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Preventing Obesity: A Social Ecological Exploration of Centers for Disease Control Prevention Strategies and Guidance toward Healthy Eating, Physical Activity, and Communities

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But in discussing, "natural" theology we shall have to cross swords not with the man in the street, but the philosophers; and that name means that they profess to be "lovers of wisdom".

Now if wisdom is identical with God, … then the true philosopher is the lover of God.

Saint Augustine

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Abstract

Obesity has reached nearly 40% of the adult public in the United States, costing the citizen taxpayer over $200 billion annually in healthcare costs. Those suffering from obesity deal with multiple physical and mental repercussions. Through a content analysis of four Centers for Disease Control (CDC) documents and guided by the conceptual framework of the social ecological model, this research explores the federal approach to preventing obesity. The analysis finds that CDC solutions to obesity involve connecting people to each other and healthier choices, an orientation toward local public administration, and an emphasis on environmental and infrastructure improvements. The research makes multiple public policy recommendations to improve upon the current CDC guidance, chief among them, promoting tactics and strategies in a comprehensive manner where multiple social ecological levels of influence are engaged simultaneously. Ultimately, according to the CDC prevention strategies, it is the public policy level of influence, particularly at the local level, that must prompt prevention of and solutions to obesity.

CHAPTER 1

Introduction

Obesity in the United States has long been at epidemic levels, and yet a cure, a solution, an end, seems nowhere in sight. For the past 30 years the obesity rate has increased from roughly 15% of the adult population in the 1980's to 42.4% in 2017 according to a July 2020 National Center for Health Statistics (NCHS) Fact Sheet. Associated with multiple contributing factors and causes, there have been various attempts to solve obesity rate increase, its escalating public cost, and of course its threatening effects on individual and public health. In the end, the result is the same, more obesity. This dissertation explores recommendations from one of the lead federal agencies charged with preventing public health epidemics, the Centers for Disease Control and Prevention, more commonly known as the CDC. The research essentially asks, what are the strategies promoted by the CDC to prevent obesity? What are their common themes? At what social ecological level are those recommendations targeted and how do those different levels work together?

The research utilizes a content analysis to review four widely published documents containing CDC obesity prevention strategies. This research is inductive and exploratory. Findings will offer insight into what national public policy is suggesting about this problem and further through the latent nature of the analysis, the research may help illuminate what current recommendations are saying about root causes and the true nature of what is necessary to end this epidemic. The main goals of the research are to identify the common themes among the documents to develop a common narrative and from that narrative, the analysis will identify future strategies and new public policy recommendations. The analysis uses the social ecological model to detect where and what is causing obesity, and where and how it can be prevented. The

study will also look at points of divergence, disagreement, and conflict across the materials and areas in need of further emphasis, research, education, and increased awareness.

Statement of the Problem

According to the Centers for Disease Control and Prevention, obesity is associated with many negative consequences including the following medical risks: diabetes, high blood pressure, heart disease, breathing problems and several forms of cancer (Centers for Disease Control, 2017). It is also associated with depression and other mental illnesses and an overall lower quality of life. Financially, obesity is associated with a massive public cost estimated to be between $147 and $210 billion annually (Centers for Disease Control, 2017). One reason that the cost is so high, is that the prevalence has reached "epidemic" levels. While in 1985 obesity rates lingered nationally around 15%, today, according to 2017 statistics from the National Centers for Health Statistics (NCHS), over 40% of adults and 19% of children are obese. At this level of prevalence and cost, obesity is a public agenda item and a challenge to public policy practitioners.

Obesity rate increases can be affiliated with a number of contributing factors that range from individual influences and causes to environmental and societal wide determinants (Apovian, 2016, Gurnami, Birken, and Hamilton, 2015, Williams, Mesidor, Winters, Dubbert, and Wyatt, 2015, and Smith and Smith, 2016). This research will generally explore the role of environmental and individual factors contributing to obesity, but also a select set from each of these broad categories. Individual factors considered are those of personal attitudes and family characteristics and dynamics, and the environmental factors studied are corporate influence, mass marketing, and government regulation. The research is framed through the social ecological model and examines factors and strategies through the model's levels of influence.

Purpose of the Study

The research began with a few purposes in mind. The goal is to understand how the federal government in the United States is proposing to solve America's obesity epidemic and prevent a continuation of rate increases. Therefore, one of the main purposes of the research is to better understand CDC obesity prevention strategies. The study seeks to explore the CDC's identification of factors related to obesity and if possible, its understanding of root causes of obesity's astronomical increase. The study seeks to discover themes related to obesity prevention, better understand the role of the different branches and levels of government in its response to the problem, and how those levels of government interact. The study will seek to understand how federal strategy suggests to incorporate environmental and individual factors and solutions. Further, the study seeks to understand the settings within society where the CDC associates cause and where it associates the solution, and finally, how these different settings and levels of society interact and can interact to both cause and prevent obesity. This is all done using the social ecological model as a theoretical framework. The study from these understandings seeks to develop a broader narrative about the strategies and finally, to make policy recommendations toward future government and public policy approaches to obesity. Obesity is often described as a complex social problem and the study will try to analyze and convey this complexity with new insights and new policy recommendations.

Study Overview

Following this introduction, in Chapter 2 the dissertation will review literature pertinent to obesity and several specific factors. After the literature review the theoretical framework will be introduced. In Chapter 3, the dissertation states the research questions and explains the content analysis methodology utilized. In Chapter 4 findings are presented. Chapter 5 the

dissertation closes with a discussion of the findings, a set of public policy recommendations, an acknowledgement of its limitations, and lastly, how the study contributes to the larger body of research.

CHAPTER 2

Review of Factors and Conceptual Framework

This project begins with a review of relevant literature pertaining to the environmental factors of corporate influence, marketing, and regulation, and the individual factors of personal attitudes and family, as related to obesity. The literature review also takes a brief look at the role of exercise and schools as they relate to obesity. At the conclusion of the literature review, the conceptual framework of the research, the social ecological model, is explained in full. First, however is a synopsis of obesity itself.

Obesity Defined, Common Factors, and Rate Increases

According to the Centers for Disease Control and Prevention, obesity is defined as having a body mass index above 30. The body mass index or BMI is a common method for measuring or delineating weight according to categories of obese, overweight, healthy, and underweight, but it is not the only way. In her book *Obesity, Cultural and Biocultural Perspectives* (2011), Brewis notes a number of alternative methods for measuring body fat including anthropometry, bioelectrical impedance analysis, and dual x-ray absorptiometry to name a few. Brewis discusses how in many ways the BMI, as popular as it may be for the purposes of explaining and measuring obesity, may not be the best method. For one, BMI is a measure of mass and not fat. She explains that when we use BMI, popular figures like Arnold Schwarzenegger and Matt Damon, and even Olympic athletes would be considered obese based on their index number.

Obesity is associated with many negative consequences including the following medical risks: many causes of death, diabetes, high blood pressure, heart disease, breathing problems and several forms of cancer. Obesity is also associated with depression and other mental conditions and an overall lower quality of life (Centers for Disease Control, 2017). As well obesity is associated with stigmatization and people suffering from obesity are vulnerable to being treated with a negative bias. According to Puhl and Heur (2009, found in Brewis, 2011) obese adults are less likely to get hired, more likely to get fired, less likely to be accepted to their college of choice, and are susceptible to ridicule from family, friends, and society in general. According to Brewis (2011) this bias even spills over into health care settings and that overall, stigmas associated with "weight produce a global devaluation of the individual attached to the trait". Finally, a core component of obesity's stigmatizing nature is that those suffering from the condition are considered responsible.

From a biomedical perspective obesity is a multifactorial disease (Smith & Smith, 2016), that involves multiple risk factors. One explanation for obesity is that it is a result of an imbalance between calorie consumption and expenditure (Smith & Smith, 2016). Since the 1960's adults have increased their daily average caloric intake by 205 calories. Over the past hundred years, food itself has changed becoming more ultra-processed, decreasing in fiber and increasing in fat, sugar, and salt, making calories more available (Apovian, 2016). Genetically, a number of syndromes, such as Prader Willi, Bardet-Biedl, and Alstrom and Wagr can lead to obesity. Gene defects, which affect the melanocortin pathway can also lead to obesity (Gurnami, Birken, and Hamilton, 2015). Additional physical or pathologic causes include endocrine disorders such as hypothyroidism and growth hormone deficiency (Gurnami, et. al., 2015).

Contextual or environmental risk factors include geography, social environments and networks, cultural influences, physical activity, food processing and fatty foods, socio economic status, and for children especially, excess screen time and fatty food marketing (Apovian, 2016, Gurnami, et. al., 2015, Williams, e.t al., 2015, and Smith and Smith, 2016). Nutritional behaviors can have an impact. For example, increased fast food consumption, eating while watching television, skipping meals, and exercise are all related to obesity (Gurnami, et. al., 2015).

The obesity epidemic that we know today, perhaps recent within a long view of history, did not evolve overnight. Through a complex sampling process ranging across all age, income levels, and ethnicities, the National Health and Nutrition Examination Survey (NHANES), conducted through the years 1960 to 1962, 1971 to 1974, 1976 to 1980, and again in 1988 to 1994, showed steady increases in the adult obesity rate and then a jump. Respectively, those rates increased from 12.8% to 14.1% to 14.5% and then in the last assessment, the rate increased eight points to 22.5% (Taube, 1998). At that point, public health experts were describing obesity rate increases as an epidemic (Taube, 1998). According to Brewis (2011), in the summer of 1998, the federal government lowered the body mass index threshold for obesity. When the BMI scales changed, 29 million people became *overweight* according to the new guidelines.

The NHANES has continued to show increasing rates and a continuation of obesity's non- discriminatory nature in that it remained detrimental to the population regardless of race, ethnicity, gender and age through 2010 with combined overweight and obesity percentages reaching 68.5% of the population (Williams, et. al., 2015). In 2016 an analysis of 2013-2014 data from the NHANES found 35% of the men and 40.4% of the women surveyed to be obese. The sample included 2,368 men and 2,817 women with average ages of 46 and 48 respectively (Flegal, Knuszon-Moran, Carroll, Fryar, and Ogden, 2016).

Another national study, the Behavioral Risk Factor Surveillance System (BRFSS) tracks obesity rates among other health indicators. BRFSS utilizes a cross sectional telephone survey and from 1991 to 1998 showed a steady rate increase in all states and across a number of variables including age, race, and education levels. The rate levels were different than those of the NHANES, but similar. The BRFSS reported a jump from 12% to 17.9% (Mokdad, Serdula, Dietz, Bowman, Marks, and Koplan, 1999). From 1986 to 2000 that same survey reported that severe obesity, where an individual is more than 100 pounds overweight, increased at a faster pace (Sturm, 2003). In comparison to normal obesity conditions, severe obesity has additional causes and health consequences. During this time frame, severe obesity quadrupled from 1 in 200 to 1 in 50 (Sturm, 2003). The BFRSS reported that the growth rate, an increase of 70% through 2010, did begin to slow in 2005 (Sturm & Hattori, 2012). However, according to 2017 statistics from the National Center for Health Statistics (NCHS), 40% of adults and 19% of children are obese.

In the United States, attempts to halt and suspend the obesity rate increase have been funded through hundreds of millions of dollars from various sectors including philanthropic sources, government, and industries (Zylke & Bauchner, 2016). School and community programs, promotion of exercise and better food choices, and nutritional labeling have all been attempted to stall obesity increases, but to no avail (Zylke & Bauchner, 2016). The financial cost of obesity is estimated to be between $147 and $210 billion annually according to the Centers for Disease Control and Prevention. These estimates do not include an additional $4.3 billion in costs due to worker absenteeism.

Individual Factors

In a 2007 article examining the ways in which obesity can be framed it was observed that the food industry, like the alcohol and adult beverage, tobacco, and even the car industry, has used the term *personal responsibility* to place blame for negative outcomes of product consumption not on the corporate suppliers, but on the individual consumer (Dorfman and Wallack, 2007). In a wide-ranging series of papers about obesity, authors suggest that individuals are responsible for their health, but that the environment can positively or negatively affect individual choice toward outcomes (Roberto, Swinburn, Hawkes, Huang, Costa, Ashe, Zwicker, Cawley, and Brownwell, 2015). Those same authors suggest that food environments exploit individual vulnerabilities in a way that reinforces unhealthy eating and preferences for unhealthy eating. The series recommends government regulation, but also increased efforts from the food industry (Roberto, et. al., 2015). The medical community has labeled obesity a disease (Jung, 1997) 25% to 41% attributable to genetics, but acknowledges that environmental factors have a major influence. This research project is interested in this dichotomy between individual versus environment factors. Two individual factors, the role of family and personal attitudes, are highlighted in the research below.

Family Dynamics and Characteristics

Many efforts to curb weight gain or to promote weight loss fail to establish the support or social networks that keep weight loss sustainable. The social network that is most likely to support healthier behavior choices is the family (Gruber and Haldeman, 2009). A ten-year study of treatment results among obese children in four randomized treatment studies found convergence on the vital role of the family for eating and activity changes. The study showed results that supported family-based behavioral treatment programs (Epstein, Valoski, Wing, and

McCurley, 1994). Successful interventions should be multifaceted and community wide, and because of their critical role, parents should be involved in interventions from the very beginning of child development (Lindsay, Sussner, Kim, and Gortmaker, 2006).

Parenting styles have an effect. Authoritative styles of parenting, where the parent is strict, but also concerned about educating the child about standards and involving the child in understanding good choices, are linked to healthier eating, weight and other healthy outcomes (Berge, Wall, Loth, and Neumark-Sztainer, 2009; Lopez, Schembre, Belcher, O'Connor, Maher, Arbel, Marolin, and Dunton 2018). Permissive parenting where there is great freedom afforded the child and authoritarian parenting where standards demand absolute and unquestionable obedience, have negative outcomes and have been linked to unfavorable weight and related health conditions (Yavuz & Selcuk, 2017; Lopez, et. al., 2018). A study of Turkish children and parenting styles, for example, found that when parents used an authoritarian parenting style, their children were 4.7 times more likely to be overweight or obese. The study signaled the need to look at multiple aspects of parenting to better understand the role of parenting in obesity interventions (Yavuz & Selcuk, 2017).

Family structure matters too. A study of the kindergarten cohort of the Early Childhood Longitudinal Study found that children living with single-parent mothers were more likely to become obese by fifth grade than children who lived in two parent homes. Additionally, the study found that children who had siblings were more likely to have a lower body mass index and less likely to be obese than children who did not have brothers or sisters (Chen & Escarce, 2010). The study suggests that family structure should be a consideration of health care interventions.

The United States National Longitudinal Study of Adolescent Health found that family environments can have an effect on children's weight into young adulthood (Crossman, Sullivan, and Benin, 2006). The study revealed that parent obesity increases the risk for children to become overweight or obese as young adults. In the same vein, the study found that children who are overweight are more likely to be overweight as young adults. Another set of findings from the study show that higher education, a greater perception that parents care about them, and higher self-esteem have a positive effect on body weight, but this finding was only for girls. For boys, the perception that parents were trying to control their diet and a higher degree of closeness with a parent increased their risk for excessive weight (Crossman, Sullivan, and Benin, 2006). The same study found Native Americans and African Americans at an increased risk for becoming overweight (Crossman, Sullivan, and Benin, 2006).

Adult obesity has been shown to potentially stem from a family history of obesity and early childhood obesity (Kral & Rauh, 2010). Parental obesity has been estimated to more than double the risk of adult obesity. These risks are likely a product of both genetic predispositions and the environment. Parental modeling of eating behaviors, tastes, and food choices are influential factors in the adaptation that children make toward food and eating (Kral & Rauh, 2010). Parental attitudes can be a determinant of healthy food related behavior. Significant correlations between parent and child nutritional behaviors have been identified (Scaglioni, Salvioni, and Galimberti, 2008). In terms of obesity, if the home modeling is detrimental to good health, children will then be at risk for negative health consequences. Behavioral interventions are a recommended approach to avoid or curb risk and reduce the negative results (Kral & Rauh, 2010). For example, repeated exposure to foods has been associated with a higher consumption and affinity for those foods. Therefore, if parents are setting up the home food environment with

higher energy dense foods, children are more likely to grow up eating and enjoying these foods and then become adults who continue the same behaviors. A solution to the cycle maybe an intervention that challenges parental behaviors and the way they establish the home food environment (Kral & Rauh, 2010).

The idea of familial modeling and environment shaping by the family is not new and has been ratified in other consumer spaces besides food. Research in the area of consumer socialization or "the process by which individuals, particularly children, acquire the skills, knowledge and attitudes relevant toward their functioning as consumers in the marketplace" (Ward, 1974) has provided insight into the ways in which children comprehend marketing, make purchasing decisions, and their cognitive and social capacities. This socialization is heavily influenced by the family, where childhood experiences toward brands which are often predicated by parental preferences can linger and affect choices long into adulthood (Ward, 1974). Parents can either create an environment that promotes healthy or unhealthy behaviors and therefore asking parents to become more of a role model in this subject may in fact be more valuable than dietary control (Scaglioni, Salvioni, and Galimberti, 2008).

Personal Attitudes

When making food choices, eating decisions are based on personal food systems (Connors, Bisogni, Sobal, and Devine, 2001). These systems include the five food values: taste, health, cost, time and social relationships. Additional values might include symbolism, ethics, variety, safety, waste and quality. Values can be described as enduring beliefs that guide behavior (Kahle and Timmer, 1983; Kluchohn, 1951; Rokeach 1979) and are frequently acknowledged to be important in decision making about food (Harrison et al., 1997; Reaburn et al., 1979; Sims, 1978; Steelman, 1976).

In one study comparing health, taste, guilt, and comfort, taste was found to be the stronger predictor of attitudes and past eating behavior (Aikman, Min, and Graham, 2005). The comparison was made of 83 predominantly female undergraduates, who ranked healthiness through a card sorting task and a food attitude questionnaire. An additional finding from the same study was that participants did not rely on the actual health or nutritional make-up of the product when ranking, which could not be influenced by either card or product nutritional labels (Aikman, Min, and Graham, 2005).

In a survey of food handlers (who are involved with food preparation and provision) and the general public it was found that the general public had a significantly higher food science knowledge than the handlers (Lessa, Cortes, Frigola, and Esteve, 2017). The survey revealed that the majority of respondents ranked taste as the most influential factor for the success of reduced calorie items. The study called for more collaboration between food handlers and health professionals to ensure that healthier items are more widely available, developed and promoted (Lessa, Cortes, Frigola, and Esteve, 2017).

In looking at the feelings of guilt or celebration, a study found that when eating chocolate cake, participants who had guilty feelings did not have a stronger intention to eat healthier than those who associated eating the cake with feelings of celebration. This indicates that guilt did not have adaptive or motivational qualities (Kuijer, Boyce, 2014). However, participants reporting guilt also reported lower levels of perceived behavioral control over eating and had less success maintaining their weight over an 18-month period (Kuijer, Boyce, 2014).

Often the conflict of eating healthy versus eating unhealthily reflects a tension between personal standards or self-control and impulse (Hofman, Rauch, and Gawronski, 2006). A study linking this conflict and specifically, impulse to automatic attitudes, found that control resources

or self-regulation resources are influential on personal standards and automatic attitudes. Automatic attitudes are described as the impulsive action tendencies to evaluate and either approach or avoid a stimulant when it is present (Hofman, Rauch, and Gawronski, 2006). In the study for example, without the presence of self-regulation resources, participants consumed candy based on their automatic attitude toward candy rather than their personal standards (Hofman, Rauch, and Gawronski, 2006).

According to a study involving a random sample of 1,256 Irish adults, overall individuals with positive attitudes toward healthy eating behavior had a healthier diet and were more likely to adapt to healthy dietary guidelines (Hearty, McCarthy, Kearney, and Gibney, 2007). These findings are contrary to findings from those who had negative attitudes. The study also revealed that diets consisting of breakfast cereals, fruit and vegetables and poultry and lower consumption of high calorie drinks is associated with positive perceptions of healthy eating (Hearty, et. al., 2007). The study concludes by suggesting that increased compliance with dietary guidelines might be attained through promoting positive attitudes toward healthier diets and behaviors (Hearty, et. al., 2007).

A 2013 study reported that supermarket shoppers with positive attitudes toward healthy eating had equally higher quality diets (Aggaarwal, Monsivais, Cook, and Drewnowski, 2013). This was found to be true regardless of the cost level (low, medium, or high) per supermarket, socio economic status (SES), and other covariates. The study indicates that as long as there is an attachment to good nutrition, shopping at low cost supermarkets does not prevent consumers from having high quality diets (Aggaarwal, et. al., 2013).

The literature thus far has focused on the individual factors of family and personal attitudes, both of which have been found to have an effect on obesity. The influence of family is

considered a key component for healthy eating and behavior choices (Epstein, et. al., 1994, Gruber & Haldeman, 2009). Parenting styles and parental modeling, family structure, history and the family environment can contribute to obesity and or healthy eating and behavior (Berge, et. al., 2009; Lopez, et. al., 2018: Yavuz & Selcuk, 2017; Chen & Escarce, 2010; Crossman, et. al., 2006; Kral & Rauh, 2010; Scaglioni, et. al., 2008; Ward, 1974). In terms of personal attitudes, taste has been found to be a strong predictor of attitudes, attitude can influence healthier food purchasing regardless of economic background, and positive attitudes toward healthier eating are connected to healthier diets (Aikman, et. al., 2005; Aggaarwal, et. al., 2013; and Hearty, et. al., 2007). The research from these articles does not evaluate the factors of family and personal attitudes in comparison to more environmentally oriented factors. Neither does the research evaluate how obesity is affected within these settings compared to the affects of other settings across the social ecological spectrum.

Environmental Factors

While obesity is a complex social problem and there are multiple environmental factors influencing rate increases, this study will focus specifically on corporate influence, mass marketing, and regulation specifically. Each of these as discussed below has been found to have a significant effect on the shaping of behavior and the dietary values and attitudes of both families and individuals.

Corporate Influence

Corporate influence on health can be seen in the production and marketing of healthy versus unhealthy products, creating psychological desires and fears, distributing health information and the promotion of policies that are favorable to profitable bottom lines (Freudenberg, 2012). For the purposes of this study, marketing will be considered a separate

factor from corporate influence. Broadly, this review will look at the ways in which the corporate food industry influences the environment surrounding the social issue of obesity and then dial in to a more detailed review of mass marketing. Corporate influence in many ways comes in behind the scenes to develop a consumer environment in which it can market and present its product in the most advantageous manner. It is this hidden influence that this section focuses on.

In terms of the obesity epidemic, corporate responses have come in three phases. First, food companies blamed a lack of individual physical activity and denied having a real part in the growing obesity rates. Then, they said the customer is responsible for the choices he or she is making. Lastly, companies have attempted to develop win-win solutions (Wansink & Huckabee, 2005). For example, one potential win-win solution is smaller portion sizes. According to a survey of 770 people, 57% were willing to pay an additional 15% for portion-controlled products (Wansink & Huckabee, 2005).

Another win-win technique might be a voluntary effort to improve business practices or develop a corporate social responsibility ethic that would prohibit the need for outside imposed restraints like regulation (Herrick, 2009). For example, Kraft foods decided to limit children's advertising to healthier products (Herrick, 2009). However, a World Health Organization study found that years later, Kraft was still advertising unhealthy products to kids (Ludwig & Nestle, 2008). The potential problem or caution in these voluntary social responsibility efforts, even if they are actually followed through, is that they could become just another way to suggest that even with the appropriation of healthier business models, individuals are still making poor health choices and are ultimately responsible for social trends like obesity (Herrick, 2009). At the same time, while maintaining an image of becoming more responsible, the corporation can continue to

contradict their corporate social responsibility efforts with legislative efforts designed to negate regulation that would enforce healthier outcomes (Lock & Steele, 2016).

This blurring of the lines approach can manifest in other ways, for example, the food industry has often attempted to partner with health advocacy organizations (Freedhoff & Hebert, 2011). The Susan G. Komen Foundation, known as a leader in the fight against breast cancer, has partnered with Yum! Brands to sell pink buckets of Kentucky Fried Chicken. On the one hand the co-mingling of brands works against something that is causing harm and on the other it is saying eat something that is not healthy. The partnerships can lead efforts that address causes for negative health to become compromised. This happens when pro-health organizations side with business messaging that suggests issues like obesity exist strictly because of a lack of moderation or self-control on the part of the consumer (Freedhoff & Hebert, 2011).

Corporate strategies to influence decision making can also include the development and funding of lobbying firms and entities, research organizations, science institutions, and public policy think tanks (Miller & Harkins, 2010). These strategies intend to work through science, the media, civil society and public policy toward ideal parameters in which to promote business. In working through science, an industry might develop data that contradicts research that would hinder sales (Miller & Harkins, 2010). Studies funded through the food industry have a four times better chance of developing favorable results to the industry than those that do not receive industry contributions (Ludwig, & Nestle, 2008). Additionally, this participation in research increases the credibility of the firm as it influences decision making and public policy. While focusing on ingredients or specific nutrients, simultaneously, attention is pulled away from other aspects of corporate strategy or their negative effects (Clapp & Scrinis, 2016). Through a focus on nutrition enhancement, for example, the firm can provide new nutritionally enhanced products

which deliver a more responsible appeal in the marketplace and at the same time buffer business to continue to sell unhealthy products (Clapp & Scrinis, 2016). In capturing civil society or dominating the information environment and decision making of charities, non-governmental organizations, trade unions and other similar groups, corporations might plant social movements and organizations, even ones that seem opposed to the products of industry. Media influences are most commonly exhibited through advertising and public relations (Miller & Harkins, 2010).

These multifaceted and complex strategies utilizing multiple channels of influence enhance corporate power over regulatory decision making and make it difficult to address precisely where to locate accountability associated with the consumption of unhealthy food products (Clapp & Scrinis, 2016). On top of all these complex strategies is the sheer financial strength of the food industry, which is annually a $1.3 trillion dollar enterprise. It will go to great lengths to maintain policies that do not entice people to eat less, ensuring sales of their product and continued profits. For example, in order to avoid saying eat (buy) less, the food industry has come up with the more common language of words and phrases like “moderate”, “choose”, “healthy weight”, and “be more active” (Marwick, 2003). At the end of the day, the capitalist economy of the United States naturally sets up a conflict of interests between public health and the corporate bottom line (Ludwig & Nestle, 2008). Until profits truly align with healthier food options, that conflict is likely to continue.

Lastly, the literature reveals the strong effort of corporations to lobby through the public policy process for advantageous outcomes. Two articles cited the World Health Organization’s statement in 2006 that called for a reduction in food advertising to children (Nestle, 2006; Harris, Pomeranz, Lobstein, and Brownell, 2009). The obesity marketing fight between the public and private sector goes as far back as 1978 when the Federal Trade Commission’s attempt to regulate

marketing to children, known as Kid-Vid, was shut down by the private sector's influence over Congress (Harris, et. al., 2009). The problem with past attempts by organizations like the Federal Drug Administration or the Federal Trade Commission to more strictly limit advertising to children is that they are often heavily thwarted by a well-financed food industry (Harris, et. al., 2009).

Mass Marketing

Economists might argue that lower costs for food production and lower costs for food consumption means consumers are rationally choosing more food because it is more affordable (Young, 2003). Health insurance, exercise, sedentary work and leisure whether in decline or on the increase can be considered factors. Research exists that blames the full spectrum of variables working together to increase obesity and to a degree exempts advertising from blame. This exemption is made in part by citing that advertising is primarily an effort to attract consumption toward a brand identity and not necessarily a food type. Young (2003) after addressing each of the factors above concludes that mass marketing is the main cause for increased obesity. It is not just paid or commercial advertising that are included in the type of marketing that can be linked to increased obesity. Young (2003) states that the amount of food offerings, product placement, school sponsorships, and portion sizes should all be included within techniques that food industry marketing has utilized. Similar to Young's (2003) multiple methods used within marketing strategies, a literature review examining retail grocery store marketing suggested that availability, affordability, prominence, and promotion of healthful foods versus the marketing of unhealthy foods are all strategies to influence consumer choices toward a healthier diet. The review did point out however, that there is little evidence to suggest that increasing access to healthy foods increases healthy eating (Glanz, Bader, & Iyer, 2012). The environmental factor of

mass marketing was selected for review because of the vast influence it can have on society. Later in this study, the CDC is revealed to also advocate for "community campaigns" that utilize multiple mediums to reach a community in an effort to improve healthier choices and behaviors. Marketing is a significant component of these campaigns and through multiple mediums, messaging can affect multiple settings.

In 2004, Congress asked the CDC to conduct a study of effects of advertising on childhood obesity (Nestle, 2006). In response, the Institute of Medicine (IOM) reviewed 123 research articles and reported in *Food Marketing to Children and Youth: Threat or Opportunity* that the majority of research supports a link between childhood obesity and advertising and that essentially the argument that food advertising can increase obesity "cannot be rejected" (Nestle, 2006). IOM conclusions include more restrictive measures on food advertising toward children.

In a similar article, Harris, Pomeranz, Lobstein, and Brownell (2009) go so far as to say that calling obesity a complex problem attributable to many variables is negatively simplifying the problem and allowing contributing entities off the hook. Likewise, their research suggests that marketing is a definitive variable. They focus on childhood obesity and point to a number of studies and statistics to channel their argument. For example, fast food consumption in 1970 was $43 billion, but grew to $558 billion by 2009 (Harris, Pomeranz, Lobstein, and Brownell (2009). The average child in the United States watches 15 food advertisements a day or 5,500 per year. The article cites a comparison of two Canadian cities where one allows for advertising toward children (Ontario) and one does not (Quebec). The comparison indicates that families in Ontario consume more fast food than in Quebec. Lastly, Harris and colleagues (2009) cite the World Health Organization's statement in 2006 that called for a reduction in food advertising to children.

A study of receptivity to fast food television advertisements found fast food marketing to be associated with adolescent obesity (Mclure, Tanski, Gilbert-Diamond, Mejia, Li, and Sargent, 2013). The study also suggests that television fast food advertising (TV-FFAR) may have spillover effects where receptivity leads to consumption of similar food types, in terms of density and content, regardless of brand and situation. McClure and colleagues (2013) note that this spillover can influence not only individual food choices, but also cultural eating patterns. They cite additional research, that suggests human reward-related brain activity from food images was prognostic toward weight gain or that a heightened responsiveness to food cues is associated with overeating (Mclure, et. al., 2013). In contrast, results from a meta-analysis involving a sample size of more than 17,000 children between the ages of three and twelve across eight studies indicate that media advertising has only a small effect on obesity. As a result, the study cautions against policy discussions involving advertising bans or restrictions and suggest they will only have a minor effect (Dahl & Desrochers, 2013).

Government Regulation

In a continuation of the previous section and in regard to regulation, a study comparing the European Union and the United States in their efforts to regulate obesity found that there is more focus on nutritional labeling and consumer information promotion than taxation or placing stricter limits on marketing. In both geographic areas few statutory regulations address marketing (Sisnowski, Handsley, and Street, 2015).

In the United States a particular emphasis has been placed on federally assisted nutrition programs, mainly the Special Supplemental Nutrition Program for Women, Infants and Children. The 2010 Patient Protection and Affordable Care Act mandated nutrition labeling, which includes calorie value per item on menus and menu boards, across the country. Child nutrition is

a major regulatory focus (Sisnowski, et. al., 2015). The 2010 Healthy, Hunger-Free Kids Act updated the long running federal school lunch and breakfast programs, making both more nutritious through calorie and fat limitations, and the inclusion of more healthy potent food products (Sisnowski, et. al., 2015). In addition, the law required that all food sold in schools meet regulatory specified health standards. In the past, schools, often for budgetary reasons, were open to industry offers and opportunities for a variety of vending contracts to help school financing (Haye, Moran, and Ford, 2004). The 2008 Food, Conservation, and Energy Act implemented on a permanent basis a fresh fruit and vegetable school program. Sisnowki, Handseley, and Street (2015) suggested that "regulatory practices in the EU and US are generally limited in reach and scope" and while health concerns are often promoted, they are not taken to be more important than the preferences of industry interests. This seems to be a result of a greater concern over bottom line economic effects from improved or increased regulation. Ultimately, both continents lack comprehensive reform (Sisnowski, et. al., 2015).

Arguments against increased regulation include that regulation is just more "big brother" interfering with private choices and personal responsibility (McGuinness, 2012). Taking it further, if the individual is responsible for becoming obese, he or she should be responsible for reducing it and bearing the cost. A 2012 Mercatus Center working paper titled *Fat Chance: An Analysis of Anti-Obesity Efforts* articulates the anti-paternalist argument which basically suggests that developing more involved government solutions with wider and deeper reach into the issue interferes with potential free market solutions (Marlow & Abdukadirov, 2012). Under the anti-regulation framework, government intervention will only take away the opportunity for the private sector to develop individually tailored and affordable solutions. This same logic suggests that obese individuals know they are overweight and the negative consequences that come with

it. Their employers know it and so does the free market, which has been growing private sector solutions dealing with weight loss, exercise, diet books, and other weight control methods (Marlow & Abdukadirov, 2012). Therefore, according to this logic, more information and individual or corporate incentives are unnecessary. Lastly, opponents to more regulation suggest that a paternalist approach typically utilizes a one-size-fits-all solution which goes against the fact that obesity can stem from multiple individual case-by-case factors (Marlow & Abdukadirov, 2012).

In contrast, advocates say that regulation is the solution for decisions that are made with inaccurate or incomplete information (McGuinness, 2012). While the individual is acting in a voluntary manner, would the individual continue to voluntarily make the same choices with: improved transparency, truth in advertising, an increase in healthier options, decreased portion sizes, a better understanding of the benefits of a healthier diet, and if norms of eating had been better understood or healthier in past generations (McGuinness, 2012)?

In a bold example of more regulation and government controls, the mayor of New York and the executive branch of city government implemented bans on trans fats from food outlets, institutional food standards, menu labeling requirements, and programmatic access initiatives (Sisnowski, Street, & Braunack-Mayer, 2015). These efforts were largely undertaken without consultation from elected representatives of government, and though the measures were based on evidence suggesting their need and likely positive outcomes, because these were basically non-collaborative executive actions, they were met with resistance from multiple sectors of the general population (Sisnowski, et. al., 2015). The solutions, while seemingly necessary and a good step at curbing local obesity, were seen as government overreach, not necessarily the best policy (Sisnowski, et. al., 2015).

Mello, Studdert and Brennan (2006), who reviewed obesity related regulation found a number of themes surfacing. First, initiatives that focus on children are more acceptable. Secondly, advertising restrictions even to children, are difficult to develop in the current political environment. They also propose that industrial self-regulation is more likely to succeed than government regulation and so, proper motivations and incentives are required. Lastly, improving the public's awareness of how the food environment and the food industry shape health should be a first step in regulatory strategy (Mello et. al., 2006).

Additional Factors

As the research progressed and the content selection began, it became clear that two additional factors were worth looking at in terms of pertinent literature. Those factors are, exercise and schools. The CDC guidelines reviewed in these documents incorporate these factors frequently. Physical activity is the sole subject of one CDC document and schools is a major component of several strategies among the documents. Further, exercise is a category in and of itself on the CDC website pertaining to obesity prevention. Exercise can strongly be considered an individual technique to lose weight and stay healthy, but because it might be encouraged and sustained through a peer group and in settings out in the community or work places, exercise can also be affiliated with environmental supports. Schools, too, with their ability to shape identity and where students learn or gain knowledge on health, can also be described as a factor influencing individuals, but because the larger community can also interact or take advantage of a local school, particularly when gyms or fields are used for exercise and sports, schools also take on environmental aspects. Below are two short sections describing why they are relevant to the study of obesity prevention.

Exercise

Gonzalez-Gross and Melendez (2013) point out that the health benefits of exercise have been known since antiquity and cite Morris (1953) and Paffenberger (n.d.) for starting the development of a more serious knowledge base around the topic in the last century. Morris (1953) and Paffenberger (n.d.) established through observations of physical activity at work, that physical activity reduces risk around cardiovascular disease and mortality (as cited in Gonzalez-Gross and Melendez, 2013). These findings have been supported in multiple follow-on studies and research now suggests that even moderate exercise can improve health and lower the pervasiveness of overweight and obesity in all ages (Patterson and Levin, 2007; Gonzalez-Gross and Melendez, 2013). The body of research involving the health benefits of physical activity has led to the World Health Organization recommending 150 minutes of moderate to vigorous exercise weekly in adults and sixty minutes a day for children (Gonzalez-Gross and Melendez, 2013). However, obesity intervention and prevention should promote exercise at appropriate levels taking caution not to overwhelm individual fitness or health with a one size fits all mentality (Jackicic and Otto, 2006). For those who have become obese, previously obese individuals who maintain weight loss credit physical activity for continued lower body weights (Patterson and Levin, 2007). Cheng (2012) uses the phrases “exercise is medicine” and “exercise is vaccine” in describing how exercise is required to prevent or treat obesity, but warns against the assumption that such prescriptions are linking obesity or overweight statuses as a primarily individual responsibility. Interventions, particularly those targeting youth, that help change diet and exercise habits can provide immediate social and health benefits, and lead to ongoing health benefits later in life (Baronowski, Mendlein, Resnicow, Frank, Weber Cullen, and Baranowski, 2000). Benefits of exercising are apparent regardless bodyweight, body type, age and gender (Gonzalez-Gross and Melendez, 2013). Clearly, exercise should be considered a preventive

measure to obesity, some is better is than none and the more the better (Gonzalez-Gross and Melendez, 2013).

Schools-Based Prevention Education

Along with exercise, what became apparent as the research progressed, is that school based obesity prevention was an important component of CDC recommendations. Today, more than any other time in history, children are overweight and schools can offer an environment that encourages healthy eating and exercise (Nanney and Schwartz, 2009). Schools across the country host more than 50 million children up to several hours a day each week day. Schools provide opportunities for physical activity, but they may also provide up to three meals a day and snacks for their students (Story, Kaphingst, and French, 2006). Part of the focus on schools is due to the success of childhood interventions in comparison to adult approaches when lifestyle changes are more difficult to make. Detection and treatment of obesity in children may in fact be the best way to curb future obesity rate increases and all the healthcare costs that come with it (Verroti, Penta Zenzeri, Agostinelli, De Feo, 2014).

Davidson's (2007) study points out that there is little decisive evidence that obesity prevention in schools was having an effect. Her work was published just prior to the CDC guidelines that this study reviewed. She recommends further research and to determine how teachers understand the issue of obesity and how to prevent it (Davidson, 2007). Nanney and Schwartz (2009) citing Wechsler, McKenna, Lee, and Dietz, (2004) highlight the CDC recommendations, which among them are: address physical activity and nutrition through a coordinated school health program; maintain an active school health council; strengthen the school's nutrition and physical activity policies; offer a high-quality health promotion program for the school's staff; increase opportunities for students to engage in physical activity and

ensure that students have appealing, healthy choices in foods and beverages offered outside the school meals program. School environments are shaped by public policy choices at the federal, state and local level (Rosenthal and Chang, 2004 as cited by Nanney and Schwartz, 2009). Billions of dollars in food programs flow from the federal government to school systems. This creates an opportunity for federal policy to leverage that funding to force school systems into eliminating unhealthy foods (Haskins, Paxon, and Donahue, 2006 as cited by Nanney and Schwartz, 2009).

Review Summary

In the next section of this chapter the five settings and levels of influence of the social ecological model, and the model itself, will be explained in full. For now, individual factors and influences are associated with the intrapersonal and interpersonal levels and settings. Environmental factors are affiliated with the organizational, community, and public policy levels of the model. Among the several studies reviewed in this chapter, the individual factors of personal attitudes (intrapersonal) and family characteristics (interpersonal) have been revealed to influence obesity, and are a part of the intrapersonal and interpersonal levels of the social ecological model respectively. From an environmental perspective, the literature submitted that corporate influence, mass marketing, and regulation are factors that must be considered as contributors to the social challenge of obesity. These factors take into account the organizational, community and public policy levels of the social ecological spectrum where they are also prompting obesity complexities and growth. However, as will be seen later in the analysis section, factors that might be associated with one level of the social ecological model may have overlap and influence in other levels and settings as well. This can be said for all of the environmental factors reviewed. Additionally, the literature review looked at the factors of

exercise and schools, both of which have a major role to play in obesity prevention. These two factors can be viewed from an individual or intrapersonal and interpersonal perspective, but may be considered environmental factors too and have overlap into the community and organizational levels of the social ecological model.

The question becomes, given the scientific understanding of obesity provided in the literature, how do public policy and public administration address a multi-factorial social issue like obesity? The research to follow will seek to address this question by analyzing four documents that describe CDC strategies to prevent obesity. The contribution this research hopes to make to the body of literature above and the general body of obesity research, is a discovery of the latent causes and solutions that federal public policy is currently espousing and how those recommendations maybe improved upon. Ultimately, what the analysis concludes is that public policy must address obesity from multiple levels of the social ecological model simultaneously. The next chapter explains the social ecological model in more detail.

Conceptual Framework- The Social Ecological Model

The research will utilize the social ecological model to frame and guide the study. In the 1960's and 1970's the field of social ecology began emerging which increased focus on the social, institutional, and cultural contexts of people-in-environment relations and their interaction (Stokols, 1996). This was a shift from opposing foci of strictly biological processes or geographical environments of human ecology. The model includes core principles concerning the interrelations among environmental conditions and human behavior and well-being (Stokols, 1996). First, environmental settings have multiple physical, social, and cultural dimensions that influence a variety of health-related outcomes. A second core principle is that health is not only influenced by the environment, but also by personal attributes like genetics and behavioral

patterns. The model emphasizes the dynamic interplay between environment and person, rather than exclusively focusing on one or the other. Additionally, social ecological models utilize systems theory concepts like homeostasis, the balance sought between a system and its settings, or interdependence, the notion that systems are not operating in isolation, but are connected to other dependent systems (Stokols, 1996). These concepts help describe the dynamic relations between people and their environment. Another point of emphasis for social ecological models are the interdependence of environmental conditions within particular settings and the interconnections between multiple settings and life domains (Stokols, 1996). In this core principle, one would take into consideration work and home spaces and the ways in which health or stress from one environment drips into the other, or potentially, perhaps the way in which stress or adversity influences the individual as she moves between settings. Lastly, the social ecological framework integrates community with individual strategies and vice versa (Stokols, 1996).

The social ecological model is a broad and comprehensive approach to health challenges and it recognizes that most public health challenges are too complex to be adequately understood and addressed from a single level of analysis (Robinson, 2008). The model requires an approach that involves multiple levels of influence, in multiple settings, and that utilize multiple strategies (Robinson, 2008). The first level, the *intrapersonal* level, encompasses individual characteristics that influence behavior, like personal attitudes, beliefs, and personality traits (Robinson, 2008). At this level, the Centers for Disease Control (CDC) includes biology and personal histories, education, genetics, age, gender, and income. At the next level, the *relationship or interpersonal* level, the individual's family or peer group are among the factors taken into account. This level is comprised of the processes and primary groups that provide social identity and support. The

third level or *organizational level*, includes characteristics like regulation, and policies and informal structures that might constrain or promote certain behavior. The fourth level is the *community* level, which is made up of social networks and norms, that exist formally or informally among individuals, groups, and organizations. Lastly, the *public policy* level encompasses local, state and federal policies and laws that regulate or support health care systems and practices that prevent, manage, detect and control health challenges (Robinson, 2008).

Federal Use of the Model

The CDC uses the social ecological model to discuss violence prevention, stating that the model considers the complex interplay between the individual, relationship, community, and societal factors. The model according to the CDC, allows for an understanding of a range of factors that put people at risk for violence or protect them from it. The CDC claims that in order to prevent violence, it is necessary to act across multiple levels of the model simultaneously and that this approach is more likely to sustain long term prevention rather than the use of any single intervention.

In the Eighth Edition of the Dietary Guidelines for Americans, the Department of Health and the Department of Agriculture references the social ecological model. The guidelines suggest that there is consistent evidence that implementing multiple changes at multiple levels of the model is an effective solution to poor eating and sedentary behavior. They cite school and work setting-based examples, for children and adults respectively, where improvements to dietary policies and approaches targeting physical activity can favorably affect weight related outcomes. The guidelines suggest that involving multiple levels of influence throughout society

are needed to change individual behavior and decision making. Multilevel solutions need to be incorporated into existing structures and sustained over the long term.

In their description of the social ecological model, the Departments of Health and Agriculture describe and emphasize the effects of sectors and settings. Sectors include systems, such as government and health care systems, as well as organizations, businesses, and industries. The guidelines state that these sectors have the potential for major influence over dietary consumption and or physical activities through the support of policies and strategies that encourage healthy choices and behavior. Settings can include the work or home environment. These environments are important because they too have the capacity to foster healthy choices and behaviors. This can be done through the access and availability of healthy food options and the promotion of exercise.

The guidelines also highlight the importance of sectors and settings to social and cultural norms. Norms, according to the guidelines, are rules that govern thoughts, beliefs and behaviors and are based on social values. Examples of nutrition and physical activity norms include food preferences and attitudes toward exercise and acceptable body weight. The guidelines admit that norms can be difficult to change, but state that changing sector and setting approaches can have a powerful impact.

Need for Comprehensive Solutions

Friel, Chopra, and Satcher (2007) suggest that large-scale solutions to obesity should consider an integrated response. Wilson, Hutson, and Mujahid, (2008) suggest that fixing contributing factors and improving community health will require comprehensive solutions that should include “smart growth”, “sustainability”, the “new urbanism”, and “active living” approaches. Newman, Baum, Javanparast, O'Rourke, and Carlon (2015) acknowledge that while

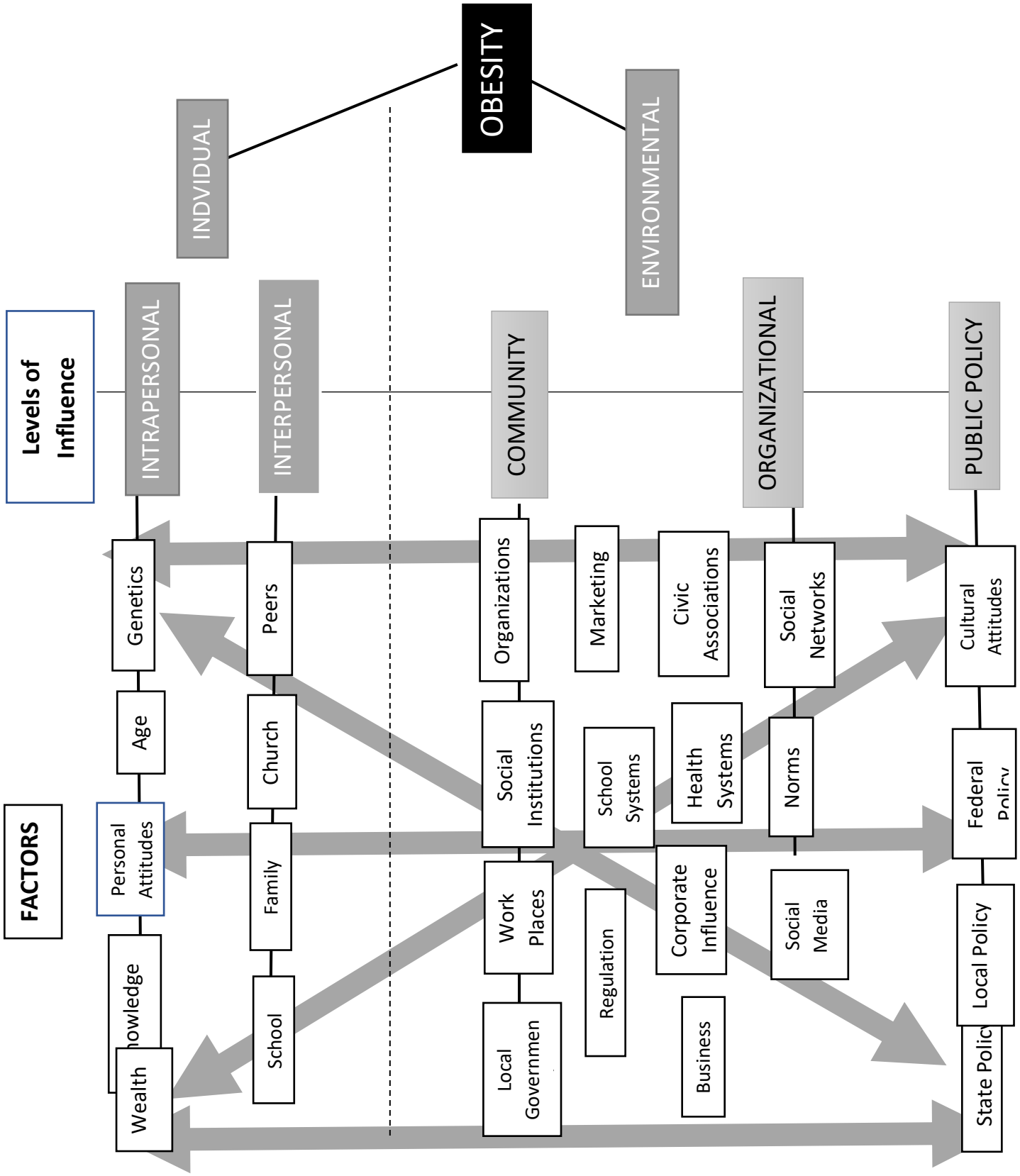
there has been a focus toward individual behavior within settings, the study suggests replacing those initiatives with approaches that focus on living conditions and higher-level structures to further solve the obesity crisis.

In seeking a comprehensive, integrated solution to obesity that combines individual and environmental factors it makes sense to consider the social ecological model. Dorfman and Wallack (2007) suggest opening the framework around obesity to share responsibility with environmental inputs and cites Cohen and colleagues (2005) and the need for the use of a socio ecological approach. The long-term rise of obesity, growing to 40% of the adult population in 2017, is the epitome of a complex social problem. For public policy and public administration to address, curb, and prevent its continued increase, a comprehensive approach will be necessary. This research utilized the social ecological model to frame the issue of obesity, the CDC strategies that were reviewed, the factors identified, and the overall approach public policy and public administration should develop going forward.

Concept Map

A concept map, which can be found below, illustrates the way in which the social ecological model can frame the topic of obesity. On the far right is the research topic and moving to the left, obesity is divided between individual and environmental factors. Next, just right of center, these two broad categories are broken down further along a vertical line that lists out the levels of influence according to the social ecological model. Continuing right to left, factors associated with each level are laid out horizontally. The gray arrows crossing levels and mingling between the factors depict the ways in which factors associated with one level will have influence on factors of lower or upper levels. As a more direct example, the cultural attitudes at the public policy level of a given country or society, affect community or

organizational level marketing which will have influence on the individual. In the issue of obesity, this might play out in terms of an overall cultural appreciation and value placed on freedom of expression, which in turn allows for permissive marketing regulations that in turn leads to advertising agencies touching individual consumers as much as possible to entice and motivate purchasing. If on the other hand, individuals become motivated to challenge advertising practices, particularly in association with unhealthy food choices, these personal attitudes may affect the political landscape enough to change regulation at the organizational or community level, and potentially across public policy or society as well. These regulatory changes, may then potentially have ripple effects on corporate influence, mass media and health systems. As it stands today, these myriad interconnections have resulted in an overall obesity epidemic.


OBESITY
INDVIDUAL
ENVIRONMENTAL
Levels of Influence
INTRAPERSONAL
INTERPERSONAL
COMMUNITY
ORGANIZATIONAL
PUBLIC POLICY
FACTORS
Genetics
Age
Personal Attitudes
owledge
Wealth
Peers
Church
Family
School
Organizations
Social Institutions
Work Places
Local Governmen
Marketing
School Systems
Regulation
Civic Associations
Health Systems
Corporate Influence
Business
Social Networks
Norms
Social Media
Cultural Attitudes
Federal Policy
Local Policy
State Polic

CHAPTER 3

METHODOLOGY

This research is exploratory, inductive, and utilizes a qualitative approach. The study utilized a content analysis of several Centers for Disease Control and Prevention documents that describe prevention strategies with respect to physical activity, healthy eating, and communities. The research made a latent interpretation of these texts, but bolstered those interpretations through word counts and so, in this manner, the analysis includes a quantitative component. The literature review suggests that multiple factors are in play when accounting for the obesity rate increases that have become consistent over the last 30 years. Do CDC guidelines and strategies address these factors? The literature cites a need for comprehensive approaches to this epidemic. Do CDC guidelines and strategies to obesity prevention incorporate a comprehensive approach? Specifically, do CDC guidelines and strategies incorporate a social ecological approach? By limiting research to this select group of public policy strategies, and diving further into meaning and process within these documents, the research will be able to explore if, how, and why: the factors cited are part of federal strategies; federal strategies address influences from multiple levels of influence across multiple settings of culture and society and; federal strategies accommodate interaction among those levels. This deep dive approach to investigate meaning and process aligns well with qualitative strategies. The goal of qualitative research is "in-depth understanding" (Nastasi, n.d.). Creswell (2003), citing Rossman and Rallis (1998), lists several potential characteristics of a qualitative study. Qualitative research can utilize a variety of data collection and data analysis methods, which traditionally include open-ended observations, interviews, and multiple types of documents, the list of which has increased over the years (Creswell, 2003). The design can evolve, in that the research focus and questions, can shift and

be refined based on the data collected (Creswell, 2003). The approach is interpretative from the vantage point of the researcher. Therefore, the qualitative researcher should be introspective throughout the research process, noting and sensitive to the individual background and potential bias he or she brings to the project. Qualitative research provides a wide scope of insight into social phenomena and therefore is more micro oriented and holistic (Creswell, 2003).

Qualitative research can be useful to understand the meaning of situations, experiences and actions that participants are involved with and their context (Maxwell, 2005). It also provides flexibility to navigate through and more deeply into unexpected areas of interest that may develop as a result of the research itself. Qualitative research emphasizes understanding the process in which events and actions take place (Maxwell, 2005). In the case of obesity, the outcome is clear: long term rate increases that have created a social epidemic. The concern of this research proposal is the response the CDC is providing to this epidemic. Do the solutions suggested at the federal public policy level of the social ecological spectrum address pragmatic program needs at the community level or individual level personal attitudes and family dynamics? How does public policy at this level interact with public policy at the state and local level? How do these guidelines discuss organizational level health systems, local government policy and programming and school environments?

Research Questions

Research questions are a central part of any research undertaking and link the other components of the research strategy. Initially, to frame and guide the project, the following research questions were posed:

1. What are the CDC strategies and guidelines to prevent obesity?

2. How does the CDC engage the social ecological model directly or indirectly as a framework for approaching obesity?
3. How do CDC strategies and guidelines to prevent obesity reflect different levels of the social ecological model in its identification of causal factors?
    a. How do strategies and guidelines fail to reflect different levels of the social ecological model in the identification of causal factors?
4. How do CDC strategies and guidelines to prevent obesity reflect different levels of the social ecological model in its identification of solutions to obesity?
    a. How do strategies and guidelines fail to reflect different levels of the social ecological model in the identification of solutions to obesity?
5. How do CDC strategies and guidelines to prevent obesity accommodate the interaction of levels of influence upon each other?
    a. How does it connect strategies and guidelines to this interaction?

Based on the body of research and the calling for large-scale solutions and integrated responses, the research design set forth here seeks to understand if this direction toward comprehensive approaches and more specifically, the social ecological model as a framework, is actually utilized in federal level strategies and guidelines to curb obesity. Through a content analysis of several Centers for Disease Control and Prevention documents this research project will analyze if and how the social ecological model is utilized in guiding the public toward obesity solutions.

Content Sample

The research from the beginning was interested in the approach that public policy and public administration was using to address obesity, therefore the content sample is found through

a nonprobability and purposive manner foremost concerned with public documentation of policy and strategy related to obesity prevention. Content for the study is pulled directly from the Centers for Disease Control and Prevention website page titled Overweight and Obesity-Obesity: Prevention Strategies and Guidelines located at https://www.cdc.gov/obesity/resources/strategies-guidelines.html.

The guidelines start with the following preamble:

> *To reverse the obesity epidemic, places and practices need to support healthy eating and active living in many settings. Below are recommended strategies to prevent obesity.*

Below the preamble are the following categories: Nutrition, Physical Activity, and Obesity Prevention Strategies; Early Care and Education Strategies; School Health Guidelines; Community Guide; and Clinical Guidelines. Under each category are links to documents that describe strategies and guidelines pertaining to the category.

The Early Care and Education Strategies section links to the Caring for our Children website. This website describes "National Health and Safety Performance Standards, Guidelines for Early Care and Education Programs". The website is a product of the National Resource Center for Health and Safety in Child Care and Early Education. The School Health Guidelines section of the web page links to a separate web page that links to several guidelines that school systems can practice to address obesity. The Community Guide section links to the Community Preventative Services Task Force website dedicated to a wide collection of evidenced based findings that are intended to help users select interventions that will improve health in their local environment. Clinical Guidelines discuss cardiovascular issues and recommendations related to pediatric interventions. For the purposes of this research the following documents were selected:

1. The CDC Guide to Strategies to Increase Physical Activity in the Community
2. The CDC Guide to Strategies to Increase the Consumption of Fruit and Vegetables
3. Recommended Community Strategies and Measurements to Prevent Obesity in the United States
4. Community Strategies- Implementation and Measurement Guide

These documents come under the Nutrition, Physical Activity, and Obesity Prevention Strategies. In total they encompass 246 pages of material and were selected due to their accessibility directly from the *Prevention Strategies and Guidelines* page, their contiguous bound nature, and their fitness to the aims of the study.

Content Analysis

Where data are qualitative or expressed in words, research cannot rely on statistical analysis to give proper meaning to the data. Therefore, the data for this study requires a qualitative analysis. According to Burnard (1995, as found in Bengtsson, 2016) in qualitative research several analysis methods can be used, including content analysis. Content analysis is not linked to any particular science; however, it has largely developed in social research. Content analysis can be conducted on a variety of texts regardless of where they come from and has fewer rules to follow (Bengtsson, 2016). In qualitative research, data analysis is ongoing throughout the data collection process. It involves ongoing reflection, memo writing, and continual questioning of the data (Creswell, 2003). Memo writing for example can be used as a way to park observations about the study that prompt reflection on the process, the participants and the subject of the study (Maxwell, 2005; Saldana, 2015). It may require a use of creativity, embracing intuition, and honing in on reaction to the reading of the text (Erlingsson and Brysiewicz, 2017).

Generally content analysis reduces the volume of text collected, identifies and groups categories together and seeks some understanding of it. The purpose of the research is to organize content, discern meaning from it, and draw conclusions (Bengtsson, 2016). Overall, the analysis that follows involved traditional qualitative approaches and followed a number of typical qualitative analysis steps including the preparation and organization of data, an initial review, coding and analysis, the development of a research narrative, and finally an interpretation of findings (Cresswell, 2003; Maxwell, 2005). The analysis utilized the following general approach as recommended by Bengtsson (2016).

Stage 1 Decontextualization

In the first stage of analysis, also known as decontextualization, the main purpose is to begin breaking down the text into meaning units. Meaning units according to Bengstsson (2016), can be described as *the smallest unit that contains some of the insights the researcher needs, and it is the constellation of sentences or paragraphs containing aspects related to each other*. These units are given a code and so this stage also begins the open coding process (Bengstsson, 2016). Coding data plays an integral part in the analysis. In qualitative studies coding is the use of a word or phrase to summarize data and symbolically capture the essence of what is observed or recorded in the data (Saldana, 2015). It can be considered an interpretive act and it should be cyclical, meaning that codes should be revisited and may need not just a second cycle, but a third and fourth, where data is continually reflected upon to extrapolate more relevant features (Saldana, 2015). According to Grbich (2013, as found in Saldana, 2015), this applying and reapplying of codes, or codifying allows the data to be divided, grouped, reorganized, and connected to ultimately develop understanding. Synthesis then or the combining of different data points to transition codes to categories and beyond is an important part of qualitative analysis.

Coding techniques can include laying data out in a specific format, pre-coding or highlighting data that could or should be coded and jotting or taking notes in reaction to the observation or data (Saldana, 2015). This study processed collected data using these coding and synthesizing techniques. The study utilized computer assisted qualitative data analysis (CAQDAS) to help synthesize and examine the data. Specifically, the study utilized NVivo version 12. The content analysis was conducted in the months of June, July and August of 2020.

Prior to launching into decontextualization, an initial reading and review of the files was conducted. After downloading the content files to a hard drive, the files were then uploaded into NVivo version 12. NVivo was accessed through the internet using credentials established through the University. Once uploaded, codes or nodes were established prior to reviewing the files for decontextualization. Originally, 20 codes based on the research proposal were entered into the nodes section of the software and are listed below. Codes in italics were considered to be the main areas of interest of the research, identify the social ecological levels of influence and the broader interest in individual versus environmental factors of obesity.

1. *Community*
2. Corporate Influence
3. *Environmental*
4. Exercise
5. Family Characteristics
6. *Individual*
7. *Interpersonal*
8. *Intrapersonal*
9. Marketing

10. Organizational

11. Other Factors

12. Personal Attitudes

13. Public Policy

14. PP Federal

15. PP Local

16. PP State

17. Regulation

18. SEM Dynamics

19. Socio Economic Status

20. Urban / Rural

After establishing the codes as *nodes* in NVivo, the reading and coding began. The first document reviewed was the *Recommended Community Strategies and Measurements to Prevent Obesity in the United States.* The document was read in detail and as the content revealed material related to the codes list, the content was labeled as appropriate and according to the procedures required by NVivo. When material did not fit into one of the initial codes, but was useful to the research purposes, a new code was developed. Over the course of the decontextualization phase, an additional 13 codes were developed and added to the nodes list in NVivo. A total of 33 codes were developed as a result of the decontextualization phase and the codes were further defined and developed into a code book. The code book can be found under Appendix 2. Many sections of the same material were coded multiple times using multiple codes. Often, "chunks", sentences and even paragraphs of text, were coded at a time. When appropriate annotations were made to record either explanations for the coding choices or reflections on the

material. Additionally, handwritten notes and reflections were recorded in the researcher's journal.

Each document was decontextualized in the manner described above. The decontextualization process was conducted over the course of several weeks. The files were decontextualized in the following order:

1. Recommended Community Strategies and Measurements to Prevent Obesity in the United States
2. Recommended Community Strategies and Measurements to Prevent Obesity in the United States: Implementation and Measurement Guide
3. Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables
4. Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase Physical Activity in the Community

Stage 2 Recontextualization

In stage two, recontextualization, the original text is read again alongside the final list of meaning units to determine if all parts of the text have been utilized in relation to the purposes of the research. If unused text remains, the researcher determines if it should be included or discarded (Bengtsson, 2016).

Prior to beginning stage two, the decontextualized or coded text was further reviewed. The codes were summarized in to the NVivo Coding Summary by Code Report and downloaded into a word document. In this review, smaller groupings of text within the original "chunks" from Stage 1 were highlighted. These highlighted texts more clearly and accurately identified with the relevant code within the rest of the "chunk". The full "chunk" section gave more

context, but the highlighted portions were what made the chunk relevant to the code. Two highlight colors were used. Yellow highlighted text associated with the relevant code and green highlighted text referred to SEM Dynamics, which could be found within multiple codes. When insights were gleaned from this second coding exercise, they were noted within the text and in the researcher's journal. This follow up to stage 1 was not originally planned. However, since large portions of text were coded together and in preparation for future evaluations, there was a need for an additional step to clarify which part of the coded text was specifically signaling a use of the code.

After color coding the decontextualized text, Stage 2 officially began. In Stage 2, the files were reviewed alongside the code book and text that had not been coded was re-evaluated. For the most part, text that had not been decontextualized in Stage 1, remained so. However, a few new sections of text were added to several codes.

Stage 3 Categorization and Themes

In stage 3, categorization, themes and categories are identified among the meaning units. (Bengstsson, 2016). Themes and categories are interchangeable terms and can be reduced to sub themes or categories which are the smallest unit within this evolution of the analysis. The themes or categories should be internally homogenous and externally heterogeneous and therefore data should not fall between groups nor fit into more than one group (Bengstsson, 2016). Meaning units maybe moved between categories to help develop the category. While there maybe numerous categories as this stage begins, the number may be reduced over the course of the evaluations and analysis which concludes when the researcher feels that a reasonable explanation has been reached (Bengstsson, 2016).

In this research, after reviewing the content a third time, the codes were divided into three categories: primary, secondary, and tertiary. Primary codes were considered to be the most useful to the research, largely because they were the focus of the research itself. Secondary codes mostly involved factors related to obesity. These codes often added context to the primary codes. Tertiary codes were not very influential to the research focus and often provided background to the development of the CDC guides. The Codes are distributed among the three categories as follows:

Table 1 Primary, Secondary, and Tertiary Codes

	Primary	Secondary	Tertiary
1	Built Environment	Access	CDC Efforts
2	Community	Corporate Influence	Comprehensive Solutions
3	Environmental	Cost	Definitions
4	Individual	Exercise	Ethnicity
5	Interpersonal	Factors	Family Characteristics
6	Intrapersonal	Mass Marketing	Measurements
7	Organizational	Norms	Obesity Background
8	Public Policy	Personal Attitudes	Rural V. Urban
9	PP Local	Regulation	Socio Economic
10	PP State	Schools	Strategies
11	PP Federal		Unhealthy Food
12	SEM Dynamics		

The codes were then analyzed again, and material from each code that was deemed particularly useful was put into a document called "coding highlights". This document featured the most pertinent sections and notes under each code. This document was printed and code sections were assembled on bulletin boards based on the three categories. This was done so that the codes could be viewed together simultaneously. From that vantage point, theme development began.

Themes were developed in two ways. First, comparing codes provided some immediate conclusions. For example, the *PP local* code had more content than *PP state* or *PP federal* and it also had more content than most of the other Primary Codes. This quickly indicated that the prevention strategies recommended by the CDC were first public policy dependent, but also locally based. The codes *environmental* and *built environment* similarly had far more volume than the *individual, interpersonal,* or *intrapersonal* codes. It should be noted that codes, especially primary codes, included content that supported multiple themes.

Secondly, themes were developed through the researcher's general synthesis and reflection of the content. The themes are taken from a latent perspective, where the research is seeking to understand what the text is saying indirectly. The texts indicate clearly, explicitly, communities should create healthier environments where healthier foods and more exercise are more accessible. Indirectly, they suggest that obesity prevention is largely dependent on creating connections, the leadership of local public policy and public administration, and land use policies and infrastructure. Similarly, in this latent approach, the research looked at what was not being said. For example, the CDC is saying the role of local government is critical to obesity prevention. At the same time, while not directly attributed as a factor in obesity rate increases, it can be concluded in a contrarian manner that local government is failing. From this process, the following themes and sub themes were developed.

1. Treat the Environment not the Individual
    a. Land Use is Health Policy
    b. Full Spectrum Promotion
    c. It is not Personal, or Intrapersonal or Interpersonal Either
2. Connection is Key
    a. Connect People
    b. Connect People to Healthy Foods
    c. Improve Connectivity by Improving Infrastructure
3. Prevention is Locally Oriented
    a. Education Policy is Health Policy
    b. Focus on Communities and Organizations
    c. It's Not a National Statistic, It's a Local One
4. Public Policy is the Prominent Level of Influence
    a. Lack of Public Policy Process Description or Commentary
    b. Failure

Stage 4 Compilation

Finally, in the compilation stage, the analysis and write up process begins. This must be done from a neutral and objective perspective, as much as possible (Bengstsson, 2016). In this phase the researcher can present counts of the data, themes and categories, and use charts and numbers to better illustrate interpretations and to create an overview of the findings (Bengstsson, 2016). The narrative used was developed as data collection and analysis began to reveal trends, frameworks, and overarching themes. After processing the data through the analysis above, the findings and next chapter of this dissertation was written.

Ethical Considerations

Ethical considerations in research relate to determining what is acceptable in the pursuit of the research objective and the creation of parameters around the design and methodology to prevent negative consequences, particularly for participants (Traianou, 2014). In planning for a research project, the researcher is obligated to consider the cost to participants of the study (Nachmias and Nachmias, 2007). Minimizing harm, respecting participant autonomy, and preserving their privacy are among the usual principles of research ethics (Traianou, 2014). Since this study was not using human subjects and was strictly conducting analysis on written documents, the research was not obligated to address the normal concerns brought up through research ethics.

Validity

Maxwell (2005) uses validity to "refer to the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account" (Maxwell 2005, p. 106). Dealing with threats to validity is a key aspect of research. The main threat to qualitative research is researcher bias. Research bias refers to the use of data that "stand out" to the researcher or the use of data that fits preconceptions and or biases that the researcher brings into the study (Maxwell, 2005).

The goal in qualitative studies is not to necessarily eliminate threats, but to understand their impact on the research, to communicate them effectively within reporting, and to be transparent about their influence. It is critical for example for the researcher to openly express preconceptions or theoretical expectations and how he or she will deal with these biases throughout the study. One way to do this would be to share how the researcher's influence is potentially affecting data collection and its analysis (Maxwell, 2005).

There are a number of additional techniques that qualitative research can employ to improve validity. This study employed the use of discrepant evidence and quasi statistics. In the use of discrepant evidence, the idea is to utilize data even if it does not support or fit conclusions. The threat to validity is the temptation to ignore these findings to focus on bolstering a conclusion (Maxwell, 2005). However, using this data can actually sharpen findings. A technique to confront this threat is to open the review process to peers or mentors who can affirm researcher conclusions or recognize missing data points that might lead to alternate explanations (Maxwell, 2005). The use of the dissertation committee and through regular check ins and reviews with the dissertation chair, provided opportunity to utilize this technique. Likewise, the use of quasi statistics may be helpful to bolster validity and adds a quantitative component to the analysis. Counting and assessing the amount of data within codes or categories or themes that support the conclusion or negate it, helps to reinforce the credibility of the study (Maxwell, 2005). Word counts are used throughout the findings section to assist building the themes and conclusions that follow.

CHAPTER 4

Findings

This chapter delivers the key findings from the analysis described above. It is broken down into thematic findings and then a set of more general findings. The intent of the analysis was to breakdown the CDC guidelines to understand how the federal government in the United States is proposing to solve America's obesity epidemic. It set out to understand the roles of not just the federal level, but also the local and state levels of government and how they are proposed to interact. The analysis explored factors related to obesity and was particularly interested in the dichotomy between individual and environmental factors. To a degree the analysis, as will be

described below, actually identified root causes, at least how they are indirectly described through the CDC guides. Finally, the study intended to evaluate how different levels and settings of influence within society interact with one another, perhaps causing obesity in those interactions, but really how those interactions can prevent further rate increases.

In the methodology section, five main research questions were introduced to guide the research to identify and explore CDC strategies, and how those strategies engaged the social ecological model. The questions steered the research to explore how the guidelines reflected or did not reflect different levels of the social ecological model as they discussed both causal factors to obesity and the proposed prevention solutions. Lastly, the research asked how the CDC strategies accommodated dynamic interplay of the social ecological levels of influence. The findings that follows will attempt to answer the questions and provide insight to the use of and the influence of the model in the CDC strategies.

As the content documents are discussed, when using the word "guides" the analysis is referring to the three guides. When used individually, the *Recommended Community Strategies and Measurements to Prevent Obesity in the United States: Implementation and Measurement Guide* will be referred to as the Implementation Guide. *The Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables* will be referred to as the Fruits and Vegetables Guide, and the *Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase Physical Activity in the Community* will be referred to as the Physical Activity Guide. The *Recommended Community Strategies and Measurements to Prevent Obesity in the United States* document will be referred to as Community Strategies.

Thematic Findings

As previously mentioned, the analysis revealed four major themes. The first of these themes gets to the research design's interest in how the strategies address environmental versus individual factors and solutions of obesity. Largely, the CDC strategies reviewed focus on shaping and improving the environment. The second theme describes the need for connecting citizens and communities to each other, healthier foods and to infrastructure that enhances the likelihood of healthier lifestyles. This theme illustrates one of the main tenets of the social ecological model in that it pertains to the nature in which different settings within culture and society have an effect on each other. The CDC in a latent manner, suggests that the environment should surround the citizen in a manner that promotes healthy living through proximity to healthy choices at home, at work, and out in the public market. The assumption made is that the more citizens are connected to healthy choices and influences, the more likely the citizen and community will make healthy choices. The final two themes directly illustrate facets of the social ecological model by describing how levels of influence and settings engage, interact, and influence obesity. The first of these two, explains how localities and their interpersonal, organizational, and community level aspects are influencing obesity and obesity prevention. In the fourth theme, the analysis found that ultimately, the public policy level of the social ecological model has the most influence on the social challenge that is obesity. At the core of the CDC strategies is a demand on public policy, mainly local public policy, to support and lead obesity prevention.

Theme 1 – Treat the Environment, not the Individual

Preceding the study, several factors related to obesity were identified. Those factors were divided into two large groupings, individual factors and environmental factors. While not a

primary focus of the research, a sub intent of the study was to evaluate those factors and or identify more prominent factors identified by the CDC through their published strategies. What is apparent through the content analysis is that the CDC heavily favors environmental solutions to obesity rather than individually founded solutions. The factors identified through the CDC strategies are not those identified at the beginning of the study, but are environmental nonetheless, and strikingly, physical or built.

Again, this is not a slight favoritism. Thirty six of the 44 strategies studied were intended to improve the environment. Combining the words "environmental", "environments", and "environment" over the four documents yields a total word count of 193. This total would put a version of the word "environment" among the top words of the project word count and give "environment" a ranking of 23 for the most used word. In comparison, the word "individual" and "individuals" combine for a count of 68 and a ranking of 129. Obviously, the Environment and Built Environment codes contributed greatly to this theme, but so was the lack of content in the individually based codes.

How does the CDC recommend that the environment be improved? The CDC recommends improvements through supermarkets, recreational centers, foot paths, bike lanes, street lighting, proximity between homes and schools, infrastructure for public transit and traffic safety, parks and green space, hiking trails, sports fields, public pools and play grounds, light rail, commuter trains, subways, bus shelters, green ways, and buses with bicycle racks. Below are two quotes. The first is from the Physical Activity guide and the second is from the Implementation guide. Both bring in several of the recommended improvements.

> Transportation and travel policies and practices can encourage active transport by facilitating walking, bicycling, and public transportation use; increasing the safety of

> walking and bicycling; reducing car use; and improving air quality. Environmental changes that support these goals and increase physical activity can be achieved by using strategies such as changing roadway design standards; creating or enhancing bicycle lanes; expanding, subsidizing, or otherwise increasing the availability of and access to public transportation; providing bicycle racks on buses; providing incentives to car or van pool; and increasing parking costs (CDC, 2011, p. 41).
>
> King County, Washington, developed a comprehensive land use plan that encourages zoning for mixed-use development as a way to support active living among residents. The land use plan outlines specific design for mixed-use developments, such as integrating retail establishments and business offices into the same buildings as residential units, ensuring the availability of parking lots or parking garages either within or close to buildings, and having safe pedestrian connections and bicycle facilities throughout the area (Metropolitan King County Council, 2006, CDC, 2009, p. 55).

The heavy emphasis on environmental factors is worth breaking down further and so this theme now delves into the following sub themes.

Sub theme 1 – Land Use is Health Policy.

While obesity is a public health epidemic, the CDC is suggesting through its strategy guides that one way to combat this social challenge is through land use. Ten or 22% of the strategies involve a connection to local zoning or land use policy. The built environment whether through better access to transit, more walkways and bike paths, more recreational properties and centers, or improved proximity to work or school is typically a product of local land use policy. Land use committees and their work, approved by a local board of supervisors, are all contributing factors to obesity rates. Multiple types of land use are included in the CDC strategies:

transportation, agricultural, recreational, residential, and commercial. Ostensibly, the ultimate land use tactic is Strategy 21 out of the Community Strategies Guide: Communities Should Zone for Mixed Use Development. Below is an excerpt illustrating the concept.

> Zoning for mixed-use development is one type of community-scale land use policy and practice that allows residential, commercial, institutional, and other public land uses to be located in close proximity to one another. Mixed-use development decreases the distance between destinations (e.g., home and shopping), which has been demonstrated to decrease the number of trips persons make by automobile and increase the number of trips persons make on foot or by bicycle. Zoning regulations that accommodate mixed land use could increase physical activity by encouraging walking and bicycling trips for nonrecreational purposes. Zoning laws restricting the mixing of residential and nonresidential uses and encouraging single-use development can be a barrier to physical activity (CDC, 2009, p. 19).

This connection of the commercial, residential, and institutional will be highlighted in the next theme, but as the CDC describes, mixed use combines all the elements of the environment and brings to together social ecological settings in a concerted manner and in doing so, communities can deter obesity. When considering comprehensive solutions, if that is indeed what is necessary to prevent the spread of obesity, the concept of mixed use, where multiple environmental solutions of the CDC combine, seems to be *sin qua non* public policy.

Sub theme 2 – Full Spectrum Promotion.

When discussing the environment, the stress is on the physical or built environment, but the CDC also considers the soft environment of what is seen or heard around a community. In fact, some of the strongest language is reserved for these techniques. The first strategy from the

Physical Activity guide discusses community wide campaigns, where in this case exercise is promoted through multiple public channels. The tactic is elaborated on in the following texts:

> From a public health perspective, some strategies merit a higher priority than others—such as those with the potential for greatest reach, effectiveness, and sustainability. Policy and environment strategies are integrated within the socioecological perspective. Based on these criteria and on expert opinion, the physical activity promotion strategies considered to be the most appropriate for public health agencies and their partners and to have the highest priority for implementation are community-wide campaigns, increased access to places for physical activity combined with informational outreach, and enhanced physical education in schools (CDC, 2011, p. 4).

> Traditional prevention efforts focus on educating and motivating people to help them increase their physical activity. Communitywide campaigns address multiple levels of influence, including individual, interpersonal, institutional, and community levels. These types of socioecological, multipronged efforts that are designed to promote and eliminate barriers have been found to be more effective than each single component (CDC, 2011, p. 5).

Additional "promotional" strategies include point-of-decision prompts to encourage use of stairs, limiting advertisements of less healthy foods and beverages, discouraging consumption of sugar-sweetened beverages, and reducing screen time in public service venues. Prompting people to use the stairs maybe a subtle gesture toward improved health, but the potential for a healthier environment exists, at least in theory, where health is promoted on a constant basis, both in a subtle and an overt manner in multiple settings.

This study does not compare the social messaging that an individual is tallying through their ears and eyes each day and processing through their neuro-system, but it did start with a literature review of mass marketing. The literature has mixed reviews of the effects of mass marketing, but the CDC does suspect it is having an influence on obesity rates and pays special attention toward child advertising. Therefore, it makes sense that the CDC would counter private sector unhealthy food advertising with a healthy promotional response. While the CDC puts a massive emphasis on the physical environment, community wide campaigns in particular, suggest that federal prevention strategies also take into consideration the norming influence of repetitive messaging and promotion of good health and healthy choices. This intertwining of physical and soft environmental cues, combined with a zoning program like mixed use development, strengthens the need for a social ecological approach. Further, these soft attempts at improving the environment, if effective, may develop into a new community norm, where healthy options are not just helpful, but expected.

Sub theme 3 – It is not Personal, or Intrapersonal, or Interpersonal Either.

Judging from the emphasis that the CDC places on environmental solutions, one could conclude in the opposite way, that obesity should not be considered a personal struggle. Nor does the CDC focus on interpersonal or intrapersonal struggles. With the exception of schools, which can be considered a component of the interpersonal level of influence, rarely are these two levels of the social ecological model recognized among the CDC strategies (schools will be highlighted again in a subsequent theme). Again, two of the four documents are focused on community solutions, but even among the other two guides, solutions incorporating either individual characteristics or group affiliations are simply rarely factored into the strategies. This is not to say that the CDC completely ignores intrapersonal or interpersonal connections. There are a couple of

exceptions to the overarching importance of the environment. For example, strategy 3 of the Physical Activity guide prescribes individually adapted change programs. The following rational is used to explain this suggestion:

> Although individually adapted behavior change programs have traditionally been used in clinical and small group settings, they also have a role in community-level efforts. Increasing physical activity requires focusing on several factors across the socio-ecologic framework, and individually adapted programs have often been used in community-based physical activity classes in work sites, schools, and homes. These programs can complement and enhance the effects of policy and environmental interventions. When communities, health care organizations, and other key sectors create environments and policies that support individual behavior change and systematize those policies, individual behavior changes are more likely to be sustained. Incorporating individual physical activity interventions into settings that also focus on using the built environment to increase physical activity also is likely to be successful (CDC, 2011, p. 13).

Below is another example of the individual level focus, this time coming from the intrapersonal level of influence.

> People may have the necessary knowledge, skills, attitudes and motivation to be physically active, but if they do not have access to the necessary opportunities, they may be restricted or prohibited from being active (CDC, 2011, p. 25).

However, what the CDC is maintaining even when acknowledging the role of individually based strategies, is that the environment, through organizational and community settings, or perhaps the actual physical environment, is more important. Individually based programs seem to be a secondary asset that can add to the effects of the environmental changes

that are necessary. In table 2, several word counts are provided that can be associated with the interpersonal or intrapersonal level of the social ecological model. Combined these terms account for 209 words or the 20th spot on the word counts list. Separately, only the word "group" combined with its plural crack the top 100 words. The rest fall below the 300th ranking. Notice the variable "family" highlighted in the literature review is mentioned just 29 times in all four documents. In word quantity and number of strategies, these two levels of influence and the settings in which they typically exist, do not seem to be a priority.

Table 2 Intrapersonal and Interpersonal Word Counts

Intrapersonal Words	Count	Interpersonal Words	Count
Age(d)	34	Group(s)	97
Skill(s)	11	Family(ies)	29
Socio-economic	10	Church	1
Minority	17		
Ethnic	11		

Summary

Why does the United States seem to have such an inability to stop obesity? The answer seems to be that in part, that the everyday environment does not do enough to ward off obesity and conversely, passively allows for unhealthy options to dominate citizen decision making. Federal strategy seems to start with promoting healthier built environments and secondarily, promoting healthy options in that environment. In the development of local prevention strategies, the CDC does include the role of the individual, but without question, the overarching strategy is

to change environmental settings in which citizens will individually and personally combat obesity.

Theme 2 - Connection is Key

One of the major themes from the content is an overarching suggestion to improve connectivity within a community or locality. Throughout the CDC recommendations is an underlying notion that to prevent obesity communities will have to become better connected relationally, physically, and to healthier options. This theme is supported by each of the documents, 21 of the 44 CDC strategies and several codes, but primarily by the following codes: SEM Dynamics, PP Local, Built Environment, Organizational, and Access.

The call for improved connectivity can be found in text describing the need to bring healthy food straight from local farms directly to institutions like businesses, schools and government buildings. This theme can be seen in the recommendations related to building neighborhoods close to schools and integrating public transit, bike paths, and walking routes in and out of residential areas. The theme is evident in the call for and the highlighting of land use policies like those of mixed-use development where residential, business, recreational, and transit facilities are connected through close proximity and walkable routes and approaches. This theme is visible in the recommendations and examples regarding food councils and other community-based coalitions that are established to improve community health. These groups are often set up to connect representatives from multiple sectors of the community, including government officials, business and nonprofit leadership. The theme of connectivity can be further broken down into the sub-themes discussed below.

Sub theme 1 - Connect People.

Several CDC strategies emphasize connecting people. In this method of connection, the CDC is suggesting that if a community can connect people to support one another or to support the goal of preventing obesity or improving community health, the likelihood of preventing obesity is improved. Two examples of the connecting people sub theme can be found below. The first is strategy five from the Physical Activity guide which calls for communities to cultivate peer supports for exercise programs.

> Participants can be connected with other participants and program staff members to monitor progress and encourage continuation of activities. Some programs or interventions involve formal discussion groups in which barriers and negative perceptions about activities are addressed (CDC, 2011, p. 21).

A second example of the connect people subtheme, is the CDC suggestion to communities to establish and support community health coalitions or food councils. In this strategy, the idea is to bring people together from across a geographic area to achieve a common goal like improving community health. Members can be recruited from all over the community and can draw from their respective backgrounds and resources to communally address the problem and achieve the group or community goals. Below is an example of strategy 24 from the Implementation Guide regarding community coalitions.

> PedNet Coalition in Columbia, Missouri, is a community coalition that includes 5,000 individuals and 75 businesses, government agencies, and nonprofit organizations. The goal of the coalition is to develop and restore a network of nature trails and urban "pedways" connecting residential subdivisions, worksites, shopping districts, parks, schools, and recreation centers (PedNet Coalition, 2008, CDC, 2009, p 63).

Sub theme 2 - Connect People to Healthy Food.

In the Fruits and Vegetables guide, six out of the ten CDC strategies suggest increasing connections to healthier food. Among the CDC community strategies, five out of the first six are related to connecting people to healthier food. These eleven strategies account for 25% of the full collection of recommendations reviewed. The healthy food solution to obesity is common knowledge and should be expected to appear in public policy guidelines like the ones reviewed for this study. Also, not surprising is the recommendation to communities to increase the number of food stores that offer healthier food, particularly in places where there are none or few. This can be attained, according to the CDC, through incentive packages with business-friendly commodities like lower tax rates and infrastructure improvements in the location of the potential new supermarket. Take for example the actions of the Philadelphia Food Marketing Task Force from the Community Strategies Guide.

> The Philadelphia Food Marketing Task Force investigated the lack of supermarkets in Philadelphia and released 10 recommendations to increase the number of supermarkets in Philadelphia's underserved communities. A new funding initiative was created using public funds to leverage supermarket development. To date, the initiative has committed $67 million in funding for 69 supermarket projects in 27 Pennsylvania counties, creating or preserving 3,900 jobs (Burton & Duane, 2004).

A more unique strategy is connecting communities through their institutions to fresh locally grown produce. Three out of the eleven strategies from this sub theme include a connection to local farming. Farmers markets are a natural way to increase connectivity to healthier food, so the CDC encourages the use and the increase of farmers markets in a locality. The CDC also

encourages directly connecting institutions like schools and other public organizations and workplaces to local farming. Below is content related to these recommendations.

> An important benefit of farmers markets is that they support regional fruit and vegetable production, while providing consumers with access to fresh produce at an affordable cost. Farmers markets, farm stands, community-supported agriculture (CSA), pick your own, and farm-to-school initiatives are all ways to purchase food from farms (CDC, 2011, p. 21).

> Increasing the availability of such mechanisms for purchasing foods from farms may reduce costs of fresh foods through direct sales, increase the availability of fresh foods in areas without supermarkets, and improve the nutritional value and taste of fresh foods by harvesting produce at ripeness rather than at a time conducive to shipping (CDC, 2009, p. 15).

> In 2005, Jefferson Elementary School, in Riverside, California, launched a farm-to-school salad bar program which provides elementary school students access to a daily salad bar stocked with a variety of locally grown produce as an alternative to the standard hot lunch. Two small, locally owned family farms, within 30 miles of the school, sell their produce at an affordable price and make weekly deliveries to the school. Since implementing the farm-to-school salad bar program, the Riverside school district has expanded the program to four additional elementary schools (Anupama, Kalb, & Beery, 2006).

Sub Theme 3 - Improve Connectivity through Improved Infrastructure.

Lastly, the CDC is recommending that localities improve infrastructure and zoning policies to enhance the opportunity for citizens and residents to make healthy choices. Improved infrastructure may lead to connections highlighted in the previous two sub themes, but

infrastructure can do more than that. It can lead to community amenities that bring people together like community gardens or urban farm locations. Strategic improvements to infrastructure can certainly improve access to healthy foods, but it can also provoke exercise. Infrastructure improvements can be as costly and complicated as increasing the number of recreational centers or as simple as increasing the number or mileage of walkways or bike paths.

No matter what the locality chooses to improve in terms of infrastructure, the selection according to the CDC is sure to enhance the citizen's opportunity for and the connection to a healthier choice. As it was described in the previous theme, the concept of "mixed-use" is worth bringing up again. Mixed use improvements can lead to citizens intermingling in an environment that encourages not only obesity prevention, but the overall well-being of a community. The following, from Strategy 21 of the CDC's Implementation Guide and illustrates the idea of a better-connected community.

> The concept of mixed-use development is the official growth management policy for Eugene, Oregon, which focuses on integrating mixed-use developments within the city's urban growth boundary. The city's regional transportation master plan targets dozens of potential "mixed-use centers" for development into quality neighborhoods that enjoy higher densities, more transportation options, and convenient access to shopping, consumer services, and basic amenities. By combining mixed-use centers with improved transit options, the plan aims to reduce dependence on automobile travel, encourage walking, and reduce the need for costly street improvements (CDC, 2009, p. 55).

Summary

The CDC is suggesting that improved connectivity improves health. This theme and its sub themes highlight key principles of the social ecological model in that these connections

assume that the interplay between settings has an effect on health, that outcomes are not from one setting alone, and that strategies must take into consideration the dynamic interaction between the individual and the environment in each setting. The connection theme includes aspects of *organizational*, *community* and *public policy* levels of influence from the social ecological model. Public policy plays a required role in shaping this connection, particularly when it comes to building connectivity through infrastructure. The Community and Organizational elements of social networks and social institutions are regularly used as examples in the strategies referenced above. The CDC calls upon workplaces and particularly government institutions to support these measures. The citizenry united and demanding change or being brought together by government to develop change, must be willing participants. The social networks and organizations that spawn from and influence food councils and community coalitions underly the utility of these techniques.

If the community is better connected then rather than get in a car to go to work, a resident may bike and in doing so, will exercise. If the resident is closely connected to public transit, she can walk to the bus stop and burn calories on the way. If the recreation center is right down the road, it is more accessible and will take the resident less time to get there and less time to get back, and therefore making that daily or weekly exercise regimen more likely to take place. If healthy food is right around the corner, then the last-minute shopping trip will provide access to fresh produce and the option to turn aside from fast food. If local government forms a food council and includes prominent business leaders in its membership, maybe the private sector can become connected to and influential on public efforts to encourage healthier lifestyles.

Connection maybe key to preventing obesity, but it is conditional in that it is based on the unwritten assumption that these connections will encourage healthier behaviors and choices, and

that the local consumer, resident, and citizen will indeed be encouraged, choose, and then utilize the healthier option made more available through these connections. This suggests that healthy norms will develop and be reinforced through these connection points. Again, in an indirect manner, the opposite is being said as well. The more isolated a community or neighborhood, the more disconnected the community is to itself, the less likely the resident, consumer, or individual will choose the healthier option. The strategies promoted by the CDC encourage communities to connect settings and people, and if they do, they enhance the opportunity for obesity prevention.

Theme 3 – Prevention is Locally Oriented

If there is any question about whether obesity is a federal, state or local issue, the CDC states clearly that the way to prevent obesity is to work at the local level. The four documents evaluated in this research all reflect a heavy emphasis on local strategies and efforts. Word counts alone make the case. The word "local" is used 523 times throughout the documents. In comparison, the word "state" is used 138 times and the word "federal" is used just 41 times. Additionally, across all four documents the word "community" is used 530 times. Only the word "food" and the word "school" are used more often than these two synonyms. This theme largely emerged from the Community, Organization, and PP Local codes.

It should be obvious that recommendations from a document titled *Community Strategies Implementation Guide* or *The CDC Guide to Strategies to Increase Physical Activity in the Community* are about local strategies. However, even the *The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables* are all local strategies. In fact, all 44 strategies across all four documents are locally slanted if not explicitly.

Four strategies require changes to local transportation policy. Two speak to the law enforcement and public safety that local governments are responsible for. As previously

mentioned, ten of the 44 strategies necessitate the activation of land use committees and the cooperation of zoning laws. These strategies dealing with local transportation, public safety, and land use are core functions of local government. Further, the CDC is suggesting that localities can encourage the production, distribution, or procurement of food from local farms. Localities should limit television, incentivize supermarkets to enter food deserts, ensure that schools require a set amount of physical education, ban sugar and sweeteners in childcare facilities, encourage breastfeeding, and support urban farming. Additionally, seven of the strategies fall within the purview of or are connected with the local school system.

Below are excerpts from the Implementation Guide that illustrates the power of local authorities.

> Many aspects of our physical environment that influence our health are created, managed, and maintained by local governments. For example, local policies and incentives can affect the presence and absence of parks, sidewalks, bike lanes, mixed-use development, healthy food retailers, and farmers markets. Public schools—although not under the authority of local governments—also have a vital role in ensuring that children have access to healthy food and sufficient opportunities for physical activity during the school day. Clearly, local governments and public-school systems can make a real difference in creating healthy food and activity environments that benefit all people living in their communities. Aside from the health benefits, there are also economic benefits to local governments for creating walkable, safe, and food-secure environments. For example, home values are expected to rise faster in "smart communities" that are made pedestrian-friendly by employing mixed-use development, sidewalks, and traffic-calming features (Local Government Commission Center for Livable Communities, n.d., CDC, 2009, p. 2).

> Local governments play a key role in shaping community infrastructure to support walking by promoting transit, community planning, and zoning provisions, and by retrofitting existing areas to better serve pedestrians (CDC, 2009, p. 49).
>
> Local governments have critical perspectives and resources to share with community coalitions aiming to prevent obesity by improving the local food and physical activity environment (CDC, 2009, p. 63).

The prominence placed on local governments and local efforts illustrates additional insights drawn out through reflection on the social ecological model. Those reflections are discussed further in the following section.

Sub theme 1 – Education Policy is Health Policy.

According to the CDC documents, public policy is a critical level of influence of the social ecological model and a critical factor at the local or community level. Public policy will be *the* focus of the next theme. One component of local public policy is education policy. Schools, which can be considered a component of the interpersonal level of the social ecological model because they provide a place of belonging and identity to the individual and have a place within the local community setting, are a main element of CDC prevention strategies. While the federal and state roles in education should be acknowledged, the CDC seems to propose that the local school system is where expected change and policy implementation to prevent obesity is supposed to happen. Education based solutions that the CDC advocates for, at least in these documents, are all local in orientation. As noted above, the CDC offers an entire section on their prevention website devoted to school based obesity prevention strategies. Among the four documents studied, six of the 44 strategies directly incorporate schools. However, the word "school" combined with its plural, the word "schools", is used more than any other word.

Schools, while not necessarily a part of local government, are governed by local school boards. The confluence of federal and state education policy is filtered through the local school authority. This is typically a local school board and school system, that govern local education policy. Therefore, while schools account for a group that individuals interact with at the interpersonal level, they are also very much a part of local public (school) policy. Schools can require and increase physical activity, incorporate food and vegetables into food offerings, and generally can become of a part of the effort to improve healthy options within public settings.

Sub theme 2 – Focus on Communities and Organizations.

Moving beyond the interpersonal level of the social ecological model, the organizational and community levels of influence are also heavily referenced within the local context. While an occasional reference is given to a national organization or institution such as the United States Environmental Protection Agency or the National Complete Streets Coalition, the CDC is not suggesting that the focus to fight obesity be limited to these types of membership groups or establishments. Most of the social institutions recognized are locally based workplaces, schools, local government buildings, and recreational centers for example. Community groups and coalitions that advocate and address health are also locally focused and based. The idea of a community garden or the cultivation of a group that works on walkways or supports members to continue exercising are neighborly, residential, and pull from local civic and business networks. Thirteen or nearly 30% of strategies across the four documents incorporate the use or development of a local social network or institution. Below is an example from the Community Strategies of organizational and community content.

> Potential stakeholders in community coalitions aimed at obesity prevention include but are not limited to community organizations and leaders, health-care professionals, local and

> state public health agencies, industries (e.g., building and construction, restaurant, food and beverage, and entertainment), the media, educational institutions, government (including transportation and parks and recreation departments), youth-related and faith-based organizations, nonprofit organizations and foundations, and employers (CDC, 2009, p. 21).

Sub theme 3 – It's Not a National Statistic, It's a Local One.

On the flipside of these "local" and "community" strategies is an implicit root cause of obesity: the failure of local government and communities to address obesity as a community health epidemic. If recent statistics reveal that 40% of Americans are obese, equally, are 40% of citizens in every jurisdiction across the country obese? If the federal government through the CDC is studying obesity and effects of public policy, and coming away from that study with an overwhelming stress upon local solutions, then one of two possibilities exist. Either the federal government is looking for ways to abscond itself from being blamed for the American obesity epidemic or, alternatively, the real solution to obesity does in fact lie with local government and community-based prevention strategies.

Summary

The cliché goes that all politics are local, meaning that if you want to win political elections, you need to address the issues right at home in the local community. The CDC is saying the same for obesity prevention. Going back to the source of the documents, the CDC website, there is a page available devoted to state opportunities for obesity prevention. However, the local and community page is more robust, less descriptive and data-driven and more substantive and strategy-oriented. These "local" strategies are largely dependent on local school systems, authorities, social networks and institutions. They are largely dependent on improving prevention efforts at the interpersonal, organizational, and community levels of the social

ecological model. The emphasis begs the question: are these strategies based on theoretical best practices (local solutions are better than a national focus) or is this a political or ideological bent of the federal level of government? Either way, the assumptions is made that if schools and workplaces and local social networks are trending toward healthy living, there is an improved chance of turning obesity rates around. The CDC seems to be betting that local efforts will be implemented and succeed at reducing obesity. So far, those bets do not seem to be paying off.

Theme 4 – Public Policy is the Predominant Level of Influence

According to the CDC recommendations, the most influential level of the social ecological model when it comes to obesity prevention is the public policy level. All five levels of the social ecological model are mentioned across the four CDC guides and while the organizational and community level are highly influential in the strategy descriptions, without a genesis or the support from public policy, these strategies, their outcomes and predominantly the environment in which healthier decision making becomes an option, does not exist. Public policy leads the other four levels of the social ecological model. In fact, organizational, community, and interpersonal level solutions to obesity may not occur, may not exist, and may not be executed without effective public policy. This prioritization is exemplified through the prevalence of the terms public and policy which appear, respectively 11th and 12th on the word list and between the two average a count of 294. In terms of the other levels of influence only the word community is used more. This theme was developed by a concentrated review of the primary codes.

To some degree or another, each and every strategy the CDC includes in the four guides reviewed is shaped by public policy. While public policy is not commonly mentioned directly by the 44 strategies, each one will require public policy's prompting, permission, or support. It is as if obesity cannot be prevented without it.

The public policy level of the social ecological model reflects the three levels of government: local, state, and federal. As mentioned in the previous theme concerning local prevention, the public policy described by these CDC strategies is dominated by local government officials and local policy makers from city councils and board of supervisors to public health departments and school boards and school systems. States are recognized from time to time within the context of several strategies. Below are excerpts of state material.

> States and communities are responding to the obesity epidemic in the United States by working to create environments that support healthy eating and active living (8,9) and by giving public health practitioners and policy makers an opportunity to learn from community-based efforts to prevent obesity (CDC, 2009, p. 2).

> Sixth, many of the proposed policy-level measurements have their own limitations. For example, although the measurements have been developed in consideration of local governments, a number of policies might be established at the state level, which would limit local variability within states (CDC, 2009, p. 22).

However, these texts illustrate that the state role in comparison to the local one, is minor. The Federal role throughout the documents is even less prominent. When Federal public policy is brought to bear it is usually in the mention of a supporting program or agency like the United States Department of Agriculture or the Environmental Protection Agency. The federally funded Supplemental Nutrition Assistance Program (SNAP) and Women Infants and Children (WIC) program are mentioned. So too is the National Safe Routes to Schools and the Let's Move Campaign. The limited mentions and programs, which are typically administered at the state and local level, are the only federal policies recognized by the CDC.

As mentioned in previous sections, the strategies are unsurprisingly based in local and community efforts as that was also the focus of the documents. Nevertheless, there are additional insights to glean from the way in which public policy is described and not described. These insights are shared below in two sub themes.

Sub theme 1—Lack of Public Policy Process Description or Commentary.

There is almost no mention of the public policy process in the CDC recommendations. The suggestion in the text below from the Fruit and Vegetable guide, that it will be necessary to convene and obtain support from local or state health department officials is about as close as the CDC gets to describing process. The text comes from strategy two, which discusses bringing supermarkets to underserved areas.

> Successful efforts to bring supermarkets to underserved areas have had significant support from community, business, and political leaders. You will need to convene and obtain support from multiple stakeholders, including representatives from local and state departments of health, local and state governments, advocacy groups, trade associations, local universities, community-based organizations and associations, grocery retailers, and other local businesses (CDC, 2011, p. 12).

The CDC has laid out 44 strategies that describe "how" to prevent obesity, but the CDC does not explain how to develop those programs and policies through the lens of the public policy process. It does not discuss electing public representatives who emphasize obesity prevention. It does not discuss the influence of the private sector on this public process. The CDC does not discuss policy making from a political platform. With the exception of the strategy describing community wide campaigns, there is little in the way of developing a public agenda or forming public opinion at the local level that lends itself to these strategies becoming actual

policy. The community wide campaigns that were highlighted in the physical activities guide and specifically speak to prompting exercise within a jurisdiction, receive high praise among the strategies. They could also be useful to develop public will to enact the other more prominent infrastructure needs described in theme three. In order for these 44 strategies to become actual policy, the public policy process must be followed which must take into account public opinion, political sensitivities and then the actual procedures that "turn a bill into a law".

At the local level, the proverbial "bill" is often called a "board matter" which is introduced by a member of the county board of supervisors. A strategy like restricting screen time in public facilities, strategy number 15 in the Implementation Guide, might require a board matter from a local board of supervisors. To pass the board matter, a majority of the elected board members will have to endorse the matter. This might be a simple measure, but overall support for obesity prevention might require some strategic interaction with the public policy process. This is sometimes called lobbying, but it goes unmentioned in the CDC recommendations. Rules and techniques for lobbying might be a helpful addition to these strategies for both the public administrator and the citizen alike.

The importance of the public policy process has been highlighted in the literature section and there has been reference to the federal process breaking down through the influence of special interests (Harris, Pomeranz, Lobstein, and Brownell, 2009). If public policy or public administration are to take on such a large share of obesity prevention, guides like these might be enhanced if the process is more thoroughly explained. Further, the CDC might assist prevention success by highlighting methods to engage the process itself and why.

Sub theme 2 – Failure.

It was mentioned in the opening paragraph of this theme, that without the influence of public policy, the environment in which healthier decision making becomes an option, does not exist and therein lies the problem. The healthier environment prescribed through these CDC strategies does not exist. With obesity continuing to increase, it maybe concluded that public policy is failing. Certainly, there are communities throughout the United States that are incorporating these strategies. The CDC illustrates the implementation of strategies with many community examples across the country. However, if CDC strategies are so heavily dependent on public policy's cooperation, participation, and leadership, the gradual uptick in obesity prevalence is a sign that public policy is not cooperating, participating, and leading the way in which it needs to. This can be said in relation to the 44 strategies, but of public policy in general and not just local public policy.

The CDC's recommendations and their overarching strategies of local influence, improving the built environment, and connecting citizens to solutions and each other, all seem to hinge on the influence of public policy. The CDC has supported policy makers with the development of these strategies, but how is federal policy and public administration prompting, incentivizing, or punishing localities for not adhering to them? What is there in the way of federal policy that his enhancing these proposed initiatives? Maybe the strategic mechanisms that are published in these CDC documents are not solving the obesity crisis because they alone, that is to say local level public policy, is not enough.

Summary

According to the CDC prevention strategies described in the four documents researched, public policy is *the* level of influence when it comes to the social ecological model. Without it,

this social problem seems impossible to stop. All 44 strategies studied and listed among the four documents touch upon public policy and almost exclusively local public policy. The documents, however, fail to integrate the public policy process and how this component of prevention strategies can be engaged, thwarted, or truly utilized to stop obesity. The emphasis on public policy implies its responsibility and failure in the obesity epidemic. All other levels of the social ecological model seem dependent on this one level if obesity is going to be halted. In the sections to come, a set of public policy recommendations will be made to improve upon the CDC's strategies. However, it is clear that the role of public policy in shaping a healthier environment will remain the most critical.

Findings

The findings chapter now looks at the CDC strategies from a broader perspective related to the research questions by providing a general analysis of the strategies and how they engaged a social ecological approach, how the social ecological model is reflected in factors and solutions to obesity, and how the strategies accommodate the dynamic interplay between levels of influence. This section is organized accordingly.

Strategies

Beyond the actual strategies, which are listed in the strategy's matrix in appendix 1, the CDC provides additional descriptions of the strategies and guidelines in three of the documents. *The CDC Guide to Increase Physical Activity in the Community* does not provide a summary explanation of what the strategies are. Below are explanations for the other three documents.

The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables:

The 10 strategies described in this guide focus on policy and environmental changes that are designed to increase access to and improve the availability of fruits and vegetables, with the expectation that these changes will lead to increased consumption. Strategies were selected on the best available evidence, as well as the knowledge and expertise of the authors and Centers for Disease Control and Prevention (CDC) partners (CDC, 2011, p. 4).

Rerecommended Community Strategies and Measurements to Prevent Obesity in the United States:

Recommended strategies and appropriate measurements are needed to assess the effectiveness of community initiatives to create environments that promote good nutrition and physical activity. To help communities in this effort, CDC initiated the Common Community Measures for Obesity Prevention Project (the Measures Project). The objective of the Measures Project was to identify and recommend a set of strategies and associated measurements that communities and local governments can use to plan and monitor environmental and policy-level changes for obesity prevention. This report describes the expert panel process that was used to identify 24 recommended strategies for obesity prevention and a suggested measurement for each strategy that communities can use to assess performance and track progress over time. The 24 strategies are divided into six categories: 1) strategies to promote the availability of affordable healthy food and beverages), 2) strategies to support healthy food and beverage choices, 3) a strategy to encourage breastfeeding, 4) strategies to encourage physical activity or limit sedentary activity among children and youth, 5) strategies to create safe communities that support

> physical activity, and 6) a strategy to encourage communities to organize for change (CDC, 2009, p. 1).
>
> Implementation and Measurement Guide:
>
> This product is the result of an innovative and collaborative process that seeks to reverse the U.S. obesity epidemic by transforming communities into places where healthy lifestyle choices are easily incorporated into everyday life (CDC, 2009, preface).

These descriptions suggest that the strategies focus on policy and environmental change, that they are based on the best available evidence and research, and are selected as the result of a deliberative, innovative and collaborative process. Through this process the public can assume that these strategies are the best methods available to create a healthier environment.

Further, these strategies are the product of CDC experts and their partners. Each document mentions the collaborative research process that went into forming them. The content below comes from the Physical Activity Guide and is an example of the summary statements used to describe who wrote and how the guides were written.

> To update the science in this area, a distinguished advisory committee reviewed the new research findings and rated the strength of the evidence for health benefits from physical activity (CDC, 2011, p. 3).

It should be noted that the Guides are between nine and eleven years old. The Physical Activity Guide and the Fruits and Vegetables guide rate their strategies based on having strong, sufficient, or insufficient evidence. Out of the twenty strategies from the two guides, nine are reported with strong evidence to support, three sufficient evidence, and eight report insufficient evidence. The Community Guide products provide this statement on limitations:

> The strategies and measures presented in this manual represent an early step in our understanding of how the environment and policies influence behavior. We are still accumulating evidence to support each strategy and the measures are not yet validated and their reliability has yet to be determined. The strategies do not represent an exhaustive list of the types of changes that need to occur and some may prove to be more important than others in relation to desired behavioral changes that affect health. Even with these limitations, these strategies and measures are an important starting point for addressing the obesity epidemic in the United States (CDC, 2009, p. 3).

The guides provide multiple "real life" examples for each strategy which are pulled from across the United States. Each guide includes a brief explanation of the following headings found under each strategy: Strategy, Definition, Rationale, Evidence of Effectiveness, Key Considerations, Action Steps, Program Examples, and Resources. The guides are colorful and easy to read. The Recommended Community Strategies document, on the other hand, reads more like a scholarly article and is formatted as such. In terms of obesity stigmatization, the documents appear to be neutral and do not address or condemn the historically negative social associations that come with it.

Use of the Social Ecological Model

The CDC uses the term socioecological just three times and therefore the word does not break into the top 1,000 most used words or the project's word count chart. To qualify for the list a minimum of nine counts was required. These three mentions, listed below, are the only direct mention of the model and are all found in the Physical Activity guide.

> From a public health perspective, some strategies merit a higher priority than others—such as those with the potential for greatest reach, effectiveness, and sustainability. Policy and

> environment strategies are integrated within the socioecological perspective. Based on these criteria and on expert opinion, the physical activity promotion strategies considered to be the most appropriate for public health agencies and their partners and to have the highest priority for implementation are community-wide campaigns, increased access to places for physical activity combined with informational outreach, and enhanced physical education in schools (CDC, 2011, p. 4).
>
> Traditional prevention efforts focus on educating and motivating people to help them increase their physical activity. Communitywide campaigns address multiple levels of influence, including individual, interpersonal, institutional, and community levels. These types of socioecological, multipronged efforts that are designed to promote and eliminate barriers have been found to be more effective than each single component (CDC, 2011, p. 5).
>
> Interventions that use social support within community settings can create opportunities for physical activity by reducing or eliminating many of the barriers to physical activity (e.g., safety, motivation). Because physical activity behavior is influenced at multiple levels of the socioecological framework, it is important to focus not just on policy or individual behavior change, but also on the interpersonal level (CDC, 2011, p. 21).

A limited number of mentions may give the impression that the social ecological model is not influential in the CDC approach. However, the model is present indirectly throughout the four documents. The model intertwines throughout the content of the guidelines studied and frequently with the themes that prefaced this more general analysis. For example, the Implementation Guide begins with a brief synopsis of obesity in the United States and in the next paragraph discusses how multiple components of the environment can affect health. The heading over that second

paragraph in bold is, *"Where People Live, Work, and Play Affects Their Health"*. This is quintessential social ecological model language in that it highlights multiple settings and levels of the model in describing how health can be determined in several common environments. Social challenges like obesity should be addressed at the interpersonal and intrapersonal level (home), at the organizational level (work), and community level (play). Below is an example from the Physical Activity Guide providing further emphasis.

> Interventions that create or enhance access to places for physical activity and provide informational outreach activities may involve representatives from work sites, coalitions, government agencies, and communities who are working to change the local environment to create opportunities for physical activity. Many of these interventions are multicomponent and influence behavior at multiple levels. They usually combine *both individual and environmental* components and are long-term interventions (emphasis added, CDC, 2011, p. 25).

The thematic analysis has provided additional ways in which the content is informed by the social ecological model. Of major import is the emphasis on public policy, connecting people and settings through infrastructure, and the nexus of schools, communities and organizations at the local level. The analysis examined for representations of the model within the text and found these indirect connections, but a reader with knowledge of the model could get the sense that the government agents framed their approach to these strategies directly through the model.

Factors and Strategies

The CDC documents do not directly identify causes of obesity, nor enter into an exploration of why America is suffering from an obesity epidemic. The agency does however, mention a number of contributing factors. Among them are lack of access to full service grocery stores;

increasing costs of healthy foods; the lower cost of unhealthy foods; lack of access to safe places to play and exercise; diet and exercise; limited availability of healthier foods; cost, access, and presence of retail venues; television advertisements; portion size; consumption of sugar-sweetened foods and drinks; lack of walking; insufficient consumption of fruits and vegetables; and access to modes of transportation beyond the automobile. There are certainly individual aspects to several of these factors, however, they more highly connected to the environment, societal values, and decision making at the local public policy level.

As the CDC identified solutions, it indirectly pointed out failures as well. For example, multiple factors mentioned above are influenced by local government and local public policy. If the factors described above have an influence on obesity rates and can be directed to prevent obesity, then the CDC is also circuitously stating that it is up to local government and local public policy to address these factors. Therefore, indirectly, the CDC through the recognition of these factors is also reflecting that the public policy level of the social ecological model has a major influence and should also be considered a major factor of obesity, but is failing to act on that influence successfully. Therefore, could the conclusion be made that local public policy is failing or a root cause of our obesity epidemic? As previously described, according to the CDC there are failures at the intrapersonal, community and organizational levels as well. The CDC is not *directly* placing blame or responsibility on public policy, schools or the physical environment. Nevertheless, the research sees these factors pop out of the text indirectly, and begs the question, are these more influential factors within the discourse on obesity than they are given credit for and should they be named out right as roots and causes of obesity?

In much the same way, the CDC reflects different levels of the social ecological model when

it discusses solutions or preventive tactics and strategies to obesity. Through these strategies, the social ecological model is reflected in an indirect manner. Schools are a major part of the overarching strategy, and represent the interpersonal level of the model, but the most predominant levels of the social ecological model are the public policy, community, and organizational levels. These three are really the levels of emphasis in the four documents studied. The CDC does host an entire section of the prevention strategies website on school-based solutions. The documents rarely mention the intrapersonal level. Further, the solutions almost entirely focus on a local and public approach. There is very little mention of the private sector, state, and federal support. Of course, this is by design in the sense that especially the Community Strategies and its Implementation Guide, are written for local public strategies; however, had these aspects of the organizational, community, and public policy levels been engaged, perhaps the recommendations could have been enhanced. Describing how business can become more pro-active in reducing obesity, either in supporting public policy initiatives or the process itself, might for example improve the strategies of these four documents. Offering how federal and state level public administration provides incentives and partners, or how those public policy levels should engage, is another example of how these strategies could be improved. Federal and state policy supports are mentioned tangentially and need to be better connected to local tactics, or perhaps, they need development so that they can be connected. Perhaps a lack of federal and state interaction in these documents, is a sign that they are not available as a support and partner.

Interaction Across Levels of Influence and Settings

The CDC guides accommodate social ecological interactions across the spectrum in a number of ways. For example, public policy is connected to each of the strategies. Any strategy affiliated with a different level of social ecological influence will almost universally require the

support of and therefore interaction with, public policy. The recommendation of the CDC calling for local governments to pursue mixed land use development is an example. Here, perhaps more than in any other strategy, the CDC is suggesting that the way to curb obesity is to connect communities and settings through a common intersection of residential, workplace, and recreational spaces. Ideally, these different spaces come together to reinforce healthy living and through a dynamic interplay of infrastructure, regulation, and messaging. This is enunciated again in the excerpt below from the beginning of the Community Implementation Guide.

> Where we live, work, learn, worship, and play affects the choices we make, and in turn, our health. As such, the policies and environments that shape and define a community will also affect the health outcomes of its citizens (CDC, 2009, preface).

This overlapping and intermingling of levels and settings can also be found when the CDC calls upon communities to support coalitions that support healthier initiatives or food councils that support access to healthier food choices. The CDC says these citizen groups should be compromised of representatives from across the social ecological spectrum. Ideally, they include parents, school representatives, business owners, government agents, and health professionals.

The examples above offer the most pronounced interaction and potentially involve every level of the spectrum. Other CDC strategies may not be as inclusive, but several strategies illustrate two or more levels and settings connecting and working together. The strategy of bringing local farm produce to community institutions may involve public policy, organizational, community (farming networks) and perhaps intrapersonal (choices of individual farmers) or interpersonal (school) levels. The strategy to provide safer recreational space may originate from a smaller combination of levels of either the community or organizational and public policy. Adding more physical education time in a school system is a public policy within the local

school system. In this strategy, though, is the opportunity for communities, organizations, and interpersonal groups to collaborate with the school system to support that direction. For the citizen these combinations mean that opportunities for healthier living will be available, not just in one setting, but in others, as they move about their environment and day or week.

It is important to note, the CDC does not describe the processes in which these solutions should be pursued. A question that remains unanswered in the guides, is who should serve as the catalyst? If these are all up to local governing boards and local government, do any other levels need to be involved? Those other levels will be affected, but do they need to be a part of the process? Answering these questions are important, in that the interaction of these levels is in some part dependent on how the strategy is initiated and then implemented.

As previously mentioned, the CDC acknowledges the wholistic approach necessary to prevent obesity. Each given setting, the home, the workplace, or the community center, may or may not facilitate and support a healthier lifestyle. While the wholistic or comprehensive approach is provided a brief acknowledgement among the four documents, it is not an outright theme or strategy from the CDC. It is not explicitly promoted beyond these references. This is in contrast to the CDC approach and use of the social ecological model referenced in the conceptual framework section, where the expectation is that strategies to prevent violence are employed simultaneously across the spectrum.

The social ecological model offers the framework to incorporate multiple everyday life environments into obesity prevention. While the CDC appears to be framing its strategic approach through the social ecological model, a more explicit implementation should be considered. The guides are written by “experts”, individuals who have researched best practices and thinking on the subject of obesity prevention, but they are written for the local community.

The guides could be enhanced by directly stating how they would work best. If the answer is more multipronged solutions, CDC guidelines should bring that to the forefront of their guidance. The guides begin in a subtle manner with the bigger picture and context of a "multipronged" solution. However, spelling this out in more detail to the local practitioner, along with why the social ecological model is so important and what it is, might help frame local efforts like mixed land use development. With a few exceptions, the strategies are isolated attempts to prevent obesity. If implemented in a more wholistic fashion, where multiple strategies are pursued simultaneously, seemingly the predicted outcomes of each single strategy have the potential to morph into something much more potent. As highlighted in the review, obesity literature often speaks of obesity's complexity and that this social challenge needs comprehensive solutions. CDC guidance should explain that complexity, both in terms of the problem itself and the solutions required to solve obesity.

Chapter 5

Discussion

In this chapter the final narrative and reflection is delivered and with it a set of public policy recommendations. Afterwards, the research limitations and research contribution are discussed. This chapter finishes the dissertation with a conclusion paragraph.

The content analysis used in this research, framed by the social ecological model, evaluated four CDC documents pertaining to obesity prevention strategies. The CDC strategies reviewed are predominantly infrastructure and environment oriented, and dependent on public policy. Several strategies attempt to connect citizens to each other and healthier options and choices. The strategies are targeting the local community. As referenced in the Community Strategies and Implementation Guide, they are designed to create a healthier environment where

those options are readily and conveniently available and encouraged. They are contingent on an assumption that citizens in this improved environment will take advantage of these options.

In the literature review, several factors were highlighted: family dynamics and characteristics, personal attitudes, corporate influence, mass marketing, and regulation. The first two factors focus on individual level influences and the next three on environmental level influences. The literature review also examined the factors of exercise and school as they relate to obesity. The CDC guidelines almost completely go without mentioning family characteristics and personal attitudes and the same can be said for the larger category of individual factors. In comparison, while corporate influence, mass marketing, and regulation are mentioned more than the individual factors studied, they too are used on a very limited basis. However, the CDC through these documents is plainly stressing the environment when it comes to obesity prevention. The experts that drafted these documents, and therefore, the CDC itself, is pushing an environmental agenda over individual strategies. Many of the familiar factors and tactics to reduce obesity are present: exercise, eating less unhealthy foods and eating healthier foods instead, are mentioned. Nevertheless, the majority of the strategies are about building and shaping the environment to encourage these behaviors and choices, and not individual or intrapersonal dynamics.

In doing so the CDC is shifting focus from the individual and the often-stigmatizing effects that come with thinking and narratives that make obesity and health purely about personal responsibility or choice. Overall, the documents do not address obesity stigmatization. They do not include any particularly negative language or stigmatizing language that might deride, but neither do they actively address how communities could address stigmatization. However, language like "*Where we live, work, learn, worship, and play affects the choices we make, and in*

turn, our health" from the Community Strategies guide and the general use of the social ecological model, essentially relieves purely personal responsibility thinking. Instead the focus on the environment and use of the model suggest that social determinants are found throughout the environment. If the emphasis really is on the environment, then CDC literature could be improved by acknowledging that personal responsibility or blame rhetoric should be removed from public discourse. Further, community efforts to prevent obesity should consider the ways in which obesity and those suffering from obesity are presented and addressed in public strategies, research, and messaging.

From the environmental emphasis and the themes of this paper come new factors. Based on the findings of this analysis, the fight against obesity has to take into consideration the role of local government and local public policy. This institution and its effects are key to preventing obesity. First and foremost, is the infrastructure that these entities provide their communities. Therefore, land use policy, zoning, and the built environment are also all key factors along with local government. Education policy, in a similar way, through the local school board and school system level is a big part of that local environment focus. Based on the heavy emphasis that they are given by the CDC, it seems possible that maybe these determinants, provided they are resourced properly, will outperform the other more commonly discussed influences, like diet and exercise. In documentaries like *Fed Up* for example, obesity is more typically a conversation about the abundance of unhealthy foods and the private sector promotion of those foods out in the public square, on television and street corners, and at decision points within the public policy process. A latent reading of the CDC prevention recommendations instead illuminates that this issue, from the CDC perspective, is not really about sugars and big business, but about local land use policy, mixed use development, education policy, school boards and boards of supervisors,

and an array of infrastructure. At least that is the conclusion drawn here. Certainly, there can be no disregard for healthy eating, physical activity, and genetics. The CDC in these four documents though is almost entirely focused on strategies that improve the local environment. The problem is, even the CDC is uncertain about their usefulness.

The CDC framework clearly utilizes the social ecological model. The CDC rarely uses the model blatantly, but for the most part, the guides reviewed in this research weaved social ecological thinking in and out of the text without mentioning it by name. In looking at where in the model demand is placed, first and foremost, the CDC is suggesting that the Public Policy level of the social ecological model must take lead in preventing obesity. This again is an indirect call to arms, but in every strategy a connection can be made to public policy. Following the influence of the public policy level are the organizational, community, and interpersonal levels and settings of the model. Noting that the four documents are written for the local level and community to apply, there is a leaning on local institutions, predominantly government and some mention of the workplace to take action. Local social networks should come together to support obesity reforms, either organically straight from the community or fostered by local government. Another dominant player in the fight against obesity is the school system. There are multiple strategic tie-ins to this component of the interpersonal and community level.

Within the documents, with some imagination, the reader can see the dynamic interplay between the levels and settings that must take place. Again, with public policy taking lead, one can picture local social networks joining into support strategies like improved infrastructure. Parents of school children want improved and safe walking routes to schools. Outdoor enthusiasts want better walking and biking paths. The commuter groups want work closer to home and easier access to transit. The CDC seems to be banking on a local market for these

solutions. Institutional solutions are mainly taking into consideration government settings which of course will take on these improvements through the prompting of their local governing boards. Despite the CDC stating that many of their strategies can be applied in private sector workplaces, they are hardly mentioned.

A couple of the strategies truly personify the dynamic interaction of levels of influence that the social ecological model describes. The first is the idea of mixed-use development. Mixed-use provides an ideal remedy to the obesity epidemic. The infrastructure supporting this strategy can encourage healthier choices through more accessible options like fresh produce or physical exercise as a means to transportation. However, it seems that in order for this connectivity to improve health, the settings have to not only provide the healthier options, they have to encourage them and then citizens have to follow through accordingly in their decision making. As a second example of a strategy exemplifying social ecological dynamic interplay, is the CDC strategy of community campaigns. In the examples used to illustrate this strategy, communities launched multimedia publicity campaigns promoting healthier options, mainly exercise. In these campaigns, the citizen can be confronted at the bus stop, on radio and television, and in the marketplace about a healthier choice. After adding all the other 42 strategies into an environment that is connected to and promoting healthier options, one can begin to see a vision of how the obesity epidemic in America can come to an end.

Unfortunately, this vision is not coming true. In fact, for thirty years, the opposite has been true. Obesity has been on the rise. The environment described above, where multiple solutions are working in unison to combat obesity's spread could be considered a very comprehensive approach. The major critique that this research brings to the CDC strategies is that they are not utilizing the social ecological model enough and not as explicitly as they should.

The documents give the need for comprehensive solutions a mention, but do not stress enough that the strategies listed should be used together. Examples of strategy implementation are plenty, but there are no examples of a single locality or jurisdiction executing multiple strategies simultaneously. A set of bus stops alone is not likely to change obesity in a given locality. The CDC should be pressing communities and localities to adopt several strategies at the same time and connecting this approach to a more pronounced need for wholistic methods.

All of this is for not though, without proof that these strategies are indeed effective. Each of the four documents are now ten years old and at the time of their print, the CDC admits, that the strategies are largely unproven. There is a great need for a federal executive refresh on obesity prevention. In 2010, First Lady Michele Obama launched *Let's Move* a national campaign targeting obesity in children with the promotion of healthier eating and more exercise. The Community guides coming out in 2009 and the Increasing Vegetables and Physical Activities guide in 2011 are a small part what seems to be a federal executive branch that was zoning in on progress toward obesity reduction and prevention. Over the past thirty years, it may have been a pinnacle attempt or a surge to stop the pandemic. Since then, the national public agenda has not seen such a widespread focus on the issue. President Obama's second term tapered off on the obesity focus and the administration worked on immigration reform, gun control, and climate change. President Trump taking office in 2017 leaned into closing the southern border, reducing the size of the federal bureaucracy, and eventually, containing the Covid-19 virus that swept the country and world beginning in early 2020. In politics, priority shifts are not uncommon, especially when there are changes in office. While a focus in 2010 may have been on halting obesity rate increases in kids, obesity as a public issue seems to have long left the center of the public health agenda.

When reflecting on the fact that obesity is still on the rise, a decade after the publication of these strategies, what becomes obvious is that these strategies, at least at the macro level are not working. Individually, these strategies need more evaluation. Perhaps at the local and individual level they have leveled off obesity rates. Perhaps at the local level they are increasing exercise and healthier food consumption. Maybe on the micro level these strategies are preventing obesity. The guides intermittently suggest that they do. However, taken as a whole, and looking at a larger picture of the obesity epidemic, where rates are teetering around 40% of the adult public, the strategies have simply not taken root or are failing.

If an emphasis has been placed on local environmental efforts, the public can quickly conclude that these CDC recommendations are not enough or have not been implemented effectively. By now, hopefully, measurements have been taken toward their effectiveness. Federal strategies need a renewal and with it, new evidence. The research now reflecting this discussion, provides several more public policy recommendations to consider.

Public Policy Recommendations

Throughout the content analysis, much thought was given to the need for a set of public policy recommendations that might improve upon the existing CDC approach. The CDC solutions to obesity, the ones published in the guides reviewed, are practical. With the right resources and local public will, they are feasible. They are not too grand for a locality to implement, but that might be part of the obesity problem. Another potential problem is that obesity solutions are not focusing on the right contributing factors. The recommendations below are a combination of a need for practicality, more wholistic thinking, and some reinvention of how public policy and public administration views obesity.

Table 3 Public Policy Recommendations

Public Policy Recommendations	
Recommendation	**Components**
Publish New Strategies	• Updated • Evidenced Based
Support Local Efforts	• Funding • Incentives, Penalties • Unfunded Mandate
Engage the Private Sector	• Local and National • To Support Local Initiatives
Reshape the Narrative about Factors	• Land Use, Infrastructure • Local Public Policy • Local Government
Engage the Public Policy Process	• Political Efforts • Agenda Setting • Outside Influences
Explain Local Governance	• Powers of Local Government • Land Use Committees
Call for Comprehensive Solutions	• Explain the Social Ecological Model • Promote as a Package Deal • Reach Social Ecological Levels at the Same Time

1. **Publish New Strategies**-

   The first public policy recommendation is that the CDC should update their strategies. It is past time. The CDC and federal government must update their website, their guides and with it, the CDC must update its data and evidence for these strategies. Data collection could be conducted in numerous ways: site visits, surveys, and interviews to name a few. However, without adequate data, the American public and the authorities able to combat the epidemic are meandering in the dark. Worse, following guides without some assurance that there is a true result to follow potentially means more waste of taxpayer money, time, and talent. Spending bureaucratic effort and political capital on strategic uncertainties is careless. Maybe this lack of evidence is why these strategies

haven't been succeeding. Maybe localities have avoided these recommendations because they do not come with guarantees. Obviously, developing recreation centers can do more for a community than just improve health. Creating infrastructure or environmental improvements can also increase property values and therefore property tax revenues. However, if there is an ambition to improve health or if that is part of the decision matrix for these types of improvements, the citizen and local decision maker ought to know if they are valid. The CDC needs to publish new strategies. Where necessary, it needs to cut what is not working and after validation, it should focus on what is. Lastly, the CDC should proactively address obesity stigmatization, craft strategies that utilize inclusive language and encourage a greater sensitivity to those who are struggling with weight issues.

2. **Support Local Actions**-

   The documents primarily describe what local communities can do to create a healthier environment and at times, the guides provide some ways to attain national or federal support. For example, the Implementation Guide mentions Safe Routes To Schools, a national program dedicated to assisting communities to build safe walking routes and street crossings for children and parents to commute back and forth from home and school. However, if as a culture and a society the United States seriously desires to reduce obesity and if, as this analysis has developed, the solution to obesity is a function of local government, then as a nation support has to be poured into local efforts. The federal government through these CDC guides is advising the public and really local governments how to combat this health crisis. Indirectly, the federal level of government

is saying it is "on you" local governments. However, without federal support or without state support, this becomes an unfunded mandate.

Obviously, funding is a major way to support local governments. Infrastructure improvements and where the intention to combat obesity is included in the planning process, should be rewarded and incentivized. Taxes to restrict unhealthy offerings at restaurants or super markets might be a way to combat obesity's rate increases. This may not be a function of federal policy, but could federal policy match that type of revenue as a way to provide incentive for stricter local regulations? In a different direction and harkening back to the exercise literature, the federal government could look for ways to withhold funding to provide incentive for local governments to do more (Haskins, Paxon, and Donahue, 2006 as cited by Nanney and Schwartz, 2009). Either way, it is not enough to prescribe local solutions to obesity without providing some attempt to resource those efforts. The CDC guides fail to adequately address this gap and federal strategies could be improved by offering an increase of federal support.

3. **Engage the Private Sector**

The Centers for Disease Control acknowledges that the strategies are not targeting and addressing private sector settings, but they do suggest that they are applicable to the private sector. The CDC strategies seem largely dependent on local government fighting the obesity pandemic, and as the previous recommendation suggests, these institutions need support. That support could come from the local business community. Certainly, local business can support infrastructure improvements and join food councils or health related advisory boards. Perhaps, most importantly, the CDC should discuss how local construction companies and land development companies can and should play a role in

obesity prevention. It is these companies specifically and in cooperation with local government that build the local environment. Engaging these players of the local private sector seems to be a necessity. However, the CDC should also look at how the more nationally dominant franchises, corporations and companies can address obesity prevention campaigns at the local level. If the CDC can develop private sector "titans" of the marketplace toward engaging in this effort, imagine how they can contribute to the local community. This first brings to mind food specific companies, like national fast food chains for example, but even oil or gasoline companies for instance could become involved. What if local gas stations wiped out all the sugar related food content from their convenient stores? What if that action was replicated in pharmacy type convenient stores too? What if those food choices were replaced with healthier options? The CDC describes implementing changes in government workforce settings, but the many private sector settings within the local community, from shopping malls to gas stations, can be a place where the citizen is encouraged to become healthier.

4. **Reshape the Narrative About Factors-**

Indirectly, through these guides the CDC is putting emphasis on contributing factors that typically go without mention. This analysis suggests that local government, education policy, infrastructure, public policy and land use are keys to solving obesity. If that is true, then the CDC and public policy makers should be talking more about these factors. Why develop 44 strategies that have to do with local public policy and local government if obesity can't be discussed as a product of these institutions? The narrative around obesity has to be changed if rates will change. The narrative has to emphasize environment and it has to emphasize how that environment is shaped and how it can be

shaped. Therefore, it has to talk about infrastructure and the policies and policy makers that develop that infrastructure respectively. Obesity apparently is more than genetics, diet and exercise. It is also about the ways in which public policy influences communities and organizations to promote health. As mentioned in the last recommendation, it is not just public policy at the local level, but all three levels of government. If comprehensive solutions are necessary, then approaches to this epidemic have to take into consideration all the relevant factors. Public policy should especially discuss those factors that it purports will solve the epidemic. Messaging and language around causal factors have to include those listed above, particularly public policy, infrastructure, and local government.

5. **Engage the Public Policy Process-**

   A major lacking in the CDC documents is that they do not engage the public policy process. With so much emphasis on local public policy, the federal approach should guide communities on how to actually implement change. The strategies and solutions listed offer an array of choices to curb obesity, but how do you procure them? The CDC needs to discuss the steps necessary to develop a public agenda to fight obesity. It might be outside the comfort zone of government administrators to talk about it, but should these guidance documents discuss where politics plays into these strategies or what parts of the political process need to be considered? For example, should obesity prevention be considered as local officials are nominated for and elected to office. Once elected, what must those representatives do to adopt and then execute these tactics. The CDC might suggest for representatives to consult their transportation, health, school, and finance departments to explore what is possible and what to bring before their full boards or

councils. Additionally, the CDC might advocate for local government governing boards to implement special committees to focus solely on obesity prevention. These committees could be used to organize and oversee a full legislative and comprehensive approach. Further, what should the local community do to protect the policy making process from being thwarted in its attempts to prevent obesity? As mentioned in the literature, the private sector has interfered with the federal policy process just as policy makers were considering measures to prevent obesity (Nestle, 2006, Harris, Pomeranz, Lobstein, and Brownell, 2009). An overview of the public policy process at a minimum, might be a helpful additive for the local bureaucrat, supervisor or council member, and citizen alike.

6. **Explain Local Governance-**

   In a similar way, if it is placing a high degree of importance on local government, the CDC should provide more context for the local solution and how local governance can change the obesity trajectory. If the federal process is too susceptible to special interests or maybe too removed from the citizen to effectuate change, perhaps a more honest admission of federal ineffectiveness and beckoning of local execution should be made up front. To put it more clearly, maybe the dependency on local government in this instance should be fully explained. From there, the CDC should describe the powers of local government and why they are useful to obesity prevention. The CDC should explain how local government typically functions and is different from state and national government institutions. The CDC should discuss how local transportation policy and execution works. It should discuss how land use and zoning works and the role of the local land use committee and how they are appointed. It should explain how local law enforcement differs from state and federal police, and how that local enforcement can actually foster

healthier lifestyles. For the CDC to be counting on local communities to engage their local governments, CDC obesity prevention guidelines should include a local government tutorial or background section. This is especially needed if the CDC is counting on the citizen to engage in these local solutions

7. **Call for Comprehensive Solutions-**

   The literature recommends it and the CDC guides recognize it: combating obesity will require comprehensive solutions. However, the CDC fails in making that a real demand or ask. The guidelines today miss the point. Only two strategies, mixed use development and community campaigns, are really approaching every level of the social ecological model at the same time. That said, many of the strategies touch upon multiple levels in chorus. However, a single strategy does not make for a comprehensive solution. It is doubtful that a single strategy implemented alone will change obesity rates in a local jurisdiction, but what would be the result if a local jurisdiction implemented four or five or ten of the strategies simultaneously? The CDC has to be more explicit. Up front, these strategies should be promoted as a package deal. The social ecological model should be explained in more detail and so should the ways in which each setting of life has influence on the health of the citizen and how working together, those settings can have an exponentially larger influence on an issue than just one acting alone. Of course, this will require that the previous public policy recommendations, particularly recommendation number two, be implemented as well.

Summary of Recommendations

The cliché goes that drastic times call for drastic measures. With nearly 40% of adults in the United States obese and costing in related health care $200 billion annually, the federal

government and American people need to change how obesity is addressed. Strategic approaches to obesity must be overhauled, updated, and include metrics and evidence of why they should be chosen. Local governments must be resourced and incentivized to combat obesity, especially if that is where obesity is most likely to be stopped. The narrative around obesity must begin to include the role of local public policy and public administration, and those institutions must employ wholistic social ecological methods, not one-off tactics.

Limitations

There are several limitations to this study. The research was conducted in an exploratory manner. The findings are a latent interpretation of the data. Therefore, while the analysis connects themes and findings in a logical manner, they are not necessarily replicable. Research on the same material from a different perspective may yield a different interpretation of the data. Future research would benefit by taking a similar content analysis approach from the perspective of other conceptual frameworks. While it is likely that a different point of view will draw different conclusions, can the findings showcased here, be found again?

Secondly, even though the CDC documents were pulled at the time of the research from the CDC website, they are severely dated, over a decade old, and they beg the question: are these strategies valid today? The research attempts to answer that question by stating that overall obesity rates continue to rise despite that these measures are still being promoted. That means either these measures are failing or not being implemented correctly. However, real evidence to support that finding needs to be gathered and explored. The first step toward new research should be to determine where in the process the CDC is in publishing new guides and strategies. From there, the field can evaluate approaches to new CDC strategies. Ideally, the CDC going forward is providing evidenced-based solutions.

Third, and although this was not found in the literature review, themes and factors purported in the analysis may be refuted in the full body of research. Future research should consider reviewing literature on the correlation between the environmental factors found here, infrastructure improvements for example, and their effects on obesity. A closer look should be given to how local governments and local public policy correlate with obesity rates. The question might be asked, do more proactive, focused and comprehensive local approaches lead to a lower community obesity rate? Or does the body of knowledge host literature that relates infrastructure or land use to obesity and if so, how?

Fourth, the research was limited to the content reviewed and simply the constraints of a content analysis. There is some use of quasi statistics throughout the analysis section. Word counts were utilized to bolster the findings, but the research could be improved by validating the findings through interviews of CDC officials or further comparing what was found here to other federal materials regarding obesity prevention strategies. Additionally, analysis would be enhanced by including a larger volume of CDC materials to review and compare findings. Does the full body of CDC prevention strategies run similar themes and involve similar factors? Are they all environmentally oriented?

In this study, the social ecological model framed the research, but how might other theoretical frameworks and conceptual models shed light on the CDC strategies? Future research might enhance the findings here by evaluating the same documents and strategies through the lens of other public health theories like the Health Belief Model, the Transtheoretical Model and stages of change, or Social Cognitive Theory. These theories are all listed by the National Institute of Health (NIH) as common approaches used to address public health. The social ecological model, another approach mentioned in NIH literature, has produced in this

analysis findings that describe how the CDC connects levels of influence and settings to factors, causes of obesity, and solutions to obesity, but future research might instead seek to understand how these strategies influence individual behavior and decision making through social cognitive theory.

Lastly, future research should study the effects of these and like strategies *at* the local level. That research should include how and to what extent these strategies are actually implemented. The policy recommendations within this dissertation request the CDC to update their strategies and include evidence to go along with their updated solutions. Academia and social science should assist that evaluation by looking closely at local data in comparison or in correlation to these strategies. Further, future studies should discuss these findings and obesity prevention more generally with local health officials and administrators. Recording the perspectives and experiences of this group should be considered a priority in future research and public policy development.

Research Contribution

Throughout the literature on obesity there is commentary and research on the many factors associated with obesity and how they contribute to the growth of this social challenge or how they can contribute to its elimination. However, there is very little analysis on the actual federal public policy guidance documents that are available for public use. This research study aimed to make a research contribution by analyzing select content from federal guidelines and strategies. The study adds to the body of research by taking a strict look at current federal policy guidelines and strategies and assessing their compliance with previous research and the framework of the social ecological model.

Further, the research contributes to the obesity discussion by highlighting that the federal approach and recommendations heavily rely on the role of the public policy level of influence within the socio ecological model. While the interpersonal, organizational, and community levels are also utilized throughout the CDC guidelines, none are more important and connected to the published strategies than local public policy. As well, the research findings suggest that several other factors be strongly considered as more prominent contributors to obesity. The research here suggests that while the body of knowledge on obesity has talked through multiple contributing factors, based on the CDC recommendations, the often-overlooked roles public policy, land use, and infrastructure deserve more focus.

This research also adds to literature that argues that the obesity problem is related to the environment. Rather than focus on how communities can teach individuals obesity reducing behaviors or how individual citizens can improve their knowledge about healthy choices, the CDC strategies reviewed in this research are prodigiously slanted toward fixing and changing the physical environmental. Altogether, thirty six of the forty-four strategies focus on environmental improvements.

Several additional points are worth mentioning as contributions to the literature. The literature suggests the need for comprehensive approaches to combat obesity and the research of this study confirms that notion. Even though more than 44 strategies were analyzed, with obesity still on the rise, clearly these strategies are not enough. This is partly due to the fact that the strategies are not promoted in a package manner where the audience is asked to implement the strategies in a wholistic style. In addition, the analysis determined that the social ecological model is used in the federal approach, but that it is not used explicitly enough. Therefore, while promoting multiple tactics, the CDC could improve their guidelines by further stressing the need

to use their strategies in ways that affect multiple or all levels of the social ecological model simultaneously.

Lastly, the research highlights the need for strategies to incorporate the public policy process. With an overwhelming emphasis on local public policy to prevent obesity, a missing element in the CDC strategies is the role of process. There is no real mention of local legislative procedures, nor is there any mention of the political process that leads up to legislation. Further, there is no acknowledgement of the potential threats to the process, which, as history has pointed out, is often limited to a few powerful special interests. If social ecological dynamics and settings within a greater community are dependent on public policy to shape social challenges or improve the overall environment toward a greater health, the process utilized to make those improvements must be taken into further consideration. This research highlights that need.

Overall, this research is unique because it provides an interpretive evaluation of federal prevention strategies. It adds emphasis on several rarely noticed contributing factors, presents findings that support an environmental approach, and determines that the public policy level of the social ecological model is key to ending this social health pandemic.

Conclusion

This research explored the issue of obesity and the ways in which the federal government has prescribed its prevention. Using the social ecological model as a conceptual framework a content analysis was conducted on four CDC documents related to obesity prevention strategies. The strategies largely focus on connecting citizens to each other and healthier choices, are locally oriented, reliant on public policy, and seek improvements to the environment as ways to prevent obesity from continuing to increase. The CDC recommendations seem largely based off of a social ecological approach where a heavy emphasis is placed on the public policy,

organizational, and community levels of influence. Through a common connection to schools and education policy, the interpersonal level of the model is also prominent. Overall, the study calls upon federal public policy and public administration to revamp its strategies in general and to do more to support local efforts. The research supports future efforts to combat obesity that discuss a wider array of factors, like the role of public policy and land use for example. Lastly, the analysis suggests that strategies need to be updated and ultimately, must become more comprehensive and more influential on several social ecological levels simultaneously.

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Appendix 1- The Strategies Matrix

The Strategies Matrix displays each strategy affiliated with each document and how that strategy affiliates with state and local levels of government, each level of the social ecological model, and the four main themes of the analysis. A full key is presented at the end of the matrix.

	DOCUMENT / STRATEGY	L of G		Social Ecological Level					THEME(s)			
#	Increase Physical Activity in the Community	L	S	PP	O	C	TRA	TER	C	E	L	PP
1	Community-wide campaigns.	x		x	x	x				x	x	x
2	Point-of-decision prompts to encourage use of stairs.	x		x	x					x	x	x
3	Individually adapted health behavior change programs.	x		x		x		x		x	x	x
4	Enhanced school-based physical education.	x		x			x				x	x
5	Social support interventions in community settings.	x		x		x	x		x		x	x
6	Creation of or enhanced access to places for physical activity combined with informational outreach activities.	x		x		x			x	x	x	x
7	Street-scale urban design and land-use policies.	x		x		x			x	x	x	x
8	Community-scale urban design and land-use policies.	x		x		x			x	x	x	x
9	Active transport to school.	x		x		x			x	x	x	x
10	Transportation and travel policies and practices.	x		x						x	x	x

	DOCUMENT / STRATEGY	L of G		Social Ecological Level					THEME(s)			
#	Increase Fruit and Vegetables	L	S	PP	O	C	TRA	TER	C	E	L	PP
1	Promote food policy councils as a way to improve the food environment at state and local levels.	x	x	x	x	x	x		x	x	x	x
2	Improve access to retail stores that sell high-quality fruits and vegetables or increase the availability of high-quality fruits and vegetables at retail stores in underserved communities.	x		x		x			x	x	x	x

3	Start or expand farm-to-institution programs in schools, hospitals, workplaces, and other institutions.	x		x	x	x			x	x	x	x
4	Start or expand farmers' markets in all settings.	x		x		x			x	x	x	x
5	Start or expand community supported agriculture programs in all settings.	x		x		x				x	x	x
6	Ensure access to fruits and vegetables in workplace cafeterias and other food service venues.	x		x	x				x	x	x	x
7	Ensure access to fruits and vegetables at workplace meetings and events.	x		x	x				x	x	x	x
8	Support and promote community and home gardens.	x		x		x				x	x	x
9	Establish policies to incorporate fruit and vegetable activities into schools as a way to increase consumption.	x	x	x			x			x	x	x
10	Include fruits and vegetables in emergency food programs.	x		x		x					x	x

#	DOCUMENT / STRATEGY Community Strategies	L of G		Social Ecological Level					THEME(s)			
		L	S	PP	O	C	TRA	TER	C	E	L	PP
1	Communities should increase availability of healthier food and beverage choices in public service venues.	x		x	x	x			x	x	x	x
2	Communities should improve availability of affordable healthier food and beverage choices in public service venues.	x		x	x	x			x	x	x	x
3	Communities should improve geographic availability of supermarkets in underserved areas.	x		x		x			x	x	x	x
4	Communities should provide incentives to food retailers to locate in and/or offer healthier food and beverage choices in underserved areas.	x		x		x				x	x	x
5	Communities should improve availability of mechanisms for purchasing foods from farms.	x		x		x			x	x	x	x
6	Communities should provide incentives for the production, distribution, and procurement of foods from local farms.	x		x					x		x	x

7	Communities should restrict availability of less healthy foods and beverages in public service venues.	x		x	x				x	x	x	x
8	Communities should institute smaller portion size options in public service venues.	x		x	x					x	x	x
9	Communities should limit advertisements of less healthy foods and beverages.	x		x		x				x	x	x
10	Communities should discourage consumption of sugar-sweetened beverages.	x		x		x				x	x	x
11	Communities should increase support for breastfeeding.	x		x		x					x	x
12	Communities should require physical education in schools.	x		x		x	x				x	x
13	Communities should increase the amount of physical activity in PE programs in schools.	x		x		x	x				x	x
14	Communities should increase opportunities for extracurricular physical activity.	x		x		x					x	x
15	Communities should reduce screen time in public service venues.	x		x	x	x				x	x	x
16	Communities should improve access to outdoor recreational facilities.	x		x		x			x	x	x	x
17	Communities should enhance infrastructure supporting bicycling.	x		x		x				x	x	x
18	Communities should enhance infrastructure supporting walking.	x		x		x				x	x	x
19	Communities should support locating schools within easy walking distance of residential areas.	x		x		x			x	x	x	x
20	Communities should improve access to public transportation.	x		x		x			x	x	x	x
21	Communities should zone for mixed use development.	x		x		x			x	x	x	x
22	Communities should enhance personal safety in areas where persons are or could be physically active.	x		x		x				x	x	x
23	Communities should enhance traffic safety in areas where persons are or could be physically active.	x		x		x				x	x	x
24	Communities should participate in community coalitions or partnerships to address obesity.	x		x		x	x		x	x	x	x

	L of G		Social Ecological Level					THEME(s)			
	L	S	PP	O	C	TRA	TER	C	E	L	PP
Physical Activity	10	0	10	2	8	2	1	5	8	10	10
Fruits and Vegetables	10	2	10	3	7	2	0	6	9	10	10
Community Strategies	24		24	5	21	3		10	19	24	24
TOTAL	**44**	**2**	**44**	**10**	**36**	**7**	**1**	**21**	**36**	**44**	**44**

KEY

= Strategy Number

L of G = Level of Government

L = Local

S = State

F = Federal

Social Ecological Level

PP = Public Policy

O = Organizational

C = Community

TRA = Intrapersonal

TER = Interpersonal

THEME(s)

C = Community

E = Environment

L = Local

PP = Public Policy

Appendix 2- Code Book

Name	Description
1. Access	Having to do with access to healthy foods, opportunities for physical activity.
2. Built Environment	Physical aspects of the environment that shape decision making and present or prevent opportunities.
3. CDC Efforts	Describes how the CDC has compiled the strategies, data, methodology and or any background pertaining to the development of the content being analysed and directions on how to use the products.
4. Community	A level of the socio logical model that refers to organizations and institutions that people/citizens participate and find belonging in.
5. Comprehensive Solutions	The literature pointed out that comprehensive solutions were needed to solve the obesity epidemic. This code labels content that refers to the use of comprehensive solutions.
6. Corporate Influence	Used to label text that is describes the way the private sector influences obesity. Corporate influence could be positive or negative.
7. Cost	Content that describes the pricing of related contributing factors of obesity, mainly food.
8. Definitions	Terminology described in full.
9. Ethnicity	This code was used to label references to race.
10. Environmental	Broadly, Text related to external factors or the strategies discussed.
11. Exercise	Used for coding physical exercise material.
12. Factors	Content that describes any of the contributing factors related to obesity.
13. Family Characteristics	Language that discusses how families and aspects of families influence obesity.
14. Individual	Broadly labels how individual aspects, choices, and behaviours relate or influence obesity or the strategies described.
15. Interpersonal	Content having to do with interpersonal level of the socio ecological model which has to do with groups such as families, schools, and churches.

Name	Description
16. Intrapersonal	Content associated with the intrapersonal level of the socio ecological model which has to do with individual characteristics such as gender, age and knowledge.
17. Mass Marketing	Labels content having to do with the advertisement of food or strategies.
18. Measurements	This code was used to label language having to with the ways in which the CDC measured results of the various strategies.
19. Norms	Material that has to do with group, community or cultural values and ways of thinking.
20. Obesity Background	Factual information about obesity and the overall obesity epidemic.
21. Organizational	Material having to do with the organizational level of influence of the socio ecological model which pertains to social networks and the norms that bind them together.
22. Personal Attitudes	Text that describes individual attitudes toward food or other subjects described in the content.
23. PP Federal	This code covers material having to do with federal public policy.
24. PP Local	This code covers material having to do with local public policy.
25. PP State	This code covers material having to do with state public policy.
26. Public Policy	Broadly encapsulates anything related to public policy or public policy content that does not fit into just one of the other public policy categories.
27. Regulation	Labels content related to regulation on any number of issues, products or industries covered in the strategies.
28. RURAL V URBAN	This code refers to content that distinguishes either rural or urban content when addressing a strategy or related topic of obesity.
29. School	The school code references material describing aspects of obesity or strategies involving schools.
30. SEM Dynamics	This code labels is used anytime content illustrates different levels of the socio ecological model interacting with one another.
31. SES	SES is short for socio economic status and is used to label content that refers to individual or group economic well being.

Name	Description
32. Strategies	This code is used to broadly headline content that describes any of the number of strategies used in the CDC material.
33. Unhealthy Food	The code used anytime content discussed unhealthy foods or food choices, advertisements or offerings.

Appendix 3 -- Word Counts

Top 100 Words Across All Four CDC Documents

	Word	Count
1	Food	714
2	School	552
3	Community	530
4	Local	523
5	Health	488
6	Physical	469
7	Activity	423
8	Program	336
9	Healthy	324
10	http	311
11	Public	301
12	Policy	288
13	www	283
14	Foods	282
15	Schools	244
16	Use	244
17	Programs	238
18	Facilities	226
19	Communities	214
20	Strategy	209
21	Vegetables	209
22	Fruits	196
23	Org	192
24	Measurement	191
25	Obesity	187
26	Strategies	185
27	Increase	183
28	City	179
29	Access	174
30	Nutrition	173
31	Policies	169
32	Within	164
33	Children	160
34	Department	160
35	Guide	151
36	Support	147
37	Government	144

38	Beverages	142
39	Available	139
40	Jurisdiction	138
41	State	138
42	Walking	138
43	Active	134
44	Cdc	132
45	National	132
46	Farm	130
47	Pdf	125
48	Transportation	125
49	Prevention	122
50	Among	120
51	Center	120
52	Evidence	120
53	New	120
54	Phd	119
55	Resources	118
56	Students	118
57	Healthier	117
58	Fruit	116
59	Consumption	115
60	Environmental	115
61	Including	113
62	One	113
63	Work	113
64	Areas	111
65	farmers'	111
66	Education	107
67	Provide	107
68	Service	107
69	Availability	106
70	Time	103
71	Vegetable	100
72	Also	98
73	Research	98
74	Include	96
75	Land	96
76	Stores	96
77	Based	94
78	Gov	93
79	District	92
80	Interventions	92

81	County	90
82	May	90
83	Studies	90
84	Centers	89
85	Increased	88
86	Care	87
87	Data	87
88	Markets	86
89	Online	86
90	Promote	86
91	Fresh	85
92	Low	85
93	Eating	84
94	Intervention	84
95	Design	83
96	Produce	83
97	Agriculture	82
98	Safety	82
99	Breastfeeding	81
100	Development	81