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Obesity in the United States: The Food Environment and How It Is Linked to Obesity

By

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Introduction

The rising obesity rates have been constantly discussed in the media, academia, science, and society in the United States; from root causes and possible solutions to effects on individual health and the health of our nation. In my thesis, I focus on the social and economic causes of obesity, especially on the food environment in the United States. My ultimate goal is to effectively argue that obesity a problem rooted in society, often caused by factors such as the price of food, the availability of food, and the mass marketing of food to both children and adults.

In chapter one, I provide a brief background on obesity in the United States, outlining the consequences of obesity, and possible explanations for why obesity rates have risen in the United States. I use chapter one to stress the importance of the rising obesity rates in the United States and to frame my research for chapters two through four. In chapter one, I begin with an explanation of the individual health consequences of obesity and the economic burden it has put on our health system. The individual health consequences of obesity include increased risk of coronary heart disease, type 2 diabetes, cancer, hypertension, dyslipidemia, metabolic syndrome, stroke, liver and gallbladder disease, sleep apnea, respiratory problems, osteoarthritis, gynecological problems such as infertility, and psychological problems including depression and anxiety (Centers for Disease Control and Prevention 2011). All of these individual health consequences

related to obesity lead to added pressure on the healthcare system in the United States, contributing almost \$147 billion of added health care costs annually.

Once I established the consequences of obesity for public health and individual health, I address the many explanations researchers have for rising obesity rates in the United States, focusing on the built environment including where we live, work, and play, and the food environment, including advertisements, food prices, accessibility of healthy foods, nutritional information, and food in schools. I conclude chapter one by framing my future research around three societal contributors to obesity; the accessibility and affordability of healthy food in Schenectady and Niskayuna, New York, and the influence media and advertising have played in purchasing and consumption patterns across the U.S.

In chapter two I focus on the societal influence in America's obesogenic environment through media and advertising. I discuss many advertising mediums including print, screen, and digital advertisements, highlighting the different ways they have influenced purchasing and food selection. I specifically address television and film, Internet, interactive content including contests and sweepstakes, and in-school marketing. I provide evidence from numerous researchers that advertisements do in fact have power over decision-making and purchasing patterns, especially children's food choices. I realize that advertisements and media are linked to food choices, but there are other factors that go into food selection and purchasing, which I address in chapters three and four.

In chapter three I focus on where people purchase and eat certain foods, looking directly at the accessibility and availability of healthy foods in local food stores in Schenectady and Niskayuna, New York. I first identified local food stores and categorized them by supermarket, grocery store, and specialty store. I visited 22 stores and surveyed them for healthy food options, including fresh fruits and vegetables as well as frozen and canned options, meat and poultry, low-fat dairy products, and whole-wheat bread and pastas. I found that supermarkets in both Schenectady and Niskayuna were the best source for healthy food offerings, with the widest varieties. Local specialty stores were the next best source of healthy food, as some of them have in-store butchers for Halal meats, and other international food options. Grocery stores had the most limited variety of healthy foods, most of them only offering healthier snack foods such as peanuts and sunflower seeds.

Once I established where individuals could purchase healthy foods in Schenectady and Niskayuna, I looked to understand how food prices vary between store types and towns. While visiting each store, I also recorded the prices of healthy foods when available. I found that supermarkets in both Schenectady and Niskayuna offered the lowest prices for all healthy foods. Thus, I concluded that supermarkets must be made accessible to all individuals in all neighborhoods, as they are the best source of healthy food and have the best chance of supporting a balanced diet.

Chapter One

The Ins and Outs of Obesity: From the Environment We Sustain, to the Environment that Sustains Us

The links between food and obesity have been at the center of attention in the United States today, from academia, health, and science, to politics, news, and media. The Surgeon General has stated “obesity was a leading cause of preventable death and was only surpassed by smoking as the number one cause of avoidable death in the United States” (U.S. Department of Health and Human Services 2001). According to the United States Department of Health and Human Services and the Centers for Disease Control and Prevention (CDC), rates of obesity in children have doubled since 1980, and have tripled among adolescents such that 17%, or about 12.5 million children are obese (Centers for Disease Control and Prevention 2011). The CDC recorded that in July of 2011, about one-third of US adults, or 33.8% are obese (Centers for Disease Control and Prevention 2011). It is the American population of obese people that continues to grow beyond control.

The CDC defines obesity for both adults and children by Body Mass Index (BMI), because for the average person, BMI correlates with their proportion of body fat to muscle and flesh (Centers for Disease Control and Prevention 2010). For adults, overweight and obesity ranges are determined by weight and height proportions, which translate to BMI; an adult with a BMI between 25 and 29.9 is considered overweight, and an adult with a BMI of 30 or higher is considered obese (Centers for Disease Control and Prevention 2010). For children, the CDC calculates obesity using BMI, but also takes age and sex into account because a child's body composition varies as they age, and varies between males and females. Thus, overweight is defined as a BMI at or above the 85th percentile and lower than the 95th percentile, and obesity is defined as a BMI at or above the 95th percentile for children of the same age and sex (Centers for Disease Control and Prevention 2011). Though obesity specifically refers to a range of weights and BMI, it is also linked to certain diseases and health concerns (Centers for Disease Control and Prevention 2010).

With the common definition of obesity provided, and the daunting numbers of individuals in the United States affected by obesity, we can move on to discuss the implications and explanations for such high rates of obesity. In this chapter I will discuss the health and economic implications of obesity, focusing on individual health implications and public health challenges. In the third section of this chapter, I address the proposed causes of such high obesity rates in the United States, including the built environment through urban and community design as well as transportation systems; and the food environment through prices, availability, nutritional information available,

school lunches, and advertising practices. My goal is to understand why obesity rates are so high in the United States so that I can continue with my own original research.

Implications of Obesity

Individual Health

Obesity has been deemed a “new national epidemic” from many branches of society in the United States because of its astounding list of related health risks (Kersh 2009, 296). Adults living with obesity are likely to suffer from many health conditions, many of which can lead to premature death and reduced quality of life (Centers for Disease Control and Prevention 2011; Kersh 2009; Khan 2011). According to Fazal Khan, obesity is related to over 20 major chronic diseases (Khan 2011). Some of these diseases include coronary heart disease, type 2 diabetes, cancer (endometrial, breast, and colon), hypertension, dyslipidemia, metabolic syndrome (a combination of high blood sugar, high blood pressure, high triglycerides, and high cholesterol), stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis, and gynecological problems such as infertility (Centers for Disease Control and Prevention 2011). Many obese individuals also suffer from psychological disorders such as depression and anxiety (Centers for Disease Control and Prevention 2011). Any combination of these can lead to premature death; in 2000 approximately 400,000 deaths from obesity and related diseases were reported (Rashad and Grossman 2004).

For children, the consequences of obesity are especially harsh. According to the CDC, obese children are more likely to have high blood pressure and high cholesterol, type 2 diabetes, breathing problems such as sleep apnea and asthma, joint problems, fatty

liver disease, gallstones, and gastro-esophageal reflux, or heartburn (Centers for Disease Control and Prevention 2011). Similar to obese adults, obese children and adolescents are also at risk for social and psychological problems such as low self-esteem and depression (Centers for Disease Control and Prevention 2011). Obese children are now more than twice as likely to die before the age of 55 compared to healthy weight children (Khan 2011). If this trend is not reversed, America's current generation of children are likely to have a shorter lifespan than that of their parent's generation (Khan 2011). The Mayo Clinic, a well renowned hospital in Minneapolis, Minnesota, explains that the health issues associated with childhood obesity were at one point confined to adults (Mayo Clinic 2010). If obese children and teens remain obese, the linked conditions such as high blood pressure and liver disease are likely to become more severe throughout adolescence and adulthood.

Public Health and Economics

“The obesity epidemic is not only impairing the health of millions of Americans but also giving rise to billions of added dollars in health care spending. Climbing rates of obesity over the past decades are one of the predominant determinants behind surging progression of health care expenses in the United States.”
(Yang and Nichols 2011, 381)

The health consequences associated with obesity are dangerous for the individual, but are also costly when considering health care systems and economics. Lisa Powell and Frank Chaloupka (2009, 232) explain that “negative externalities resulting from significant health care costs of treating diseases and disabilities caused by obesity may be imposed in the form of higher private-group health insurance premiums and higher government expenditures by Medicaid and Medicare.” A 2009 study by the CDC

reported that the direct and indirect cost of obesity, health care for the diseases linked to obesity, could be as high as \$147 billion annually, a number based on figures from 2006 (Holden 2010).

This is an especially sensitive issue because there are great disparities in overweight and obese individuals by race, ethnicity, and socioeconomic status (SES) (Morrill and Chinn 2004). The highest prevalence of obesity has been found in both Hispanic men and women, exceeding 70% of the Hispanic population in America (Morrill and Chinn 2004). In women of lower SES, obesity has been found to be 50% more prevalent (Morrill and Chinn 2004). Unfortunately, it is the populations with high rates of obesity that are more dependent on government intervention on medical care costs through programs such as Medicaid (Yang and Nichols 2011).

The growing number of obese individuals in the United States has put unprecedented pressure on the health care system. It is estimated that obesity-associated medical costs per person per year contribute an additional \$170 - \$1,500 to all individual health care bills, obese or not, an approximate 27% increase in health care costs among the working-age population from 1987 to 2001 (Yang and Nichols 2011). Since 2001, per capita spending on health care has risen to \$4,550 (Elmendorf 2010). The Congressional Budget Office (CBO) estimates that with current rates of obesity and health costs, by 2020 per capita spending on all health care for adults will rise by 65%, from \$4,550 in 2007 to \$7,500 (Elmendorf 2010).

The newly enacted comprehensive health care reform law titled Patient Protection and Affordable Care Act (PPACA) will put more pressure on the health care system, as

the rates of obesity increase (Yang and Nichols 2011). It is reported that individuals with a BMI greater than 35 (morbidly obese individuals) account for 37% of the obese population, but are liable for 61% of additional medical expenditures (Yang and Nichols 2011). With pressure building on the health care system and costs rising, obesity has become a public health issue of epic proportions that must be dealt with immediately.

Explanations

Doctors, scientists, and government agencies all agree that obesity has become a public health issue, but cannot find a common explanation for what has caused the rapid increase of obesity in America. According to the CDC, obesity and body weight are related to genetics, metabolism, behavior, environment, culture, and socioeconomic status (Centers for Disease Control and Prevention 2011). Similarly, the National Institute of Health (NIH) lists the causes of obesity as genetic factors, environmental and social factors, and culture factors (National Institute of Health 2008). The Mayo Clinic reports the causes of obesity with more detail: inactivity, unhealthy diet and eating habits, pregnancy, lack of sleep, and certain medications such as antidepressants, anti-seizure medication, diabetes medication, and antipsychotic medications (Mayo Clinic 2011). However, all institutions and groups agree that weight gain occurs when average daily calorie intake is greater than output (Centers for Disease Control and Prevention 2011; Mayo Clinic 2011; National Institute of Health 2008). It is necessary to find a common understanding of the societal and individual causes of weight gain and obesity to implement effective preventative and control strategies.

The Built Environment

“It’s in those sprawling suburbs, ironically enough, that America’s long love affair with cheap food may have met its match. Out there, you drive everywhere – especially to fast-food restaurants, giant supermarkets, and vast club stores that sell all manner of groceries in Brobdingnagian sizes. Out there, the cost of food in relation to income is probably at its lowest. And out there, people are fat”
(Akst 2003, 38).

Addressing obesity from a “built environment” angle requires the consideration of physical characteristics linked to obesity prevalence such as dependence on personal cars and differences between urban, suburban, and rural life (Adler and Stewart 2009). Khan (2011, 388) explains that the relationship of obesity with the built environment is complex in that “the built environment can both facilitate and hinder physical activity and healthful eating.” Khan (2011, 388) continues as he explains the built environment is “defined as all of the physical parts of where we live, work, and play.” Mia Papas and fellow researchers (2007) explain that “the environment can be thought of as all that is external to the individual, with the term ‘built environment’ encompassing aspects of a person’s surroundings which are human-made or modified, as compared with naturally occurring aspects of the environment” (See also Hayne, Moran and Ford 2004). Within this built environment framework is transportation systems, street zoning, parks, stairs, and public spaces (Adler and Stewart 2009; Cohen 2008; Hayne, Moran, and Ford 2004).

According to Cohen (2008, S140), the human race has been developing “labor-saving devices” and other shortcuts throughout our history, making life “easier” for people and causing total energy expenditure required for survival decline (Cohen 2008, S140). The wide use of the elevator and escalator, and the personal car has decreased our dependence on our own two feet, limiting physical activity each day (Hayne, Moran, and Ford 2004). The built environment is essential when considering physical activity and its

relationship to obesity (Adler and Stewart 2009; Cohen 2008; Hayne, Moran, and Ford 2004).

Though the built environment encompasses all where we live, work, and play, when addressing physical activity and obesity, we must focus specifically on community design (differences between urban, suburban, and rural life), neighborhood makeup (land use and perceived safety), and transportation systems (Booth 2005; Cohen 2008; Papas et al. 2007).

Suburbanization and Urbanization

Following World War II, the grid-based community system diminished in popularity and the disconnected suburb rose to power; “community design favored disconnected suburbs that were designed with automobile traffic, not pedestrian traffic, in mind” (Khan 2011, 389). Our built environment has undergone countless changes through urbanization and suburbanization; the physical design of our cities, towns, neighborhoods, and communities encourages convenience and both time and energy-saving over recreation and physical activity (Akst 2003; Hayne, Moran and Ford 2004; Rundle et al. 2007). In most suburban areas, residential housing is kept separate from commercial and retail destinations, making access difficult for social pedestrians and bikers (Booth 2005; Rundle et al. 2007). Booth (2005, S110) writes, “for example, safer neighborhoods, which include a mixture of houses, commercial, retail, and recreation destinations, often result in more physical activity and social capital and less overweight and obesity.”

When considering urban and suburban areas, accessibility and convenience as well as safety, are primary concerns related to physical activity and obesity (Booth 2005; Rundle et al. 2007). In urban areas, pedestrian access, or walkability, is sensitive to population density and safety, as well as aesthetic concerns like presence of graffiti and litter (Booth 2005; Papas et al. 2007). Researchers have agreed that mixed land use areas with sidewalks are the safest and also the best for encouraging physical activity, “residents in neighborhoods with more available physical activity resources, including sidewalks and safe streets, report higher activity levels (Booth 2005, S111).

Zoning laws in suburban areas mandate specific distances between schools, commercial stores, and residential areas, limiting residents’ ability to travel by foot (Adler and Stewart 2009; Akst 2003). The typical suburban community is made up of small neighborhoods with cul-de-sacs at the center connected by high-speed roads make walking as a means of transportation impractical and near impossible (Adler and Stewart 2009; Akst 2003; Cohen 2008; Hayne, Moran, and Ford 2004; Khan 2011). Similarly, in poorer communities, access to sidewalks, bike routes, clean, outdoor play spaces, and fear of crime and safety increased dependence on public and private transportation (Adler and Stewart 2009; Hayne, Moran, and Ford 2004; Khan 2011).

Current transportation systems and urban design encourage use of the automobile, so much that in California, research suggests that individuals who spend more time in motor vehicles are more likely to be obese (Adler and Stewart 2009). Specific examples of automobile autonomy include the expansion of the interstate highway system and suburbanization (Akst 2003, Rundle et al. 2007). In a study conducted on the built environment in New York City and its relationship to obesity rates, researchers found that

individuals living in “pedestrian-friendly” areas, determined by density of subway and bus stops, population density, and an even mix of residential and commercial land use, have “significantly lower BMI compared with other New Yorkers” (Rundle et al. 2007). These findings suggest that there is a correlation between the built environment, specifically access to pedestrian modes of transportation, and obesity rates.

Though the built environment can influence physical activity levels through urban, suburban, and neighborhood design as well as through transportation systems, the social environment has a more direct influence to what we put in our bodies, and what we put out (Adler and Stewart 2009; Cohen 2008; Watkins et al. 2008).

The Food Environment

“Cheap food has shaped not just our bodies but our country and our culture” (Akst 2003, 33).

The food environments in the United States have been recently deemed “toxic,” as consumers are encouraged to overindulge three times a day, constantly bombarded with advertisements for unhealthy foods and drinks, and often receiving misleading and inadequate nutritional information (Hayne, Moran, and Ford 2004). The toxic food environment, or “obesogenic food environment,” encourages rising obesity rates through

“Expanding portion sizes, foods high in fat, sugar (or artificial sweeteners like corn syrup), and sodium, the ubiquitous availability of food at outlets ranging from gas stations and drug stores to bank lobbies and elementary schools; and the incessant advertising of high-fat, low-nutrition foods” (Kersh 2009, 300).

Researchers, scientists, and doctors have found that intake of fats, snacks, and sugar-rich foods, soft drinks, and fast foods is found to be associated with greater energy intake, higher BMI, and obesity (Kersh 2009; Powell and Chaloupka 2009; Seiders and Petty 2004). These fattening foods have been found to be less costly in price than more nutritious, wholesome foods such as fresh produce and meats (Kersh 2009; Powell and Chaloupka 2009; Seiders and Petty 2004). Thus, when addressing obesity in America, we must consider food prices and availability, portion sizes, nutritional information, and food advertisements.

Food Prices

One of the most problematic factors of our current food environment is the low price of a calorie, which as been shown to be substantially cheaper when attained from an unhealthy source (Powell and Chaloupka 2009; Seiders and Petty 2004; Ford and Dziewaltowski 2008). Experts blame government subsidies on specific grains and crops such as corn and soybeans for price deflation, overproduction, and thus the extensive processing of our foods (Seiders and Petty 2004; Kersh and Marone 2002). Nutrition expert Marion Nestle writes, “The single most important problem with food in this country is that it is vastly overproduced. The single most important nutritional problem is obesity. These issues are clearly related, and cheap food is a factor in both” (Akst 2003, 38). As people value low cost and high benefit, cheap food is often favored for its convenience and low prices (Akst 2003; Powell and Chaloupka 2009; Seiders and Petty 2004). Unfortunately, it is not simply that our food is cheap, but the issue is the draw of inexpensive food to specific groups of people, and the hidden costs (obesity, health care

pressures, etc.) that are not reflected in the true price of food prices (Akst 2003; Powell and Chaloupka 2009; Seiders and Petty 2004).

Powell (2009) reports that energy intake from fast food and “away-from-home sources” has increased with rising obesity rates. Studies have looked into fast food consumption, focusing on the “real price of food and the relative low cost and convenience of energy dense foods...[as] key contributors to overweight” (Powell 2009). Since researchers have found a correlation between higher fast food price and lower BMI, the link between food prices and obesity has become a central focal point to addressing obesity (Powell 2009; Powell and Chaloupka 2009). In her own study, Powell (2009) found that “higher fast food prices are statistically significantly related to decreases in adolescent BMI.” This evidence points towards price elasticity and inelasticity for fast food; such that consumption habits are often dependent on changing prices (Powell 2009; Powell and Chaloupka 2009).

In similar studies, researchers have found that individuals are sensitive to price changes in food such that purchasing patterns are reflect fluctuating prices (Powell and Chaloupka 2009). For example, “ a 50% reduction in low-fat snack vending prices was found to increase the sales of low-fat snacks by 127 percent” (Powell and Chaloupka 2009, 234). Powell and Chaloupka (2009) also reported increases in fruit and salad sales in high school cafeterias after a 50% price reduction. With these findings, Powell and Chaloupka and others (French, Story, et al. 1997; Horgan and Brownell 2002; Jeffery et al. 1994; Powell and Bao 2009) have found a correlation between food prices and patterns of purchase.

For lower SES individuals, budget constraints determine food purchases and consumption, contributing to dependence on cheap, high-fat, high-energy foods (Powell and Chaloupka 2009, Seiders and Petty 2004; Larson, Story, and Nelson 2009). Researchers have found that higher prices of beef have been associated with anemia, and higher prices for fast food were associated with higher fiber intake, lower saturated fat, and better diet (Larson, Story, and Nelson 2009; Powell and Chaloupka 2009). These studies, among others, establishes the idea that most often individuals purchase and consume based not on quality and taste, but based on price, pointing towards the affordability of food (Larson, Story, and Nelson 2009; Powell and Chaloupka 2009; Ford and Dzewaltowski 2008). Some results suggest that availability of unhealthy foods in specific neighborhoods discourage healthy eating among low SES populations; thus, food prices are not the only constraint for low-income individuals (Ford and Dzewaltowski 2008; Galvez et al. 2007; Powell and Chaloupka 2009).

Availability

Many researchers have questioned the relationship between geographical region, city, town, or neighborhood and availability of retail food stores and fast food restaurants, geographical region (etc.) in availability of healthy foods and fresh produce, and finally, rates of obesity among individuals and groups exposed to poor-quality, cheap food environments (Ford and Dzewaltowski 2008; Galvez et al. 2007; Seiders and Petty 2004; Powell and Chaloupka 2009). Rundle and fellow researchers (2009) write, “There is a growing understanding that the availability of residential neighborhood resources that support physical activity and healthy food choices may influence obesity rates.” Other

researchers have found correlations between proximity to supermarkets, fast food establishments, and diet and weight (Rundle et al. 2009).

In researching food prices and obesity patterns based on geographical location, many researchers have found links between obesity and SES, as well as race (Ford and Dziewaltowski 2008; Seiders and Petty 2004; Powell and Chaloupka 2009; Galvez et al. 2007). Some researchers have found a correlation between race, SES, and food store availability, such that fewer supermarkets are located in poorer, often minority communities, than in wealthier, Caucasian neighborhoods (Galvez et al. 2007; Rundle et al. 2009). Some researchers have found that “compared with US adolescents living in newer suburbs, those living in rural working-class, exurban, and mixed-ethnicity urban areas were approximately 30 percent more likely to be overweight, independent of individual SES, age, and ethnicity” (Wang and Beydoun 2007, 19). Other studies have found a higher density of small grocery stores and fast food restaurants, and almost no fruit and vegetable markets, bakeries, specialty stores, or natural food stores, in low-income neighborhoods (Galvez et al. 2007, 625).

In Chicago, researchers found that low-income neighborhoods are underserved by supermarket chains, such that the north side of the city, the more affluent area, has 50% more supermarket stores than the south side (Seiders and Petty 2004). Retail stores’ fears of low profitability in low-income neighborhoods is called “retail redlining,” and is a problem in urban areas throughout the United States (Seiders and Petty 2004). With the abundance of fast food, and lack of fresh produce in low-income and non-white neighborhoods, researchers have found a correlation between SES and race, nutrition, and obesity rates (Galvez et al. 2007).

In a similar study in New York City, researchers found that access to healthy food stores, supermarkets and fresh vegetable and fruit markets, is directly associated with lower BMI and lower obesity rates (Rundle et al. 2009). In their conclusion, Rundle and fellow researchers (2009) explain that the food environment is “significantly” correlated to weight, diet, and obesity prevalence. These studies highlighted point to geographic location and food accessibility as a variable in obesity rates such that obesity, in many instances, is a side effect of the food environment (Galvez et al. 2007; Rundle et al. 2009; Seiders and Petty 2004).

Nutritional Information

Unfortunately, it is not exclusively food prices and availability of food that dictate purchasing power and obesity rates, but also lack of accurate nutritional information, which prevents individuals from making educated and informed decisions (Hayne, Moran, and Ford 2004; Seiders and Petty 2004). Nutritional information availability is currently a controversial topic among policymakers, because consumer interest for health is conflicting with corporate interests for profit and business (Seiders and Petty 2004; Kersh 2009). “In certain food industry sectors, companies (e.g., fast-food restaurant chains) providing relevant dietary information incur costs and potentially discourage consumption of the entire product class” (Seiders and Petty 2004, 157). According to a poll by the New York City Department of Health, consumers “neither know nor estimate accurately the calorie count of food purchased in restaurants...respondents were more likely to guess that Denny’s French toast and syrup (1,003 calories) had fewer calories than fried steak and eggs (464 calories)” (New York City Department of Health and

Mental Hygiene 2008, 7). There is clearly a misconception in regards to calorie content of restaurant food, contributing to uninformed choices.

Since New York City passed legislation requiring chain restaurants to post calorie information, some groups have changed their eating habits, and others have not (Kersh 2009; Hartocollis 2009). However, it is unclear who those groups are, and why they are changing their fast food purchasing patterns (Bollinger, Leslie, and Sorenson 2010). For those who have changed their eating habits since calorie information has been posted, it is unclear whether changes are related to the calorie postings (Seiders and Petty 2004; Kersh 2009; Hartocollis 2009). A study by New York City's Health Department found that Subway customers purchased items with 48-92 fewer calories after seeing calorie information posted (New York City Department of Health and Mental Hygiene 2008; Kersh 2009). Despite this information, there has not been enough research conducted to find true correlational evidence that calorie posting alone has in fact the power to change eating and buying habits, as many values such as price, calories, and situation (time for only one meal that day, severe hunger) are considered when making a purchase. For instance, some individuals may value price more than nutrition (number of calories), and therefore be unaffected by a menu with calorie posting (Gerend 2009; Seiders and Petty 2004; Powell and Chaloupka 2009).

Schools

More than 95% of American children and adolescents are enrolled in public and private schools, over 48 million students, making schools responsible for teaching values of nutrition, physical activity, and healthy lifestyles (Story, Nannery, and Schwartz 2009;

Story, Kaphingst and French 2006). Children and adolescents spend about seven hours per day at school, for 180 days a year, consuming between 19 and 50 percent of their daily total calories at school (Story, Nanney, and Schwartz 2009; Story, Kaphingst, and French 2006). The school environment has a powerful impact on what children eat; making schools both responsible for decreasing current obesity rates while preventing future increases in obesity rates (Story, Kaphingst and French 2006; Morrill and Chinn 2004; Gustafsson 2002).

Despite the responsibility schools have for educating children on academics and lifestyle, children in schools are vulnerable to unhealthy lifestyles (Hayne, Moran, and Ford 2004; Morrill and Chinn 2004; Story, Kaphingst, and French 2006). as schools feature fast food outlets, constant food related advertisements through in-school media and vending machines, and decreased exposure to physical activity (Hayne, Moran, and Ford 2004; Morrill and Chinn 2004; Story, Kaphingst, and French 2006). The school food environment reflects both current United States federal government policies through school lunch and breakfast programs like the National School Lunch Program (NSLP), and also “competitive foods,” or fast food outlets, vending machines, snack bars, and school stores by national brands (Story, Nanney, and Schwartz 2009; Hayne, Moran, and Ford 2004).

“Competitive foods” currently dominate the school food environment; in American public schools, nineteen out of twenty high schools have vending machines that sell soda, and one out of every five schools contains a fast food outlet such as McDonald’s (Morrill and Chinn 2004; Story, Kaphingst, and French 2006). According to a study published by the CDC in 2007, “33% of elementary schools, 71% of middle

schools, and 89% of high schools had a vending machine or a school store, canteen, or snack bar where students could purchase food or beverages;" in those schools, "the most common beverages sold were sports drinks, sodas, and fruit drinks, and the most common foods sold were higher-fat salty snacks" (Story, Nanney, and Schwartz 2009, 73).

Fortunately, since the CDC study was completed, the government has begun introducing programs and incentives to states and school districts to reduce the sales of competitive foods (Centers for Disease Control and Prevention 2009; Story, Nanney, and Schwartz 2009).

The School Health Policies and Programs Study (SHPPS) conducted by the CDC found that students consumed more than 150 calories from competitive, low-nutrition, energy-dense foods found in most vending machines and snack bars (Story, Nanney, and Schwartz 2009; Story, Kaphingst, and French 2006). "Competitive foods sold to students are displacing fruits and vegetables and other healthful foods and contributing to excessive fat and saturated fat intake" (Story, Kaphingst, and French 2006, 116). A study by Kubik, Lytle, and Story (2005) found that students' BMI increased by 0.10 BMI units for every additional food practice (fundraising, vending machines, a la carte options) permitted at the school, suggesting exposure and access to competitive food can increase weight gain in students. Given this information, it is vital that schools address obesity and the presence of certain foods on school grounds.

Federal government policies surrounding school lunches have improved in the past ten years to address the "increasing incidence and prevalence of [obesity] among children and adolescents (Hayne, Moran, and Ford 2004, 396). Currently, the NSLP, a United States Department of Agriculture (USDA) program started in 1946, provides

lunch to about 25 million American children each school day (Story, Nanney, and Schwartz 2009; Hayne, Moran, and Ford 2004). The NSLP sets regulations on the food schools can serve as the USDA also reimburses school districts for their food purchases if they abide by the NSLP regulations stated (National School Lunch Program 1988). The original NSLP document states that “the Department provides States with general and special cash assistance and donations of foods acquired by the Department to be used to assist schools in serving nutritious lunches to children each school day...and shall to the extent practicable, ensure that participating children gain a full understanding of the relationship between proper eating and good health” (National School Lunch Program 1988). The Food and Nutrition Services sector of the USDA explains that the NSLP is a federally assisted meal program, providing low-cost or free lunches to more than 31 million children each day (Food and Nutrition Services 2011).

Unfortunately, due to space and time limitations, many school cafeterias offer lunch as early as 10:00 am and as late as 1:30 pm, encouraging students to eat snacks and/or replace meals with snacks (Story, Kaphingst, and French 2006). While the NSLP must meet federal nutritional guidelines, most schools do not exclusively offer the NSLP, meaning students often make other food purchases a la carte or in vending machines, preventing true support from the NSLP (Hayne, Moran, and Ford 2004; Story, Nanney, and Schwartz 2009; Story, Kaphingst, and French 2006).

Despite attempts to implement the NSLP and other federal programs to encourage healthy eating, schools and students remain influenced by marketers and food retailers through in-school advertisements on vending machines, billboards, and company sponsored material and events (Morrill and Chinn 2004; Hayne, Moran, and Ford 2004).

School administrators have an economic incentive to allow competitive food offerings and advertisements throughout school grounds, as school districts have negotiated contracts for product sales,

“These ‘pouring rights’ contracts typically involve substantial lump-sum payments to school districts and additional payments over five to ten years in return for exclusive sales of one company’s products in vending machines and at all school events...Many contracts increase the share of profits schools receive when sales volume increases, further encouraging schools to promote consumption” (Story, Kaphingst, and French 2006, 117).

Because schools generate revenue from the sale of competitive foods, making changes and mitigating sales of competitive foods involves financial risk and/or revenue loss for the schools (Story, Kaphingst, and French 2006; Morrill and Chinn 2004; Seiders and Petty 2009). A school district’s involvement with large corporations and advertising schemes contradicts the idea of putting children first, while also creating a conflict of interest between the health and nutrition messages children should be receiving and the advertisements they are faced with daily (Story, Kaphingst, and French 2006; Story, Nanney, and Schwartz 2009; Morrill and Chinn 2004; Hayne, Moran, and Ford 2004).

Advertising

The food system has become dependent on advertising and marketing such that food service and food retailers have contributed the largest increases in advertising expenditures in the United States in the past twenty years (Seiders and Petty 2004; Hayne, Moran, and Ford 2004). “Food companies compete fiercely for our food dollars and do everything they can to induce us to eat their products and to eat more food, regardless of the effects on waistlines and health” (Akst 2003, 38). Due to low cost for the manufacturer, food companies often use marketing incentives that include “super-

sizing” meals, and “buy one, get one free” (Seider and Petty 2004). For the company and manufacturer, the costs of size upgrading are extremely low, and the profits are high (Seiders and Petty 2004). These marketing schemes encourage the consumer to purchase larger portions and larger quantities of food (Hayne, Moran, and Ford 2004; Seiders and Petty 2004). For example, upgrading from “a 7-Eleven 16-ounce Regular Gulp soda to a 64-ounce Double Gulp soda adds almost 400 calories to the product, but only \$.37 to the price” (Seiders and Petty 2004, 154). Consumers see value in the low cost of upgrading or supersizing, and companies and manufacturers find more benefit than cost when supersizing their own products.

Advertisers not only target adults with purchasing power, but also target young children and teens, a group responsible for \$140 billion of individual spending a year (Morrill and Chinn 2004; Seiders and Petty 2004). Children and adolescents are especially vulnerable to advertising because they often do not understand the health consequences or the nutritional value of most food products (Seiders and Petty 2004; Morrill and Chinn 2004). Not only are children unaware of health consequences, but also young children cannot distinguish between television entertainment and commercial advertising (Seiders and Petty 2004). In fact, “critics charge that high fat/calorie products are inappropriately featured in Saturday morning television advertisements and that children...are vulnerable to advertisers” (Seiders and Petty 2004, 157; Kunkel et al. 2004; Nestle 2002). Other marketing mechanisms targeting children include character placement and toy giveaways in fast food meals, which creates a connection between toys and games, and food for children, ultimately giving children incentive to eat certain foods from specific companies (Seiders and Petty 2004, 155).

Future Research

For my own original research, I will focus on the simple idea that obesity and weight gain is caused by putting in more calories than one is putting out. Thus, I will begin my research by asking the questions; “Why are people eating too much food?” and, “Why do people purchase and eat certain foods?” To look further, I will focus on current government policies on food; especially the pricing patterns of fresh produce, meat, and poultry; the availability of fresh produce, meat, and poultry; and food advertising. Ideally, I will aim to conclude my research with an understanding of how we got here and what changes we can make to our government policies on food to decrease obesity rates in the United States.

My second chapter will focus on the motivations behind eating and buying, as I’ll research the current and controversial food advertisement strategies and schemes. I will consider current snack, beverage, and fast food advertisement strategies, focusing on those that utilize mass marketing and that target children. Some researchers have begun addressing advertising and marketing, and the competition over young consumer dollars (Seiders and Petty 2004; Akst 2003). To understand the extent to which food companies encourage children to purchase more, I will consider the largest fast food chains such as McDonald’s, and study current incentive programs like the infamous happy meal and the use of popular games like Monopoly, as well as television and movie characters to sell a specific brand and product. Ultimately, I want to understand the relationship between advertisements, buying incentives, and consumption so I can understand why both adults and children eat as much as they do, and why they prefer some foods over others.

In my third chapter, I will consider the pricing structure of food in the United States, from fresh produce, meat, and poultry, to prepackaged, processed foods and fast food. Not only will I look to see how prices determine purchasing patterns, but also I will look to understand why certain foods are more costly than others, and why other foods are cheaper. I anticipate to find that government subsidies for farmers producing soy and corn commodity crops have encouraged the processing of foods, ultimately causing overproduction and driving market prices down. To research this, I will look into current market prices for fast food, processed and packaged food, frozen meals, and also fresh produce, meats, poultry, and dairy. If infact people make decisions based on price, we must reconsider the pricing structure and subsidy system to decrease the production of commodity crops and instead encourage farmers to grow whole foods such as fruits and vegetables.

My next section will continue to explore why people purchase certain foods, but will focus less on price and more on availability and accessibility of fresh produce and meats compared to availability of processed foods and fast food. Some studies have already established a pattern between obesity patterns and geographical location (Ford and Dzewaltowski 2008), and others have found correlations between geographical location, socioeconomic status (SES), and demographics local food establishments (Galvez et al. 2007). I would like to delve deeper on this issue by focusing on New York City neighborhoods; by utilizing Census records and current maps of food outlets and markets in specific areas. I will especially focus on differences between neighborhoods with lower and higher SES. I expect to find that neighborhoods in New York with a lower SES will have more fast food options and small markets with a very limited

selection of fresh produce, meat, poultry, and dairy. This should help us understand why people purchase the foods they do, and why they purchase as much as they do.

At the end of my research, I hope to have a more complete understanding of why Americans eat as much as we do, and why we prefer certain foods, such that we can move forward with creating effective policy to limit the toxic food environment and encourage a more moderate relationship with food.

Chapter Two

Are Food Advertisements Making Us Fat?

Introduction

Since the early 1980's, corporations have been increasing their spending on advertisements, from television and film, to print, digital, and integrated media (Linn and Novosat 2008, 134). Many of these corporations have targeted their food and beverage advertisements at children, contributing to the \$10-15 billion dollars spent on food related advertisements a year (Eggerton 2007). Susan Linn (2004, 267) explains that “children between the ages of 2 and 18 spend almost forty hours a week outside of school engaged with media...including television, films, video and computer games, radio, and print materials, most of which is commercially driven.” As children and young adults spend countless hours immersed in media, so do adults, according to a study by the Council on Research Excellence, reporting that adults spend up to 8.5 hours “exposed to screens” from televisions and cellphones, to computers and tablets, with up to sixty-one minutes advertisements during those 8.5 hours (Stelter 2009).

Since obesity rates have risen, especially among children, and money spent on advertising targeting children has also increased, the World Health Organization (WHO) and the Institute of Medicine (IOM) have done extensive research on the relationship between advertising and childhood obesity. The WHO and IOM conclude that there is indeed a link between advertisements targeting children and childhood obesity.

Ultimately, the WHO and IOM write in their 2006 report that “the heavy marketing of high-calorie and low-nutrient foods and fast food outlets represents a probable increased risk for childhood obesity (McGinnis, Goodman, and Kraak 2006, 301-2). For example, in 2002, fast food giant Burger King spent about \$650 million dollars on television advertising to children, while McDonald’s spent over \$1.3 billion on advertising in the United States alone (Advertising Age 2003).

Food corporations and advertisers have gotten creative with their advertising schemes, ultimately utilizing familiar characters from television and cartoons and branding them with specific foods (Linn and Novosat 2008, 135). Children have become victims of branding, a 2007 study reveals, such that when three to five-year-olds were given a choice between McDonald’s-branded wrapping and unbranded wrapping, the participants preferred the McDonald’s food even though all of the food offerings were McDonald’s (Robinson et al. 2007, 796). The researchers conclude in this specific case that brand loyalty trumps “sensory input” such that children are influenced by market branding (Robinson et al. 2007, 796). Brand licensing, product placement, contests, promotions, and cross-branding have been so successful targeting children that they have gone so far as to follow children from the television at home, to the computer, tablet,

cellphone, to the movie theater and supermarket, and most alarming, into school (Linn and Novosat 2008, 136).

Researchers have concluded that children are especially vulnerable to advertising because children under seven and eight years old cannot differentiate television programming and advertisements (Kunkel 2001, 385). Advertising targeted to children has become controversial because “children are too young to understand a message’s persuasive intent [and thus] is inherently unfair and deceptive” (Kunkel 2001, 387). These advertisements prey on children’s weaknesses, and encourage them want and desire certain foods. This has become an ethical issue because advertisers are putting their own interests of profit before public interest of health. Corporations and advertisers are encouraging children to select unhealthy foods and to push their parents to purchase unhealthy foods for them, ultimately undermining parenting and healthy choices.

Advertising regulations are controlled by the Federal Communications Commission (FCC) and the Federal Trade Commission (FTC) (Linn and Novosat 2008, 135). The FCC and FTC struggle to find a balance between the interests of advertisers and corporations, and the interest of consumers, including children, parents, and all other citizens. The FCC and FTC must maintain free speech rights under the First Amendment, and must keep large corporations happy because they provide much funding and support. However, as government institutions, the FCC and FTC must keep public health and public interest at the forefront of all regulation.

In this chapter I will discuss many advertising mediums including print, screen, and digital advertisements and the different ways in which they have influenced

purchasing power and food selection, especially among children. My sections within the chapter will focus specifically on television and film, Internet, interactive content including contests and sweepstakes, and in-school marketing. I will review current research and findings on the links between advertising, eating habits, and obesity and hope to answer my main question: *why are obesity rates continuing to rise in the United States?*

Television, Film, and the Internet

Watching television is described by the United States Bureau of Labor Statistics (USBLS) as a “leisure activity” occupying 2.7 hours of leisure time per day, on average, for people fifteen years and older (US Bureau of Labor Statistics 2010). For children, the numbers are even higher, such that the average child spends between three and four hours watching television per day (AACAP 2011). With such attention to the television screen, it is no wonder corporations spend billions of dollars on television advertising per year. In fact, these corporations have gotten creative, many of them hiring child psychologists and anthropologists to better understand the consumer and to “exploit children’s developmental vulnerabilities” (Linn and Novosat 2008, 136). Children and young adults contribute to over \$200 billion in spending each year: the top categories youth spend on are candy and snack foods, soft drinks, fast foods, and cereals (McGinnis, Goodman, and Kraak 2006, 21). This is direct spending from the young consumer, and thus does not account for the money they encourage their parents and guardians to spend (Linn and Novosat 2008, 134).

One of the most powerful forms of advertising is the simple television commercial, which exploits weaknesses in the adult viewer, such as desire for acceptance, love, body image, happiness, and health (Marks 2011, 11). Some corporations evoke these emotions very effectively, for example; POM Wonderful, Dannon's Activia Yogurt and Kashi Cereal. Activia Yogurt targets middle-aged women by promising health benefits such as improved regularity (consistent bowel movements and stomach function) (Marks 2011, 11). Activia commercials feature Jamie Lee Curtis and groups of like aged women discussing how Activia has helped them, all raving about the *Bifidus Regularis* bacteria found in Activia, a supposed pro-biotic aiding in stomach regularity (Federal Trade Commission 2010, 1). Kashi cereal uses the "all-natural" platform to increase their sales of cereals, snack bars, and protein shakes (Kashi 2012). POM Wonderful makes claims that their juices can prevent and treat heart disease, fight prostate cancer, and improve erectile dysfunction (O'Donnell 2012). The FTC has recently challenged POM Wonderful, Kashi, and Activia for their health claims in Supreme Court cases, looking to determine if these corporations are making deceptive advertisements (O'Donnell 2012). It is clear that these advertising campaigns were effective in sparking sales, giving the FTC reason to challenge POM Wonderful, Kashi, and Activia.

Other advertising tactics for children include licensed characters; bringing characters from the television screen, the movie theater, and computer to food packaging and to restaurants. Unfortunately, most of the foods advertised in the media are snack foods and candy (McGinnis, Goodman, and Kraak 2006, 21). If the majority of Americans spend three hours a day lost in the television alone, they are exposed to over

23,000 to 40,000 television commercials per year. With such high rates of obesity in the United States, as well as so much attention focused on food through advertising, it is important to address to extent to which advertising has played a role in individual food choices. In this section I will focus on the use of commercial advertisements, brand licensing, and product placement in all media platforms from television and film, to the Internet, books, and in school and how our constant exposure to such advertisements has contributed to rising obesity rates in America.

Commercials

With the increase in obesity rates in children and the time children spend each day watching television, the *American Journal of Public Health* completed a study focusing on the commercials aired during prime-time television for children aged six to eleven years old (Linn and Novosat 2008, 134). The *American Journal of Public Health* found that during prime time television for children, 83% of commercials aired were for snacks, fast foods, and sweets (Harrison and Marske 2005, 1568). The researchers explain that “a diet based on foods advertised on these programs would exceed U.S. Department of Agriculture Recommended Daily Values of fat, saturated fat, and sodium” (Harrison and Marske 2005, 1568). In a separate study, researchers found that between 5:30 and 7:30 p.m. during the week on the Cartoon Network, there were twenty food commercials, or one every six minutes (Thompson 1999). In 2003, Sunday afternoon television on Nickelodeon, featured 40 food commercials in six hours of television, or one food related commercial every nine minutes (Linn 2004, 371). Though these studies do not feature the most current research, with no change in regulation for advertising, it is unlikely that corporations have since changed their advertising strategy.

Researchers have found evidence that after viewing commercial advertisements, children are able to identify specific brands and products (Linn and Novosat 2008, 137; Borzekowski and Robinson 2001, 42-46). In a widely cited study, Borzekowski and Robinson (2001) found that after seeing a 30-second food commercial, a child as young as two-years-old can identify the specific brand. Companies have targeted young children, hoping to build a loyal brand following and maintain that loyalty through adulthood (Borzekowski and Robinson 2001, 43). Kjos (2002) explains that “corporations are trying to establish a situation where kids are exposed to their brand in as many different places as possible throughout the course of the day or the week, or almost anywhere they turn in the course of their daily rituals” (Linn and Novosat 2008, 137). When young children are exposed to brands and products, they become familiar with them after time, and eventually gain trust and show preference for those brands (Borzekowski and Robinson 2001, 43; Linn and Novosat 2008; Kjos 2002). Children show preference for food brands in the purchases they make, and the purchases they influence through their parents (Borzekowski and Robinson 2001, 43; Linn and Novosat 2008; Kjos 2002). Thus, food advertisements are linked to influence of food choices for children and adults.

In one of the first studies on advertising and the influence ads can have on children, Charles K. Atkins (1978, 41) reports that after seeing television advertisements for specific cereals, children often requested that their parents purchase that brand of cereal. In another study, Stoneman and Brody (1982) found that children exposed to commercials while watching television requested specific products significantly more than children who did not see commercials during the programming. After watching a

television show with or without food commercials, children that watched the food commercials requested a greater number of products than children who did not see the food advertisements (Stoneman and Brody 1982; Chernin 2008, 105). Similarly, Galst and White (1976) found a positive correlation between the time children spent watching television and the number of food requests children voice to parents (Chernin 2008, 105).

Researchers agree that there is indeed a link between what kids see on television and in commercials and what kids prefer to eat and purchase (Linn and Novosat 2008). If food companies were advertising for healthy, nutritious snacks and meals, this would not pose a health issue as it does now. Unfortunately, the most frequent foods and beverages advertised are “the antithesis of what would be recommended for children’s health” (Avery, Mathios, Shanahan, and Bisogni 1997, 218). In a study by Signorielli and Lears (1992), researchers found that “commercials were dominated by unhealthy foods, nutritional messages were unhealthy, and programming rarely incorporated meals” (Avery, Mathios, Shanahan, and Bisogni 1997, 218). The IOM concludes that “commercials shape children’s food preferences and short-term eating habits and increase the number of purchase requests children direct to parents” (Chernin 2008, 102). Researchers found that when children are present during shopping trips, parents often allow them to choose certain foods to avoid nagging and to save time (Chernin 2008, 102). With the majority of commercials containing advertisements for snack foods, candy, fast food, and soft drinks, it is no wonder children prefer and request these foods.

Brand Licensing

With the extensive time commercials air during television programming, the content of the commercials, and the apparent influence the commercials have on children, it is no wonder corporations spend millions of dollars a year on commercials alone. Children have proven able to identify familiar characters from television and film, and so corporations have extended their advertising campaigns beyond commercial content to brand licensing and product placement (Linn 2004, 370). Brand licensing is best described as “an image or logo [that is] leased for use on products other than the one it was created for” (Linn 2004, 370). With brand licensing, popular characters make their way from the television and movie screens and onto food packaging and into fast food restaurants (Linn 2004, 371). Brand licensing is especially influential on children, as many cannot differentiate between entertainment and advertisement, and most are easily convinced by their favorite “friends,” or characters (Linn 2004, 371; Nevius 2003, 37).

The links between food manufacturers and media programs create an advertising paradigm for both industries; media and television characters promote the television program while the food manufacturers and restaurants can use the popular characters to sell more of their product. Linn (2004, 371) explains that “once a program is associated with a particular brand, the program itself becomes an ad for that food...Tie-ins like these are designed to lure children into selecting foods associated with favorite movie or TV characters. They are also designed to keep children continually reminded of products.”

One of the most successful brand licensing campaigns to date is Kraft’s *SpongeBob Square Pants* Macaroni and Cheese, the consistently top selling macaroni and cheese since 2002 (Linn 2004, 371; Nevius 2003, 37). Due to the great success of *SpongeBob Square Pants* Macaroni and Cheese, Nickelodeon now features all of its

popular cartoon characters in its own line of fruit snacks (Linn 2004, 371). Kraft also features other popular television characters on their macaroni and cheese packaging and in the shape of noodles; *Blue's Clues*, *Fairly Oddparents*, *Dora the Explorer*, and *Go Diego Go!* Beyond macaroni and cheese, fruit snacks are another popular outlet for brand licensing; General Mill's and Kellogg's fruit snacks feature *My Little Pony*, *Polly Pocket*, *Tonka Trucks*, and *Animal Planet* (Linn and Novosat 2008, 138). Other successful brand licensing campaigns include popular films such as *Shrek the Third* and *Pirates of the Caribbean: At World's End*, which licensed characters on cereals, cookies, M&M's, Cheetos, Pop Tarts and McDonald's milkshakes (Linn and Novosat 2008, 137). All of these products feature popular characters and familiar faces, making eating a fun and entertaining experience for children.

Targeting children through brand licensing starts with the youngest of consumers: toddlers and infants and their favorite juices (Linn 2004, 371). Apple & Eve brand, Libby's Juicy Juice, and Mott's all feature bright-colored packaging with cartoon characters from *Sesame Street* and *Arthur* to *Rugrats* and *Dragon Tales* (Rant 2001, 68). Doctors began questioning brand licensing in 2001 when the *American Academy of Pediatrics* began worrying that babies and toddlers were drinking too much juice, rotting away their teeth and consuming too many empty calories (American Academy of Pediatrics 2001, 1210-1213). By targeting children at their youngest and most vulnerable, corporations create brand following and loyalty by confusing in children the line between food, consumerism, and entertainment. Of course, this would not be an issue if the corporations were advertising all whole grains, and fruits and vegetables.

Brand licensing is a successful and booming industry because it is effective in encouraging and influencing sales. In a 2005 study on food packaging and children's choices, Dr. Robert C. Atkins found that "appending a sticker of a recognizable Sesame Street character to food's packaging strongly affected children's food selection" (Linn and Novosat 2008, 139). Dr. Atkins found that branding helped to sell both healthy and unhealthy foods; when children were given unbranded packaging for chocolate and broccoli, only 22% of children selected the broccoli, and when an Elmo sticker was added to the broccoli packaging, 50% of children selected the broccoli (Linn and Novosat 2008, 139; Sesame Workshop 2005). This study shows that the youngest children are making their eating preferences based on the food packaging, not on the food itself. This is great news for advertisers, evidence that brand licensing is in fact effective. But for health professionals and those concerned with the health of our children, we must further consider the influence advertising does in fact have on all audiences, young and old alike.

Product Placement

The United States has the fastest growing market for product placement; increasing from \$1.5 billion in 2005 to \$3.7 billion in 2008 (Brandweek 2007; Quart 2008; Williams et al. 2011). According to Williams et al. (2011, 2), "product placement...is a marketing practice in advertising and promotion wherein a brand name, product, package, signage, or other trademark merchandise is inserted into and used contextually in a motion picture, television, or other media vehicle for commercial purposes." Product placement has become a popular alternative for advertisers looking to go beyond commercials; the widespread popularity of the TiVo and digital video recorder (DVR) has decreased the effectiveness of commercials (Almond 2007; Moore 2006, 1).

Rather than encourage direct sales, product placements aim to achieve audience exposure and attention, increase brand awareness and consumer recall, to encourage positive attitudes and evaluations of the brand, and to change purchasing patterns (Williams et al. 2011, 8).

Though product placement is illegal and prohibited in children's television programming, it is abundant in the most popular prime-time television shows. Product placement is a less direct way to feature a product, using popular characters and famous people to encourage consumers to select specific products and brands. In 2008 between January 1 and November 30, the top ten television programs featured 29,823 product placements (Williams et al. 2011, 4-5). One of the most famous and direct television product placements is on *American Idol*, a favorite television show for adults, teens, and pre-teens, where Coca Cola drinking glasses are featured constantly throughout the programming. *Business Week* magazine reports that Coca Cola paid \$20 million for just product placement on *American Idol* (Foust and Grow 2004, 77). From April to May of 2007, when *American Idol* was at its peak of popularity, 1.93 million to 2.4 million two-to-eleven-year-old children were exposed to Coca Cola's product placement (Linn and Novosat 2008, 139).

Many current prime-time television programs were created by the Family Friendly Programming Forum, part of the Association of National Advertisers (ANA) made up of a coalition of 40 advertisers, including Kellogg's (Linn 2004, 372). The Family Friendly Programming Forum has created numerous television programs including *Ugly Betty*, *Friday Night Lights*, and *Brothers & Sisters*, and *Gilmore Girls*, all popular prime-time television shows (ANA 2012). These shows also feature product

placement such as Healthy Choice Fresh Mixers on *Ugly Betty*, and Applebee's Restaurant in *Friday Night Lights* (ANA 2012). Though no longer on-air, the television program *Gilmore Girls* is another example of a successful product placement campaign where the two main characters eat PopTarts each morning for breakfast (Reyes 2002). According to the ANA website, the Family Friendly Programming Forum was created in 1998 because two powerful advertisers, Proctor and Gamble and Johnson & Johnson believed their advertisements campaigns were at risk because there were not enough popular family programs on prime-time television to attract viewers (ANA 2012). The Family Friendly Programming Forum promotes television programming that appeals to adults and children alike, free of plots with violence and sex, but not free of food marketing (ANA 2012; Linn 2004, 372).

While there are laws making product placement in children's television programming illegal, there are no restrictions for film or websites (Linn and Novosat 2008, 139). In the film *Spy Kids*, McDonald's food products were featured, while Burger King was featured in *Scooby Doo 2* (Minnow 2004; Linn and Novosat 2008, 140). The film *First Descent*, a snowboarding action film targeting an adolescent male audience, takes product placement to the extremes, as the film itself doubles as an advertisement for Mountain Dew (Lawton 2005, B4). In the film, snowboarders helmets and gear are all adorned with Mountain Dew logos, while Mountain Dew funds the entire project (Lawton 2005, B4).

Beyond film and television, product placement in online games and websites has been used extensively (Linn and Novosat 2008, 140). Research from six years ago suggests that over 98% of children's websites allow advertising, and more than two-

thirds of websites designed for children rely on advertising for revenue (Moore 2006, 1; Neuborne 2001). Since 2006, there have been no regulations passed that prevent corporations from advertising on children's websites, and thus we can only expect that more corporations have capitalized on the power of the Internet to advertise. With the rise in popularity of social media by individuals as well as corporations, children and adults are more exposed to online advertisements than ever before. Some advertisers find that online advertising is more captivating for young people, as advertisers can hold the attention of an individual for multiple minutes, compared to only thirty-seconds on the television (Moore 2006, 1). In fact, researchers have found that children spend about twenty-five minutes on a gaming site, most of which contain "brand immersion" (Ferrazzi and Benezra 2001; Moore 2006, 1).

Product placement in online games, video games and "immersive advertising" is a growing industry, worth \$1 billion (Linn and Novosat 2008, 140). Many online games and video games integrate product placement in their programs; in the online game *Everquest*, gamers can click a corner button with a Pizza Hut logo to have a pizza delivered in 30-minutes (Gentile 2005). In the world of *Neopets*, currently owned by Nickelodeon, players are encouraged to send friends a Reese's Puffs Cereal screensaver (Neopets.com 2005). Since the early 2000's, *Neopets* has incorporated brand advertising in their online world from companies including McDonald's, General Mills, Disney, and Heinz (Winding 2002, 17). Heinz reported that after placing EZ Squirt Ketchup on the *Neopets* website, they saw a 18% increase in product awareness (Winding 2002, 17). The product placement seen in *Neopets* and *Everquest* is more subtle, such that gamers and Internet users are not interacting directly with the advertisements.

A more direct online advertising scheme is through “advergaming,” which entails a game built completely around a product. A popular website since the early 2000’s, *Candystand*, consists of games highlighting Wrigley’s brand products including Lifesavers, Gummie Savers, and Wrigley’s Extra gums (Wrigley’s Candystand 2007). Other popular advergame websites include *nabiscoworld.com*, sponsored by Nabisco brands, and *postopia.com*, sponsored by Post cereals (Moore 2006, 5). Advergames not only confuse children between entertainment and eating, but also they keep food and snacks at the forefront of children’s minds (Linn and Novosat 2008, 140). Other online games and advergames require players to purchase products before they can access the websites, directly encouraging sales (Linn and Novosat 2008, 140). One popular game is the *SpongeBob Square Pants Bubble Trouble Cereal Game*, which targets the youngest of children and encourages them to watch *SpongeBob Square Pants*, to play his online games, and to purchase and eat his cereals (Linn and Novosat 2008, 140).

Product placement in video games and websites, and advergames are effective way for corporations to target specific audiences and keep them focused on their products. Moore (2006, 5) gives an example of an advergame that focuses on brand recall for gamers; “Nestle Push-up Frozen treats are popping up all over the place, and it’s your job to bop ‘em back down...’The brand package is the visual centerpiece of the game (it pops up repeatedly), making the brand easier to recall later.” Moore explains that in her research, there were a total of 546 online games all promoting food brands (Moore 2006, 5). All of these food brands are competing with one another for audience viewership and viewer recall.

Clearly, large corporations have specifically targeted children through television, film, and the Internet to build a brand loyalty, increase brand recall, and change buying habits. As noted before, the majority of corporations are advertising for foods and beverages high in fat and sugar, and low in energy. Of all that is being advertised, little to none of the brands or foods are recommended by the nutrition standards of the United States Department of Agriculture (USDA) (Linn and Novosat 2008, 134).

In-School Marketing

It is both surprising and upsetting that advertisers have found another way to target children and adolescents: through the public education system. It is expected that the media is an unrestricted space for advertisers, but is outrageous that schools are now open to advertisers. In 2000, the Government Accounting Office (GAO) referred to marketing in schools as a “growth industry” (Linn and Novosat 2008, 141). Currently, schools are still motivated to allow marketing and vulnerable to advertising because of their struggles to get the funding they need (Story and French 2004, 1). Advertisers are aggressive in the schools because they see students as a “captive audience,” consistent viewers day in and day out (Linn and Novosat 2004, 141).

Despite the interests of children, most public schools throughout the United States allow for advertising to increase revenues (Story and French 2004, 5). Snack food and beverage contracts with schools can generate up to \$1.5 million annually. Beyond the revenues generated from signing an exclusivity contract with beverage companies, schools also are incentivized with cash awards and equipment donations (Story and

French 2004, 5; Wechlser, Brener, Kuenster and Miller 2000). With such incentives, it is no wonder struggling school districts literally sell the school to generate revenues.

Direct advertising in schools encourages the sale of soft drinks, fast food, and snack foods by using corporate logos on everything from athletic scoreboards and banners to computer screen savers, textbook covers, and school newspaper advertisements (US General Accounting Office 2000). In 2008, nationally, over 94% of high schools, 84% of middle schools, and 58% of elementary schools allowed the sale of soft drinks, while more than half of middle schools and two-thirds of high schools allow the sale of candy and snack foods (Linn and Nososat 2008, 142; Story and French 2004, 5). Today, some local governments have encouraged public schools to prohibit advertising, but still many schools do allow advertising. In fact, Mark Grisanti (R-Buffalo) and Steven Englebright (D-Suffolk County) introduced a bill that would allow school buses to carry advertisements (Huehnergath 2011). Coca Cola and Pepsi not only encourage schools to sign exclusive “pouring rights,” but often force the schools to sign five-year contracts, locking the schools into their decisions (US General Accounting Office 2005).

Direct advertisements are most commonly seen on vending machines and in snack bars, on the inside and outside of school buildings, on school buses, in stadiums, gymnasiums, and fields, and in school newspapers and websites (Linn and Novosat 2008, 143; Story and French 2004, 3). Corporations post logos and images of their products throughout schools to develop strong product recall amongst students, and to keep their products at the forefront of their minds as students make food preferences and purchases (Linn 2004).

Other forms of direct advertising in schools are supported and directed by Cover Concepts, a company that distributes free textbook covers, posters, and other school supplies adorned with advertisements ranging from brands like McDonald's, Pepsi, Frito-Lay, M&M's, and General Mills (Linn and Novosat 2008, 143; Story and French 2004, 3). Cover Concepts explain that they, "place your brand directly into the hands of kids and teens in a clutter-free environment. [Working] in tandem with school administrators to distribute free, advertiser-sponsored materials" (Greenberg and Brand 2004, 7). Cover Concepts claims to reach over thirty million students in 43,000 schools and daycare centers nationwide (Story and French 2004, 3). Cover Concepts brings corporations and advertisements into the classroom, creating a link between reading and learning, and eating and consuming. Though there is no direct evidence showing that children who see Cover Concepts advertisements are influenced to make purchases, previous research does show that food choices and purchases by children are influenced by advertisements (Linn 2004; Linn and Novosat 2008; Story and French 2004).

In addition to direct advertisements in school hallways and around buildings, advertisers use corporate-sponsored television programs to put their brands at the forefront of students minds. One of the most controversial advertisers is *Channel One*, a news program developed by advertisers and designed for middle and high school students. *Channel One* offers schools ten minute news programming with two minutes of commercials. As of 2005, *Channel One* programming was shown to about eight million students in over twelve thousand schools (Channel One 2005; Greenberg and Brand 2004, 143; Linn and Novosat 2008, 142). Schools are encouraged to sign a contract with *Channel One* to create a more informed student body, and because schools are given the

television equipment including TV sets for each classroom, DVR, and satellites required for the programming (Greenberg and Brand 2004, 143; Story and French 2004, 3).

Schools that do sign a contract with *Channel One* must sign for three years, and agree to show the programming to at least 90% of the student body (Greenberg and Brand 2004, 143).

Channel One features ten minutes of current news programming designed specifically for middle and high school aged students, with two minutes of commercial content (Channel One 2005). Frequent *Channel One* advertisers are Pepsi, Mountain Dew, Snickers, and Kellogg's Pop Tarts (Linn and Novosat 2008, 142). According to Greenberg and Brand (2004, 5), in 2004 in one month of *Channel One* programming in and commercials there were 45 food commercials; 70% of the 45 were for fast foods, soft drinks, chips, and candy.

In April of 2007, Alloy Marketing purchased *Channel One* due to their financial struggles; Alloy Marketing is an advertising and marketing company focused on targeting children and adolescents (Linn and Novosat 2008, 142). According to a study completed by Greenberg and Brand (2004) on the impacts of *Channel One* on students in Michigan, students who viewed *Channel One* "wanted to buy more of the products they [saw] than those who were not exposed to the programming." The researchers found that students exposed to the advertisements gave positive product evaluations and expressed a desire to purchase the products (Greenberg and Brand 2004, 150).

Conclusions

It is clear that there is in fact a link between food advertisements and brand and product recognition among children and adults (Linn 2004; Linn and Novosat 2008; Moore 2006; Story and French 2004; Greenberg and Brand 2004; Williams et al. 2011). Many researchers have found that food advertisements influence children's wants and desire when it comes to food, but there is still limited evidence that advertisements are directly linked to food purchases. However, children and adults are constantly prodded with food advertisements across all forms of media, helping to create an obesogenic food environment where people are constantly thinking about food. Researchers have determined that food advertisements are especially influential to children, many of whom do not understand the difference between television programming and advertisements, as well as the difference between healthy and unhealthy foods (Linn 2004; Linn and Novosat 2008; Moore 2006; Story and French 2004; Greenberg and Brand 2004; Williams et al. 2011).

However, advertisements alone are not driving children, adolescents, and adults to making poor eating selections. Advertisements may keep specific brands and genres of food at the forefront of peoples' minds, but advertisements are not swiping credit cards, unwrapping candy bars and Big Macs, or gulping sodas. Beyond the obesogenic food environment that advertisements have helped create, other factors contribute to determining what we eat and where we purchase our food. Food advertising is a vital link to obesity and food choices, but is only a part of a much larger picture. In the next chapters I will look into other factors that determine *what*, *how*, and *why* we are eating certain foods, and how they are making us a nation of obese people. I will especially

focus on the accessibility and availability of healthy foods in urban and suburban areas of New York's Capital District.

Chapter Three

Food Environments: Disparities Between High-Income Niskayuna and Low-Income Schenectady

Introduction

As I look to understand why obesity rates in the United States have been rising, I am focusing on the environment in which people live, and how that influences where people purchase their food. The main assumption of this study is that individuals only purchase foods they have access to; thus, those with better access to healthy, nutritious foods will have lower obesity rates. To better understand access and availability of food in specific neighborhoods in the Capital Region, I will study two very different cities: Schenectady and Niskayuna, New York. In these two cities, the demographics of family

income and family makeup, race and ethnicity, and dependence on public transportation vary. With two towns with such different demographics, I expect to see that the availability of wholesome and nutritious food will be better in high-income areas, such that more supermarkets will be present in higher-income areas like Niskayuna.

Researchers have been studying the disparities between neighborhood food environments and obesity rates to better understand the social and environmental contributors of obesity. Specifically, researchers are considering the food stores available to disadvantaged populations and in low-income neighborhoods (Andreyeva et al. 2008, 1381; Baker, Schootman, Barnidge, and Kelly 2006; Morland, Roux, and Wing 2006; Raja, Ma, and Yadav 2008). The presence of supermarkets, smaller grocery stores, specialty food stores, and convenience stores vary across cities, towns, and neighborhoods throughout the United States (Rose et al 2009, 2). Researchers have found that supermarkets are found less often in low-income areas, while small grocery stores and convenience stores are abundant in the same neighborhoods (Powell et al. 2007, S301; Raja, Ma, and Yadav 2008, 269). A study focusing on two Chicago towns, Austin and Oak Park, found an abundance of small grocery stores and convenience stores in the low-income area of Austin and very few supermarkets (Block and Kouba 2005, 837). A similar study conducted in Los Angeles found that the higher the concentration of poverty, the fewer supermarkets present (Algert, Agrawal, and Lewis 2006, 265). Studies as old as fifteen years have cited evidence of the little access individuals in low-income, inner-city, and predominately African-American and Hispanic neighborhoods have to supermarkets containing wholesome, fresh, and healthy food (Smoyer-Tomic et al. 2008, 741).

Researchers have created a system to identify and categorize “healthy” food stores based on the food on the shelves (Andreyeva, Blumenthal, Schwartz, Long, Brownell 2008, 1381). In a study focusing on areas of New Haven, Connecticut, researchers focused on the presence, or lack thereof, of any fruits, vegetables, frozen or canned vegetables, baked potato chips, lean beef or chicken, plain cereal, skim or low-fat milk, and whole wheat or whole grain bread and pasta (Andreyeva, Blumenthal, Schwartz, Long, Brownell 2008, 1385). These nutritious, lower fat foods are found to be associated with normal weight and generally good health and are thus categorized as “healthy” foods (Powell et al. 2007, S301).

Researchers have found that supermarkets consistently have the widest variety of healthy foods, giving shoppers the best access to fresh produce, eggs, milk, raw meats and poultry and whole wheat breads and pastas, as well as healthier snack foods like baked potato chips and plain cereals (Raja, Ma, and Yadav 2008, 470; Smoyer-Tunic et al. 2008, 741). Supermarkets offer fresh and raw, as well as prepackaged, frozen, and canned food options, whereas small grocery stores and specialty stores often lack fresh options (Algert, Agrawal, and Lewis 2006, 265). Researchers have found that small grocery stores and convenience stores often carry limited supplies of fresh fruits and vegetables, rarely any fresh meat or poultry those that do carry fresh and wholesome foods often charge a premium (Powell et al. 2007, S301; Rose et al. 2010, 5).

The food environment in the Capital Region of New York, specifically Schenectady and Niskayuna should follow the same patterns other researchers have found. Schenectady and Niskayuna are neighboring cities outside of Albany, New York with very different demographics. Neither Schenectady nor Niskayuna are large

metropolitan areas or rural areas. Both situated in Schenectady County, the city of Schenectady is a larger city, with characteristics of a rust belt area, while Niskayuna is classified as a suburban town (Reilly and Taormina 1997; Schenectady 2006).

Schenectady was once a prospering city with the rise of General Electric, but has since had failures that has brought unemployment and poverty into the area (Niskayuna 2012; Schenectady 2012). Many old houses stand empty and dilapidated, crime rates have increased, and the area is made up of mostly racial and ethnic minority, low-income groups.

Niskayuna has one of the highest average income rates in the Albany area, with a median household income of \$82,336 and \$35,577 per capita (US Census 2010a). Schenectady has much lower income rates; the median household income is \$37,607 and the per capita income is 19,810 (US Census 2010b). In Hamilton Hill, one of the most poverty stricken neighborhoods in Schenectady, the average household income is only \$16,645 (City of Schenectady 2010). Of the 26,264 households in Schenectady, only 32% of them were married couples living together (US Census 2010b). In Niskayuna, 64% of households were married couples living together (US Census 2010a). The racial makeup of Niskayuna and Schenectady are also widely different; 86.4% of Niskayuna's residents are white and 2.7% are African American, whereas 61.38% of Schenectady's residents are white, 20.19% are African American, and over 10% of the population is Hispanic or Latino (US Census 2010a; US Census 2010b). And the US Census (2010b) recorded that since the early 2000's, Schenectady has had an influx of Guyanese immigrants move

from New York City, bringing a new ethnic tradition to the area.¹ With a more diverse demographic in Schenectady, the demographics are reflected in the socioeconomic makeup and also the food stores available.

Public transportation is an important component for the accessibility of food for certain individuals. In Niskayuna, only 1.9% of individuals depend on public transportation to commute to work and 82.9% drive alone in personal cars (US Census 2010a). In Schenectady, 5.8% of residents depend on public transportation, and 73.8% travel alone in personal cars (US Census 2010b). Though the percentages of residents dependent on public transportation in Niskayuna and Schenectady are not drastically different, there are over 1500 Schenectady residents dependant on transportation to and from work, and only 42 individuals in Niskayuna, as estimated by the US Census American Community Survey (2010a; US Census 2010b).

The Capital District Transportation Authority (CDTA) reports that in the Capital region has over 50,000 people who ride the CDTA buses everyday, and over 15.4 million customers annually in Albany, Rensselaer, Saratoga, and Schenectady counties (Melleady, Stackrow, Figueroa, Spairana, Young, MacElroy, Owens, Lynch, and Miller 2009, 3). Unfortunately, there are no estimates on the number of individuals in Schenectady or Niskayuna that depend on public transportation each day, especially for food shopping. However, adequate public transportation to local supermarkets would increase the convenient accessibility of healthy foods to local individuals.

¹ Sarah Kershaw, "For Schenectady, A Guyanese Strategy; Mayor Goes All Out to Encourage A Wave of Hardworking Immigrants," *New York Times*, 26 July 2002.

Despite the fact that Schenectady and Niskayuna share some borders, the demographic differences are significant, and make the two cities viable case studies. To understand the different food environments in Schenectady and Niskayuna, I visited supermarkets, grocery stores, and specialty markets in both cities, recording the healthy foods offered in the stores. I hypothesize that because Schenectady is a lower-income city, it will have far more small grocery stores and specialty food stores than Niskayuna, and that those stores may lack healthy food options. With a lower-income community, large corporate supermarket chains are less likely to bring in new stores (Powell et al. 2007, S301; Rose et al. 2010, 5). Without large supermarkets, Schenectady residents, especially those who lack personal transportation, will have limited accessibility to healthy, wholesome foods, increasing the likelihood of high obesity rates. I expect to see that food environments in Schenectady and Niskayuna are representative of socioeconomic status, and thus the healthy food presence in Schenectady will be much less than in Niskayuna.

Once I discuss the results of my study and draw conclusions, I will place my findings in the context of obesity in the United States, and explain why food environments are an important issue to address.

Method

To study the food environments in Schenectady and Niskayuna, I first found common definitions of a supermarket, grocery store, and specialty store via Merriam-Webster dictionary and previous research. With these definitions, I was able to categorize food environments within Schenectady and Niskayuna. According to Merriam-Webster, a

supermarket is “a large self-service store selling foods and household goods.” In my definition of a supermarket, I expound and explain that a supermarket has separate departments dedicated to produce, meats, dairy, prepared foods, and fresh bakery items. Supermarkets also carry an array of prepackaged foods, pet foods, and some basic houseware items. A supermarket shopper has the ability to one-stop shop and find all ingredients and items necessary within the store. A grocery store is similar to a convenience store: smaller in scale and with a focus on snack foods and beverages, both alcoholic and non-alcoholic, but is different in that grocery stores often carry fresh deli items and some basic prepared foods. Specialty stores can vary in size, but always have a particular focus, such as meat, dairy, Asian, or Italian. Many of these stores sell products in bulk, have an in-store butcher, and import products from around the world. An ideal city would have all three types of stores present, to provide a diverse food environment that appeals and is accessible to all residents.

To identify which stores I needed to visit, I mapped the food stores in Schenectady and Niskayuna using Google Maps, and the local Yellow Pages. I searched for “grocery stores near Schenectady, New York” and “grocery stores near Niskayuna, New York” with the hope that supermarkets, grocery stores, and specialty stores would all be listed. I selected about 25 stores to visit, based on the location of the store and based on names that included the words “grocery,” “market,” and “food.” I avoided any stores with the word “convenience” in the name. Once I identified approximately 25 stores to visit based on store names and locations within neighborhoods, I used Google Maps to make sure I stayed within the town lines, as postal addresses can differ from actual town boundaries.

Once I mapped the markets within each town, I made store visits, looking to identify the healthy foods available within each store. I looked to identify any fresh fruits and vegetables, raw meats and poultry, low-fat dairy options, and whole-wheat grains (breads, pasta, brown rice) available in each store, based on a previous study. I began in Schenectady, following State Street towards downtown Albany. I created a coding system for each store to keep my method systematic and accurate. This kept my research consistent for each store, creating a more fair study. With my coding sheet and pen in hand, I walked into each store as if I was an average customer looking for specific ingredients and items. I walked the perimeter of the store and then through each aisle, locating the healthy items on my list. If I did not find the items, I refrained from asking the store clerk for help. I decided never to ask because the average individual shopping at these markets will likely not ask for items they cannot find, especially if the individual is a regular shopper. Once I left each store, I immediately took note of specific foods I saw within each healthy food category. I did this to keep my time limited to about ten minutes in each store, again, to keep my study fair and consistent.

After visiting all of the stores on my list, I gathered all of my data onto an Excel spreadsheet and categorized each store based on the foods and products I saw. Once my stores were categorized by supermarket, grocery store, and specialty store, I was able to see the disparities in healthy foods available by store, by food type, and by city.

Results

Table 1 provides the breakdown of the healthy foods available by city and by store type. Supermarkets are the most consistent in offering healthy foods; for all

categories of food, all 6 supermarkets (100%) offer each type of healthy food. As previously discussed, supermarkets are organized by department, with specific areas dedicated to produce, meat, dairy, bakery, and packaged foods. The presence of supermarkets in Niskayuna makes healthy foods accessible to all residents. In total, I studied four supermarkets in Niskayuna and two supermarkets in Schenectady.

Table 1 provides the number of food stores visited, and the categorized breakdown of store type. The table shows the food environment in both Niskayuna and Schenectady; the abundance of supermarkets and lack of grocery stores and specialty stores in Niskayuna, and the abundance of grocery stores and specialty markets in Schenectady. Niskayuna has 4 large supermarkets and no other grocery stores or specialty stores that I was studying. Schenectady has 10 grocery stores, 6 specialty markets, and 2 supermarkets. These results show that Schenectady has more food stores in total than does Niskayuna. This table shows that the number of food stores in a city may not be reflective of the socioeconomic status of the city itself. Rather, a city such as Schenectady may have a significantly larger number of food stores available.

Table 1

Town	Supermarkets	Grocery Stores	Specialty Markets
Niskayuna	4	0	0
Schenectady	2	10	6

Table 2 shows that grocery stores only offer a limited variety of healthy foods. Of the ten stores visited, 0% of them sold fresh vegetables or whole-grain pasta and breads, and only one store (10%) sold lean meats and canned or frozen vegetables. I found that 30% of grocery stores sold low-fat dairy items, and only 40% of stores sold fresh fruit.

Healthy snacks were sold at all of the stores (100%). Neighborhood grocery stores in Schenectady lack a consistent supply of healthy food and instead provide a variety of snack foods and beverages. Grocery store shoppers cannot one-stop shop, but must visit multiple stores to gather ingredients for healthy cooking and eating.

Table 2 shows the value specialty stores have in Schenectady. I visited 6 specialty stores in Schenectady, one being a weekly farmers market in downtown Schenectady. Of the specialty stores, 100% of them offer whole-wheat and whole-grain breads, pastas, and rice, lean meat and poultry, and fresh vegetables. Low-fat dairy products and healthy snacks are also readily available at specialty stores, as 75% of stores offer them. Fruit and canned or frozen vegetables are the most difficult to find in specialty stores, as 50% of them carry those items. Nonetheless, specialty stores in Schenectady offer a wide variety of items, many of them distinct to specific cultures and nationalities, for example, Middle Eastern and Asian spices, rice varieties, and frozen prepared foods.

Table 2

Food	Type of Store (%)			Neighborhood (%)	
	Supermarket	Grocery	Specialty	Schenectady - 18 stores	Niskayuna - 4 stores
Any Fruit	100%	40%	50%	44%	100%
Any Vegetables	100%	0%	100%	33%	100%
Any Canned/Frozen Vegetables	100%	10%	50%	39%	100%
Healthy Snacks	100%	100%	75%	83%	100%
Lean Beef/Chicken	100%	10%	100%	50%	100%
Dairy	100%	30%	75%	44%	100%

Whole-Wheat/Whole Grain Bread	100%	0%	100%	33%	100%
Whole-Grain Pasta	100%	0%	100%	28%	100%

Table 3 provides a qualitative list of the foods I saw in the Schenectady and Niskayuna food stores, organized by food category and store category. The list breaks down what foods are available where, and ultimately shows the limited healthy foods available in grocery stores, and the diverse variety of fruits, vegetables, dairy products, and whole-wheat products available in supermarkets.

The healthy foods available in Schenectady are significantly less than the healthy foods available in Niskayuna. Table 1 shows that in Schenectady, less than 50% of food stores sell whole-wheat and whole grain pastas, rice, and bread, low-fat dairy, canned or frozen vegetables, fresh vegetables, and fruit. Most unsettling is the lack of fresh fruit, vegetables, meats, and poultry sold within Schenectady's food stores; only 33% of stores offered vegetables, 44% offered fruit, and 50% offered raw meat and poultry. The best-represented healthy food in all Schenectady food stores is healthy snacks, offered in 83% of the 18 Schenectady food stores.

Table 3

Healthy Options Found in Stores	Supermarket	Grocery Store	Specialty Market
Fruit	Apples, oranges, bananas, strawberries, blueberries, pineapple, lemons, limes, pomegranate, melons	Apples, bananas, oranges	Apples, bananas, oranges

Vegetables	Avocado, green and yellow squash, carrots, cucumbers, tomatoes, potatoes, onions, garlic, eggplant - widest variety of organic and conventional	None	Onion, garlic, ginger
Frozen or Canned Vegetables	Wide variety of vegetables with no added butter, salt, or sugar	None	Limited: tomato sauces, olives,
Healthier Snack Foods	Baked chips, honey wheat pretzels, blue corn tortilla chips, nut variety, hummus	Honey wheat pretzels, peanuts, sunflower seeds	Raw almonds
Lean Beef/Chicken	Raw, unfrozen meat, poultry, fish	None	Halal meats and chicken, organic options
Dairy	Assortment of milks and cheeses in low-fat varieties	Limited variety of low-fat milk	Limited variety of low-fat milk
Whole-Wheat Bread	Assortment of whole-wheat, multigrain breads, bakery fresh and packaged	None	Whole-wheat pita, naan
Whole Grains	Whole-wheat pasta, brown rice	None	Brown rice

A comprehensive list of the stores I visited, categorized by city and store type, can be found in Appendix 1.

Discussion

According to Schenectady's newspaper, *The Daily Gazette*, Schenectady is comprised of eleven different neighborhoods with about 66,135 residents living in about 11.0 square miles (Moore 2011). My results show that much of Schenectady's food environment lacks fresh produce, lean meats, and poultry. For the over 66,000 Schenectady residents, healthy foods are less accessible, found most abundantly in supermarkets and specialty stores. While some of Schenectady's specialty stores offer fresh meats and poultry, there is a lack of fresh fruits and vegetables available in all

specialty stores and grocery stores in Schenectady. Though Niskayuna has one-third the residents of Schenectady (just over 20,000 residents currently live in Niskayuna), healthy foods are widely available and accessible in four supermarkets (US Census 2010a). Schenectady offers healthy foods as well, but may be less accessibility, especially for those without personal transportation. With only two supermarkets offering healthy food for over 66,000 residents, and many grocery and specialty stores offering an abundance of unhealthy foods, the food environment in Schenectady is different than that in Niskayuna (US Census 2010b).

My results show an abundance of grocery stores and specialty stores in Schenectady neighborhoods. Of the eighteen food stores I analyzed in Schenectady, sixteen of them, or 88.8%, are small grocery stores and specialty stores. For residents of Schenectady, the small markets dispersed through the city provide convenient and often twenty-four hour access to food. Unfortunately, my results show that grocery stores especially lack healthy food offerings. The only consistent healthy food I found in grocery stores was in the healthy snack category; peanuts, sunflower seeds, and honey wheat pretzels. Of the snack food options available in food stores, these are the healthiest options, providing whole grain and protein. With a large supply of frozen meals and high-sugar, high-fat snack foods, grocery stores do not provide enough alternative to provide necessary nutrition for Schenectady residents. In the grocery stores, it is impossible for individuals to purchase the ingredients essential for cooking healthy meals. On one hand, some of the grocery stores provide healthier options for individuals purchasing snacks, but do not serve as food stores for those looking to purchase ingredients to cook.

Specialty markets in Schenectady provide some diversity to the food environment, with stores ranging from meat and dairy specialty, to Italian and West Indian. These stores provide healthy alternatives to grocery stores in the area, while providing a variety of international food items. As previously mentioned, the recent influx of Guyanese immigrants creates a demand for specific international and ethnic foods, as well as a supply of the foods as some of the Guyanese are restaurant and market owners (Kershaw 2002). One store, Karam Asian Grocery & Halal Market, specializes in Pakistani, Afghan, Bangladeshi, and Guyani foods, providing bulk and individual foods to shoppers. Other specialty markets in Schenectady specialize in Italian and West Indian foods, targeting residents of other ethnicities and nationalities. The healthy foods available at these markets vary, but lean meat and poultry, both organic and Halal, is consistently available in all four of the specialty food markets. The specialty markets also offer spices and sauces imported from Asia and Europe, supplied again for the international and ethnic populations.

While the specialty markets provide lean meats and poultry, vital nutrition for a healthy diet, the markets also target specific groups and do not provide enough variety of products to complete a one-stop shopping trip. While there are healthier options available in the specialty markets, the lack of variety of healthy food available in specialty markets might limit the shoppers.

Results show that supermarkets provide the most consistent variety of healthy foods in both Schenectady and Niskayuna. The two supermarkets in Schenectady are located in the Eastern Avenue and Central State Street neighborhoods, only two miles apart. The Price Chopper store located in the Eastern Avenue area is situated in a more

commercial area, near the Upper Union Street area with small businesses and restaurants. The Central State Street neighborhood is also a commercial area located off of a large main artery road, connecting Schenectady and Colonie to downtown Albany. These supermarkets are convenient to only those living around these commercial areas. Unfortunately, they are not central to most residential areas in Schenectady. Residents living outside of the two neighborhoods, especially in the Bellevue, Woodlawn, Stockade, and Northside neighborhoods, must take multiple buses or drive a few miles to reach Aldi or Price Chopper. Based solely on location, the two supermarkets in Schenectady are most accessible to residents that own cars, that live within walking distance, and that live on or near the CDTA bus routes. Nonetheless, supermarkets are the best source of healthy foods in both Schenectady and Niskayuna food environments, and are thus valuable assets to adopting and practicing healthy diets.

The results of my study mirror the results of other studies; healthy and wholesome foods are more accessible in the higher-income areas, and are more difficult to find in low-income communities. In Schenectady, while there are two supermarkets and sixteen other food stores, the availability of healthy foods is limited, especially for those without personal transportation. My results show that the number food stores is not as important as what is available and for sale in the stores. That said, Niskayuna's four supermarkets provide healthy food options, giving the higher-income, less racially diverse community better access to healthy food and thus healthy diets.

Conclusions: The Bigger Picture

In my research I studied the food environments in Schenectady and Niskayuna, New York, focusing on the food stores present in each city, and specifically what healthy foods were available and accessible to local city residents. I found clear differences between the food stores in Schenectady and Niskayuna, and the foods sold within each type of store. It is thus important we discuss *why* food environments matter, and why food environments in Schenectady and Niskayuna matter. My ultimate goal in this section is to explore the relationship between our food environments and obesity rates, and attempt to understand my main question: why are obesity rates in the United States rising?

My results show that food environments differ depending on the demographics and socioeconomic status of the respective neighborhoods, in Schenectady and Niskayuna. Though not reflective of the United States as a whole, my results do show a clear difference in food environments based on demographics and socioeconomics. Other researchers have come to similar conclusions for food environments in greater Los Angeles and Chicago, such that food environments differ based on demographics and socioeconomics (Algert, Agrawal, and Lewis 2006, 265; Block and Kouba 2005, 837). These researchers determined that there are fewer supermarkets in areas with a high density of poverty, and predominantly African-American and Hispanic neighborhoods (Smoyer-Tomic et al. 2008, 741).

Baker and other researchers (2006, 1) have found that obesity rates are higher among some racial and ethnic minority groups, as well as lower-income groups, varying depending on gender. The US Department of Health and Human Services (2001) has found a similar pattern in the demographics of obesity rates such that there is a 50%

higher prevalence of obesity reported in poor women than in nonpoor women. In a separate study completed by the Centers for Disease Control and Prevention (CDC) (2010), researchers found that obesity and socioeconomic status differs by sex, race, and ethnicity group. Ultimately, the CDC came to the same conclusion as the Department of Health and Human Services, and that obesity rates among women were highest as income rates decreased (CDC 2010). If there are in fact different rates of obesity among different demographic groups, as well as different food environments convenient to these groups, it is important we further explore the relationship.

Some researchers have studied the relationship between food store availability in certain neighborhoods and individuals' diet. In many studies, researchers found a correlation between diet and the availability of healthy food in stores (Baker, Schootman, Barnidge, and Kelly 2006; Cheadle, Psaty, Curry, Wagner, Diehr, Koepsell, and Kristal 1991; Morland, Diez Roux, and Wing 2006; Powell, Auld, Chaloupka, O'Malley, and Johnston 2007; Rose, Hutchinson, Bodor, Swalm, Farley, Cohen, and Rice 2009). Numerous researchers found that with limited variety of healthy foods, individuals struggle to make healthy choices that support balanced diets (Baker, Schootman, Barnidge, and Kelly 2006; Cheadle, Psaty, Curry, Wagner, Diehr, Koepsell, and Kristal 1991; Morland, Diez Roux, and Wing 2006; Powell, Auld, Chaloupka, O'Malley, and Johnston 2007; Rose, Hutchinson, Bodor, Swalm, Farley, Cohen, and Rice 2009). In a recent study, researchers found that food store availability may be most important in determining the diets of single parent households, African-American adolescents, and those living in lower-income areas (Powell, Auld, Chaloupka, O'Malley, and Johnston 2007, S306). By studying the food available in neighborhood stores, the demographics of

those neighborhoods, and obesity rates, researchers found a correlation between the three (Powell, Auld, Chaloupka, O'Malley, and Johnston 2007, S306). Researchers explain “without access to healthy food choices, individuals cannot make positive changes to their diets” (Baker, Schootman, Barnidge, and Kelly 2006, 1). Thus, differences in neighborhood demographics, and the local food environments are important as we address obesity in the United States; specifically the food stores available and healthy foods available within different neighborhoods.

In a Harvard School of Public Health report (2012), researchers write “roughly 2 million U.S. households live more than a mile from a supermarket and don’t have cars or access to cars.” The researchers continue to explain that residents in these areas are often low-income, racial and ethnic minorities and have lower quality diets and increased risk of obesity (Harvard School of Public Health 2012). Not only do these individuals have less access to supermarkets, but also they have greater access to small food stores like grocery stores and specialty stores as well as fast food outlets, which make unhealthy foods more convenient than healthy foods found in supermarkets (Harvard School of Public Health 2012). Other researchers have focused specifically on the relationship between food store environment and obesity rates. Rundle and researchers (2008) found that access to healthy food stores in New York City is associated with lower BMI and lower prevalence of obesity. Similarly, researchers in Canada found that areas with more grocery stores, fast food outlets and convenience stores than supermarkets are associated with obesity and higher BMI (Science Daily 2009). A review of 28 studies (Giskes, van Lenthe, Avendano-Pabon, and Brug 2011) determined that weight status was “consistently associated with the food environment; greater accessibility to supermarkets

or less access to takeaway outlets were associated with lower BMI or prevalence of overweight/obesity.” These researchers also determined that living in a low socioeconomic status area was consistent associated with “obesogenic dietary behaviors” (Giskes, van Lenthe, Avendano-Pabon, and Brug 2011).

My next chapter will focus on another factor dealing with purchasing patterns and obesity rates; the pricing structure of food. I will review current research on the economics of obesity and how price of food as impacted food purchasing. I will also include my own data I gathered while visiting stores in Schenectady and Niskayuna. I ultimately hope to better understand the extent of influence that food prices play in food purchasing patterns, and how all of that relates to obesity in the United States and in Schenectady County.

Chapter Four

Food Prices in the Schenectady and Niskayuna Food Environments

Introduction

As I continue to explore obesity in the context of food environments, I must consider the price of healthy food in different food stores to better understand how food prices might determine individual diets. In 2010, Americans spent over \$1,240.4 billion dollars on food, a 3.4% increase in spending from 2009, or an average of \$7,420 per person, per year (Kohli 2010). With such a large number of consumer dollars spent on food each year, it is clear how much of an influence food plays in our daily lives. Therefore, we must take a closer look at the foods being purchased and the prices of

those foods. Obesity rates differ amongst different demographic groups, and similarly food prices might differ between different food stores. It is important that healthy foods are available in all cities and towns, and are affordable to town residents. This chapter will focus on the latter; the affordability of healthy food in different store types.

Researchers have found that some groups of individuals make certain food purchases in order to save money or to spend wisely (Drewnowski and Specter 2004, 8; Finkelstein, Ruhm, and Kosal 2005,4). According to economic theory “Economists’ first law of demand implies that a decrease in the price of food will cause consumption to increase” (Finkelstein, Ruhm, and Kosal 2005, 4). The Harvard School of Public Health (2012) reports that in the last thirty years, the price of fruit and vegetables rose while the price of salty and sweet snacks, and carbonated drinks declined. Meanwhile, researchers followed 5,000 adults for 20 years and found that “lower prices on soda and pizza were associated with higher caloric intake and increased weight” and “higher fruit and vegetable prices were associated with greater weight gain over time” (Duffey et al. 2010). Similarly, researchers found that lower prices of low-fat milk and dark green vegetables were associated with lower BMI and lower prices for soda, juice, starchy vegetables, and snack foods were associated with higher BMI (Wendt and Todd 2011, 3). Other researchers agree that higher prices for fast food and lower prices for fruit and vegetables are linked to lower BMI (Auld and Powell 2009; Powell and Bao 2009; Sturm and Datar 2008). These researchers all studied the influence of price and found that price does in fact influence purchasing and consumption (Duffey et al. 2010; Harvard School of Public Health 2012).

The price of food is variable depending on the quality of food and the type of food. Researchers Drewnowski and Darmon (2005b, 900) write “added sugars and fats are far more affordable than are the recommended ‘healthful’ diets based on lean meats, whole grains, and fresh vegetables and fruit.” Some researchers believe that the low cost of calorie-dense foods may be one of many causes of weight gain and obesity (Drewnowski and Darmon 2005b, 900). Most researchers have concluded that on a per calorie basis, fruits and vegetables are more expensive (Drewnowski and Darmon 2005b, 901; Kaufman, MacDonald, Lutz and Smallwood 1997). All of these studies draw connections between food purchasing and price, highlighting the importance of affordability. Because most researchers believe that price influences purchase, it is vital to address the affordability of healthy food in Schenectady and Niskayuna.

While many consider the difference in price of healthy and unhealthy food to be a central issue in the obesity problem, I want to focus on the difference in prices of healthy food between different food stores. To further my own research on the food environments in Schenectady and Niskayuna, New York, I will look into the pricing patterns of healthy foods available in the same stores I visited in my study on availability of healthy foods in Chapter Three. I hope to better understand the differences in prices between healthy food options in supermarkets, grocery stores, and specialty stores. I am studying the prices of food more to determine the accessibility of healthy food, than to make an argument for why people purchase healthy or unhealthy foods.

I expect to find that food prices will be significantly lower in all supermarkets, because supermarkets can buy large quantities of items at wholesale prices. In specialty stores, the demand for fruits and vegetables might be limited due to the lower volume of

customers, making the prices higher. However, stores that specialize in meats and poultry, especially those with Halal meat should have similar prices in comparison to supermarkets because these stores have a constant demand for meat from restaurants and individual shoppers.

Ultimately, this study should suggest the importance of supermarkets in all cities and towns. Where grocery stores and specialty stores carry a wide variety of inexpensive, calorie-dense foods deemed unhealthy, supermarkets consistently carry low price, fresh produce, meats, poultry, and low-fat dairy products, deemed healthy. However, some grocery stores and specialty stores do in fact sell these healthy food items. For these stores that do offer healthy foods, the prices often vary from store to store. Ultimately, if my hypotheses are proven correct, I should be able to effectively argue that food environments are reflective of the neighborhoods in which they are located, and that the accessibility and affordability of healthy foods are dependent on food environments. Because we know that obesity rates are linked to food environments, as demonstrated in previous chapters, it is clear that the price of food is one of many vital factors contributing to obesity.

Method

I visited the same stores in Schenectady and Niskayuna for both my studies on the accessibility of healthy foods, and the prices of healthy foods. I selected the stores based on the qualifications and attributes listed in Chapter Three. While making store visits throughout Schenectady and Niskayuna, I surveyed store shelves for specific foods deemed “healthy.” I looked specifically for fruit, vegetables, canned and frozen vegetables, healthy snacks, lean beef and chicken, low-fat dairy, and whole-wheat and

whole-grain breads and pastas. Once I located the items, I recorded the prices displayed per item or per pound. For fruits, vegetables (fresh, canned, and frozen), meat, and poultry, I considered the price per pound. For low-fat milk, I considered the price per gallon. I will compare the prices of each item in different stores.

I want to explore healthy food affordability based on the price of bananas, broccoli, eggs, meat and poultry, and low-fat milk in Schenectady and Niskayuna food stores. I am focusing specifically on these five foods because these items are found in all local supermarkets, most specialty stores, and some grocery stores. These foods are also nutrient rich and often associated with good health and balanced diets (Drewnowski and Darmon 2005, 901; Kaufman, MacDonald, Lutz and Smallwood 1997).

Once I gathered all of my data collected from the stores, I compared food prices in each food category against store category. For example, I compared the price of bananas in supermarkets, specialty stores, and grocery stores. Of course, my observations were limited to the foods available in the stores. For stores that do not sell the healthy foods I am studying, I omitted them from the results section. Thus, I have very limited data from grocery stores, as they have very little variety of healthy foods available.

After comparing data from the stores I visited, I will look at the average prices in the United States as of April 2012 and compare those prices with those found in Niskayuna and Schenectady.

Results & Discussion

Table 1 provides the average prices for each store type and the national price averages for each healthy food. The national price averages were calculated from the price of foods in all retail outlets by month, by the USBLS (U.S Bureau of Labor

Statistics 2012). I included the national price averages in my results section to see how local prices in specific food stores compare to national prices in all retail outlets. This puts local prices in supermarkets, grocery stores, and specialty stores in the context of national prices, which is important because we need to know that prices in this area are somewhat reflective of national prices so we can draw larger conclusions. I found no consistent pattern between local prices in Schenectady and Niskayuna versus the national averages. In some categories such as broccoli, the national prices were lower than the local prices, and for chicken breast, the national price was higher. In most cases, specifically bananas, eggs, ground beef, and skim milk, national prices were higher than supermarket prices and lower than grocery store and specialty store prices.

Table 1 also shows that local food prices in supermarkets in Schenectady and Niskayuna were cheaper than in other food stores; for almost all food types, Schenectady and Niskayuna supermarkets provide the lowest prices. Ground beef had the same average in supermarkets and specialty stores, supporting my original hypothesis that stores specializing in Halal meat would have similar prices of supermarkets. Table 1 shows that supermarket prices in Schenectady were often lower than in Niskayuna, specifically for broccoli, eggs, chicken breast, and skim milk. As we continue to compare local food prices, Table 1 shows that in most cases, grocery stores have the highest prices for healthy food, especially ground beef and chicken breast. The averages show that supermarkets offer the lowest prices by up to \$1.45, which is evidence that supports my hypothesis speculating that supermarkets should have the lowest prices for healthy foods.

Table 1 also shows that supermarkets in Schenectady and Niskayuna offer prices on healthy foods that are often lower than the national average prices, specifically for

skim milk, chicken breast and ground beef in Schenectady supermarkets. This is a very positive outcome for Schenectady residents, as the demographics show they are a low-income community. With low prices on three key foods to support a balanced diet, Table 1 shows that Schenectady residents have affordable access to vital healthy foods.

Table 1

		Bananas (per pound)	Broccoli (per bunch)	Eggs (per dozen)	Chicken Breast (per pound)	Ground Beef (per pound)	Skim Milk (per gallon)
Average Price in the United States as of April 2012		\$0.60	\$1.56	\$1.82	\$3.17	\$3.96	\$3.47
Average for Schenectady	Supermarket	\$0.54	\$1.99	\$1.75	\$1.94	\$3.44	\$3.07
	Grocery	\$0.63	N/A	\$2.23	\$2.79	\$4.89	\$3.12
	Specialty	\$0.69	\$2.78	\$2.65	\$2.58	\$3.45	\$3.63
Average for Niskayuna	Supermarket	\$0.54	\$1.81	\$2.10	\$2.41	\$3.47	\$3.79

To provide a more comprehensive look into local food prices, I included Table 2, which provides a more detailed account of the prices in each store and for all categories of healthy food. In Table 2, food prices are broken down by food store and by city. Local food price data is comprised of a total of four supermarkets in Niskayuna, two supermarkets in Schenectady, two grocery stores in Schenectady, and five specialty stores in Schenectady. I included these specific stores because they offer the exact healthy foods I am studying. Grocery stores and specialty stores in Table 2 only provide limited price data because many stores do not carry the healthy foods I am addressing. Thus, it is important to consider not just the price averages, but the prices offered at each store as well.

In Schenectady specialty stores, Table 2 shows the range of prices from the Schenectady Green Market with the highest prices, and Avon Market with the lowest prices. Other specialty stores fall somewhere in the middle, depending on the healthy food. The Schenectady Green Market has significantly higher prices for most healthy foods in all store types. The Green Market is a unique food environment in that it is offered weekly, and features only seasonal items that are produced locally and sold by the farmers, crafters, and vendors themselves. That said, the healthy foods offered at the Green Market are offered only when in season and are of the highest quality goods. Typically the eggs, meats, and poultry are sold at higher prices, and the fresh fruits and vegetables at more affordable prices. Unfortunately, there were no bananas or broccoli this month at the Green Market, and thus I could not include those prices in the study.

Both the Niskayuna Co-Op and Schenectady's Aldi store are considered supermarkets, but offer very different prices as seen in Table 2. The Co-Op has higher prices than most supermarkets for bananas, chicken breast, and skim milk, whereas Aldi offers the lowest prices for eggs, chicken breast, ground beef, and skim milk. Because Schenectady has only two supermarkets, the low prices at Aldi bring the average food prices in Schenectady supermarkets down.

It is important to study the prices carefully in Table 2, before drawing conclusions in Table 1. Prices vary in all of Schenectady and Niskayuna food stores; however, supermarkets consistently offer the lowest food prices. Thus, supermarkets are the best local provider of affordable healthy foods. As we can see, the Schenectady Green Market, as of early May when gathered data, has high prices on meat, poultry, and eggs, and a limited variety of healthy foods due to the limitations of the season. However, during

summer months, the Green Market provides affordable prices for fresh fruit and vegetables. This is important to note because the Green Market is the only local market that depends on seasonality of foods, and thus is the only market that has a constantly changing assortment of foods available.

Table 2

Town	Store Type	Store Name	Bananas (per lb)	Broccoli (per bunch)	Eggs (per dozen)	Chicken Breast (per lb)	Ground Beef (per lb)	Skim Milk (per gallon)
Niskayuna	Supermarket	Co-Op	\$0.69	\$1.69	\$1.85	\$3.69	\$3.29	\$3.15
Niskayuna	Supermarket	Shop Rite	\$0.49	\$1.59	\$1.89	\$1.99	\$3.29	\$2.71
Niskayuna	Supermarket	Price Chopper	\$0.49	\$1.99	\$1.80	\$1.99	\$3.99	\$2.99
Niskayuna	Supermarket	Hanaford	\$0.49	\$1.99	\$2.88	\$1.99	\$3.29	\$3.19
Schenectady	Grocery	Stewarts	\$0.60	n/a	\$1.90	n/a	n/a	\$3.12
Schenectady	Grocery	Hamilton Hill Meat Market	\$0.65	n/a	\$2.55	\$2.79	\$4.89	n/a
Schenectady	Specialty	West Indian Grocery	\$0.69	\$2.55	n/a	\$3.05	\$3.99	n/a
Schenectady	Specialty	Karam Asian Grocery & Halal Meat	n/a	n/a	n/a	\$3.15	\$4.05	\$3.75
Schenectady	Specialty	Schenectady Green Market	n/a	\$3.00	\$3.50	\$7.00	\$5.00	\$3.50
Schenectady	Specialty	Lazeeza Halal Food Mart	n/a	n/a	n/a	\$2.99	\$4.15	n/a
Schenectady	Specialty	Avon Market	n/a	\$3.49	\$1.79	\$1.99	\$2.98	n/a
Schenectady	Supermarket	Aldi	\$0.60	\$1.99	\$1.70	\$1.89	\$2.89	\$3.15
Schenectady	Supermarket	Price Chopper	\$0.49	\$1.99	\$1.80	\$1.99	\$3.99	\$2.99

Ultimately, food prices in Schenectady and Niskayuna vary between food outlet and by food type. Overall, supermarkets offer the lowest prices on bananas, broccoli, eggs, chicken breast, ground beef, and skim milk. These healthy foods offer vital nutrients to a healthy diet, and are thus key in the battle against obesity in the United States.

This study focused specifically on the healthy foods available in Schenectady and Niskayuna food stores, and the prices of those foods. My ultimate goal was to establish

that supermarkets are the greatest source of affordable healthy food in Schenectady and Niskayuna. The data demonstrated above shows that in fact supermarkets do offer healthy foods at the lowest prices, compared to grocery stores and specialty stores. Supermarkets also offer the widest variety of fresh fruits and vegetables, meats and poultry, low-fat dairy items, and whole-wheat products, as discussed in chapter three. Taken together, supermarkets are vital in providing individuals affordable healthy foods.

Where supermarkets offer lower prices, neighborhood grocery stores and specialty stores offer great convenience. The abundance of grocery stores and specialty stores in Schenectady offer local residents convenient and affordable access to foods. With small grocery stores on many street corners in Schenectady, residents are exposed to calorie-dense and inexpensive foods deemed unhealthy. Fortunately, some of these grocery stores and specialty food stores do offer healthy foods, though most healthy foods sold in grocery stores and specialty food stores are sold at higher prices than can be found at supermarkets.

Because many individuals are motivated by food price and convenience, based on previous research and economic reasoning, it is important that supermarkets become more accessible to all individuals in Schenectady and Niskayuna, and that grocery stores and specialty stores offer a wider variety of healthy foods. As grocery stores and specialty stores target a smaller audience, lowering prices is a difficult task to encourage. However, supermarkets can afford to lower prices because of the large customer base and consistency in sales. In a city like Schenectady, supermarkets could be a key solution to bring more affordable food into residents' homes, which could have the potential to lower obesity rates in the area. As discussed early in chapter three, Schenectady and Niskayuna

have very different demographics, for people and for food stores. Schenectady has a much larger ethnic and racial minority community, a greater low-income community, and many more grocery stores and specialty stores than Niskayuna. Schenectady also has fewer supermarkets. Bringing more supermarkets into Schenectady would give local residents better access to affordable, nutritious, healthy foods.

Conclusion

In my thesis, I address obesity from a more social perspective, focusing specifically on the food environment in the United States that many researchers believe has contributed to rising obesity rates. In chapters two, three, and four I provided current research on the advertising of food, as well as my own research on healthy food availability and affordability in Schenectady and Niskayuna, New York and attempt to find links to obesity. Though researchers have been successful in finding evidence that food advertisements have an influence on consumer choice and behavior, it is not food advertisements alone that influence our decision making in food stores. This conclusion led me to chapters three and four, which address the food environment in two neighboring cities, Schenectady and Niskayuna, and discuss the accessibility and affordability of healthy food.

Accessibility and Affordability

In these chapters, I conducted my own research in local food stores, comparing the healthy foods available between store type (supermarket, grocery store, and specialty store) and between each city. I found that food stores had a range of healthy foods

available in Schenectady and Niskayuna; some had a diverse array of fruits, vegetables, meats, poultry, low-fat dairy products, and whole grains available, other stores had limited supplies, and many stores had no healthy foods available. These findings lead me to believe that accessibility and affordability of food are key factors when individuals make food purchases.

Schenectady and Niskayuna have very different demographics and different food environments. Schenectady is a low-income city with white, non-white, and immigrant communities. Based on the different demographics reported in Schenectady and Niskayuna, the food environment in both cities is vital for providing healthy food options in all neighborhoods.

I found that in Schenectady and Niskayuna, the food environments are not equal; Schenectady has a much larger density than Niskayuna of small grocery stores and specialty stores, commonly known to offer a wide range of pre-packaged, processed foods high in calories, high in fat and low in price. In Schenectady, New York, only two supermarkets serve over 66,000 residents, and are situated within miles of each other. Schenectady supermarkets offer an abundance of fresh produce, meats and poultry, low-fat dairy products, and whole-grain foods for lower prices than when sold in other food stores. Niskayuna has a total of four supermarkets throughout the city limits, and a very limited array of small grocery stores and specialty stores.

Fortunately, both Schenectady and Niskayuna supermarkets provide all healthy food items an individual or family needs, and at affordable prices. However, not all individuals have easy access to supermarkets in Schenectady or Niskayuna, as some rely

on public transportation, shared cars, and walking. For those who do not have access to private cars, local grocery stores offer convenience and low prices, but rarely carry a significant variety of healthy foods to support a balanced diet.

This study of Schenectady and Niskayuna is a small snapshot of food environments around the country. Though I provided significant evidence of key differences in food environments in Schenectady and Niskayuna, there are limitations to my research. First, I was only able to identify and visit a total of 22 food stores in both cities. In Niskayuna, I visited only four supermarkets, and no grocery stores or specialty stores. This is because there are no small food stores in Niskayuna. In Schenectady, there are many food stores in the eleven different neighborhoods, many of them unlisted in newspapers and online. I was able to locate eighteen food stores in Schenectady, but am aware that there are many more. Without a complete survey of local food stores in Schenectady and Niskayuna, I do not have a comprehensive understanding of the local food environments. In future research, I would visit all food stores in the area.

Another limitation to my study is the inclusion of the Schenectady Green Market in my data. Though the market provides healthy, nutritious foods year-round in Schenectady, the Schenectady Green Market operates weekly, and only offers locally produced, artisan made, seasonal products. Bananas were unavailable at the market while I was gathering data, and prices for locally raised chicken and beef were much higher than in conventional food stores. Because these animals were raised on small, local farms, the prices are much higher than compared to chicken and beef found in large supermarkets, grocery stores, and specialty stores. Thus, it is difficult to truly compare the prices of healthy foods from the Green Market and healthy foods from other food

stores. In future research, I would put the Green Market into its own category for food stores.

Food Advertisements

In 2006, the food industry spent over \$1.6 billion on advertisements promoting foods to kids through television and film, Internet, social media, video games, and in schools (FTC 2011). Almost all of these foods advertised are high in calories and low in nutrition. Food advertisements alone do not influence food purchasing and consumption, but when individuals are constantly faced with images of food and brand logos, they are more inclined to wander into local food stores, and are more likely to make purchases (Linn 2004; Linn and Novosat 2008; Moore 2006; Story and French 2004; Greenberg and Brand 2004; Williams et al. 2011). Food advertisements are especially influential when children are involved in food shopping.

In chapter two I provided many opinions and findings on the influence of food advertisements, focusing especially on children. After reviewing multiple perspectives and data, it is clear that food advertisements keep food at the forefront of our thoughts, and are influential when individuals, especially those shopping with children, make food purchases (Linn 2004; Linn and Novosat 2008; Moore 2006; Story and French 2004; Greenberg and Brand 2004; Williams et al. 2011). Food advertisements come straight from the corporate world, where businesses capitalize on consumer vulnerabilities to increase purchasing and thus profits. Unfortunately, these corporations are selling unhealthy, high-fat, high-calorie foods. The main concern is that food advertisements target our weaknesses; our emotions and our children who do not know better. If we are

constantly faced with images of food and brand logos, we are more likely to buy and to eat.

Food advertisements only encourage these practices, using brand logos and branded characters to gain the attention of both adults and children. For children especially, familiar characters and icons are influential when children eat. These advertisements undermine parents' efforts to encourage healthy eating and lifestyles. Corporations continue to spend billions of dollars on food advertisements because they see a profit, and see the advertisements increasing sales. These corporations are motivated by self-interest alone, and are capitalizing on our weaknesses and vulnerabilities to spark profit. Rather than promote healthy eating and the purchasing of fresh fruits and vegetables, lean chicken, beef, or pork, low-fat dairy products, and whole-grains, corporations promote their own products, which are mostly fattening foods high in salt, sugar, and fat. Unfortunately, the more pre-packaged and processed food we consume, the worse it is for our health, as individuals and as a nation.

Policy for Food Advertisements

There are three ways in which we can tackle food advertisements and their effect on obesity rates in the United States: through government regulation and intervention, through the businesses themselves, and through public efforts. The most effective system would incorporate all three avenues of solutions such that individuals, businesses, and our government all advocate for public health. However, only in an ideal world would all three groups uphold the same interests. Because businesses are motivated by profit and consistent customer loyalty, they are unlikely to realign their values to put the public first.

That said, businesses like Wal-Mart might have made business decisions that are both good for business and for the public good, for example, Wal-Mart now sells Stonyfield Organic Yogurt, and is now currently the largest distributor nationwide. Stonyfield CEO Gary Hirshberg explains that “Wal-Mart is the latest and best example of what happens when you combine capitalism with ethics and morals and values and principles: every large company on earth stands up and pays attention” (Kaplan 2010). Despite this example of business savvy and consumer wellness inspired innovation, corporations have seen continued profits due to advertising and marketing, and are thus unlikely to stop. In other words, it would be an unwise business decision to cut and limit advertising. Thus, we must rely on government regulation and policy as well as grassroots efforts on the community level to create change in the advertising industry.

Policy makers in Congress, along with those working for the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Agriculture (USDA) have pushed the Federal Trade Commission (FTC) to establish an “Interagency Working Group of federal nutrition, health, and marketing experts” to “improve the nutritional quality of the foods most heavily marketed to children” (FTC 2011a). In the proposal presented by the Interagency Working Group there are two basic nutrition principles; (A) “foods marketed to children should provide a meaningful contribution to a healthful diet, with contributions from at least one of the following food groups: fruit, vegetable, whole grain, fat-free or low-fat milk, fish, extra lean meat or poultry, eggs, nuts and seeds, and beans” and (B) “foods marketed to children should be formulated to minimize the content of nutrients that could have a negative impact on health of weight” (FTC 2011a). Principle B prevents foods with

certain levels of saturated fat, trans fat, added sugars, and sodium to be marketed to children (FTC 2011a). The proposal looks to encourage adoption of these principles by 2016, focusing on marketing directly to children and adolescents aged 2-17. As positive as this proposal sounds, the FTC is only encouraging the food industry to change their marketing tactics, making these changes completely voluntary (FTC 2011b). The hope is for self-regulation in the food industry so they adopt these principles in the interest of national health.

The United States government has been lax in making policies preventing advertising to children, in fear of upsetting large corporations (Montgomery and Chester 2011, 7). The American Heart Association believes there is no “ethical, political, scientific, or social justification for marketing and advertising low-nutrient, high-calorie foods to children” and provides a policy statement encouraging Congress to restore the FTC and Federal Communications Commission (FCC) power to regulate food marketing to children (American Heart Association 2009, 1). The American Health Association encourages measures that would only allow healthy foods to be marketed and advertised to children, would discourage product placement of food brands and media and in fast food restaurants, and would prevent any food and beverage advertising in schools or on educational materials (American Heart Association 2009, 1). The American Health Association has two goals in mind with these proposals to Congress, “to improve children’s dietary behaviors by reducing the consumption of low-nutrient, high-calorie foods, while promoting consumption of healthy food choices” (American Heart Association 2009, 1).

The American Heart Association has the health interests of the nation in mind, when suggesting and encouraging these advertising and marketing regulations.

Unfortunately, the FTC, FCC, FDA, USDA, and CDC are government institutions that must balance their own interests with the interests of donors and big business. Thus, the FTC only encourages adoption of the proposed advertising guidelines. Unfortunately, corporations act in their own interests of profit, and will unlikely conform to voluntary regulations preventing advertising to children. That said, if corporations were forced to adopt strict regulations, they would take their frustrations to Congress and use their power reinstate lax advertising regulations.

The FTC proposal and American Heart Association suggestions both address limiting childhood exposure to food advertising and marketing. Because large corporations will unlikely put public interest before private interest, voluntary regulations are assumed to be ineffective. Instead, Congress along with government organizations, despite a potential outcry from corporations, should get enact strict regulations that prevent any advertising or marketing targeting children. In Canada, Norway, Sweden, and the United Kingdom, laws have been set to regulate and ban advertising of any goods directed at children under twelve and thirteen years old (World Health Organization 2012, 22). This has effectively limited the commercial content children are exposed to. Ultimately, Congress should act in public interest only, and regulate food advertisements targeting children, with the end goal of banning it completely.

I believe the most effective solution is to ban food advertisements for unhealthy foods low in nutrition and high in fat. Corporations would still have a right to advertise food to children, but only healthy foods such as fresh fruits and vegetables, lean meats

and poultry, low-fat dairy products, and whole-grains. Ideally, this would encourage food corporations to change their product and increase the creation of healthy food options. Again, the partnership between Wal-Mart and Stonyfield Organic Yogurt is a great example of two businesses using healthy food and advertising of that food to increase profit. If advertisements are as effective in supporting sales and profits as corporations believe, a shift to healthier products could support similar sales figures with current advertising strategies.

Policy to Support Accessibility and Affordability of Healthy Foods

According to Michelle Obama's organization Let's Move, there are more than 23 million Americans, mostly low-income individuals, living in areas more than one mile from a supermarket, giving them limited access to affordable, nutritious food. One mile is an important distance because of the dependence on personal cars and fuel prices – many individuals cannot afford to travel far for their food. Michelle Obama is a leader in promoting healthy eating and exercise to fight obesity in the United States. Her organization, Let's Move, believes that we cannot decrease obesity rates without focusing on increasing access to affordable healthy foods.

Let's Move suggests many ways in which to increase access to healthy and affordable foods through public policy. Some recommendations include: “establish[ing] a food policy council, increase enrollment in the Supplemental Nutrition Assistance Program (SNAP) (a financial support system for those living on low-incomes), support the sale of local foods by offering incentives for the establishment of local farmers markets, promote policies that support community gardens, pass food policies that

require food and beverage purchased with government funds to meet certain nutrition standards, require access to free and safe drinking water in public places, and ensure that residents can access healthy and affordable food through public transportation” (Let’s Move 2012).

I believe the most effective solution is for the creation of incentive programs to attract farmers markets as well as supermarkets and grocery stores to underserved neighborhoods. This solution gives businesses reason and incentive to move into certain areas. Rather than force businesses and individuals to act, this is a voluntary solution. This would also include improvements in transportation to healthy food stores so that all individuals had convenient access to food stores. Let’s Move suggests potential incentives as tax credits, grant and loan programs, and small business development programs (Let’s Move 2012). In a partnership with the state of Pennsylvania, the Food Trust, and the Greater Philadelphia Urban Affairs Coalition, \$41.8 million in grants and loans have been funded to encourage new supermarkets in underserved areas (USDA 2009, 105). The state of Pennsylvania alone allocated \$30 million for the grant program (USDA 2009, 105). Most of these programs are successful in bringing new markets to neighborhoods, but need local support and funding to make progress. These markets have successfully created healthier food environments in Greater Philadelphia, giving residents better access to affordable healthy foods. However, there has been no notable change in obesity rates yet, due to the short period of time that this program has existed.

In New York City, efforts have been made to bring more healthy foods into small grocery stores, or “bodegas” (USDA 2009, 105). The Healthy Bodega Initiative encouraged bodegas to sell low-fat milk, and fresh fruits and vegetables. A total of 1,450

bodegas in total participated in the program, all seeing high sales of the products (USDA 2009, 105). The Harvard School of Public Health (2012) also believes that small store owners should be encouraged, through incentive programs, to offer fresh produce and healthier foods.

Other community-based programs have been successful in increasing access to healthy, fresh foods, such as farmers markets', community gardens, and mobile fruit and vegetable carts. In Schenectady, the Veggie Mobile provides fresh fruits and vegetables to senior centers, public housing projects, and other urban areas. The mission of the Veggie Mobile is to "make healthy foods more affordable and more accessible to low-income residents by selling directly to people, year-round at wholesale cost" (Veggie Mobile 2012). The Veggie Mobile was created by the Capital District Community Gardens, and funded by a five-year grant from the New York Department of Health's Hunger Prevention and Nutrition Program. Again, it is community involvement at the grassroots level that has increased healthy food accessibility and affordability in the Schenectady area.

Solutions involving public transportation are more complicated, but can provide underserved residents with great access to healthy foods. Low-income residents without cars spend time and money finding convenient and cost-effective means of transportation. Possible ways to simplify public transportation issues for low-income residents is to discount bus passes, or provide local, small-scale transportation to and from supermarkets. In Madison, Wisconsin officials proposed a discounted bus pass to riders eligible for SNAP. Another possible solution could be food delivery service provided by supermarkets. This would alleviate time spent shopping and traveling to and from

supermarkets, which could be an effective way to make healthy foods accessible to all individuals in all neighborhoods. In New York City and other large cities, many supermarkets offer free delivery services for purchases made over \$15 to provide convenience to customers. This would also spur job creation for supermarkets, employing hundreds of thousands of delivery people nationwide. Of course, this is not a policy suggestion, but a business practice proposal.

The combination of policies on advertising and the accessibility and affordability of healthy food would help create healthier food environments in the United States, ultimately helping to combat obesity. Government intervention is the most efficient and effective way to create change, so long as they are supported by local grassroots efforts.

Appendix

Appendix 1

Town	Store Type	Store Name
Niskayuna	Supermarket	Co-Op
Niskayuna	Supermarket	Shop Rite
Niskayuna	Supermarket	Price Chopper
Niskayuna	Supermarket	Hanaford
Schenectady	Grocery	Mohawk Deli & Grocery
Schenectady	Grocery	Hulett Market Grocery & Deli
Schenectady	Grocery	State Street Grocery
Schenectady	Grocery	Stewarts
Schenectady	Grocery	Hamilton Hill Meat Market and Beverage
Schenectady	Grocery	Dairy Market
Schenectady	Grocery	Cumberland Farms
Schenectady	Grocery	Craig Street Deli and Grocery
Schenectady	Grocery	Eastern Avenue Grocery
Schenectady	Grocery	S&N Grocery and Deli
Schenectady	Specialty	West Indian & American Grocery
Schenectady	Specialty	Karam Asian Grocery & Halal Meat
Schenectady	Specialty	Schenectady Green Market
Schenectady	Specialty	Capiello Foods (Italian specialty)
Schenectady	Specialty	Lazeeza Halal Food Mart
Schenectady	Specialty	Avon Market
Schenectady	Supermarket	Aldi
Schenectady	Supermarket	Price Chopper

Appendix 1 provides a list of all of the food stores I visited, categorized first by city and then by store type. The store visits were the groundwork for my research in Chapter Three and Chapter Four.

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