



# **McChildren**

## **The Growing Problem with Obesity in AMERICA: *Youth Edition***

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A World View of Mathematics and Data Analysis

by

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**Abstract**

**Obesity in America is on the rise, and it's not only among adults, but children.**

Youth around the world (especially in America) are being brainwashed by food industries to believing that they should and can eat all the sugary processed food-like substances they want to because they are children. Since the beginning of the fast food industry, Americans and other participating countries have seen a decline in health not only among the adult consumers, but the children as well. Not only is junk food responsible for the incline in youth obesity, but a decrease in physical activity. Studies also show that a person's financial background affects obesity risks too. Nevertheless, today's youth are fueling (trashing) their bodies with garbage every day and the effects are becoming more and more obvious. Obesity-linked health problems are becoming more prevalent in American children and it is time that American and other *McCountries* did something about it.

## Background

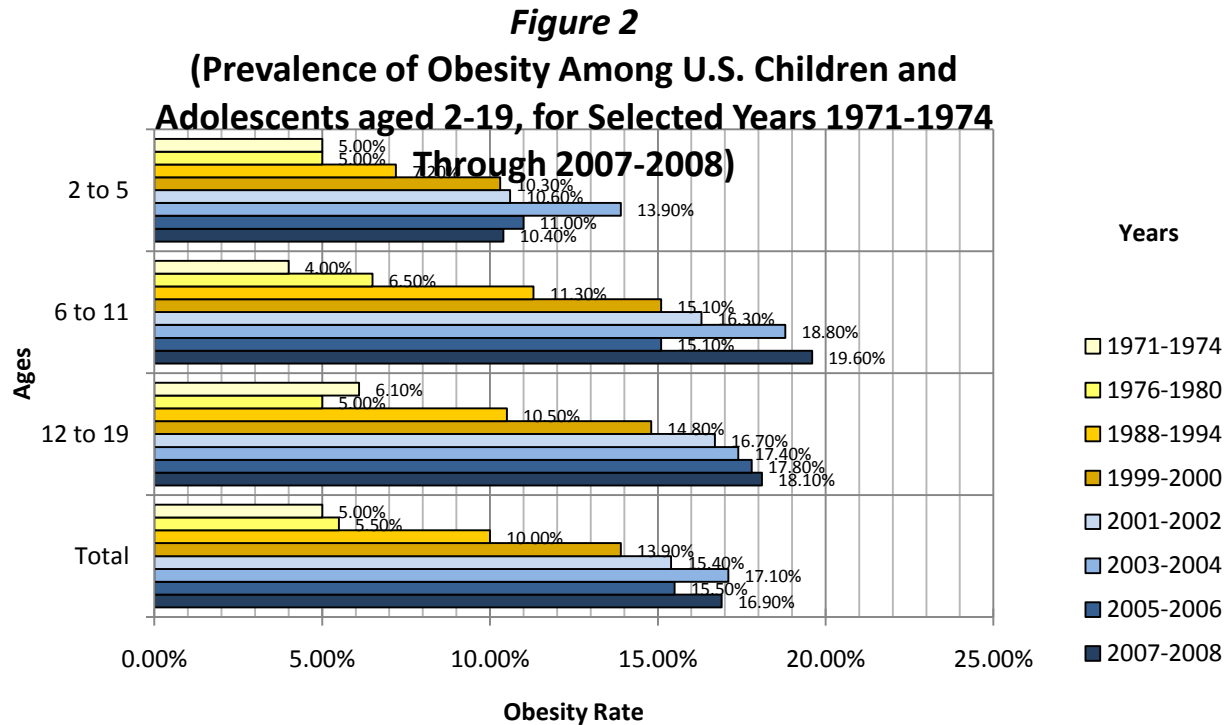
Over two thirds of American adults and one fifth of American children were classified as either obese or overweight in 2009(ref. 3). Of these adults, approximately 33% fell under the overweight<sup>1</sup> category, and 34% lay in the obese<sup>2</sup> category, 6% of which were in the extremely obese range (ref. 3). However, even more surprising and threatening was the number of overweight<sup>3</sup> **children** and **adolescents** in America. Obesity rates among children in America have tripled over the past thirty years (ref. 6). The estimated rate for obesity among adolescents and children in 2009 was 17%, which should be quite a huge (literally) concern of all Americans (ref. 4). “This generation of children could be the first basically in the history of the United States to live less healthful and shorter lives than their parents,” says Dr. David S. Ludwig, director of the obesity program at Children’s Hospital in Boston (ref.5).

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<sup>1</sup> body mass index [BMI] of 25.0–29.9 for adults

<sup>2</sup> BMI  $\geq$ 30.0

<sup>3</sup> defined as at or above the 95% percentile of the sex-specific BMI for age growth charts



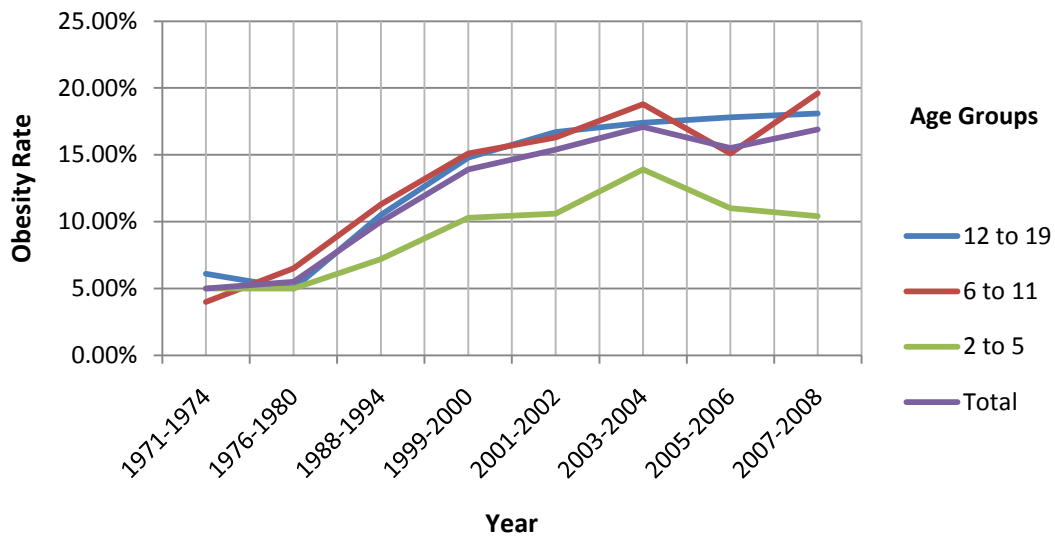
Due to statistical findings, there is a substantial amount of evidence that supports the claim that obesity/weight problems early on in life may lead to long term health conditions and can even shorten a person’s life by two to five years (*New England Journal of Medicine*, ref. 5). During a recent study at Cornell University, a group of researchers found that women who are overweight have a higher chance of developing breast cancer than women who are average size (ref. 2). In response, this group of researchers helped design and set up weight loss programs to help facilitate weigh loss among obese women to reduce their risks of breast cancer (ref. 2). Obesity does not limit itself to the deterioration of the health of adult people only. It attacks the lives and health of young people too. Thousands of studies on adolescent and childhood obesity rates reveal that excess weight not only causes physical and emotion strain, but increases risks of developing health conditions such as diabetes, heart disease, asthma, and several other ailments, including death (ref. 4).

The outbreak of obesity among young adults and children in America has sparked the attention of many researchers who want to know why such an epidemic has occurred. One study found that the density and type of food outlets in a region has an effect on the population's obesity rates within the region (ref. 1). Also, in the same study researchers found that financial, racial, and ethnic make-up of regions factor into their obesity rates as well (ref. 1). A group of researchers in the UK explored on the topic of "food deserts" (areas with little to no retail food provisions), to test their hypothesis that food deserts create barriers between people and healthy eating, specifically among areas of low-income, single parent households, the elderly and groups with limited transportation (ref. 1). Their research results showed that neighborhoods of lower socio-economic status in America generally have more food stores and lower prices than in other areas (ref. 1). This led to a more likely cause of obesity in "food deserts:" unhealthy food (ref. 1). Another study on location and food types available showed that in areas where junk food was plenty, obesity was more widespread. In other studies, the more obvious causes of obesity like over-eating and not exercising were reinforced. In addition to these causes, the possible effects of genetics and sleep deprivation were also explored.

Why should Americans care? According to a New York Times article on youth obesity numbers, "Tens of millions of young people will be at risk of illness and death unless this country commits to reversing, not just stabilizing, the epidemic" (ref. 4). Many researchers are developing ways to reverse the outbreak, and it's important that we act now. Whoever said that "lifelong behavior patterns are shaped in childhood and adolescence" was right (ref. 1). Children are the future.

There are many ways to attack the epidemic of youth obesity. The first way is through educating the crowd. By requiring every district to have its own school wellness policy in place in 2006, Congress took affirmative action against the rates of obesity (ref 5). These programs not only promote healthy diets, but increase physical activity and reward students for their achievements. Another response is to minimize if not remove all forms of junk food in schools and provide students with a healthier selection of food instead (ref. 4). Schools and Congress are not the only combaters in this war though. **Parents** play a huge role in the revolution. Parents impact their child’s future health decisions by leading by example, whether they want to or not. By monitoring caloric intake, making healthy food choices, and exercising more frequently, parents can become better examples for their kids.

**Figure 2**



## **Research Question/Problem**

Three main causes of youth obesity are poverty, decreases in exercise, and increase in consumption of junk food. Out of these three causes, which has a more linear relationship to obesity?

Hypothesis:

I believe that decrease in exercise rates have had the biggest influence on obesity among youth.

Ho:

Ha:

## Methods

To figure out the greatest cause of obesity among youth in America, I have to determine the relationships between diet and obesity; exercise and obesity; and poverty and obesity.

My hypothesis is that the leading factor of obesity is the diet of teenagers.

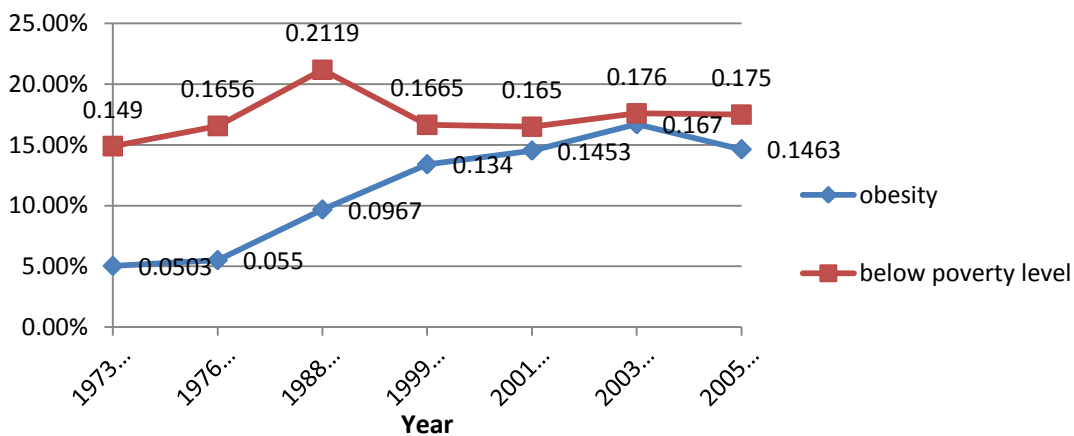
FIRST:

I have to find the average rate of exercise among obese or overweight adolescence/children and compare it to the healthy rate.

SECOND:

First, I must find statics of obesity rates among youth between the ages 2 and 19. Then, I will compare them to the calculated rates of households below poverty level with kids under the age 18.

**Figure 3**  
**Poverty Levels vs. Obesity Levels**

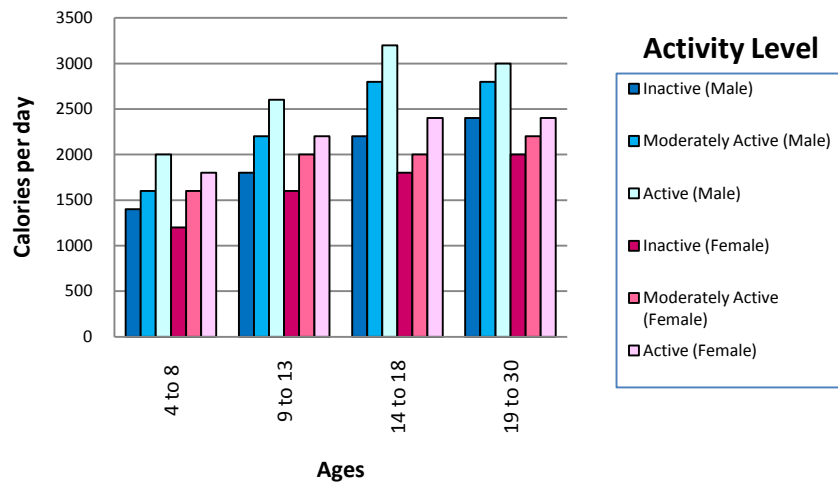




THIRD:

I have to find the suggested caloric intake for age groups and then find the average caloric intake among obese children.

**Figure 1**  
**(Suggested Daily Caloric Intake Based on Age, Gender, and Physical Activity)**



## **Results**

## Conclusion/Recommendations/Extensions

“Easy availability of snacks, sodas and fast food in the immediate vicinity of a school could easily negate school food policies, especially among students who can leave campus. Surrounding food outlets could also lower the effectiveness of health education in the classroom by setting a highly visible example that counters educational messages. There are several clear differences across sociodemographic groups with, arguably, the most pernicious being the location of off-licences. These disparities may represent an important type of environmental injustice for minorities and lower-income youth, with potential adverse consequences for dietary behaviours.” (ref. 1)

“Congress, in responding to what many are calling an epidemic, is requiring every district to have its own school wellness policy in place by the start of the 2006-07 year.” (ref 5)

“On its website ([www.cdc.gov](http://www.cdc.gov)) the CDC offers educators “10 Key Strategies” for creating healthy schools. The first four strategies, called “Building a Strong Foundation,” include creating a coordinated school health program to address the need for physical activity and good nutrition. The other six strategies, titled “Taking Action,” recommend high-quality physical education programs, nutritious lunches, and healthy food and beverage choices outside the school meals program.” (ref. 5)

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Figures:

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3. (table 2) <http://www.cdc.gov/nchs/data/hs/hs09.pdf#003>

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**(TABLE 1)**  
**Suggested Caloric Intake Based on Age and Physical Activity**

	<b>Inactive (Male)</b>	<b>Moderately Active (Male)</b>	<b>Active (Male)</b>	<b>Inactive (Female)</b>	<b>Moderately Active (Female)</b>	<b>Active (Female)</b>
<b>4 to 8</b>	1400	1600	2000	1200	1600	1800
<b>9 to 13</b>	1800	2200	2600	1600	2000	2200
<b>14 to 18</b>	2200	2800	3200	1800	2000	2400
<b>19 to 30</b>	2400	2800	3000	2000	2200	2400

**(TABLE TWO)**  
**(Obesity vs. Poverty Rates)**

Year:	Obesity (2-19):	Poverty (under 18):
1973-1974	5.03%	14.90%
1976-1980	5.50%	16.56%
1988-1994	9.67%	21.19%
1999-2000	13.40%	16.65%
2001-2002	14.53%	16.50%
2003-2004	16.70%	17.60%
2005-2006	14.63%	17.50%

Year	Poverty households with kids under the age of 18 (%)
1973	14.4
1974	15.4
1975	17.1
1976	16
1977	16.2
1978	15.9
1979	16.4
1980	18.3
1981	20
1982	21.9
1983	22.3
1984	21.5
1985	20.7
1986	20.5
1987	20.3
1988	19.5
1989	19.6
1990	20.6
1991	21.8
1992	22.3
1993	22.7
1994	21.8
1995	20.8
1996	20.5
1997	19.9
1998	18.9
1999	17.1
2000	16.2
2001	16.3
2002	16.7
2003	17.6
2004	17.8
2005	17.6
2006	17.4
2007	18