Still Too Fat to Fight

We cannot succeed in teaching our children to eat healthier foods while selling them 400 billion junk food calories in our schools every year.

A Follow-up Report to *Too Fat to Fight*

MISSION: READINESS
MILITARY LEADERS FOR KIDS

MISSION: READINESS
MILITARY LEADERS FOR KIDS

Who We Are

MISSION: READINESS is the nonprofit, nonpartisan national security organization of senior retired military leaders calling for smart investments in America's children. It operates under the umbrella nonprofit Council for a Strong America.

For a full listing of our membership, please see our website at www.missionreadiness.org.

Acknowledgments

MISSION: READINESS is supported by tax-deductible contributions from foundations, individuals and corporations. MISSION: READINESS accepts no funds from federal, state or local governments.

Major funding for Mission: Readiness is provided by: Birth to Five Policy Alliance • The Boeing Company • The California Education Policy Fund • The California Endowment • The Annie E. Casey Foundation • Early Care and Education Funders Collaborative of The Washington Area Women's Foundation • The Grable Foundation • The Heinz Endowments • Robert Wood Johnson Foundation • W.K. Kellogg Foundation • The David & Lucile Packard Foundation • William Penn Foundation • The Pew Charitable Trusts • The J.B. & M.K. Pritzker Family Foundation. The opinions expressed are those of the author(s) and do not necessarily reflect the views of The Pew Charitable Trusts or other funders.

This report was written by William Christeson, Amy Dawson Taggart, Soren Messner-Zidell, Mike Kiernan, Judy Cusick and Ryan Day.

David Carrier, Lindsay Warner, Nick Alexander and David Kass also contributed to this report.

Photos courtesy of the US Department of Defense.

©2012 MISSION: READINESS

Summary

The problem of junk food sold in schools is not just a national health issue. It is a national security issue.

Over the past 40 years, obesity rates have more than tripled for children and teens. About 1 in 4 young American adults is now too overweight to join the military. Being overweight or obese is the number one medical reason why young adults cannot enlist. When weight problems are combined with poor education, criminal backgrounds and other disqualifiers, an estimated 75 percent of young Americans could not serve in the military if they wanted to.

Students in the United States consume almost 400 billion calories from junk food sold at schools each year. If the calories were converted to candy bars this would equal nearly 2 billion bars and weigh more than the aircraft carrier *Midway*.

Meanwhile, too many schools across America still have vending machines and other venues where children can routinely buy candy, potato chips, cakes, cookies and sugar-sweetened fruit juices or sports drinks. The calories add up. According to a U.S. Department of Agriculture survey, the total calories consumed in a year from junk food sold at schools is almost 400 billion calories. If converted solely to the calories in candy bars, this would equal nearly 2 billion candy bars, which would weigh almost 90 thousand tons – more than the weight of the aircraft carrier *Midway*. [For more details see page 2, and Appendix I].

While limiting the sale of junk food is not a solution by itself for the childhood obesity epidemic, it is part of the solution. When schools sell candy and sugary drinks in cafeterias and vending machines, it works against national efforts to serve healthier school meals and parents' efforts to help their children develop healthier lifelong eating habits.

When New York City, the country's largest school district, stopped selling junk food in its schools and made other improvements in nutrition, physical activity and child- and parent-education both in the schools and city-wide, rates of obesity among its kindergarten through eighth-grade children dropped by 5.5 percent district-wide in just four years. These decreased rates of obesity included 7 and 6 percent drops among black and Hispanic 5- to 6-year-olds and a dramatic 24 percent drop in rates of obesity among white children that age. That is proof that large-scale public health change is possible in a short time and that the earlier you make those changes in a child's life, the better. Other places – such as Philadelphia and the state of Mississippi – are also beginning to see real progress in reducing childhood weight problems.

Finding ways to reverse our epidemic of obesity is crucial because the U.S. Department of Defense alone spends an estimated $1 billion per year for medical care associated with weight-related health problems. In a dramatic move to address this problem, the military is bringing healthier foods to its schools, dining facilities, and vending machines, but it cannot win this fight alone. The civilian sector needs to do its part.

The 300 retired generals and admirals of Mission: Readiness are joining parents and nutritionists in strongly supporting new efforts to limit the sale of junk food in our schools. Removing the junk food from our schools should be part of nationwide comprehensive action that involves parents, schools and communities in helping students build stronger bodies with less excess fat. We need action to ensure that America's child obesity crisis does not become a national security crisis.

Still Too Fat To Fight

An epidemic is spreading across the world

The abrupt increase in obesity among American youth has set off alarms in America's medical community. Unfortunately many other Americans still are not aware of how rapidly childhood obesity has increased.[1]

As reported in the *Journal of the American Medical Association*, 17 percent of girls age 12 to 19 years are now suffering from childhood obesity (not just excess weight). Even more boys in that age range are obese – 20 percent – and the boys' rates are still rising.[2]

Obesity rates are even higher among adults. In fact, one-third of all American adults are obese by the criterion used for adults: a Body Mass Index (BMI) of over 30, according to a survey by the Centers for Disease Control and Prevention (CDC).[3] (A separate survey conducted by the CDC has state-specific overweight and obesity data that are presented in Appendix II.)[4] While there has been a near doubling of obesity rates worldwide since 1980, no other major country's military forces face the challenges of weight gain confronting America's armed forces.[5] Our male rates of being overweight or obese are higher than those of any other major country, according to an analysis by the World Health Organization.[6] A different study in *The Lancet* further confirms that the U.S. has the highest BMIs for men and women, combined, among high-income countries.[7]

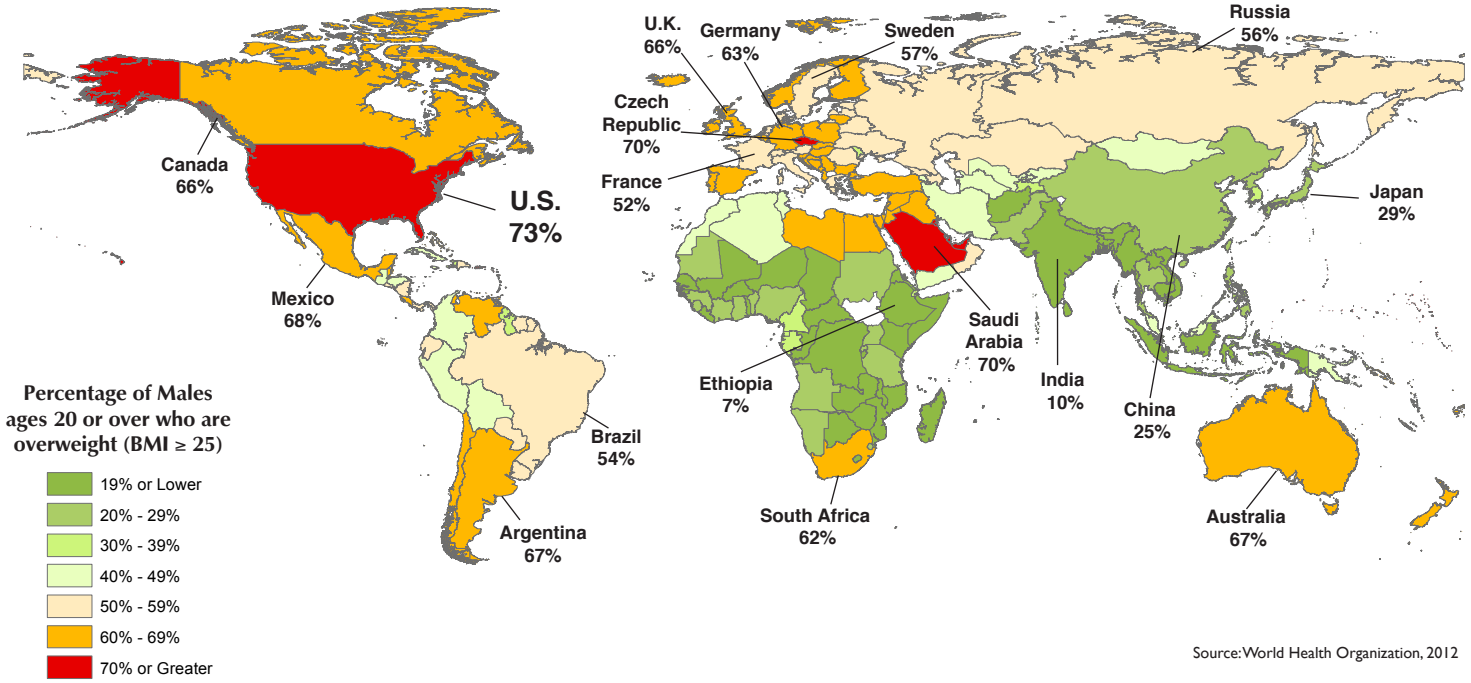
1 in 4 cannot join the military due to excess weight

National surveys conducted for the military and by the CDC show that approximately one in four young adults is unable to serve because of excess body fat.[8] When weight problems are combined with poor education, criminal backgrounds and other problems, an estimated 75 percent of all young adults could not serve in the military if they wanted to.[9]

The military spends over a billion dollars a year on weight-related diseases

Because our country has failed to improve fitness and reduce obesity among our youth, the military has had to work much harder than in the past to recruit and retain enough qualified men and women who can effectively serve our country. For example, many accepted recruits are diverted to special training to address their inadequate physical fitness before

Almost 3 out of 4 adult American males are overweight or obese. The United States has the highest rate of overweight males among all major countries.



Source: World Health Organization, 2012

"In the civilian world, unfit or overweight employees can impact the bottom line. But in our line of work, lives are on the line and our national security is at stake."

– General Richard E. Hawley, US Air Force (Ret.)

they can even begin regular basic training. The costs add up. The additional medical expenses for soldiers on limited duty in the Army because of sprains or bone fracture injuries that are caused in part by some soldiers being less fit or overweight than other soldiers total half a billion dollars a year.[10] The military's TRICARE health insurance system serves active duty personnel, their dependents and veterans. It spends well over $1 billion a year on treating weight-related diseases such as diabetes and heart disease. Many of those costs can be eliminated once America becomes more proactive in helping all its citizens to routinely become more active and consume less calories.[11]

America's school lunch program impacts military readiness

Following World War II, military leaders reported to Congress that, during the war, at least 40 percent of rejected recruits were turned away for reasons related to poor nutrition.[12] This inspired Congress to establish the National School Lunch Program in 1946.

More than 60 years later, school nutrition remains a national security concern. In 2010, the retired generals and admirals of Mission: Readiness strongly supported passage of the Healthy, Hunger-Free Kids Act. This important legislation requires the U.S. Department of Agriculture (USDA) to update nutrition standards for all school foods and beverages, including "competitive foods"—those sold outside of school meal programs, in vending machines, in school stores and as à la carte items in the cafeteria.

As the Healthy, Hunger-Free Kids Act was making its way through Congress, Mission: Readiness issued the report *Too Fat to Fight*, which focused on the importance of providing healthy school foods.[13] The Act had bipartisan support in both the Senate and the House and was signed into law in December 2010.

Since December 2010, the USDA has finalized regulations to update standards for school meals. The final standards will allow for more fruits and vegetables, whole grains, and low fat dairy products. The USDA hopes to finalize nutrition standards for competitive foods and beverages sold at school by the end of 2012.

Mission: Readiness applauds the USDA for its efforts thus far in updating nutrition standards for meals and looks forward to the finalized standards for competitive foods and beverages. We urge Congress to support the regulatory process and allow the USDA to finalize updated standards with input from nutrition experts and other knowledgeable experts on school nutrition policies.

School junk food calories equal more than the weight of the aircraft carrier *Midway*

How is it that the amount of junk food sold to children at U.S. schools in a single year is equal, in calories, to almost 2 billion candy bars, more than the weight of the aircraft carrier *Midway*?

In 2005, scientists at the USDA conducted an in-depth survey of children's food and beverage consumption. They found that, on any given day, almost 40 percent of children in elementary through high schools – 16 million children – consumed one or more competitive foods that were high-calorie, low-nutrient junk food, or sugar-sweetened beverages. These were foods obtained in school, but outside of the regular lunches.[14] K-12 students who reported in the USDA survey that they were consuming high-calorie, low-nutrient food obtained at school averaged over 130 calories a day from these desserts, candy, chips, or other junk food, even exluding sugary drinks or sodas.[15]

The 130 calories a day for all students consuming junk food equals almost 400 billion "empty" calories a year from foods low in nutrients and high in solid fats and added sugar. Our calculations show that those calories would equal nearly 2 billion candy bars, which would weigh almost 90 thousand tons – more than the weight of the aircraft carrier *Midway*.[16] [For a fuller explanation of how this figure was derived, see Appendix I]

National surveys on access to these foods, not actual consumption, conducted by the research program Bridging the Gap indicate that junk food and sugary drinks are still widely available to students in elementary, middle and high schools.[17] The USDA has not repeated its consumption survey, but from the Bridging the Gap data on access to these foods and other data, it is clear that junk food sold in schools remains a major problem.

Leading by Example

Marines lead children in exercise at a MISSION: READINESS news event in San Diego.

The Pentagon spends $4.5 billion a year on food services. In the most sweeping changes of military food services in 20 years, the Armed Services are bringing healthier foods with more fruits, vegetables, whole grains and lower-fat offerings to dining facilities, Department of Defense (DOD) schools, and other places where service members and their families buy food on base, including vending machines and snack bars.[36]

As Dr. Jonathan Woodson, Assistant Secretary of Defense for Health Affairs, explained, "Our primary focus is on the health and well-being of our service members, their families and our retirees. Obesity is a preventable problem which, if combated, can help prevent disease and ease the burden on our overall Military Health System." He emphasized the special need to begin teaching children healthy eating habits that can last a lifetime.[37]

Woodson noted that the DOD "considers obesity not only a national problem, but a national security issue. About a quarter of entry-level candidates are too overweight to actually either enter the military or sustain themselves through the first enlistment."[38]

As it has at crucial times in the past, the military is once again leading by example. After serving their country, when young men and women from all over America return to their communities, their healthier eating and exercise habits can become not just the military way of doing things, but also the American way of including healthier eating and exercise habits into daily life.

Exactly what do 130 calories per day from junk food mean in the long run for growing children? A study in the journal *Pediatrics* of child weight gain each year from 1998 to 2002 found that American youth consumed 110 to 165 more calories than they required each day. Over a 10-year period, those calories led to an excess 10 pounds of body weight for all teens.[18] Clearly, children consuming an additional 130 calories in junk food sold at school each day is part of the obesity problem.

Children who are unable to buy junk food at school may seek to replace that food with other alternatives. The solution involves children consuming fewer empty calories inside and outside of school each day while eating more nutritious foods and getting more exercise. The bottom line, as many parents and nutritionists point out, is that we cannot succeed in teaching our children to eat healthier foods while continuing to sell junk food in our schools.

Getting rid of junk food is an essential part of what works

Getting the junk food out of schools and serving nutritious school meals is both challenging and possible. It is unlikely that schools can successfully educate children about the need to improve their eating habits if the schools contradict that message by continuing to sell junk food. When New York City combined limiting junk food in its schools with other improvements in nutrition, physical activity, and child- and parent-education that took place not only in the schools but city-wide, rates of obesity among its K-8 children dropped by 5.5 percent in just four years. The younger the children the greater the decline in obesity. There was a 24 percent drop in rates of obesity among white 5- to 6-year-olds and 7 and 6 percent drops among black and Hispanic children that age – proof that large-scale public health change is possible in a short time frame and the earlier we make these changes in children's lives the better.[28]

Other places, such as Philadelphia and the state of Mississippi, are also starting to see meaningful progress in reducing childhood obesity.

An issue brief by the Robert Wood Johnson Foundation compared New York and Philadelphia, noting that, "In the mid 2000s, both cities implemented strong nutrition standards to improve the foods and beverages available to students."[29] Philadelphia also improved school nutrition education, worked to make fresh fruits and vegetables more available in underserved neighborhoods, and had citywide public education campaigns to encourage healthier nutrition. Over a 4-year period, there was almost a 5 percent decline in the overall obesity rate for Philadelphia's K-12 students. The largest declines were observed among African-American males and Hispanic females.[30]

The brief also highlighted progress made in Mississippi. Over a 6-year period, from the spring of 2005 to the spring of

Both overweight and physically unfit young adults impact national security

No one blows a whistle to stop the war when a soldier goes down with a sprain or stress fracture. Being overweight and/or physically weak increases the risk of having a sprain or stress fracture.

Many young men and women create challenges for the military because they

- are too heavy to join,
- become too heavy once they are in the military, or
- have weak muscles or bones from poor nutrition and exercise habits that can lead to excess sprains or stress fractures.

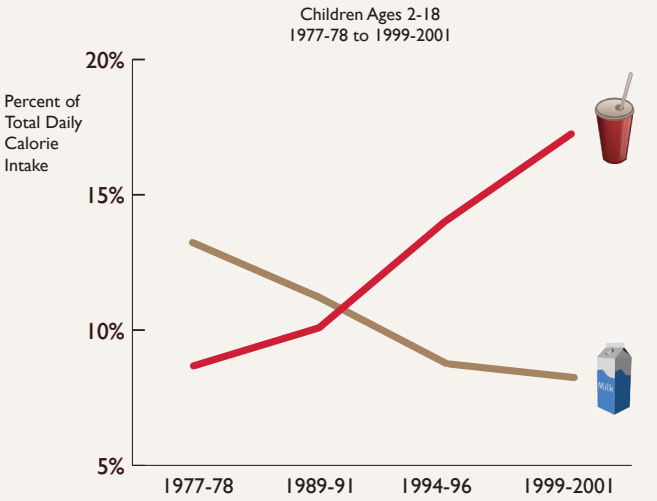
When the military could not meet recruitment goals during the Iraq war, Congress expanded the number of military recruiters and increased bonuses for new recruits. The Army experimented with accepting physically fit recruits who had more excess body fat than previously allowed.[19] The Army found that those overweight recruits were 47 percent more likely to experience a musculoskeletal injury (such as a sprain or stress fracture) and that more overweight recruits had to recycle back through boot camp.[20] The Army has stopped accepting those overweight recruits.

Poor nutrition and a lack of physical exercise not only leave young people too overweight to join, they also have an impact on those who are accepted. While recruits have, on average, more muscle mass than recruits in past decades, they also have more body fat thus placing them at risk of becoming overweight. There are also physically unfit (though not overweight) recruits who can and do enter since the military does not test the physical fitness of recruits until they arrive at boot camp.[21] In one study, 14 percent of new Army male recruits said they had not exercised or done any sports in a typical week prior to joining.[22] Of recruits who could not do 11 pushups upon entry, 45 percent did not complete boot camp.[23] We also know from military research that less fit recruits are more prone to leg and ankle injuries.[24]

Along with inadequate muscle mass due to lack of exercise, some recruits have low levels of bone density that can be due to lack of exercise, low levels of calcium and/or inadequate intake of Vitamin D.[25] It has not helped that in recent decades many children have switched from drinking milk to drinking excess empty calories from sugared sodas. Research also confirms that children who consume foods and beverages that are not part of the regular school meals take in less calcium and other important nutrients needed to build strong bodies.[26]

Changes Over Two Decades in the Consumption of Calcium and Sugar by America's Children

Percent of Total Calories from Sugar-Sweetened Beverages Consumed In and Out of School (sodas and sugared-fruit drinks) vs. Calories from Milk*



*This measures calories, not ounces. Thus some of the decline in calories consumed for milk may be due to greater consumption of lower-fat milk. However, school-age children still obtained roughly two-thirds of their milk from whole fat milk in 2005-2006 and total milk consumption per capita in America is declining.

Source: American Journal of Preventive Medicine, 2004

All of these unhealthy situations can have an impact on military readiness. Injured soldiers often cannot be deployed with their units and a soldier's failure to pass the military's physical fitness tests can result in discharge. Worse, more soldiers were evacuated from Iraq or Afghanistan for serious sprains and fractures than for combat injuries.[27] The military is working hard to reduce sprain and stress fractures. While it is true that even fully fit soldiers suffer sprains or fractures under combat conditions or during training, overweight or less-fit young men and women are at higher risk for these injuries.

2011, there was a 13 percent decline in the overall rate of overweight and obesity among Mississippi's K-5 students. The brief described the state's efforts to reduce obesity, including:

> "In 2006, the Mississippi State Board of Education set nutritional standards for foods and beverages sold in school vending machines. The Healthy Students Act of 2007 required the state's public schools to provide more physical activity time, offer healthier foods and beverages, and develop health education programs."[31]

Progress made in New York City, Philadelphia and Mississippi suggests that removing junk foods and offering healthy foods at school is an important part of successful efforts to reduce childhood obesity.

Will schools lose revenue by eliminating junk food?

Some school districts have used profits from food sold outside of the regular school lunch program to fund their extracurricular activities and other school activities. Studies show that decreased sales of junk food can be offset by increased sales of regular school meals as kids buy more healthy meals. Instead of using their family's lunch money to purchase junk food on the à la carte line in the school cafeteria, or from school stores or vending machines, children will be encouraged to make healthier choices. According to a CDC review of the literature on limiting sales of junk food, "While some schools report an initial decrease in revenue after implementing nutrition standards, a growing body of evidence suggests that schools can have strong nutrition standards and maintain financial stability." For example, the CDC noted one evaluation finding that, "of the 11 schools that reported financial data, 10 experienced increases of more than 5 percent in revenue from meal program participation, which offset decreases in revenue from à la carte food service." [32]

Reports from around the country reinforce the research. For example, the director of food and nutrition for Norwood School District in Ohio, Roger Kipp, eliminated vending machines and school stores in his district and created an area in the lunchroom where students could buy wraps, fruit or yogurt. He explained the eventual success of the change: "It took a while, but it caught on. You have to give the kids time. You can't replace 16 years of bad eating habits overnight."[33] In New York City, a pilot program with special vending machines serving fresh fruit sells out almost every day and has to be restocked. According to Gerald Martori, principal at Benjamin N. Cardoza High School, "It was pretty much an instant hit."[34]

> "[The child nutrition act] doesn't ban bake sales."
>
> – Secretary of Agriculture Tom Vilsack

U.S. Secretary of Agriculture Tom Vilsack has also reminded people to read the Healthy, Hunger-Free Kids Act: "It doesn't ban cookies. It doesn't ban bake sales." The Act is aimed at limiting the routine selling of junk food in school stores, vending machines or the cafeteria line.[35]

The risk is not behind us

The childhood obesity epidemic is still threatening our national security. In fact, the rate of obesity is still climbing among boys age 12 to 19 years. When the impact of the recession is over and fewer people seek to join the military, or if America is drawn into a new conflict, our military could again have trouble finding a sufficient number of well-educated recruits without serious criminal backgrounds, or excess body fat. Even among those who can be admitted, if they are physically unfit from a lifetime of nutritionally weak diets and lack of exercise, they will be more prone to injuries.

Why Fitness Matters

Bronze Star Recipient: US Marine Corps Sergeant Andy Lee

US Marine Corps Sergeant Andy Lee and his .50 Caliber Machine Gun team had already had a rough day. As temperatures approached 110 degrees in Afghanistan, each member of the team was carrying machine gun components or ammunition weighing over 90 pounds through extremely difficult terrain. When two squads ahead of them came under small arms and rocket-propelled grenade fire, Lee and his team rushed 200 meters forward into the danger zone, set up their gun and – ignoring the risks to themselves – started suppressing the attack on their fellow Marines. Lee ran to retrieve more heavy loads of ammunition, running back to find that a rocket-propelled grenade had injured the gunner on his team. Lee supervised the evacuation of the injured Marine while continuing to provide machine gun support for the two squads of Marines who had come under attack. For "his personal valor, physical toughness, and devotion to the mission", he was awarded the Bronze Star, joining his uncle who had earlier received the same medal at Guadalcanal during World War II.

Source: US Department of Defense *Heroes* website

Conclusion

As retired admirals and generals, we know that America is not powerless in the face of this insidious epidemic. We do not have to keep surrendering ever more of our young people to obesity. We do not need to keep jeopardizing our national security because three quarters of our young people cannot serve in the military, a quarter of them because they are overweight.

Getting the junk food out of our schools is the obvious next step in our efforts to address the childhood obesity crisis. Congress should continue to provide bipartisan support for the process they approved to ensure that our children have access to more nutritious, lower-fat, lower-calorie food at school that includes fruits and vegetables, whole grains and lower-fat dairy options. These foods can help our children become strong and healthy. As a nation, we acted decisively to improve our children's nutrition after World War II and we should do so again.

Endnotes

1 Ogden, C.L., Carroll, M.D., Kit, B.K., & Flegal, K.M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA*, January 12, 2012 (Online), E1-E8; Ogden, C.L., Flegal, K.M., Caroll, M.D., & Johnson, C.L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA, 288*(14), 1728-1732.

2 Ogden, C.L., Carroll, M.D., Kit, B.K., & Flegal, K.M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA*, January 12, 2012 (Online), E1-E8; Ogden, C.L., Flegal, K.M., Caroll, M.D., & Johnson, C.L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA, 288*(14), 1728-1732.

3 Wang, Y.C., McPherson, K., Marsh, T., Gortmaker, S.L., & Brown, M. (2011). Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet, 378*, 815-25.

4 Data from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) were used to estimate three-year weighted averages of the proportion of 18- to 24-year-olds who are overweight and obese according to the standard Body Mass Index cutoffs of 25.0 for overweight and 30.0 for obesity. We used three-year weighted averages to obtain an acceptable sample size. Centers for Disease Control and Prevention. (2011). Behavioral Risk Factor Surveillance System – Prevalence trends and data. Atlanta, GA: Author. Retrieved on February 10, 2012 from http://apps.nccd.cdc.gov/BRFSS/page.asp?cat=OB&yr=2010&state=All#OB

5 Finucane, M.M., Stevens, G.A., Cowan, M.J., Danaei, G., Lin, J.K., Paciorek, C.J., et al. (2011). National, regional, and global trends in body-mass index since 1980: Systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *The Lancet, 377*, 557-567.

6 Finucane, M.M., Stevens, G.A., Cowan, M.J., Danaei, G.,Lin, J.K., Paciorek, C.J., et al. (2011). National, regional, and global trends in body-mass index since 1980: Systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *The Lancet, 377*, 557-567; World Health Organization. (2012). Overweight and obesity. *Global Health Observatory (GHO)*. Geneva: Author. Retrieved on February 10, 2012 from http://www.who.int/gho/ncd/risk_factors/overweight/en/index.html

7 Finucane, M.M., Stevens, G.A., Cowan, M.J., Danaei, G., Lin, J.K., Paciorek, C.J., et al. (2011). National, regional, and global trends in body-mass index since 1980: Systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *The Lancet, 377*, 557-567.

8 Center for Accessions Research (CAR), United States Army Accessions Command, Fort Knox, KY. Data provided by Lt. Colonel Gregory Lamm, Chief, Marketing and Research Analysis Division, February 25, 2010; Cawley, J., & Maclean, J.C. (2010). *Unfit for service: The implications of rising obesity for US Military recruitment*. Cambridge, MA: National Bureau of Economic Research. The Accession Command's estimate that 27 percent of 17- to 24-year-old Americans are too heavy to join is based in part on a survey done for them by the Lewin Group in 2005. The National Bureau Economic Research (NBER) study is an analysis of data from the National Health and Nutrition Examination Survey (NHANES) study. The NBER analysis looks at eligibility rates for males and females based on BMI, body fat and exclusion criteria broken out for the different services. Based on the NBER analysis, we conclude that approximately 23 percent of adults eligible by age would not be able to join the Army because of excess body fat. Taking both studies into account – the NBER analysis of NHANES data and the Accessions Command's analysis – we conclude that approximately one-quarter of young Americans would be too heavy to join the military if they chose to do so. For a more recent military reference to the one in four figure see: Associated Press. (February 10, 2012). Military to fight fat in food upgrade. *Boston Globe*. Retrieved on February 24, 2012 from http://www.bostonglobe.com/news/nation/2012/02/10/military-fight-fat-food-upgrade/9Aw1M6HOruUVXJFzAA6BAP/story.html

9 Gilroy, C. (March 3, 2009). *Prepared statement of Dr. Curtis Gilroy, Director of Accession Policy in the Office of the Under Secretary of Defense for Personnel & Readiness*. Before the House Armed Services Personnel Subcommittee. "Recruiting, Retention and End of Strength Overview."

10 Sample, D. (October 11, 2011). Army wants more soldiers back on deployable status. *Army News Service*. Retrieved on February 10, 2012 from http://www.army.mil/article/67037/Army_wants_more_Soldiers_back_on_deployable_status\

11 Dall, T.M., Zhang, Y., Chen, Y.J., Wagner, R.C., Hogan, P.F., Fagan, N.K., et al. (2007). Cost associated with being overweight and with obesity, high alcohol consumption, and tobacco use within the Military Health System's TRICARE prime-enrolled population. *American Journal of Health Promotion, 22*(2), 120-139.

12 U.S. Congress. (1945). House of Representatives 49th Congress 1st Session, Hearings Before The Committee on Agriculture on H.R. 2673, H.R. 3143 (H.R. 3370 Reported). Bills Relating to the School-Lunch Program, March 23-May 24, 1945. Testimony of Major General Lewis B. Hershey.

13 Larson, N., & Story, M. (2010). Are 'Competitive Foods' sold at school making our children fat? *Health Affairs, 29*(3), 430-435.

14 Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association, 109,* S57-S66.

15 Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association, 109,* S57-S66.

16 A Calorie Counter. (2012). *Candy & chocolate bars compared: Hershey's, Nestle and Mars nutrition facts*. Retrieved on March 30, 2012 from http://www.acaloriecounter.com/candy-chocolate.php. For the complete explanation and endnotes, see appendix I.

17 Johnston, L.D., O'Malley, P.M., Terry-McElrath, Y.M., Freedman-Doan, P., & Brenner, J.S. (2011). School policies and practices to improve health and prevent obesity: National secondary school survey results, school years 2006–07 and 2007–08. *Volume 1*. Executive Summary. Ann Arbor, MI: Bridging the Gap Program, Survey Research Center, Institute for Social Research.Retrieved on May 5, 2012 from www.bridgingthegapresearch.org/research/secondary_school_survey

18 Wang, Y.C., Gortmaker, S.L., Sobol, A.M., & Kuntz, K.M. (2006). Estimating the energy gap among US children: A counterfactual approach. *Pediatrics, 118*(6), e1721-e1733.

19 Alvarex, L. (January 18, 2009). More Americans joining military as jobs dwindle. *The New York Times*. Retrieved on January 27, 2012 from http://www.nytimes.com/2009/01/19/us/19recruits.html?pagewanted=all; Asch, B.J., Heaton, P., Hosek, J., Martorell, P., Simon, C. & Warner, J.T. (2010). *Cash incentives and military enlistment, attrition, and reenlistment*. Santa Monica, CA: RAND Corporation. Retrieved on January 27, 2012 from http://www.rand.org/pubs/monographs/MG950.html; Cowan, D.N., Bedno, S.A., Urban, N., Yi, B., & Niebuhr, D.W. (2011). Musculoskeletal injuries among overweight Army trainees: Incidence and health care utilization. *Occupational Medicine, 61*(4), 247-252.

20 Cowan, D.N., Bedno, S.A., Urban, N., Yi, B., & Niebuhr, D.W. (2011). Musculoskeletal injuries among overweight Army trainees: Incidence and health care utilization. *Occupational Medicine, 61*(4), 247-252.

21 Knapik, J., Grier, T., Spiess A., Swedler, D., & Jones, B. (2009). *Secular trends in the physical fitness of infantry soldiers: Are soldiers less fit today than in the past?* Presented at the Armed Forces Health Protection Conference, Albuquerque, NM, 19 August 2009.

22 Swedler, D.I., Knapik, J.J., Williams, K.W., Grier, T.L., & Jones, B.H. (n.d.). *Risk factors for medical discharge from United States Army basic combat training*. Aberdeen Proving Ground, MD: US Army Center for Health Promotion and Preventive Medicine.

23 Six percent of young male recruits could not do even eleven pushups. Allison, S., Knapik, J., & Sharp, M. (2006). *Preliminary derivation of test item clusters for predicting injuries, poor physical performance, and overall attrition in basic combat training*. USARIEM Technical Report T07-06. Natick, MA: U.S. Army Research Institute of Environmental Medicine.

24 Knapik, J.J., Ang, P., Reynolds, K., and Jones, B. (1993). Physical fitness, age and injury incidence in infantry soldiers. *Journal of Occupational Medicine, 35*, 598-603; Lee, D. (2011). Stress fractures, active component, U.S. Armed Forces, 2004-2010. *Medical Surveillance Monthly Report, 18*(55), 8-11.

25 Bachrach, L.K., & Sils, I.N. (2011). Bone densitometry in children and adolescents. *Pediatrics, 127*(1), 189-194.

26 Templeton, S.B., Marlette, M.A., & Paneemangalore, M. (2005). Competitive foods increase the intake of energy and decrease intake of certain nutrients by adolescents consuming school lunch. *Journal of the American Dietetic Association, 105*(2), 215-220.

27 Soldiers were 79 percent more likely to be evacuated to Germany from Iraq or Afghanistan for seriouis sprains or stress fractures (musculoskeletal/connective tissue disorders) than for combat injuries. Cohen, S.P., Brown, C., Kurihara, C., Plunkett, A., Nguyen, C., & Strassels, S.A. (2010). Diagnoses and factors associated with medical evacuation and return to duty for service members participating in Operation Iraqi Freedom or Operation Enduring Freedom: a prospective cohort study. *The Lancet, 375*, 301-09.

28 Centers for Disease Control and Prevention. (2011). Obesity in K-8 students – New York City, 2006-07 to 2010-11 school years. *Morbidity and Mortality Weekly Report, 60*(49), 1673-1678.

29 Robert Wood Johnson Foundation. (2012). *Health policy snapshot: Childhood obesity*. Princeton, New Jersey: Author. Retrieved on September, 11, 2012, www.rwjf.org/healthpolicy

30 Robert Wood Johnson Foundation. (2012). *Health policy snapshot: Childhood obesity*. Princeton, New Jersey: Author. Retrieved on September, 11, 2012, www.rwjf.org/healthpolicy; Robbins, J.M., Mallya, G., Polansky, M., & Schwartz, D.F. (2012). Prevalence, disparities, and trends in obesity and severe obesity among students in the Philadelphia, Pennsylvania, School District, 2006-2010. *Preventing Chronic Diseases, 9*. Retrieved on September 11, 2012 from http://www.cdc.gov/pcd/issues/2012/12_0118.htm

31 Robert Wood Johnson Foundation. (2012). *Health policy snapshot: Childhood obesity*. Princeton, New Jersey: Author. Retrieved on September, 11, 2012, www.rwjf.org/healthpolicy; : Kolbo, J.R., Zhang, L., Molaison, E.F., Harbaugh, B.L., Hudson, G.M., Armstrong, M.G., et al. (2012). Prevalence and trends in overweight and obesity among Mississippi public school students, 2005-2011. *Journal of the Mississippi State Medical Association, 53*(5), 140-146.

32 Centers for Disease Control and Prevention. (n.d.). *Implementing strong nutrition standards for schools: Financial implications*. Atlanta: Author. Retrieved on January 27, 2012 from http://www.cdc.gov/healthyyouth/nutrition/pdf/financial_implications.pdf

33 Nixon, R. (February 20, 2012). New guidelines planned on school vending machines. The New York Times. Retrieved on February 24, 2012 from http://www.nytimes.com/2012/02/21/us/politics/new-rules-planned-on-school-vending-machines.html

34 Hu, W. (October 3, 2011) At 14 schools, the venging machine's crunch comes from carrots,*The New York Times*. Retrieved on May 1, 2012 from http://www.nytimes.com/schoolbook/2011/10/03/at-14-schools-the-vending-machines-crunch-is-from-carrots

35 Hartman, B. (December 10, 2010). The day the bake sales died? Ag Sec Tom Vilsack responds to Sarah Palin nanny state concerns. *ABC News*. Retrieved on March 1, 2012 from http://abcnews.go.com/blogs/politics/the-note

36 U.S. Department of Defense. (2012). *DOD to improve nutrition standards across the Armed Services for the first time in 20 years*. Arlington, VA: Author. Retrieved on February 24, 2012 from http://www.defense.gov/releases/release.aspx?releaseid=15052; Associated Press. (February 10, 2012). Military to fight fat in food upgrade. *Boston Globe*. Retrieved on February 24, 2012 from http://www.bostonglobe.com/news/nation/2012/02/10/military-fight-fat-food-upgrade/9Aw1M6HOruUVXJFzAA6BAP/story.html

37 Associated Press. (February 10, 2012). Military to fight fat in food upgrade. *Boston Globe*. Retrieved on February 24, 2012 from http://www.bostonglobe.com/news/nation/2012/02/10/military-fight-fat-food-upgrade/9Aw1M6HOruUVXJFzAA6BAP/story.html

38 Associated Press. (February 10, 2012). Military to fight fat in food upgrade. *Boston Globe*. Retrieved on February 24, 2012 from http://www.bostonglobe.com/news/nation/2012/02/10/military-fight-fat-food-upgrade/9Aw1M6HOruUVXJFzAA6BAP/story.html

39 Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association, 109,* S57-S66.

40 American Beverage Association. (2010). *Alliance school beverage guidelines final progress report*. Washington, DC: Author. Retrieved on April 2, 2012 from http://www.ameribev.org/files/240_School%20Beverage%20Guidelines%20Final%20Progress%20Report.pdf

41 Johnston, L.D., O'Malley, P.M., Terry-McElrath, Y.M., Freedman-Doan, P., & Brenner, J.S. (2011). *School policies and practices to improve health and prevent obesity: National secondary school survey results, school years 2006–07 and 2007–08*. Volume 1. Executive Summary. Ann Arbor, MI: Bridging the Gap Program, Survey Research Center, Institute for Social Research, Robert Wood Johnson Foundation; Robert Wood Johnson Foundation. (n.d.). *Executive summary: School policies and practices to improve health and prevent obesity*. Princeton, NJ: Author. Retrieved on February 10, 2012 from http://www.bridgingthegapresearch.org/_asset/92v1fd/ES_2012_execsumm.pdf; Centers for Disease Control and Prevention. (2011). *School health profiles 2010: Characteristics of health programs among secondary schools in selected US cities*. Atlanta: Author. Retrieved on March 30, 2012 from http://www.cdc.gov/healthyyouth/profiles/2010/profiles_report.pdf . While the beverage industry had demonstrated reductions in sugared sodas sold to schools they contract with, the RWJF study showed that, overall, sugar-sweetened beverages, including sugared juice drinks and sugary sports drinks, are still highly accessible to students.

42 Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association, 109,* S57-S66.

43 Cradock, A.L., McHugh, A., Mont-Ferguson, H., Grant, L., Barrett, J.L., Wang, C., et al. (2011). Effect of school district policy change on consumption of sugar-sweetened beverages among high school students, Boston, Massachusetts, 2004-2006. *Prevention of Chronic Disease, 8*(4), A74.

44 Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association, 109,* S57-S66; In 2004-05, there were more than 43,000,000 1st through 12th grade students throughout the 50 states. National Center for Education Statistics. (2012). *Common Core of Data (CCD), "State nonfiscal survey of public elementary/secondary education," 2004-05 v.1*. Washington, DC: U.S. Department of Education. Retrieved on January 27, 2012 from http://nces.ed.gov/ccd/bat

45 A Calorie Counter. (2012) *Candy & chocolate bars compared: Hershey's, Nestle and Mars nutrition facts*. Retrieved on March 30, 2012 from http://www.acaloriecounter.com/candy-chocolate.php

46 A Calorie Counter. (2012) *Candy & chocolate bars compared: Hershey's, Nestle and Mars nutrition facts*. Retrieved on March 30, 2012 from http://www.acaloriecounter.com/candy-chocolate.php

47 Historic Naval Ships Association. (2008). *USS Midway (CV-41)*. Smithfield, VA: Author. Retrieved on February 10, 2012 from http://www.hnsa.org/ships/midway.htm

48 Data from the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate three-year weighted averages of the proportion of 18- to 24-year-olds who are overweight and obese according to the standard Body Mass Index cutoffs of 25.0 for overweight and 30.0 for obesity. We used three-year weighted averages to obtain an acceptable sample size. Centers for Disease Control and Prevention. (2011). Behavioral Risk Factor Surveillance System – Prevalence trends and data. Atlanta, GA: Author. Retrieved on February 10, 2012 from http://apps.nccd.cdc.gov/BRFSS/page.asp?cat=OB&yr=2010&state=All#OB

49 Data from the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate three-year weighted averages of the proportion of 18- to 24-year-olds who are overweight and obese according to the standard Body Mass Index cutoffs of 25.0 for overweight and 30.0 for obesity. We used three-year weighted averages to obtain an acceptable sample size. Centers for Disease Control and Prevention. (2011). Behavioral Risk Factor Surveillance System – Prevalence trends and data. Atlanta, GA: Author. Retrieved on February 10, 2012 from http://apps.nccd.cdc.gov/BRFSS/page.asp?cat=OB&yr=2010&state=All#OB

50 Data from the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate three-year weighted averages of the proportion of 18- to 24-year-olds who are overweight and obese according to the standard Body Mass Index cutoffs of 25.0 for overweight and 30.0 for obesity. We used three-year weighted averages to obtain an acceptable sample size. Centers for Disease Control and Prevention. (2011). *Behavioral Risk Factor Surveillance System – Prevalence trends and data*. Atlanta, GA: Author. Retrieved on February 10, 2012 from http://apps.nccd.cdc.gov/BRFSS/page.asp?cat=OB&yr=2010&state=All#OB

51 This calculation of the excess pounds 18- to 24-year-old American women and men would have had to lose to be of healthy weight (below a BMI of 25) in each state and nationally was originally calculated by the CDC's epidemiologist who processes BRFSS data, Liping Pan, and provided in a table to Mission: Readiness in a personal communication, March 18, 2010. It was originally reported in our national Too Fat to Fight report. In this report, it is adjusted to update the excess weight figures for each state by multiplying it by the ratio of the current (2008-2010) average overweight percent, divided by the prior (2006-2008) average percent overweight figure used in the Too Fat to Fight Report and the results are then rounded to clarify it is a useful estimate, not a precise figure. Other findings from that survey can be found at: National Center for Chronic Disease Prevention & Health Promotion. (2011). *Prevalence and trends data – Overweight and obesity. Behavioral Risk Factor and Surveillance System*. Washington, D.C.: U.S. Department of Health and Human Services. Retrieved on February 10, 2012 from http://apps.nccd.cdc.gov/BRFSS/page.asp?cat=OB&yr=2010&state=All#OB

52 The tank estimate is from: M1 Abrams main battle tank. Retrieved on April 9, 2012 from http://www.globalsecurity.org/military/systems/ground/m1-specs.htm. One tank equals 60 tons, or 120,000 lbs.

Appendix I

Students consume almost 400 billion junk food calories at school per year, equal to almost 2 billion candy bars

The most authoritative survey of how much high-calorie, low-nutrient junk food and sugar-sweetened beverages are sold at schools was done in 2005 by the U.S. Department of Agriculture (USDA). The food and beverages were sold in vending machines, à la carte at the end of the cafeteria line or in school stores. The survey concluded that 40 percent of all elementary, middle and high school students bought and consumed such "competitive foods" at school. They purchased and consumed an average of 177 calories per day of these high-calorie, low-nutrient foods.[39]

Since the time of the survey, the major beverage companies have stopped marketing highly sugared sodas to schools, so to be conservative, we have attempted to exclude all sugar-sweetened beverages from our junk food calorie count.[40] National surveys on access to food and beverages sold outside of the school lunch program, not actual consumption surveys, conducted by the research program Bridging the Gap indicate that junk food and sugary drinks are still widely available to students in elementary, middle and high schools.[41] Until the USDA repeats its consumption survey, we will not know the exact situation, so for now, the USDA study results remain the best available data on junk food sold in schools.

130 calories per day:

Average calories from junk food and sugary drinks consumed by kids who ate junk food obtained at school, according to the USDA study results published in the *Journal of the American Medical Association:*[42]	177 calories
Minus the calories that were from most sugary drinks even though some sugary drinks are still available in many schools. The estimate of fewer calories is from a study published by the CDC.[43]	– 45 calories
Approximate junk food calories minus the sugary-drink calories	= more than 130 calories

How many students:

40% of the 40,600,000 children in 1st through 12th grades in the United States consumed junk food bought at school on the day they took the survey.[44]	= 16,000,000 students

Days of the school year:

38 weeks x 5 days/week	= 190 days

Almost 400 billion calories

130 calories per day x 16,000,000 students x 190 days	**= almost 400 billion calories** (395,200,000,000)

Calories per candy bar:[45] = 210 calories

Almost 2 billion candy bars:

$$\frac{\textbf{395.2 billion calories per year}}{\textbf{210 calories per chocolate bar}[46]}$$

= Almost 2 billion candy bars (1,881,904,761)

And

43 grams per chocolate bar x 1,881,904,761 candy bars = 80,921,904,723 grams
-OR-
80,921,905 kilograms

$$\frac{\textbf{80,921,905 kilograms}}{\textbf{907 kilograms (1 ton)}}$$

= almost 90 thousand tons

The almost 90 thousand ton weight of 2 billion candy bars is well more than the 70 thousand ton weight of the aircraft carrier *Midway*, the longest serving aircraft carrier in the U.S. Navy.[47]

Primary Source: Fox, M.K., Gordon, A., Nogales, R., & Wilson, A. (2008). Availability and consumption of competitive foods in US public schools. Journal of the American Dietetic Association, 109, S57-S66. Additional Sources: See endnotes.

Appendix II

Thirteen years ago, in only one state, Kentucky, were 40% or more of young adults overweight or obese. Now forty states have that many overweight or obese young adults.[48]

[Note: These CDC figures are not the same as the percentage of young adults in each state who cannot join the military.][a]

State Highest to Lowest	**2008-2010 average** Percent of 18- to 24-year-olds overweight or obese[b, 49]	**1995-1997** Percent of 18- to 24-year-olds overweight or obese[b, 50]	**Percent increase** During the 13 years from 1996 to 2009	**Excess pounds** Pounds needed to lose to have no overweight or obese young adults in the state[c, 51]	**Abrams tanks** Equivalent weight in Abrams tanks[d, 52]
Mississippi	49%	37%	34%	3,800,000	32
Oklahoma	49%	30%	62%	4,500,000	38
Alabama	49%	36%	37%	9,600,000	80
West Virginia	49%	37%	33%	2,200,000	19
South Carolina	48%	36%	35%	6,000,000	50
Ohio	48%	30%	60%	20,000,000	165
South Dakota	47%	37%	26%	1,300,000	11
Texas	47%	38%	25%	35,000,000	290
North Carolina	47%	38%	24%	14,000,000	116
North Dakota	46%	33%	41%	1,300,000	11
Iowa	46%	33%	38%	4,700,000	39
Arkansas	46%	39%	19%	4,600,000	38
Kentucky	45%	**41%**	11%	5,300,000	44
Wyoming	45%	27%	66%	650,000	5
Louisiana	45%	34%	32%	6,400,000	53
Kansas	45%	35%	30%	3,900,000	33
Tennessee	45%	34%	32%	7,200,000	60
Nebraska	44%	30%	48%	2,200,000	18
New Hampshire	44%	31%	45%	1,300,000	11
Georgia	44%	32%	38%	11,000,000	87
Washington	44%	31%	42%	8,600,000	71
Nevada	43%	30%	42%	2,400,000	20
New Jersey	43%	30%	42%	11,000,000	92
Minnesota	43%	33%	28%	6,000,000	50
Delaware	42%	34%	23%	1,160,000	10
Hawaii	42%	33%	27%	1,400,000	12
Indiana	42%	34%	23%	7,500,000	62
California	42%	35%	19%	55,000,000	457
New Mexico	42%	35%	19%	2,700,000	23
Rhode Island	42%	32%	31%	1,000,000	9
Illinois	41%	33%	30%	21,000,000	173
Michigan	41%	38%	10%	15,000,000	125
Missouri	41%	37%	13%	7,400,000	62
Maryland	41%	33%	24%	7,200,000	60
Montana	41%	38%	8%	1,100,000	9
Pennsylvania	41%	33%	22%	16,000,000	136
Florida	40%	34%	19%	13,000,000	105
Wisconsin	40%	31%	31%	8,100,000	68
Maine	40%	39%	3%	1,100,000	9
Massachusetts	40%	28%	44%	7,700,000	64
Connecticut	39%	26%	49%	2,500,000	21
Vermont	39%	34%	14%	890,000	7
New York	39%	31%	26%	23,000,000	190
Oregon	39%	34%	13%	3,500,000	30
Idaho	38%	30%	29%	1,300,000	11
Colorado	36%	30%	21%	3,200,000	27
Virginia	34%	33%	3%	6,800,000	57
Utah	33%	27%	21%	2,900,000	24
USA	**42%**	**33%**	**29%**	**386,300,000**	**3,219**

Alaska, Arizona and the District of Columbia did not have enough data for different years to provide comparison estimates.

SOURCE: Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System (BRFSS), 2010 & 2012.

[a] The percentage of overweight men and women in this data cannot be used to show how many young adults are unable to join the military due to their weight. The military services use somewhat more lenient cutoff points and do not have state-level estimates.

[b] These figures are based on the CDC's BRFSS and are averaged over three years to produce sufficient sample sizes. The BRFSS is not measured the same way as the CDC's National Health and Nutrition Examinatin Survey (NHANES) data cited in this report. But the NHANES data only have national results, whereas this survey is informative because it has state-level data.

[c] This data on excess pounds was provided to us from the CDC for our original Too Fat to Fight report (Mission: Readiness. (2010). Too fat to fight. Washington, DC: Author. Retrieved from http://cdn.missionreadiness.org/MR_Too_Fat_to_Fight-1.pdf). We have adjusted those original figures to provide for more recent data from each state. (See endnote 53)

[d] One Abrams tank equals 120,000 pounds.

MISSION: READINESS
MILITARY LEADERS FOR KIDS

1212 New York Avenue NW, Suite 300
Washington, DC 20005
(202) 464-5224
www.MissionReadiness.org