Weighing Change: Addressing Child Obesity Reforms in the United States

by

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Class of 2015

A thesis submitted to the faculty of Wesleyan University in partial fulfillment of the requirements for the Degree of Bachelor of Arts with Departmental Honors from the College of Social Studies.
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Acknowledgements

For Food,

This project is the culmination of a multitude of my interests, passions, and familial traditions. My love for food was engrained early by mother, a professional chef of multiple cuisines. With this priming, I pursued a variety of interests, but I always seemed to find myself back at food. Despite myself, I dove into this project and am indebted to the many people who contributed to its fruition.

Professor Marc Einser  Professor Richard Elphick  Janet Poppendieck
Professor John Finn  Madeline Levin
Professor Wendy Rayack  Melanie Schrowang, Lisa Church, and Robin Safley
Professor John Bonin  Diane Sylvia and Jheanell West
Professor Richard Adelstein  Sandy Sheedy
and Mickie Dame  Jennifer Davies
and the Davenport Scholarship Committee

I want to thank my peers for continuing to shock and impress me for four years. I have grown tremendously from both your insight and ferocity for debate.

I want to thank my family for their continued support and curiosity for my academic endeavors.

My mom for bestowing upon me her love of food.
My dad for his consistent confidence.
And my sister for her well-need perspective.

Lastly, I would like to thank anyone who read, copy-edited, or fact-checked any portion of this work. To you I am deeply grateful.
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABA</td>
<td>American Beverage Association</td>
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<tr>
<td>BMI</td>
<td>Body Mass Index</td>
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<td>CEP</td>
<td>Community Eligibility Provision</td>
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<tr>
<td>DOA</td>
<td>Department of Agriculture (State)</td>
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<tr>
<td>DOE</td>
<td>Department of Education</td>
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<tr>
<td>DOD</td>
<td>Department of Defense</td>
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<tr>
<td>EFNEP</td>
<td>Expanded Food and Nutrition Education Program</td>
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<td>FNS</td>
<td>USDA Food and Nutrition Services</td>
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<td>FPL</td>
<td>Federal Poverty Line</td>
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<td>FSP</td>
<td>Food Stamp Program</td>
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<td>FSET</td>
<td>Food Stamp Employment and Training Program</td>
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<td>FTC</td>
<td>Federal Trade Commission</td>
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<td>HFCS</td>
<td>High Fructose Corn Syrup</td>
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<tr>
<td>HHKFA</td>
<td>Healthy, Hunger-Free Kids Act</td>
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<tr>
<td>HHS</td>
<td>Department of Health and Human Services</td>
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<tr>
<td>HIP</td>
<td>Healthy Incentives Program</td>
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<tr>
<td>IOM</td>
<td>Institute of Medicine</td>
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<td>NIH</td>
<td>National Institute of Health</td>
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<tr>
<td>NSLP</td>
<td>The National School Lunch Program</td>
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<tr>
<td>PRWORA</td>
<td>The Personal Responsibility and Work Opportunity Reconciliation Act</td>
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<tr>
<td>SBP</td>
<td>The School Breakfast Program</td>
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<tr>
<td>SNAP</td>
<td>The Supplemental Nutrition Assistance Program</td>
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<tr>
<td>SSB</td>
<td>Sugar-Sweetened Beverage</td>
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<td>SSI</td>
<td>Supplemental Security Income</td>
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<tr>
<td>TANF</td>
<td>Temporary Assistance of Needy Families</td>
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<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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<tr>
<td>WIC</td>
<td>The Special Supplemental Nutrition Program for Women, Infants, and Children</td>
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If more of us valued food and cheer above hoarded gold, it would be a merrier world.
J.R.R. Tolkien
Introduction: Why Child Obesity?

Over the past three decades, global obesity rates have grown at an unprecedented rate. In 1960, 13.4% of adults and 5% of children in the United States were obese. Currently, 34.9% of adults and 16.9% of children are obese, and these statistics are either static or continue to grow.¹ These trends in obesity threaten general health and economic productivity. Obesity is linked to the escalation of cases of Type II diabetes, coronary heart disease, stroke, various cancers, and many other serious and often fatal medical conditions.² The societal costs for obesity are also growing. In 2009, obesity alone cost the United States economy $270 billion. By 2030, these costs will increase to between $861 and $957 billion, or about 16% to 18% of total spending on healthcare.³ Consequentially, many of these costs will be pushed onto Medicaid, an already stretched public healthcare program. Nevertheless, proposals from both the federal government and the mainstream food movement fail to provide a holistic solution to manage obesity. These unilateral methods are economically irresponsible because they fail to efficiently mitigate child obesity. In order to effectively reduce and prevent obesity in the United States, proposed policies must adopt a holistic, multilateral approach to address the diverse factors increasing the obesity rate.

The immediate and peripheral consequences of obesity are widespread. The negative health effects of obesity are among its most destructive consequences. In 1980, 2.5% of the population, or 5.6 million individuals had Type II diabetes in the

¹ Cynthia L. Ogden, et al., “Prevalence of Childhood and Adult Obesity in the United States, 2011-
By 2014, 9.3% or 29.1 million individuals were diabetic.\(^4\) In recent history, Type II diabetes only affected adults. However, with the growing rate of child obesity, adolescents now account for over half of these diagnoses. Type II diabetes causes sleep apnea and asthma and increases the likelihood of developing hepatic, renal, musculoskeletal, and neurological complications. There also exists a body of work dedicated to the psychological effects associated with child obesity. Society views obese adults and children as unhealthy, lazy, academically unsuccessful, and socially inept. Overweight and obese children tend to have negative self-images and more often present high-risk behavior.\(^5\) These common stereotypes and psychological attitudes only lead to further psychological complications. The financial burden of obesity has also increased. Between increased medical care, mortality, disability, and losses of productivity, obesity costs the U.S. economy $270 billion.\(^6\) Medicaid shoulders half of the medical costs associated with obesity, including a majority of the costs of obesity-related hospitalizations. From 2001 to 2005, Medicaid spending on obesity-related hospitalizations alone increased from $53.6 million to $118.1 million.\(^7\) As these costs continue to mount, the economic necessity of obesity prevention grows. Ultimately, measures to prevent obesity are more financially

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\(^7\) Wang, 2323-2330.

\(^8\) Leonardo Transande and Samprit Chatterjee. "The impact of obesity on health service utilization and costs in childhood," Obesity 17, no. 9 (2009), 1758.
responsible and devoid of the societal and individual costs compared to measures to
cure obesity.

Rising obesity rates in the United States are, however, a recent development.
In the 1960s, 13.4% of adults were obese. Since that time, the adult obesity rate has
more than doubled. These rates raise concerns of national health and economic
productivity. However, what is of even greater concern is the rise of national child
obesity rates. In the 1970s, about 5% of children were obese, and this rate remained
fairly stable throughout the decade. Between 1980 and 1994, this statistic nearly
doubled. Child obesity rates are especially important because they more accurately
estimate future projections of national health and economic success than rates of adult
obesity. According to the Center for Disease Control, overweight and obese children
are four times more likely to become obese adults than children of an average
weight. The rapid growth of obesity, and the implications for child obesity in
particular, threatens not only the livelihood of individuals but also the future
productivity of the United States.

Unraveling Causality

In the past, obesity was perceived as an individual problem, an inability to
enact self-control. Over time, the perception of the disease in the medical profession
transformed. The causes of obesity are now understood as part of a network of factors

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9 National Institute of Diabetes and Digestive and Kidney Diseases, “Overweight and Obesity
10 Center for Disease Control and Prevention, “Child Obesity Facts,” (2014),
David S. Freedman, et al., "The relation of childhood BMI to adult adiposity: the Bogalusa Heart
and circumstances rather than an individual moral failure. The changes in the dialogue on obesity mark this shift in perception. In 2004, the Centers for Medicare and Medicaid, subsidiaries of the United States Department of the Health and Human Services (HHS), removed any language from coverage manuals claiming that obesity was not an illness and reinforcing the distinction between disease and individual moral failure.¹¹

From analyzing industry practices to evaluating individual characteristics, it becomes clear that child obesity is not the result of a single element, rather a combination of causal mechanisms ranging from socioeconomic status to genetic predisposition. Obesity is an example of what policy analysts refer to as a “wicked problem.” A wicked problem involves many interdependent actors influencing a multi-causal mechanism. These problems often are socially complex, have no clear solution, and require cooperation between multiple stakeholders. When developing policy to address a wicked problem, the proposal must include a feedback mechanism and the policy must be adaptable considering future feedback. Ultimately, the goal is to create sustained behavior change through both a top-down and a bottom-up approach.¹² For the case of child obesity, there are stakeholders on both the supply-and demand-side of the food market that contribute to growing obesity rates. The actors involved in this causal mechanism are the food industry, the government, and the consumer. In this case, the consumer represents both children and parents, who influence the household food environment.

On the supply-side of the food market, the major stakeholders are the food industry and the federal government. Farm economics, industry practices, and government policies influence prices and accessibility of healthy food. The price to grow, process, and transport goods largely determines retail price. The government encourages production of specific foods through the U.S. Department of Agriculture (USDA) commodities program that provides agricultural subsidies to farmers. The food industry also controls the geographical accessibility of healthy food by choosing where to develop retail locations, which often reflects previous economic development of a neighborhood. In addition, the government influences accessibility to healthy food through economic incentives to new businesses and franchises to develop in various communities as well as through infrastructure and public transportation projects. Consequentially, financial and geographic accessibility to healthy food often depend on socioeconomic status. Unhealthy, calorie-dense foods are the cheapest available, while healthy foods are relatively expensive and inaccessible. Families with tight food budgets who have to maximize calorie-density per dollar are more likely to purchase unhealthy foods than families with larger food budgets. Accessibility also plays a major role both in the community and in the home. Studies have shown that proximity to grocery stores is correlated with diet.13 Residents of low-income communities are also less likely to have access to grocery stores because food industry professionals believe that development of grocery stores in these locations is unprofitable. What results from industry and government policies

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is a food environment where unhealthy foods are the cheapest and most accessible in the market effectively turning healthy food into a normal good.

On the demand-side of the market, the food industry, the federal government, and the individual household all shape demand and influence consumer choice. The food industry’s marketing practices and the government’s regulations on food advertising influence the quantity and quality of information about various food products that consumers receive via advertisements, labels, and public nutritional campaigns. Studies show links between junk food advertising and food perceptions. The Supreme Court protects commercial advertising because of its role in providing the consumer with complete information about a product. The use and protection of advertising influence consumer preferences and demand for goods. Also acting on the demand-side of the market are households, consisting of both parents and children. Parents create the food environments where children spend a majority of their time. Parents influence these environments through factors of budgets, time, and biology. Parental qualities such as socioeconomic status, employment status, education level, family structure, and race all influence child obesity outcomes. Socioeconomic status is often considered one of the most influential factors for determining child obesity. Studies show that minorities and individuals of lower socioeconomic status are more likely to become obese. In the past three decades, rising child poverty rates mirror rising child obesity rates. In 1969, 19% of Americans lived below the poverty line and 14% of children lived in poverty. Today, 15.1% of Americans live below the

15 Ebbeling, 476.
16 Wang, 22.
poverty line and 22% of children live in poverty. The inverse relationship between socioeconomic status and child obesity marks a larger national trend of rising poverty among American citizens. More recent developments in research on child obesity link genetic factors to the probability of becoming obese. Studies have shown that 25% to 40% of an individual’s Body Mass Index (BMI) is inheritable. Although the recent rise in obesity rates cannot be attributed to genetics alone, genetics do appear to play a role in an individual’s weight.

Similarly to parents, children are influenced by budgets, time, and biology. When children choose meals at school or use their limited disposable income, they cannot be considered rational decision makers. While making dietary selections, children discount the future more than adults do because they are more susceptible to the persuasion of instant gratification. They are also often acting with incomplete information about the health consequences of their decisions. Therefore, when children are left without information or guidance, they are less likely to make dietary selections that prioritize nutrition. Many studies also cite changes in leisure time for children such as decreases in physical activity as a major factor contributing to rising child obesity rates. Ultimately, there is a range of factors on both sides of the market involved in the recent increase in the child obesity rate, which results in a causal mechanism with a complicated web of relationships between all actors involved.


**Prevention Models and the Role of Public Policy**

To effectively manage the national child obesity rate, proposed solutions must not only address the source of the issue but also target periods of life where obesity characteristics are most defining. Managing obesity starts with reducing child obesity. Intervention during childhood is more successful and cost-effective at reducing the rate of adult obesity than interventions during adulthood that try to cure obesity. Thus preventative measures should be taken in order to change current obesity trends.19 Childhood and adolescence are critical junctures for obesity prevention because it is during these time periods that bodies develop and habits mature. During these formative years, the probability of a child becoming an obese adult is determined. Therefore, preventative measures must target these developmental periods in order to effectively reduce both child and prevent adult obesity rates.

When developing preventative public policy to address child obesity, the policies must target the exact causes of child obesity. As outlined earlier, there are causes of child obesity on both the supply- and demand-side of the market interaction. Actions of the food industry, the government, and the household (both child and parent) all influence child obesity rates. Therefore, policy proposals must include a multilateral approach that is able to identify effective solutions on either side of the market interaction. If policy proposals fail to address causality on one side of the market then a wicked problem will persist. Preventative policies for child obesity require a holistic approach that addresses multiple causal factors.

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There are two models of preventative policies for child obesity that can frame both supply- and demand-side reforms: the personal-responsibility model and the environmental model. The premise of the personal responsibility model is that the individual is capable of solving his or her own problem when provided adequate information about their choices and individual agency to make rational choices. The goal of this model is to protect individual choice while imbuing the individual with the information and the agency to solve his or her own problem. The personal-responsibility model is a bottom-up approach to ameliorating obesity by providing individuals with the tools to take preventative action themselves. The environmental model, in contrast, posits that by adapting obesogenic environments into healthy food environments, the likelihood of individuals making healthy choices increases and health outcomes improve. This model also asserts that the recent growth of obesity rates cannot be attributed solely to a deficit of information about consumer choices and the health effects of these choices. The environmental model is a top-down approach to obesity prevention that creates an environment whereby individuals are more likely to take preventative action towards improving their health. These models represent the two frames for policies that can be used on either the supply- or demand-side of the market.

Within the past two decades, the federal government and the mainstream food movement each developed public policy platforms to manage child obesity. The side of the market in which they choose to implement reforms is largely based on the actors in the market they wish to involve in the management of child obesity.

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model that they choose is reflective of their preference of a top-down or bottom-up approach to preventing obesity, which is largely reflective of ideological preference. The federal government and the mainstream food movement vary on which side of the market they propose the majority of their reforms as well as the prevention model they choose to form their policies. The federal government focuses its policies on the demand-side of the market by reforming the missions of pre-existing food programs to address concerns of child obesity. Their policies involve educating individuals on nutrition and providing food benefits, which largely implements the personal-responsibility model of public policy that offers both information and agency to the individual in order to consume rationally. The mainstream food movement proposes reforms on the supply-side of the market by demanding changes to the relative price of and geographically accessibility to healthy food. These policies follow the environmental-model by highlighting the effectiveness of reducing child obesity by creating healthy food environments to increase the likelihood of an individual making a healthy choice. Both the federal government’s and the mainstream food movement’s approaches to manage child obesity fail to consider both sides of the market interaction as well as related policies such as income maintenance, healthcare, minimum wage, and etcetera, which ultimately fails to fully address the conditions of a wicked problem. Additionally, their adherence to one prevention model restricts the effectiveness and dimensionality of their proposed reforms. In order to maximize the utility of proposed reforms, the model selected for each proposal should vary based on the effectiveness, political feasibility, and health effects rather than precedent for the use of a specific model.
The goal of this thesis is to establish the causes of child obesity in order to pinpoint the faults and gaps of both the federal government’s and mainstream food movement’s proposals to manage child obesity in an effort to illuminate sectors for policy reform to improve health outcomes. Chapter One outlines child obesity’s supply- and demand-side causal mechanism. It details the role of each of the actors involved in order to disentangle their complicated, interdependent relationships. Chapter Two focuses on the federal government’s strictly demand-side approach to the management of child obesity that predominately uses the personal-responsibility model. Chapter Three analyzes the mainstream food movement’s supply-side preventative policy proposals that adopt the environmental-model. These final two chapters outline the gaps and faults in these policies in an effort to highlight the nature of a wicked problem and the avenues for politically feasible, efficient reform to improve child health outcomes by reducing and preventing child obesity.
Chapter 1: Unraveling the Causal Mechanism

In order to create effective public policy to address child obesity in the United States, it is crucial to understand why the child obesity rate changed so significantly in the past three decades. This section will outline the current literature on the causal mechanism explaining the recent growth in child obesity. There are three major actors involved in this rise: the food industry, the government, and the household. Households can also be divided into subgroups of parents and children, whose actions both influence health outcomes of children differently. This section will explore how these actors have both independently and in conjunction contributed to drastically higher rates of child obesity rates. Each of these actors fills a role in the food market on either the supply and demand side of the equation. It is the outcomes of these supply and demand interactions that determine the diet of American children and largely influence the obesity rate.

Supply Side: Food Prices and Accessibility

On the supply side of the market, both the food industry and the federal government influence the food environments available to the individual consumer. The industry, made up of farmers, manufacturers, and distributors, is preference limiting to consumers through variation in prices and retail locations, which vary based on farm economics and manufacturing practices. The government also influences both production and distribution through regulations and agricultural subsidies as well as accessibility to healthy food through development of infrastructure and public transportation. These policies are often influenced by the
industry’s role in government affairs through vehicles such as lobbying and realities of the revolving door between the USDA and the food industry. The relationship between industry and government ultimately defines the supply-side of the food market.

**Relative Food Prices: Why Does Healthy = Expensive?**

*Role of the Food Industry: Pricing and the Economics of the Farm and the Factory*

The economics of modern food production cannot be explained by past economic theories. In the past, malnutrition was often characterized by hunger and limited supply rather than by obesity and overproduction. Thomas Malthus (1766 – 1834) developed a theory explaining population checks caused by limitations of agricultural production. Using a historical analysis, he claimed that populations would be controlled by Earth’s capacity to provide certain levels of subsistence.\(^{21}\) As fertility increased, demand would increase, but the supply curve would not be able to keep up with the necessary levels of production to sustain the population. Today, modern technologies allow farmers to enhance the fertility of land, making limitations of agricultural production a problem abstract from Earth’s nutrient capacity.\(^{22}\) This phenomenon of overproduction by farmers cannot be explained by classical economics either. According to the classical laws of supply and demand, when prices fall, suppliers should react by reducing production in order to raise prices. However, evidence shows that farmers react in opposition to this principle. When prices fall,

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farmers harvest more food to keep their income from decreasing, which in effect only drops the price further by creating a glut in the market. Farmer’s do not react to market signals as classical economists would predict them to because of the nature of the agriculture industry. Farm economics cannot be explained by either Malthusian or classical economics and requires an independent study to that of regular capitalists in order to understand the nature of farm production.

Farmers are limited in production due to the nature of both food production and consumption. When price of a commodity falls, classical economists argue that producers react to the market signal and reduce the supply in order to reinstate an appropriate price for that good. Farmers, however, react oppositely. As prices for food drops, farmers plan and harvest higher yields in order to sustain their total income. By producing more, the price sinks deeper. Farmers react to prices in this manner because of the nature of the food market and the nature of their investments. Farmers exercise less control over market prices. With a plethora of producers in a global market, the effect of an individual producer dumping surplus crop into the market is perceived as minimal. Farmers also tend to be price takers because they have to sell their crop, no matter the status of the market, once harvested. If the market is favorable when the crop is planted, but poor once harvested, the farmer has to receive some return on investments rather than none, so the crops are dumped into a poor market. Many crops cannot be stored to delay entrance into the market for future higher returns. For this reason, markets are often filled with gluts of various agricultural commodities.

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In addition, the resources of farmers, unlike those of typical capitalists, are far less mobile since they are predominately land based. Farmers tend to dislike giving up their land and investing in production of other goods. Entering into different markets is much more difficult for farmers than for capitalists who are allotted mobility by the use of capital. Unwilling to trade in or build on their land, farmers are further limited to production of land-based commodities, and they are limited by the nature, climate, seasons, and location in which they live, which means the variety of substitution goods is limited. They require higher fluctuations in relative prices of goods than capitalists in order to alter their output. The result of these preferences and limitations is an overproduction of crops because of farmers’ unwillingness to respond to market signals. Farmers will also have preferences between the various crops that they can produce on their land. Many raw materials used in processed foods have lower production costs when producing on a large scale. Corn, potatoes, and wheat – all primary ingredients in junk foods – require fewer costly inputs than fresh fruits and vegetables. These staple crops can be tilled and harvested with machines unlike fresh produce, which require human labor for both weeding and harvesting. Although fruit and vegetable production have been intensified and decreased in cost through breeding, postproduction practices, and newer forms of crop rotations, these goods are still much more expensive to produce than grains.

The cost of economic inputs for various commodities will influence farmers’ selections for production. Remarkably, the U.S. agriculture industry only produces

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76% of the servings necessary to fulfill the produce serving standards set by the USDA for the standard 2,000-calories diet for the entire U.S. population. When discounting starchy vegetables, the percentage drops further. Only half of the amount of dark greens, one-third of orange vegetables, and one-quarter of legumes recommended are produced by the U.S. food system. The only sustainable solution to this problem is to increase domestic production. In the U.S., one-third of fresh fruit is already imported, and importation is not a long-term sustainable solution considering issues of food safety, carbon costs, total costs, and national security.26

Crops also perform differently in markets than other commodities because the demand for food is not elastic; in other words, people do not eat more calories per day as price varies. Demand may shift as prices drop, but this shift would only be in the consumption of an equivalent good (i.e. replacing calories from chips with calories from vegetables if the price of vegetables drops). Eventually, there is a limitation on the inflation of the number of calories consumed per day as prices drop. In reality this means that supply can expand without any change in demand, meaning without any increase in demand for calories. Ultimately, the nature of economics on the farm encourages continuous production, and often overproduction, despite changes in prices and demand. The realities of farm production form the foundation for the price differential in the food market that makes a healthy diet expensive and inaccessible.

Overproduction of staple crops is not the only factor influencing prices of agricultural commodities. The development of new technologies in the agricultural sector in both production and manufacturing has greatly affected levels of output and

prices. In production, fertilizers and pesticides have increased farmers’ capacity to augment agricultural production. With the discovery of nitrogen fixation, land fertility is no longer dependent on crop rotation. Different crops give and take different nutrients from the soil, so crop rotations prevent a nutrient deficiency by pacing different crops during different years. With the method of crop rotation, corn, for example, never grows more than twice in the same field every five years. Crop rotations also require lands to be set aside certain years with cover crops in order to reestablish appropriate nutrient levels. Before German chemist Fritz Haber developed nitrogen fixation in 1909, agricultural production was limited to nature’s provision of nitrogen through bacteria and lightning. The Haber-Bosch process (Carl Bosch commercialized the process) uses fossil fuels rather than bacteria and lightning to produce ammonium nitrate, a powerful fertilizer. The heat and pressure required to catalyze the combination of nitrogen and hydrogen is now supplied by fossil fuels rather than natural resources, making agricultural production less sustainable. However, fertilizers now allow farmers the flexibility to plant crops without considerations of nutrient deficiencies. An important consequence of this discovery is the development of monocultures for staple crops. Over half of the ammonium nitrate produced today is used on corn.\textsuperscript{27} Pesticides have also increased levels of output by ensuring higher yields per bushel. These technologies have allowed both size and frequency of yields to increase on farms across the nation.

Another technological innovation in food manufacturing that influences consumer diets is the shift from individual, in-home preparation of meals and toward mass preparation of food has lowered the price of food while increasing the quantity

\textsuperscript{27} Pollan, 43-44.
and variety of commodities consumed. Value-added foods produced outside of the home (i.e. tomato sauce, frozen dinners, etc.) tend to contain more ingredients and preservatives that decrease the healthiness of the meal than homemade products. The importance of this change of hands of producers is notable, as the obesity rates of subpopulations with greater access to and need for these foods rise, and countries with greater accessibility to this technology also experience increased obesity rates.\textsuperscript{28}

One of the major technological developments that infiltrated a vast array of food commodities and dramatically altered the nutritional content of many foods is high fructose corn syrup (HFCS). Developed by food scientists in Japan in the 1970s, HFCS is both economically cheaper to produce and six times sweeter than sugar cane.\textsuperscript{29} There exist three different forms of sugar: glucose, fructose, and sucrose. Sucrose, is a combination of both glucose and fructose.\textsuperscript{30} Unlike glucose, fructose is processed in the liver rather than in the pancreas, which means no insulin is released in the body. With less insulin, consumers are more likely to consume great quantities of the product because their hunger is not satiated.\textsuperscript{31} Individuals consume much higher levels of fructose than ever before because of HFCS is now an additive in the majority of processed foods both as a sweetener and a preservative. These technologies heavily influence the quantity, diversity, health, and price of the output. The beneficiaries of these low prices of raw materials due to technological innovation are neither the farmers nor the consumers, but rather food processors such as Cargill,

\begin{flushend}
\textsuperscript{28} David Cutler, Edward Glaeser, and Jesse Shapiro, “Why have Americans become more obese?” *Journal of Economic Perspectives*, vol. 17 no. 3 (2003), 93-4. \\
\textsuperscript{30} Guthman, 110. \\
Tyson, and Archer Daniels Midland whose profit margins grow as costs of raw materials decrease. Farmers do not receive prices that reflect the cost of production of their goods, and the low price of these staple crops (i.e. raw materials for processed goods) are not reflected in the retail prices consumers pay. Keeping commodity prices low benefits only the producers of cheap, processed foods.

*Role of the Government: Agricultural Policy and a History of Pricing, Subsidies, and Overproduction*

Although the U.S. federal government influences the relative price of healthy food, its role is often misconstrued. It is a common misconception in the mainstream food movement that agricultural subsidies for staple crops, such as corn and soybeans, cause obesity by reducing the price of high fructose corn syrup and vegetable oil, making them common additives in processed food. The argument, largely introduced and circulated by Michael Pollan and Greg Crister, follows that farm subsidies, through economic incentive, encourage surplus production of corn and soybeans. This surplus has made HFCS, a product of corn, and vegetable oil, a product of soybeans, cheap additives for processed foods, which decrease their price relative to healthy food. Evidence for this trend comes from a study from Adam Drewnowski and SE Spector whose research notes that a dollar can purchase 1,200 calories of potato chips, or 875 calories of soda, or cookies but only 250 calories of...
carrots or 170 calories of juice concentrate. The fault Pollen and Crister’s argument is the lack of consideration of manufacturing costs that influence the relative price of food, which Drewnowskki and Spector discuss. Although corn and soybeans are some of the most highly subsidized in the market, the final price of a processed good is rarely heavily influenced by the price of its raw materials. Farm subsidies have lowered the cost of some foods such as breakfast cereals and feed grains for livestock, but subsidies do not in fact influence the majority of processed food prices. On average, farm commodities as ingredients in value-added, food products only represent 20% of the cost of production, and this percentage is often much less for soda and fast food. The influence of subsidies on the final price is even smaller. For example, corn subsidies represent only a 2% reduction in consumer price, which only increases consumption by less than 0.5%. The consumer price of processed foods comes more directly from manufacturing costs than from the artificially low price of raw materials. Between 1980 and 2000, the percentage of the price represented by raw materials decreased from 31% to 19%. Subsequently, 81 cents of every dollar spent on food was spent on processing, packaging, transport, and marketing. It is estimated that a 5% to 7% increase in the price of corn would only result in a one percent price increase of meat. Therefore, the price of raw materials in food products has minimal effects on the retail price of food despite the large savings for

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35 Guthman, 122.
38 Fields, 11.
manufactures (See Table 1).\textsuperscript{39} This variation in the price of product inputs explains the phenomenon of Supersizing. The incremental cost of the food to make a product slightly larger is minimal relative to the cost of processing and packaging.\textsuperscript{40} Companies can make huge profits with these campaigns because the increased cost of the food is minimal compared to the increased profit. The price of food largely reflects manufacturing practices rather than the cost of raw materials to the manufacturer.

The narrative produced by the growing food movement has generated this popular misconception that farm subsidies have dramatically reduced prices of the unhealthiest foods on the market. Although these foods are the cheapest available, farm subsidies are not the culprit. The danger of this narrative is in the potential policy recommendations generated to reduce prices for healthier foods that misunderstand the interaction of industry and government in food production. It is important to understand the role the government has played throughout history in agricultural policy in order to understand the government’s influence on food prices today.

Historically, the U.S. government has dramatically intervened in agricultural policy ever since the New Deal. The Great Depression provides a concrete example of the phenomenon of farm economics. During the Depression, the price of corn fell to zero as farmers continued to harvest corn because it was their only source of revenue. New Deal policies developed in order to stabilize the amount of corn in the

\textsuperscript{39} Mark Muller, Heather Schoonover, and David Wallinga, "Considering the contribution of US food and agricultural policy to the obesity epidemic: overview and opportunities," \textit{Institute for Agriculture and Trade Policy, Minneapolis, MN (2007)}, 23.

\textsuperscript{40} Guthman, 174.
market, which would effectively raise price levels. The Agriculture Adjustment Acts of 1933 and 1938 were the first successful attempts to mitigate the problem of overproduction.\textsuperscript{41} The goal of supply management was to bring the supply in line with the demand. These acts developed policies of price supports that were backed by a grain reserve, for storable commodities such as corn, to keep surplus out of the market. Whenever prices dropped, farmers had the option of either dumping their crops into a continually weakening market or to take a non-recourse loan from the government, using the crop as collateral, until prices rose. When the market recovered, the farmer could either sell the crop and pay back the loan or give the government the crop if the market never recovered, which would effectively keep farmers out of debt. The grain reserve, named the ‘ever-normal granary, was managed by the USDA, who would sell the corn on the market whenever prices were high in order to control prices.\textsuperscript{42} Policies such as these encouraged farmers not to flood markets and sink the price of crops. The economics of farm production encourage overproduction in order to increase income for farmers, so if farm policy does nothing to curb this instinct, then farmers overproduce and gluts of certain crops develop in the market.

The farm policies implemented during the Great Depression lasted until the 1970s when food prices skyrocketed and critiques of overregulation supported policies that aligned with more laissez-faire policies, which they believed would encourage higher levels of production, thereby dropping prices. Food processors and grain exporters would profit from the increased production and lower prices their

\textsuperscript{41} Wallinga, 406.
\textsuperscript{42} Pollan, 49.
President Nixon’s second secretary of agriculture, Earl Butz, would forever reform the agricultural sector by pushing policies that encouraged overproduction during a time when food prices were already high, which allowed for more politically digestible farm policy that promised lower prices. In 1973, Butz made a deal with the Soviet Union to sell thirty million metric tons of U.S. grain – three-quarters of all commercially traded grain in the U.S. at the time. This caused a shift in U.S. grain supplies from a surplus to a scarcity, which augmented prices even more dramatically. Farm policies began to encourage farms to “get big or get out” in order to produce higher yields. The idea was for the U.S. agricultural sector to use both its size and lower prices to control world markets, and thus farmers were encouraged to grow from “fencerow to fencerow” by bringing marginal land back into production. New Deal policies of loans, grain purchases, and supply management were slashed and replaced with a lower target price for grains and a new system of direct payments to farmers. Government subsidies allowed farmers to receive the same profit from every bushel of their crop. The only difference from the previous policy was that now farmers began entering their commodities in the market no matter the price because their profit was not reflective of the current market price. The profit per bushel was determined by the federal government who set the target price and paid the difference between the price of corn and the target price directly to the farmer. The federal government was effectively supporting massive amounts of crop overproduction by paying farmers directly rather than helping them through

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43 Pollan, 50.
44 Guthman, 121.
45 Pollan, 52.
46 Guthman, 121.
loans, which would keep surplus out of the market. Overproduction of this nature does not support farmers, rather those industries that profit from cheap corn prices such as producers of ethanol, cattle feed, and high fructose corn syrup.

The Freedom to Farm Act in 1996 planned an elimination of all remaining price floors and grain reserves, which was supported by free-market economic ideology. It was determined that the free market would set prices, and by removing the government from the agriculture sector, farmers could react appropriately to price fluctuations.47 However, by 1998, prices had collapsed, and the government had to bail out farmers through emergency subsidy payments. The 1996 policy represented the end of supply management but kept all incentives for commodity overproduction. By 2001, the emergency subsidy payments had tripled in cost, culminating in a $20 billion yearly budget. These payments had only represented 13% of the income of farmers in 1996, but by 2000 they represented 49% of the average farmer income.48

In 2002, these subsidies became a permanent fixture of the structure of agricultural policy and the Farm Bill.49 The goal of contemporary farm policy is to reduce the risk of production. However, farmers are also penalized for producing outside of the constraints of federal support. There is lower economic security in producing fruits and vegetables than producing highly subsidized crops such as corn, wheat, and potatoes.50 Today, the agricultural sector is marked by chronic overproduction. In 2009, U.S. farms planted eighty-seven million acres of corn with yields of 150

47 Franck, 329.
49 Wallinga, 406.
50 Franck, 330.
bushels per acre. These yields are 600% higher than yields in 1920.\textsuperscript{51} Ultimately, farm subsidies were a solution to prior failures in farm policy and low prices. Overproduction is not a direct result of subsidies and removing them from policy would simply drive farmers out of the market. However, farm policy can still greatly influence the price and quality of food through other means that more directly affect the production, manufacturing, and distribution of food. Following the New Deal policies, all agriculture policies have been built during episodic periods of high food prices. However, the development of such policies misinterprets the nature of farm economics, which shows that prices trend downwards. The development of a functional farm policy is dependent on understanding of the nature of the farm.

\textbf{Geographical Accessibility: Why Is Healthy Food Hard to Find?}

\textit{Role of Industry: Is There a Market in a Food Desert?}

Food environments are also influenced by the geographical accessibility to food retail locations. The food industry selects profitable locations based on a variety of factors related to both supply-side costs and demand-side risk. These decisions determine whether or not a neighborhood will generate a healthy food environment or become a food desert. Food deserts are neighborhoods or communities with minimal access to healthy food. In addition to the lack of geographical accessibility to healthy food in food deserts, food prices are higher in food deserts than non-food deserts in both rural and urban locations.\textsuperscript{52} These communities are usually minority and low-

\textsuperscript{51} Wallinga, 406.
\textsuperscript{52} Deja Hendrickson, Chery Smith, Nicole Eikenberry, “Fruit and vegetable access in four low-income food deserts communities in Minnesota,” \textit{Agriculture and Human Values} vol. 23 (2006), 371–383.
income neighborhoods, and the lack of geographical and financial accessibility to
grocery stores increases the likelihood of obesity.\textsuperscript{53}

Food companies consider both supply- and demand-side factors when
deliberating on the profitability of opening a grocery store in a new location. On the
supply-side, it is important to consider both fixed and variable costs. The theory of
economies of agglomeration states that per unit operating costs decline with a higher
geographic concentration of retailers.\textsuperscript{54} Total costs for a business decline when a
retail economy is already developed in the neighborhood. Similar to other industries,
the food industry is less inclined to develop a new retail location in a food desert.
Additionally, the fixed costs to start a new business are high considering land, labor,
equipment, and inventory costs, etcetera. Though low-income neighborhoods are
more likely to have lower land and labor costs, the fixed costs alone are exceedingly
high if a low-income neighborhood is not densely populated.\textsuperscript{55} The current trend in
food sales is to build large chain grocery stores on the outskirts of cities, which makes
it more difficult for less densely populated, poorer communities to access the majority
of these locations. These grocers have longer hours and more parking but are less
accessible via public transportation.\textsuperscript{56} It is also unlikely for these megastores to
develop in urban locations because access to large areas of land is limited. In these
communities, contractors have to deal with more zoning laws such as specific
minimum parking requirements that are more expensive and difficult to meet in urban

\textsuperscript{53} Story, 259.
\textsuperscript{54} Marianne Bitler and Steven J. Haider, "An economic view of food deserts in the United
\textsuperscript{55} Ibid.
\textsuperscript{56} Renee E. Walker, Christopher R. Keane, and Jessica G. Burke, "Disparities and access to healthy
rather than suburban locations.\textsuperscript{57} The development of these megastores on the outskirts of urban areas forces the closure of many smaller stores within the city that cannot compete with the variety and accessibility of these stores for non-residents.\textsuperscript{58} These smaller stores also have a more difficult time accommodating the equipment or space necessary for fresh produce or perishable products that improve the nutritional landscape of the shop, and they are often not on convenient delivery routes for suppliers.\textsuperscript{59} Each of these supply-side costs of opening food retailers in new locations deter development and create food deserts in low-income neighborhoods.

There are additional demand-side characteristics to consider when developing new retail locations. The theory of economies of agglomeration also states that without previous demand established, suppliers fear that there is not a demand for these goods in low-income and minority communities and are therefore hesitant to develop new businesses.\textsuperscript{60} Suppliers often consider the demographics and the habits of individuals within a community when determining whether or not development would be profitable. Prices of the new retailer must be competitive in order for individuals to considering shifting habitual shopping routines. Consumers are restricted by income, prices, and preferences. Other restrictions include time, information, and nutritional education.\textsuperscript{61} For example, a lack of information on nutrition can lead to a lack of demand for healthy food. Food deserts developed in the inner city between 1970 and 1988 as more affluent families moved to the suburbs,

\textsuperscript{57} Michele Ver Ploeg, “Access to affordable, nutritious food is limited in ‘food deserts,’” \textit{Amber Waves} 8, no. 1 (2010), 26.
\textsuperscript{58} Walker, 876-877.
\textsuperscript{59} Ver Ploeg, 26, 27.
\textsuperscript{60} Bitler, 156.
\textsuperscript{61} Ibid.
and economic segregation increased. The median income dropped and almost one half of all supermarkets in the three largest American cities closed. With this shift in demographics of the consumer, the food landscape of the inner city changed. There are obstacles perceived by food companies on the demand-side of the market in low-income and minority neighborhoods that de-incentivize the development of retail locations for healthy food, which further explains the formation of food deserts. Both the supply- and demand-side concerns from the food industry create food deserts in many underserved communities.

Role of Government: Building Infrastructure and Improving Accessibility

The government also influences accessibility of healthy food through both economic incentives to bring retailers to underserved communities as well as through the development of infrastructure and public transportation to make existing retailers geographically accessible. Most of the literature on the federal government’s role in building infrastructure in the case of obesity centers on improving environments to encourage physical activity. Though this concept is important to the reintegration of physical activity into daily life (i.e. making cities for people rather than for cars), this section is about creating “built environments” that increase accessibility of healthy food. However, the creation of walk-able neighborhoods that encourage public transportation and bike path development can simultaneously encourage physical activity.

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62 Walker, 877.
activity while improving food access. Studies show that when this infrastructure develops, people use it and improve their health. For example, cities that receive federal funding in proportion to their population size for biking infrastructure have the most effective bike programs that improve transportation and health in the city. The federal government can encourage this form of development in order to improve access to healthy food in large retailers. The federal government can also provide economic incentives to the food industry to develop in locations that would not necessarily be considered initially profitable according to the industry. These responsibilities of the federal government could potentially improve health outcomes if the federal government decides to step into this role of reducing the incidence of food deserts.

Supply-Side Results

On the supply side of the food market, the food industry and the federal government work independently and in coordination to affect the supply of food. They influence consumer options by affecting prices and accessibility to healthy food. These stakeholders greatly control the food environments that are accessible to consumers. Technological innovation both in agricultural production and manufacturing explain 40% of the rise in obesity rates. These innovations are

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responsible for reduced prices of unhealthy foods.\textsuperscript{67} Although it has been discredited that farm subsidies are responsible for the price variation in the food market (i.e. the cheapest foods are unhealthy), the reality is that prices of unhealthy, energy-dense foods are the lowest available as seen in Figure 1.\textsuperscript{68} Drewnowski and Spector’s research presents these realities of the market in terms of purchasable calories per dollar. The prices of unhealthy foods have also continued to drop as prices for healthy foods are on the rise. Between 1997 and 2007, the real price of a two-liter bottle of Coca-Cola fell 34.89%, and the price of a McDonald’s quarter pounder dropped 5.44%. During this same period, however, the average price of fruits and vegetables rose by 17%.\textsuperscript{69} Similarly, between 1985 and 2000, the price of fruits and vegetables rose by 118% but only 35% for fats and oils, 46% for sugars and sweets, and 20% for carbonated beverages.\textsuperscript{70} Not only are these price differences stacked against health, but also the current trends in prices are only increasing the gap and effectively reducing accessibility to healthy foods. Accessibility to healthy foods is also affected by both industry and government priorities that only dedicate limited attention and financial aid to the development of retailers of healthy food in low-income and minority neighborhoods. These food deserts decrease accessibility of healthy food and increase the likelihood of obesity rates rising. The food industry’s and the federal government’s effects on prices and accessibility create the food environments in which individuals make their dietary choices.

\textsuperscript{68} Muller, 21.
\textsuperscript{69} John Cawley, “The Economics of Childhood Obesity,” Health Affairs, vol. 29 no.3 (2010), 364.
\textsuperscript{70} Story, 262.
**Demand Side: Information, Environments, and Individuals**

Food advertising and individual circumstance shape consumer demand. As explained on the supply-side of the market, both the food industry and the federal government influence the type of food environments found in various communities through variations of price and accessibility. In addition to shaping prices and accessibility, these two actors also shape demand by controlling the information about food products available to individuals. This information ultimately influences consumer decisions. Additionally, individual characteristics and circumstance within those environments further determine the likelihood and capacity of an individual making healthy choices. Food environments are shaped by relative prices of food, accessibility of food, level of advertising, and the quality of nutritional information and education. Factors such as income, education, and race determine what diets are accessible to individuals as well as what choices they are likely to make within the limited options available. Parents and children each play a role in health outcomes. Parents manage the food environment in the home, and children have a degree of control over their own dietary choices. Each of these three actors – the industry, the government, and the household – plays a role on the demand side of the market to influence or participate in consumption and ultimately affect health outcomes.

**Advertising and Information: Informing or Influencing the Consumer**

**Industry Advertising: Influencing Demand Preferences**

The practice of advertising is defended as a method to provide consumers with information about products in order to convince consumers of the superiority of one
product over its competitors. In reality, advertising is a tool used by the industry to convince consumers to buy their product. Since the industry uses advertising to persuade consumers, the advertisement rarely provides the consumer with complete information about the product. Advertising works to generate demand for products that consumers never needed. For example, was it a demand for Cheetos that sparked their production, or was it product of the food industry, which generated demand through advertising? The evolution of food advertising has turned food from a necessity for subsistence into a product for pleasure. Thus the nutritional content of the food is no longer the focal point of its own advertising. Advertising has had adverse effects on consumers by influencing consumer preferences through fanfare, rather than information.

The United States agricultural sector already produces 2,700 calories per human per day for a world population of 9 billion.\(^\text{71}\) The majority of these calories come from staple crops such as corn and soybeans. On average, humans require between 1,000-3,200 calories depending on age, gender, and level of activity. Individuals that require 2,700 calories or more daily are limited to highly active males from ages 14 – 51.\(^\text{72}\) Ultimately, one-third of the calories produced in the U.S. ends up as animal feed and another 10% in ethanol production, but the U.S. agricultural sector still has a surplus of calories to feed the American population. The number of possible calories consumed per day limits consumer demand for food. However, an


An individual can consume 20% more or less than they intended to without realizing it. Individuals are also limited in their food consumption due to a level of vanity. Consumers do not want to appear as gluttons, so it less likely that an individual would ask for a second portion of food, but more likely that an individual would accept or request more food during the initial food purchase. This reality of human consumption was the key finding by David Wallerstein that revolutionized the marketing of food. In the 1950s and 1960s, Wallerstein worked in the concessions department for a movie theater chain in Texas. His goal was to expand soda and popcorn sales. He learned that people only want to buy one soda and one popcorn so as not to appear as gluttons. However, if they had the option to increase the quantity, people will buy a larger size at the original purchase. In 1968, Wallerstein started working for McDonald’s where he created the marketing campaign of “Supersizing.” People presented with larger portions were willing consume 30% more food than they originally anticipated. Wallerstein was able to use marketing ploys to increase caloric consumption, thereby increasing profits.

The food-advertising sector has grown tremendously over the past few decades. In 2009, reporting companies spent $9.65 billion on food advertising, and a total of $2.25 billion of these funds was spent on ads targeting children. Of the ads that targeted children, 72% were for fast food, soda, and breakfast cereals. These ads are spread over a variety of mediums from television, radio, print, schools, schools,

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74 Crister, 10.
75 Pollan, 105.
Internet, and video games. Exposure to ads has increased dramatically since the popularization of home televisions. In 1950, 2% of American households owned a television. By the 1990s, 98% of households had televisions, with the majority of households owning more than one.\textsuperscript{77} Children now see over 5,500 advertisements every year. The majority of these ads are for unhealthy foods; 98% of the food ads aimed children and 89% of food ads for adolescents market foods that are high in fat, salt, and sodium (HFSS foods).\textsuperscript{78} Ads for children tend to focus less on the food and more on the advertising campaign. Elements of campaigns most often focus on celebrities, mascots, contests, prizes, and etcetera rather than the nutritional content. Ads for children more often present the restaurant location, which may include playhouses, and the food packaging than ads for adults because children are much more susceptible to the influence of these advertising ploys.\textsuperscript{79} Figure 2 compares the picture that food advertising generates of the appropriate diet, both based on quantity and content of messages, and the actual recommended diet.\textsuperscript{80} The exposure to fats, sugars, and carbohydrates highly exceed recommended values. Advertising methods and exposure influence preferences of consumers, and ultimately, the content of these messages skew perceptions of what constitutes a balanced diet.

\textsuperscript{78} Kunkel, Dale, “Food Marketing: Can ‘Voluntary’ Government Restrictions Improve Children’s Health?”, \textit{Hearing before the House Energy and Commerce Committee; Subcommittee on Commerce, Manufacturing, and Trade; and Subcommittee on Health} (October 2011), 3.
\textsuperscript{79} Ibid.
\textsuperscript{80} Note: This food pyramid is from 2003 and is no longer representative of the current National Dietary Guidelines. However, the level of advertising fails to meet the even less restrictive guidelines than the current iteration.
Through advertising lawsuits, the U.S. Supreme Court has safeguarded commercial speech under the constitutional protection of freedom of speech on multiple occasions. Although the First Amendment protects the right to free speech, the amendment is not necessarily explicit about the varieties of speech protected by law. The first major case taken to the Supreme Court to dispute the protection of commercial speech under the First Amendment was in 1942. In the case of *Valentine vs. Christensen*, F.J. Christensen disputed a New York law that prohibited the distribution of flyers on streets that incorporated commercial advertising. Handbills could only be distributed to disseminate information, but Christensen wanted to distribute flyers to promote his WWI submarine exhibit on the East River. Controversially, the event required an admission fee, meaning that the flyer was not simply disseminating information but rather advertising an event for profit. The Supreme Court sided with New York law, stipulating that the Constitution does not protect commercial advertising. This precedent was reevaluated in 1976 in the case of *Virginia State Board of Pharmacy vs. Virginia Citizens Consumer Council*. In Virginia, it was illegal for pharmacists to advertise prescription drug prices. The variance of prices around the state sparked controversy from citizen groups that demanded freedom of information on behalf of consumers. The Supreme Court decided that informing the consumer and providing the free flow of information were crucial to creating an effective market, and that commercial advertising was a part of
that process. Thus, the state could not prohibit it. Advertising is, however, regulated by the Federal Trade Commission (FTC). In 1978, the FTC introduced an initiative called the Children’s Advertising Rulemaking or “kidvid.” The goal of the commission was to eliminate television advertising that targeted children for products high in sugar content. The commission argued that children did not have the cognitive ability to understand the nature of advertising, thus making the practice deceptive. Opposition from food, toy, broadcasting, and advertising industries was immediate. They responded with a $16 million campaign to paint the FTC as a “national nanny.” The commission also faced practical difficulties in the implementation of rules since it could be argued that the majority of television audiences are comprised of children, and advertising of all high-sugar products could not be prohibited. The commission also lacked sufficient evidence that advertising influenced long-term eating habits. The commission ultimately dropped the initiative, and today the FTC is entrusted only to regulate advertisings deemed deceptive within each target age group. Commercial free speech is still protected by the U.S., and though there are certain restrictions for products such as tobacco and alcohol, which are prohibited from advertisements for children, food advertising targeting children in general is still widely practiced.

83 Mello, 2605.
Federal Government Providing the “Facts:” National Dietary Guidelines

The government creates its own ad campaigns to disseminate the National Dietary Guidelines to the public. In 1980 the first National Dietary Guidelines were written, and every five years the federal government revises them. Although the details have changed over time, the guidelines have always promoted a diet of great variety with moderation portions.84 The most recent guidelines encourage consumption of whole grains, produce, fish, and dairy. The guidelines are developed by an external advisory committee, which is assigned by the USDA and the HHS. The committee reviews and summarizes the current literature, often sourcing from the National Institute of Health (NIH) and the Institute of Medicine (IOM). Their recommendations avoid promoting health fads or crazes similar to the all low-carb or low-fat diets. These advisory boards, though often void of food industry professionals, are still influenced by lobbyists. In the 1990 revisions, ten of the thirteen groups that submitted written comments to the board were either food producers, trade associations, or organizations allied with the industry. They were able to successfully lobby to change the language of advice on meat and dairy from “eat less” to “choose lean meats” to “have 2-3 portions.”85 During the most recent committee hearings in 2010, the Sugar Association stated that promoting a reduction in sugar was “impractical, unrealistic and not grounded in the body of evidence,” while the Salt Institute claimed that, “encouraging consumption of low-salt foods will encourage Americans to eat excessively to make up for the lack of taste…The

guidelines have become far more a reflection of ideology than sound science."  

Lobbying groups have great interest in government promotions of these guidelines. However, what is most important is whether or not these guidelines actually affect national consumption patterns. Even as the guidelines have become more science-based, the gap between consumer behavior and scientific evidence is growing.

These guidelines tend to have a greater effect on government programs such as the National School Lunch Program (NSLP) or the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) because the guidelines limit options for individuals in these programs rather than try to influence preferences through government-sponsored advertising campaigns.

The government also endorses consumption of certain goods through the commodity check-off program. In 1996, the Commodity Promotion Act formed government-sponsored advertisements for commodities without the brand names and promotional campaigns of value-added commodities. For example, distinguishing between brands of chips is comparatively easier than distinguishing between brands of apples, so the goal of the program was to support these types of commodities. Ultimately, the program supports mostly the dairy, beef, and pork industries, but it also strengthens the market for agricultural commodities. The Commodity Production Act granted the Secretary of Agriculture authority over the check-off program, which since its foundation has promoted 35 different commodities. Check-off programs


promote consumption of commodities through advertising campaigns, which are financed by the industry but supported and organized by the federal government. However, the finances from the industry are made mandatory by the federal government who enforces the collection. The federal government’s other role is to defend the check-off program’s communication in court as the federal government’s endorsed message. In 2004, the program spent a total of $600 million on various ad campaigns. These campaigns have included various slogans such as: “Got Milk?”, “Beef. It’s What’s for Dinner,” and “Pork. The Other White Meat.” These programs have been seen as controversial especially when the messages contradict National Dietary Guidelines. These campaigns are also often more effective than campaigns for the National Dietary Guidelines because of appearing as unassociated with government participation, which garners greater appeal. Ultimately, the government supports specific messages for consumption through these ad campaigns, despite certain contradictions to the National Dietary Guidelines. Both the federal government and the food industry control nutritional information accessible to consumers through various advertising campaigns.

**The Household: Parental and Child Characteristics**

For children, the likelihood of becoming obese is largely determined by parental characteristics. Children are not only born with certain genetic traits that can make them more or less susceptible to becoming obese, but the environments in which they are born – which are typically controlled by parental figures – also influence their health outcome. Food psychologist Brian Wansink refers to the

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88 Wilde, 968.
individual in the household who creates the food environment as the gatekeeper. According to Dr. Wansink, the gatekeeper controls 72% of all food decisions for children and spouses. The influence of parental economic conditions and decisions on food budgets greatly affects the food environment in the home and the weight outcomes of children. Children do retain a level of autonomy and influence over their health status, especially as they grow older, but parental economic flexibility, demographics, and genetics have great influence over a child’s likelihood of becoming obese.

When both children and parents try to maximize utility, defined as either happiness or welfare (of which health is a contributing factor), they are limited by the constraints of budget, time, and biology. Budget constraints affect accessibility to affordable foods. Time affects the ability of an individual to dedicate time to food preparation, which is highly dependent on family structure. Lastly, biology affects individual preferences and genetic predispositions to obesity. Each of these factors, for both parents and children, influences the likelihood of an individual becoming obese.

A. Role of Parents: Budget

Socioeconomic status is the amalgamation of income, education, and occupation. For adults, socioeconomic status is inversely correlated with obesity: individuals of lower socioeconomic status are more likely to be obese. Child obesity is less correlated with socioeconomic status and more closely correlated with parental health outcomes.

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89 Wansink, 165.
obesity rates. If a parent is obese, the child is much more likely to be obese, and parents are more likely to be obese if they are of a lower socioeconomic status. Each of these conditions for parents affects food budgets, which ultimately determine the health status of the child.

Engel’s Law is an economic principle that states that as income rises, the proportion of income spent on food falls even as the net expenditure on food increases. Low-income families spend a higher percentage of their income on food. Maximizing the utility of food budgets for low-income families becomes crucial to provide enough calories for the household. When constrained by a budget, individuals maximize consumption by following the last dollar rule. For the case of food, this rule stipulates that the budget is optimally allocated when the individual receives the same net utility spent on food from the last unit of money as from any other increment of money in the budget. In other words, individuals with constrained budgets will reallocate their funds in order to gain the most utility per dollar. When a food budget is constrained, a certain number of calories per day are still required per individual. This requirement forces individuals to buy the cheapest calories on the market, which are usually foods that are high in fat, sugar, and salt. Energy-dense foods are the cheapest calories available because their price per calorie is the lowest on the market. Energy density of a food item measures its water content. Energy dense foods contain less water and therefore often contain more starch, fat, and sugar. For example, junk foods such as chips and cookies have a high energy density whereas fruits and

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vegetables have a low energy density. Food insecure households will first begin to consume the least expensive foods to maintain energy intake at a more affordable price.  

A corollary to Engel’s Law is that the more a budget is constrained and the higher a percentage of income goes towards food, the less healthy the diet of the family becomes. Individuals tend to discount the future, but the likelihood of discounting the future increases when individuals have the option of eating unhealthy food today as they put themselves at a higher risk of mortality over time.

Children are affected by how their parents are restricted by food budgets and choose to maximize calories with limited funds. Parents create the food environments in the home, so when they have to make unhealthy trade-offs in food purchasing, children suffer. When individuals are both living in poverty and are food insecure, they often have lower quality diets that include fewer fruits and vegetables and more energy-dense, unhealthy, processed foods.  

Between 1985 and 2000, the USDA reported that average calorie consumption increased by 300 calories per day. Of this caloric increase, 24% were from added fats, 23% were from added sugars, and 46% were from refined grains. Looking at an even broader scope of history, between 1970 and 2007, the average calorie consumption increased by 600 calories per day. Since 1985, the average American’s annual consumption of HFCS has increased from 45 to 65 pounds. During this same time, annual consumption of refined sugars has also also increased by five pounds. Although food insecurity alone is not correlated with obesity, individuals living in both impoverished and food insecure environments are

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94 Drewnowski, 6.
95 Wallinga, 405.
96 Pollan, 104.
more likely to be obese.\textsuperscript{97} Their diets are an economic response to individuals trying to maximize utility of budgets when considering price distributions. Food insecure adults are much more likely to be obese, and girls with an obese parent are twice as likely to be overweight or obese.\textsuperscript{98}

Education level also has a large effect on obesity outcomes. Some studies attest that education has an even greater effect than income on obesity rates.\textsuperscript{99} Higher education rates are often associated with greater awareness of health issues. Unfortunately, education alone does not restrict the health of individual diets because the cost of a healthy diet can still be out of reach for many families even if nutrition education is provided. Maternal occupational status is also highly correlated with obesity, and children are more likely to be overweight or obese if their mother is working.\textsuperscript{100} When analyzed independently from income, race is also a determining factor for child obesity rates. Many researchers have attributed ethnic and racial differentials by varying norms for body image and lifestyle as well as social and physical environmental factors.\textsuperscript{101} Race could also reflect a similar social experience due to racial group status.\textsuperscript{102} Institutions of faith, education, recreation, and occupation can often be divided by race, and these institutions form the culture and the norms around food practices, though these practices are also largely influenced by


\textsuperscript{99} Drewnowski, 10.

\textsuperscript{100} Anderson, 25.


education and income. Race and culture, along with socioeconomic status, are likely to influence how parents choose to allocate their food budgets, which determines the healthiness of children’s diets.

B. Role of Parents: Time

Allocation of parental leisure time is greatly influenced by family structure, and family structure can greatly determine a child’s dietary habits. The number of children living in the home, the number of parents in the home, and the working status of parents all affect obesity outcomes for children. In single-mother households, children are more likely to be obese. This correlation remains significant up until fifth grade. In eighth grade the correlation becomes much weaker as parents tend to have less control over the dietary habits of older children.103 However, the age that is most defining of obesity traits is childhood when parents still have the most influence over a child’s consumption. Studies have also looked at the correlation between household stability and child obesity. Child obesity is not correlated with adverse characteristics such as maternal depression, negative life events, or poor family functioning, which previous research has claimed. With the more recent increase in obesity rates, this correlation has become discredited. However, being raised by an obese or single mother is often considered the most determining factor for whether or not children will be obese themselves.104

These correlations are often augmented due to economic circumstance. For families of higher socioeconomic status, the increase in number of average weekly work hours for mothers from 1975 to 1994 contributes between 11.8% and 34.6% of the rise of child obesity during this period. In addition, children raised by single mothers tend to watch more television and eat fewer home cooked meals, both of which are associated with higher rates of obesity.\textsuperscript{105} Higher rates of television watching are negative for children because it both decreases frequency of physical activity and increases exposure to unhealthy food advertising. Eating fewer home cooked meals can increase obesity rates because caloric intake for children is higher on average when consuming meals outside of the home (770 calories) than consuming meals at home (420 calories).\textsuperscript{106} Engaging in family dinners also increases the average length of a meal. If an individual eats with three other people, the meal takes twice as long as if the individual were eating alone. With longer dinners there is both the possibility of overconsumption and the ability to better adjust eating patterns based on whether or not one is actually full.\textsuperscript{107}

Certain social programs that encourage single mothers to enter into the labor force have been considered a possible cause of dramatic increases in the child obesity rate. The 1996 welfare reforms raised work incentives especially for single mothers.\textsuperscript{108} These reforms also implemented strict time limits, changed and limited the eligibility index, and reduced welfare benefits.\textsuperscript{109} The large entrance of single-mothers in the labor force as a response to this federal, economic incentive could be

\begin{footnotes}
\footnotetext{105}{Cawley, “The Economics of Childhood Obesity,” 365.}
\footnotetext{106}{Wootan, 7.}
\footnotetext{107}{Wansink, 46.}
\footnotetext{108}{Cawley, “The Economics of Childhood Obesity Policy,” 31.}
\footnotetext{109}{Guthman, 175.}
\end{footnotes}
linked to decreased leisure time in the home for mothers, which could lead to more television screening for children, fewer home cooked meals, fewer family dinners, and more meals out of the house all of which are correlated with increased child obesity rates. These economic programs incentivize work and therefore decrease leisure time and the ability for parents to provide home cooked meals.

Fast food consumption often increases when convenience, due to restrictions on budgets and leisure, is a major factor in food consumption. There is a strong correlation between fast food availability and fast food consumption, especially among men. Although this same study showed that there was no correlation between geographic availability of grocery stores and obesity, this study did demonstrate a relationship between obesity and fast food consumption in a three-kilometer radius among low-income residents.\textsuperscript{110} Other studies have shown correlations between accessibility to grocery stores and obesity rates. Access to chain supermarkets is associated with lower adolescent BMI and greater availability of convenience stores is associated with higher adolescent BMI. U.S. Census data showed that low-income neighborhoods had fewer chain supermarkets, with only 75\% of the availability of middle-income neighborhoods.\textsuperscript{111} Income, family structure, and geographic location can constrain how much leisure time is available for individuals as well as how individuals choose allocate their leisure time. This allocation of time can greatly influence the diets of individuals.

\textsuperscript{111} Lisa M. Powell and Frank J. Chaloupka, "Food prices and obesity: evidence and policy implications for taxes and subsidies," \textit{Milbank Quarterly}, vol. 87, no. 1 (2009), 259.
C. Role of Parents: Biology

More recent research on child obesity has shown that genetic factors can affect the probability of an individual becoming obese. Studies have shown that 25% to 40% of an individual’s BMI is inheritable. Shared environmental and economic conditions alone cannot account for similarities in family BMI. Studies of both dizygotic and monozygotic twins raised apart have shown a 0.7 correlation of BMI (a 1 correlation is perfect). This correlation is only slightly lower than that of twins reared together. Although the recent rise in obesity rates cannot be attributed to genetics alone, genetics do appear to play a role in an individual’s weight. Genetics also alter an individual’s nutrient preference and are heritable. Research on genetic linkages to obesity is important because it can help to explain why certain individuals are more susceptible to becoming obese. Ultimately, there is a range of factors involved in the recent increases in child obesity rates, but by decoding a biological link, it will be easier to detect warning signs in children before they become obese.

D. Role of Children: Budget

Children also have a degree of control over their own food options with their limited expendable funds and their food selections in school. When children make dietary decisions, they act with even less rationality than economists expect adults to act. The *homo economicus* or the Economic Man is a rationally acting, self-interested, utility maximizing individual that economists often implement as a model for human behavior in the marketplace. The study of behavioral economics challenges the

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112 Anderson, 25.
113 Danielle R. Reed et al., "Heritable variation in food preferences and their contribution to obesity," *Behavior genetics*, vol. 27, no. 4 (1997), 373.
foundation of the Economic Man: that individuals can act irrationally or against their best interest. Children are often excluded from the set of rational actors because of their tendency to act irrationally. Consequentially, when making dietary choices, children tend to discount their future more dramatically due to a lack of information about future health consequences caused by current action as well as an inability to resist current temptations that result in immediate gratification.\textsuperscript{114} When children are allowed to make food choices themselves, they are less likely than adults to pick options that are beneficial for the long term. This deficit in rationality for children is likely to lead to less healthy outcomes in the long run. However, children do still respond to prices. A study using vending machines in schools measured variations in purchases for factors such as prices, advertising, and health. Low-fat snacks were added to the vending machines, and these low-fat options were purchased at higher frequency (increased from 25.7% to 45.8%) as prices of these snacks were reduced by 50%.\textsuperscript{115} When low-fat snacks were advertised, this had a small but statistically significant effect on the sales of low-fat snacks.\textsuperscript{116}

When allocating their budgets to various food options, children are also much more likely to be swayed by food advertising than adults. Children often are not able to understand the practice of advertising in general. A study on advertisements during children’s television programming showed that a child can only distinguish between a television program and advertisements at age 8. It is then not until age 11 or 12 that a child can understand that the goal of an advertisement is to try to sell the viewer a

\textsuperscript{114} Cawley, “The Economics of Childhood Obesity Policy,” 32.
Frequent exposure to ads can also change children’s perceptions of junk foods. Children with greater exposure to these ads have been shown to eat these foods more frequently, have a more positive attitude regarding these foods, and believe that other children consume these foods more frequently than they do. Overweight and obese children have also been found to recognize more food ads than children of normal weight. Food advertising often manipulates children’s perceptions of food as well as their consumption patterns. Television ads can have priming effects on children when making consumption decisions. In a study on junk food consumption while watching television programming, children were given junk food and watched fourteen minutes of television. Half of the children watched programming with ads and the other half watched programming without ads. The children who watched television with ads ate 68 calories more than the children who watched without ads. If a child watches thirty minutes of television a day while snacking, they will consume an extra 94 calories a day, which accumulates to around ten pounds a year. Children’s dietary options and dietary budget allocations are heavily influenced by their susceptibility to food advertising and their limited ability to make rational decisions for long term benefit.

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118 Dixon, 1319.
E. Role of Children: Time

In a world driven by convenience, the nature of leisure time has changed. The use of cars has increased dramatically; and since the late 1940s, community development projects have often focused on car accessibility by increasing construction of roads and decreasing development of sidewalks. There has been a smaller effort put towards expanding bike paths and sidewalks than freeways and roads.120 Studies have shown that 25% of trips made from homes are less than 1 mile away, yet 75% of these trips are made by car.121 City planning has engendered a culture of reliance on cars rather than on foot traffic. The health consequence of this shift is a reduced number of caloric expenditures, though some researchers believe this change is only secondary to increased caloric intake in the current upward trend of obesity rates.122 Childhood obesity has not been correlated with neighborhood safety or availability of local facilities for children unlike other correlations such as longer commutes or suburban planning.123 These changes that have correlated with obesity rates have affected leisure time for parents and result in reduced energy expenditures for children and parents alike.

The nature of leisure time for children has also changed over the past three decades. With increased access to televisions, television viewing for children increased in the early 1980s with an average extra 1.5 hours per week. Since then,

120 U.S. Department of Health and Human Services, “Promoting better health for young people through physical activity and sports,” A Report to the President from the Secretary of Health and Human Services and the Secretary of Education (2000), 1-36.  
123 Cawley, “The Economics of Childhood Obesity Policy,” 46.
television viewing has dropped although it is expected that children are substituting television with other forms of non-athletic leisure activities such as video games and Internet activity. In 1970, a child spent an average of 6 hours per week watching television. By 1999, the average child had 24.1 hours of screen time per week divided between television, video games, and computer time.\textsuperscript{124} Children today spend more time participating in non-athletic leisure activities than in the past. Not only is screen time less physically engaging than other activities, but also it leads individuals to eat, ignore how much they consume, and eat for too long.\textsuperscript{125} Family structures can also affect how children choose to allocate their leisure time. Children with siblings have lower BMIs and are less likely to be obese on average than children without siblings. This correlation continues past the time when single-parenthood correlations with child obesity are no longer significant. It is believed that children with siblings have greater encouragement to be active since they have a playmate at home.\textsuperscript{126} How children have allocated their leisure time has changed dramatically over the past three decades and could be contributing to a deficit in caloric expenditures.

\textit{F. Role of Children: Biology}

There are also biological explanations for increased consumption of unhealthy foods that leads to obesity. Humans have a natural predisposition to prefer flavors of salt, fat, and sugar because of their higher energy density per serving. These flavors do not exist in abundance in nature as they do today due to modern technologies. The

\textsuperscript{124} Anderson, 37.
\textsuperscript{125} Wansink, 103.
\textsuperscript{126} Alex Y Chen and José J. Escarce, "Peer Reviewed: Family Structure and Childhood Obesity, Early Childhood Longitudinal Study—Kindergarten Cohort," \textit{Preventing Chronic Disease}, vol. 7, no. 3 (2010), 1775.
natural instinct to prefer these flavors comes from a biological history that prioritized eating energy dense foods to save fat in adipose tissue for periods of food scarcity.\textsuperscript{127} Before industrial farming and modern technology, malnutrition was more often a result of a calorie deficit rather than calorie surplus. It has only been within the past few decades that these biological preferences became harmful due to the abundance and accessibility of these calorie dense foods. These preferences are even stronger for children. There exist four flavor profiles in nature: sweet, salty, bitter, and sour. Babies reject bitter and sour flavors as a natural instinct to avoid poisonous foods in the wild. Babies and children prefer sweet and salty flavors above these other flavors, and they have higher bliss points – optimal levels of consumption – for salty and sweet flavors than adults do. For adults the bliss point for sugar is 0.35 molar, and for children the bliss point is 0.6 molar. Foods that are saltier and sweeter usually have a higher energy densities, which are also associated with high neurological rewards.\textsuperscript{128} However, preferences can also be set with exposure. Babies will be more receptive to new flavors if they are exposed to them via their mother’s diet, during pregnancy and lactation.\textsuperscript{129} In a study on pregnancy diets, pregnant women consumed high levels of carrot juice during their third trimester. After birth, their children preferred carrot flavored cereal when normally babies would reject these flavors.\textsuperscript{130} Children are taught to eat through biology. Senses are open to learning, but it takes 30 repetitions of experimenting with a new food, that has no positive predisposition, to form a new,
positive association.\textsuperscript{131} Food preferences are set by energy density, familiarity (or exposure), and sweetness.\textsuperscript{132} The malleability of preferences means that these biological preferences can also be shaped by parental diets and industry influences.

Food psychology also developed to explain individual eating habits and the tendency of humans to overeat. Young children react differently to food consumption. Up until age 5, children eat until they are full; they consume only what they need, and then they stop. After age 5, children eat what they are served.\textsuperscript{133} A new norm is formed and children begin to eat far past their dietary requirements without realizing it. It is outside of normal human behavior to evaluate whether or not one is full after each bite of food. In addition, it takes individuals an average of 20 minutes to even realize that they are full. With the speed and convenience at which individuals consume meals today, rarely do meals even exceed the 20 minutes required to deduce fullness. When eating at a fast food restaurant, individuals usually consume their meal in 11 minutes; in a cafeteria, 13 minutes.\textsuperscript{134} Instead of listening to internal cues to signal when to stop eating, humans look for external cues to end consumption such as an empty plate or the pace at which others are consuming the meal. Since individuals look for external clues, portion sizes do affect individual consumption patterns because they signal when to stop eating. To highlight this, a study provided individuals at a movie theater with free, stale popcorn. Some individuals received a medium size popcorn while others received a large size. The individuals with the

\textsuperscript{132} Drewnowksi, 9.
\textsuperscript{133} Wansink, 176.
\textsuperscript{134} \textit{Ibid.}, 46.
large popcorn consumed 173 more calories on average (or 53% more) than the individuals with the medium popcorn. Even though people with the large popcorn reported that they ate as much as they wanted to and would not have consumed differently if they had had a smaller size, the results were conclusive: bigger buckets made people eat more. In general, individuals consume 20-25% more of a product when the packaging is larger.\textsuperscript{135} These psychological eating habits are not novel for this generation’s consumers. Humans have always used external cues to evaluate whether or not their dietary necessities have been met. However, these psychological realities are exacerbated by new environmental conditions set by the industry, the government, and personal characteristics that have contributed to the recent rise in obesity rates.

\textit{Demand-Side Results}

All three actors, the food industry, the federal government and the individual, play a role in shaping demand and individual preferences. The food industry and the federal government shape demand through various strategies and regulations on advertising that influences consumer knowledge of food products and nutrition. Individual circumstance also plays a large part in determining health outcomes. Characteristics such as income, race, family structure, gender, and education all influence the likelihood of an individual to become obese. Ultimately, the causes of obesity can be attributed to all three actors within the supply-demand interaction. Understanding child obesity’s causal mechanism is crucial to justifying how political intervention could benefit individual health outcomes.

\textsuperscript{135} Wansink, 16-18, 59.
Justifying Political Intervention

When justifying government intervention, market failures create an impetus for action. The rising rate of child obesity alone does not justify market intervention. However, there are four predominate market failures that justify government intervention in the case of child obesity: (1) limited rationality of children, (2) incomplete information, (3) negative externalities, and (4) and transaction costs. Each of these market failures is either a cause or effect of rising obesity rates and thus justifies government intervention.

First, although children do not have control over all of their dietary choices, the choices they do retain control over are limited by their rationality. Children are less likely to make dietary choices based on long-term nutritional benefits because (1) they do not understand nutrition and the long-term effects of their daily consumption patterns, and because (2) they are more likely to succumb to choices based on immediate gratification rather than long-term benefits. For these reasons, government intervention is justified due to the dietary choices children will make because of their skewed rationality. Second, in food markets, customers are rarely supplied with sufficient information about food products and about the long-term health effects of consumption of these goods. The need for supplementary nutritional information of food products justifies market intervention on behalf of consumers who require complete information in order to make informed purchases their health and nutrition. Although advertising is protected by law because of the necessity of providing the consumer with complete information, advertising rarely leaves consumers fully informed about the product and instead uses marketing ploys to convince consumers
to purchase products. Ultimately, consumers require digestible information that can influence preferences without distractions from industry advertising fanfare. Thirdly, the external costs of obesity on society justify government intervention in the market. Both the loss of economic productivity and the medical costs associated with obesity place an economic burden on society. These burdens justify intervention in order to prevent further economic responsibility from weakening the nation. The last market failure is the transaction costs implicated in food markets. Although demand does have an effect on prices, prices are largely determined by supply-side factors rather than through interactions between supply and demand. As a result, the prices in food markets put upward pressure on healthy food and downward pressure on unhealthy food. Consequentially, individuals with tighter food budgets consume unhealthier diets. Each of these market failures is either a cause or an effect of obesity and justifies government intervention to end the current rise in obesity rates.

Despite increased national concern over the rising child obesity rate, the federal government’s response has been unilateral and unimaginative. Currently, the largest initiative of the federal government thus far was to amend the mission of existing USDA food programs to address child obesity. This approach largely focuses on the demand-side causal factors of obesity and focuses on reforms using the personal-responsibility model. The federal government focuses on these types of reforms because of their interest in targeting demand-side actors such as the individual consumer rather than the main supply-side actor, the food industry. The three programs that are the foundation of USDA food services are the National School Lunch Program (NSLP); the Supplemental Nutrition Assistance Program, (SNAP); and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). These programs were not founded on a mission of combatting child obesity, but the federal government has focused on them as the only response to growing child obesity rates. This chapter will investigate why these programs are not effective at reducing and preventing child obesity. It will also address why these programs alone cannot provide a holistic solution to a multifaceted issue. The complicated nature of child obesity as outlined in Chapter One necessitates an equally holistic solution that the federal government has yet to provide by simply reforming preexisting food programs.
History of the National School Lunch Program

The NSLP has been subject to shifting political tides from the Great Depression to the 1996 Welfare Reforms. Consequentially, the mission of the program has changed over time. These alterations are not due to changes in necessities, but rather due to political and economic fluctuation. The NSLP’s questionable origins and undefined mission make it incapable of successfully addressing issues of child obesity. Additionally, this unilateral approach to combating child obesity is insufficient when child obesity requires a cohesive, multidimensional response. In order for the NSLP to become a strong component of the response to child obesity, Congress must define the program for the first time in its history based on current needs rather than partisan preferences or political tides.

During the Progressive Era, the first school lunch programs were local initiatives sponsored by charities often using government-sponsored research and training.\(^{136}\) Home economists were the first supporters of school lunch programs. They believed in providing safe, healthy meals to children while teaching the science of nutrition.\(^ {137}\) These programs were constructed beyond the boundaries of the Americanization of immigrants that often plagued Progressive Era reforms because home economists advocated for a healthy nation where everyone is well fed.\(^ {138}\) The USDA hired chemists, home economists, and child welfare advocates to develop new departments focused on nutrition. As a chemist at Wesleyan University and the first director of the USDA’s Office of Experiment Station, Wilbur O. Atwater believed the

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\(^{137}\) Janet Poppendieck, *Free For All: Fixing School Food In America* (Berkeley: University of California Press, 2010), 47.

\(^{138}\) Levine, 34.
state had equal interest in both agriculture and human productivity. Consequentially, the goals for increased farm output were aligned with the goals of nutritionists. With the developments of this new vision for the USDA, the department began to invest greater interest in nutritional research.

The relationship between the USDA and the official NSLP originated from a publicity nightmare in the midst of the Great Depression. In 1933, USDA Secretary Henry Wallace ordered the slaughtering of millions of immature pigs to manage the price-depressing glut in the market. This action led to a public relations nightmare and caused President Roosevelt to order Secretary Wallace and the Federal Emergency Relief Administrator to form the Federal Surplus Relief Corporation to purchase farm surpluses and distribute them to the needy. Section 32 of the Agricultural Adjustment Act allowed Congress to purchase surplus commodities and donate them to schools and welfare offices. The emergency phase of the relief program was abruptly terminated in 1935, and the program was transferred to the USDA who allocated the farm surpluses to schools. School lunches became institutionalized, and state and local governments began supplementing federal funds through their own budgets. The school lunch program, in essence, was borne of agricultural necessity. By 1942 one-third of elementary and secondary schools were fed through the program, which distributed 4.5 million pounds of food valued at

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139 Levine, 15, 20, 34, 35.
140 Poppendieck, 48.
141 Levine, 46.
142 Poppendieck, 48.
over $21 million.\textsuperscript{143} The achievements of this program led to the development of the National School Lunch Act of 1946.

The NSLP developed with dual agricultural and nutritional aspirations. Following World War II, “defense nutrition” became a concern of national security as the quantity of malnourished soldiers highlighted the importance of a well-fed citizenry despite the strain on resources during the war.\textsuperscript{144} The food science sectors of the USDA provided the program nutritional guidance, but the actual political support of the bill came from the interests of the southern Democrats in Congress and the agricultural lobby rather than the public pledge to nutrition or child welfare.\textsuperscript{145} Although other bills proposed moving the NSLP out of the USDA to what would become the Department of Education (DOE), the Senate Agricultural Committee Chairman Richard Russell (D-GA) refused to support a school lunch bill that removed the program from the jurisdiction of the USDA. The final version of the bill stated that the Secretary of Agriculture was limited to working through the states’ DOE to administer the program and did not have the authority to directly interfere with schools.\textsuperscript{146} In the end, nutrition reformers were disappointed with the vision of the bill that lacked federal oversight despite significant federal funding and failed to implement the specific, scientific nutritional guidelines touted by the Women of the Bureau of Home Economics.\textsuperscript{147} The bill was stuck in not only a battle of agricultural versus nutritional goals but also a battle of state versus federal rights. The program

\begin{fnsymbollist}
\item Levine, 47.
\item Poppendieck, 49.
\item Levine, 72.
\item \textit{Ibid.}, 74-76.
\item \textit{Ibid.}, 39.
\end{fnsymbollist}
needed to support agricultural markets while allowing states to retain control over the administration of the federal program.

Schools were funded based on a formula that measured the number of school-aged children and the state’s relative poverty.\textsuperscript{148} Although the federal government mandated that every student be provided a meal despite ability to pay, these mandates were often ignored by schools that held discretion over standards for eligibility into the program.\textsuperscript{149} Schools failed to receive adequate funding to develop school lunch programs especially considering that federal funds could only be used to purchase food or hire nutritionists, while many schools required funding for new equipment or lunchrooms.\textsuperscript{150} By the 1950s, there was a national assumption that all children were receiving meals no matter their ability to pay. In reality, the majority of participants were paying full price for lunch, and by 1960 only 10% of the children receiving meals were receiving free or reduced-priced meals.\textsuperscript{151} Additionally, the nutritional value of the meals was questionable due to the large presence of surplus crops in the menu.\textsuperscript{152} As the USDA began to consolidate departments dedicated to nutritional research, fewer advocates for school nutrition remained in the department.\textsuperscript{153}

The early developments of the NSLP are emblematic of the program’s identity crisis. The program was developed originally to support agricultural markets while improving the Roosevelt administration’s image. In the NSLP Act, Congress also promised to serve meals to all children regardless of their ability to pay but failed to

\textsuperscript{148} Poppendieck, 52.
\textsuperscript{149} Levine, 59.
\textsuperscript{150} Ibid., 58.
\textsuperscript{151} Poppendieck, 53
\textsuperscript{152} Levine, 93.
\textsuperscript{153} Ibid., 93, 95.
provide the finances necessary to achieve this goal. Congress also failed to provide adequate oversight of the program or define eligibility measures as a method to preserve state control over the program, which left these responsibilities at the discretion of the state and local authorities, further weakening the goal of providing meals to all children. The exact mission of the NSLP was unclear. Was it an agricultural support or a nutritional necessity? Was it for all children or just those who could pay? Was it the responsibility of the state or federal government to meet these demands? As the program developed into the 1960s, the voters demanded answers to these questions as the public “rediscovered poverty” and learned the truth about the nature of the NSLP as a response to hunger in America.

The 1960s marked an expansion of welfare services as the “war on poverty” and the “war on hunger” took the U.S. by surprise through news reports on the impoverished living conditions of many Americans. In 1962, the Secretary of Agriculture Orville Freeman commissioned a survey on the status of the NSLP only to discover that millions of poor children were largely excluded from participation in the program.\(^\text{154}\) In order to address the concerns illuminated by the report, Congress had to clarify the mission of the NSLP. In 1962, Congress developed a new formula in Section 11 of the NSLP Act that authorized funding to reimburse schools for free meals for the first time in the program’s history.\(^\text{155}\) The Child Nutrition Act of 1966 included a new reimbursement formula that introduced the federal government’s commitment to providing school lunches to all children. However, the bill failed to allocate funds for schools to expand cafeteria facilities, build lunchrooms, and hire

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\(^{154}\) Levine, 110.

\(^{155}\) Poppendieck, 54.
cafeteria staff, which many schools in impoverished and urban areas required. In addition, the commission revealed the low nutritional quality of the average school meal due to the USDA program’s goals, structure, and administration, which worked to maximize agricultural over welfare benefits. Once again legislators lobbied to move the NSLP to a different department – the Department of Health, Education, and Welfare. Secretary Freeman lobbied in opposition to the relocation, fearing that urban legislators would monopolize the program and remove commodity supports. Although the administration was able to define the NSLP as a program for all children, it was not yet able to either fully provide the financial support required to materialize this goal or define the program’s mission as primarily nutritional.

Throughout the 1960s, schools defined their eligibility measures with discriminatory policies that stigmatized students receiving free meals by forcing them to use special tokens, wait in separate lines, or work on school premises to earn free meals. Although the USDA also launched the School Breakfast Program and the Summer Meals Program, which attempted to fill other nutritional gaps, it also created a foundation for stigma associated with participation in the NSLP by forming tiers of participation by payment ability. With increased participation, heightened promises of food provision, and stagnant funding, school administrators began seeking out private food services to keep the program afloat. Subsequently, the quality of the meals themselves deteriorated. Since the inauguration of the NSLP, schools were prohibited from providing meals via private contractors in an attempt to maintain a higher level

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156 Levine, 113.
157 Ibid., 39.
158 Poppendieck, 56.
159 Ibid., 58.
160 Levine, 151.
of nutritional value, but the Nixon administration later reversed this decision. By the mid-1970s, the food service industry grossed $4.5 billion annually through the NSLP, which became the third largest food service program in the nation following only McDonald’s and KFC.\textsuperscript{161} This change decreased the nutritional value of school lunches by effectively turning the cafeteria into a fast food eatery. School food administrators began to view children as customers to please rather than students to feed and educate. A new identity crisis of the NSLP formed: were children students or customers? Achieving the goal of providing meals for everyone relied on students participating in the program. Since the majority of the costs of providing meals are fixed (equipment, staff, lunchroom maintenance, etc.), the cost of providing meals declines with greater participation. Food administrators relied on private contractors, fast food, and brand name advertising to keep the school lunch program afloat. However, using these tactics complicated the NSLP’s identity crisis by forcing school food administrators to view NSLP participants as customers rather than students.

The financial strains on school food administrators only increased throughout the Carter and Reagan administrations, as budget cuts constantly threatened federal allocations to child nutrition programs. The Carter administration wanted to reduce the federal subsidies for full-price meals while Congress wanted to preserve the “middle-class character” of the NSLP. Congress responded to the administration’s targeted cuts with across the board cuts of $400 million to all child nutrition programs. The Reagan administration threatened the complete removal of all subsidies for full-price meals, which would effectively turn the NSLP into a welfare

\textsuperscript{161} Poppendieck, 67, 166.
Eventually the NSLP’s budget was reduced by $400 million, and the next year $1.4 billion was removed from the budget of all child nutrition programs. During this period, the NSLP was subject to the public scrutiny of federal government spending. Increased spending cuts led to increased privatization of lunchroom services and the further decline in the nutritional value of meals. As these spending cuts redefined the program as a welfare service rather than a school norm, participation rates dropped. School lunch prices jumped, full-price student participation decreased by 25%, and over 2,700 schools dropped out of the program. The program’s image shifted from one of general participation to a welfare-oriented program meant for low-income students. With dwindling participation of students paying full-price, stigma associated with participation in the NSLP grew.

As budgets tightened and participation of students paying full-price dropped, school food administrations were forced to adopt one of two strategies. The first was to increasingly adapt the menu to children’s preferences further reducing the nutritional quality of food and reproducing the image of students as customers. Second, school food administrators increased the sale of unregulated competitive foods or à la Carte items, which the USDA had authorized the sale of since 1972. These foods were unsubsidized but were able to avoid the nutritional regulations of the federal government. The revenue from these foods often supplemented a school’s budget for providing NSLP services. The accessibility of these unhealthy options only increased as federal budget cuts restricted school food budgets and as participation of

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162 Poppendieck, 72.  
163 Levine, 156, 174.  
164 Poppendieck, 73-75.  
165 Levine, 162.  
Poppendieck, 89.
full-price students decreased. By 1990, only 1% of schools served meals that complied with the National Dietary Guidelines.\textsuperscript{166} The nutritional crisis in the NSLP led to the Healthy Meals for Healthy Americans Act of 1994 that required the USDA to create a menu planning system for school lunches to meet the nutritional standards set out by the Dietary Guidelines for Americans.\textsuperscript{167} There was also the development of the Department of Defense (DOD) Fresh Program in 1994 that used the DOD system to purchase fresh fruits and vegetables for schools in order to make the commodities program healthier.\textsuperscript{168} The 2004 Wellness Policy Mandate in the Reauthorization of WIC and NSLP required school districts receiving federal funds for the NSLP or School Breakfast Program (SBP) to form committees and to develop policies on physical activity in schools and on nutritional content for any foods sold or served on campus, though the federal government still failed to mandate any guidelines for nutritional content of competitive foods.\textsuperscript{169}

The most recent shift in the identity of the NSLP has been the Healthy, Hunger-Free Kids Act (HHFKA) of 2010. The bill outlined new nutritional standards for both NSLP and competitive foods, and it marked a major reimaging of the NSLP. Although these changes help to define the NSLP’s mission, they cannot eliminate the inherent tensions between both nutritionists’ goals versus the food industry’s goals and state rights versus federal rights. They also fail to define the identity of the child in the program as customer or student. The reforms also fail to reduce the stigma of participation in the NSLP. The history of the NSLP has woven complicated

\textsuperscript{166} Poppendieck, 78.
\textsuperscript{168} Poppendieck, 105.
\textsuperscript{169} \textit{Ibid.}, 6.
relationships within the program that continue to haunt its development. These inherent conflicts engender an inhospitable environment to the reimagining of the program’s mission to address child obesity.

Contemporary NSLP: What Does It Look Like? Does It Work?

The NSLP has changed dramatically over the past five years since the implementation of the HHFKA in 2010. The goal of this bill was to improve various nutritional and administrative components of the NSLP to make it healthier and more accessible. The bill also outlined a pilot program called the Community Eligibility Provision (CEP) to increase eligibility and participation of schools in low-income districts. This pilot program has since been introduced nationally due to its high level of success. The NSLP has often been criticized for its lack of nutritional value and failure to address issues of child obesity, but the goal of the HHFKA was to improve school lunches while continuing to allow schools the flexibility to create their own menus. These changes are especially important considering that the NSLP services over 100,000 schools and fed more than 30 million children in 2013-2014.¹⁷⁰

Becoming eligible for the program requires a complicated process of application, certification, and verification for the individual, which can create many obstacles to participation. There are three tiers of eligibility to the program derived from a mean-test that determines how much a student will pay for their meal: full-price, reduced-price, and free. Families must apply to the program by filling out an

income-based application. The children of families with income below 130% the federal poverty line (FPL) are eligible for free meals, and children of families with income below 185% FPL are eligible for reduced-price meals that do not exceed $0.40. The federal government reimburses schools based on the level of participation at each tier.\textsuperscript{171} One study showed that 31% of children in districts studied were not certified to receive free meals even though they were eligible. One quarter of those children were mistakenly enrolled as reduced-price participants when they were actually eligible for free meals.\textsuperscript{172} Some districts have begun using direct certification in order to ensure that all eligible children receive free meals. Direct certification requires a computer program to link children with families receiving SNAP or Temporary Assistance of Needy Families (TANF) benefits to automatically become certified without an application process.

There exist other provisions to increase accessibility to the NSLP. Since 1980, Provision 2 has allowed schools to accept applications and certify eligibility once every three years provided they offer free meals to all children. Provision 3 was instated in 1995, which allows the base year to be adjusted for enrollment change and inflation.\textsuperscript{173} The most recent reform from HHFKA to improve eligibility is the Community Eligibility Provision (CEP) that allows schools with over 40% children eligible for free meals to feed the entire school for free. Schools use direct certification technology to calculate the percentage of the student population eligible for free meals, which eliminates the administrative costs associated with individual child certification. Once the school has tabulated the percentage eligible for free meals, they can offer free meals to all children in the school.

\textsuperscript{172} Poppendieck, 179, 183.
\textsuperscript{173} \textit{Ibid.}, 211.
meals, the school is reimbursed at the free-rate 1.6 times the percentage of students eligible for free meals. This multiplier represents the six children on average missed through direct certification for every ten identified using the tool. The provision was initially introduced as a national provision, but the USDA Food and Nutrition Services (FNS) pushed for slower implementation due to concerns that changing rules among school districts would cause confusion. After three years of the pilot program, almost 4,000 schools participated in more than 600 districts across 11 states. The early evaluation showed that CEP allowed for schools to increase participation in the NSLP.

One of the landmarks of the HHFKA was the addition of nutritional guidelines to align the meals served through the NSLP with the 2010 National Dietary Guidelines for Americans. These guidelines are particularly important because NSLP participants consume 40% of their daily calories at lunch, which is higher than most non-participants. A meal through the NSLP is comprised of five items: fruit, vegetable, grain, meat/meat alternative, and milk. Students can reject two of the five options, but they must select at least a fruit or a vegetable. This rule was created in the 1970s to reduce food waste. One of the major changes in 2010 was the creation of calorie limits. The limits are based on school year from elementary to high

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174 Madeline Levin (Senior Policy Analyst, National School Breakfast/Lunch Programs at the Food Research Action Center) in discussion with the author, (18 June 2014).
175 Levin (interview).
school. Additionally, there are restrictions including a 10% limit on calories from saturated fat, a requirement that half of all grains be whole grain, and limits on sugar and salt content. The HHFKA also ruled for the first time ever that all foods sold on school campuses must comply with these regulations. All competitive foods such as à la Carte or vending machine products must fall into one of the five categories. These regulations were difficult to achieve. According to the Government Accountability Office, 30% of all high schools generate more than $125,000 annually through competitive foods, which often finance other food services such as the NSLP. The reforms from the HHFKA are recent, and thus their influence not fully calculable. However, it is important to analyze the current data in order to judge their effectiveness in the short-run.

**Literature Review: Does the program work?**

Evaluating the efficacy of the NSLP is only useful if the NSLP is shown to have lasting effects on long-term health and dietary habits. These types of longitudinal studies are more difficult to design and are often heavily influenced by many confounding factors. However, a small, observational study showed that the NSLP had long-term effects on the dietary habits of children. This study concluded that ignoring the implications of the NSLP on children’s health would be misguided. Another study concluded that restrictions of menu options for the NSLP largely affect the diets of participating children but that these habits do not always

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178 Glenn, 61.  
179 Byker, 685.  
180 Cawley, “The Economics of Childhood Obesity Policy,” 80.  
carry over to meals outside of school.\textsuperscript{182} This variation could occur because many children do not control the food environments in their home, but this study does not negate the importance of the NSLP on children’s health. However, evaluating the efficacy of the NSLP will only be useful if a student is likely to participate in the NSLP.

There are many factors that influence the likelihood of a student’s participation in the NSLP. Many of these factors are impacted by the school’s budget, the quality and variety of the food, the cafeteria environment, the length of the lunch period, the price, and the availability and the attractiveness of the alternatives.\textsuperscript{183} However, one factor usually trumps all others: stigma. There are many reasons that there is a heightened stigma for participation in both the NSLP and the SBP, but the negative image of the program is not necessarily permanent and unalterable. Historically, policies that prioritize funding for free or reduced-price meals increase stigma because fewer full-price students participate as prices increase and more reduced-price and free meal children participate. School policies such as allowing for off-campus dining also increase stigma because only low-income participants consume the school meal. The increases in stigma associated with the program continue to influence its productivity.

There are a variety of studies on the quality of the diet of the NSLP and the health outcomes of its participants. Many studies have shown neutral or positive effects on participation in the NSLP with improved diets. Some studies have shown


\textsuperscript{183} Poppendieck, 138.
when participating in both the NSLP and the SBP, students have superior nutrient intake over non-participating students.\textsuperscript{184} This phenomenon exists largely because meals consumed by participants have superior nutritional content than meals brought from home.\textsuperscript{185} Participants in the NSLP have also been shown to have lower consumption of SSBs than non-participants.\textsuperscript{186} In addition, studies show that the menu and the availability of certain foods is crucial to the overall quality of diet and does not in fact reduce participation. Students consume higher rates of fruits and vegetables if items such as French fries or dessert are not available.\textsuperscript{187} One study evaluated obesity rates for states that had nutritional standards exceeding those of the federal government prior to 2010. Although direction of causation is difficult to prove, the results showed that states with stricter standards had lower obesity rate and a lower average BMI.\textsuperscript{188} Other studies have show contrasting results that participating individuals are more likely to have negative health outcomes.\textsuperscript{189} Most of these studies, with both positive and negative outcomes, indicated statistically significant results but acknowledged that the difference in outcomes was minimal. The most

\textsuperscript{184} Benjamin L. Campbell, Rodolfo M. Nayga, John L. Park, and Andres Silva, "Does the National School Lunch Program Improve Children’s Dietary Outcomes?" \textit{American Journal of Agricultural Economics} (2011), 1099.


\textsuperscript{188} Gleason, 1047-1061.

\textsuperscript{189} Ishdorj, 341.


\textsuperscript{189} Diane Whitmore Schanzenbach, "Do school lunches contribute to childhood obesity?" \textit{Journal of Human Resources}, vol. 44, no. 3 (2009), 684-709.

\textsuperscript{189} Ji Li and Neal H. Hooker, "Childhood obesity and schools: evidence from the national survey of children's health," \textit{Journal of School Health}, vol. 80, no. 2 (2010), 96-103.
conclusive studies came from those reporting participation in both the NSLP and the SBP. Participation in the SBP tends to spread caloric consumption throughout the day. SBP participants have been shown to have lower BMI and consume healthier diets with a better nutrient balance. SBP has been shown to influence the regularity at which adolescents consume breakfast and predicts the likelihood of consumption as a young adult. Unfortunately, the majority of these studies were conducted prior to the changes enacted by HHFKA, but their results are still relevant as they display the importance and influence that the NSLP can have on a child’s health outcomes and dietary habits.

The few studies measuring the success of the implementation of the 2010 nutritional guidelines have shown improved consumption. Students increased consumption of fruits from 54% to 66% and of entrees from 71% to 84%. The same study has also shown decreased plate waste since the implementation of the new guidelines. Currently, 90% of schools are successfully meeting the new nutritional standards, and school lunches have increased revenue by $200 million in the past year. Studies show that participation has increased in many urban areas; for instance, Los Angeles has increased participation by 14%. Very few schools (0.15%) have

191 Philip M. Gleason and Allison Hedley Dodd, “School breakfast program but not school lunch program participation is associated with lower body mass index,” *Journal of the American Dietetic Association*, vol. 109, no. 2 (2009), S118.
Michael J. Merten, Amanda L. Williams, and Lenka H. Shriver, "Breakfast consumption in adolescence and young adulthood: parental presence, community context, and obesity," *Journal of the American Dietetic Association*, vol. 109, no. 8 (2009), 1384.
dropped out of the NSLP due to the new guidelines.¹⁹³ Many food service directors feared the implementation of new guidelines. Doug Davis, the food service director in Burlington, VT, state that the guidelines force the cashier to check plates and instruct the kids to retrieve other items, effectively slowing down the lunch line. The result is that some kids only have nine minutes to eat lunch, which also increases plate waste.¹⁹⁴ Although these concerns are valid, they could reflect the adjustment period to a new system rather than represent the guidelines themselves. It is important to look at the long-term implementation in order to analyze the guidelines’ effectiveness at improving overall diets.  

Research has shown that the nutritional value of meals served by the NSLP is important considering both health outcomes and dietary habits, but there are other components to school-based obesity-prevention interventions that require evaluation. The cost-effectiveness of educational interventions is important considering their potential for large success rates due to mandatory schooling. Small, observational studies have shown cost-effectiveness from integrating obesity-prevention into existing courses as well as building physical education courses.¹⁹⁵ The largest comparative analysis of school-based interventions was conducted in Australia, thus reducing generalizability. However, the results of the analysis highlighted the importance of widespread accessibility to obesity-prevention interventions. The study demonstrated that limitations on advertising had greater effects than nutritional,

¹⁹³ Levin (interview).
¹⁹⁴ Janet Poppendieck (Policy Director at the New York City Food Policy Center) in discussion with the author, (24 June 2014).
Li Yan Wang, "Economic Analysis of a School-Based Obesity Prevention Program." *Obesity Research*, vol. 11, no. 11 (2003), 1314.
school-based interventions because of the scale of the intervention, yet nutritional school-based interventions were more effective than physical education ones. These cost effective comparative studies are important when considering what modifications to make to the educational component of the NSLP. Overall, existing research highlights the importance of the role of the NSLP in a child’s diet, the health effects of the NSLP, and the recent effects of the new dietary guidelines. These insights are important to consider when evaluating changes of the NSLP to address child obesity issues.

**Critiques of the NSLP**

The importance of the NSLP in shaping the children’s health outcomes and dietary habits is undeniable, but there are still strong critiques of the program from both conservatives and liberals alike. The mission of the NSLP has never been clear-cut, but by resolving these critiques, the NSLP could become a strong piece of the response to increasing child obesity rates. Although the HHFKA shows a measured change in the mission of the NSLP, the current debates about provisions of the HHFKA exemplifies the lack of a unified vision for the NSLP.

The first and oldest critique of the NSLP is the program’s dueling priorities between child nutrition and the food industry profit. Historically, school lunches were developed as a method of agricultural supports. Today the food industry is also prioritized through the various nutritional regulations of the NSLP. Although the HHFKA clearly sets a precedent for the importance of child nutrition when designing

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the NSLP, food lobbyists still retain a large role in the development of nutritional guidelines for the NSLP. A notable example of this phenomenon includes the various lobbies supporting pizza sauce as a vegetable. The fat and caloric content of pizza clearly categorizes it as junk food, but the potential revenue from selling goods to a buyer as large as the NSLP leaves the NSLP susceptible to a high quantities of lobbying by the food industry to ensure the NSLP as a purchaser of specific goods. For example, the NSLP spent over $450 million on pizza alone in 2014.\footnote{Nicholas Confessore, “How School Lunch Became the Latest Political Battleground,”  \textit{NYTimes.com} (7 October 2014), http://www.nytimes.com/2014/10/12/magazine/how-school-lunch-became-the-latest-political-battleground.html?_r=0.} In 2011 when the validity of classifying pizza sauce as a vegetable was under interrogation, the Frozen Food Institute spent $543,000 lobbying labels of pizza and other frozen foods.\footnote{Jacob Day, “How Pizza Became a Vegetable,” \textit{Food Politic: Journal of Food News and Culture} (3 March 2013), http://www.foodpolitic.com/how-pizza-became-a-vegetable/.} Pizza is still considered a vegetable and can represent a very important item on the plate as long as it supplies enough sauce to consider it a fortified food.\footnote{Poppendieck, \textit{Free For All}, 28-42.} The role of the food industry in determining the nutritional guidelines for meals served by the NSLP represents a conflict of interest between child nutrition and food industry profit.

Another undefined element of the mission of the NSLP is whether or not this program is built to serve all children or only poor children. During the initiatives to increase eligibility throughout the 1970s, budget constraints due to higher rates of participation of children eating free meals and lower rates of participation of children eating full-price meals not only led to lower quality meals but also labeled the NSLP as a welfare program.\footnote{Levine, 8.} When only students receiving free meals choose to
participate, then stigma grows. By associating the NSLP with this stigma, it reduces participation and changes how Congressional leaders both view the benefits of the program and determine it’s funding. In the NSLP’s early developments, the original vision of the program was to provide meals to all children in order to set consistent dietary habits early in life. Stigma increased through the budget cuts of the 1980s, which disproportionately affected full-price meals. These cuts created a new understanding of the target beneficiaries of the NSLP. Today the target population of the NSLP is still unclear. Is it a program for poor children or all children? Congress must define who the NSLP is targeting in order to reduce stigma and become more effective at achieving its mission.

The way both school food administrators and Congressional leaders view the role of the child in the NSLP has been inconsistent over time. Originally nutritionists and home economists at the USDA believed that the program would provide all children with nutritional knowledge and improve dietary habits. Once the movement began in the 1970s to increase participation, school food administrators changed their view of children. Meals were no longer a function of nutritional education; rather they functioned as a tool to entice participation. School food administrators need full-price paying students to participate to balance the budget. However, by altering the menu to a child’s natural palette preferences, meals become unhealthy. Viewing children as customers of the cafeteria rather than as students of nutrition misses the opportunity that the NSLP presents to positively influence children’s dietary habits. At the program’s origin, nutritionists and home economists believed that the NSLP could have this positive effect on the health of the nation, but this opportunity has been lost.

Poppendieck, *Free For All*, 38.
as food service directors struggle to break even and are forced to treat children as customers rather than as students.

The newest critique of the NSLP focuses on the restrictiveness of the nutritional regulations outlined by the HHFKA of 2010. One of the major areas of conflict was the implementation of calorie ceilings based on school year. Many believe that these restrictions are flawed because children of the same age do not necessarily require the same portion size. However, guidelines based on any other student characteristics, such as weight or engagement in physical activity, would be stigmatizing. Some congressional officials have critiqued these new regulations by inserting the NSLP into the narrative of state versus federal rights. Congressman Steve King (R-IA) claimed that the new regulations were a “one-size-fits-all encroachments of our liberties.” These nutritional guidelines are not the first restriction on the NSLP that have ignited this form of debate of state versus federal rights. In the 1940s and 1960s, similar debates occurred regarding control over creating national eligibility standards in order to avoid discriminatory policies. The goal of the federal nutritional standards is to provide guidelines yet flexibility for food service directors to create individualized, but healthy, menus. Many congressional officials also argue that students will not eat the food that these guidelines outline. However, studies have shown that the offering of fresh fruits and vegetables and the lack of unhealthy items such as French fries, dessert, or high-fat milk have no effect on a child’s decision to participate in school meals. Policies to improve the nutritional value of meals have not been shown to reduce participation,

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202 Byker, 683.
203 Ishdorj, 356.
and thus it is the responsibility of schools to provide meals of nutritional quality to students.

Each of these four critiques of the NSLP is important to consider when forming solutions to the program’s problems. They address and define both the mission of the program and its potential for success. In order to reform the NSLP into a program to prevent child obesity, the program must first define its priorities to fit this mission.

**Solutions: How to Improve the NSLP**

In order for the NSLP to become an effective piece of the solution to prevent child obesity, the program requires a reprioritization and redefining of its principles. Many scholars have proposed possible avenues for reform. Susan Levine, a historian on the NSLP, proposed a political coalition that “links child nutrition to agriculture, food policy, and social welfare.” This solution acknowledges the structural barriers outside the NSLP to addressing the concerns of child obesity experts. Janet Poppendieck, a school food expert, proposes restructuring of the NSLP in order to provide universal free lunch. By providing free lunch to all children, many of the obstacles of eligibility, participation, and stigma would be eliminated. On a much smaller scale, other scholars propose minor changes within the current budgetary constraints of the NSLP. Several scholars propose simple structural changes such as scheduling recess before lunch in order to encourage participation. Brian Wansink, a professor of consumer behavior and nutrition science as well as former Executive

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204 Levine, 9.
205 Byker, 687.
Director of the USDA’s Center for Nutrition Policy and Promotion, endorses the use of nudges to encourage healthy consumption habits. These nudges often make the healthy option the most accessible option such as placing the plain milk in front of the chocolate milk or putting vegetables at the front of the line and fruit at the end. These small changes are feasible considering school budgets, and have dramatic effects on consumption. Each of these proposed solutions evaluates the changes necessary of the NSLP on large, medium, and small scales.

Janet Poppendieck’s solution to provide universal free lunch builds on previous reforms from the NSLP and directly addresses critiques of the program. By providing universal free lunch, the NSLP becomes a program that is meant for all children, not just the poor. With fewer barriers to the program, higher participation allows food service directors to view children as students rather than consumers.

Stigma also reduces due to universal participation. Currently, the best option to transition to universal free meals is CEP, which allows schools to provide every student with a free meal. Through a three-year pilot program, CEP has been shown to reduce administrative costs, provide greater menu flexibility, and feed more children due to quicker lunch lines. By using CEP, schools no longer have to collect eligibility paperwork from students, which mean administrative costs are eliminated.

Additionally, when a cashier does not have to record every child’s lunch status, the line can move quicker, and kids have more time to eat their meals. Food service directors have greater flexibility for serving locations around the school if kids are not required to meet with a cashier, which allows schools to provide cart services, meal

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deliveries, or grab-and-go options. One of the greatest successes of the CEP pilot program has been the reduction of stigma, particularly in high schools, which also increases participation. Stigma associated with participation in the NSLP is most present in high schools. State Food and Nutrition Service Directors of the NLSP in Florida, Massachusetts, and New York as well as the creator of CEP, Madeline Levin, have seen increased participation in high schools through CEP particularly due to the reduction in stigma through universal access. Although CEP could initially be expensive to implement, participation should increase over time due to the improvements of school environments with universal meals, and schools will receive larger reimbursements as a result of increased participation.

There are multiple obstacles to implementing CEP. First, the option is only available to districts or schools that have a population of 40% or more eligible for free meals. Because of the multiplier reimbursement rate, any school with 62.5% eligibility for free meals should participate in CEP because they will receive the free-price reimbursement rate for every meal sold. Any school can participate with a population of 40% eligible, but in reality it is only financially feasible with 55% or greater eligible. Some states, such as West Virginia, have decided to use CEP throughout the state, but they usually use specific district groupings to keep the

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207 Levin (interview).
208 Melanie Schrowang, Lisa Church, and Robin Safley (Florida Department of Agriculture and Consumer Services, Division of Food, Nutrition, and Wellness) in discussion with the author, (16 June 2014).
Madeline Levin (Senior Policy Analyst, National School Breakfast/Lunch Programs at the Food Research Action Center) in discussion with the author, (16 June 2014).
Diane Syvilia (School Nutrition Coordinator) and Jheanell West (Summer Food and Breakfast Programs and CEP Coordinator) (Massachusetts Department of Education, Division of Food and Nutrition Services) in discussion with the author, (19 June 2014).
Sandy Sheedy (New York State Department of Education Child Nutrition Program Administrator) in discussion with the author, (2 July 2014).
209 62.5% eligibility for free meals * 1.6 multiplier = 100% reimbursement at the free-rate
210 Levin (interview).
percentage eligible in the low-50s. In New York State, the lowest qualifying district has 53% eligibility. Another barrier to participation in CEP is the necessity of direct certification. States require software to match children with family participation in programs such as SNAP, TANF, or Supplemental Security Income (SSI). Although this software is expensive and requires training, it helps to identify many children that would be missed otherwise. In Florida, after the implementation of their software Nutrislice, at least 5% of students in each county became eligible who were not previously. Some counties were missing upwards of 50% of the population. Direct certification software helps to identify more eligible children and make CEP available to more districts. Unfortunately not all states have this software, and some critics believe direct certification software is an invasion of privacy since there is not an opt-out option. However, direct certification through CEP only identifies students to make the school or the district eligible, not the individual child, which helps to retain anonymity. The final obstacle to the implementation of CEP is the use of NSLP eligibility paperwork by the state to determine allocation of Title I funding. Title I includes all federal education funds, and many states use NSLP paperwork to determine which districts require more or less funding. Some states use other data such as Census data or participation in other social services. However, for states that still use NSLP paperwork, the transition can be daunting and many school administrators are apprehensive of the change because they fear they will lose a

211 Sheedy (interview).
212 Schrowang (interview).
213 Poppendieck, *Free For All*.
214 Schrowang (interview).
portion of their Title I funds.\textsuperscript{215} In order to implement CEP successfully, many of these obstacles must first be addressed.

Another major fear for the implementation of CEP and universal school lunch in general, is that once districts start providing free meals, they cannot reverse their policy. Once the expectation is set that schools will provide all students with free lunch, that policy is relatively permanent. For this reason, New York City decided to implement universal free meals gradually. In June of 2014, the NYC Mayor’s Office announced its annual budget with the inclusion of free meals for all middle schools. Elementary schools already had close to 85\% full participation in the NSLP, and high schools would require a much larger shift.\textsuperscript{216} Although this transition can create some confusion for families with children in both middle and high schools, the gradual transition can allow the city to assess the costs and formulate a plan for further implementation. Other cities such as Detroit have decided to use CEP but continue to collect NSLP paperwork in order to continue using this system to allocate Title I funds. The New York State DOE rejected that plan because with the provision of free lunch not enough families would continue to fill out the paperwork.\textsuperscript{217} Ultimately, transitioning to either CEP or universal free meals requires the development of a new school lunch system, which will take measured training and education of local officials in order to ensure positive reception. However, the benefits of universal meals on NSLP participation, as seen through CEP, show the merit in this venture.

\textsuperscript{215} Syvlia (interview).
Sheedy (interview).
\textsuperscript{216} Poppendieck (interview).
\textsuperscript{217} Sheedy (interview).
**Conclusion: What to do with the NSLP**

Reforming and redefining the NSLP to address its critiques is a piece of the solution to address rising rates of child obesity. Poppendieck’s proposal of providing universal free lunch addresses many of these critiques. If the NSLP provides free, universal lunch, then it is clearly not a program only for poor children. This strategy would also allow food service directors to treat children as students rather than customers. A shift of this magnitude would show a strong priority for child nutrition within the NSLP, but there would still be the potential to prioritize the food industry over nutrition. Some scholars have suggested moving the NSLP out of the USDA and into the HHS or the DOE. Poppendieck rejects both of these suggestions. She believes that the HHS focuses too closely on a nutrient-based approach to nutrition and health rather than a food-based approach and that the DOE excessively emphasizes quantitative measurement as a sign of success.\(^\text{218}\) Similarly, the Florida State Department recently moved their NSLP from their DOE to their Department of Agriculture (DOA) because of the DOE exceedingly large agenda compared to that of the DOA.\(^\text{219}\) Although moving the NSLP could help to prioritize child nutrition over food industry goals, lobbyists will still have the ability to influence NSLP decisions no matter the department that controls the NSLP. The potential benefit of moving the NSLP to the DOE or the HHS would be the reduction in department members committed to food industry priorities (i.e. fewer issues of revolving door). However, if the NSLP were moved, other departments would potentially still have issues of

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\(^{218}\) Poppendieck, *Free For All.*

\(^{219}\) Schrowang (interview).
reversing door in the future. Balancing goals of nutritionists and members of the food industry will be a continued struggle in the NSLP no matter the structural changes.

There will still be many administrative and political obstacles to implementing universal free meals, but the long-term benefits are significant. CEP has shown that by providing universal free meals in a school, participation increases and the potential for positive influence on child nutrition through the NSLP grows. The NSLP is currently a battleground for food policy and reducing the political tension around this program will be difficult. One of the main obstacles will be to continue to reform the program without consuming exorbitant amounts of political, media, and social capital required for other child obesity-related policies. However, both the NSLP structural changes of providing universal meals and the larger structural changes that Levine proposes will be necessary in order to make real progress. The NSLP represents a piece of the federal government’s response to child obesity rates by providing meals and nutrition education, which largely subscribes to the personal-responsibility model. Although, the individual reforms are often refer to the creation of healthier school environments, the nutrition goal of the federal government in respect to the NSLP is to provide an individual in-kind and educational services.

**History of the Supplemental Nutrition Assistance Program**

Although SNAP’s development is more recent that the NSLP’s, it too has been subject to the changing tides of political and public support of federal social services. Unlike the NSLP, SNAP’s identity is clearly affiliated with the welfare state in providing a social safety net. Its original purpose of reducing hunger in America is
still critical to this day, but SNAP has yet to redefine its mission considering the modern image of malnutrition in America. The current political discourse on SNAP mimics its historical discourse of considering solely funding and eligibility without considering the changing needs of the American population.

With the “rediscovery of poverty” in the 1960s, hunger and malnutrition were a large component of poverty’s image during this period, which allowed for the formation of food programs. The Food Stamp Program (FSP), later renamed SNAP in 2008, started as a pilot program in 1961, and the Food Stamp Act of 1964 developed a nationwide, federally funded and state administered food program providing in-kind transfers for food purchases.\(^{220}\) The only food items excluded from the benefits were alcohol and prepared foods. In 1971 the federal government established eligibility standards for entrance into the program.\(^{221}\) Participation grew from 1969 onward due to generous benefit levels, the removal to obstacles of participation, and the increase in media publicity and outreach. Participation also varied due to economic circumstance. In the late 1970s, the USDA estimated that each 1% increase in the unemployment rate would add 800,000 participants to the program.\(^{222}\) In 1977 feeble reforms were implemented to restrain growing costs. Measures to prevent fraud and waste were implemented alongside a largely superfluous spending cap that was often granted last minute extensions by Congress. Work requirements were also added to the program for able-bodied participants ages eighteen to sixty with exceptions for

\(^{220}\) Glenn, 53.
\(^{221}\) Currie, 205.
\(^{222}\) Sar A. Levitan, Garth L. Mangum, and Stephen L. Mangum, *Programs in Aid of the Poor*, 7th ed. (Baltimore: Johns Hopkins University Press, 1998), 133.
adults with small children.\textsuperscript{223} Despite these attempts to reign in the costs of the FSP, the program’s budget continued to grow throughout the 1970s. The first major cuts to the program came in the 1980s along with similar cuts to programs such as Aid to Families with Dependent Children and other social services. The FSP spending decreased by 13.8\% during this time largely due to eligibility restrictions, and a formal welfare to work program called the Employment and Training Program was founded in 1986.\textsuperscript{224} This work program, however, had limited oversight and the FSP failed to track how many program participants gained employment, received wage increases, or expanded education credentials. It was not until a national evaluation of the FSP Employment and Training Program was released that the program was found to have no effect on participants’ employment or earnings.\textsuperscript{225} Support of the FSP has always been swayed by public opinion of federally funded social programs rather than nutritional requirements for low-income individuals. With each decade a new perspective developed on the role of the federal government in financing social programs, which resulted in inconsistent support of the FSP.

The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), otherwise known as the 1996 Welfare Reforms, framed the previous social welfare policies as “welfare liberalism,” and left the FSP along with other social services subject to major budget cuts.\textsuperscript{226} The final bill projected $55 billion in savings over six years, with $27.7 billion of the cuts coming from the FSP. The cuts from the FSP largely came from restrictions in eligibility and participation

\textsuperscript{223} Levine, 134.  
\textsuperscript{226} O’Connor, 7.
requirements. All able-bodied participants between the ages of eighteen and fifty had a three- to six-month benefit limit every three years with additional work requirements. Legal immigrants residing in the U.S. at the time of the reforms were denied food stamps for ten years or until they became naturalized citizens.\textsuperscript{227} There was increased spending on nutritional education; from 1997 to 1999 spending increased from $32.7 million to $75 million on FSP nutritional education.\textsuperscript{228} Though public support of in-kind transfers is often higher than cash benefits, cuts to eligibility in the program were dramatic. PRWORA coincided with decreased participation of the FSP due to the growing inaccessibility of the program.\textsuperscript{229} In a 2002 interview with Rob Haskins, President George W. Bush’s chief welfare advisor, he stated that all of the reforms of 1996 were consistent with the Republican Party’s political ideology except for the reforms to the FSP:

\begin{quote}
The food stamp thing, to me, was a little bit – not shameful, but it didn’t fit in with the rest. The rest was conceptually driven. The Republicans had an agenda – this is consistent with our ideology; here’s why we’re doing it; right out here we’re going to defend this stuff; we’re going to tell you why we’re doing it. And food stamps was just to save money.\textsuperscript{230}
\end{quote}

The 1996 welfare reforms were an incarnation of the social and moral concerns of out-of-wedlock births and welfare dependency that contributed to the growth of the concept of personal responsibility. However, the changes to the FSP were not a result of the changing nutritional and dietary needs of the American people, but rather they were a budgetary design to reduce federal spending.\textsuperscript{231} Federal spending should be subject to budget cut considerations in order to avoid fraud and waste, but these cuts

\begin{footnotes}
\textsuperscript{227} Levitan, 135.
\textsuperscript{228} Currie, 210.
\textsuperscript{229} Currie, 222.
\textsuperscript{230} O’Connor, 233
\textsuperscript{231} O’Connor, 234.
\end{footnotes}
should reflect the changing needs of the people who the government serves not the whim of the current session of Congress. The reforms of the FSP from its incarnation in 1964 to the spending cuts of the PRWORA did not consistently represent the changing needs of the American people, and they continue to solely consider budgetary restrictions rather than nutritional necessity. Both economic restrictions and dietary needs should decide how the program is administered. Nutrition has never been an integral concern of the program despite its connectedness to malnutrition in all forms. The FSP, and now SNAP, should begin to reflect the changing image of malnutrition in the U.S. and the needs of the American people.

Contemporary SNAP: What Does It Look Like? Does It Work?

SNAP originated to provide adequate nutrition to households based on the Thrifty Food Plan, a low-cost model diet created by the National Academy of Science. SNAP is the largest food program in the U.S. serving over 46 million participants with a budget of $74 billion in 2014. SNAP provides both in-kind transfers through food vouchers as well as optional nutrition education supplements. To become eligible for the program, a household must have a monthly income below 130% FPL. Households with a pregnant women or with at least one child under the age nineteen can qualify at 200% FPL. Participation in other welfare programs such as TANF or SSI results in automatic eligibility. Since the 1996 welfare reforms, adults from ages eighteen to forty-nine without children must participate in the Food

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Stamp Employment and Training Program (FSET) if unemployed. As of 2010, 66% of eligible individuals receive SNAP benefits. Benefits are determined based on family size and income. Participants can also receive Bonus Bucks for purchases of fresh fruits and vegetables at farmers’ markets. This relatively new program rewards participants for purchases at farmers’ markets by providing participants with four to five extra dollars per ten dollars spent at the market. In the last iteration of the Farm Bill, $100 million was allocated to help spread this program.

The economic theory of in-kind transfers suggests that if the value of the benefit is less than the amount that the recipient would regularly allocate to that good, then the benefit will have no additional effect on consumption than an equivalent cash transfer. In-kind transfers are often used because of the general support garnered from many actors involved in their construction such as advocacy groups, the agriculture industry, and the general public who prefer to support in-kind transfers over cash benefits in order to control how aid is spent. In-kind transfers also deter fraud because individuals are much less likely to falsely claim eligibility. However, in-kind transfers are more expensive to administer, they give less utility and flexibility to the decision-maker of the household, and they can be stigmatizing for participants. These characteristics of social services influence how benefits will affect the well being of participants. In the case of SNAP benefits, these qualities will determine health, nutritional, and dietary outcomes of participants.

233 Glenn, 54-55.
234 Glenn, 62.
236 Currie, 228-9.
237 Ibid., 270.
**Literature Review: Does SNAP Work?**

Research on the effect of SNAP on the health and nutrition of its participants is varied. Often the variances are in the effects of SNAP amongst different age groups. Most studies show that participation in SNAP increases the risk of obesity among women but not among men.\(^{238}\) Only one study contradicts this outcome. This study looks at long-term participation in SNAP that results in a 10% increase in obesity among female participants and a 15% increase among males.\(^{239}\) Studies on the effects of SNAP during early childhood often show no association between child obesity and early SNAP participation.\(^{240}\) In fact, participation in SNAP is commonly associated with positive birth outcomes.\(^{241}\) These results suggest that SNAP participation may lead families to consume more nutritious and less calorie dense food or that participation in SNAP simply reduces food insecurity often associated with obesity.\(^{242}\) One study shows that overall participation in WIC and SNAP, either alone or in conjunction, is related to lower risk of nutritional deficiencies.\(^{243}\)

Ultimately, the effects of participation in SNAP on obesity outcomes are varied.

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\(^{238}\) Meyerhoefer, Chad D. Meyerhoefer and Yuriy Pylypchuk, "Does participation in the food stamp program increase the prevalence of obesity and health care spending?" *American Journal of Agricultural Economics*, vol. 90, no. 2 (2008), 298.


\(^{243}\) Maximilian D. Schmeiser, "The impact of long-term participation in the supplemental nutrition assistance program on child obesity," *Health Economics*, vol. 21, no. 4 (2012), 400.

\(^{241}\) Almond, 287.

\(^{242}\) Schmeiser, 400.

amongst generations. These studies show that the program can still improve to lower the risk of obesity among its participants.

Many studies evaluate potential reforms of SNAP in order to improve health outcomes. These studies assess the various effects of these reforms on both individual health and food markets. Often studies propose the addition of dietary restrictions on SNAP benefits since SNAP is the only FNS program that does not include any restrictions on benefits outside of the prohibition of purchasing prepared foods or alcoholic beverages. Studies show that restrictions on SNAP purchases would have negative results on participation because of increases in stigma associated with participation and increased transaction costs because fewer suppliers would participate. The effect of restrictions on purchasing would also have limited effect on consumption patterns. Some scholars suggest that households would simply reallocate funds for unhealthy food to the regular household budget since the food budget often exceeds the benefit allotment. A study by Biing-Hwan Lin and colleagues suggests that food subsidies for everyone would be more effective at improving consumption patterns than restrictions for only SNAP participants. Restricting only SNAP purchases would also have consequences in the market and affect consumption patterns of non-participants. One study estimated that although

244 David S. Ludwig, Susan J. Blumenthal, and Walter C. Willett, "Opportunities to reduce childhood hunger and obesity: restructuring the Supplemental Nutrition Assistance Program (the Food Stamp Program)," *JAMA*, vol. 308, no. 24 (2012), 2568.
245 Mechel S. Paggi, "Food and nutrition programs in the next farm bill," *Choices*, vol. 26, no. 2 (2011), 5.
246 Gunderson, 15.
benefit restrictions could improve consumption patterns of SNAP participants by
gaining increased access to healthy food, it could potentially decrease access to
healthy food for non-participants through subsequent shifts in market prices due to
SNAP reforms. Increased access to healthy food by SNAP participants would
create upward pressure on prices of healthy foods and downward pressure on prices
for unhealthy foods. These effects on food markets could potentially have negative
dietary effects on participants and non-participants alike. The Bonus Bucks
program is one current solution to providing SNAP participants with greater access to
healthy foods at farmers’ markets without greatly affecting overall food market
prices. The Health Incentives Pilot (HIP) program administered by the USDA is a
current initiative to evaluate the effect of economic incentives with SNAP benefits to
purchasing fruits, vegetables, and other healthy foods at any retail location. With this
program, participants receive an extra $0.30 for every dollar spent on health foods.
The incentive is capped at $60 per household per month, but few households actually
reached this benefit ceiling during the program’s pilot. The interim report showed
that HIP participants consumed one-fifth a cup (25% more) targeted fruits and
vegetables daily than non-HIP participants. The program reduced the consumption
gap for SNAP participants for fruits and vegetables by 17%. However, the report
only evaluated how participation in HIP changed the shopping patterns of participants
and not how HIP would affect participating retailers i.e. whether the creation of a

248 Julian M. Alston et al., "Likely effects on obesity from proposed changes to the US food stamp
program," *Food Policy* 34, no. 2 (2009), 176.
249 Paggi, 5.
Service (2013), 1.
251 *Healthy Incentives Pilot*, 5.
HIP-like program would reduce participation of retailers. Additionally, the report did not evaluate the effects of overall market prices for fruits and vegetables following a large-scale implementation of this type of program. It would be difficult to evaluate how this program would affect overall consumption of fruits and vegetables of non-participants due to market pressures on these goods, but this study is a first step to evaluating the potential effectiveness of healthy-eating incentives in SNAP.

Scholars have also evaluated the potential efficacy of various structural reforms to SNAP. There are many small transaction costs associated with participating in SNAP that could reduce participation due to travel time and time spent in the SNAP office. The work incentives for individuals without dependents have been shown to have no effect on employment or earnings but could potentially act as barriers to participation. Additionally, the Expanded Food and Nutrition Education Program (EFNEP) is a voluntary educational program to teach participants about nutrition and food management techniques. Studies have shown that participants in this educational program have healthier dietary practices than non-participants. However, the voluntary nature of the program could present some selection bias i.e. only those who choose to participate already have a heightened attention to nutritional value of their diets. A concern about expanding the program or requiring participation would be the increased administrative costs or participant burden. The author of this study suggested only requiring participation after extended

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252 Healthy Incentives Pilot, 76.
253 Gunderson, 3.
254 Muhlhausen, 153.
255 Jay L. Zagorsky and Patricia K. Smith, "Does the US Food Stamp Program contribute to adult weight gain?" Economics & Human Biology, vol. 7, no. 2 (2009), 257.
participation in SNAP for nine months or more.\textsuperscript{256} The addition of work incentives and nutrition education to the SNAP program could potentially change both participation rates and health outcomes depending on their reforms.

Many studies also look at the consumption effects of using in-kind transfers rather than cash allotments. Most studies show that SNAP households are inframarginal, meaning that they spend more on subsidized goods than the value of the in-kind transfer, and thus the benefit is equivalent to cash and does not affect consumption.\textsuperscript{257} Other studies have shown that SNAP benefits cause households to increase food spending by 5\% even though they continue to treat one dollar of food stamps as an equivalent of one dollar in cash.\textsuperscript{258} One study evaluates how changing SNAP from in-kind to cash transfers would be ineffective in increasing consumption of healthy foods and proposes increased nutritional education instead.\textsuperscript{259} Other structural changes could include reforms to the timing of benefit distributions. With the food stamp cycle, participants receive a single lump sum at the beginning of every month. Participants tend to fall into a cycle of binging at the beginning of every month, which results in food deficits by the end of the month.\textsuperscript{260} Possible reforms to the program could either change the structure to pace benefit allotment or provide budgeting information to participants. Overall the research shows that the current

\textsuperscript{256} Zagorsky, 257.
\textsuperscript{257} Leslie McGranahan and Diane Whitmore Schanzenbach, "The earned income tax credit and food consumption patterns," (2013).
\textsuperscript{259} Chad D. Meyerhoefer and Yuriy Pylypchuk, "Does participation in the food stamp program increase the prevalence of obesity and health care spending?" \textit{American Journal of Agricultural Economics}, vol. 90, no. 2 (2008), 299.
\textsuperscript{260} DeBono, 752.
iteration of SNAP does provide necessary dietary benefits, but that various reforms could improve the health outcomes of participants.

**Critiques of SNAP**

There are many critiques of SNAP from both conservatives and liberals alike. Many cite program efficiencies and changing economic needs as the impetus for changing the program. Advocates also criticize the health of the program, distinguishing the health of participants from non-participants. These critiques are important to outline in order to understand how to improve the program in general, but it is equally important to define the major role that SNAP plays in the federal government’s approach to reduce and prevent obesity.

Two necessary components of all social programs are consistent evaluation of their effectiveness at accomplishing their mission and redefining the program to meet the needs of the target population. House Budget Committee Chairman Tom Price recently proposed a budget plan that would turn federal SNAP allocations into block grants to provide states with increased budgetary and administrative flexibility.\(^{261}\) This proposal originates from a Republican critique of the budget’s scale and of the administrative inefficiencies of the federal government. Democrats, however, oppose the imposition of block grants claiming that the new system would reduce widely needed benefits. This critique originates not only in the administration of SNAP but also with all federally regulated social services. It is an inevitable critique for a program and a service of its size. This inevitability does not invalidate the

criticism, but this critique often fails to consider the larger goals of the program itself. Budget cuts from SNAP should be based on cost-effective analyses of the program rather than larger ideological, partisan debates that can change with the shift of a Congress.

Another common critique of SNAP is the health of its participants and its influence on obesity. Many believe that SNAP causes obesity due to its lack of nutritional regulations. The addition of nutritional regulations would have effects on consumption both due to increased stigmatization associated with the program and the reduction of participating retailers, which increases transaction costs for participants. However, nutritional regulations or subsidies could improve diets of SNAP participants. Support of in-kind transfers often comes from supporters’ desire to control how federal dollars in welfare programs are spent, which could potentially garner similar support for greater control over the allocation of SNAP dollars. By limiting the breadth of SNAP purchases, however, there is also an ethical argument. Many welfare advocates would argue that nutritional regulations to SNAP would be an encroachment of the government on the lives of low-income individuals. It would act as an example of the government telling poor people how to behave, or in this case eat. However, SNAP is the only government program that does not have any nutritional restrictions. There does exist a precedent of other food programs to create nutritional guidelines. Additionally, forming nutritional regulations or adding healthy incentives would act as a major reform in SNAP to address child obesity. SNAP must act as a major component of the federal government’s prevention plan for child obesity. Each of the critiques of SNAP addresses either structural or theoretical
failures that limit the efficiency and scope of influence SNAP could have in preventing child obesity.

**Solutions: How to improve SNAP**

There are many proposals by academics to improve SNAP through both nutritional and educational changes to the program. One of the major flaws in the current political debate on SNAP is the failure to consider the goal of the program instead of simply the financial burden on the federal government’s budget. Although budgetary oversight is essential, it is equally important to consider the needs of the recipients of the benefits as well, otherwise the program becomes ineffective.

Concerns about SNAP’s role in reducing and preventing child obesity are rarely discussed during political debates about the program. SNAP needs to make a larger commitment and play a larger role in the current effort to reduce and prevent child obesity. Within the political debates of the program, certain reforms to prioritize health will be more realistic than others. For example, defining nutritional restrictions on SNAP benefits would be less politically feasible than providing healthy incentives for SNAP participants. Large food companies who benefit from SNAP participants purchasing their goods with their benefits lobby against adding nutritional restrictions to the program. By instead receiving healthy incentives SNAP participants are not limited in purchasing power, but are instead rewarded by improving their diets. The SNAP reformers need to evaluate the program within the larger context of obesity and health in the U.S. rather than as a budgetary burden on the American government. In order to improve the conversation about SNAP, the program will require both
individual structural reforms as well as larger reforms similar to the NSLP. In order to truly address child obesity, all FNS programs need to coordinate and align their mission on obesity and health in the U.S. in order to create a consistent and durable plan to improve health outcomes. By coordinating their efforts, FNS programs will increase their efficiency at addressing demand-side causal factors of child obesity. SNAP currently represents another piece of the federal government’s response to child obesity that uses the personal responsibility model to provide individuals with benefits and voluntary education in order to improve health outcomes. If SNAP reforms to directly address rising child obesity rates, it can become an integral piece in a larger response from the federal government.

History of the Supplemental Nutrition Program for Women, Children, and Infants

WIC is one program within the USDA’s Food and Nutrition Services that has been able to grow with the needs of Americans while bargaining with political tides and partisan disputes. Although no program can fully evade these influencing factors, WIC developed primarily out of the medical and nutritional needs of pregnant women, new mothers, and young children rather than through political clashes. Additionally the program evolves based on the changing needs of these individuals rather than budgetary disputes. WIC provides a combination of food supplements, nutritional education, and access to health services for pregnant, postpartum, and lactating women as well as children under the age of five.\textsuperscript{262} The original health goals were to improve early fetal development by lowering incidence of low birth weight, short gestation, and anemia. Recently the mission changed to include the reduction of

\textsuperscript{262} Currie, 213-214.
the incidence of overweight and obese children and mothers.\textsuperscript{263} The food packages are tailored to the specific needs of each target population, which provide nutritious food that fit the National Dietary Guidelines. The program’s success originates from its focus on the medical and nutritional needs of specific target populations while simultaneously distinguishing itself from other social services so as to avoid the stigma of the term welfare.

In 1968, a conference of physicians and the Department of Health, Education, and Welfare discovered that the common ailments among pregnant women were often caused by a nutritional deficit. A White House Conference on “Food, Nutrition, and Health” followed, which documented nutritional deficiencies among low-income women, infants, and children.\textsuperscript{264} The conference derived a solution to build food commissaries into neighborhood clinics. Women would receive prescriptions from their doctors or clinical staff for specific food items that would be distributed at the food commissaries. This model was integrated into the design of the 1972 amendment of the 1966 Child Nutrition Act that developed WIC. The first WIC site opened in 1974 with only these food packages available and initially no nutrition education or healthcare services.\textsuperscript{265} In 1975 Congress modified the age limit to make all children up to age five eligible, and they incorporated a nutrition education component of the program.\textsuperscript{266} Further reforms were enacted in 1978 to define “nutritional risk” in the eligibility standards, require one-sixth of all funds to be directed to nutrition

\textsuperscript{264} Currie, 213.
\textsuperscript{265} Oliveira, 7.
\textsuperscript{266} Ibid., 8.
education, and provide the Secretary of Agriculture the discretion to regulate the items in the food packages. The first regulation of the food packages on the federal level came in 1980 when the maximum level of sugar per dry ounce of adult cereal was limited to six grams. During this time other educational and nutritional components were incorporated such as information on the benefits of breastfeeding and vouchers for farmers’ market purchases. In 1999, Fit WIC developed in order to provide participants with information and goods to aid in obesity prevention. WIC has been able to evolve in order to meet the changing needs of its participants. However, WIC is not an entitlement program. When the funds allocated by Congress are depleted, eligible participants can no longer be served. This distinction restricts WIC in its ability to provide for its participants. However, WIC has been able to find great success in its developments by consistently addressing the needs of its participants. WIC’s defined origins and consistent, specific mission have allowed the program to grow with the needs of its target populations.

Contemporary WIC: What Does It Look Like? Does It Work?

WIC’s mission is to provide pregnant women, new mothers, infants, and young children with nutritional and health support. In order to be eligible for WIC, individuals cannot have a federal income above 185% FPL, and they must be at nutritional risk. Anyone who qualifies for SNAP automatically qualifies for WIC. In 2014, WIC served almost 9 million individuals and cost the federal government $5.5

267 Currie, 213.
268 Oliveira, 9.
269 Currie, 213.
270 Ibid., 213.
billion.\textsuperscript{271} Almost 54\% of infants and 25\% of children aged one to five are registered participants of WIC.\textsuperscript{272} The nutritional regulations of WIC are the most rigorous of any of federal government’s food programs. In 2003, the National Academies’ Institute of Medicine suggested servings that would align food packages with the Dietary Guidelines for Americans and infant feeding practice guidelines of the American Academy of Pediatrics.\textsuperscript{273} With WIC vouchers, participants are limited to healthier purchases such as fruits, vegetables, fat free milk, wholegrain bread, and brown rice. The goal of the dietary guidelines was to provide foods required during this crucial developmental period that could also take into account cultural food practices. WIC also requires nutrition education for mothers participating in the program. Each component of the program addresses specific medical needs for the target population, and the mission of the program has remained consistent throughout its development.

\textit{Literature Review: Does WIC Work?}

Overall, the literature on the effectiveness of WIC at improving birth outcomes is overwhelmingly positive. WIC is associated with lower incidence of anemia and better nutritional intake such as higher intake of vitamins C, A, B-6; folate; grains; fruit; dairy; and meat, with similarly lower intake of added sugars, total fat, cholesterol, and sodium.\textsuperscript{274} Other studies show modest rather than sweeping

\textsuperscript{272} Glenn, 58.
\textsuperscript{273} Ibid., 59.
\textsuperscript{274} Andrea Carlson and Ben Senauer, "The impact of the Special Supplemental Nutrition Program for Women, Infants, and Children on child health," \textit{American Journal of Agricultural Economics}, vol. 85, no. 2 (2003), 479.
improvements, but these studies often propose reforms to the educational components of the program rather than sweeping nutritional changes. WIC has shown to work well to improve birth outcomes both independently and in conjunction with SNAP despite low levels of coordination between the two programs. The most recent study on the cost-effectiveness of WIC unfortunately uses data from 1990, but it shows that every dollar spent on WIC saved $1.77 to $3.13 in Medicaid demonstrating program cost-effectiveness at preventing rather than curing disease.

Most of the more recent studies on WIC evaluate the effectiveness of nutritional guidelines and education practices. Studies measuring fruit and vegetable consumption after the implementation of special vouchers have consistently shown improved diets that often sustain following the intervention. Most of these interventions are for vouchers at farmers’ markets, which unfortunately have access barriers such as geographical proximity, transportation, and limited leisure time. However, an observational study on the modified food packages showed improved consumption and home availability of healthy food options such as fruits, vegetables,

Oliveira, 4.

276 Lee, 516.
278 Elizabeth F. Racine, Ashley Smith Vaughn, and Sarah B. Laditka, 'Farmers' market use among african-american women participating in the special supplemental nutrition program for women, infants, and children,' Journal of the American Dietetic Association, vol. 110, no. 3 (2010), 441.
low-fat dairy, and whole grains. The most recent studies on the EFNEP, WIC’s educational program, demonstrate both program cost-effectiveness and participant benefit by teaching participants how to use their vouchers cost-effectively. WIC has been able to adapt to the needs of its target population throughout its conception, and the program has consistently provided food packages and nutritional education to its participants to improve health outcomes.

**Critiques of WIC**

WIC bears a fraction of the political controversy that either the NSLP or SNAP undergoes in both political and news arenas. Although there are still debates over budgets and the content of food packages, the controversy around the program is much more muted than its contemporaries. However, these differences do not preclude WIC from experiencing any controversy. There still is room for improvement in the WIC program, and there is still partisan divide over its policies.

The current debate over the program has been limited to specifics on the items in food packages and the measures of the program’s success. The most contentious item prohibited from the food packages is white potatoes. Until recently, the IOM selected all of the items chosen for food packages through studies conducted on behalf of the USDA. However, the Maine potato lobby has recently gained support

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in the Senate in an attempt to reform WIC food packages to add white potatoes back into the nutritional regulations.\textsuperscript{282} There has been a precedent since the creation of WIC that food packages were determined by medical professionals alone. This case could potentially catalyze a major change in WIC’s consistent dedication to providing health packages without industry influence. Robert Greenstein, an expert on nutrition at the Center of Budget and Policy Priorities, said that changes in WIC’s food packages based on industry interests rather than suggestions from the IOM would reduce the effectiveness of the most successful federal program.\textsuperscript{283} WIC reforms made by industry professionals would only reduce the program’s effectiveness thereby working against Congressional interests.

The only major obstacle that WIC has faced recently was the misleading claim made by First Lady Michelle Obama that in the past decade WIC had reduced obesity by 43% for children ages two to five years old.\textsuperscript{284} The study that she cited was conducted with a relatively small sample size and the results had a wide margin of error. After the surprising announcement, many media sources later criticized both the study and the First Lady for having cited it as a marker of success. Although the study cannot alone confirm the effectiveness of WIC in reducing the incidence of child obesity, this study does show initial signs of the benefits of the program, and it prompts the need for greater interrogation of the efficacy of the program. This news ordeal, however, is not representative of the larger discourse around WIC, and it is


\textsuperscript{283} Rogers.


necessary to focus on why WIC is successful. Ultimately, WIC’s success in improving birth outcomes underlines the necessity of retaining the integrity of the program.

**Conclusions: What to do with WIC**

WIC’s mission has been concrete and clear since its foundation in the 1960s, and it has been successful due to the clarity in which it developed and the principles it set. Because of the program’s dedication to its founding vision, the WIC mission can be redefined to better address the needs of its target population such as growing concerns of child obesity. Although WIC is not immune to political battles, it provides a strong example for other programs of effective usage of the personal-responsibility model for child obesity prevention. WIC’s design also allows the program to better coordinate with other FNS child nutrition initiatives as well as with SNAP and the NSLP in order to fashion a coordinated effort to addressing child obesity in the country. WIC is an integral piece of the federal government’s response to child obesity, but it alone cannot address all demand-side concerns for the individual actor.

**Comparative Analysis of the Three FNS Programs**

The federal government’s response thus far to the rising rate of child obesity has been to take preexisting food programs and slightly restructure them to address obesity in their mission. It is only within the past few decades that the federal government has had to address concerns of obesity, and thus the response has been a
unilateral reform of FNS programs that affect children. The federal government has primarily used the personal-responsibility model because of ideological preferences since PRWORA as well as the model’s effectiveness on many demand-side policies. However, this is not the only model that should be used to address demand-side reforms. There has also been a focus on the demand-side causes and actors because of a preference to focus on individual, household improvements rather than larger agricultural reforms. Even First Lady Michelle Obama’s Let’s Move! campaign to reduce and prevent child obesity has shifted priorities and targets for reform. On the Let’s Move! website, the “Learn the Facts” webpage focuses strictly on demand-side problems and solutions for child obesity. To explain increases in child obesity rates, the campaign targets reduced physical activity, fewer home cooked meals, and increased frequency of snacking and fast food consumption as the main causes of the rise of child obesity. There is zero accountability for the supply-side causal mechanism and the role of the food industry or the federal government in these changes in consumption and physical activity.\(^{285}\) In the official report to the president by the White House Task Force on Childhood Obesity, reference to the role of agricultural policy in the increase of the childhood obesity rate is limited. In the discussion of subsidies, there is an acknowledgement that subsidies have a small, but minimal affect on food prices, but the report does not acknowledge the price differential of healthy and unhealthy foods.\(^{286}\) In addition, the only response from the


\(^{286}\) White House Task Force on Childhood Obesity Report to the President, “Solving the Problem of Childhood Obesity Within a Generation,” Executive Office of the President of the United States (May 2010), 57.
report to the connection between hunger and obesity is to improve SNAP.\textsuperscript{287} Though this is an important step in reducing hunger and preventing obesity, this solution continues to focus on limited demand-side, personal-responsibility solutions without considering the larger environmental, causal framework. The correlation between socioeconomic status and child obesity suggests that larger anti-poverty reforms such as welfare reforms, raises in the minimum wage, and improvements in public transportation should become integral pieces of the federal government’s response to the rising rate of child obesity by addressing the larger causes of hunger through both the personal-responsibility reforms (i.e. minimum wage) and environmental reforms (i.e. public transportation).

The government has failed to take a holistic approach to the rising rate of obesity. The causes associated with the rising rate of child obesity are diverse and affect many components of society. In order to effectively combat this issue, the government must garner interdepartmental support and formulate better organization between programs in a coordinated response. Models for reforms should be selected not based on ideological preference but rather proven efficiency. Although the USDA’s FNS programs should not be the sole response to child obesity, they should be a major component of the solution and thus their reforms are still crucial. The histories of each of these programs provide the foundation to understanding their strengths, weaknesses, and the origins of their controversy.

Since its origin, the mission of the NSLP has mapped a complicated relationship between the goals of child nutrition and food industry stability. The NSLP was founded as a USDA tool to control the supply in various food markets, and

\textsuperscript{287} White House Task Force on Childhood Obesity Report to the President, 62.
today the NSLP works as one of the largest consumers for many food companies. The creation of dietary regulations for the NSLP is wrought with the influence of both experts in nutrition and food industry lobbyists. These complicated relationships continue to guide the mission and the health outcomes of the NSLP. The NSLP’s history also creates confusion over the role of the student and augments the stigma associated with NSLP participation. The NSLP’s convoluted history has created a tumultuous political environment that integrates the program into preexisting battles of states’ versus federal rights. Reprioritizing the program to directly preventing child obesity will thus be fraught with these established tensions. Although the goal of the NSLP is about creating healthy food environments in schools, it largely ignores the big picture and only reforms the consumer side of the market. The NSLP does nothing to reform the supply-side of the market. As one of the largest consumers in the food market, changes to the NSLP, such as removing the label of vegetable for pizza, could encourage changes on the supply-side of the market. However, the reforms to NSLP are largely about improving the cafeteria environment without largely disrupting the goals of the food industry. In order for child obesity to be effectively managed, the supply-side of the causal mechanism cannot continue to be ignored by the federal government.

Unlike the NSLP, SNAP and WIC developed from the Great Society Welfare State social and moral imperatives. Their original purpose was solely to provide target populations with benefits to prevent malnutrition. However, throughout SNAP’s development, the primary concerns of lawmakers has been the financial burden of SNAP rather than the nutritional effect of the program on primarily low-
income individuals. SNAP has zero nutritional guidelines and has never committed to combatting child obesity through prevention campaigns. The history of SNAP and its focus on budgets rather than the changing image of malnutrition have resulted in inaction in addressing the growing issue of child obesity. WIC has been able to evade the level of political and media attention given to the NSLP and SNAP. This variation is largely due to the size of its operation. WIC costs the federal government approximately half the amount of the NSLP and one-fifteenth of the SNAP budget. However, WIC has always been able to address the medical and dietary needs of its participants because its foundation was largely due to the insight of medical experts. Although WIC has recently garnered greater political attention, the program’s allegiance to the medical needs of its participants has been consistent throughout its history with program failures largely limited to budgetary constraints. WIC has shown great success and dedication to preventing child obesity over the years, but this program cannot address the issue alone.

The federal government has largely relied on these three programs to address rising rates of child obesity. However, the histories of each of these programs influences their ability and effectiveness at addressing this national concern. The NSLP and SNAP must completely reprioritize their missions, as WIC has done, to incorporate child obesity prevention into their vision and make it their top priority. Although reforms to these programs will be crucial to preventing further increases in the child obesity rate, the federal government must take on a holistic approach to combating child obesity rather than a unilateral measure to solely improve FNS

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programs. The federal government must begin to consider other contributing demand-side factors, the supply-side causal mechanism, and the possible benefits of the environmental model in order to successfully manage child obesity.
Chapter 3: An Incomplete Solution II, The Mainstream Food Movement

The mainstream food movement supports a specific policy platform that addresses the causes of child obesity from a different vantage point than that of the federal government. Many of its proposals call for changes to the supply-side of the market interaction. Policies such as the removal of agricultural subsidies or the implementation of food taxes target price inequities between healthy and unhealthy foods in an attempt to make healthy diets accessible on any budget. These policies, along with the rest of the platform of the mainstream food movement, have largely subscribed to the environmental-model of reducing and preventing child obesity.

While working to improve the supply-side of the market, the movement prescribes policies that generate healthy food environments by increasing accessibility to healthy food.

Although the intention of these policies is admirable, they ultimately fall short of their goal. Building effective public policy requires a thorough understanding of the problem and a holistic approach to the solution. Outlining both the supply- and demand-side causes associated with child obesity is the first step in constructing public policy to manage the problem. In order to frame an effective, preventative solution, policies must address all causes of the problem while considering the political feasibility of proposed solutions. However, in its reliance on the environmental-model to target supply-side causes, the mainstream food movement largely neglects consideration of both the complete causal mechanism of increasing child obesity rates and the political feasibility of its policy prescriptions. In order to advocate effective public policy, the mainstream food movement must subscribe to a
holistic approach to manage child obesity that considers the political feasibility of its proposals.

**Supply-Side Intervention: An Environmental Approach**

The supply-side of the food market forms the nutritional landscape of a community. These landscapes vary depending on the community the market is servicing by decisions of food suppliers on whether or not a certain market is profitable. They are defined not only by relative prices of various foods but also by the geographical accessibility of the foods themselves. The economics of food production—from growing, to manufacturing, to transporting goods—as well as federal agricultural policy largely influence the development of food landscapes. The mainstream food movement seeks to make healthy options financially accessible to everyone by proposing reforms to policies of food production and sourcing. Agricultural policy reform would alter the environments formed by the food industry and the government to allow both financial and geographical access to healthy food.

**Relative Prices: Farm Economics and Farm Policy**

The mainstream food movement often cites price inequalities between healthy and unhealthy food as a major cause of child obesity. Current farm practices and agricultural policies have resulted in a dramatic price differentiation between healthy and unhealthy foods: as the price of unhealthy food drops and the price of healthy food rises, achieving a healthy diet becomes financially impossible, and public health suffers. To diminish the price differential between these goods, various solutions have
been proposed, from a reformation of commodity programs that provide agricultural subsidies to farmers to food taxes that incentivize consumption of healthier goods. However, when reforming the agricultural sector, each of the actors must be considered: farmers, wageworkers, industry (of both non-farm inputs and outputs), and consumers. Solutions must provide healthy options in the market while supporting the producers of those goods. The mainstream food movement often proposes changes to the commodities program and the subsidy system in America without fully understanding the causal mechanism of child obesity and without fully understanding the consequences of their policy proposals.

Solution A: Incentivizing Production: Reforming the USDA Commodities Program

The most popular proposal of the mainstream food movement is to reform the USDA commodities program. A narrative has formed that links low prices of unhealthy foods to USDA subsidies for staple crops such as corn and soybeans in the Farm Bill. Although there is a strong correlation between food manufacturing and transportation costs with the final price of a product, the price of raw materials, i.e. corn and soybeans, is rarely represented in the final price of a product. Thus the proposed solution by the mainstream food movement exemplifies inherent misunderstandings of how food prices are determined. In order to effectively improve food environments, it is first crucial to understand how food prices form.

Since the mainstream food movement opposes agricultural subsidies and their effects on food prices, the Farm Bill has become its primary target. The Farm Bill, as it was originally designed, was intended to support farmers and agricultural
production. In 1933, the Agricultural Adjustment Act addressed the downward acceleration of commodity prices and determined the necessity of government intervention in order to stabilize food markets. These policies established granaries and loans to support farmers while simultaneously boosting production. They were built on a philosophy of farm economics that fears chronic low prices due to overproduction, which is how production trends most frequently. Through a process of repeated revision every five to seven years, the Farm Bill has lost its principles of farm economics since new provisions are consistently written during periods of abnormally high commodity prices. Recent increases in ethanol production from corn have spiked corn prices and urged farmers to substitute production of other commodities for production of corn. This shift raises prices of other food goods as well by limiting the supply.

In the 1970s, policies were developed following a poor harvest and large sale of commodities to the Soviet Union, which raised prices as a result of scarcity. These policies were developed with the expectation that the Soviet Union would become a large consumer of American crops, which it did not. The same assumption occurred during the development of the 1996 Farm Bill, except China was expected to be the new, large consumer. 289 None of these phenomena lasted long, but they resulted in a misinterpretation of the role of policy in farm economics. As a result, today’s policy does not support farmers because it does not provide farmers adequate compensation for their goods. Figure 3 shows the cost of production of agricultural commodities

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versus the price of production. This figure also shows that even with the government commodities program subsidies, farmers are barely breaking even. However, there are benefactors of these artificially low prices. Food manufacturers from grain buyers to meat packers and food processors all benefit from low prices of raw materials. Farmers control less and less of their production as inputs are controlled by the manufacturers of seed, machinery, and chemicals (pesticides and fertilizers), and output prices are kept low for the benefit of food manufacturers.

The Farm Bill is not designed to supply the country with adequate diets to fulfill even the USDA recommended diet or to support farmers with reasonable crop prices. Rather, the Farm Bill provides the food industry with guaranteed cheap inputs and raw materials of processed goods, animal feed, and ethanol.

The $956.4 billion budget for the Farm Bill influences the nutritional landscape in America for the next ten years by allocating funds to commodity programs, agriculture research, and food programs. The bill provides farmers with direct payments and crop insurance. The Commodities Program, Title I of the Farm Bill, provides direct subsidies to farmers who produce specific goods. Between 2014 and 2023, the bill will provide $89.8 billion in direct payments, representing 9.4% of the entire budget. However, the bill heavily favors production of specific commodities. Corn, soybeans, wheat, cotton, and rice are among the crops most heavily subsidized by Congress. Because of the concentration of subsidies, in 2007,

291 Guthman, 124.
60% of farmers received no subsidies, and the top 10% of subsidized farmers received nearly 75% of these subsidies with an average of $35,000 per year. For the bottom 80% of farmers receiving subsidies, they received an average of $700 annually.293 The number of farms receiving federal subsidies has become more concentrated because of the breakdown of commodity distributions. In 2004, corn subsidies represented 30% and soybeans represented 29% of total subsidy payments.294 Fewer and fewer farmers are receiving subsidies as big farms continue to grow and produce only crops supported by the commodities program, which influences the food landscape of the American diet.

When looking to reform agricultural policy, it is important to consider each of the major actors involved in both the production and consumption side of the process. Policy must consider the farmers, the wageworkers, the food industry, and the consumer, as well as the nature of farm economics, production costs, and healthy diets. As mentioned in Chapter One, a solution often lauded by both libertarians and members of the mainstream food movement is the removal of subsidies. Members of the food movement in particular support the removal of subsidies for staple crops such as corn, soybeans, and wheat. However, removing agricultural subsidies would not produce the desired effect: prices would plummet, farmers would overproduce, and Congress would once again be forced to provide emergency subsidies. In addition, subsidies on raw materials do not dramatically deflate the price of processed goods, thus the desired effect of increasing the price of unhealthy foods through the

removal of subsidies would result from this policy reform. Although this policy may force the industry to pay slightly higher prices for these raw materials, the effect on consumer prices and ultimately consumer diets would be minimal.

Aside from doing little to raise the price of unhealthy foods, subsidy removal would also have an undesirable effect on caloric consumption. The research of Bradley J. Rickard and colleagues showed that while holding all other policies constant, removal of subsidies on major commodities such as corn and soybeans would have decreased caloric consumption only minimally and the removal of all agricultural policies, most importantly trade barriers on sugar and dairy imports, would actually increase caloric intake.295 Specific farm commodities are cheaper, they argue, because of technological innovations in the productivity of these goods not due to USDA subsidies. The solution then to shift consumption by shifting production cannot be achieved via subsidies but rather through technological innovation for healthier goods to increase productivity of healthier commodities.296 Government regulations have been known to spur development in industries that claim technological innovation is impossible. The lawnmower industry for example always claimed that they were not capable of making a safe lawnmower. However, once the Consumer Product Safety Commission required them to do so, they developed one swiftly.297 Government insistence and incentives to shift production to supporting farmers and public health could induce change and force the industry to modify its practices.

295 Bradley J. Rickard, Abigail M. Okrent, and Julian M. Alston, "How have agricultural policies influenced caloric consumption in the United States?" *Health economics* 22, no. 3 (2013), 316. 
296 Rickard, 336.
Another solution from Caroline Franck and colleagues includes the decoupling of income supports from specific crops while rewarding agricultural diversification. Government support for harvesting sustainable, bio-diverse crops would help farmers increase revenue, since fruits and vegetables are among the products with the highest farm-retail value, and would provide the market with a greater supply of fresh produce. These policies would dis-incentivize monocultures that ruin soil and tarnish diets. Phuong Lan Thuy Nguyen revised this solution by illuminating the potential of intersectoral support for agricultural diversification by both public health and climate change professionals, all of whom could benefit from these revisions. These types of policies would support midsize farms that are best positioned to diversify production, yet are rapidly disappearing under pressure from large-scale farms producing monocultures supported by the federal commodities program, which receive the majority of federal subsidies. By substituting subsidies for healthier, more expensive commodities, farmers would have incentives to produce goods with higher returns that support healthier diets. If the mainstream food movement wishes to influence the relative prices of healthy and unhealthy foods, then removing crop subsidies is an ineffective policy proposal. Instead, members of the movement should focus on using agricultural policy to generate agricultural diversification. Additionally, agricultural policy should support innovations that reduce the cost of producing healthier foods. In order to effectively address the price differential between healthy and unhealthy foods, these realities of agricultural production must be addressed.

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299 Wallinga, 408.
Although there are merits to reformation of the Farm Bill, the political feasibility of these reforms is extremely limited. According to the Center for Responsive Politics, over 350 companies and organization lobbied the Farm Bill in 2013. Consequentially, the Farm Bill was the sixth-most heavily lobbied measure of 2013. Agribusiness spent $111.5 million on lobbying alone. Major supporters of agribusiness in Congress often receive large donations from this sector as well. The Agriculture Committee Chairman of the House of Representatives, Frank D. Lucas (R-OK), received over $744,000 from the agricultural sector in the 2012 election cycle. These donations comprised on nearly 46% of total funds for his campaign. In the Senate, Debbie Stabenow (D-MI), chairwoman of the Agricultural Committee, received more campaign contributions from the crop production industry than any other senator with over $346,000 in donations. The amount of control that agribusiness currently has over the Farm Bill and Congress compromises the likelihood of any monumental shifts towards public and environmental health priorities. Although reforms to the Farm Bill could potentially improve America’s nutritional landscape, the current proposals of the mainstream food movement neither address main concerns about price inequities nor garner the political power to compete with food industry lobbyists.

Solution B: Taxes and Subsidies: Altering Price at the Retail Level

Another popular solution to the price inequity between healthy and unhealthy foods is the introduction of taxes and subsidies to change the monetary accessibility

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of a healthy diet. By changing food prices, this solution falls under the environmental-model, which attempts to create food environments where the healthy choice is more accessible. Often, proposals by the mainstream food movement focus on soda taxes, but in reality these taxes could take multiple forms. For example, a tax could target nutrient-specific foods with high sugar, salt, or fat content. Taxes on consumers could raise the price of unhealthy items, and subsidies for produces could lower the price of healthy goods. In theory, these initiatives would encourage a certain type of consumption or increase the accessibility of healthy food options. For this reason, the mainstream food movement often supports the implementation of food taxes in order to reduce consumption of unhealthy foods.

Studies have shown that food taxes are effective at influencing consumption depending on the gravity of their effect on prices and the breadth of goods they cover. Moderate taxes have minimal effects on changes in consumption patterns, yet larger, less politically feasible taxes have greater success in influencing consumption and promoting healthier diets.301 One study found that decreasing the real or relative price of low-energy dense foods, in relation to high-energy dense foods would increase consumption of low-energy dense foods.302 In the U.S., the norm for a soda tax is around 4%, and does not substantially deter consumption. A study analyzing various soda taxes in U.S. states showed little variation in consumption for soda taxes ranging from 3.5% - 7%. However, the study found that subgroups of at-risk children such as those who are already overweight, come from low-income families, or are African

American were more sensitive to even moderate soda taxes.303 Subsidies can also influence consumption patterns by decreasing the price of healthy foods, which subsequently become financially accessible to more people. A study on a moderate subsidy of fruits and vegetables showed that a 1% decrease in price could potentially result in a decrease of around 6,700 cases of coronary heart disease and almost 3,000 ischemic strokes annually.304 However, in general studies have found that taxes on high calorie foods were more effective than subsidies on low calorie foods.305 In order for food taxes or subsidies to influence consumption patterns, food taxes must be implemented and set high enough to incentivize certain consumption patterns.

To make food taxes and subsidies more effective, researchers have looked at price elasticities of various commodities to determine whether or not taxes and subsidies could vary consumption. This initiative was started by a study that promoted purchasing low-fat snacks at vending machines in worksites and secondary schools. Price reductions of low-fat goods of 10%, 25%, and 50% increased sales of those goods by 9%, 39%, and 93% respectively.306 This study showed not only the importance of the gravity of the tax in terms of influencing consumption, but also the effect the elasticity of the individual good had on variations between individual items such as fresh fruit and baby carrots. Further studies showed that the most price-elastic goods are soda, juice, meat, fruit, and cereal, whereas eggs, sugars, sweets, cheese,


Powell, 329.


306 Simone A. French, "Pricing effects on food choices," *The Journal of nutrition*, vol. 133, no. 3 (2003), 841S.
fat, and oils are the most price-inelastic goods.\textsuperscript{307} The most recent study has found that nutrient-specific taxes improve nutrition more than product-specific taxes without harming consumer utility. For example, a 20% soda tax would decrease purchased calories by 4.84% and overall sugar consumption by 10%. However, a 20% sugar tax would decrease total calories purchased by 18% and sugar calories purchased by over 16%.\textsuperscript{308} This study concludes that taxing sugar, salt, and fat has greater effects on diet than taxing soda and junk food because of the broader base these taxes cover, which lowers the probability of substitution of an equally unhealthy good. The research concludes that nutrient-based taxes and subsidies that dramatically change relative prices could improve nutrition. For instance, many researchers propose a sugar-sweetened beverage (SSB) tax. A penny-per-ounce SSB tax would lead to an estimated 24% reduction in consumption, which could reduce daily consumption of sugar from 190-200 calories to 145-150 calories, while generating $79 billion in tax revenues in five years.\textsuperscript{309} It is estimated that a 20% tax on SSB would reduce the obesity rate in adults by 3% and for children by 2.9%.\textsuperscript{310} An avenue of research yet to be explored, however, would be various price elasticities for groups of differing socioeconomic status. One common critique of food taxes is that they are regressive because individuals of low-socioeconomic status spend a higher percentage of their income on food. It is important to examine how price elasticities


\textsuperscript{309} Andreyeva, 413.

vary between these groups in order to understand how regressive these taxes would actually be.

Though high food taxes can influence the consumption patterns of consumers, they are usually not politically feasible, so instead more moderate food taxes are implemented. However, moderate, product-specific taxes are usually offset by increased consumption of other high-calorie drinks.\(^{311}\) Many taxes on unhealthy foods today have low rates that generate revenue but do not influence consumption patterns. This introduces another function of food taxes: to use moderate, politically feasible rates to generate revenue for obesity-prevention campaigns. Although moderate taxes do not greatly influence consumption, they can generate significant revenue. For example, tax rates of one cent per pound or one percent value would not alter consumption and would have minimal effects on health outcomes, but this form of taxation could generate $40-$100 million in tax revenues if implemented nationwide.\(^{312}\) While this tax revenue could then be used to promote other obesity-prevention measures, funds promised to certain projects are often reallocated away from obesity-prevention campaigns. Consequentially, many researchers suggest the use of soda taxes to generate revenue for obesity-prevention programs rather than as a measure to deter consumption. Ultimately, choosing whether to implement food taxes to either influence consumption or generate revenue for obesity-prevention projects will always have trade-offs.


Food taxes were first implemented in Europe. With one of the highest levels of obesity and the lowest life expectancies in the European Union, Hungary was one of the first nations to enact a food tax. Hungary used low-level taxes on foods high in fat, sugar, sat, and caffeine content. These taxes were projected to raise $192 million in tax revenues that would be pumped into healthcare costs to lower obesity rates. However, these taxes came during a time of economic recession, so their overall success is difficult to tabulate since reductions in sales of soda and junk food could be a result of economic circumstance. Denmark also implemented a tax of €2.41 per kilogram of saturated fats. This tax applied to products containing 2.3% or more saturated fat, targeting food such as butter and many types of meat. Rather than being intended as a public health measure, however, this tax was introduced to the public as a means to generate tax revenues. Following its introduction, anecdotal evidence of Danes stockpiling commodities and crossing the border to purchase cheaper butter entered the news cycle, and the tax was withdrawn after just six months. Later data analysis showed that the tax did have a relative measure of success by reducing consumption of saturated fats by 4%.

France also implemented a tax on SSBs at $0.036 per liter. However, under pressure from manufacturers, the tax was applied to both diet and sugary drinks, which failed to distinguish the healthy from

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315 Villanueva, E1229.
the unhealthy. Each of these national tax schemes, while well intended, serves as an example of how a lack of political feasibility can prevent success anticipated by scientific research.

Despite the European experience, heavy taxes have seen success in influencing consumption, with the most prominent, contemporary example being in Mexico. In 2013, Mexico’s obesity rate surpassed America’s, and Mexico became the most obese developed nation. President Enrique Peña Nieto took action to combat this trend in January of 2014 by enacting both soda and junk food taxes. Mexico drinks more soda than any other nation and tends to prefer regular soda to diet sodas. Soda was taxed one peso per liter ($0.08 per liter), and an 8% tax on all junk food was also implemented. Consumption of soda decreased by 10% in the first three months of 2014, which included a 7% increase of consumption of other bottled beverages such as bottled water and milk. In the first half of 2014, overall consumption decreased by 6.4% for Coca-Cola bottler FEMSA and 4.7% for Coca-Cola bottler Arca-Continental. Mexico provides an example of the possible effect on consumption of a moderate soda tax. although the taxes were predicted to raise $1 billion in the first year, only $100 million out of an originally stipulated $300 million of funding was allocated to the construction of water fountains in public schools around the country. This demonstrates how revenue from food taxes can often be reallocated away from public health programs. The actual passage of Mexico’s soda

317 Bosley.
320 Guthrie.
321 Ibid.
tax also serves as an example of the many obstacles to the implementation of an
effective tax in America.

The financial barriers to implementing a soda tax are quite large. Throughout
Mexico’s soda tax campaign, Michael Bloomberg donated $10 million to promote the
passage of the proposed law.\(^{322}\) Bloomberg’s support of soda taxes began years ago
as mayor of New York City when he attempted to prohibit the sales of 16-ounce soda
drinks in retail locations such as restaurants and movie theaters. However, this law
was later repealed by court order. Bloomberg was also the largest donor to support
the implementation of a soda tax in Berkeley, California in 2014. He donated
$657,000 to the campaign, which he argued was to level the playing field against the
American Beverage Association (ABA), which spent $1.7 million in Berkeley and
$7.7 million in San Francisco to denounce these taxes.\(^{323}\) Bloomberg chose not invest
in the campaign to implement a soda tax in San Francisco because of the super
majority required to pass such a bill, which he believed insurmountable considering
the level of funding that the ABA allocates to anti-soda tax campaigns.\(^{324}\) The ABA
has spent over $100 million in the past five years to squash over 20 soda-tax
proposals across the country.\(^{325}\) Although the soda tax in Berkeley proves that the
passage of a soda tax in America is possible, the funding required to counter the ad
campaigns of the ABA raises doubts about the political feasibility of future passage

\(^{322}\) Adam Nagourney, “Bloomberg to Back Soda Tax in Berkley,” NYTimes.com (17 October 2014),

\(^{323}\) Gail Sullivan, “How Michael Bloomberg Helped Pass Berkeley’s Soda Tax,” washingtonpost.com
michael-bloomberg-helped-pass-berkeleys-soda-tax/.

\(^{324}\) Sarah Varney, “Soda-Makers Try to Take Fizz Out of Bay Area Tax Campaigns,” NPR.org (27
October 2014), http://www.npr.org/blogs/thesalt/2014/10/27/359325115/soda-makers-try-to-taking-fizz-
out-of-bay-area-tax-campaigns.

\(^{325}\) Nagourney.

\(^{325}\) Sullivan,
of such laws. In both Mexico and America, these movements have only begun or found success under the financial support and tutelage of Michael Bloomberg. The passage of influential bills cannot rest solely on the bank account of one man. Despite the aid that a nutrient-tax could provide through both increasing the accessibility of healthy diets and raising funding for obesity prevention campaigns, the political feasibility of the passage of nutrient taxes or subsidies on the federal level is minimal due to the current political climate. In this sense, while the mainstream food movement largely supports the passage of a food tax, more often in the form of a soda tax, it fails to consider the political feasibility or the trade-offs involved in its implementation.

**Geographical Accessibility of Healthy Food**

The association between a lack of geographical accessibility to healthy food and poor diets is a logical one. When consumers do not have retailers physically accessible either by foot or by public transportation, nutrition suffers. These unhealthy environments have been labeled “food deserts” because of the minimal access to healthy food. Generating geographical accessibility to healthy food is the foundation of the environmental-model to solutions for child obesity. A study using U.S. Census data showed that low-income neighborhoods only had 75% of the chain supermarkets available to middle-income neighborhoods. Access to these stores has been associated with increased fruit and vegetable intake and with lower adolescent BMI.³²⁶ This problem exists in both urban and rural communities, and although the proposed solution of incentivizing the development of chain grocery stores is a

³²⁶ Story, 259.
significant way to address the issue, it cannot be considered a complete solution. Understanding the economic reasoning behind the development of food deserts as well as perceiving the factors that influence food culture within communities are necessary steps to developing a sound solution.

Food deserts are poor and minority neighborhoods that have limited access to fresh, healthy food. There are both supply- and demand-side explanations for the development of food deserts. Developing new businesses without a previous retail landscape can be risky according to the theory of economies of agglomeration. This theory refers to the concept that per unit operating costs decline when there is a higher geographic concentration of retailers.\textsuperscript{327} Without a previous demand established, suppliers fear that there is no demand for these goods in communities and are therefore hesitant to develop new businesses in these neighborhoods. The consumers on the demand-side of the market are restricted by income, prices, and preferences. Healthy food is a normal good since the demand for healthy food increases as income levels increase, and the price remains constant.\textsuperscript{328} However, there are also many characteristics of food deserts that can potentially incentivize development of new retailers: high unemployment levels, low wages, and low property prices. The prices of new retailers must be competitive with food prices already habituated to community members in order for people to alter their shopping and dietary habits. Each of these supply- and demand- side concerns must be considered in the development of a new solution.

\textsuperscript{327} Bitler, 157.
\textsuperscript{328} Ibid., 156.
Strictly focusing on the development of grocery stores in low income and minority neighborhoods will not alone eliminate food deserts and address each supply- and demand-side concern. In 2010, the Obama Administration launched a $400 million Healthy Food Financing Initiative that included a provision to promote the development of food retailers in food deserts.\textsuperscript{329} The program provides both funding and technical assistance to developing retailers in these neighborhoods. However, the addition of grocery stores in low-income communities does not insure that people will change their habits, shop at these stores, and improve their diets. On the supply-side, retailers require assurance that there will be a demand when developing these stores, which can only be provided if the retailer is adequately integrated into the community.

Development of farmer’s markets, community food initiatives, and convenience stores can also help to integrate healthy food into the community without the development of large retailers.\textsuperscript{330} To create a demand for these products and an incentive for individuals to alter their habits and purchase healthy food, taxes and subsidies should incentivize purchasing healthy food and make healthy food an accessible economic option. Geographic access also necessitates the development of public transportation systems around these developing businesses. Each of these policies must incentivize retail development while simultaneously incentivizing consumers to change their habits through competitive pricing.

\textsuperscript{329} Bitler, 154.
\textsuperscript{330} Steven Cummins, Ellen Flint, and Stephen A. Matthews, "New neighborhood grocery store increased awareness of food access but did not alter dietary habits or obesity," \textit{Health Affairs}, vol. 33, no. 2 (2014), 283-291.
The development of these types of policies is crucial to preventing child obesity. However, they require an interdisciplinary approach to obesity, which is often missing from both the proposals of the federal government and the mainstream food movement. In particular, their proposals often lack methods of integrating these businesses into local communities and providing full access to their services. The success of eliminating food deserts requires the implementation of agricultural, transportation, retail, and cultural policies that work in conjunction towards a goal of complete integration of a new food system. Unfortunately, the likelihood of this type of reform is limited if the government continues to take a unilateral approach to preventing obesity despite the need for intersectoral support of obesity-prevention policies.

**Advertising Regulations: Informing the Consumer**

Advertising acts as a medium to provide consumers with complete information about competing products in order to make educated choices in the market. Unlike the other solutions proposed by the mainstream food movement, expanding federal regulations for food advertising falls under the personal responsibility model, which posits that thoroughly informed individuals will make economic and dietary selections based on complete information, and thereby improve their health. This solution follows the logic of the economic utility maximizing model, which assumes that individuals with complete information about products, their contents and their effects, will make rational economic decisions.\(^{331}\) Since advertising is viewed as a medium to inform, regulations on advertising in the U.S.

\(^{331}\) Brambila, 365-7.
have only required companies to provide details about a product rather than restricted advertising mechanisms themselves that unethically target children.

Restrictions on advertising have been more widespread abroad. In Sweden, all food advertising that targets children twelve years or younger is banned before, during, and after children’s programming. A similar ruling in the United Kingdom was shown to decrease the number of advertisements watched by children aged 4 to 9 years by 39% and children 10 to 15 years by 28%. Canada’s ban on advertising on children’s television reduced the probability of children purchasing fast food by 13%. These reforms are new and still under review for their effectiveness, but early indicators show that reduced exposure to advertisements for unhealthy foods improves young children’s diets. In the U.S., current advertising regulations require companies to provide more information to consumers, but they do not restrict advertising practices that influence consumption based on fanfare rather than facts. These initiatives, such as menu labeling, public information campaigns, and product labeling propose that improvements in individual dietary choices are made possible by providing facts in conjunction with fanfare.

Initiatives to improve information on food labels follow the personal-responsibility model that posits that individuals with complete information will make informed decisions in the market. Although these initiatives do provide additional information to consumers, only about two-thirds of consumers actually read labels, and the individuals who use labels are generally already more health-conscious. Consumers should be able to make completely informed decisions about their dietary

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332 Brambila, 367.
333 Ibid., 369.
selections, but this should not come at the cost of other reforms of advertising mechanisms. There only exists a limited amount of political, media, and social capital dedicated to food advertising, and it is currently consumed by labeling. However, by instead reducing excess messaging and highlighting nutritional content, heavier advertising regulations would place a greater emphasis on reducing fanfare and highlighting facts. By reducing the excess messaging, the food environment becomes less crowded by unnecessary fanfare. Thus, this reform implements the environmental-model. Once again, however, the political feasibility of restricting messaging is limited. Although the FTC does restrict advertising of alcohol and tobacco products to children, which sets a precedent of creating advertising regulations on behalf of child health, the direct connections between these addictive products and their effects on health outcomes differentiate them from unhealthy food, which can be consumed minimally and can have limited health consequences if consumed appropriately. Current trends forecast that Congress will continue to require companies to provide increased information to consumers, but will not limit the capacity at which companies can market their products.

Having informed consumers is a crucial to the success of food markets. However, studies have shown that public health measures that work to inform consumers have mixed or limited success, whereas measures that target the market environment tend to be more intrusive yet have greater success.\textsuperscript{334} Creating environments where healthy food is geographically and financially accessible to all individuals is one of the most effective measures for reducing the incidence of child obesity, rather than measures that only provide consumers with more information

\textsuperscript{334} Brambila, 365.
about what they already consume. However, reducing the fanfare used in advertising campaigns increases the likelihood of positive food environments and improved health outcomes. The types of restrictions on advertising that create healthy food environments and subscribe to the environmental-model of child obesity prevention are more likely to improve child obesity outcomes than current advertising regulations that follow the personal-responsibility model. Though labeling is important, the mainstream food movement should focus its efforts on reforming advertising regulations to create more visibly factual, healthier food environments.

**A Holistic Approach: What is the Food Movement Missing?**

The proposals by the food movement to prevent child obesity are often not politically feasible due to the political climate in which they are born. However, their political feasibility alone does not limit their productivity at reducing and preventing child obesity. The majority of the proposals made by the food movement focus on the supply-side of marketing and use only the environmental-model to prevent child obesity. Although this approach is important and is often ignored by the federal government, it also misses an important component of the solution. Child obesity is a wicked problem and requires diverse, multilateral solutions. It requires appropriate implementation of both the environmental model that improves the breadth and accessibility of the supply of healthy food as well as a personal-responsibility model that enables individuals to become educated about nutrition and to afford healthy food. The efficacy of the model, by improving health, will depend on the policy itself and should vary from policy to policy rather than from which side of the market the
policy addresses. The current mainstream food movement proposes only environmental reforms on the supply-side of the market because the focus of its attacks are on supply-side actors such as the food industry and the federal government. One counter example is the mainstream food movement’s effort to introduce food-labeling initiatives to provide the individual with more information about the products they purchase. However, studies have shown that in the case of food advertising, limiting the scope of advertisements produces better results for preventing obesity than labeling initiatives. Regulations that restrict advertisers from targeting children are more effective at improving health outcomes than regulations that improve product labeling. In this case, the environmental-model is more effective at preventing child obesity than the personal-responsibility model. In order to prevent and reduce child obesity effectively, the appropriate model must be implemented for each policy proposal in order to maximize obesity prevention efforts. On both sides of the market, each proposal must use the model that will maximize obesity prevention efforts.

Overall, using both the environmental-model and the personal-responsibility model is crucial to enable both the supply- and demand-side of the food market to address child obesity prevention. In addition to its supply-side initiatives, the mainstream food movement must advocate demand-side reforms that enable individuals to make healthy choices. In order to create healthy environments in the household through demand-side policies, reforms must provide parents with greater budgetary and temporal flexibility so that they can improve health outcomes for their children. The expansion of budgets includes policies that can improve the
employment, income, and education status of parents. Reforms in these political sectors are topical in contemporary political discourse, especially as they pertain to issues of minimum wage, paid sick leave, subsidized childcare, and the attainment of higher education. Therefore, it is more likely that these reforms of demand-side policies could pass through Congress and improve obesity outcomes by enabling consumers to live healthier lifestyles, and consequently place more emphasis on healthier food. Unfortunately, the passage of policies that expand the amount of time that parents have in the home is not politically feasible. Welfare programs that disincentivize work simply are not digestible in a country where “welfare for work” policies are the ones most frequently supported by Congressional leaders. Therefore, the reforms that are the most politically feasible, as well as the most likely to improve health outcomes for children, are policies that expand budgetary flexibility for parents in order to provide healthy food environments for children.

The limitations that children face as consumers in the market are twofold. First, children do not think rationally when making dietary choices; second, children have nutritional information deficits due to a lack of early habit setting. The likelihood of a child making a positive dietary choice is largely dependent on the food environment formed by both his or her parents and school. Thus, policies should focus on presenting nutritional information to children while providing them with limited, healthy options to begin setting consistent habits. Positive outcomes for children are thus largely dependent on the success of policies that provide both parents and schools the budgetary and temporal flexibility to create healthy food environments.
In order for the mainstream food movement to effectively prevent child obesity it must pursue politically feasible supply- and demand-side reforms that select either the environmental-model or the personal-responsibility model to maximize policy efficiency. The causes of child obesity are multifaceted, with implications on both the supply- and the demand-side of market interaction. Therefore, the response to reduce and to prevent child obesity must be equally diverse and multilateral, addressing both environmental and personal improvements while taking the realities of reform into account.
Conclusion: A Holistic Approach

The nature of child obesity as a wicked problem necessitates a policy response that coordinates all stakeholders while prioritizing effective solutions. Wicked problems are inherently complicated due stakeholders’ diverse priorities and interconnected, causal relationships. They require interactive responses between all actors that address every element of the causal mechanism. Child obesity’s causal mechanism engages both supply- and demand-side characteristics through the interactions of three actors: the food industry, the federal government, and the individual. Both sides of the market are influential in creating food environments, taste preferences, and economic mobility that all affect dietary decisions. Therefore, an effective solution to the management of child obesity will include a holistic approach that engages all participating actors. The solutions should be framed using either the personal-responsibility or the environmental model based on the effectiveness of that model with a policy rather than ideological preference of a specific model. Holistic policies that engage all actors with the appropriate models will manage child obesity most efficiently.

Neither the federal government nor the mainstream food movement has provided a holistic solution to child obesity. Their solutions fail to address not only the full causality of the side of the market in which their proposals intervene but also the complexities of child obesity by engaging all stakeholders on both sides of the market. The federal government’s response to the management of child obesity is unilateral in its central focus on the redefining of FNS programs’ missions. Remodeling NSLP and SNAP to address child obesity relies on the capacity of these
programs to singularly redefine their mission and remain accountable to that mission. The histories of these programs question their capacity to accomplish that task. Their complicated origins and changing ideological models invalidates the ability of the programs to adapt to the needs to child obesity management. Discussions of NSLP and SNAP budgets consume the limited political and media attention that issues such as child obesity garner and leave little space to analyze the needs of those participating in the programs. Nevertheless, even if the missions of NSLP and SNAP could effectively evolve to incorporate child obesity prevention measures as WIC has successfully done due to its consistent prioritization of health over politics, the federal government’s approach would still be incomplete. By redefining FNS programs to address child obesity rates, the federal government is only partially engaging with only the demand-side of the causal mechanism.

The federal government fails to provide a holistic response to child obesity for multiple reasons. Reforms to FNS programs address hunger and malnutrition but not necessarily the source of that hunger or malnutrition: poverty. The federal government must incorporate anti-poverty reform into its response to child obesity in order to better address the demand-side of the child obesity causal mechanism. In addition, the federal government’s current proposed reforms adjust FNS programs to improve individual circumstance, but they fail to address any supply-side causes or actors. The federal government engages with demand-side reform because of its preference for changing policies affecting individuals rather than the food industry. When implementing these policies, the federal government solely uses the personal-responsibility model, which has arguably become the ideological preference since
PRWORA. By expanding food budgets for SNAP and WIC or providing healthier meals through the NSLP, the government supplies individuals with benefits and information rather than improving food environments by making healthier choices more accessible. The federal government’s singular focus on child obesity solutions reduces its ability to fully address the complex problem.

The mainstream food movement is similarly shortsighted by only addressing the supply-side actors with the environmental model. They focus reforms on agricultural subsidies, food taxes, food deserts, and food advertising. Apart from this narrow perspective, the major weakness of the mainstream food movement’s response to child obesity is the flaw in its narrative on agricultural subsidies. Although these subsidies influence farmers’ production decisions, they do not ultimately alter the retail price of food. The price discrepancy between healthy and unhealthy food is a result of farm production methods, manufacturing, and transportation. Thus the mainstream food movement’s desire to remove agricultural subsidies will in reality have damaging effects on the livelihood of farmers. The movement should instead propose a reorganization of agricultural subsidies to encourage farmers to diversify crop production and grow healthier food.

Even if the mainstream food movement were able to reorganize its agricultural policy proposals, its solution to child obesity would still be incomplete. The movement has only engaged with supply-side actors such as the food industry and the federal government without considerations for demand-side reforms that engage the individual by improving economic and educational opportunities consumers. In addition, the mainstream food movement focuses solely on the
environmental-model in its policy proposals. This frame is often the more effective model considering the proposals the movement is engaging, but the movement must consider the personal-responsibility when further developing policy proposals. Ultimately, both the federal government and the mainstream food movement have flaws in their solutions to child obesity because they fail to adopt a holistic approach to manage child obesity effectively by engaging all stakeholders, levels of causality, and policy models.

The nature of a wicked problem requires engagement of all stakeholders in order to form policy that addresses all aspects of the causal mechanism. Even though the federal government and the mainstream food movement are theoretically creating policy that in the aggregate addresses both sides of the market, they are neither applying altogether effective policy nor coordinating their efforts. Therefore, their overall policy is incomplete. A central explanation for the lack of coordination between the federal government and the mainstream food movement is the power differential that exists between the two bodies. The mainstream food movement has limited political power relative to the federal government, and therefore its priorities are secondary. The federal government is a direct actor in the causal mechanism whereas the mainstream food movement vies for a role. These power dynamics largely explain the variance in the political feasibility of the federal government’s and the mainstream food movement’s policy efforts. In order to address all policy arenas necessary for reform, the federal government must first take responsibility for the formation of policy in all applicable sectors.
The proper management of child obesity requires not only engagement of both sides of the market but also larger policy sectors that are already tightly integrated into the causal mechanism. Child obesity’s concurrent rise with poverty and high correlation with socioeconomic status suggests that policy reform of other sectors including (but not limited to) income maintenance, healthcare, minimum wage, transportation, and etcetera will all ultimately reduce poverty and prevent further incidence of child obesity. These larger, structural changes must be the focus of child obesity policy. Problems such as obesity are only granted limited attention, which means that policymakers must capitalize on those few moments. It is especially important to implement sweeping policies, while using the correct model, because of the limited political, media, and social capital that child obesity garners as a topical issue. Although debating the minutia of the WIC package is important for health, perhaps greater political currency should be spent on sweeping reforms that improve structural, causal factors. Although these individual policies are crucial to improving child obesity outcomes, effective reform must provide a holistic response to the growing child obesity rate.
Appendix I: Tables and Figures

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|l|c|c|}
\hline
\textbf{Top Four Hog-Producing Companies} & \textbf{Total Savings, 1997-2005} & \textbf{Top Four Broiler-Producing Companies} & \textbf{Company} & \textbf{Market Share} & \textbf{Total Savings, 1997-2005} \\
\hline
Smithfield & 30% & $2.2$ billion & Tyson & 23% & $2.59$ billion \\
Premium Standard & 8% & $589.9$ million & Gold Kist & 10% & $1.13$ billion \\
Seaboard Corp & 7.5% & $553.1$ million & Pilgrim's Pride & 9% & $1.01$ billion \\
Prestage & 5% & $368.7$ million & ConAgra Poultry & 8% & $900$ million \\
Total & 51% & $3.71$ billion & Total & 50% & $5.63$ billion \\
\hline
\end{tabular}
\caption{Savings from Low Feed Prices, 1997 - 2005}
\label{table:feed_savings}
\end{table}

Table 1. Savings for Corporations on Cheap Animal Feed
Muller, Mark, Heather Schoonover, and David Wallinga, "Considering the contribution of US food and agricultural policy to the obesity epidemic: overview and opportunities," \textit{Institute for Agriculture and Trade Policy, Minneapolis, MN} (2007), 23.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure12.png}
\caption{Relative Prices for Products in a Market Basket of Food}
\label{figure:price_savings}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure13.png}
\caption{Relative Price of Food}
\label{figure:price_savings}
\end{figure}

Muller, Mark, Heather Schoonover, and David Wallinga, "Considering the contribution of US food and agricultural policy to the obesity epidemic: overview and opportunities," \textit{Institute for Agriculture and Trade Policy, Minneapolis, MN} (2007), 21.
**Figure 2.** USDA National Dietary Guidelines versus Saturday Morning Advertising Breakdown


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**Figure 3.** Price of Corn and Cotton vs. Cost of Production

Appendix II: Bibliography


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