

# Obesity in North Carolina

## Reference Guide - Obesity and Related Data

### Obesity in NC and Nationally

In July 2009 the Trust for America's Health ranked North Carolina as the state with the 14<sup>th</sup> highest rate of overweight and obese children age 10 – 17 and the 12<sup>th</sup> most obese state in the nation.<sup>1</sup>

In 2007, 33.5% of NC children aged 10-17 are overweight or obese, compared to 31.6% nationally.<sup>2</sup>

In 2008, 65.7% of North Carolina adults were overweight or obese,<sup>3</sup> compared to 63.2% nationally.<sup>4</sup>

Overweight adolescents have a 70% chance of becoming overweight and obese adults. This increases to 80% if at least one parent is overweight or obese.<sup>5</sup>

### Physical Activity and Nutrition – Our Unhealthy Habits

Sedentary lifestyles and poor eating habits are widely recognized contributors to the overweight epidemic in NC. Physical inactivity and unhealthy eating combined are the second leading preventable cause of death in NC, and both increase the risk of heart disease, certain types of cancer, diabetes, high blood pressure, stroke, and obesity.<sup>6</sup>

- More than 24% of NC adults reported no physical activity within the previous month and nearly 24% of adults had not engaged in leisure-time physical activity within the previous week.<sup>7</sup>
- 56% of NC adults do not get the recommended amount of physical activity, compared with 51.2% nationally.<sup>8</sup> Nearly half of NC students do not get the recommended amount of physical activity.<sup>9</sup>
- Nearly 80% of NC adults and 85% of NC high school students eat less than 5 servings of fruits and vegetables each day, the minimum recommended for good health.<sup>10 11</sup>
- One-third of NC children typically consume one serving or less of vegetables per day,<sup>12</sup> and one in every three NC children eats fast food two or more times per week.<sup>13</sup>
- 48.7% of NC children watch more than two hours of television on a typical day.<sup>14</sup>

### Physical Activity and Academic Performance

- Overweight children were absent significantly more than normal-weight children.<sup>15</sup> Studies have demonstrated a negative association between number of absences and academic performance.<sup>16 17</sup>
- Children who are physically fit are more likely to have stronger academic performance<sup>18</sup> while overweight or obese children have poorer academic outcomes.<sup>19</sup>
- North Carolina school districts reported improved academic focus, alertness, and behavior among students as a result of the statewide policy mandating at least 30 minutes of physical activity per day for K through 8<sup>th</sup> grade students (2008 survey of 106 NC School Districts).<sup>20</sup>
- Including daily 10-minute activity breaks during the school day for K – 4<sup>th</sup> grade students in North Carolina increased the students' on-task behavior by an average of 8% and by 20% among the students who are usually "least on-task".<sup>21</sup>

### Physical Education and Academic Performance

- Students with higher grades are less likely to engage in physical **inactivity** than their classmates with lower grades.<sup>22</sup>
- Sacrificing physical education to devote time to other classes does not improve academic performance.<sup>23</sup> "Despite devoting twice as many minutes per week to physical education, the health-related physical education program did not interfere with academic achievement."<sup>24</sup>

- Providing quality physical education has been noted to decrease disruptive behavior in schools and improve students' grades, concentration, test scores, and self-esteem.<sup>25 26 27 28</sup>

### Obesity and Other Chronic Diseases

Overweight and obesity are significantly associated with diabetes, high blood pressure, high cholesterol, asthma, arthritis, and poor health status. Heart disease, cancer, stroke, and chronic lung disease account for 58% of all deaths in the state.<sup>29</sup>

- Overweight individuals are nearly 40% more likely to develop heart disease and 50% more likely to develop diabetes than healthy weight individuals. The risk is even greater for obese individuals.
- Diabetes has more than doubled in NC over the past decade. Nearly 1 in 10 NC adults have been diagnosed with diabetes, which is higher than the general US population.<sup>30</sup>
- More than 1.2 million people in NC have pre-diabetes or diabetes, and many are unaware of their condition. 87% of adults with diabetes in NC are overweight or obese.

### Obesity and Chronic Diseases in Children and Youth – Kids with adult diseases

- An estimated 15-45% of all new diabetes case in NC children are Type II – a disease previously found only in adults.<sup>31</sup>
- NC public schools reported that 4,584 students had diabetes in 2008-2009; 3,548 monitored blood glucose at school; 2,101 received insulin injections at school; 1,544 had insulin pumps; and 2,527 are know to self-carry their medication.<sup>32</sup>
- In addition, nearly half of NC students do not get the recommended amount of physical activity,<sup>33</sup> which means they are 600 times more likely to develop heart disease as adults.<sup>34</sup>

### Cost to NC Employers

Overweight and obese workers cost their employers more.

- Increasing BMI is associated with greater costs to employee health plans; obese workers have up to 21% higher health care costs compared with those of healthy weight.<sup>35 36 37</sup>
- An overweight or obese adult will accrue \$250,000 in lost productivity over the course of his or her career.<sup>38</sup> A Duke University study found that the number of lost workdays for obese adults was almost 13 times higher, compared with those of healthy weight.<sup>39</sup>

### Obesity-related Medical Costs

Individuals who are obese have annual medical costs 37.4% higher than their healthy weight counterparts, representing an additional \$732 per obese person, per year.<sup>40</sup>

	Costs in 2006 <sup>41</sup>	Projected Costs for 2011	Projected Costs for 2015
<b>Adults 18 +: Direct Medical &amp; Indirect Costs</b>	\$57.37 billion	\$75.64 billion	\$94.31 billion
<b>Youth Age 10-17: Direct Medical Costs related to overweight and obesity*</b>	\$105.13 million	\$164.59 million	\$204.96 million

\* NC costs are calculated according to the prevalence of the following risk factors: poor nutrition, physical inactivity, overweight and obese, hypertension, high cholesterol, tobacco use, depression and type II diabetes.

## Medicaid Expenditures – We all pay the price for obesity

- Nationally, nearly one half of overweight- and obesity-attributable medical spending becomes the responsibility of the public sector (Medicaid and Medicare).<sup>42</sup>
- In 2003, an estimated 11.5% (\$662 million) of NC Medicaid expenditures for adults were attributed to obesity.<sup>43</sup> The direct and indirect Medicaid costs related to obesity in NC youth is estimated at nearly \$16 million per year (based on 2003 dollars).<sup>44</sup>

<sup>1</sup> Trust for America's Health. (2009). F as in Fat: How Obesity Policies are Failing in America. Available at <http://healthyamericans.org/reports/obesity2009/Obesity2009Report.pdf>. Accessed on March 19, 2010.

<sup>2</sup> National Survey of Children's Health (2007), U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. Available at <http://nschdata.org/ranking/rankingmap.aspx?item=07>. Accessed March 13, 2010.

<sup>3</sup> North Carolina Behavioral Risk Factor Surveillance System Survey, NC State Center for Health Statistics, NC Department of Health and Human Services, (2008). Available at <http://www.schs.state.nc.us/SCHS/brfss/2008/nc/risk/rf1.html>. Accessed on March 19, 2010.

<sup>4</sup> Behavior Risk Factor Surveillance System (BRFSS), U.S. Centers for Disease Control and Prevention (2008). Available at: <http://apps.nccd.cdc.gov/BRFSS/list.asp?cat=OB&yr=2008&qkey=4409&state=All>. Accessed on March 19, 2010.

<sup>5</sup> Telama, R., Yang, X., Laakso, L., and Vilkari, J. (1997). Physical activity in childhood and adolescence as predictor of physical activity in young adulthood. *American Journal of Preventive Medicine*, 13, 317-323.

<sup>6</sup> North Carolina State Center for Health Statistics, 2002; NC Medical Journal, July/August 2002, Vol.63, #4, Makdad, 2004 & NC Mortality 2006.

<sup>7</sup> North Carolina Behavioral Risk Factor Surveillance System (BRFSS), State Center for Health Statistics, (2008). Available at: <http://www.schs.state.nc.us/SCHS/brfss/results.html>. Accessed on October 21, 2009.

<sup>8</sup> North Carolina Behavioral Risk Factor Surveillance System Survey, NC State Center for Health Statistics, NC Department of Health and Human Services, (2007). Accessed on October 21, 2009.

<sup>9</sup> Reflects high school (56%) and middle school students (45%) who were not physically active for a total of at least 60 minutes per day on five or more of the past seven days. Data Source: North Carolina Youth Risk Behavior Surveillance System, North Carolina Department of Public Instruction and North Carolina Department of Health and Human Services, (2007). Accessed on October 21, 2009.

<sup>10</sup> 21.6% of North Carolina adults consume five or more servings of fruits and vegetables per day. Data Source: North Carolina Behavioral Risk Factor Surveillance System (BRFSS), State Center for Health Statistics, (2007). Available at: <http://www.schs.state.nc.us/SCHS/brfss/results.html>. Accessed on October 21, 2009.

<sup>11</sup> 14.8% of students who ate fruits and vegetables five or more times per day during the past seven days. Data Source: North Carolina Youth Risk Behavior Surveillance System, North Carolina Department of Public Instruction and North Carolina Department of Health and Human Services, (2007). Available at: <http://www.nchealthyschools.org/data/YRBSS/>. Accessed on October 21, 2009.

<sup>12</sup> On a typical day, 25.5% of children have 1 serving and 5.8% of children have 0 servings of vegetables, not including french fries. Data Source: North Carolina Child Health Assessment and Monitoring Program (CHAMP), State Center for Health Statistics, (2008). Available at: <http://www.schs.state.nc.us/SCHS/champ/results.html>. Accessed on October 21, 2009.

<sup>13</sup> North Carolina Department of Health and Human Services, Division of Public Health, State Center for Health Statistics. Health Profile of North Carolinians: 2007 Update-May 2007. Available at: <http://www.schs.state.nc.us/SCHS/pdf/HealthProfile2007.pdf>

<sup>14</sup> North Carolina Child Health Assessment and Monitoring Program (CHAMP), State Center for Health Statistics, (2008). Available at: <http://www.schs.state.nc.us/SCHS/champ/results.html>. Accessed on October 21, 2009.

<sup>15</sup> Geier, A.B., Foster, G.D., Womble, L.G., et al. (2007). The Relationship Between Relative Weight and School Attendance Among Elementary Schoolchildren. *Obesity*. 15, 2157–2161. Accessed on March 13, 2009 at <http://www.nature.com/oby/journal/v15/n8/full/oby2007256a.html#bib13>

<sup>16</sup> Monk, D., Ibrahim, M. (1984) Patterns of absence and pupil achievement. *Am Educ Res J*. 21: 295–310.

<sup>17</sup> Dunn, M. C., Kadane, J. B., Garrow, J. R. (2003) Comparing harm done by mobility and class absence: missing students and missing data. *J Educ Behav Statist*. 28: 269–288.

<sup>18</sup> Active Living Research, Research Brief (2009). Active Education: Physical Education, Physical Activity, and Academic Performance. Available at: <http://www.activelivingresearch.org/resource/research/summaries>. Accessed on January 1, 2010.

<sup>19</sup> Taras, H., Potts-Datema, W. (2005) Obesity and student performance at school. *J School Health*. 75: 291–295.

<sup>20</sup> Evenson, K, Ballard K, Lee G, et al. Implementation of a School-Based State Policy to Increase Physical Activity. *Journal of School Health*, 79(5)231-237, May 2009.

<sup>21</sup> Mahar M, Murphey S, Rowe D, et al. Effects of a Classroom-Based Program on Physical Activity and On-Task Behavior. *Medicine and Science in Sports and Exercise*, 38(12): 2086-2094, December 2006.

<sup>22</sup> Centers for Disease Control and Prevention. Health Risk Behaviors and Academic Achievement. [Data from the 2003 National Youth Risk Behavior Survey (YRBS)]. Available at: [http://www.cdc.gov/HealthyYouth/health\\_and\\_academics/pdf/health\\_risk\\_behaviors.pdf](http://www.cdc.gov/HealthyYouth/health_and_academics/pdf/health_risk_behaviors.pdf). Accessed on October 21, 2009.

- <sup>23</sup> Active Living Research, Research Brief (2009). Active Education: Physical Education, Physical Activity, and Academic Performance. Available at: <http://www.activelivingresearch.org/resource/research/summaries> . Accessed on January 1, 2010.
- <sup>24</sup> Sallis, J.F., McKenzie, T.L., Kolody, B., Lewis, M., Marshall, S., and Rosengard, P. (1999). Effects of health-related physical education on academic achievement: Project SPARK. *Research Quarterly for Exercise and Sport*, 70, 127-136. Abstracted in "The Research File" newsletter of the Canadian Fitness and Lifestyle Research Institute. December 1999.
- <sup>25</sup> Shepard RJ, et al. Required physical activity and academic grades. A controlled study. In J Ilmarinen and I Vaelimaeki, eds. *Children and Sport. Pediatric work Physiology*. Berlin, Germany. Springer-Verlag. 1984, 58-63.
- <sup>26</sup> Dwyer, T, et al. Relation of academic performance to physical activity and fitness in children. *Pediatric Exercise Science*, 2001,13:225-237,1979,3:196-202.
- <sup>27</sup> Sallis JF, et al. Effects of health-related physical education on academic achievement. Project SPARK, *Research Quarterly for Exercise and Sport*, 1999, 70(2), 127-134.
- <sup>28</sup> Centers for Disease Control and Prevention. Guidelines for School and Community Programs: Promoting Lifelong Physical Activity. March 1977.
- <sup>29</sup> NC State Center for Health Statistics, NC Department of Health and Human Services, (2007).
- <sup>30</sup> 9.3% of adults in North Carolina report having ever been told by a doctor that they have diabetes. Data Source: North Carolina Behavioral Risk Factor Surveillance System Survey, NC State Center for Health Statistics, NC Department of Health and Human Services, (2008). Available at: <http://www.schs.state.nc.us/SCHS/brfss/2008/nc/all/topics.html> . Accessed on October 21, 2009. [Nationally, 8.3% of adults report having ever been told by a doctor that they have diabetes. Data Source: 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, (2008).] Available at: <http://apps.nccd.cdc.gov/BRFSS/list.asp?cat=DB&yr=2008&qkey=1363&state=All> . Accessed on October 21, 2009.
- <sup>31</sup> Tipping the Scales: How obesity and unhealthy lifestyles have become a weighty problem for the North Carolina economy. Be Active North Carolina, Inc. June 2008. (Chenoweth & Associates)
- <sup>32</sup> NC Annual School Health Services Report: 2008-09. NC Division of Public Health, Department of Health and Human Services. Public Schools of North Carolina, Department of Public Instruction. Available at <http://wch.dhhs.state.nc.us/cay.htm>. Accessed March 19, 2010.
- <sup>33</sup> Reflects high school (56%) and middle school students (45%) who were not physically active for a total of at least 60 minutes per day on five or more of the past seven days. Data Source: North Carolina Youth Risk Behavior Surveillance System, North Carolina Department of Public Instruction and North Carolina Department of Health and Human Services, (2007). Available at: <http://www.nchealthyschools.org/data/yrbs/> . Accessed on October 21, 2009.
- <sup>34</sup> Tipping the Scales: How obesity and unhealthy lifestyles have become a weighty problem for the North Carolina economy. Be Active North Carolina, Inc. p. 12. June 2008. / 2005 NC YRSS (Chenoweth & Associates)
- <sup>35</sup> Burton WN, Chen CY, Schultz AB, Edington DW. The economic costs associated with body mass index in a workplace. *J Occup Environ Med*. 1998;40:786-792.
- <sup>36</sup> Wang F, Schultz AB, Musich S, McDonald T, Hirschland D, Edington DW. The relationship between National Heart, Lung, and Blood Institute Weight Guidelines and concurrent medical costs in a manufacturing population. *Am J Health Promot*. 2003;17:183-189.
- <sup>37</sup> Anderson DR, Whitmer RW, Goetzel RZ, et al; Health Enhancement Research Organization (HERO) Research Committee. The relationship between modifiable health risks and group-level health care expenditures. *Am J Health Promot*. 2000;15:45-52.
- <sup>38</sup> Tipping the Scales: How obesity and unhealthy lifestyles have become a weighty problem for the North Carolina economy. Be Active North Carolina, Inc. p. 12. June 2008. (Chenoweth & Associates)
- <sup>39</sup> Ostbye, T. et al. Obesity and Workers' Compensation: Results from the Duke Health and Safety Surveillance System, *Arch Intern Med*. 2007; 167:766-773.
- <sup>40</sup> Finkelstein EA., [Fiebelkorn IC](#), Wang G. National medical spending attributable to overweight and obesity: how much, and who's paying? *Health.Aff*. 2003, Suppl Web Exclusives, W3-219-26.
- <sup>41</sup> Be Active North Carolina, Inc. Tipping the Scales: How obesity and unhealthy lifestyles have become a weight problem for the North Carolina economy. June 2008. Available at [www.beactivenc.org](http://www.beactivenc.org) . Accessed on March 5, 2009.
- <sup>42</sup> Finkelstein EA., [Fiebelkorn IC](#), Wang G. National medical spending attributable to overweight and obesity: how much, and who's paying? *Health.Aff*. 2003, Suppl Web Exclusives, W3-219-26.
- <sup>43</sup> [Finkelstein EA.](#), [Fiebelkorn IC](#), [Wang G](#). State-level estimates of annual medical expenditures attributable to obesity. *Obes Res*. 2004; 12: 18-24.
- <sup>44</sup> Be Active North Carolina, Inc. The economic cost of unhealthy lifestyles in North Carolina. December 2005. Available at [www.beactivenc.org](http://www.beactivenc.org). Accessed on November 12, 2007.