Eat Less, Move More: the epidemic of obesity in America

An Honors Thesis (HONRS 499)

by

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ABSTRACT

The Centers for Disease Control and Prevention have documented a recent trend toward a dramatic increase in the prevalence of obesity among many populations in the United States. More than half of the nation is carrying excess body fat, increasing the risk factors for a variety of deadly diseases including cardiovascular disease and diabetes, along with many other serious conditions. The underlying causes of obesity have a tremendous impact on society and on the growth of the disease. Poor eating habits and inadequate nutrition have multiplied the effects of increased portion sizes, convenience foods, and fast food consumption to add excess calories to the average American diet. Additionally, technological advances and environmental factors have led to a decrease in physical activity. These influences culminate in the epidemic of obesity affecting the entire United States today. Research has pointed to a variety of causes and statistics, many of which address the need for major reform in eating habits and levels of planned exercise or physical exertion. The objective of this project is to present information detailing the underlying causes of the increasing percentage of clinically obese and overweight people in America. It lists and explains the physiological criteria surrounding obesity, the causes of obesity prevalence increases, and the resulting consequences of decreased physical activity and increased caloric intake. It also provides suggestions to curb the obesity epidemic and thus improve the general health of American society.
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An epidemic is quickly sweeping across the nation. In this modern world of global civilization, telecommunications, fast-paced business, and miracles of technological advancement, a deadly disease is covering the globe threatening to disrupt human life and health in such devastating numbers and across demographic borders in ways that have not been seen for hundreds of years. The advancement of modern medicine, especially in the United States, has produced a healthcare system of hospitals, physicians, pharmaceutical companies, and allied health professionals that work tirelessly everyday in the pursuit of longer, fuller lives for the human race. Yet a condition has worked between the seams to affect 300 million people worldwide\(^1\) and more than 66% of the United States’ population.\(^{13}\) This disease killed 400,000 Americans last year and cost an estimated $123 billion dollars.\(^1\) It runs rampant in the streets, the business offices, in schools, on the subway trains, the freeways, and within every community in America. Yet this disease is almost entirely preventable, often easily and inexpensively controlled or treated, and just as easily overlooked by the average citizen. The conditions of obesity and overweight, clinically diagnosed disease states where an individual possesses an excess of adipose tissue in one’s body, have increased dramatically over the last half century with a particularly sharp increase in the United States of all places, a wealthy, modernized country with seemingly adequate access to medical treatment, healthcare facilities, and the knowledge and education necessary to combat such an issue. Despite the vast network of healthcare that has been established, American waistlines continue to grow larger while the epidemic continues to spread to adults and children alike. A statement from the American Obesity Association explains the situation quite bluntly, “...obesity is the most fatal, chronic, prevalent disease of the 21\(^{st}\) century. No other human condition combines obesity’s prevalence and prejudice, sickness and stigma, death and discrimination.”\(^1\)
There are a variety of specific clinical states for what many people might refer to as “overweight” or “fat.” *Overweight* is defined as a body weight that exceeds the normal or standard weight for an individual’s particular height and body frame. *Obesity* is the condition of having an excessive amount of body fat. The criteria for defining an individual’s specific body composition can be measured in a variety of ways, all of which are meant to determine an individual’s relative amount of body fat, also known as adipose tissue. Anthropomorphic methods, which assess a subject’s height, weight, circumferences at specific points on the body, and skinfold caliper measurements are all included within these methods. Anthropomorphic methods bear the advantages of being easy to use, quick, relatively accurate, and also quite inexpensive. Densitometry, often used in clinical settings, estimate a subject’s body composition based on “…a measurement of whole-body density, using the ratio of body mass to body volume.” Such methods can include hydrodensiometry (underwater weighing), converting a known body density to a body fat percentage, and plethysmography (e.g. BOD-POD). These methods are more accurate that anthropomorphic means, but are often more uncomfortable for an individual to use and carry a higher cost of use. Finally, other electronic means have come into use within the last decade, namely dual energy x-ray absorptiometry (DEXA) and bioelectrical impedance analysis (BIA). These methods have questionable rates of accuracies based on conflicting studies, with DEXA being quite expensive and BIA offering very fast and relatively inexpensive results.

Because of their easy-to-use methods, immediate results, and inexpensiveness, the most commonly used forms of evaluation for body composition are the waist girth, waist-to-hip ratio, and the body-mass index. An individual’s waist girth is assessed using a spring-loaded cloth measuring tape to gauge a standing subject with a horizontal measure taken at the narrowest part
of a relaxed abdomen superior to the umbilicus but below the xiphoid process. A waist girth larger than 102 centimeters for males and 88 centimeters for females is categorized as obese, based on the American College of Sports Medicine’s Risk Stratification for Coronary Artery Disease. A waist-to-hip ratio is the number resultant from dividing a subject’s hip size, achieved by a horizontal measurement of a standing person’s maximum circumference of his or her buttocks, by their waist measurement, achieved by the method described previously. This resulting ratio can define one as obese if it is equal to or higher than 0.95 for men or 0.86 for women. Finally the body-mass index, or BMI, has become the most widely used and accepted method for quickly assessing an individual’s status in terms of overweight. The number is achieved by dividing a subject’s weight in kilograms by their height in meters squared, or $\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m}^2\text{)}}$. The concept of using BMI as a method to diagnose obesity uses a categorical system to classify individuals.

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m(^2))</th>
<th>Obesity Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>18.5 – 24.9</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>25 – 29.9</td>
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<tr>
<td>Obese</td>
<td>30 – 34.9</td>
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<tr>
<td></td>
<td>35 – 39.9</td>
<td>II</td>
</tr>
<tr>
<td>Extremely Obese</td>
<td>$\geq 40$</td>
<td>III</td>
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</tbody>
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Source: Obesity Education Initiative Clinical Guidelines

The BMI’s easily obtained patient data and quick calculation give a quantifiable, immediate response to any number of individuals. This method’s increasingly wide acceptance is becoming the standard to identify a person’s category of body composition, and as such the classification shown above will be used within this document, usually referring to an individual as overweight (25 – 29.9), obese (30 – 39.9), or extremely obese ($\geq 40$), also known as morbidly obese. Measuring an individual’s BMI is also extremely repeatable, with the average person able
to assess a BMI just as well as a trained professional. The low cost and easy availability of this method has prompted the National Institutes of Health to suggest the body-mass index technique above others, recommending that "Practitioners should use the BMI to assess and classify overweight and obesity and to estimate relative risk of disease compared to normal weight." Former United States' Surgeon General Dr. David Satcher has agreed, citing more than fifty medical and scientific associations that have endorsed the NIH Clinical Guidelines, supporting "...the use of a BMI of 30 kg/m² or greater to identify obesity in adults and a BMI between 25 kg/m² and 29.9 kg/m² to identify overweight in adults." Also, because children and adolescents serve as a special population where the use of BMI to assess weight classification can be less accurate, the Department of Health and Human Services has recommended defining overweight as "sex- and age-specific BMI at or above the 95th percentile, based on revised Centers for Disease Control and Prevention (CDC) growth charts."10

Many people in society think they can understand how obesity works. "People eat a lot, so they get fat, right?" But the startling statistics, once fully comprehended, can be enough to shake any individual to the core. The rapid growth, astonishing magnitude, and rampant prevalence across all forms of demographic make this disease almost unimaginable. Increasing almost 55% in the last decade alone, 129.6 million adults in the United States are living with an unhealthy weight. Within the last twenty years, the percentage of overweight children has doubled, with the percentage of adolescents who are overweight more than tripling. It is estimated that 400,000 American adults die each year because of factors relating to inadequate physical activity and poor nutrition, a number just shy of the total U.S. deaths during World War II. Yet the American public continues their daily routines, despite the fact that there were 593 obesity-related stories in the media in the year 2000, but 4,560 stories in 2003.1
Although the numbers continue to increase every year, approximately 65% of the United States population is overweight or obese, including 15% of children.² While the average person might shrug off the idea that over eight million children and teenagers are overweight in America,⁷ there are only eleven states in the Union that have a population higher than this number. Over the last three decades, the population classified as obese (BMI equal or greater than 30) has doubled, the prevalence of morbid obesity (BMI equal or greater than 40) has tripled, and the population of individuals who have a BMI of 50 or higher has risen by more than 400%. Find it startling? If the morbidly obese population in this country was put to live together in one location, only the morbidly obese, it would form a state approximately the size of Illinois, the nation’s 12th largest state.¹

While obesity itself may not physically kill an individual, its overwhelmingly detrimental effects often result in a shortened lifespan that cannot be overlooked. Obesity’s well-documented links between cardiovascular disease, diabetes mellitus, osteoarthritis, stroke, hypertension and certain types of cancer, have drawn a strong corollary between what many physicians and health professionals are beginning to refer to as “metabolic syndrome.” This condition refers to the disease states and conditions caused quite often by inadequate physical activity and a poor diet fueling the risk factors for some of the most prevalent known diseases leading to pre-mature death. In 2001 it was reported that obesity was a primary factor in five of the six leading causes of death in the United States: heart disease, stroke, chronic obstructive pulmonary disease, cancer, and diabetes. This proves that the consequences of obesity reach far beyond a larger waist, a longer belt, and a heavier frame. U.S. Secretary of Health and Human Services Tommy Thompson announced that “…recently over 40% of Americans over the age of 40 are pre-diabetic,” a condition that is the forerunner to Type 2 diabetes, an irreversible metabolic disease
whose condition of insulin-resistance and hyperglycemia can lead to vision problems, coronary artery disease, and peripheral vascular disease. It has been reported that the prevalence of diabetes has risen 49% within the last decade, indicating that one out of every three Americans born in the year 2000 will become diabetic without a change in current health and behavior patterns.\(^1\) The Centers for Disease Control released a report in March 2004 declaring that, “over the last decade, death due to obesity and sedentary lifestyles rose by 33%. Obesity is related to more than 30 medical conditions, and scientific evidence has established a strong relationship with at least 15 of those conditions.” Adding fuel to the fire of America’s obesity, the American Cancer Society reports that “up to one third of cancer deaths are related to diet and physical activity.” During a 2004 testimony to Congress, it was remarked that metabolic syndrome “…is considered an independent cardiac risk factor, equal in importance to and in some cases a precursor for other well established risks, such as diabetes, hypertension, and previous myocardial infarction. The syndrome is present in up to 47 million Americans.” Obesity has been linked to diseases and illnesses that account for over two-thirds of all deaths in the United States.\(^7\) And still other conclusions can be drawn; while seven out of ten deaths in the U.S. are caused by chronic disease, two of the three underlying factors of chronic disease, inadequate physical activity levels and poor nutrition, are the primary causes of obesity. Likewise, testimony to the United States Senate revealed that “obesity has roughly the same association with chronic health conditions as does twenty years of aging.”\(^8\) Far from a stand-alone disorder, obesity is often the precursor to, and early warning of, some of the most deadly diseases in this country.

Despite the overwhelming amount of medical and scientific evidence urging society to strongly consider obesity an immediate threat to the health of the United States, Americans have never been afraid to cheat death. Some might go as far as saying that ignoring a doctor’s advice
or choosing a lifestyle as one wishes has always been a part of the American dream. Yet as the United States spirals downwards into the plume of obesity, the medical journals and doctors’ warnings cast aside, the public at large has always been wary of one thing, the almighty dollar. It was reported that for the fiscal year 2000 the medical treatment of obesity and its related conditions cost the U.S. approximately $117 billion annually, half of which was paid for by taxpayers through federal government spending in the form of Medicaid or Medicare. Estimates also show that a more current figure would reflect over $123 billion in annual spending for obesity.\(^7\) When one takes into account the estimated population based on 2004 U.S. census data, that number equates to almost $400 dollars per person, regardless of age, gender, or health status.\(^9\) This is emerging proof that when it comes to the ever-growing problems of obesity, the burdens are shared by all. Yet the direct medical costs of treatment, via surgical and pharmacological treatments among others, do not include the indirect and often-overlooked costs of the obesity epidemic. It is estimated that on average, an annual 39 million days of work are missed each year by Americans who are affected by the complications resulting from overweight and obesity. There are also approximately 63 million medical visits made yearly due obesity.\(^2\) The funding for obesity research in 2003 soared to an estimated $320 million dollars, up from $128 million in 1998.\(^8\) The increasing waistlines of Americans have grown to outpace the growth of their wallets and bank accounts, leaving the entire country to manage the significant financial burdens.

So how did the United States become such a heavy country, literally growing in size? Experts, physicians, and Congressmen have taken their guesses, attempting to pinpoint the exact cause or causes of how such an epidemic could begin or even more importantly, how it could grow so large and continue to expand across all demographics. Yet it can be concluded by basic
physiology that two factors have led to the straining scales of America, a decline in physical activity and an increase in caloric intake. These two factors form the basis for the “energy equation,” the metabolic balance that can and should be regulated within the human body. This energy homeostasis is defined in a relatively simple manner. The body acts as one metabolic system, bringing in energy in the form of food, often defined by calories, or more specifically kilocalories. The body also expends energy in a variety of forms, often thought of as “spending” the calories that have been brought into the body. The thermogenic effect of food, which is the heat produced from the digestion and absorption of food, accounts for five to ten percent of the total energy expenditure of an individual. The basal metabolic rate, the energy required to run the body’s organ systems, accounts for 60% of energy expenditure. Finally, physical activity can account for approximately 30 to 35 percent of total energy expenditure throughout the day for the average individual.\textsuperscript{11} This number could vary greatly depending on the physical activity habits of the individual.

But it is this energy homeostasis that is so vital to the concept of obesity for an individual. When someone requires more energy then he or she has eaten, often because of increased physical activity, he/she forms a negative energy balance, utilizing stored calories from adipose tissue (fat) to provide the additional calories needed for movement. Conversely, when someone brings in more calories than he or she expends, often through increased consumption of food, he or she forms a positive energy balance, where excess calories must be stored in the form of adipose tissue and intramuscular triglycerides. It is this deadly combination of too much eating and too little exercise that has lead to America’s increasing fat stores and persistent struggle with overweight.
An important factor in the energy equation is the use of calories which have entered the body in the form of chemical energy stored in food. These calories provide the energy necessary for activities of daily living, such as household chores or movement at work, along with other physical activity, such as a daily trip to the local fitness center or that bike ride through the neighborhood. But the trends of Americans are shifting away from the latter. Decreased amounts of physical activity and exercise, in almost all activities throughout one’s life, have resulted in a general evolution toward decreased caloric expenditure for the average individual. The Surgeon General’s “Call to Action” has noted that “Overweight and obesity have reached nationwide epidemic proportions,” and that “Our modern environment has allowed these conditions to increase at alarming rates and become highly pressing health problems for our nation.” This decrease in caloric expenditure has been brought about by the advanced technology of humankind, which has resulted in the decline of functional physical activity. Additionally, there is a general trend toward the decline in recreational physical activities for reasons unknown. The Chairman for the President’s Council on Physical Fitness and Sports, Lynn Swann, has made his own statement agreeing with Dr. Satcher, remarking how, “Obesity has come about not because people are lazy but because, for many reasons, of our own innovation and advances in technology and growth, the Internet, robotics...” Simply put, the modern world’s decreasing levels of physical activity and planned exercise, specifically within the United States, have led to a lifestyle of decreased caloric expenditure and the increasing prevalence of overweight and obesity.

The technological advances of humankind have allowed us to put forth less effort to accomplish a certain task, but in doing so have also required us to exert less energy and use fewer calories to perform the same workload. Lanningham-Foster, Nynne, and Levine, three
researchers from the Endocrine Research Unit at the famous Mayo Clinic, explained their findings in a 2003 study revealing that the population as a whole does not statistically appear to be eating more fat, but they are performing less work, which is resulting in a decreased caloric expenditure; “Progressive sedentariness has been attributed to greater use of labor saving devices, such as washing machines, and less non-exercise walking.” The group explains how many once labor-intensive chores have been replaced by automated machines, such as household laundry, washing dishes, vacuuming flooring, and even modes of transportation such as personal automobiles to reach one’s place of employment and elevator use instead of stairs. The Mayo study compared three modes of caloric expenditure that have been significantly altered because of modern innovation: using a dishwasher instead of hand-washing dishes, using a washing machine instead of hand-washing clothing, and driving to work versus walking. The results indicate that an individual washing his or her dishes and clothes by hand and walking to work would expend an extra 111 calories per day with just these three chores compared to using the contemporary conveniences. The group also concluded that at this rate, an individual who lowered their caloric expenditure by 111 kcals per day without also decreasing their food intake would increase their body weight by ten pounds annually. That means that a 25-year-old male could add 200 pounds by age 45, just by using the appliances he has grown up with, unless the body adapted to this decrease in activity. This led the group to summarize that, “Domestic mechanization is a likely environmental force in the obesity epidemic…seeming to be sufficiently great to contribute to the progressive weight gain seen in high-income countries…”

But how can researchers adequately assess the caloric expenditure of physical labor that has not been routinely performed for the better part of the last century? Researchers Bassett, Jr., Schneider, and Huntington from the University of Tennessee set out to study this question when
they traveled to an Old Order Amish community in Ontario, Canada. Using the International Physical Activity Questionnaire and electronic step counters (pedometers), the researchers set out to assess the level of physical activity of this rare community where all work was done by hand, automobiles were not used, and the everyday conveniences of the modern United States were not available. It is interesting to note that among the Amish community, only 4% of the people were defined as clinically obese, yet 26% met the BMI criteria for overweight. Despite this contradictory data, every single subject in the study met the CDC criteria for daily physical activity, and often exceeded it by a large percentage, especially when compared to the average American in the modern United States. Also, the combined percentage of overweight and obese Amish, 30%, is still less than half of the 66.3% of Americans who are defined as clinically obese or overweight. The researchers concluded that “the high levels of physical activity in this Amish community probably contribute to the low prevalence of obesity,” and that “The results of the study suggest that there has been a large decline in physical activity in North America over the last 150 years.”

These two studies highlight the disturbing facts surrounding America’s trend toward obesity in correlation to increasing use of technology over physical effort. The average individual chooses an automobile instead of walking or using a bicycle for transportation, uses an elevator instead of the stairs to head to work or class, and relies on mechanized equipment such as snow blowers, power washers, leaf blowers, and lawnmowers to accomplish tasks once performed by hand. This is not a “lazy” attitude; it is simply that the power of technology requires men and women to exert themselves less that biology’s design. From 1960 to 1990 the percentage of people who worked outside their county of their residence tripled. At the same time the National Household Travel Survey, conducted by the U.S. Department of
Transportation, reports that trips to and from work by automobile have increased, as have the miles driven and the time spent behind the wheel. Rather than using public transportation, an act that would require at least minimal physical exertion, 91% of people prefer to drive their own vehicle. This means that people would rather live further away and drive to work than live nearer and bike or walk. The National Bicycle Dealers Association (NBDA), the collective body of bicycle distributors and shop owners, keeps statistics on sales and use of their products.

According to data from 2002, while over 41 million Americans ride bikes, only 5.2% of them use their bike for the purpose of transportation. These trends toward increased use of technology as a replacement for physical activity, and in turn the decreasing caloric expenditure of society, are leading the United States toward a greater increase in obesity and overweight.

Another amazing trend regarding decreases in functional physical activity has begun in relation to schools and children. The Transportation Research Board, a division of the National Research Council, has conducted a variety of research and studies, releasing their results in early 2005. The results seemed relatively in line with common sense: students who attended a school that was closer to their home tended to ride their bike or walk to and from school more often than if the school was further away, in which case a parent or guardian would drive them. In addition, students were even more likely to walk or bike when sidewalks were available. These two findings argue for two important concepts in urban planning, smaller and more numerous neighborhood schools instead of large centralized schools further away, and improved sidewalk networks to make manual travel easier. Probably the most startling of the research results was that, “Between 1940 and 1990, the total number of elementary and secondary public schools fell by 69%, despite a 70% increase in the U.S. population.” Further research pinpointed that many states have set minimum acreage requirements for schools, often forcing them to search for
larger areas of open space and the most affordable land, which was often found further away from the very neighborhoods the school would be serving. This of course resulted in less children walking and riding to school and requiring someone to drive them via automobile. The first Nationwide Personal Transportation Survey of 1969 showed that 48% of students walked or biked to school. But data from the 2001 National Household Travel Survey cites that less than 15% of schoolchildren aged 5 to 15 walk to or from school, with only one percent using a bicycle. A CDC survey showed that only 31% of schoolchildren living within one mile of their respective school make the trip on foot, while the percentage from 1969 was almost 90%. Lastly, only 2% of children living within two miles of school travel by bike. The highest ranked reasons for these low rates of manual travel are: too far of a distance to walk or bike, and lack of a safe barrier from traffic, which sidewalks would provide. It is no coincidence that the percentage of adolescents who are overweight has tripled since the 1960’s, and quadrupled for children age 6 to 11 years. The infrastructure is the key, however. Research reported that students were four times more likely to walk to school if the school was built before 1983 compared to those built later. But many localities are learning to change, with California and South Carolina leading the way, starting programs to provide funding for sidewalks and bike lanes as well as eliminating required minimum acreage for schools, respectively. Even the federal government has taken notice, spending $44 million in the year 2000 to help school districts make smaller schools, but increasing that number to $142 million only two years later. Smaller schools located near the neighborhoods they educate, combined with safe, protected travel modes such as bike lanes and sidewalks, offer the public an increased opportunity to enjoy manual transportation and schoolchildren a head start at curbing the obesity epidemic.27
Theoretically, all of these technological wonders and simple-to-use appliances should allow people to accomplish tasks quicker and easier, subsequently allowing more time for leisure and recreational activity. Yet unlike the generations before them, Americans today are choosing to spend their free time watching television, playing video games, and using the computer; many researchers are beginning to use the phrase “screen time” to refer to the phenomenon. These methods of leisure have resulted in decreased caloric expenditure and physical effort involved with recreational activity. Taking another look at bicycle use, the NBDA records show that in 1973 more than 15 million bikes were sold domestically; by 2001 that number had dropped to a little over 11 million. The sales decline prompted an NBDA spokesperson to announce that “Bicycle use continues to be a potential solution for improving peoples’ health, as well as contributing to more livable communities.” But people are simply not enjoying physical activity as they once did. Schools, often trying to improve academic performance and test scores, have greatly reduced or just discarded entirely their mandatory physical education programs. Television viewing has increased, as have other sedentary forms of entertainment. Despite the rise of American suburban housing, many neighborhoods continue to be built without sidewalks where residents could enjoy a walk or bike ride, directly conflicting evidence that access to safe areas of recreation such as a neighborhood park doubles the likelihood that Americans will be physically active.

While technology has decreased our functional caloric expenditure, it has also decreased our recreational physical activity as well. It has been documented that American children spend more time in front of a television or playing video games than they do sleeping. The Surgeon General reports that in 1999, 43% of high school students spent more than two hours per day watching television. This screen time is a direct cause of increased body weight, which has
been confirmed by the International Journal of Obesity who reports that one extra hour of television viewing per day adds about 1.32 pounds of body weight per year for both men and women.\textsuperscript{17} This statistic is extremely hard to ignore when researchers have found that “on average, children in the U.S. watch 18 hours of television a week,” and that they spend “900 hours per year in school as compared to 1,023 hours watching T.V.” Even the television remote control allows technology to help a person exert less energy than a viewer 50 years ago, where someone would have to physically stand and walk to the set to change the channel. Even watching television has gotten easier. Perhaps Secretary of Health Tommy Thompson said it best: “We need to get our children away from the Play Station and out on the playground.”\textsuperscript{7}

But how can America find ways to help its youth when their average daily environment, a school building, is not contributing to the effort? Currently only one state in the entire country, Illinois, requires mandatory physical education as a part of the basic curriculum. While it is frightening to think that in 1991 only 42\% of students attended daily physical education classes in schools, that number fell to only 29\% of students by 1999.\textsuperscript{1} The already limited and often diminishing budgets of school districts has prompted many to reduce the frequency of their physical education classes or simply eliminate them all together, while at the same time reducing their after-school programs. These programs can offer children an opportunity to exercise and play in a safe, controlled environment that can also provide important information about a child’s health and wellness. These financial difficulties can also directly affect the physical school building as well, as seen when many elementary and middle schools are obliged to decrease available areas intended for playgrounds and gymnasiums in favor of additional classroom space in the pursuit of improved academic results in the light of recent emphasis on meeting federal testing mandates.
This increase in technology and the decline of leisure-time exercise, the functional and recreational declines in physical activity and caloric expenditure, have resulted in a total sedentary lifestyle for a vast majority of the United States. The American College of Sports Medicine lists a “sedentary lifestyle” under its seven positive risk factors for coronary artery disease, defining this as persons not actively engaged in a regular exercise program or accumulating less than 30 minutes per day of moderate physical activity on most days of the week. Yet a federal report shows that “only about one-half of U.S. young people (ages 12-21) regularly participate in vigorous physical activity,” and nearly half of all American adults report no physical activity at all. While the National Association for Sports and Physical Education recommends that “children should engage in at least sixty minutes of physical activity daily and should not be sedentary for more than sixty minutes at a time except when sleeping,” one study has shown that by the time surveyed girls reached the age 18 or 19, up to 56% of them self-reported no physical activity at all. While the importance of a good education cannot be undermined, another federal report shows that children spend approximately 48% of their waking hours engaged in sedentary activity, often attending school or involved in some other sort of school-related activity such as homework. But behavior patterns are learned, and children learn the traits and practices of their parents and the adults in their environment. It has been estimated that while most adults are well-aware of the proven health benefits of regular exercise, more than 60% of Americans do not perform enough physical activity to receive the possible health benefits available.

America’s increased prevalence of overweight and obesity is biologically caused by a negative energy balance, consuming more calories than an individual is expending. While statistical evidence has shown that the U.S. is quite obviously failing to meet the required
amount of physical activity recommended by the Surgeon General, this is a much smaller portion of the equation than the caloric intake side. Americans are on an eating spree beyond the control of parents, registered dieticians, and even the federal government. Unhealthy eating habits, increasingly larger portion sizes, consuming too many convenience foods, and just plain eating too frequently have promoted this contagion of obesity and are also a primary means of controlling the affliction. The increasing caloric intake of society is part two (and really part one) of the epidemic of overweight and obesity affecting the United States.

A primary contributor to America’s overindulgence in food is the skewing of portion sizes for virtually all dietary intakes. Addressing the issue directly, Nielsen and Popkin note in their research that “portion sizes and energy intake for specific food types have increased markedly. Between 1977 and 1996, food portion sizes increased both inside and outside the home for all categories except pizza. The energy intake and portion size of salty snacks increased by 93 kcal [calories], soft drinks by 49 kcal, hamburgers by 97 kcal, french fries by 68 kcal, and Mexican food by 113 kcal.”18 So what do all the numbers mean? Simply put, the food Americans are eating is bigger than it used to be, which results in additional calories being consumed and stored in the form of fat. Nielsen and Popkin note that evidence exists “to support the general consensus that there is a marked trend toward larger portion sizes in the United States.” But America’s sense that “bigger is better” does not carry over across the Atlantic. An article from the American Society for Nutritional Sciences finds that on average, portion sizes in the U.S. are 25% larger than those of France, where the rate of obesity is also lower.19 A “Large” McDonald’s soda in the U.S. is an “Extra Large” in Dublin, Rome, and London. Also, the largest portion of fries available in the United States provided over 160 kcal more than its counterpart in the United Kingdom.28
Researchers have discovered that “[portion size increase] began in the U.S. as early as the 1970’s, with portion sizes increasing sharply in the 1980’s and continuing to rise.”\textsuperscript{19} Illustrating this trend, a woman’s daily intake of calories has increased by 22\% from 1971 to 2000, with men’s also increasing 7\%.\textsuperscript{1} To be exact, that equates out to an additional 335 kcal per day for women and 168 more kcal per day for men, also from 1971 to 2000.\textsuperscript{7} The shocking medical result of this increase in caloric intake is that even an additional 10 kcal per day above one’s average dietary intake is equivalent to an extra pound of weight per year if not countered by additional physical activity.\textsuperscript{18} Finally, data on food availability research has suggested that the United States could offer 3,300 kcal per person per day in 1977. By 1994 this number had risen to 3,800 kcal per person per day, an increase of 15\%.\textsuperscript{17} This is in part due to federal agricultural subsidies, some $72 billion dollars worth, which is paid to American farmers each year. It is estimated that these additional yields, financed by the federal government, produce literally twice the calories needed for the U.S. population. The overproduction in turn leads to not only increased portion sizes, but also a decreased cost of food and an increasingly ruthless market for food manufacturers who continually strive for a larger portion of the market’s share.\textsuperscript{1}

Three researchers from Baylor University, in conjunction with a medical doctor from the Tulane Center of Cardiovascular Health, studied the eating patterns, portion sizing, and quality of food consumed for a variety of adolescents and adults in an effort to draw any connections between American diets and the rising rates of obesity in the United States. Specifically looking at the changing trends of portion sizes from 1957 to 1997, the team discovered evidence confirming the growing size of food items in the United States. A 1957 hamburger in a typical fast-food restaurant contained slightly more than one ounce of cooked meat, compared to the 600\% increase of a 1997 burger weighing up to six ounces. The average size of soft drinks
jumped up 800%, with even muffins ballooning to more than six times their weight of 40 years ago. A medium-sized theatre popcorn in '57 served three cups of popcorn to movie-goers. By 1997 the medium bucket was 16 cups, and that does not even address the issue of butter toppings. This drastic increase of portion sizes cannot be ignored any longer.

Young and Nestle, two prominent researchers in the field of food and nutrition released their research findings regarding portion sizes to the *American Journal of Public Health* in early 2002, revealing most poignantly that “with the single exception of sliced white bread, all of the commonly available food portions [they] measured exceeded – sometimes greatly – USDA and FDA standard portions.” The largest excess was seen in the grouping of cookies, which were 700% greater than USDA standards. The remainder of the list included muffins, steak, pasta, and bagels, which surpassed standards by 333%, 224%, 480%, and 195%, respectively. Taking into account that daily American dietary intakes have increased by 200 kcal per day from 1977 to 1996, Young and Nestle note that “Larger portions not only contain more energy but also encourage people to eat more, making it more difficult to balance static levels of physical activity.” These larger portion sizes are easily illustrated with foods that were once sold in only one size, such as chocolate bars and beer. Of course today that one size is either the smallest available or not available at all. Fast food menu items such as hamburgers, fries, and soft drinks, have also increased from 2 to 5 times their original sizes when first created. Explaining the trend from a marketing standpoint, Nestle and Young point out that in sharp contrast to decades past, food companies of today are actually using the size as the major selling point of a product, as seen with the 7-Eleven Double Gulp or McDonald’s Supersized option, which has since been removed from the menu. Additionally, restaurants and ready-made frozen entrees use portion size as a direct feature, advertising larger meals and portion sizes as a means to communicate
value to the consumer. Industry has had to follow the trend as well, creating larger beverage and French fry containers, bigger pizza pans, and larger dinner plates for restaurants. Quite interesting is the study’s comparison between cookbooks 30 years apart, with identical recipes recommending smaller quantities of servings, meaning that a larger portion size is expected, despite the constant recipe. Finally, the two report that “Overall, our observations indicate that the portion sizes of virtually all foods and beverages prepared for immediate consumption have increased and now appear typical.”

America’s portion sizes are not only growing, but growing into a problem for the overweight. Many people in today’s society have simply grown up with this distortion and now accept it as the proper amount to eat of any given food. A handful of well-controlled studies have found that when subjects were provided larger portions to eat, and given the option to eat whatever amount they chose, they consumed a “significantly higher” amount of calories. While it may seem like common sense to some, most people ignore the fact that the human body and brain should be the triggers for eating as well as deciding when an individual has had enough. Too often however, the amount of food eaten during a meal is decided by how much is available on a plate. For example, researchers gave adolescents a typical fast food meal with “extra large portions” and found that the students consumed roughly 62% of their daily allowable intake (calories) in this one meal. Society has grown up with the “finish what’s on your plate” mentality, and when the plate holds more food, people are digging in. But research has also yielded two more important facts about portion sizes. First off, people who eat larger portion sizes during one meal do not compensate with smaller meals later that same day or even over the following several days. And secondly, children who have a higher body mass index tend to eat larger portions than those with a lower BMI, sometimes up to twice as much. A variety of
studies and research have confirmed that providing larger portion sizes leads to increased energy intakes, a trend pushing America further and further into the category of an obese nation.

Having established that Americans are eating more food and in larger portion sizes, we are left with the issue of where people are actually getting their food from. The results are not favorable, and continue to shed light on the horrid eating habits within the United States, as well as add explanation to the growing numbers of obese and overweight in society. In 1970 Americans spent roughly 26% of their food budgets on meals purchased outside the home, most often in restaurants. Today this number has risen to approximately 46%. 34% of total food budgets are spent at fast food restaurants, which serve more than half of the food away from home (FAFH) that people eat. Data even from 1994-1995 shows that 57% of Americans consumed at least one food item away from home on a daily basis. Additionally, people are now 40% more likely to eat FAFH three or more times per week when compared to even the late 1980’s. Three researchers publishing their findings in the *International Journal of Obesity* reveal much of the truth surrounding this ever-increasing practice of eating food away from home. They too found that people consumed more FAFH from the 1970’s until the late 1990’s, but also noticed a corresponding trend in the growth of the restaurant and fast food markets. Noting figures from the Bureau of Labor Statistics, the researchers found that number of actual restaurants grew almost 34% from 1980 to 1995, while at the same time the nominal growth of restaurants, such as a specific chain adding additional outlets, grew some 147%. Fast food is even more outlandish, with real growth topping a 75% increase in the same 15-year span, and nominal growth jumping 224%. The researchers concluded their study by noting that, “The trends in both increased U.S. obesity and in increased consumption of FAFH are unlikely to be
coincidental. FAFH, and particularly fast food consumption, are likely to be contributing factors to increased obesity.”

The increase in people eating out meant that there was and is big business in the food industry. With Americans spending more than 40% of their food budgets out of the home, there is ample room for another restaurant on Main Street, U.S.A. In 1970 Americans spent approximately $42.8 billion dollars in restaurants, with the National Restaurant Association estimating that 2006 will bring in more than $511 billion in restaurant sales. Records also show that the average household expenditure for FAFH in 2004 was $2,434, or roughly $974 per person that year. Finally, 2006 will also hold 925,000 different locations serving more than seventy billion meal and snack occasions this year.

But where did America learn to eat food outside of the kitchen? How did generations of people eating home-cooked meals simply decide to trade in mom’s cooking for paper-wrapped burgers and french fries? In two words, the Golden Arches. The examination of fast food in the United States cannot begin without staring down the leader of the pack, McDonald’s. In 1955, businessman Ray Kroc began franchising McDonald’s restaurants, selling hamburgers and milkshakes faster than any other food source available. In 1968 McDonald’s released the Big Mac, a concoction of “two all-beef patties, special sauce, lettuce, cheese, pickles, onions, on a sesame seed bun.” Today’s version boasts 560 kcal and 30 grams of fat. Not to be outdone, the menu’s Double Quarter Pounder with Cheese dishes out 730 kcal and 40 grams of fat, a sandwich that would require a 185 pound individual to run at seven miles per hour for more than 40 minutes to balance the equation. And that doesn’t include the fries or the drink. 1979 saw the famous fast food chain launching the Happy Meal with the express intention of marking fast
food to children. Today McDonald’s has more than 30,000 restaurants worldwide that serve 40 million people each day just in the United States.21

So while McDonald’s may have pioneered the “fast food” movement in the United States, the increasing rise of fast food as an acceptable and even normal component of one’s diet is spreading. When Nielsen and Popkin chose which foods they would examine for a study in food portion trends and patterns of eating, they chose hamburgers, french fries, soft drinks, pizza, salty snacks, and Mexican food. Some people might notice that many of these are “fast foods,” or what the average individual might not eat everyday. Yet the foods they selected represented approximately 18% of the average individual’s diet in 1977, and by 1996 fast food accounted for 28% of daily calories. They also found that the number of calories consumed at home dropped during the same time period.18 NPD Group Inc., a research and marketing corporation, reports that the average American now eats about 20 meals in their car per year, an additional marker for increased consumption of fast food. Even the concept of the “drive-through,” the ability to access food without even leaving one’s vehicle, has become so common that 1 in 5 restaurant meals are delivered via this method.15 But not only are people eating more fast food, but they are literally getting more food when they eat at such establishments. Reports indicate that menu items for fast food restaurants are two to five times larger than the same products offered twenty years ago.19 For example, a 1955 McDonald’s offered one size of fries, the “Small,” which was one-third the size of the biggest fry in 2001. But even the big get bigger. The modern-day “Large” was actually the same as the “Supersize” in 1998, until the “Supersize” grew one ounce heavier in 2001.28

Dr. Mark Pereira, Professor of Epidemiology at the University of Minnesota, set out to study the long-term effects of fast food consumption on 3,000 young and healthy adults in four
major U.S. cities. After a period of 15 years, those who had consumed fast food more than twice per week had gained an additional ten pounds of body weight and had a 200% higher increase in insulin resistance, a risk factor for Type 2 diabetes, when compared to individuals who ate fast food less than once a week. Of particular importance, “Researchers found that the adverse impact on participants’ weight and insulin resistance was seen in both blacks and whites who ate frequently at fast food restaurants, even after adjustment for other lifestyle habits.” Professor of Epidemiology David Jacobs Jr., another author of the study, added that approximately 150 of the original participants have now developed diabetes, with others suffering from hypertension. Besides just contributing to the onset of diabetes, research from Binkley, Eales, and Jekanowski reports that “Food sources are significant determinants of BMIs even when controlling for other determinants. Both eating out at restaurants and at fast food outlets significantly increased males BMI, while for females only the fast food source was a significant BMI determinant.” This was proven true after the study noted that male subjects who consumed fast food were 1.76 pounds heavier than those who did not, with females being 2.2 pounds heavier for fast food eaters. Finally, the World Health Organization reports that McDonald’s spends more than one billion dollars each year to market food and products that “play a major role in the obesity epidemic.”

The children of today begging for french fries and fast food toys will be the minimum-wage adolescents of tomorrow, quickly spending their hard-earned cash on the fast food they grew up loving. Research published in the *Journal of the American Medical Association* estimates that 75% of American adolescents consume fast food at least once per week. The average caloric intake of the fast food meals eaten were “extremely large” at 1,652 kcal, or roughly 62% of an individual’s daily energy requirements. They also confirmed previously mentioned data that overweight persons consumed more than their counterparts of healthy
weight. The study revealed that "...fast food consumption serves to maintain or exacerbate obesity..." Yet the most important part of the study was perhaps the explanation of exactly why fast food is so detrimental to the overall health and well-being of Americans. Elucidating their rationale, the researchers describe that, "The increase in fast food consumption parallels the escalating obesity epidemic, raising the possibility that these two trends are causally related. Characteristics of fast food previously linked to excess energy intake or adiposity includes enormous portion size, high energy density, palatability, excessive amounts of refined starch and added sugars, high fat content, and low levels of dietary fiber." 24

If older teens and adolescents can purchase their own fast food at their leisure, then what are younger children dished up? Data shows that almost 29 million schoolchildren are served each day from the National School Lunch Program (NSLP). 1 From both a parent’s standpoint and that of a school administrator, this could seem like a great accomplishment toward proper eating habits. Yet the laws of Congress require that full-fat, whole milk be made available at schools that participate in the NSLP. 7 Meanwhile most dieticians will recommend at least 2% milk, with a preference toward skim milk. But maybe milk should not be an issue when reports indicate that soft drinks account for more than 10% of the average teenager’s daily caloric intake. 8 The percentage of adolescents consuming soft drinks on a daily basis has increased by an average of almost 70%, with research also indicating that individuals who drink large amounts of soda have higher energy intakes, the increased caloric intake contributing to overweight. Approximately three quarters of all students eat at least one snack during the day, with 36% announcing that they eat four or more snacks daily; that’s snacks, as in, in addition to regular meals. Perhaps the children are snacking to fill the void of no morning breakfast, the “most important meal of the day,” whose consumption has been on the decline for the last 40 years. Meanwhile only 1% of
schoolchildren meet all of the food group recommendations from the USDA Food Guide Pyramid, with only 5% meeting the recommendations for four or more groups. 16% of children meet none of the recommendations at all.²⁵ The habits started at home and continued within the school cafeteria are vital to the proper establishment of dietary guidelines and habits for America’s children.

The final and often overlooked sources of America’s increased caloric intake are convenience foods. While many boast that they are “on the go,” “time-saving” or “able to be taken anywhere,” these meals and snacks of all varieties have given consumers the ability to actually add calories to their daily diets in a convenient and simple form. From plastic cup-shaped salty snacks to T.V. frozen dinners to the entire variety of “bars” on the market, foods of convenience have infected the American diet, and are contributing to the landscape of an overweight and obese society. Americans on average are now consuming 7% of their total caloric intake from snacks,¹⁸ a source that is often easy to locate once one examines an individual’s daily life and routines. The National Association of Convenience Stores recorded more than $394 billion dollars in sales in the year 2004 from more than 138,000 locations across the nation. It is not surprising to see the dollars add up either, according to Jeff Lenard, spokesperson for the association; “You only make a penny or two profit on gas, if you’re lucky. You can make more off a 12-ounce cup of coffee than a 12-gallon fill-up.” And no one knows more about convenience coffee than the now world-famous 7-Eleven chain of convenience stores, who sells more than one million cups of coffee per day, along with 30 million gallons of soft drinks annually just from the fountain alone. Do the math on an average serving of soda, and that’s about 48 billion calories in one year, from one chain, just from the fountain. Sheetz Inc., a convenience chain covering six states and 310 locations, stocks roughly 350 to 500 brands and
flavors of drinks just in its coolers. These are the simplest forms of eating convenience, foods that most people have grown accustomed to over the past 20 to 30 years, and the market is developing new concepts each and every day.

The evolution of convenience, and growing the sizes of those conveniences, has taken a turn for the worst over the latter part of the 20th century. Perhaps one of the easiest examples is that of the soft drink. In the mid-1950’s Coca-Cola introduced their hobble-skirted “tell it is Coke in the dark” glass bottle. The glass ridged bottle, now world-famous, originally held 6.5 ounces of Coca-Cola Classic. But even by 1955, Coke had released bottles holding 10, 12, and 26 ounces, branding the bottles “king-size” and “family-size.” But the ease of soft drink consumption really hit the market in the form of metal cans that had been developed for the armed forces, reaching supermarket shelves by 1960. The plastic 2-liter followed in 1977, beginning another serious surge of convenience for beverages. Aluminum cans and plastic bottles allowed Coke to go with someone anywhere, the ultimate convenience. Yet Coke introduced the nation’s first low-calorie beverage in 1963, Tab, with Diet Coke following in 1982. Even then the company realized the necessity for a low-caloric or zero-calorie beverage, and the effects that consumption of their original brands might cause.

The dramatic effect of America’s crisis with food often comes down to one thing, the almighty dollar. Food manufacturers have increased portion size and convenience, and expanded efforts to distribute food almost everywhere, because they are simply trying to reach the American consumer in the constant pursuit of higher revenue. In 2003 the United States government spent $4 to $5 million dollars on its “Five Fruits and Vegetables a Day” campaign. By comparison, U.S. food companies spent more than $7 billion for “mostly high fat, high sugar, high salt foods, often consumed by children.” Economically, it is simply worth it to spend that
much when the public consumption can provide a profit. Subsidies to American farmers, funded by the U.S. government, encourage the over-production of food in the same land where many people struggle to eat less. In testimony to the U.S. Senate one speaker noted that, “You can get 20,000 calories per dollar from sugar. And this is why our diet is largely composed of added sugars and added fats, not natural sugars in vegetables and fruit, but added sugars; not natural fats in dairy products and meat, but added fats. There is nothing cheaper.”8 Worried about protecting profit margins and stockholders in a world where media coverage about obesity is growing, the Sugar Association launched a $3 to $4 million dollar advertising campaign in 2005 to “reintroduce the consumer to sugar.”27 Thanks sugar, but clearly America is already quite familiar with you.

So with increasing caloric intake due to portion sizes, fast food, and convenience foods, America has begun tipping the scales of the energy equation toward the side of gaining weight. Unfortunately, decreasing physical activity levels move the scale in the same direction, leading to a double-threat of too many calories coming in and not enough being expended. Even small changes on a day-to-day scale can have deadly consequences over a period of time when one examines the “energy equation” previously mentioned. One pound of fat is equal to roughly 3,500 calories of energy. While this may seem like a lot, one small adjustment can equal a large change over time. Perhaps John Q. Public wants to indulge in two Snickers bars per week, without off-setting this change by decreasing his diet or increasing his exercise. At 280 calories a bar, Mr. Public is eating an extra 560 kcal per week, totaling more than 29,000 calories in one year. That is more than eight extra pounds of fat in one year all because of a chocolate bar.

Statistically, Americans add about one to two pounds per year of body weight after their early 20’s. By the time he or she hits age 50, the average American will have added 30 pounds of body
weight without even trying. It is this energy equation, and the grossly understated need to maintain energy balance, which needs to be better explained and understood. The balance of positive and negative energy extends far beyond junk food and eating out. The United States’ public should recognize the balance between eating and exercise, bringing in versus expending calories. This small understanding could put millions of individuals back on track to lowering obesity levels and improving the quality of daily life.

In the battle against America’s high rates of obesity and overweight, the battle with food takes the cake, per se. Increasing portion sizes, FAFH and fast food, and the explosion of convenience foods have riddled the nation with easy to find, tasteful to eat, and inexpensive to purchase food in all shapes and sizes. Usually, however, that “size” is extra large. In an age of modern technology, stunning biological ability, and research-minded professionals, America’s changing dietary landscapes have produced cheap, easy, fat-laden calorie-dense foods. From the growing bag of chips to the need-two-hands-to-hold soft drinks, society is paying the price for unhealthy foods in the form of constantly growing obesity prevalence. These improper diets and poor eating habits have led to an overall increased caloric intake, and the addition of decreased physical activity is making rampant the scourge of overweight and obesity in the United States.

The prevalence of overweight and obesity in the United States has increased drastically within the last half-century. With more than 66% of the nation displaying a BMI of 30 or higher, and obesity-related diseases killing more than 400,000 Americans annually, the harmful and often lethal effects of obesity on the human population need to be realized to their full extent. Among its other damaging results, obesity is a key contributor to some of the most deadly and preventable diseases of the U.S., among them heart disease, diabetes, and stroke.

U.S. Surgeon General David Satcher has warned that “individuals who are obese (BMI ≥ 30)
have a 50% to 100% increased risk of premature death from all causes compared to individuals with a BMI in the range of 20 to 25.\textsuperscript{10} This condition of overweight has grown to enormous proportions and its ramifications will be enacted through these other killers which will continue to thrive off the over-indulgence and inactivity of a nation disregarding the warning signs of a nation-wide killer.

Compared to other nations around the world, the United States has one of the highest rates of obesity, a factor weighing heavily on the also high rates of other disease states within the country. European nations, often thought of as sharing much of the U.S. culture and trends, still fall far short of the Americans’ staggering numbers when it comes to the percentage of the population that is overweight. According to the International Obesity Task Force and the International Union of Nutritional Sciences, the United Kingdom trails the closest with a little under a 20% obesity rate, with France and the Netherlands showing less than 10% of their citizens as obese. Far to the East, Japan’s population has a prevalence rate under 5%, one-sixth that of the U.S. The United States leads all modernized countries in its obesity prevalence rates, and in fact leads much of the world with the exceptions of a few African countries, namely Western Samoa.

The leading cause of death in the United States is heart disease, often medically referred to as coronary artery disease (CAD). The condition often results in atherosclerosis, or “hardening of the arteries,” namely a build-up of plaque, collagen, and fatty tissue deposits within the blood vessels surrounding the heart, causing the arteries to either rupture or limit blood flow because of vessel narrowing. When blood flow becomes completely obstructed, ischemia can occur, causing injury to the muscle tissue of the myocardium. In other words, the heart muscle can begin to die because it cannot receive adequate blood, and thus adequate oxygen. This quite often results in
myocardial infarction, the heart attack most Americans have come to fear yet somehow accept as a part of life, despite the fact that it often leads to death. Yet the very same factors that contribute to obesity, poor diet and inadequate physical activity, are also great contributors to heart disease. Studies have suggested that an individual gaining ten to twenty pounds of body weight increases the risk of coronary heart disease by a gender average of 1.4 times. Higher levels of weight gain, something not uncommon in the U.S. and what researchers defined as 22 pounds of extra weight in males and 44 pounds of in females, increased relative risk of CAD by 1.75 in men and 2.65 in women. Obesity has been attributed to these increased risks namely because the diets of overweight individuals have been shown to contain higher levels of saturated fats as well as trans fats, often an ingredient in fast foods, both of which are linked with atherosclerosis. While many people seem to disregard a gain in body weight, the harmful effects of obesity can hardly be ignored with the establishment of a clear link between overweight and heart disease.

Besides obesity's clear link to coronary artery disease, one of the deadliest and most uncontrolled results of excess body weight can be the onset of Type 2 diabetes mellitus. Diabetes prevalence for adults grew by more than 50% during the 1990's, and continues to climb today. Through the process of the metabolic syndrome already described, an individual can begin to accumulate excess adipose tissue to grow larger and heavier. Often this increase in size is accompanied by an insulin resistance, whereby the body's cells are not as sensitive to insulin and do not take in glucose from the blood. This insulin resistance can progress into hyperglycemia and eventually Type 2 diabetes, a metabolic disease whose state cannot be reversed, only treated and controlled. Figures as of 2004 report that more than 18 million Americans have Type 2 diabetes, while 41 million are "pre-diabetic," having hyperglycemia and risk factors that indicate a strong disposition toward developing diabetes. The same research explains that "Obesity is a
major cause of the epidemic of diabetes. In 2000 [Americans with diabetes] cost approximately $132 billion. Complications of diabetes include heart disease and damage to the eyes, nerves, and kidneys. When people lose weight, they are often able to reverse the progression of diabetes and reduce or discontinue insulin and other medications. While there is a genetic component to chronic diseases, increasing scientific evidence documents that the primary determinants of these illnesses are the lifestyle choices that we make each day. ² Yet despite this scientific research regarding the correlation between obesity and diabetes, “80% of all people with Type 2 diabetes are obese at onset.” ²⁹ Research has found that an individual who gains 11 to 18 pounds of body weight doubles their chances of developing Type 2 diabetes compared to someone who has not gained any weight. An individual gaining 44 pounds has four times the risk. ¹⁰ Additionally, the trend is increasingly dangerous because of the higher prevalence of obesity in children.

Confirmed cases of diagnosed Type 2 diabetes have begun appearing in children as young as eight years old, ²⁵ a horrific marker that America’s obesity is not only leading to deadly disease states in adults, but is advancing downward to affect younger populations. This is also evident in the change of nomenclature, where the newer terminology of “Type 2” has replaced the former of “adult-onset” diabetes because the disease is no longer diagnosed in only adults, but is quickly infecting younger and younger generations, primarily because of overweight and obesity as a direct contributing factor. This gradual escalation of metabolic syndrome, most often hyperglycemia and insulin resistance advancing into Type 2 diabetes, is becoming a deadly and serious consequence of America’s problem with obesity.

Finally, obesity’s detrimental effects on the overall state of U.S. health can often include other smaller problems that are equally important. A growing number of orthopedic injuries are occurring, often the result of older adults or teenagers who are carrying a large excess of body
weight, which in-turn applies additional stress to bones and joints that are either aged and osteopenic/osteoporosic or have not yet reached adequate maturity to handle the additional loading. Asthma is a growing concern for the younger obese populations and beginning to increase in prevalence among adults as well. A variety of studies have shown that obesity is known to exacerbate the known risk factors and causes for asthma, and that individuals with higher BMIs have also been shown to have more severe forms of asthma. Obesity can also create a potential for hypertension, or high blood pressure, as the heart beats harder and faster to circulate blood to the increased amount of vessels required to supply oxygenated blood to excess adipose tissue and perform the additional work required to maintain the basic functions of life. The negative effects on American health caused by the growing prevalence of obesity are severe and far-reaching. Excess body weight can grossly increase the potential for heart disease, Type 2 diabetes, and many other deadly and incapacitating illnesses and conditions.

The overwhelming concerns of overweight and obesity on the population of the United States are not restrained to affecting adults who have accumulated excess body weight over a period of time. Rates for childhood obesity have literally tripled since 1970. Data shows that 16% of children and adolescents are overweight or obese, a figure that has increased by 100% just within the last 20 years. In the 1960’s only 4% of children ages 6 to 17 were overweight, a population that has almost quadrupled to more than 15% today. The same source blames American adults for the childhood obesity problem, explaining how the sedentary lifestyles of adults are learned and emulated by children, adults have increased portion sizing for children, and adults have invented computer and video games for children resulting in a decrease of physical activity. Extremely shocking, one testimony shares that “over 20% of babies aged 19 to 24 months have never consumed any food except for soft drinks, bacon, and french fries.”
Nicklas et al. conducted research with 10-year-old females in Louisiana, showing the changes in the percent of overweight children “significantly increasing from 13% in 1973 to 39% in 1994,” with obese 10-year-olds also “significantly increasing from 4% in 1973 to 21% in 1994.”

America’s growing problem with obesity is already well-embedded within its youth, a problem which needs to be acknowledged and remedied in order to preserve future generations.

The habits and physical attributes young people are learning in their childhood form their decision-making processes of adolescence and extend into adulthood, carrying with them the consequences of an obese lifestyle. Documented follow-up periods of up to 20 years have shown that children who are overweight are still overweight after they become adults. A hearing before the U.S. House of Representatives announced that “overweight adolescents have a 70 percent chance of becoming overweight or obese adults. This increases to 80 percent if one or both parents are overweight or obese.” This was confirmed by the American Academy of Pediatrics in 2003 when they explained “for adolescents, the probability of childhood obesity persisting into adulthood is as high as 80%.”

Estimates for television viewing reveal that children in the United States see up to 10,000 food-related commercials each year, with more than half of them pitched to sell products such as fast food, high-sugar cereals, soft drinks, and high-calorie snacks. By comparison, Australia does not allow food ads during preschool programming and Sweden and Norway prohibit advertising aimed at children less than 12 years of age. Estimates also show that American children on average spend more than four hours a day with screen time, often split between television, video games, and computer use. This influx of advertising and increased screen time is also reducing the time spent in recreation or exercise. On average today, 80% of elementary schoolchildren participate in less than one hour of physical education per week. Meanwhile the Society of Nutrition Educators advocates that
children receive 50 hours of nutritional education per year, with data reporting that the average child receives only a little more than one-fourth of that recommendation, about 13 hours. Attempting to curb the nationwide crisis of childhood obesity, and thus improve adult obesity in the long run, the Centers for Disease Control and Prevention have released growth charts for children indicating an approximate BMI for specific age groups. The CDC is also recommending that any children falling outside of their expected range for height and weight should seek further clinical assessment by a healthcare provider.

Some experts argue that these statistics and the ever-growing number of obese children are threatening to cause something never seen before, a generation of individuals who are actually less healthy than their predecessors. Estimates have been made regarding how much time is actually taken off an individual’s lifespan because of obesity, with some research indicating that as many as 20 years of life may be lost due to overweight and obesity. The potential for a shorter lifespan and a decreased quality of life make these conditions a serious threat to society.

There are obvious health problems associated with overweight and obesity. Yet these direct implications on physical health do not account for a variety of other side-effects related to excess body fat. Obesity and overweight carries with it a variety of mental and psychological problems. Examples of these mental issues can include social stigma, depression, teasing, bullying, extreme self-consciousness, anxiety, body dissatisfaction, and body dysmorphic disorder. Many of these problems are especially prevalent in children, who are often teased or bullied by their peers because of their size or overweight. This may also lead to alienation from social groups or activities, and may extend into discrimination. Anxiety and body dissatisfaction can persist into adolescence and adulthood, raising a potential for severe psychological disorders.
if left untreated and allowed to evolve. In addition to psychological issues surrounding obesity, many economic and occupational concerns have come to the forefront. Estimates suggest that $20 to $30 billion dollars per year are lost to obesity, often in the form of lost productivity and time off because of an increase in obesity-related medical conditions. In 1994 employees lost 39.3 million workdays because of medical problems related to the disease, which was a 50% increase over missed work in 1998. A recent release from the Associated Press explains how the various branches of the United States' armed forces are increasingly turning away potential recruits because they do not meet standards for physical form or function. The release states that, “Of some 32 million Americans now [in a prime recruiting group age 17 to 24], the Army deems the vast majority too obese, too uneducated, too flawed in some way…” The article continues to explain additional factors for some recruits being classified as ineligible, including, “A decline in physical fitness; one-third of teenagers are now believed to be incapable of passing a treadmill test.” The increased prevalence of obesity is not only affecting people’s minds and employment, but may actually be putting the safety of the nation at risk.

America’s increasing proclivity for being sedentary means that the often-recommended solutions of proper diet control and increasing physical activity to control and fight obesity are being underused or simply not attempted. Many people simply do not possess the mental fortitude, or in some cases the physical ability, to follow-through on planned exercise in order to control their weight. It is for these reasons that many Americans have turned to an alternative to healthier diets and exercise, bariatric surgery. Now while surgical options offer a verified medical solution to individuals who are extremely obese, and often gained so much weight that exercise is simply improbable, the tremendous rise in surgical options as a means to mitigate excess body weight is stunning. Between 1998 and 2002, only a four-year period, bariatric
surgery operations increased by 450% up to 70,256 cases per year.\textsuperscript{35} Yet the numbers continue to grow. Testimony before the U.S. Congress reveals that, “In [2003], the failure to provide a viable solution to the obesity epidemic has spawned approximately 120,000 obesity-related surgical treatments.”\textsuperscript{7} The American Society for Bariatric Surgery says that approximately 140,640 procedures were performed in 2004, with estimates for 2005 surpassing 171,000.\textsuperscript{35} That is an increase of 1,240% in a span of only seven years! The procedure, costing patients an average of $26,000, is only performed on the extremely obese who often carry 100 pounds or more of excess body weight.\textsuperscript{35}

The obesity epidemic in the United States has shown itself not only in the damaging consequences in physical health and wellness, but also in various impacts on the general environment. Across the country, Americans are witnessing daily changes that are a direct result of this disease. From the cars they drive, the food they purchase, and even the place of their final resting, the increasing prevalence of overweight and obesity is driving the American consumer market to adapt to the ever-increasing waistlines of the spending population.

The effects of obesity are often physically manifested in the growing size and frame of Americans, and the industry must change to reflect this increase in stature. One of the premier consequences is the increase in seat sizes for various public venues to accommodate the larger sizes of the individuals they are serving. Safeco Field, which serves Major League Baseball’s Seattle Mariners, opened in 1999 with bleacher seats that allowed 18 inches for a fan to sit and enjoy a game. Yet moving into the ballpark’s folding green plastic seats provides 19 inches of room, a response to the country’s rising rate of obesity.\textsuperscript{36} Last year the city of Chicago began ordering a new fleet of buses with larger seats meant to welcome their larger riders with an additional level of comfort. The city already widened seats to 17.5 inches in 1990, and is shelling
out more than $17 million dollars to make the seats a full 18 inches across, purportedly the largest seats in the country. The increase is rightly deserved in light of *Men’s Health* magazine naming Chicago the fattest city in the U.S. in January 2006. This will be the city’s third increase since the original bus seats, 16.75 inches, were used in 1949.\(^{37}\) Surpassing Safeco’s precedence, Petco Park hosting the San Diego Padres offers seats ranging from 19 inches all the way to 22 inches wide. The city of Philadelphia now boasts new trains that allow 21 inches of seat width per passenger, a full three inches wider than previous trains. Yet above and beyond all the rest, a handful of theatres throughout the country have discretely purchased double-wide seats for their venues, each one providing 44 inches of seating room for patrons who are particularly large. Much of the standards for seating sizes and design come from the same source used to host people who needed to sit down before World War II – a guide for the building and design industry entitled *Architectural Graphic Standards* which dates back to the 1930’s. The book lists 18 inches as a minimum seat-width standard. The guidelines also lists 21 inches as “ideal” for theatres with only 15 inches considered acceptable for restaurants.\(^{38}\) But public venues are not the only place for larger rear-ends to find comfort. American and foreign automakers are increasing the seat sizes for cars, often adding three-quarters of an inch all the way up to three full inches to increase an occupant’s comfort and safety for side-impact crashes. Ford Motor Company has even begun using a larger virtual mannequin in design and crash tests, citing the fact that “the average near-biggest man grew 27 pounds heavier and nearly an inch-and-a-half wider in the hips from 1962 to 2000.”\(^{39}\) Finally and not surprisingly, one manufacturer of bathroom products is even producing a “luxury line of toilet seats 20% wider than the industry norm.”\(^{36}\)
Even the airline industry has been forced to adapt to the growing size of U.S. posteriors. Southwest Airlines, in a bold move that resulted in a public outcry of discrimination from many Americans, began a policy of charging passengers the price of two tickets for individuals who were simply too large to be contained within one seat. The company explains how the armrest between two seats is a "definitive gauge", serving as the "boundary" between seats, the physical space one person has purchased for a flight versus where another person's space begins. While the airline requires all passengers who cannot fit within the prescribed space to purchase two tickets, they do offer a refund of the second ticket after travel providing the flight is not oversold. Additionally, Southwest offers "seatbelt extensions" for all passengers who cannot properly buckle a standard seatbelt over their large waists. Justifying their actions, the company explains that, "[they] could no longer ignore complaints from customers who traveled without full access to the seat purchases due to encroachment by a large seatmate whose body extended into the neighboring seat."^40

The U.S. prevalence of obesity is not just increasing the size of seats, but elsewhere as well. It has been reported that, "At least half of all American women wear size 14 or larger,"^36 with six out of ten women wearing a size 12 or larger. This increased demand for larger clothing sizes is rocking the apparel industry that has now begun entry into the "plus-sized" market, once considered an "afterthought" to most manufacturers. Plus-sized clothing has seen a tremendous jump in sales, increasing 49% from 2000 to 2005, resulting in estimated U.S. retail sales of $47 billion for the same year."^41 [TC]^2, a consulting firm which released the SizeUSA survey in early 2004, produced three-dimensional body scans of approximately 10,000 people to provide data to garment and apparel designers and manufacturers. The results reveal that the classic "hourglass figure" has been replaced by the "pear shape," with less than 10% of the population meeting the
standards that are currently in place to produce domestic clothing. 69% of women now have a waist larger than 40 inches, while the standards used for apparel estimate the average woman to have a 27-inch waist. Evenflo, a large producer of children’s products, has enlisted the help of a design firm to help with the creation of car seats to accommodate larger babies. Goliath Caskets of Lynn, Indiana has begun making plus-size caskets up to 52 inches wide, a full 28 inches wider on the inside than a standard casket. Asked about their company’s products, co-owner Keith Davis remarked that, “We’re very, very busy.” Amplestuff, a company originally started to offer a “sponge-on-a-stick” product to obese populations, has grown to sell a wide variety of products including shoehorns, larger-than-usual umbrellas, scales capable of measuring 1,000 pounds, and even “leg lifters” to assist people with entering and exiting their vehicles. The airline industry, already bombarded with positive and negative feedback about their “second seat” policies, is even paying more for fuel because their planes are laden with passengers who increase the weight of a plane-full of people beyond the usual. According to the CDC, this increase in weight resulted in extra fuel usage, costing the airlines an extra $275 million dollars in 2000.42

The large increase in the United States’ obese population has of course led to increased hospitalizations for people with obesity-related conditions. Yet American hospitals are being forced to adapt to these larger-than-usual patients, a change which is prompting the creation of new and larger medical equipment to adapt to their needs. Everything from wheelchairs to hospital beds, doorways to hospital gowns, and even larger CT-scan machines must grow to meet the changes. Colleen Becker, a patient care director for Barnes-Jewish Hospital in St. Louis, Missouri, discovered that in 2005 roughly one-third of the hospital’s patients weighed 350 pounds or more. Consequently and unfortunately, a union representing 70,000 allied health
workers has petitioned for new laws requiring hospitals to purchase portable hoists to aid in the moving and transportation of obese patients, a practice which has resulted in many nurses being injured on the job. New beds able to accommodate 500-pound patients are being installed, as are larger doorways, wider and sturdier wheelchairs, and operating tables, which have sometimes resulted in some patient’s girth “lapping over the table, in some cases all the way to the floor.” New, larger slippers are replacing the usual hospital “footies,” which were reported to be too small on larger patients, sometimes cutting off circulation. Worst of all were two new adaptations; the longest needles available, some 4.5 inches, were unable to penetrate the fat layers of some patients, and new lighting has been installed at lower floor levels because “the bodies of extremely obese people can cast a shadow that makes it hard to see the floor.” Many manufacturers are meeting the trends with literally hundreds of new products for the medical community, with the Stryker Corporation offering a new ambulance cot capable of supporting 1,600 pounds. Barnes-Jewish Hospital is also working with suppliers to develop a wider body bag for larger patients who pass away, citing that the bags are required to be “leak-proof,” and that “some patients were so large they wouldn’t fit in them.”

The increased caloric intake provided by convenience foods has had a major impact on the environment of American life. Point in case, the cupholder. Henry Petroski’s book Small Things Considered delves into the life of this American invention, devoting an entire chapter to the subject. Petroski details the evolution of automobiles to elaborate on how the cupholder came to be, explaining how the earliest cars offered society a way to escape home life with picnics, followed by drive-in restaurants and drive-in movies. Yet these methods only allowed food and drink consumption while the vehicles were parked. The advent of the drive-through window forced automakers to adapt to changing consumer trends, eventually leading to the cupholder
becoming widely available and often expected as of the mid-1990's. For example, the 1997
Chevrolet Venture minivan boasted 17 cupholders. Yet the cupholders themselves evolved as
well, changing to meet demand and often expanding to allow room for larger cups or even a
child's juice box, with the 2001 Chrysler RS minivan's cupholders able to "expand or contract to
accommodate 32 sizes of drink containers..." Petroski notes that "increasingly in the 1990's,
American car buyers were expecting something to hold their drinks," and even explains that
functional, well-designed, and well-placed cupholders have even become a staple to a potential
buyer, so much so that some consumers will choose one vehicle over another based strictly on
the beverage receptacles.44 Yet this craze evolved because of consumer demand for convenience.
It has been speculated that the cupholder was a strong factor in many Americans choosing cars
with automatic transmissions, an option that allowed them to drink a beverage without worrying
about changing gears. The popular location for most cupholders, between the driver and
passenger seats in the forward compartment of a vehicle, is the often the most convenient for
vehicle inhabitants while at the same time forcing the removal of a manual transmission because
the shifting mechanism must be altered. Even more important is the fact that when cupholders
gained great popularity in the 1980's and 1990's, most automakers quickly added the device to
their American vehicles, but were slow to add the option to models bound for Europe or
elsewhere.15

America's love of convenience foods has spawned quite a surmountable list of new food
items and products to package and distribute them. In 1987, Dunkin' Donuts introduced the first
lid for coffee cups specifically designed to allow its customers to drink their coffee in their cars.
7-Eleven released a new line of sandwich wraps in early 2005, with their vice president of fresh
food merchandising, Joanne DeLorenzo, announcing that "one of the biggest challenges was
making them car-friendly. To prevent dripping, the wrap makers used a cardboard sleeve. ‘Of course, the package had to fit in a car cup holder.’” McDonald’s, ironically offering both dessert parfaits and perceivably-healthier salads, packaged both of the items in cups meant to be easily transported and consumed in an automobile. Campbell’s Soup Company has released Soup at Hand, a small cup that holds pre-made soup ready to be micro-waved and then drunken from an opening in the lid. Technomic Incorporated reports that each year food service companies spend $3.5 billion on beverage containers alone, using more than 12 million paper cups for hot drinks and almost 15 million plastic beverage cups.15 But the market for convenience foods marches forward, with Big Gulps and Double Quarter Pounders leading the American consumer down the path of convenience and eventually gaining weight. Snack foods are being packaged in plastic cups instead of foil or paper bags, supposedly to offer more “protection” for the food. But how much protection might one need at the kitchen table? Ultimately these devices are intended to market convenience, allowing the American consumer to purchase more food products they do not need but have been told are now available to them. Snack foods and entire meals can be easily transported and quickly prepared or accessed, allowing the intake of additional calories that are often unhealthy or entirely unnecessary. This convenience and its negative impact on the public’s general environment are just one more factor in the equation of increasing obesity prevalence.

One final effect of the obesity epidemic in America is a direct issue of health and safety not only to overweight individuals, but to whomever they might be sharing an airplane or boat with. Two recent tragedies have brought to light a potential problem with the average passenger weighting systems that were put in place years ago but are still used today despite the overwhelming trend toward the increasing size of U.S. society. On January 8, 2003, a Beech
1900 aircraft crashed in North Carolina killing all 21 people on board. Officials from the National Transportation Safety Board (NTSB) issued a statement three weeks later citing that the plane was overloaded and that “flawed weight estimates” could have been to blame. The problem lies with the average passenger weight system that has been in use since at least 1995, initiated by the NTSB to estimate an average per-person weight of 180 pounds for all passengers in the winter and 175 pounds in the summer. Yet the standard has not changed to reflect America’s trend toward weight gain, and still assumes that all children ages 2 to 12 weigh only 80 pounds. The aircraft’s higher-than-estimated weight may have meant an inadequate fuel supply for the flight or any other list of problems for pilots who were flying a plane heavier than they anticipated.\textsuperscript{45} A second accident with the same potential cause took place in Lake George, New York in the fall of 2005. A tour boat, the \textit{Ethan Allen}, was carrying 48 people (with only a maximum limit of 50) when it capsized, resulting in the death of 20 that had been on-board.

The maximum occupancy limit for the vessel was established using guidelines from the United States Coast Guard, whose outdated rules from 1960 assume that the average passenger weighs only 140 pounds regardless of gender. This average weight is grossly overshadowed by today’s average male who tips the scales at 191 pounds, with the average female weighing 164 pounds, still well above the estimated average weight.\textsuperscript{46} While these guidelines for passenger weights are obviously skewed when compared to today’s modern crisis of obesity, the effort to change them is not exactly driving full-throttle. A change in weight limits to properly reflect the average size of the American public would mean that boats, trains, and airplanes would be forced to remove seating and allow fewer passengers on board in order to accommodate the increased weight. This move would result in decreased profits and most likely prompt an increase in ticket prices and fares to make up for any lost revenue.\textsuperscript{46}
So in all this mess of overweight and obesity, where does America stand? To put it simply, America has slipped into a trend of decreased physical activity and increased caloric intake. The problem of obesity in the United States has reached epidemic proportions, with more than 66% of the population overweight, including over 17% of children and adolescents. These alarming numbers and the constantly rising prevalence have forced this nation into a general “call to action.” The scary part is that most of the literature and recommendations have already been distributed to the American public, often with little results. Now is the time for the U.S. to wake up and see the fat. Recommendations for physical activity and proper nutrition must be acknowledged, explained, and undertaken to curb the widespread prevalence of obesity, and hopefully return an entire society to a state of proper health.

Before America can begin its journey to a healthier population, one important fact cannot be overlooked. The United States has an inherent lack of funding surrounding the obesity epidemic, with other health problems and political agendas clouding the true issue at hand, the poor state of health in this country. First on the list are the competing interest groups that not only line the pockets of U.S. government, but can also be linked to America’s problem with weight. On average, American food companies spend almost $5 billion dollars a year just on television advertising. The National Food Processors Association is reported to produce $500 billion dollars worth of food products each year. Some of the money these groups spend aim to promote laws and regulations that allow their products into school lunch programs and keep the American consumer eating the diets that corporate America chooses. But the spending of the U.S. government is erroneous as well. In 2002, 514,000 Americans had been diagnosed with the HIV/AIDS virus, for which the National Institutes of Health (NIH) spent $2.9 billion dollars to research, treat, and prevent. Meanwhile, the same year saw the NIH spending only $440 million
on obesity, a disease afflicting 64 million adults. Get out your calculators; obesity affects 124
times the population, but receives less than one-sixth the funding. The U.S. population of
morbidly obese individuals, just the morbidly obese, is two-and-a-half times the population of
those afflicted with Alzheimer’s. Yet the money spent just on research for Alzheimer’s disease
is double the amount spent on all of the obesity populations and costs. While obesity has been
shown to be an emerging factor in the fights against heart disease and diabetes, these two
conditions receive $2.5 billion and $1 billion for research, respectively. In the same year obesity
research reached just $400 million.¹

Perhaps the most important factor in the equation of obesity is the poor eating and
nutrition habits of the United States. As a culture Americans simply do not eat well, and eat too
much. Despite a good economy that provides a tremendous selection of fruits and vegetables,
healthy whole grains and legumes, lean meats and dairy products, and a host of other available
options, the average U.S. diet is simply unhealthy and riddled with problems. First off are the
abnormally large portion sizes of Americans. Steaks, muffins, pasta dishes…they are just too
big. These larger meals provide an increased intake of calories, driving the human body to store
the excess kcals and continue to ask for more at the next meal. The United States Department of
Agriculture has released a Food Pyramid, recommending how many servings and how much of
particular food groups should be consumed each day. Second on the list of improper eating
habits are fast foods and dining out in general. The concept of fast food has turned what was
once a wholesome, family-involved, hours-to-prepare meal into a 60 second trip past a series of
sliding windows and a paper-wrapped cheeseburger. The quicker, easier system of obtaining
food has skewed prices for the rest of the food market and provided an entire menu’s worth of
overly-fat, high-caloric, yet seemingly-delicious food that is literally killing the nation. The
Food and Drug Administration has recognized the threat of FAFH to American diets, and is urging restaurants to offer “point-of-sale” nutrition information about the products they serve to consumers.\(^2\) The final turn down the road to better eating habits is an elimination of snacking, or at least a change to better snack foods. Convenience foods of all types, from pocket packs of cookies to fast food to candy bars allow people to take food with them wherever they go and constantly consume excess calories they do not need. Look around one day and see how many people are carrying open cups of drinks or glass bottles and a bottle opener versus easy-to-grab aluminum cans or cups with drinkable lids. Convenience food items add thousands of calories to a diet per year simply because you can eat them anywhere at anytime, which is exactly what they are designed to do!

The American diet needs to improve in correlation with its eating habits. It is reported that only 15% of children and 25% of adults consume the recommended five servings of fruits and vegetables per day.\(^7\) Children must learn the importance of a proper diet and proper eating habits at a young age, primarily in the home and at their schools. In 2004 the U.S. Surgeon General identified schools as “a key setting for developing public health strategies to prevent and decrease overweight and obesity.”\(^3\) Nicklas et al. reports that families who ate dinner together at home were associated with higher consumption of iron, calcium, fruits and vegetables, a variety of vitamins, and fiber, as well as a reduced consumption rate of trans fat, soft drinks, saturated fats, and fried foods. Still only 12% of Americans consume a diet that could be considered “good,” with individuals who had better diets displaying lower BMIs.\(^25\) The typical diet of the United States must begin a shift toward better nutrition, often the same recommendations that dieticians and the USDA have been advocating for years. Americans need to eat more whole grains, shifting away from foods that are classified with a high glycemic index (GI). Simply put,
high GI foods have the potential to quickly raise an individual's blood glucose levels, provoking a rapid response of insulin and quickly breaking down glucose in the body. Low GI foods on the other hand, such as whole grains and high-fiber foods, offer a slower digestion time with a steady release of energy. Americans also need to reduce their caloric intakes and make the best use of the calories they do bring in. Nutrient-dense foods such as skim milk, a variety of fruits and vegetables, whole-grain breads and beans, and lean meats offer lower levels of calories and better nutrients for the body. Finally, a proper diet should be lower in fats than the average U.S. diet seen today, with special attention paid to lowering the levels of saturated and trans fats. This path to proper nutrition and correct caloric consumption is a large piece of solving the obesity problem in the United States.

With America moving on a better track toward proper nutrition and healthier eating habits, one must then turn to the inadequate levels of physical activity in the United States. Mancino et al. reports that “nearly 60% of overweight and obese men consider themselves to have a healthy weight.” Meanwhile the average individual does not meet the national recommendations for adequate exercise. The CDC, the National Institutes of Health (NIH), and the U.S. Surgeon General recommend at least 30 minutes of moderate physical activity on most days of the week for adults, and at least 60 minutes for children, while at the same time limiting the amount of “inactive forms of play such as television watching and computer games.” The idea behind decreasing caloric intake and increasing physical activity is of course to lose weight, thus slowing or reversing obesity and its effects. Binkley et al. report that “vigorous exercise at least twice a week results in a decrease in weight of 2.6 lb for males and 2.5 lb for females.” The group also concluded that individuals engaging in physical activity had lower BMIs while people watching an extra hour of television per day were “significantly heavier.” The overall goal for
weight maintenance is 100 fewer kcal per day, whether in the form of exercising that much more, or eating that much less. The NIH advocates sustained physical activity and reduced sedentary time in combination with a balanced diet, a reduction in calories, and behavioral therapy as a means to initiate and maintain a weight loss program. Specifically, they recommend an initial weight loss goal of reducing body weight by 10%, with a weight loss maintenance program becoming the priority after six months.6

This concept of more physical activity can easily be adapted with a change in the physical environment, often with proper neighborhood planning. The National Recreation and Park Association cites that, “active users of public parks have a lower BMI than did people who use parks passively or not at all.”47 Additionally, the Transportation Research Board advises the construction of small neighborhood schools in an effort to not only encourage students to walk or ride their bikes to school, but also because they “promote neighborhood cohesion” and “foster a better learning environment with higher student achievement.”27 Adequate urban planning, with the inclusion of public parks, sidewalks, and playgrounds, can take a large step toward community involvement in a large-scale effort to increase overall physical activity.

The goal of weight loss to curb American obesity is aimed to improve the general health of a nation. Reducing caloric intake by 1,000 kcal per week and increasing moderate physical activity to three to five days per week would contribute significantly to the regression of this disease. But the recommendation to treat obesity is rooted in the damaging effects and contributions that overweight has to national killers. Heart disease, diabetes, high cholesterol, high blood pressure, and even increased depression can all be attributed to obesity. This list of diseases names some of the most prevalent and deadly conditions facing the United States, killing more Americans than any other means. Yet weight loss, most effective through proper
diet and exercise, has been shown to actually "prevent the development of type 2 diabetes among persons who are overweight or obese." Likewise, reductions in body weight have been shown to improve lipid panels, lower blood sugar levels, lower blood pressure, and reduce key risk factors for cardiovascular disease. It is these diseases that obesity is linked to, and it is obesity that can be controlled and reversed with improved nutrition and increased physical activity.

The rampant disease of overweight and obesity consuming the United States needs to move to the forefront of American minds. Killing hundreds of thousands of people each year, costing billions of dollars in medical treatment and additional expenditures, and affecting more than 66% of Americans, obesity is on track to be the most prevalent, and most preventable, cause of premature death throughout the nation. Obesity affects everyone, from children and adolescents to adults and older populations. It touches all genders, nationalities, races, and demographics. It has been shown to be a contributing factor to the increased rates of cardiovascular disease and Type 2 diabetes, two of the nation's leading killers. Every single state in the Union has least 15% of its population classified as obese, with the morbidly obese population of the U.S. equaling the number of people living in Illinois. Yet the disease is almost entirely preventable. The personal and environmental factors of the United States in the last 50 years have led to a nation of overweight individuals. Americans consume too many calories, enjoy food away from home, and utilize convenience foods on a daily basis. Their increasingly sedentary lifestyles have resulted in excess body fat and a population that is continually growing in size. Yet, "Experts agree that the solution is not to be found on a particular diet, but rather a modification of lifestyle risk factors for obesity. These would include dietary modifications combined with exercise to reach long term net health gains." Dr. Richard Carmona, current Surgeon General of the United States, recommends three key factors to aid in America's fight
against the disease: “increased physical activity, healthier eating habits, and improved health literacy.” He describes obesity as, “…the public health crisis that affects every state, every city, every community, and every school across our great nation. It’s the fastest-growing cause of disease and death in America, and it’s completely preventable.” Obesity in the U.S. is growing by a force of environmental factors and personal choices that must be stopped. Curbing the prevalence of excess body weight will take an active response from an entire nation. Increasing the levels of daily physical activity, encouraging and participating in healthy eating habits, and educating the United States about this deadly disease is paramount to fighting the epidemic. Through the common efforts of society, obesity in America can be controlled and reversed, ensuring the future health of the nation for generations to come.


8. Improving nutrition and health through lifestyle modifications. (2003, February 17) Committee on appropriations, United States Senate, 108th Congress first session special hearing.


22. Eating at fast-food restaurants more than twice per week is associated with more weight gain and insulin resistance in otherwise healthy young adults. (2004, December 30) *NIH News*, Nationals Institutes of Health.


