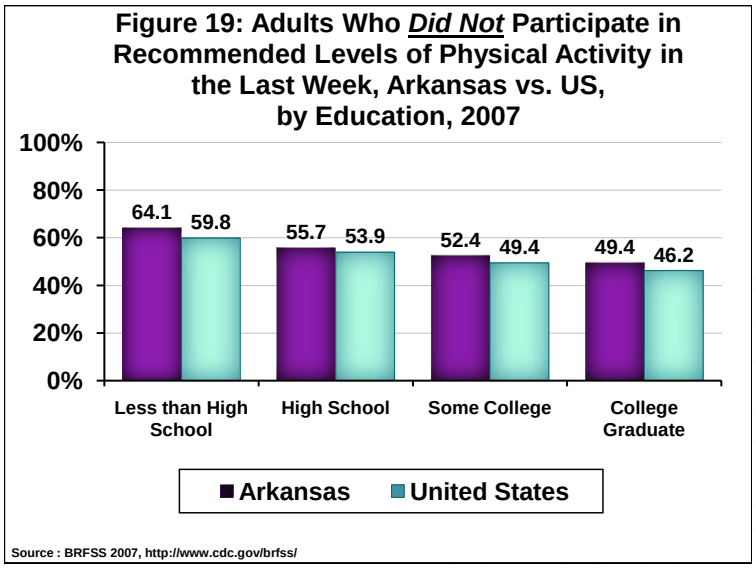
- **Figure 16.** Arkansas had a higher percentage of adults in both White and Black racial/ethnic groups than the US who ***did not*** participate in recommended levels of physical activity. The difference between Whites in Arkansas and the United States was statistically significant.



- **Figure 17.** In both Arkansas and the United States, adults generally became more inactive as they aged. Comparing inactivity in Arkansas and the United States, adults in Arkansas were less physical activity across the age groups from 18 through 64 years. The differences between Arkansas and the United States for the 18-24, 35-44, and 55-64 year age groups were all statistically significant.



- **Figure 18.** As income increased the percentage of adults who ***did not*** participate in recommended levels of physical activity generally declined. When compared to the United States, the percentages of Arkansans who ***did not*** attain the recommended level of physical activity were slightly higher for all income levels except for the $25,000-$34,999 group.



- **Figure 19.** The number of adults who ***did not*** participate in recommended levels of physical activity decreased as educational level increased. In Arkansas, the differences between the less than high school and the high school groups when compared to college graduates were statistically significant. In the college graduate group, the difference between the United States and Arkansas was statistically significant.

Adult Arkansans with a Disability

As the population increases in age and the rates of obesity continue to rise, it is estimated that the rates of disability will also increase. Among those persons who are disabled, those who are overweight or obese experience more extensive limitations than people with disabilities who are not overweight or obese. Persons who are disabled and obese suffer even further limitations by not being able to manage the basic activities of living (i.e. bathing, dressing, walking across a room, getting in and out of bed) because their extra weight overwhelms their limited physical strength and endurance.[6]

In general, people with disabilities are less likely to exercise, more likely to be overweight or obese, and more likely to smoke than their non-disabled peers. In Arkansas, people with disabilities are more likely to be female, have less education, have lower income, are less likely to be married, are less likely to be employed, and are more likely to be over the age of 65 than people without disabilities.

According to 2005 BRFSS data and Partners for Inclusive Communities at the University of Arkansas for Medical Sciences (UAMS), obesity rates among Arkansans with disabilities are more than twice as high as those without disabilities (64.7% vs. 25.5%). In 2007, adult Arkansans with disabilities were almost twice as likely to have high blood pressure (48.2% vs. 24.4%), three times as likely to have diabetes (17.0% vs. 5.6%), and often have higher blood cholesterol (26.8% vs. 23.2%) than their non-disabled counterparts. One of the most common chronic health conditions affecting Arkansans with disabilities is arthritis. It was almost two times higher among disabled adults than non-disabled adults, 39.5% vs. 21.8%, respectively.

Prevention measures usually target specific health behaviors which have been linked to the development of chronic health conditions. Health behaviors such as not smoking, physical activity, good nutrition, and routine medical screenings have been the basis of health promotion efforts in the state of Arkansas and the nation. The data reported here demonstrate the increased rates of chronic health conditions among people with disabilities and indicate significant health disparities. These individuals could benefit from specific health promotion programs, marketing, and activities which use inclusive messages and adaptive techniques for people with disabilities.[7]

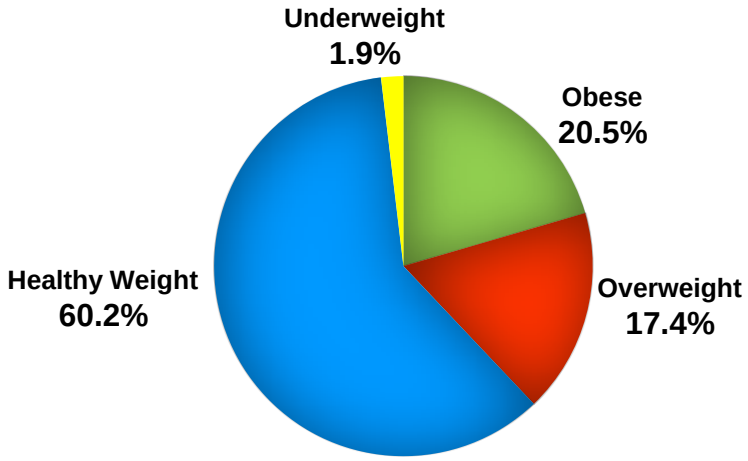
The data presented in this section are from the CDC Behavioral Risk Factor Surveillance System (BRFSS) 2007 and 2008, and Partners for Inclusive Communities at the University of Arkansas for Medical Sciences (UAMS) website. http://www.uams.edu/ar_disability/

Overweight and Obesity Among Arkansas Public School Students

Act 1220 of 2003 required public health professionals in Arkansas to collect comprehensive BMI data annually on all public school students from pre-kindergarten through twelfth grade. It began as a comprehensive approach to address the childhood obesity problem in Arkansas. The Arkansas Center for Health Improvement (ACHI) was charged with the task of instituting this initiative and carrying out the measurements throughout the state. Act 201 of 2007 changed the law to assess the BMI's every two years in grades K, 2, 4, 6, 8, and 10 only. Working with public school personnel and community nurses during the 2007-2008 school year, BMI assessments were completed for 178,181 Arkansas public school students enrolled in grades K, 2, 4, 6, 8, and 10.[8]

The data presented in this section are from the ACHI state report for 2007-2008 and the CDC Youth Risk Behavior Surveillance System (YRBSS) 2007. [8,9]

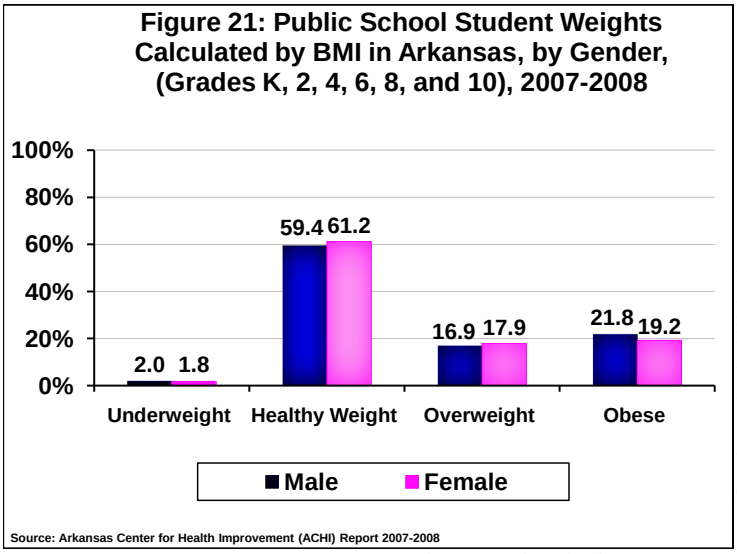
Figure 20: Weights Calculated by BMI for Public School Students in Arkansas, (Grades K, 2, 4, 6, 8, and 10), 2007-2008



Source: Arkansas Center for Health Improvement (ACHI) Report 2007-2008

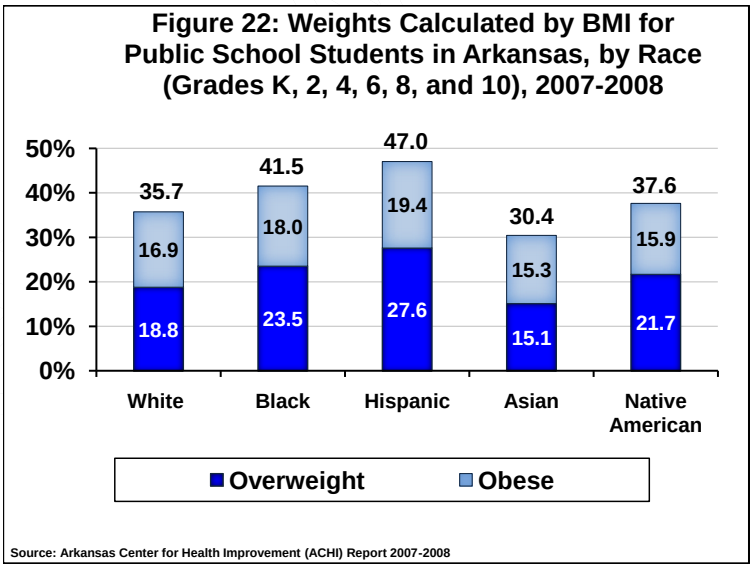
Obese: BMI-for-age greater than or equal to 95th percentile
Overweight: BMI-for-age between 85th and less than 95th Percentile
Healthy Weight: BMI-for-age between 5th and less than 85th Percentile
Underweight: BMI-for-age less than 5th Percentile

Figure 20. During the 2007-2008 school year, 60.2% of Arkansas public school children evaluated were considered to be a healthy weight, while 17.4% were overweight, 20.5% were obese and 1.9% were classified as underweight.

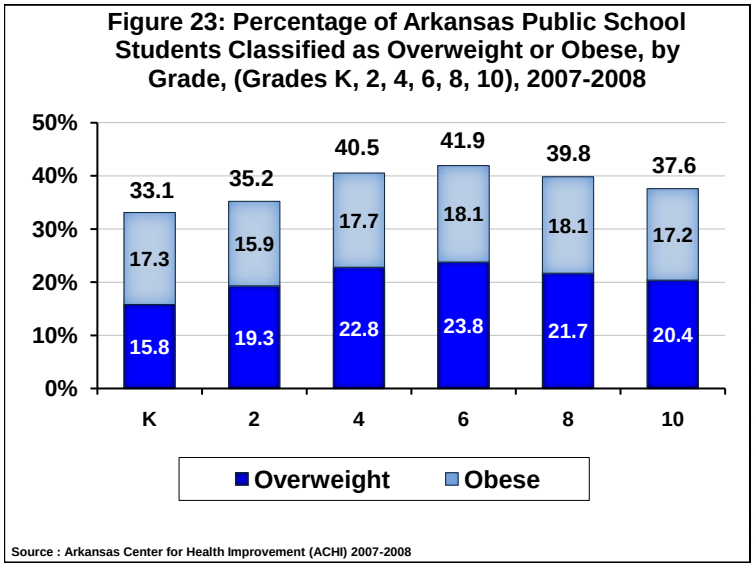


- **Figure 21.** Female public school students were more likely to be a healthy weight than male students (61.2%, 59.4% respectively).

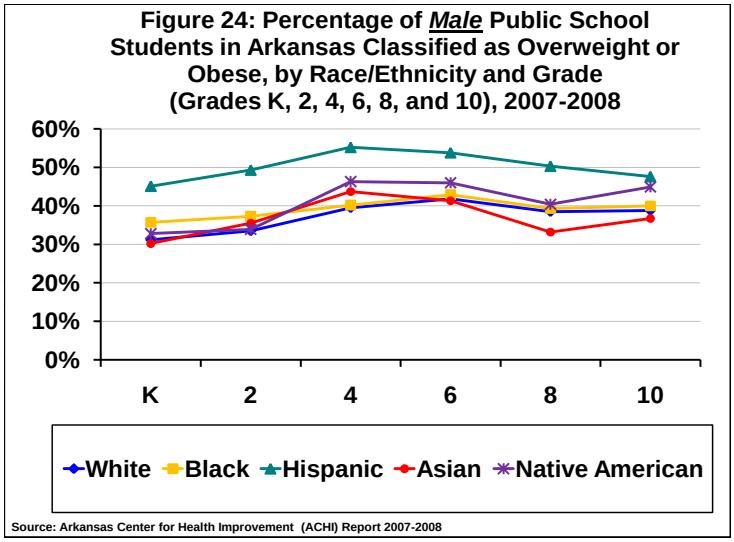
- Male public school students were more likely to be obese than female school students during the 2007-2008 school year (21.8%, 19.2% respectively).



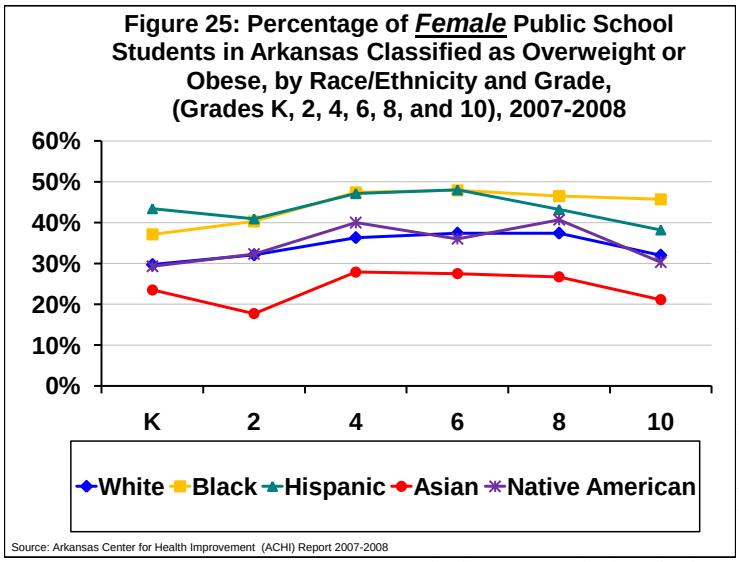
- **Figure 22.** Higher proportions of Black and Hispanic children were either overweight or obese when compared to other racial/ethnic groups. More specifically Black, Hispanic and Native American public school students were more likely to be overweight (23.5%, 27.6%, and 21.7%) than White and Asian racial/ethnic groups. Whites, Blacks, and Hispanics were more likely to be obese (16.9%, 18.0%, and 19.4%) than Asians and Native Americans.



- **Figure 23.** For the 2007-2008 school year, the percentage of those who were either overweight or obese was highest among students in the 4th, 6th and 8th grades.



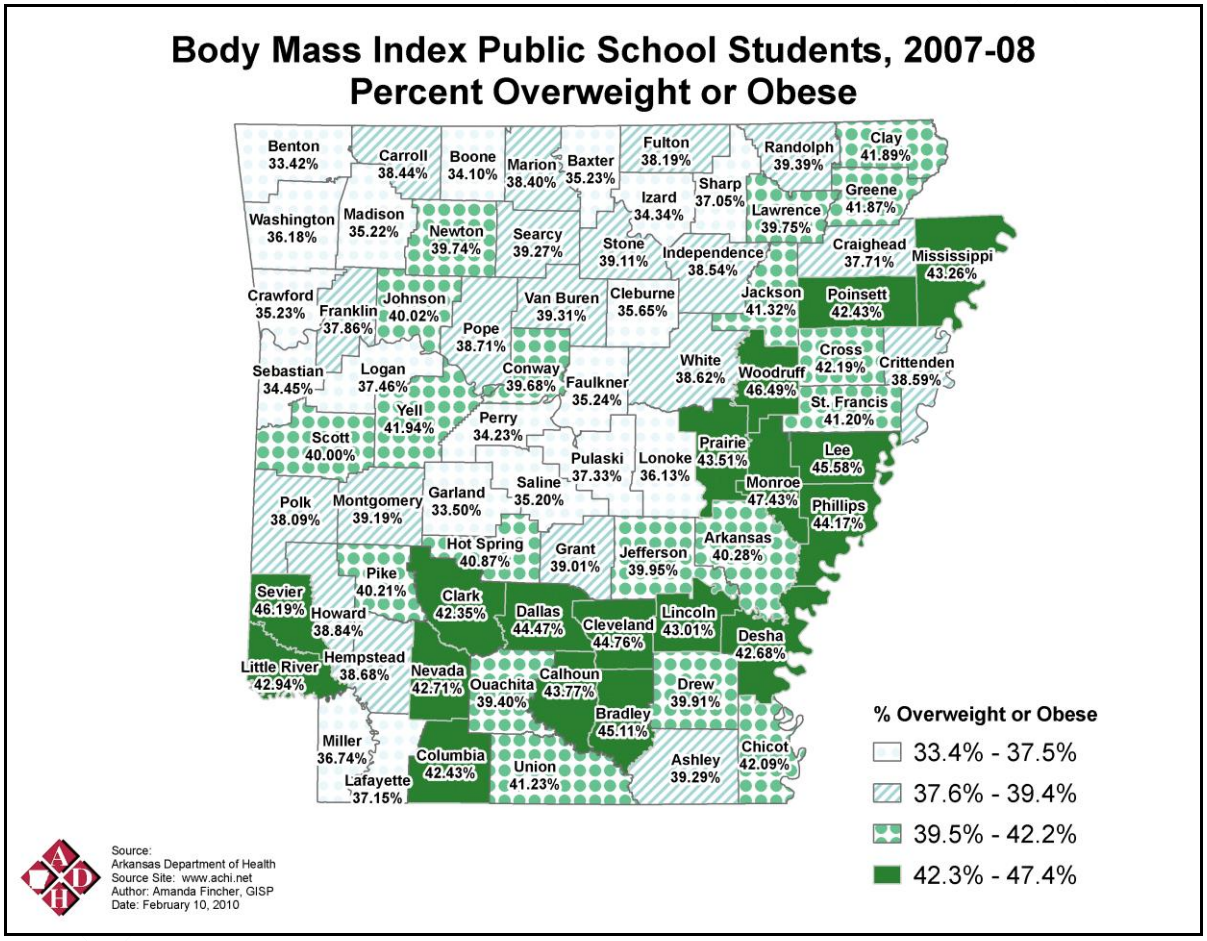
- **Figure 24.** During the 2007-2008 school year, the proportion of male Hispanic students who were either overweight or obese was consistently higher compared to males in the White, Black, or Asian racial/ethnic groups. The Native American group did not show an increase in weight until after the second grade.



- **Figure 25.** During the 2007-2008 school year, a higher percentage of Black and Hispanic female students were overweight or obese compared to White, Asian or Native American racial/ethnic groups.

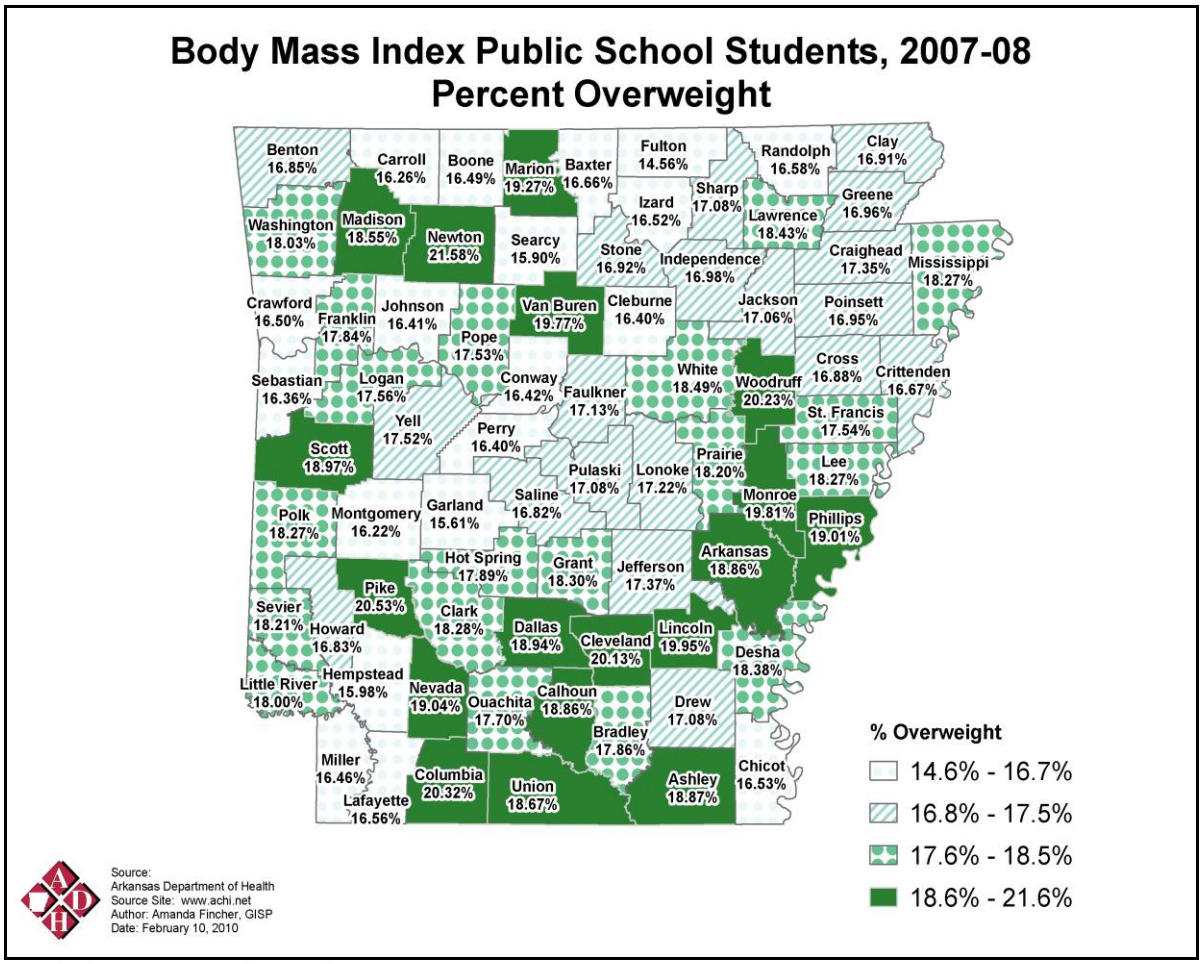
Overweight and Obesity by County Among Arkansas Public School Students, 2007-2008

Overweight and Obesity Combined



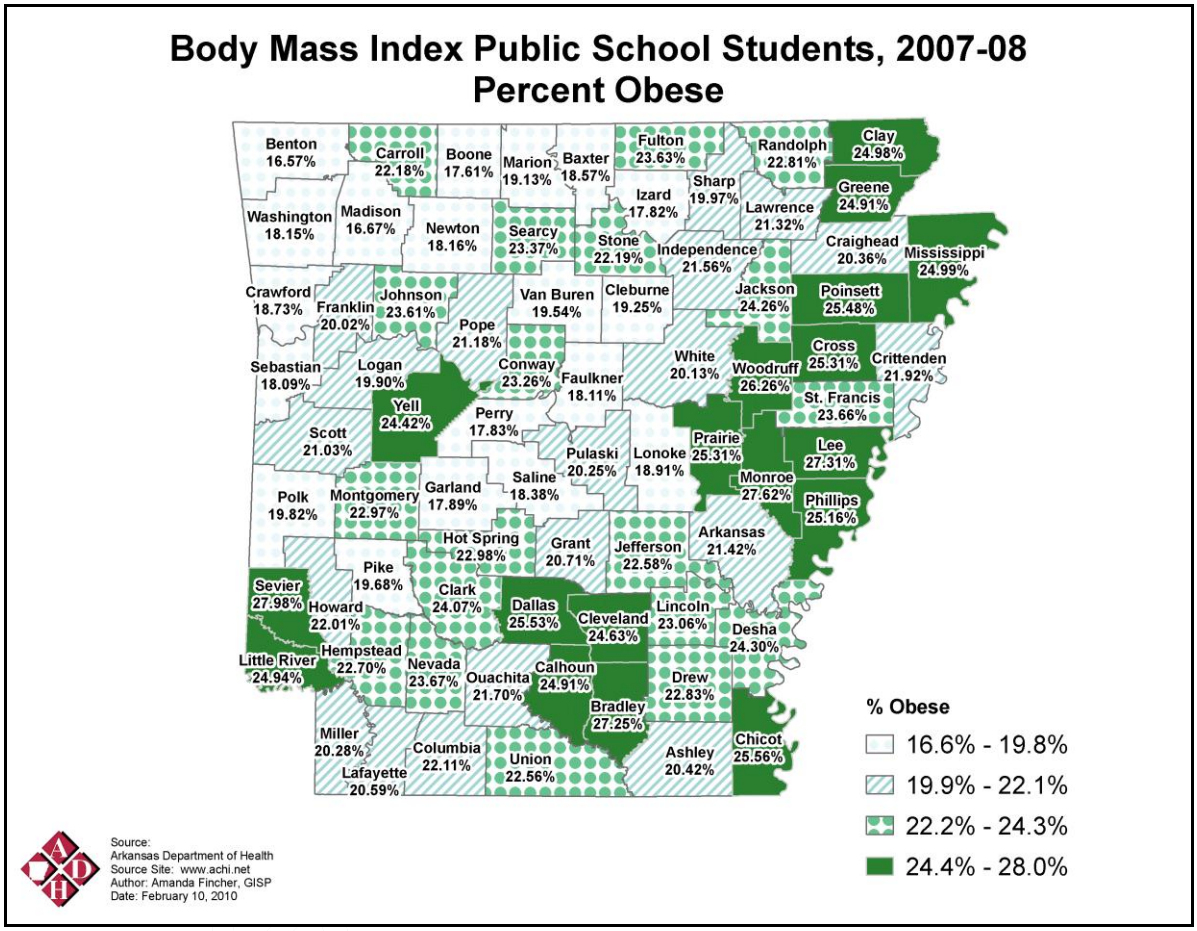
During the 2007-2008 school year, 37.9% of Arkansas public school students were overweight or obese.

Overweight Only



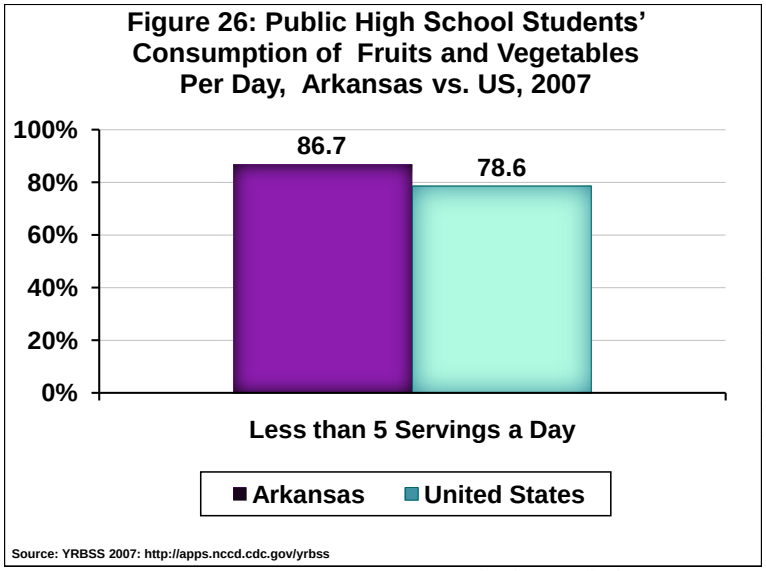
During the 2007-2008 school year, 17.4% of Arkansas public school students were overweight.

Obesity Only



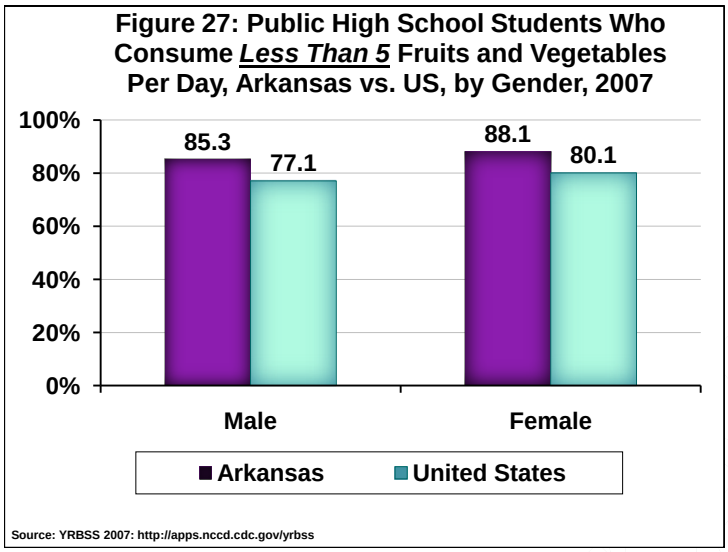
During the 2007-2008 school year, 20.5% of Arkansas public school students were obese.

Nutrition

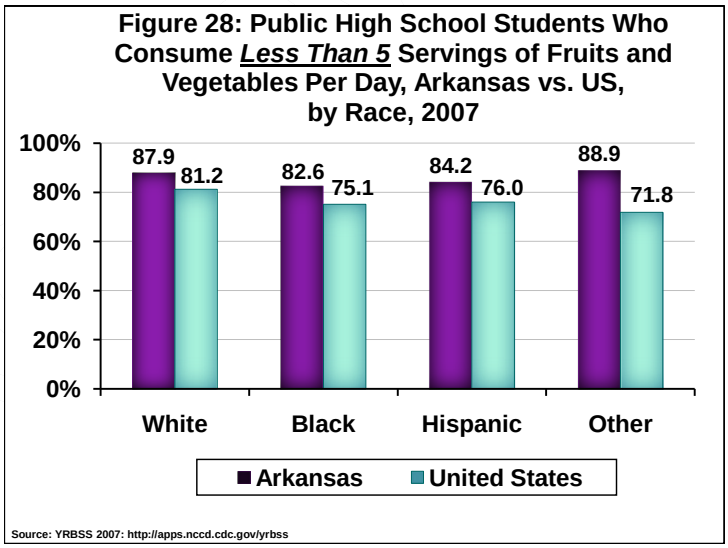


- **Figure 26.** In 2007, both in Arkansas and the United States, the vast majority of high school students ***did not*** consume the recommended servings of fruits and vegetables per day.

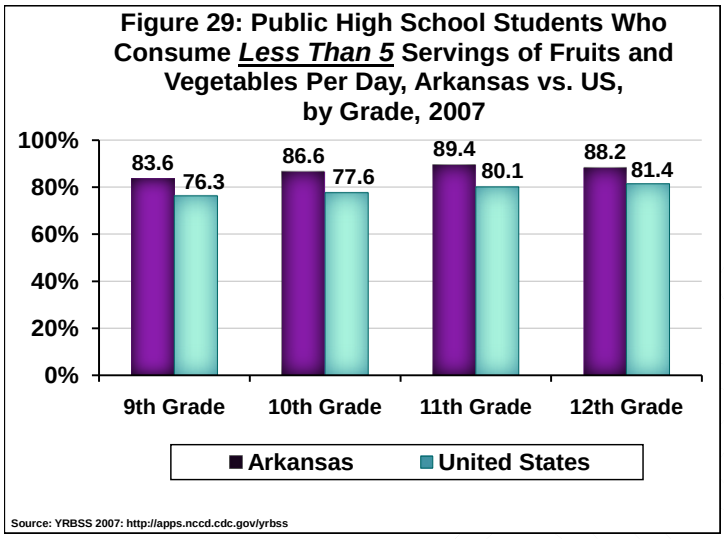
- In 2007, 86.7% of high school students in Arkansas ***did not*** eat a minimum of five servings of fruits and vegetables per day in comparison to 78.6% of students in the United States who ***did not*** eat the minimum number of servings recommended. This difference was statistically significant.



- **Figure 27.** Higher proportions of Arkansas male and female public high school students ***did not*** consume 5 or more servings of fruits and vegetables compared to their United States counterparts. These differences were statistically significant. For both Arkansas and the United States, the proportion of females who did not consume the recommended amount of fruits and vegetables were slightly higher than that for males.



- **Figure 28.** Higher proportions of Arkansas public high school students of all races ***did not*** consume 5 or more servings of fruits and vegetables per day as compared to those in the United States. The differences between Arkansas and the United States were statistically significant for two racial/ethnic groups, Whites and Others.



- **Figure 29.** The percentage of public high school students who ***did not*** consume 5 servings of fruits and vegetables per day increased by grade in Arkansas in 9th, 10th and 11th grades and in the United States in the 9th through 12th grades.

- A higher percentage of Arkansas public high school students ***did not*** consume the minimum recommended number of servings compared to public high school students in the United States in all grades. This difference was statistically significant for grades 9, 10, and 11.

Physical Activity

Physical Activity is important to children. It aids physical development in terms of coordination, strength and endurance. Studies have shown that physical activity also enhances academic performance. Children who participated in 20 to 40 minutes of physical activity per day at school showed improvement when tested against a control group who did not participate in any physical activity.[10]

Physical activity recommendations for youth are different from those for adults. To maintain a healthy lifestyle, youth need to have 60 or more minutes a day of moderate to vigorous activity in periods lasting 10 to 15 minutes or more.

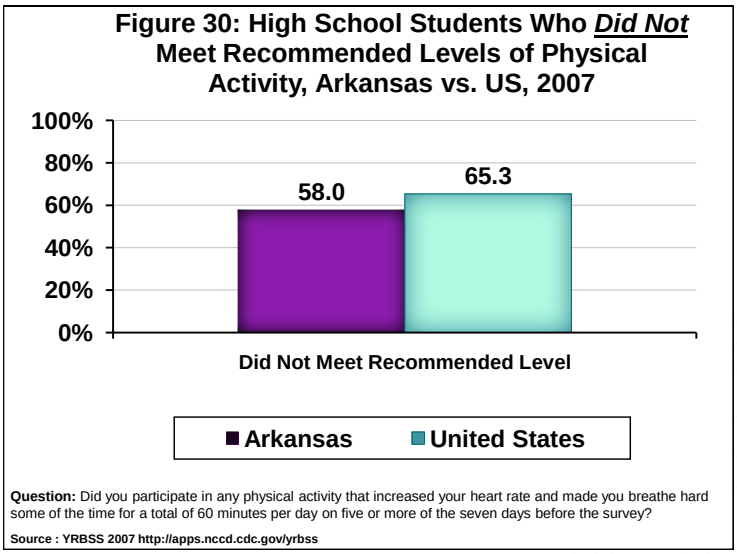
Children and Adolescents (aged 6–17)

- Children and adolescents should do 1 hour (60 minutes) or more of physical activity every day.
- Most of this daily exercise should be either moderate- or vigorous-intensity aerobic physical activity.
- As part of their daily physical activity, children and adolescents should do vigorous-intensity activity on at least 3 days per week. They also should do muscle-strengthening and bone-strengthening activity on at least 3 days per week.

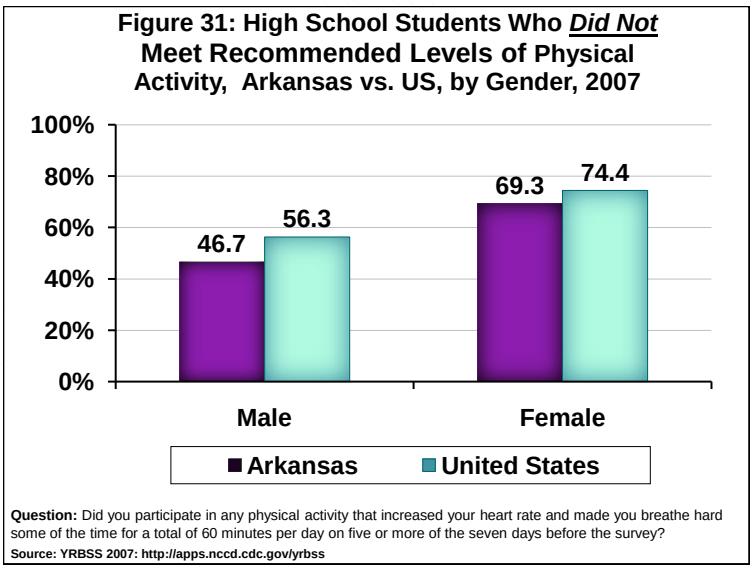
Intensity is the level of activity required to do an activity or a measure of how hard your body is working

- A person doing moderate-intensity aerobic activity can talk but not sing, during the activity.
- A person doing vigorous-intensity activity cannot say more than a few words without pausing for a breath.[1]

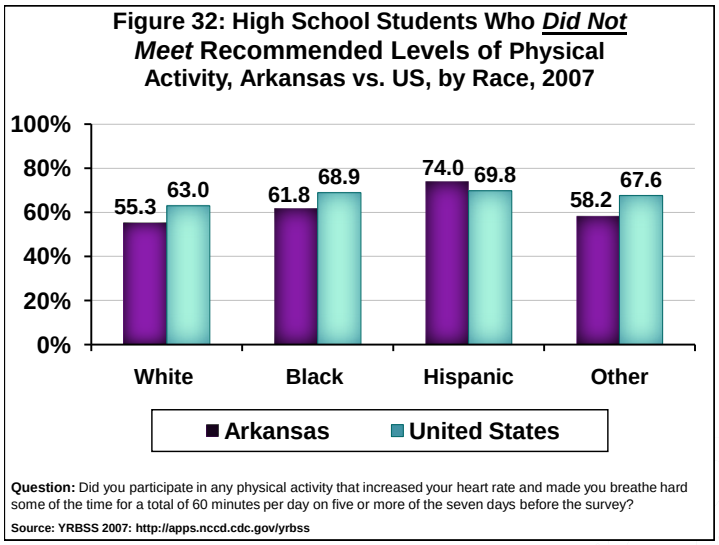
These are minimum guidelines. Each person needs to find what works for them to maintain themselves in a healthy weight range.



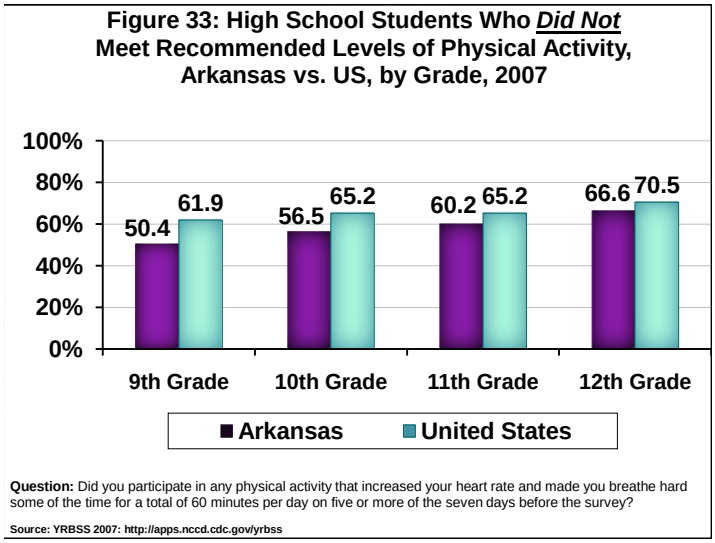
- **Figure 30.** In both Arkansas and the United States a majority of students ***did not*** meet the recommended levels of physical activity. The percentage of students who ***did not*** meet the recommended level of physical activity was 58.0% for Arkansas, which was lower than the US percentage of 65.3%. This difference was statistically significant.



- **Figure 31.** Higher proportions of female high school students ***did not*** meet the recommended levels of physical activity as compared to male high school students in Arkansas and the United States. These differences were statistically significant. The difference between females in Arkansas and the United States was not statistically significant. However, the difference between males and females in Arkansas and those in the US were both statistically significant.



- **Figure 32.** In Arkansas, the proportion of Hispanics who ***did not*** meet the recommended levels of physical activity was higher than all other racial/ethnic groups. For the US, Hispanics and Blacks were both elevated relative to Whites and Others. None of these differences were statistically significant.

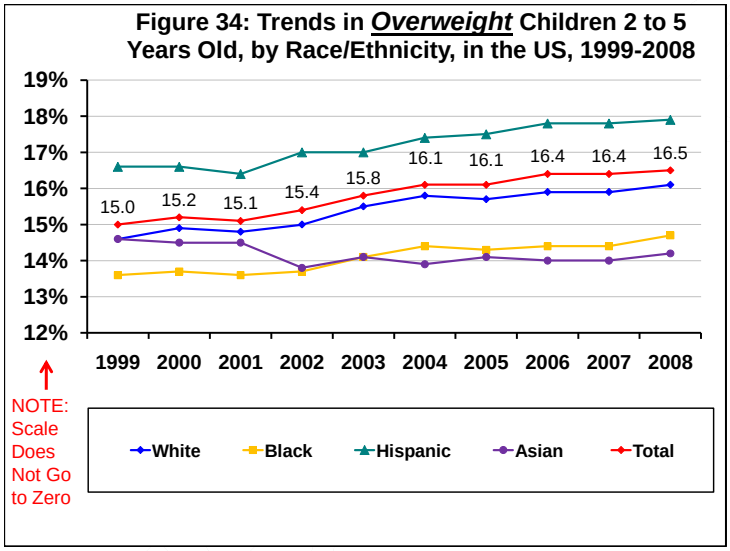


- **Figure 33.** In both Arkansas and the United States, the percentage of high school students who ***did not*** participate in the recommended amount of physical activity increased as grade level increased. The percentage increase in Arkansas from 50.4% in the ninth grade to 66.6% in the twelfth grade was greater than the increase in the United States from 61.9% in the ninth grade to 70.5% in the twelfth grade. In both Arkansas and the United States, the increasing trends by grade were statistically significant.

Overweight and Obesity Among Children Two through Five Years Old in the United States

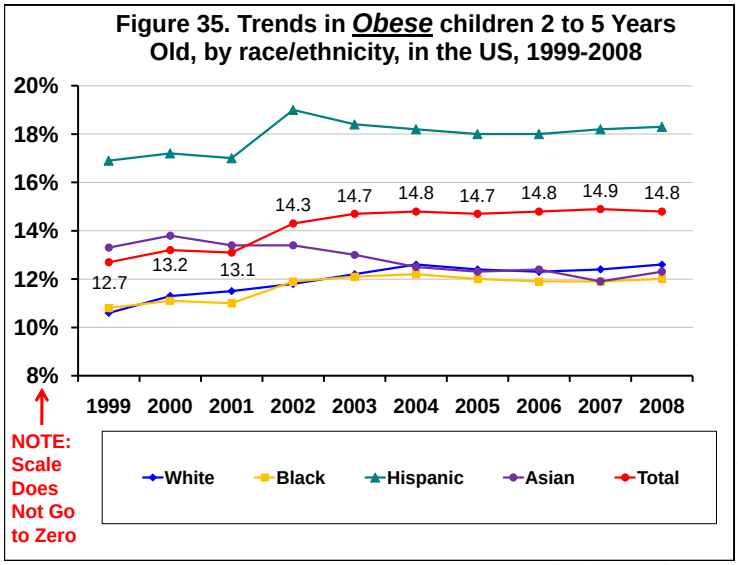
Overweight Only

The Pediatric Nutrition Surveillance System (PedNSS) data collected for children since 1999 has shown that children between two and five years of age were also following the trend of our adult and youth populations in weight gain in both overweight and obese categories.[11]



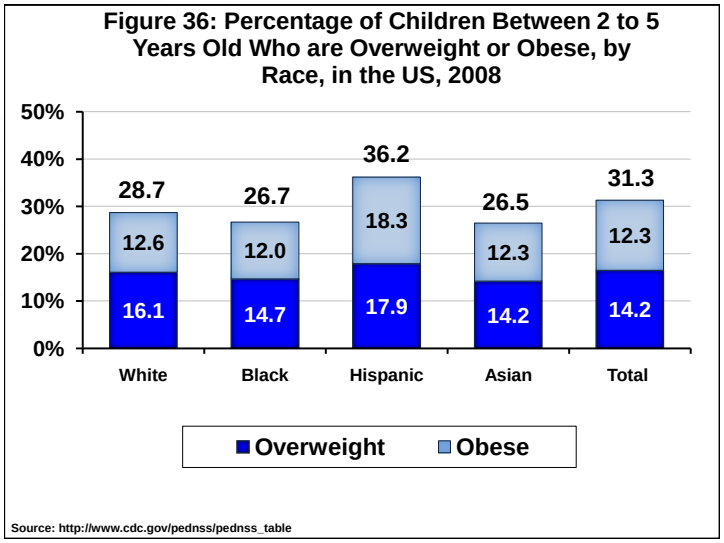
- **Figure 34.** In the United States in 1999, 15.0% of all children between 2 and 5 years old were ***overweight***. By 2008, 16.5% of all children between 2 and 5 years of age were ***overweight***.
- In the United States in 2008, the prevalence of ***overweight*** among the Hispanic group was higher than that among the other racial/ethnic groups examined.
- Over the eleven years of observation, there have been persistent increases in the proportion of overweight children among Hispanics, Whites and Blacks. Asian children showed a decrease in the proportion who were overweight from 1999 through 2002 with a leveling that has lasted through 2008.

Obesity Only



- **Figure 35.** In the United States in 1999, 12.7% of all children between 2 and 5 years old were ***obese***. In 2008, 14.8% of all children between 2 and 5 years of age were ***obese***. The proportion of children who were obese has remained unchanged for Whites, Blacks and Hispanics since 2003. Obesity among Asian children has shown a steady decrease since 2000.

Overweight And Obesity Combined



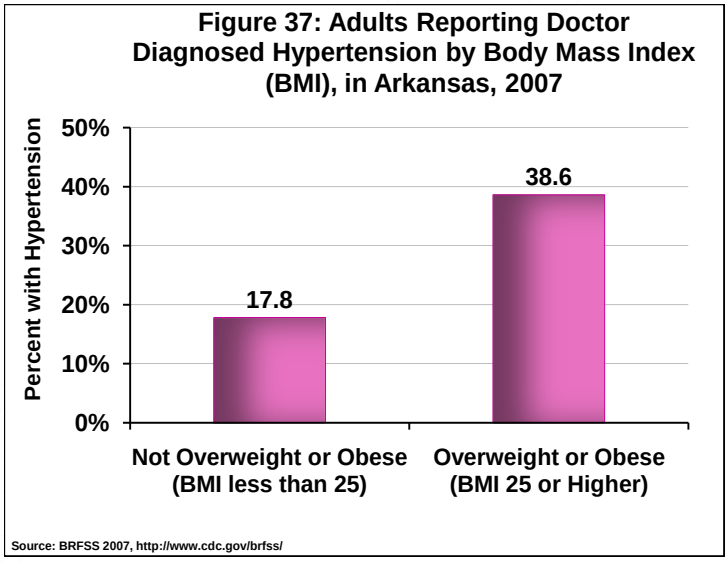
- **Figure 36.** In the United States, the proportion of children ***overweight or obese*** was higher among the Hispanic group relative to Whites, Blacks, and Asians.

Chronic Disease Burden Associated With Overweight and Obesity in Arkansas

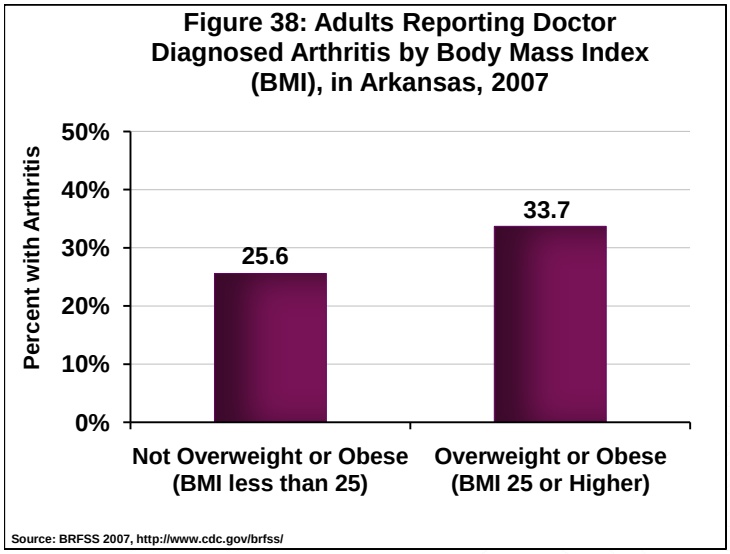
There are greater consequences to being overweight or obese than appearance. People who are overweight or obese are at higher risk for developing chronic diseases and disabilities than people who are not. More specifically, overweight and obesity are associated with heart disease, high blood pressure, stroke, diabetes, arthritis, breathing problems, reproductive complications, skeletal and joint problems, decreased physical endurance, and premature death.[1]

For the last three decades across all ages and races, the proportion of the population who are overweight or obese in the United States and in Arkansas has increased. It has been documented that even children as young as two years old are following the upward trend observed among youth and adult populations.

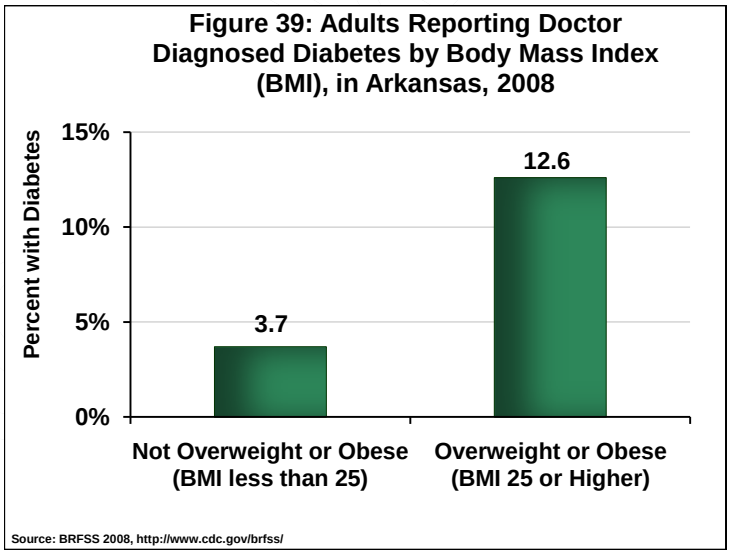
The following graphs illustrate the risk, if one is overweight or obese, of having certain chronic illnesses.



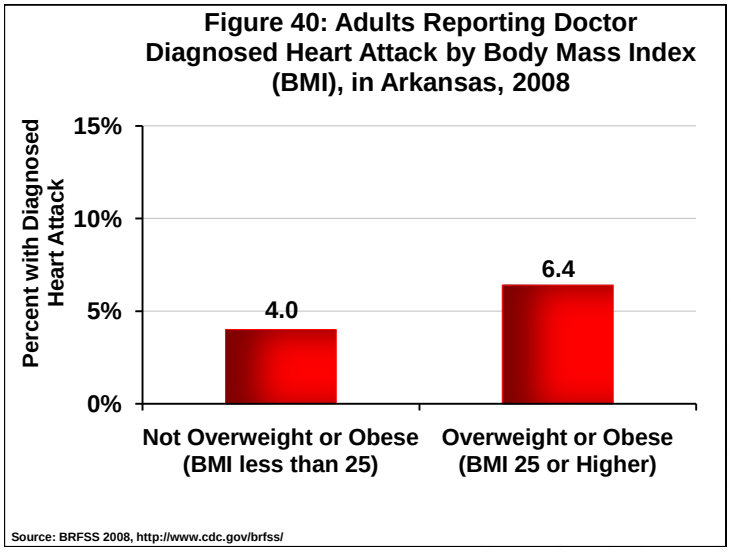
- **Figure 37.** In 2007, 38.6% of people who were overweight or obese reported being diagnosed with hypertension compared to 17.8% who were not overweight or obese. This difference was statistically significant.



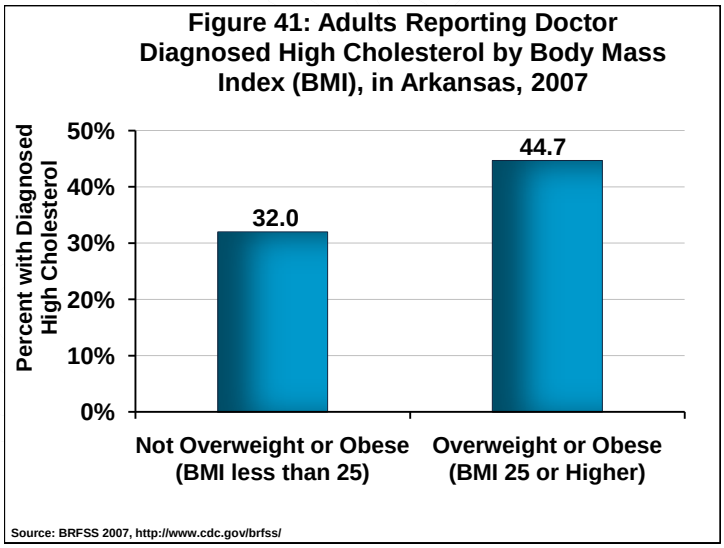
- **Figure 38.** In 2007, 33.7% of people who were overweight or obese reported being diagnosed with arthritis compared to 25.6% who were not overweight or obese. This difference was statistically significant.



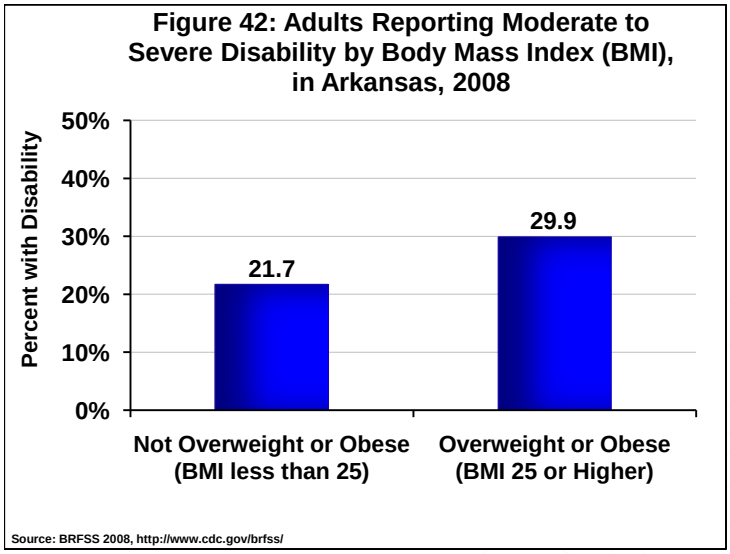
- **Figure 39.** In 2008, 12.6% of people who were overweight or obese reported being diagnosed with diabetes compared to 3.7% who were not overweight or obese. This difference was statistically significant.



- **Figure 40.** In 2008, 6.4% of people who were overweight or obese reported being diagnosed with a heart attack compared to 4.0% who were not overweight or obese. This difference was statistically significant.



- **Figure 41.** In 2007, 44.7% of people who were overweight or obese reported being diagnosed with high cholesterol compared to 32.0% who were not overweight or obese. This difference was statistically significant.



- **Figure 42.** In 2008, 29.9% of people who were overweight or obese reported being diagnosed with severe disability compared to 21.7% who were not overweight or obese. This difference was statistically significant.

Obesity and Cancer

According to the American Cancer Society, one way to reduce the risk of cancer (other than not smoking) is to achieve and maintain a healthy weight. To do this one needs to be physically active on a regular basis, and make healthy food choices. Each year, about 550,000 Americans die of cancer; a third of these deaths are linked to poor diet, physical inactivity, and obesity.

Approximately, two thirds of Americans are overweight or obese. Most Americans are aware that overweight, poor diet and lack of exercise can lead to diseases such as heart disease, stroke, and diabetes. A survey conducted by the American Institute for Cancer Research (AICR) showed that only about one in four individuals knew that obesity is also a risk factor in several types of cancer.

According to the AICR, obesity increases the likelihood of developing the following cancers by 25 to 33 percent: [12]

- Endometrial
- Esophageal
- Pancreatic
- Kidney
- Gall Bladder
- Breast
- Colorectal

Economic Burden Associated With Overweight and Obesity

For people under age 65, medical expenditures for people who are either overweight or obese are approximately 37% higher than those of normal weight people. Economists estimate the expenditures incurred for overweight and obesity presently cost taxpayers approximately $175/year for each individual who is overweight or obese. As more people become either overweight or obese this figure will increase. Chronic disease care is depleting the amount of heath care dollars for diseases that are largely preventable. It has been estimated that if the obesity trend continues to increase, up to one fifth of health care expenditures will be necessary to take care of the consequences of obesity. It is estimated that if this trend is not reversed, Arkansas will go from spending $13.9 billion in 2003 to spending an estimated $42.1 billion in 2023 on obesity-related chronic diseases and other consequences of being overweight or obese.[13]

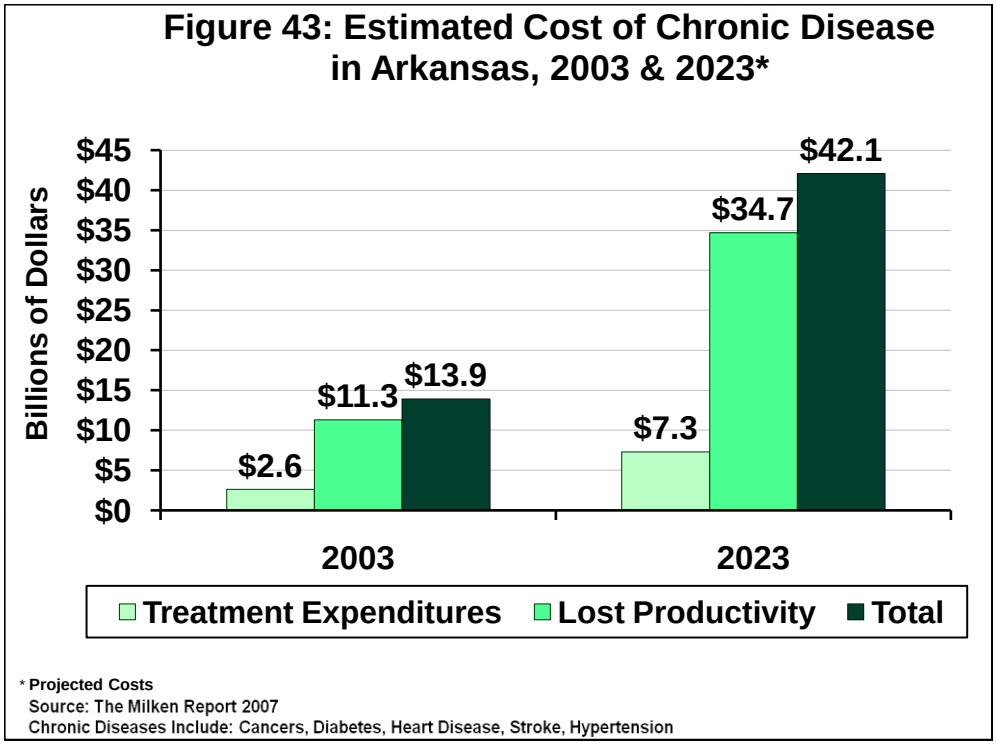


Figure 43. Figure 43 shows the estimated cost of chronic diseases in terms of treatment expenditures, and lost productivity in Arkansas for 2003 to be 13.9 billion and projected total costs for 2023 to be 42.1 billion dollars.[13]

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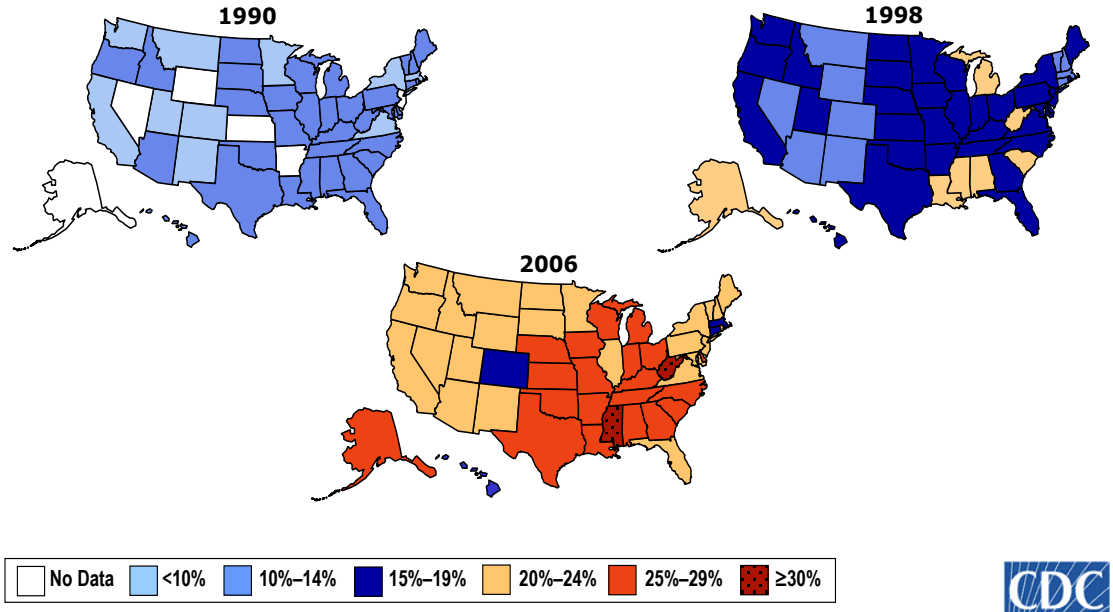
Appendix

Preliminary Draft

Obesity Trends* Among U.S. Adults

BRFSS, 1990, 1998, 2006

(*BMI ≥30, or about 30 lbs. overweight for 5'4" person)

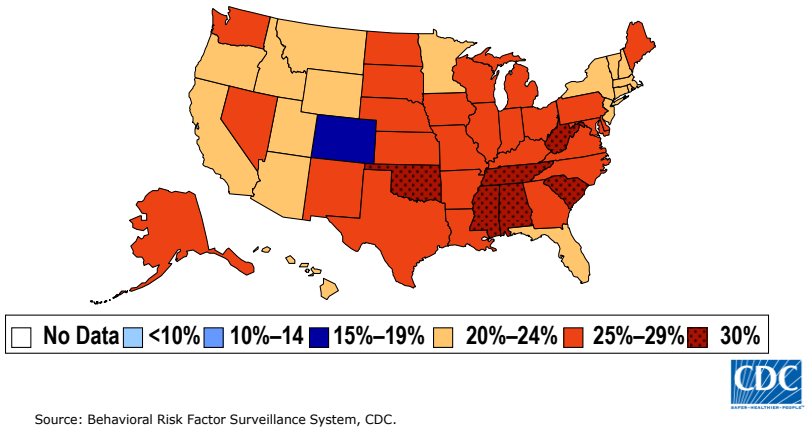


Source: CDC Behavioral Risk Factor Surveillance System.

About 60 million adults, or 30 percent of the adult population, are now obese, which represents twice the rate since 1980.

Additional maps can be seen at (http://aps.nccd.cdc.gov/brfss)

BRFSS, 2008



Source: Behavioral Risk Factor Surveillance System, CDC.