2014
Obesity Data Deck

Chronic Disease Epidemiology Section
Epidemiology Branch
Center for Public Health Practice

Chronic Disease Branch
Center for Health Advancement

Arkansas Department of Health

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Acronyms

• BRFSS - Behavioral Risk Factor Surveillance System
• YRBS - Youth Risk Behavior Survey
• ACHI - Arkansas Center for Health Improvement
• YTS - Youth Tobacco Survey
• PedNSS – Pediatric Nutrition Surveillance System
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SECTION I. INTRODUCTION
Obesity Data Deck

• Purpose
  To provide a comprehensive set of charts describing multiple impacts of **overweight and obesity** in Arkansas with selected U.S. comparisons.

• Burden
  Being overweight or obese increases a person’s risk for developing various adverse health conditions, many of which are included in this data deck.
Health Consequences of Overweight and Obesity

- Coronary heart disease
- Type 2 diabetes
- Cancers (endometrial, breast, and colon)
- Hypertension (high blood pressure)
- Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
- Stroke
- Liver and Gallbladder disease
- Sleep apnea and breathing problems
- Osteoarthritis (a breakdown of cartilage and bone within a joint)
- Gynecological problems (abnormal periods, infertility)

Source: Centers for Disease Control and Prevention
Fifteen Leading Causes of Death (All Ages)
Arkansas, 2012

- Heart Disease: 23.8%
- Malignant Neoplasms (Cancer): 21.2%
- Chronic Lower Respiratory Disease: 6.2%
- Cerebrovascular (Stroke): 5.2%
- Unintentional Injuries: 4.6%
- Alzheimer's Disease: 3.1%
- Diabetes: 2.7%
- Influenza/Pneumonia: 2.3%
- Nephritis: 2.2%
- Septicemia: 1.6%
- Suicide: 1.5%
- Liver Disease/Cirrhosis: 1.0%
- Hypertension: 0.9%
- Parkinson's Disease: 0.8%
- Homicide: 0.8%

Source: Arkansas Health Statistics Branch (provisional data)
BMI Calculation

- Body Mass Index (BMI)

\[\text{BMI} = \left( \frac{\text{weight in pounds}}{(\text{height in inches}) \times (\text{height in inches})} \right) \times 703\]

or

\[\text{BMI} = \frac{\text{weight in kilograms}}{(\text{height in meters}) \times (\text{height in meters})}\]
## Standard Weight Classification Categories for Adults

<table>
<thead>
<tr>
<th>BMI</th>
<th>Weight Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 18.5</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5-24.9</td>
<td>Healthy weight</td>
</tr>
<tr>
<td>25.0-29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>30.0 and Above</td>
<td>Obese</td>
</tr>
</tbody>
</table>
# BMI Table for Adults

<table>
<thead>
<tr>
<th>Height (inches)</th>
<th>Body Weight (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>91  96  100  105  110 115 119 124 129 134 138</td>
</tr>
<tr>
<td>60</td>
<td>97 102 107 112 118 123 128 133 138 143 148</td>
</tr>
<tr>
<td>61</td>
<td>100 106 111 116 122 127 132 137 143 148 153</td>
</tr>
<tr>
<td>62</td>
<td>104 109 115 120 126 131 136 142 147 153 158</td>
</tr>
<tr>
<td>63</td>
<td>107 113 118 124 130 135 141 146 152 158 163</td>
</tr>
<tr>
<td>64</td>
<td>110 116 122 128 134 140 145 151 157 163 169</td>
</tr>
<tr>
<td>65</td>
<td>114 120 126 132 138 144 150 156 162 168 174</td>
</tr>
<tr>
<td>66</td>
<td>118 124 130 136 142 148 155 161 167 173 179</td>
</tr>
<tr>
<td>67</td>
<td>121 127 134 140 146 153 159 165 171 177 183</td>
</tr>
<tr>
<td>68</td>
<td>125 131 138 144 151 158 164 171 177 184 190</td>
</tr>
<tr>
<td>69</td>
<td>128 135 142 149 155 162 169 176 182 189 196</td>
</tr>
<tr>
<td>70</td>
<td>132 139 146 153 160 167 174 181 188 195 202</td>
</tr>
<tr>
<td>71</td>
<td>136 143 150 157 164 171 178 185 192 200 208</td>
</tr>
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<td>72</td>
<td>140 147 154 162 169 177 184 191 199 206 213</td>
</tr>
<tr>
<td>73</td>
<td>144 151 159 167 174 182 189 197 204 212 219</td>
</tr>
<tr>
<td>74</td>
<td>148 155 163 171 179 186 194 202 210 218 225</td>
</tr>
<tr>
<td>75</td>
<td>152 160 168 176 184 192 200 208 216 224 232</td>
</tr>
<tr>
<td>76</td>
<td>156 164 172 180 189 197 205 213 221 230 238</td>
</tr>
</tbody>
</table>

How to Interpret BMI for Children

• Interpretation for children’s BMI takes into account height and weight measurements, sex, and age.

• CDC recommends that health care providers use the growth standards for infants, children, and adolescents in the U.S.
  – Ages 0 to 2 years: WHO growth standards
  – Ages 2 years and older: CDC growth charts

World Health Organization (WHO) growth charts: http://www.who.int/childgrowth/en
Centers for Disease Control and Prevention (CDC) growth charts: http://www.cdc.gov/growthcharts/clinical_charts.htm
BMI Percentile Classification for Children

<table>
<thead>
<tr>
<th>Percentile Range</th>
<th>Weight Status Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than the 5th percentile</td>
<td>Underweight</td>
</tr>
<tr>
<td>5th percentile to less than the 85th percentile</td>
<td>Healthy weight</td>
</tr>
<tr>
<td>85th to less than the 95th percentile</td>
<td>Overweight</td>
</tr>
<tr>
<td>95th percentile or greater</td>
<td>Obese</td>
</tr>
</tbody>
</table>
Growth Chart Example

Body mass index-for-age percentiles: Boys, 2 to 20 years

A 10-year-old boy with a BMI of 23 would be in the obese category (95th percentile or greater).

A 10-year-old boy with a BMI of 21 would be in the overweight category (85th to less than 95th percentile).

A 10-year-old boy with a BMI of 18 would be in the healthy weight category (5th percentile to less than 85th percentile).

A 10-year-old boy with a BMI of 13 would be in the underweight category (less than 5th percentile).
SECTION II. ADULTS
(AGES 18 AND OLDER)
A. BRFSS TREND DATA (2000-2012)
Adult Overweight and Obesity Prevalence
Arkansas and U.S., 2000-2012

Source: BRFSS

In 2011, BRFSS had substantial methodological changes; it is not comparable to previous years.
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Obesity Prevalence
Arkansas and U.S., 2000-2012

Source: BRFSS
In 2011, BRFSS had substantial methodological changes; it is not comparable to previous years.
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence
Arkansas, 2000-2012

Source: BRFSS

In 2011, BRFSS had substantial methodological changes; it is not comparable to previous years.

BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30

Percent


Overweight

Obese

Overweight and Obese
Adult Overweight and Obesity Prevalence, by Gender
Arkansas, 2000-2012

Source: BRFSS
In 2011, BRFSS had substantial methodological changes; it is not comparable to previous years.
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence, by Race/Ethnicity
Arkansas, 2000-2012

Source: BRFSS
In 2011, BRFSS had substantial methodological changes; it is not comparable to previous years.
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
B. BRFSS DATA, 2012
Adult Overweight and Obesity Prevalence
Arkansas and U.S., 2012

Source: BRFSS
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence, by Gender

Arkansas, 2012

Source: BRFSS
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence, by Race/Ethnicity
Arkansas, 2012

Source: BRFSS
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence, by Race and Gender, Arkansas 2012

Source: BRFSS
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
Adult Overweight and Obesity Prevalence, by Age
Arkansas, 2012

Source: BRFSS
BMI Categories: Overweight = 25-29.9; Obese = BMI ≥ 30
SECTION III. CHILDREN AND YOUTH
A. YRBS DATA
(HIGH SCHOOL STUDENTS)
High School Students Overweight and Obesity Prevalence
Arkansas and U.S., 2005-2013

Source: YRBS
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
High School Students Overweight and Obesity Prevalence
Arkansas, 2005-2013

Source: YRBS
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
High School Students Overweight and Obesity Prevalence
Arkansas, 2005-2013

Source: YRBS
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
High School Students Overweight and Obesity Prevalence
Arkansas, 2005-2013

Percent

9th 10th 11th 12th

Source: YRBS
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
B. ACHI DATA
(K, 2\textsuperscript{nd}, 4\textsuperscript{th}, 6\textsuperscript{th}, 8\textsuperscript{th}, & 10\textsuperscript{th} GRADE STUDENTS)
Trends in BMI Classification for Arkansas Public School Students in Grades K, 2, 4, 6, 8, & 10

Source: Arkansas Center for Health Improvement, Assessment of Childhood and Adolescent Obesity, Year Ten (Fall 2012-Spring 2013)
Percent of Arkansas Students* Overweight and Obese, by Gender, 2012-2013 School Year Grades K, 2, 4, 6, 8, & 10

Total: 37.5% (16.8% Overweight, 20.7% Obese)
Male: 37.7% (16.2% Overweight, 21.5% Obese)
Female: 37.2% (17.3% Overweight, 19.9% Obese)

Source: Arkansas Center for Health Improvement, Assessment of Childhood and Adolescent Obesity, Year Ten (Fall 2012-Spring 2013) *Public School Students
Percent of Arkansas Students* Overweight and Obese, by Race/Ethnicity, 2012-2013 School Year Grades K, 2, 4, 6, 8, & 10

Source: Arkansas Center for Health Improvement, Assessment of Childhood and Adolescent Obesity, Year Ten (Fall 2012-Spring 2013) *Public School Students
Percent of Arkansas Students* Overweight and Obese, by Gender & Race/Ethnicity, 2012-2013 School Year Grades K, 2, 4, 6, 8, & 10

Source: Arkansas Center for Health Improvement, Assessment of Childhood and Adolescent Obesity, Year Ten (Fall 2012-Spring 2013)  
*Public School Students
Percent of Arkansas Students* Overweight and Obese, by Grade, 2012-2013 School Year
Grades K, 2, 4, 6, 8, & 10

Source: Arkansas Center for Health Improvement, Assessment of Childhood and Adolescent Obesity, Year Ten (Fall 2012-Spring 2013)
*Public School Students
C. YTS DATA
(HIGH SCHOOL STUDENTS)
Do you think smoking helps you lose weight?
Percent of High School Students Who Answered “Yes”, by Smoking Status, Arkansas, 2010

Source: Arkansas YTS
Question: “Do you think that smoking cigarettes makes you gain or lose weight?”
Percent of High School Students who are Overweight or Obese, by Smoking Status
Arkansas, 2010

Source: Arkansas YTS
D. PEDNSS
(AGES 2 TO 5 YEARS)*

*Among low-income children in federally funded maternal and child health programs
Children ages 2 to 5 Years Old, Overweight PedNSS* Population, Arkansas and U.S., 2000-2011

*Source: PedNSS (among low-income children in federally funded maternal and child health programs)
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
Children ages 2 to 5 Years Old, Obese PedNSS* Population, Arkansas and U.S., 2000-2011

*Source: PedNSS (among low-income children in federally funded maternal and child health programs)
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
Children ages 2 to 5 Years Old, Overweight and Obese PedNSS* Population, Arkansas and U.S., 2011

*Source: PedNSS (among low-income children in federally funded maternal and child health programs)
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
Children ages 2 to 5 Years Old, Overweight and Obese, by Race/Ethnicity, PedNSS* Population, Arkansas, 2011

*Source: PedNSS (among low-income children in federally funded maternal and child health programs)
BMI Categories: Overweight: >= 85th percentile but < the 95th; Obese: >= the 95th percentile for BMI, by age and sex
SECTION IV. ASSOCIATED CHRONIC DISEASES
A. CORONARY HEART DISEASE
Coronary Heart Disease Prevalence Among Adults, by Weight Classification, Arkansas and U.S., 2012

Source: BRFSS
B. STROKE
Stroke Prevalence Among Adults, by Weight Classification
Arkansas and U.S., 2012

Percent

Arkansas United States

Not Overweight or Obese 5.2 2.4
Overweight 3.4 3.0
Obese 4.1 3.5

Source: BRFSS
C. HYPERTENSION
Hypertension Prevalence Among Adults, by Weight Classification
Arkansas and U.S., 2011

Source: BRFSS
D. DIABETES
Diabetes Prevalence Among Adults, by Weight Classification
Arkansas and U.S., 2012

Source: BRFSS
E. DISABILITY
Disability* (Limited In Any Way) Prevalence Among Adults, by Weight Classification, Arkansas and U.S., 2012

<table>
<thead>
<tr>
<th>Weight Classification</th>
<th>Arkansas</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Overweight or Obese</td>
<td>22.1</td>
<td>16.0</td>
</tr>
<tr>
<td>Overweight</td>
<td>22.0</td>
<td>18.7</td>
</tr>
<tr>
<td>Obese</td>
<td>32.0</td>
<td>29.0</td>
</tr>
</tbody>
</table>

Source: BRFSS
*Question: Are you limited in any way in any activities because of physical, mental, or emotional problems?
Disability* (Use Special Equipment) Prevalence Among Adults, by Weight Classification
Arkansas and U.S., 2012

Source: BRFSS

*Question: Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?
F. CANCER
Age-Adjusted Incidence Rates of Female Breast Cancer
Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Colorectal Cancer
Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Endometrial Cancer
Arkansas and U.S., 2000-2010

Rate per 100,000*

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Pancreatic Cancer
Arkansas and U.S., 2000-2010

Rate per 100,000*

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Thyroid Cancer
Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER

*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Cancer of the Kidney and Renal Pelvis, Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Esophageal Cancer
Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
Age-Adjusted Incidence Rates of Gall Bladder Cancer
Arkansas and U.S., 2000-2010

Sources: Arkansas Central Cancer Registry and SEER
*Age-Adjusted to the 2000 U.S. Standard Population
SECTION V. DATA SOURCES AND DESCRIPTIONS
Data Sources

- Arkansas Health Statistics Branch, Arkansas Department of Health
- Behavioral Risk Factor Surveillance System (BRFSS)*
- Youth Risk Behavior Survey (YRBS)*
- Arkansas Youth Tobacco Survey (YTS)*
- Arkansas Center for Health Improvement (ACHI)
- Pediatric Nutrition Surveillance System (PedNSS)
- Arkansas Central Cancer Registry (ACCR)
- Surveillance, Epidemiology, and End Results (SEER)

*Indicates self-reported data
Data Source Descriptions

• Arkansas Health Statistics Branch, Arkansas Department of Health
  – The Health Statistics Branch provides a variety of data concerning the health of Arkansans. The Vital Statistics Section reports information on all vital events: birth, death, marriage, divorce, fetal deaths, and induced terminations of pregnancies. The Hospital Discharge Section reports on all inpatient and emergency department discharges in Arkansas hospitals and information on health professional manpower. The Registry Section collects and reports on all known cases of cancer, tuberculosis, and sexually transmitted diseases, including HIV, AIDS, syphilis, and gonorrhea. The Survey Section conducts scientifically based telephone and pencil and paper surveys of health behaviors and conditions.

• Behavioral Risk Factor Surveillance System (BRFSS)*
  – The Behavioral Risk Factor Surveillance System is a standardized, random telephone health survey conducted by each of the 50 states, Washington, D.C., and three U.S. territories under the guidance of the Centers for Disease Control and Prevention (CDC). Arkansas BRFSS contracts with an outside agency to conduct the survey, using a Computer-Aided Telephone Interviewing System. Respondents are selected using a “Disproportionate Stratified Random Sampling” design using a two-stage process. First, a telephone number is randomly selected from listed and unlisted telephone numbers. Second, according to BRFSS protocol, when a residence is selected, a random household member (age 18 or older) is chosen for interview.
• **Youth Risk Behavior Survey (YRBS)**
  
  – The CDC’s Youth Risk Behavior Survey is the only surveillance system designed to monitor a wide range of priority health risk behaviors – unintentional injuries and violence; tobacco, alcohol, and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; unhealthy dietary behaviors; physical inactivity; obesity; and asthma – among high school students. It uses a stratified random sample of schools and students at both the national and state levels. It is a paper-based classroom survey.

• **Arkansas Youth Tobacco Survey (YTS)**
  
  – The Youth Tobacco Survey is similar to the YRBS. However, the YTS includes middle school students and focuses more on tobacco-related issues. The YTS was last conducted in Arkansas in 2010.
Arkansas Center for Health Improvement (ACHI)

The Arkansas Center for Health Improvement is a nonpartisan, independent health policy center dedicated to improving the health of Arkansans. At the request of the Arkansas Departments of Education and Health, in the 2003–2004 school year, ACHI created and implemented the BMI screening process for all public school children in the state. To accomplish this, ACHI put together a BMI Task Force in partnership with local school districts, the Arkansas Departments of Education, Health and Human Services, staff from Arkansas Children’s Hospital, and the UAMS College of Public Health. In 2007, during the 86th Arkansas General Assembly, Act 201 was passed to strengthen the protocol followed by school and nursing staff in performing the assessment, require parents to advise schools in writing if they do not wish to have their child's BMI assessed, and change the periodicity of assessments to even grades (kindergarten through grade 10). ACHI continues to work closely with the Arkansas Departments of Education and Health to facilitate BMI data collection, conduct analyses, and deliver reports.
• Pediatric Nutrition Surveillance System (PedNSS)

  The Pediatric Nutrition Surveillance System is a child-based public health surveillance system that describes the nutritional status of low-income U.S. children who attend federally-funded maternal and child health and nutrition programs. PedNSS provides data on the prevalence and trends of nutrition-related indicators. The CDC discontinued PedNSS at the end of 2012.
• **Arkansas Central Cancer Registry (ACCR)**
  
  The Arkansas Central Cancer Registry is a population-based registry whose goal is to collect timely and complete data on all cancer cases diagnosed in the state. The registry is located within the Center for Public Health Practice of the Arkansas Department of Health, and is responsible for maintaining a statewide cancer incidence reporting system; monitoring data accuracy, reliability, and completeness through systematic quality assurance procedures; analyzing cancer incidence and mortality data; disseminating cancer information; and facilitating studies related to cancer prevention and control.

• **Surveillance, Epidemiology, and End Results (SEER)**
  
  The Surveillance, Epidemiology, and End Results Program of the National Cancer Institute provides cancer incidence and survival statistics in an effort to reduce the burden of cancer among the U.S. population. SEER collects and publishes data from population-based cancer registries.

*Indicates self-reported data*
The End